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AN INVESTIGATION OF THE DETERMINANTS OF THE RELATIVE  
SIZE OF THE ADMINISTRATIVE COMPONENT IN  
NATIONAL AND INTERNATIONAL LABOR UNIONS

A Dissertation Presented

By

David Allen Gray .

Submitted to the Graduate School of the  
University of Massachusetts in partial  
fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

April

1974

Business Administration

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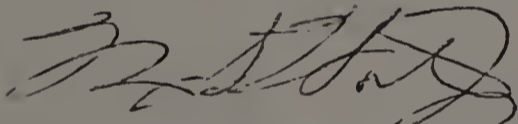
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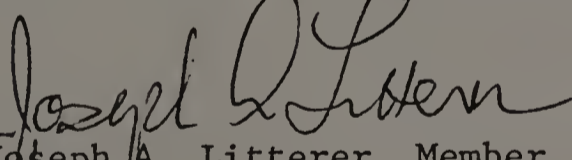
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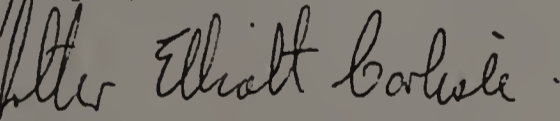
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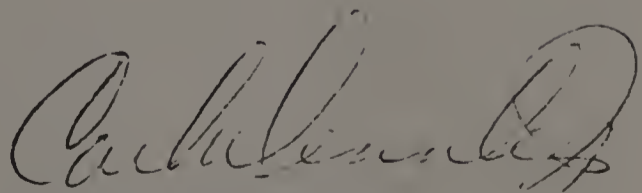
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April 1974

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An Investigation of the Determinants of the Relative  
Size of the Administrative Component in  
National and International Labor Unions

April 1972

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The research question of this study was to determine how the variables of organization size and complexity were linked to the relative size of the administrative component in a multi-level organizational system, national and international labor unions. From an analysis of the literature bearing on this question, the following general hypotheses were formulated for testing:

(1) The relative size of the administrative component decreases proportionately as the size of the organization increases.

(2) The relative size of the administrative component increases proportionately as organization complexity increases.

(3) As the complexity of the organization increases, the size of the organization increases at a proportionate rate.

(4) The interaction effect of complexity with size decreases the relative size of the administrative component as organization size increases.

A number of operational definitions of organization size and complexity were developed and used to enumerate several working

hypotheses for each general hypothesis. To test these working statements, a sample of 30 labor unions was surveyed. Union presidents, secretary-treasurers, research and education directors were asked a series of questions designed to elicit information concerning union size, administrative composition and size, structural differentiation, occupational and industrial distribution of the membership, and the complexity of the collective bargaining process. The data gathered were continuous in form which permitted the use of regression and correlation analysis for investigating the relationships among the variables.

In testing the working hypotheses of the first, second, and fourth general hypotheses, the dependent variable (relative administrative size) was decomposed according to organization level (central union headquarters and regional office) and administrative category (managers and administrators, professional staff experts, organizers and representatives, and clerical workers). The data analysis yielded partial support for the first and fourth general hypotheses and no support for the second hypothesis. The relationship between union size and relative administrative size for several working statements was negative and formed a downward sloping curve which eventually leveled off. Only one of the many interaction equations of the fourth general hypothesis produced a significant interaction term; the combined effect of the number of locals (complexity) and the number of union members (size) on the central headquarters managerial ratio (relative managerial size) produced a

rapidly declining curve which flattened out at a relatively low managerial ratio.

The analysis of the second general hypothesis yielded inconsistent findings. Different measures of organization complexity were linked with various measures of relative administrative size in contrasting ways. The managerial ratio declined with increasing structural differentiation and increased with greater centralization (complexity) of the collective bargaining (negotiations) process.

Several significant relationships for the third general hypothesis were obtained between measures of organization size and complexity. The number of members, contracts, and employers (size) were positively associated with the number of local unions, intermediate bodies, and departments (complexity). Weak to moderate relationships existed between organization size and measures of occupational and industrial diversity (complexity). Significant correlation values also occurred between indicators of size and bargaining complexity.



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## CHAPTER I

## BACKGROUND AND OBJECTIVES OF THE STUDY

Any organization can be conceived as consisting of a set of structural components in which growth is accompanied by structural changes and influenced by a number of external and internal variables. In recent years structural adjustments attracting considerable attention involve the non-proportional changes of certain organizational parts as organizational forms change and become more complex.<sup>1</sup>

Of particular interest has been the "development and expansion of a rationally oriented and dependable administrative component."<sup>2</sup> Labelling this component the 'apparatus,' Max Weber associated its rise with increasing organization size and bureaucratization. He considered size as the controlling factor in the development of bureaucracy and, concomitant with an increase in organization size, a disproportionate increase in administrative staff.<sup>3</sup>

In this investigation the following question will be analyzed: How are the variables of organization size and complexity linked to the relative size of the administrative component in a multi-level organizational system, national and international labor unions? The objectives of the study are: (1) to examine the regional (intermediate) and central headquarters' administrative staffs of unions; (2) to identify significant correlates of the relative sizes of these administrative components; (3) to investigate the relationship between the relative sizes of administrative staffs at the regional

and central headquarters levels of this multi-level system; (4) to develop measures of organization complexity and size; and (5) to determine the relationship between these two organization dimensions.

#### The Development of Union Bureaucracies

Historically, union structure and the structure of collective bargaining have adapted to changing internal and environmental conditions. Early in the development of unions, AFL unions were organized according to skilled worker classifications, local labor markets, customized manual technology, small scale production facilities, and individual employers.<sup>4</sup> As product markets expanded and technological advances permitted the development of large scale mass production operations, CIO industrial unions were founded in the 1930's to challenge both large scale industrial management and an unyielding craft union structure. These conditions also encouraged local unions to confederate into national and international unions. Confederated unions tended to develop hierarchically organized structures which could adequately meet the demands of an increasingly complex economic environment and the expanding needs of local constituencies.

In the modern labor movement, administrative centralizing tendencies continue for several additional reasons: (1) the rise of the corporate conglomerate and the trend toward product diversification; (2) the development of coordinated and coalition bargaining; (3) shifts in the locus and scope of contract negotiations; (4) the

quicken pace of union mergers; (5) the increased number, complexity, and length of contracts and supplemental agreements; (6) the enormous housekeeping tasks associated with maintaining membership rosters, filing government reports, and managing multi-million dollar pension programs and strike defense funds;<sup>5</sup> (7) the increased importance of state and national political and legislative activities; and (8) the proliferating demands of various federal government agencies.

In 1929, Berle and Means examined the changes resulting from mergers and acquisitions in the managerial and ownership structure of American business and industry. They observed that 44 per cent of the 200 largest nonfinancial corporations and 58 per cent of their assets were management controlled.<sup>6</sup> Using similar methodology, Larner reported that 84.5 per cent of the 200 largest firms and 85 per cent of their assets were management controlled in 1962.<sup>7</sup> More recently, Alexander presented data which substantiated the trend toward concentration and centralization in the American economy. During the 20 year period from 1948 to 1968, the number of acquisitions increased more than ten-fold (223 in 1948 to 2,442 in 1968).<sup>8</sup> A major difference in the recent merger and acquisition movement<sup>9</sup> from earlier movements has been the creation of conglomerates<sup>10</sup> rather than vertical or horizontal combinations.

Along with the development of a unified management, a major result of the changing character of industrial mergers and acquisitions has been the establishment of a decentralized system of local



unit collective bargaining. This has provided the multi-company conglomerate which bargained on a local basis a strategic advantage and has placed the union(s) in a relatively weak position.<sup>11</sup> As a means of counteracting the conglomerate and limiting fractionalized bargaining,<sup>12</sup> unions have attempted to extend the bargaining structure to a corporate, system, or industry-wide basis through coordinated or coalition bargaining.<sup>13</sup>

Concomitant with the development of coalition and coordinated bargaining has been the undermining of local union decision-making<sup>14</sup> through centralization of collective bargaining negotiations.<sup>15</sup> With these changes, the bargaining unit or election and representation district as established by the National Labor Relations Board declined in importance, and the negotiation unit became the key element in the structure of collective bargaining.<sup>16</sup> Accordingly, the locus of decision-making power shifted upward and the scope of the units which comprised the bargaining structure expanded.

As another response to corporate reorganization and the changing structure of bargaining, several unions have negotiated merger agreements.<sup>17</sup> Thirty-six mergers involving 77 unions have occurred from December 1955 (the time of the AFL-CIO merger) to February 1971. More than one-third of these mergers have taken place from 1968 to 1971.<sup>18</sup>

From reports filed by unions with the Department of Labor, a total of 152,831 agreements, exclusive of supplements, welfare and

pension plans, were in effect in 1970.<sup>19</sup> This was a substantial increase over 1960 in which reports yielded a total of 126,000 agreements.<sup>20</sup> Coupled with this increase has been the expansion of contracts from perhaps five to ten pages 20 years ago to a series of documents that run to several hundred pages today.<sup>21</sup> Pension plans have been a major contributor to the increased complexity and length of contracts. From about 15 million workers in 1960, private pension plan coverage has grown to about 21 million in 1969. Coverage of multi-employer pension plans expanded at an annual rate of 5.7 per cent, compared to 2.7 per cent for single-employer plans during the 1960's.<sup>22</sup> By the end of the decade, nine out of ten workers were in plans under which their accrued pension benefits were vested, or early retirement was permitted, or both.<sup>23</sup>

In response to political and legislative developments (domestic and world inflation, balance of payments, protective legislation, unfair campaign practices, and occupational health and safety) labor unions have allocated greater financial and human resources to Congressional lobbying, political campaigning, safety engineering, and government reporting. Many, if not all, of these allocation decisions have been made and carried out by officials attached to unions' central headquarters.

By combining the operation of these forces with the reduction in the number of unions and increases in union size, an understanding of the tremendous increase in the scale of administrative operations within unions can be gained. Standardization of administrative



activities through written communications and reports has reflected the unions' recognition of the need for organizational efficiency.<sup>24</sup> To meet this need and to increase bargaining power, unions have created bureaucratic structures very similar to those of business organizations.

Significance of the Study and Relationship  
to Work of Others

In the last 25 years many researchers have investigated the structure and size of administrative units in a variety of organizations. However, many of these studies have displayed two major substantive and methodological shortcomings. First, studies have been limited by their adherence to single definitions of the dependent and independent variables. Little effort has been made to subdivide the administrative component into different categories of employees. Placement of employees in different positions into a heterogeneous category has confounded the comparability of research findings. To overcome this limitation, four homogeneous administrative classifications will be used in conjunction with a single definition of administrative staff.

Similar conceptual and operational difficulties can be observed with regard to the independent variables of size and complexity. For example, using the number of administrative departments as a measure of complexity has resulted in the investigation of only one complexity dimension, structural differentiation. A more sophisticated approach

will be taken in this study. In addition to several measures of structural segmentation, measures of occupational and industrial diversity and the structure and complexity of a major union activity (collective bargaining) will be used to distinguish organization complexity.

The second principal weakness of previous research has resulted from either studying local units of multi-level organizations or local units of several different types of organizations. Within a union, generally three structural levels can be identified: central headquarters, district or regional offices, and local unions. By examining only the local administrative component, two major segments of the total administrative staff have been excluded. Size and structure of the upper two administrative units will be investigated in this study.

Through the above methodological refinements and conceptual extensions, the shortcomings of previous research can be partially remedied. Accordingly, this research project will be significant for the following reasons: (1) the information obtained about union structure and administration and the structure and complexity of the collective bargaining process; (2) the usefulness of this information in understanding and interpreting the nature and dimensions of the administrative apparatus; (3) the addition to the empirical knowledge of organizations that will enable researchers to become further acquainted with this organizational segment; (4) the

inventory of relevant measures of organization size and complexity which will serve as bases for the development of similar measurements in the study of other types of organizations; and (5) the development of a multi-level analytical framework for the study of organizations.

#### Approach of the Study

To find answers to the major research question and study the interrelationships between organizational characteristics, the comparative approach to the study of organizations was adopted. This research strategy may take the form of a longitudinal analysis of a few organizations, or of examining two contrasting organizations, or of a cross-sectional investigation of many different organizations or a homogeneous category of organizations. In this study, the method will be to collect quantitative information on many organizations of the same type and apply multivariate analyses to the data. The question posed at the beginning of the chapter is how do various conditions (size and complexity) influence a certain factor (relative administrative size). This question may be answered using multiple regression and correlation. The relationships of several independent variables to one dependent variable can be determined with these techniques.

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<sup>5</sup>Woodrow L. Ginsburg, "The Computer's Uses and Potential in Bargaining: A Trade Union View," in Abraham J. Siegel (ed.), The Impact of Computers on Collective Bargaining (Cambridge, Massachusetts: The M.I.T. Press, 1969), pp. 26-29.

<sup>6</sup>Adolf A. Berle and Gardinar C. Means, The Modern Corporation and Private Property (New York: Harcourt, Brace and World, 1968), p. 109.

<sup>7</sup>Robert J. Lerner, "Ownership and Control in the 200 Largest Nonfinancial Corporations, 1929 and 1963," The American Economic Review, Vol. 56 (September, 1966), 780.

<sup>8</sup>Bureau of Economics, Federal Trade Commission, Economic Report on Corporate Mergers (Washington: U.S. Government Printing Office, 1969), p. 63.

<sup>9</sup>Two of the most important conglomerate linkages are corporate joint ventures and management interlocks, see: Willard F. Mueller, "Conglomerate Mergers," in Collective Bargaining Today, Proceedings of the Collective Bargaining Forum, 1970 (Washington: Bureau of National Affairs, Inc., 1971), p. 107.

<sup>10</sup>The two most prevalent types of conglomerate mergers are product extension and market extension, see: Alexander, 367.

<sup>11</sup>George H. Hildebrand, "Coordinated Bargaining: An Economist's Point of View," Industrial Relations Research Association: Proceedings of the 1968 Annual Spring Meeting (Madison, Wisconsin: Industrial Relations Research Association, 1968), p. 526.



<sup>12</sup>For a discussion of fractionalized collective bargaining, see: Joseph P. Goldberg, "The Maritime Industry," Industrial Relations Research Association: Proceedings of the 1970 Annual Spring Meeting (Madison, Wisconsin: Industrial Relations Research Association, 1970), pp. 505-513.

<sup>13</sup>William N. Chernish, Coalition Bargaining: A Study of Union Tactics and Public Policy (Philadelphia: University of Pennsylvania Press, 1969), p. 9; and Philip J. Schwarz, "Coalition Bargaining," Key Issues Series, No. 5 (Cornell, New York: New York State School of Industrial and Labor Relations, 1970), pp. 1-7.

<sup>14</sup>Earl L. Engle, "Coordinated Bargaining: A Snare and Delusion," Industrial Relations Research Association: Proceedings of the 1968 Annual Spring Meeting (Madison, Wisconsin: Industrial Relations Research Association, 1968), pp. 520-521.

<sup>15</sup>Beatrice M. Burgoon, "The Railway Industry," Industrial Relations Research Association: Proceedings of the 1970 Annual Spring Meeting (Madison, Wisconsin: Industrial Relations Research Association, 1970), pp. 491-497; and E. Robert Livernash, "Recent Developments in Bargaining Structure," in Arnold R. Weber (ed.), The Structure of Collective Bargaining (New York: The Free Press of Glencoe, Inc., 1961), pp. 44-55.

<sup>16</sup>Arnold R. Weber, "Stability and Change in the Structure of Collective Bargaining," in Lloyd Ulman (ed.), Challenges to Collective Bargaining (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967), pp. 14-15.

<sup>17</sup>Herbert J. Lahne, "Coalition Bargaining and the Future of Union Structure," Labor Law Journal, Vol. 18 (June, 1967), 355.

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<sup>19</sup>U. S. Department of Labor, Directory of National Unions and Employee Associations, 1971 (Washington, D.C.: U. S. Government Printing Office, 1972), p. 87.

<sup>20</sup>U. S. Department of Labor, Directory of National and International Labor Unions in the United States, 1961 (Washington, D.C.: U. S. Government Printing Office, 1962), p. 67.

<sup>21</sup>Ginsburg, p. 27.

<sup>22</sup>Harry E. Davis and Arnold Strasser, "Private Pension Plans, 1960 to 1969 -- An Overview," Monthly Labor Review, Vol. 93 (July, 1970), 45.

<sup>23</sup>Harry E. Davis, "Growth of Benefits in a Cohort of Pension Plans," Monthly Labor Review, Vol. 94 (May, 1970), 48.

<sup>24</sup>George Won and Douglas Yamamura, "Democracy Within a Bureaucracy: A Labor Union Dilemma," Monograph No. 65 (Hawaii: University of Hawaii, Industrial Relations Center, 1967), p. 3.



CHAPTER II  
THEORETICAL CONTEXT, MAJOR PROPOSITIONS, AND  
EMPIRICAL EVIDENCE CONCERNING THE SIZE  
OF THE ADMINISTRATIVE COMPONENT

Much research has been done attempting to identify various organization dimensions that may affect the relative size of the administrative component. Studies have varied according to the number and types of organizations investigated, the number and measurement of independent variables analyzed, and the methodologies employed. However, most of these studies have stemmed from Max Weber's theory of bureaucracy.

This chapter will briefly present Weber's theory and develop four propositions incorporating organization size and complexity as major determinants of relative administrative size. Following each proposition, appropriate empirical evidence will be discussed and table summaries provided to facilitate comparison of research results.

In addition to organization size and complexity, three other independent variables (age of the organization, managerial succession, and the separation of ownership and management) have been identified as affecting the relative size of the administrative component. A summary of the research concerning these factors will be made at the end of the chapter.

### Weber's Theory of Bureaucracy

The formal structure of almost all modern administrative organizations can be conceptualized as a bureaucracy. According to Max Weber, the main characteristics of a bureaucratic structure are the following:

- (1) There is the principle of fixed and official jurisdictional areas, which are generally ordered by rules, that is, by laws or administrative regulations.
- (2) The principle of office hierarchy and of levels of graded authority mean a firmly ordered system of super- and subordination in which there is a supervision of the lower offices by the higher ones.
- (3) The management of the modern office is based on written documents ('the files').
- (4) Office management, at least all specialized office management, usually presupposes thorough and expert training.
- (5) When the office is fully developed, official activity demands the full working capacity of the official, irrespective of the fact that his obligatory time in the bureau may be firmly delimited.
- (6) The management of the office follows general rules, which are more or less stable, more or less exhaustive, and which can be learned.<sup>1</sup>

He believed that an organization designed from these principles would display maximum rational decision-making and administrative efficiency. Bureaucracy resulted in optimum efficiency because it attracted highly qualified people who become experts at selecting and applying correct decision rules, because disciplined performance governed by abstract rules and coordinated by the hierarchy of authority fostered a continuous pursuit of organizational objectives,

and because the employment and reward systems encouraged employees to develop career orientations.<sup>2</sup>

Bureaucracy, Product of Increasing Size

Of the several conditions identified by Max Weber as contributing to the development of bureaucracy,<sup>3</sup> he considered organization size as the controlling factor. In discussing legal authority with employment of a bureaucratic administrative staff, Weber mentioned, "the same phenomena (bureaucratic characteristics) are found in the large-scale capitalistic enterprise; and the larger it is, the greater their role."<sup>4</sup> He further emphasized the importance of large size by stating that "only by reversion in every field--political, religious, economic, etc.--to small-scale organization would it be possible to any considerable extent to escape its (bureaucracy's) influence."<sup>5</sup> When examining German political parties (before World War I), Michels supported Weber by observing that:

. . . the modern party endeavors to give to its own organization the widest possible base, and to attach to itself in financial bonds the largest possible number of individuals. Thus arises the need for a strong bureaucracy, and these tendencies are reinforced by the increase in the tasks imposed by modern organization.<sup>6</sup>

While Weber suggested many advantages of a large administrative staff, others have pointed out the dysfunctional consequences of large size and the development of bureaucracy. According to Barnard, one important result of the inherent difficulty of securing an adequate compensation system and scheme of incentives was:

. . . the innate propensity of all organizations to expand. The overreaching which arises from this cause is the source of destruction of organizations otherwise successful, since growth often so upsets the economy of incentives, through its reactions upon the effectiveness and efficiency of organization.<sup>7</sup>

In a discussion of the impact of organization structure on employee morale, Worthy commented that one of the most serious liabilities of over-specialization and extensive division of labor was the "fact that they so greatly expand the size of the administrative unit."<sup>8</sup> Caplow has pointed out that:

. . . large groups apparently devote a larger proportion of their resources to their own operation than do small groups. It would appear that small groups require proportionately less self-maintenance. There is an almost universal belief that the administrative and overhead components of any organization increase out of proportion to increases in its size.<sup>9</sup>

In a similar vein, characterizing administrative personnel as parasitic in nature, Parkinson contended that:

. . . the number of the officials and the quantity of the work are not related to each other at all. The rise in the total of those employed is governed by Parkinson's 'Law' and would be much the same whether the volume of the work were to increase, diminish or even disappear.<sup>10</sup>

Referring to the biological aspects of organizations, Haire suggested that as "physical objects get bigger but retain the same proportions, they get weaker, and a larger and larger proportion must go toward supporting their own mass."<sup>11</sup> From this observation, he formulated the 'square-cube law' which advanced "that mass grows by a cube function while surface grows by a square."<sup>12</sup> Haire used the law to develop a growth relationship between external employees (square of the outside) and internal employees (cube of the inside).



From the above discussion, the first proposition may be stated as follows:

Proposition One

The relative size of the administrative component increases at an increasing rate as the size of the organization increases.

Empirical Evidence--Organization Size

Studies investigating the above proposition have followed two general research strategies: longitudinal analysis or cross-sectional analysis. Research findings indicated, contrary to Weber, Parkinson and others, that increases in organization size did not necessarily produce a disproportionate increase in the relative number of administrative personnel.

Longitudinal Studies

Melman examined the magnitude of administrative overhead in relation to size variables, corporate organization, multi-plant firms, age of firm, concentration, profitability, pricing practices, selling effort, employment of technicians, and product type. Finding that differences in the magnitude of administrative overhead at one time and over a period of time appeared to be independent of all variables tested (except size), he inferred that size, regardless of the criterion used as a measure of size (average number of wage-earners per establishment, average value added per establishment, physical output of the industry, and number of wage-earners in the industry), was a differentiating factor in administrative overhead. Decreasing



administrative ratios were associated with increasing size.<sup>13</sup> Bendix made a similar observation in a study of German industrial firms. His data showed the proportion of administrative personnel declined somewhat with increasing firm size. However, administrative ratios taken from three time periods (1907, 1925, and 1933) tended to increase regardless of the size category.<sup>14</sup>

Three other studies analyzed the ratio of staff to total employment for each year during the growth of a limited number of firms. In the first, Haire noticed that after an initial period of growth (six to ten years), the growth of line and staff employment in four firms progressed at quite similar rates. Early, the staff grew geometrically as the line grew linearly, but this relation tapered off to parallel growth, stabilizing at about 25 per cent of total employment in two firms and at about 50 per cent in the other two.<sup>15</sup> Following Haire's design, Draper and Strother observed the same growth pattern of line and staff in an educational institution. After an initial period of disproportionate staff growth, both segments expanded in a parallel fashion.<sup>16</sup> In the third study, Filley computed the growth of staff in five firms. Contrary to the previous two studies, the data displayed mixed rather than similar patterns of staff growth. From this evidence, he concluded that staff growth was not solely a function of total employment.<sup>17</sup>

Two recent analyses of Canadian and U.S. school systems yielded findings somewhat consistent with those above. Using multiple

measures of relative administrative size, Holdaway and Blowers constructed individual growth curves for the period 1964-65 through 1968-69 for 41 school systems in western Canada. The changes in administrative ratios exhibited by these graphs showed no consistent tendency to rise or fall over the five-year period. In contrast to this finding, they presented cross-sectional data of the same school systems which revealed that smaller administrative ratios tended to be associated with larger system size.<sup>18</sup> Hendershot and James examined the effects of organization growth and size on the ratio of supervisors to teachers in 299 American districts. The supervisory ratios were calculated for two school years, 1949-50 and 1955-56. For both points in time, the correlation between district size (measured by the number of students) and the supervisory ratio was  $-.13$ , "indicating a stable negative relationship."<sup>19</sup>

In all seven of the above studies, organization size and relative administrative size were either inversely related or not related at all over a period of time (see Table 2-1 for comparative summary). However, one other study contradicted these findings. In a study of ten voluntary associations, Tsouderos found membership growth was directly related to the number of administrative office employees. Administrative workers continued to accumulate even when membership declined.<sup>20</sup>

#### Cross-sectional Studies

Baker and Davis analyzed data from 211 manufacturing companies and tested the hypothesis that as the total number of direct workers

TABLE 2-1

LONGITUDINAL STUDIES RELATING ORGANIZATION SIZE AND  
RELATIVE ADMINISTRATIVE SIZE

Study (by year)	Organizations Studied	Relationship	Definition of Size	Definition of Administrative Component
Melman (1951)	Firms and Industries	Inverse	Multiple <sup>a</sup> definitions	Nonproduction personnel
Tsouderos (1955)	10 Voluntary associations	Positive	Number of members	Office workers
Bendix (1956)	German indus- trial firms	Inverse	Number of employees	Salaried administrative employees
Haire (1959)	4 Firms	No Corre- lation	Number of employees	Included those who provided specialized advice and support
Draper and Strother (1963)	1 Institution of higher education	No Corre- lation	Number of employees	Staff providing specialized support
Filley (1963)	5 Firms	No Corre- lation	Number of employees	Staff providing specialized support

TABLE 2-1--continued

Study (by year)	Organizations Studied	Relationship	Definition of Size	Definition of Administrative Component
Holdaway and Blowers (1971)	41 School systems	No Corre- lation	Multiple <sup>b</sup> definitions	Multiple <sup>c</sup> definitions
Hendershot and James (1972)	299 School districts	Inverse	Number of students	Supervisors

<sup>a</sup>Melman defined firm and industry size in four ways: (1) total assets, (2) total production personnel, (3) average value added per establishment, and (4) number of wage-earners per establishment.

<sup>b</sup>Holdaway and Blowers defined system size in four ways: (1) number of schools, (2) number of pupils, (3) number of professional and administrative staff, and (4) number of classroom teachers.

<sup>c</sup>Holdaway and Blowers defined the administrative component in three ways: (1) central office administrative personnel, (2) central office professional personnel, and (3) central office administrative personnel plus school principals.



in a firm increased arithmetically, the total number of indirect workers tended to increase geometrically. Results showed each group tended to increase in an arithmetic progression.<sup>21</sup> In a study of California school districts, Terrien and Mills presented data which confirmed Weber's proposition that size was the controlling factor in the development of bureaucracy and that an increase in organization size was accompanied by an increasing proportion of administrative personnel. In three types of school systems, they reported the size of the administrative component increased at a greater rate than the total size of the containing organization. For Terrien and Mills these findings indicated the "school administrator may expect that the percentage of his organization devoted to administrative tasks may rise as his organization expands."<sup>22</sup>

Contrary to the findings above, the remaining investigations showed either a decrease in the relative number of administrative personnel as organization size increased or no relationship between the two variables. Defining the supportive (administrative) component as those persons engaged in activities which contributed indirectly to the attainment of organization goals, Haas, Hall, and Johnson analyzed data solicited from executives of 30 organizations. They observed that the percentage of personnel engaged in supportive activities actually declined as organization size increased. Although they suggested that the relationship may be curvilinear, it was maintained across different types of organizations.<sup>23</sup> Taking a slightly different approach, Indik examined the relationship between



organization unit size and supervision ratios in five sets of organizations (116 organizations in all). In each organization set there was a significant negative slope to the plotted curves: as size of the unit decreased, the supervision ratio decreased. Although the analysis utilized static measures, he suggested that if a dynamic view were taken, the structure of the unit was probably set early, and additions to the supervisory staff came as size increased but not at a sufficient rate to maintain the earlier level of the supervision ratio.<sup>24</sup>

Hawley, Boland, and Boland reported similar evidence in a study of 97 institutions of higher education. Expecting size of the administrative staff to vary directly with population size (number of part-time and full-time faculty), they found the ratio of administration to faculty declined as size of faculty increased.<sup>25</sup> Lindenfeld arrived at the same conclusion in an analysis of personnel data of 323 secondary school systems. His results suggested the larger the size of the school district, as measured by total administrative and instructional staff, the smaller the proportion assigned to high level administrative work. With increasing size the relative size of the administrative component declined regularly from 3.1 per cent of the whole in the smallest districts to 0.7 per cent in the largest.<sup>26</sup>

In two recent analyses, Rushing studied the effects of industry size (number of production personnel) on relative administrative size. He used five administrative categories (managers, clerical,

professional, sales, and service) and the mean number of production personnel per firm (calculated by dividing the total number of production employees by the total number of firms per industry) to test proposition one. Overall, industry size and relative administrative size were inversely related, but the different administrative components were linked to organization size in quite different ways. Firm size had negative effects "on managerial and sales personnel, positive effects on professional and clerical employees, and a weak and inconsistent effect on service personnel."<sup>27</sup>

Examining administrative ratios in 36 U.S. Army Hospitals, Tosi and Patt found the ratio of administrative personnel to total personnel decreased as size of the containing organization increased.<sup>28</sup> Lending support to this finding, Pondy found administrative intensity to decrease with organization size. Administrative intensity was defined as the number of managers, professionals, and clerical employees divided by the number of craftsmen, operatives, and laborers employed by the organization.<sup>29</sup>

In two other studies, administrative ratios displayed disproportionate reductions with increasing organization size. Using a logarithmic model, Klatzky showed that size decreased the staff component at a decreasing rate, the slope of the relationship became flatter and flatter.<sup>30</sup> A similar convex curve illustrating this relationship was reported by Blau and Schoenherr in a study of employment security offices. This finding led them to suggest that

administrative costs exhibit an economy of scale which may diminish with increasing size.<sup>31</sup>

During the 1950's a series of yearly surveys was conducted by Nelson, England and Yoder to determine variances in personnel ratios (the number of persons assigned to a personnel department relative to total employment) across different business and industrial firms. From their analysis they concluded that size was not generally related to the personnel ratio.<sup>32</sup> Further, the long-term study showed that the type of industry and complexity of organization structure were more relevant in assessing the role and scope of the personnel function in business organizations.<sup>33</sup> Hall also found that organization size was not the critical determinant of overall bureaucratization.<sup>34</sup>

In two of the previously discussed studies (Indik and Haas, et al.) labor union locals were included in the organizations sampled. Both studies reported an inverse relationship between organization size and relative size of the administrative component. Due to the small number of union locals included in the two samples, it cannot be determined whether this relationship would be maintained in a larger, more representative sample of unions. However, one study dealt with relative administrative size in British unions. Clegg, Killick and Adams computed several administrative-member ratios for 15 national unions. No statistical analyses were performed on the data, but the raw data tables showed no consistent pattern between the ratios and size. Both large and small unions displayed high and low administrative ratios.<sup>35</sup>

The last illustration to be cited is research on 49 Veterans Administration Hospitals by Anderson and Warkov. They found an inverse relationship between hospital size (measured by the annual average daily patient load) and percentage of personnel in administration. While acknowledging that size was a powerful explanatory variable, they suggested that organization complexity apart from size might be directly associated with the proportion of administrative personnel. They set forth three hypotheses for future testing:

- (1) The relative size of the administrative component decreases as the number of persons performing identical tasks in the same place increases.
- (2) The relative size of the administrative component increases as the number of places at which work is performed increases.
- (3) The relative size of the administrative component increases as the number of tasks performed at the same place increases (or roles become increasingly specialized and differentiated).<sup>36</sup>

The next section will focus on the nature of complexity and the studies which have tested these and other administrative size-complexity hypotheses.

After a review of numerous quantitative studies of administrative structure and growth in 1965, Starbuck concluded that the administrative ratio for "organizations with more than 100 employees . . . . is essentially independent of organization size."<sup>37</sup> From this review (see Table 2-2 for a comparative summary), the conclusion can be drawn that organization size and relative administrative size are generally inversely related. The only studies not consistent



TABLE 2-2

CROSS-SECTIONAL STUDIES RELATING ORGANIZATION SIZE  
AND RELATIVE ADMINISTRATIVE SIZE

Study (by year)	Organizations Studied	Relationship	Definition of Size	Definition of Administrative Component
Melman (1951)	Firms and industries	Inverse	Multiple <sup>a</sup> definitions	Nonproduction personnel
Baker and Davis (1954)	211 Manufac- turing firms	Positive	Number of direct employees	Indirect labor not engaged in creating goods
Terrien and Mills (1955)	428 School districts	Positive	Number of non admin- istrative employees	Superintendent, his staff, busi- ness managers, and principals
Nelson, England and Yoder (1960)	Business organizations	No Corre- lation	Number of employees	Number of per- sonnel workers
Anderson and Warkov (1961)	49 Veterans hospitals	Inverse	Average daily patient load	Office, supply, and planning personnel
Lindenfeld (1961)	232 School systems	Inverse	Total admin- istrative and instruc- tional staff	High level administrative work



TABLE 2-2--continued

Study (by year)	Organizations Studied	Relationship	Definition of Size	Definition of Administrative Component
Clegg, Adams, and Killick (1961)	15 British unions	No Corre- lation	Number of members	Full-time Officers, staff and employees
Haas, Hall, and Johnson (1963)	30 different organizations	Inverse	Number of full-time equivalent workers	All engaged in activities indi- rectly contribu- ting to goal attainment
Hall (1963)	Small organizations	No Corre- lation	Number of employees	Managers and staff workers
Indik (1964)	116 Different organizations	Inverse	Number of unit members	Decision makers and supervisors
Hawley, Boland and Boland (1964)	97 Institutions of higher education	Inverse	Number of full-time and part-time faculty	Professional administrators excluding depart- ment heads
Rushing (1967)	41 Manufac- turing industries	Inverse	Number of production personnel	Multiple <sup>b</sup> definitions

TABLE 2-2--continued

Study (by year)	Organizations Studied	Relationship	Definition of Size	Definition of Administrative Component
Rushing (1966)	34 Manufac- turing industries	Overall correlation not signifi- cant	Number of production employees and total employment	Multiple <sup>c</sup> definitions
Tosi and Patt (1967)	36 Army hospitals	Inverse	Number of full-time equivalent workers	Office, finance, personnel, data processing and records workers
Pondy (1969)	45 Manufac- turing industries	Inverse	Number of production personnel	Managerial, professional, and clerical personnel
Klatzky (1970)	53 Employment agencies	Inverse	Number of employees	Staff and Tech- nical workers
Holdaway and Blowers (1971)	41 School systems	Inverse	Multiple <sup>d</sup> definitions	Multiple <sup>e</sup> definitions
Blau and Schoenherr (1971)	52 Employment offices	Inverse	Number of employees	Managers, staff and technical employees

TABLE 2-2--continued

<sup>a</sup>Melman defined firm and industry size in four ways: (1) total assets, (2) total production personnel, (3) average value added per establishment, and (4) number of wage-earners per establishment.

<sup>b</sup>Rushing defined the administrative component in three ways: (1) number of managers, officials, and proprietors, (2) number of professional personnel, and (3) number of clerical personnel.

<sup>c</sup>Rushing defined the administrative component in five ways: (1) number of managers, officials, and proprietors, (2) number of clerical personnel, (3) number of professional personnel, (4) number of sales personnel, and (5) number of service personnel.

<sup>d</sup>Holdaway and Blowers defined system size in four ways: (1) number of schools, (2) number of pupils, (3) number of professional and administrative staff, and (4) number of classroom teachers.

<sup>e</sup>Holdaway and Blowers defined the administrative component in three ways: (1) central office administrative personnel, (2) central office professional personnel, and (3) central office administrative personnel plus school principals.

with this conclusion are Baker and Davis, Tsouderos, and Terrien and Mills.

#### Bureaucracy, Product of Increasing Complexity

Another important organization dimension closely related to size is complexity. Zelditch and Hopkins stressed, "large size is not in itself a critical characteristic of organizations. Rather, what appears to be important is complexity, which is often indicated by size but is quite distinct from it."<sup>38</sup> Similarly, Kahn, Wolfe, et al. commented that:

. . . with increased size the structure of the organization becomes much more complex. The division of labor becomes more differentiated and specialized; more levels of supervision are introduced to maintain coordination and control; and more people become involved in organizational planning.<sup>39</sup>

In a discussion of functional complexity in a growing organization, Davis expressed the law of functional growth:

The various functions of an organization increase in scope and complexity, as well as the amount of work and the technical requirements for their proper performance, as the volume of business grows. The complexity of functional relationships tends to increase in geometric progression as the volume of work that the organization must handle increases in arithmetic progression.<sup>40</sup>

According to this view, if functional complexity increases and staff units assist the line in planning and controlling activities, then staff units may expand faster than the line organizations they aid.

#### The Nature of Complexity

Complexity generally refers to the degree of internal differentiation of an organization, but it may also pertain to the



variability and heterogeneity of an organization's task and economic environment. Internal differentiation can be analyzed by looking at the division of labor, structural segmentation, functional specialization, role structure, or interpersonal relationships. The extent to which work is divided can be determined by either counting the number of distinguishable tasks<sup>41</sup> or by taking into account the distribution of individuals among tasks or throughout the structural parts of an organization.<sup>42</sup> Structural segmentation means the number of organizational parts, such as, levels in the hierarchy,<sup>43</sup> department,<sup>44</sup> and branches or subunits in dispersed locations.<sup>45</sup> The number of different occupations<sup>46</sup> and the number of staff positions (professional experts)<sup>47</sup> denote functional specialization. Role structure is the prescribed configuration of roles in a social structure.<sup>48</sup> It can be inspected by examining a comprehensive and detailed organization chart or by determining the presence or absence of written job descriptions.<sup>49</sup> To determine the interconnectedness of individuals in an organization, span of control can be investigated. Graicunas argued and demonstrated mathematically that arithmetical increases in the number of subordinates reporting directly to a manager were accompanied by potentially geometric increases in the number of personal relationships within the work unit of the manager.<sup>50</sup> Accordingly, interpersonal relationships become exceedingly complex.

Several recent analyses suggested that complex organizations develop to cope and interact with rich and constantly changing



environments. Utilizing case histories and a comparative approach, Chandler explained that structural design of an organization was determined and guided by strategic decision-making. Shifts in strategy were responses (re-allocation of existing resources and development of new ones) to changes in market demands.<sup>51</sup> Burns and Stalker focused on the adjustments in management practices in 20 industrial firms which stemmed from changes in technologies as well as markets.<sup>52</sup> Lending support to these positions, Woodward<sup>53</sup> and Harvey<sup>54</sup> presented data which showed differences in organization technology to be differentially related to certain structural variables (levels of authority, spans of control, and ratios of managers and supervisors to total personnel). As a means of adjusting to changing technological and market environments, Thompson posited that organizations should construct units to filter, stabilize, and regulate input and output transactions to allow the core technology of the organization the opportunity to operate in an environment of technical rationality.<sup>55</sup> In a study by Lawrence and Lorsch, these units functioned as integrating devices to link basic departments and resolve conflicts.<sup>56</sup>

All of the above definitions and propositions concerning organization complexity rest on one basic underlying assumption: that the coordination of organization activities becomes increasingly more difficult with greater numbers of individuals, tasks, roles, structural parts, and environmental disturbances. Differentiation makes an organization more complex. Complexity creates problems of

coordination. These problems demand the attention of line supervisors and staff experts. Consequently, more administrative personnel are needed in more highly differentiated structures and organizational environments. With this understanding, the second proposition may be stated as follows:

Proposition Two

The relative size of the administrative component increases as organization complexity increases.

Empirical Evidence--Organization Complexity

Various operational definitions of complexity have been utilized in 13 studies which focused on this proposition. Some of the researchers looked at the division of labor and structural differentiation, others classified different technologies according to their degree of complexity, and a few referred to the spatial dispersion of members and organization subunits.

Melman suggested that large administrative outlays would be associated with intensity of mechanization and that multi-plant firms would require relatively greater administrative staffs than single-plant companies. The magnitude of administrative overhead did not appear to be related to the number of plants within a firm, but the ratio of administrative to production personnel did vary with degree of mechanization (measured by average horsepower per wage-earner). This finding led Melman to infer that enlargement of the administrative component may be connected with the addition of new administrative functions stemming from increased mechanization.<sup>57</sup>

Anderson and Warkov postulated that task differentiation and spatial dispersion may contribute to the addition of administrative personnel. In testing for a relationship between number of operating sites and size of the supportive staff, Haas, et al. did not find a significant association. In fact, the result was in the opposite direction. Similarly, they did not find a significant difference between the relative size of the supportive component and number of organization activities (task differentiation).<sup>58</sup>

Edna Raphael provided partial support for the Anderson and Warkov hypotheses with a study of 65 union locals. Her data indicated that relative administrative size decreased as the spatial dispersion of members increased. Local unions in which members were employed at several spatially separated work places had a smaller administrative staff than those unions in which members were employed at one or a few locations. The analysis also disclosed that size of the administrative component increased with diversity of members' occupations; industrial unions had a larger administrative apparatus than craft unions.<sup>59</sup> A related finding has been reported by Stinchcombe in a comparative study of bureaucratic and craft administration. Using the employment of clerks as an index of bureaucratization, he observed that the proportion of all administrative personnel who were clerks was considerably greater in mass production industries than it was in construction.<sup>60</sup>

Several studies have examined the effects of structural differentiation on relative administrative size. Designating the



number of departments and non-departmentalized schools as an index of complexity, Hawley, et al. found the ratio of full-time administrators per 100 faculty declined as complexity increased.<sup>61</sup> In an attempt to isolate mutually independent dimensions of organization structure, Pugh, et al. reported that relative size of the supportive component (encompassing percentage of clerks and non-workflow personnel) was independent of a factor (structuring of activities) which contained specialization (division of labor) and vertical span of control (levels in the hierarchy).<sup>62</sup> Klatzky's data showed a negative regression coefficient between number of divisions and size of the staff component, indicating that functional differentiation reduced the staff percentage.<sup>63</sup>

Evidence contradictory to that above has been presented by a number of investigators. Rushing<sup>64</sup> and Pondy<sup>65</sup> reported that relative size of administration was directly associated with functional complexity (division of labor). Both men used the same measure of division of labor which was given by

$$D = 1 - \frac{\sum X^2}{(\sum X)^2}$$

where D was the division of labor and X the number of persons in an occupational grouping. The Blau and Schoenherr analysis revealed that three aspects of structural complexity (multiple levels, many divisions, and many sections per division) increased the managerial ratio at employment security headquarters, whereas only multiple



levels significantly increased the administrative staff ratio.<sup>66</sup>

Data generated by Blau, et al. from a study of 156 public personnel agencies displayed direct connections between measures of differentiation (professionalization and division of labor) and size of the administrative component.<sup>67</sup>

The remaining aspect of organization complexity concerns the mechanisms or processes by which an organization turns out its product or service. Woodward, Harvey, and Hickson, et al. in related studies have systematically explored the relationships between organization technology and selected properties of organization structure. In a study of 100 manufacturing firms in the South East Essex area of England, Woodward placed three groupings of firms along a scale of technical complexity, determined by the extent to which the production process was controllable and its results predictable. In ascending order of complexity and in order of chronological development, these groupings were: (1) unit and small batch, (2) large batch and mass, and (3) process or continuous flow. The analysis revealed direct relationships between increasing technological complexity and ratios of managers to total personnel, clerical and administrative staff to manual workers, and direct to indirect labor.<sup>68</sup>

With a slight modification of Woodward's production continuity scale, Hickson, et al. tested for correlates of technical complexity in 31 manufacturing organizations. Unlike Woodward, none of the linear relations between variables of structural configuration and

technology were repeated in this sample. However, from a new formulation of operations technology (workflow integration), the percentage of non-workflow employees was found to be significantly related to the degree of technical complexity. Workflow integration referred to the degree of automated, continuous, fixed-sequence operations in the technology. All employees with no direct or supervisory responsibility for work on throughputs were labeled as non-workflow personnel.<sup>69</sup>

Harvey categorized 43 industrial organizations along a continuum from technical diffuseness to technical specificity. Technical diffuseness referred to a firm in which a number of processes yielded a wide range of products. It was measured by the number of product changes and corresponded to Woodward's distinction of unit production. From the analysis, the ratio of managers and supervisors to total personnel increased with technical specificity (process production on Woodward's scale).<sup>70</sup>

Because of the numerous measures of complexity and generally inconsistent findings (see Table 2-3 for a comparative summary) regarding the connection between this variable and relative size of the administrative apparatus, it would be presumptuous to make any conclusive statements about proposition two. To characterize an organization as complex when it has two plants instead of one is an oversimplification. Given these reservations, however, it would appear the relative size of the administrative component may be affected more by increased complexity than increased size.

TABLE 2-3

STUDIES RELATING ORGANIZATION COMPLEXITY  
AND RELATIVE ADMINISTRATIVE SIZE

Study (by year)	Organizations Studied	Relationship	Definition of Complexity	Definition of Administrative Component
Melman (1951)	Firms and industries	Mixed	Multiple <sup>a</sup> definitions	Nonproduction personnel
Haas, Hall and Johnson (1963)	30 Different organizations	No Corre- lation	Multiple <sup>b</sup> definitions	All engaged in activities in- directly con- tributing to goal attainment
Hawley, Boland and Boland (1964)	97 Institutions of higher education	Inverse	Number of departments and schools	Professional administrators excluding de- partment heads
Woodward (1965)	100 Manufac- turing firms	Positive	Production continuity scale	Clerical and non-supervisory personnel
Blau, Wolf, Heydebrand and Stauffer (1966)	156 Public personnel agencies	Positive	Multiple <sup>c</sup> definitions	Proportion of clerks among total staff

TABLE 2-3--continued

Study (by year)	Organizations Studied	Relationship	Definition of Complexity	Definition of Administrative Component
Raphael (1967)	65 Union locals	Mixed	Multiple <sup>d</sup> definitions	Amount of deci- sion making by active admini- strators
Rushing (1967)	41 Manufac- turing industries	Positive	Division of labor	Multiple <sup>e</sup> definitions
Pugh, Hickson Hinings, and Turner (1968)	52 Business organizations	No Corre- lation	Multiple <sup>f</sup> definitions	Clerks and non- workflow workers performing auxiliary tasks
Harvey (1968)	43 Industrial organizations	Positive	Number of processes yielding a wide range of goods	Managers and supervisors
Pondy (1969)	45 Manufac- turing industries	Positive	Division of labor	Managerial, clerical, and professional personnel



TABLE 2-3---continued

Study (by year)	Organizations Studied	Relationship	Definition of Complexity	Definition of Administrative Component
Hickson, Pugh and Pheysey (1969)	77 Diverse and manufacturing organizations	Mixed	Production continuity scale and work inte- gration	Clerical and non-supervisory personnel
Klatzky (1970)	53 Employment agencies	Inverse	Number of subdivisions	Personnel allo- cated to staff and technical tasks
Blau and Schoenherr (1971)	52 Employment security agencies	Positive	Multiple <sup>g</sup> definitions	Managers, staff and technical employees

<sup>a</sup>Melman defined complexity in two ways: (1) number of plants in a multi-plant firm, and (2) degree of mechanization--average horsepower per wage-earner.

<sup>b</sup>Haas, Hall and Johnson defined complexity in two ways: (1) number of operating sites, and (2) number of major activities.

<sup>c</sup>Blau, Wolf, Heydebrand and Stauffer defined complexity in two ways: (1) number of distinct occupational titles, and (2) the proportion of operating staff who were required to have a college degree.

TABLE 2-3--continued

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<sup>d</sup>Raphael defined complexity in two ways: (1) spatial dispersion of members, and (2) diversity of member's occupations.

<sup>e</sup>Rushing defined the administrative component in three ways: (1) number of managers, officials, and proprietors, (2) number of professional personnel, and (3) number of clerical personnel.

<sup>f</sup>Pugh, Hickson, Hinings, and Turner defined and operationalized complexity in five ways: (1) specialization, (2) standardization, (3) formalization, (4) centralization, and (5) configuration.

<sup>g</sup>Blau and Schoenherr defined complexity in three ways: (1) number of organization levels, (2) number of divisions, and (3) number of sections per division.

### Relationship of Organization Size and Complexity

When evaluating the two previously stated propositions, two questions should be investigated: (1) What is the relationship between organization size and complexity? and (2) What effect does this relationship have on the relative size of the administrative component? The first question refers to the connection between the independent variables, while the second refers to the interaction effect of complexity with size on the dependent variable.

In a study of small bureaucracies, Blau, et al. suggested that structural differentiation was typically a consequence of expanding size.<sup>71</sup> According to this view, size and complexity may be directly related (large organizations being complex and small organizations relatively simple) or similarly related to other organization dimensions. In a later formulation, Blau proposed that "increasing size generates structural differentiation in organizations along various dimensions at decelerating rates."<sup>72</sup> The differentiation promoted by large size may have a tendency to decline beyond a certain point. Carrying the relationship further, Klatzky postulated that the rate of differentiation may decline absolutely as well as relatively as an organization increases in size. This relationship would approximate an inverted U-shaped curve.<sup>73</sup> In either case, the nature of the relationship will depend upon the measure(s) of differentiation. Accordingly, the third proposition may be expressed as follows:

### Proposition Three

Organization complexity increases as the size of the organization increases and tends toward a convex curvilinear relationship.

#### Empirical Evidence--Size and Complexity

From the factual information concerning propositions one and two, it appeared that organization size and complexity were inversely related. In all but three studies, size was either inversely related or not connected to relative administrative size. Complexity was found to be directly linked to relative size of the administrative apparatus in nine of thirteen investigations. Surprisingly, ten of twelve studies showed a positive association between size and complexity. The two which did not report a relationship were concerned with the degree of technical complexity. For Woodward "there appeared to be no significant relations"<sup>74</sup> between structure and size. Similarly, technology and size appeared to be unrelated in the South East Essex organizations. This finding was also arrived at by Harvey.<sup>75</sup>

Increased size was related to increased task specialization in three of the sets of organizations studied by Indik.<sup>76</sup> Blau, et al. noted that size exerted a strong influence on the division of labor and mild influences on the degree of centralization and professionalization.<sup>77</sup> Rushing reported a weak relationship between size and complexity, the Spearman rank correlation yielded a value of .24.<sup>78</sup> Size and spatial dispersion of local union membership were associated



in Raphael's study.<sup>79</sup> Using data from 75 diverse organizations, Ball, et al., found three sets of complexity indicators (spatial dispersion, division of labor, and hierarchical differentiation) related to size.<sup>80</sup> Both functional and hierarchical differentiation were correlated positively with size in a study of 254 city, county, and state departments of finance by Meyer. The simple correlation between size (number of employees) and number of divisions was .43 and size and number of levels was .51.<sup>81</sup> The positive correlation (.48) between size and division of labor in Pondy's study was also relatively high.<sup>82</sup> A lower, but significant, positive relationship (.38) between functional differentiation and size was calculated by Klatsky.<sup>83</sup> In the manufacturing sample of Hickson, et al., size "correlated .47 with the technology measure (production continuity), .78 with structuring activities, and .77 with vertical span."<sup>84</sup>

Although some of the size-complexity associations were relatively weak in the nine studies mentioned above (see Table 2-4 for a comparative summary), the evidence does support the first part of proposition three. The remaining illustration provided partial support for the rest of the proposition. When comparing total state agencies, Blau and Schoenherr observed that increases in size were:

. . . accompanied by initially rapid and subsequently more gradual increases in the number of local branches into which the agency is spatially differentiated; the number of official occupational positions expressing the division of labor; the number of levels in the hierarchy; the number of functional divisions at the headquarters; and the number of sections per division.<sup>85</sup>

TABLE 2-4

## STUDIES RELATING ORGANIZATION SIZE AND COMPLEXITY

Study (by year)	Organizations Studied	Relationship	Definition of Size	Definition of Complexity
Indik (1964)	116 Different organizations	Positive	Number of unit members	Task specialization
Woodward (1965)	100 Manufac- turing firms	No Corre- lation	Number of employees	Production continuity scale
Blau, Wolf, Heydebrand and Stauffer (1966)	156 Public personnel agencies	Positive	Number of employees	Multiple <sup>a</sup> definitions
Rushing (1967)	41 Manufac- turing industries	Positive	Number of production personnel	Division of labor
Raphael (1967)	65 Union locals	Positive	Number of members	Spatial dispersion
Hall, Haas and Johnson (1967)	75 Diverse organizations	Positive	Number of employees	Multiple <sup>b</sup> definitions

TABLE 2-4--continued

Study (by year)	Organizations Studied	Relationship	Definition of Size	Definition of Complexity
Meyer (1968)	254 City, county, and state finance departments	Positive	Number of employees	Multiple <sup>c</sup> definitions
Harvey (1968)	43 Industrial organizations	No Corre- lation	Number of employees	Number of pro- cesses yielding a wide range of goods
Pondy (1969)	45 Manufac- turing industries	Positive	Number of production personnel	Division of labor
Hickson, Pugh and Pheysey (1969)	77 Diverse and manufacturing organizations	Positive	Number of employees	Production continuity scale and work integration
Klatzky (1970)	53 Employment agencies	Positive	Number of employees	Number of subdivisions
Blau and Schoenherr (1971)	52 Employment security agencies	Positive	Number of employees	Multiple <sup>d</sup> definitions



TABLE 2-4--continued

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<sup>a</sup>Blau, Wolf, Heydebrand and Stauffer defined complexity in two ways: (1) number of distinct occupational titles, and (2) the proportion of operating staff who were required to have a college degree.

<sup>b</sup>Hall, Haas and Johnson defined and operationalized complexity in three ways: (1) division of labor, (2) number of hierarchical levels, and (3) spatial dispersion of the organization.

<sup>c</sup>Meyer defined complexity in two ways: (1) number of divisions, and (2) number of organization levels.

<sup>d</sup>Blau and Schoenherr defined complexity in three ways: (1) number of organization levels, (2) number of divisions, and (3) number of sections per division.



Within agency subunits internal differentiation also occurred at declining rates with increasing size.<sup>86</sup>

Interaction Effect of Organization Size and Complexity  
On Relative Administrative Size

The interaction effect of complexity with size on the relative size of the administrative component may hinge on the extent to which increases in size foster greater differentiation. If increases in organization size generate additional problems of coordination, new integrative units may be created to cope with these developments. With this greater differentiation, the proportion of administrative personnel may rise. In this case, the indirect effect of size would be to enlarge the administrative component. On the other hand, if the increase in the administrative ratio resulting from greater differentiation is less than the reduction of this ratio by large size, then the overall effect of increasing size must outweigh its indirect effect.<sup>87</sup> The assumption underlying the interaction effect arises from the idea that different coordination problems may require different organization responses. With this in mind, the fourth proposition may be formulated as follows:

Proposition Four

The interaction effect of complexity with size directly affects the relative size of the administrative component when the effects of size are controlled.

Empirical Evidence--Interaction Effect  
of Organization Size and Complexity

The earliest study to test the above proposition reported results in the opposite direction from that proposed. When eliminating the effect of size on the complexity-staff relationship, Hawley, et al. reduced the partial correlation coefficient from .680 to .372. Organization size appeared to be the dominant influence in determining the size of the administrative component.<sup>88</sup> In Raphael's study, the direct effect of larger membership size on relative administrative size tended to be dampened by the association between size and spatial dispersion. A positive correlation between size and relative size of the administrative component appeared only when spatial dispersion was held constant.<sup>89</sup>

The interaction between size and complexity tended to accentuate the direct effect of size on the administrative component in Rushing's industry study. Size decreased the positive effect of complexity, and the negative effect of size increased when the division of labor increased. The interactive effect held for managers and clerical employees but not for professional personnel.<sup>90</sup> Hickson, et al. also found that the effect of size overshadowed the influence of production continuity on the proportion of non-workflow employees. When holding size constant, the correlation between non-workflow percentage and production continuity dropped from .22 to -.04.<sup>91</sup> Klatzky's interaction model showed that as the number of divisions increased, the effect of size on the staff component was reduced, but beyond a

certain point on the scale of differentiation, the effect of differentiation disappeared and the slope of the size-staff relationship became negative again.<sup>92</sup>

The pervasive effects of size were also evident in the analysis of Blau and Schoenherr. For both the staff and managerial ratios, the direct effect of size exceeded its overall effect. Size tended to depress administrative ratios even though the differentiation it fostered enlarged the relative size of the administrative component.<sup>93</sup> Other than the finding of Raphael, the interaction between size and complexity operated to reduce the association between complexity and relative administrative size.

#### Effects of Other Variables on Relative Administrative Size

Another independent variable associated with expansion of administrative staff can be traced to Gouldner's research on the growth of bureaucracy as a consequence of managerial succession in a gypsum plant. To bridge a communication gap between himself and the rest of the plant, the new plant manager opened up new supervisory positions. This rapid change in supervisory personnel was felt by Gouldner to be so common that he gave it a distinctive label, strategic replacement.<sup>94</sup> Carlson recorded a similar observation in an investigation of executive succession in California public school systems. Taking the size of the central office administrative staff as an index of relative administrative size, he found that 26 of 36

new superintendents increased the central office staff during their first two years in office. From the proposition advanced by Whisler that a greater percentage of corporate presidents brought in from the outside will use an assistant than presidents promoted from within,<sup>95</sup> he noted that the number and proportion of outside successors who added to the central staff was greater than the number and proportion of inside successors who did so.<sup>96</sup> Selecting the 26 largest and 27 smallest firms from Fortune magazine's 500, Grusky hypothesized that strategic replacements at the top should be less likely to occur following succession in large, bureaucratized firms and more likely to occur after succession in small ones. His data showed a positive relationship between frequency of succession and strategic replacements in the small firms. No relationship was found in the large firms.<sup>97</sup>

Five studies have tested for a relationship between organization age and relative administrative size. Haire found that staff as a per cent of total employment showed a steep increase during the first six to ten years in each of four firms. Beyond the ten years, the staff and total number of employees tended to grow at similar rates, but as a company aged, the tendency to acquire a larger percentage of clerks appeared.<sup>98</sup> Draper and Strother also observed this trend in both staff and total growth, but the proportions did not become relatively stable until after twenty years.<sup>99</sup>

Haas, et al. suggested that as age of the organization increased, the percentage of persons engaged in supportive activities would



increase at a disproportionate rate. Rank order correlation coefficients were computed using two supportive component categories and in both cases the results were not significant. An analysis of Wilensky's data on labor union staff experts<sup>100</sup> by Haas, et al. disclosed no significant relation between age of a union and percentage of staff experts.<sup>101</sup> This was consistent with Melman's finding of no clear relationship between administrative overhead and firm age.<sup>102</sup>

The last independent variable linked to the administrative component was a measure of the separation of ownership and management (percentage of owner-managers for an industry). In Pondy's analysis, administrative intensity was found to increase with the separation of ownership and management.<sup>103</sup>

#### Summary and Conclusions

From the studies of the determinants of relative administrative size, the following tentative conclusions can be drawn:

(1) The relative size of the administrative component probably decreases with increases in organization size. Of the 24 studies testing for a relationship between size and relative administrative size, 15 of them are consistent with this conclusion.

(2) The relative size of the administrative component may increase with increasing organization complexity. Evidence supporting this conclusion can be found in 9 of 13 investigations. Only two studies reported an inverse relationship between the two variables.

(3) Organization size and complexity apparently are not independent variables. Out of 12 studies, 10 showed a positive association between size and complexity.

(4) The interaction between size and complexity tends to suppress the relationship between complexity and relative administrative size. Only one of six studies did not support this conclusion.

(5) Of the remaining three independent variables, managerial succession and separation of ownership and management had direct influences on the relative size of the administrative apparatus. Administrative ratios probably do not increase over time. Three of five studies testing for a relationship between age of the organization and relative administrative size did not find a significant relation.

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## CHAPTER III

## DEFINITIONS, HYPOTHESES, AND RESEARCH METHODS

Individuals interested in organization structure and design have undoubtedly encountered difficulties in interpreting and using much of the available information about these aspects of large-scale organizations. To partially overcome these problems, Price has suggested that inventories<sup>1</sup> of organization measurements should be compiled.<sup>2</sup> Such inventories would enhance the comparability of research results and encourage the development of a common set of organization terms and concepts.

In the first section of this chapter, the unit of study (dependent variable) will be defined and several measures of organization size and complexity (independent variables) will be inventoried. Following the explanation of terms and concepts, four general hypotheses and several working hypotheses will be formulated. Statistical methods and data collection procedures will be discussed in the final section.

Explanation of Terms and Concepts

## The Administrative Component

Employees in large-scale organizations may be differentiated according to the nature of their task or the functional character of their occupation: administrative-production, indirect-direct, staff-line, or buffer-core.<sup>3</sup> Bendix and Granick identified administrative

staff as salaried employees<sup>4</sup> and white-collar servicing personnel,<sup>5</sup> respectively. Using similar definitions, Stinchcombe,<sup>6</sup> Pondy,<sup>7</sup> and Rushing<sup>8</sup> referred to administrative personnel as all those in the standard occupational census categories of 'managerial,' 'professional,' and 'clerical' personnel. Following a residual classification procedure, Melman lumped all employees not directly involved in production activities (wage earners) into the administrative component (salaried employees).<sup>9</sup> In an attempt to broaden these definitions, Haas, Hall and Johnson included not only administrative personnel in the administrative unit but also non-administrative employees who were engaged in supportive or indirect organizational activities. Supportive activities comprised such tasks as bookkeeping, personnel administration, custodial work, and maintenance services.<sup>10</sup>

From these definitions, administrative staff can be considered a multi-dimensional term. A useful definition would seem to be one which is applicable to many situations and types of organizations. Accordingly, administrative staff is defined as the personnel of an organizational system who are primarily oriented to and perform decision-making, control, and service activities. Administrators manage an organization's internal affairs, represent the organization in its external environmental relations, and render services to subunit organizations.<sup>11</sup>

Within an international union, generally three structural levels can be distinguished: central headquarters, district or regional

offices, and local unions. Attached to each level is an administrative staff. At union headquarters, executive officers (president and secretary-treasurer) are assisted by staff experts (lawyers, statisticians, economists, etc.) in conducting the union's affairs. The staff experts (professionals) are 'men of knowledge' in the sense that they bring to the problem at hand a body of specialized information and skill.<sup>12</sup> Organizers and representatives occupy important staff roles at the regional or intermediate level. In addition to soliciting new members, forming new locals, and negotiating labor contracts, the continuing function of a representative (or organizer) is to act as advisor to all locals within his region with regard to employer relations and internal union affairs. At the local union level, the business agent coordinates the activities of the local, maintains its office and files, sometimes collects dues, and may even operate the union's hiring hall.<sup>13</sup> At all three levels, clerks and secretaries aid administrative officials in their tasks when administrative activities become standardized through formal written communications and reports.

#### Measurement of Administrative Size

In this study, only the central and regional administrative components will be studied. Accordingly, four administrative groups will be considered: managers and administrators, organizers and representatives, professional staff employees, and clerks and secretaries.



Size of the administrative component can be measured in several ways: number of administrators, number of administrative activities, number of problems solved and decisions made, dollar payments to administrators, or the total amount of administrative overhead. Number of administrative employees will serve as the measure of administrative size. With multiple administrative categories, five measures of the administrative component are necessary, four relatively homogeneous measures corresponding to the four groups specified above and one heterogeneous measure for the administrative component as a whole.

#### Organization Size and its Measurement

Size is an important but ambiguous characteristic of the social structure of organizations.<sup>14</sup> It generally refers to quantity, scope, or depth. Measures of organization size should correspond to these dimensions or incorporate as many of them as possible. In this study, union size will be specified as follows: (1) number of members, (2) average local union size (average membership), (3) number of collective bargaining agreements, and (4) number of different employers covered by agreements.

In studies reviewed, the quantity measure of size consisted of the number of employees. In a voluntary or 'mutual-benefit' association,<sup>15</sup> the client or member should be the primary beneficiary of the organization's activities. Consequently, number of members (clients) would be the comparable organization or system size measure

in a labor union. Due to the complexities of tabulating union membership (lack of uniformity in reporting, multiple counting, and incomplete information),<sup>16</sup> this study will utilize the concept of annual 'average dues-paying membership' as a measure of membership size. Size in terms of the number of members apparently has certain consequences for the distance between the rank and file and top leadership, formal communication links and channels,<sup>17</sup> power structure,<sup>18</sup> internal political processes,<sup>19</sup> and intra-union conflict.<sup>20</sup>

Average local size provides an indication of the degree to which an organization is achieving economies of scale in its administration.<sup>21</sup> The minimum requisite size to develop an effective and efficient organization will undoubtedly vary from union to union, but its membership must be large enough to justify the employment of full-time officials.<sup>22</sup> This applies at all levels of union organization. If scale economies are operative at the local level, the entire organization may be large enough for it to be functional at the international level (central headquarters).<sup>23</sup>

Another approach to determining the size of an organization is to measure the results (output) of accomplishing its primary task. In a firm this could be ascertained by using total dollar sales or the number of product units produced. A primary task of a union is the negotiation of a union-management contract, the contract being the output. Therefore, the number of collective bargaining agreements will be another quantity measure of union size.

Scope as a measure of organization size relates to geographic area, share of the market, service area, or the degree to which organization units are spatially dispersed. The scope of a union can be measured in terms of jurisdiction (geographic area, number of firms or employers, type of work, industry, or occupation over which a union asserts a special interest).<sup>24</sup> Union jurisdiction (size) will be measured by the number of different employers covered by collective bargaining agreements.

#### Measurements of Relative Administrative Size

With several administrative groups and operational definitions of organization size, a number of administrative ratios can be produced to provide measures of relative administrative size. The (total) number of administrative employees divided by the number of members could be one definition of administrative ratio. Other administrative ratios can be constructed by changing the denominator to number of contracts or employers. Sub-group administrative ratios for different organization levels can be derived by breaking down the numerator. For example, the regional clerical administrative ratio can be obtained by dividing the number of clerical employees at the regional level by the number of members. In formulating and testing hypotheses, the denominator or basis of the administrative ratio will remain constant, the number of members. The numerator will be subdivided by organization level and by administrative category when testing for correlates of relative administrative size.



### Organization Complexity and its Measurement

As discussed in the previous chapter, complexity generally refers to the degree of internal differentiation of an organization and to the variability and heterogeneity of an organization's task and economic environment. This definition will be adopted in this study.

Three measures of internal (structural) differentiation will be used: (1) number of local unions, (2) number of intermediate bodies, and (3) number of departments. The number of local unions may not reflect the number of places at which union members work,<sup>25</sup> but it, nevertheless, constitutes a measure of the spatial dispersion of members. The number of intermediate bodies indicates structural segmentation between local unions and central headquarters. Taking many different forms (joint council, regional office, legislative board, or skilled trade department) and serving a variety of functions (supervisory, service, legislative, or consultative), the intermediate body is a federated association of local unions. It operates to promote and achieve unity of effort in meeting internal and environmental demands. The number of technical and administrative departments provides a measure of differentiation at central headquarters. The departments furnish executive officers with technical advice and information and handle the internal housekeeping activities of finance and audit.<sup>26</sup>

The complexity of a union's task and economic environment will be measured by two sets of factors. The first set includes (1)



member's occupational diversity or specificity and (2) industrial diversity or specificity. Diversity or specificity (uniformity) of members' occupations<sup>27</sup> can be viewed as a dichotomous variable which roughly distinguishes craft from industrially organized unions.<sup>28</sup> Industrial diversity or specificity reflects the number of major industry groups in which union members are employed. Both measures can be determined by the formula:<sup>29</sup>

$$D = 1 - \frac{\sum X^2}{(\sum X)^2}$$

where D represents occupational (industrial) diversity and X the number of members in a major occupation (industry). The larger the value of D, the greater the occupational (industrial) diversity. For example, a union with members in five occupations (industries) may have 80 per cent of its members in only one occupation (industry), whereas, in another union members may be equally distributed among the same number of occupations (industries), (a list of major occupations and industries can be found in Appendix A).

The second set of factors contains measures of the complexity of a major union activity (task), collective bargaining. Collective bargaining involves the negotiation, administration, and interpretation of a union contract. If each local union bargains by itself with an employer, the central headquarters is not likely to become intimately involved. However, in multi-unit bargaining (bargaining among several locals of one or more international unions or two or

more internationals bargaining nationally) the central headquarters may coordinate the negotiating process. The extent to which the central headquarters<sup>30</sup> becomes involved may be an indication of the amount of activity coordination taking place. Four complexity (bargaining)-activity measures will be used to approximate the bargaining activity coordination performed by the central headquarters: (1) number of contracts per one hundred local unions, (2) number of contracts per one hundred employers, (3) number of employers per one hundred local unions, and (4) bargaining level(s) at which contracts are negotiated.

In regard to the first two complexity-activity measures, the smaller the ratio, the greater the activity coordination. If there are fewer than one hundred agreements per one hundred locals, it may indicate that two or more locals are coordinating their bargaining efforts. The larger the third ratio, the greater the activity coordination because one local may be negotiating with several employers. The last factor refers to the degree of centralization or decentralization in contract negotiations. Greater coordination of activities may be necessary in centralized bargaining. Six different bargaining structures or levels are designated to ascertain the degree of centralization in negotiations. These range from multi-employer (multi-plant) to single-employer (single-plant) negotiations<sup>31</sup> (see Appendix A for a listing of the six bargaining levels).

### Hypotheses to be Tested

Following from discussions in Chapter II, four general hypotheses are formulated to link the variables of organization size and complexity to the relative size of the administrative component. Since the hypotheses cannot be directly tested, working or operational hypotheses are derived utilizing appropriate definitions.

#### Hypothesis One--Organization Size

##### General Hypothesis One

The relative size of the administrative component decreases (at a constant rate) as the size of the organization increases.

Three major groups and five sub-groups of working hypotheses can be extracted from the general hypothesis. These groups result from breaking down the dependent variable according to organization level and administrative category. The three major groups include (1) a combined (central headquarters plus regional) set of administrative ratios, (2) central headquarters administrative ratios, and (3) regional administrative ratios. The sub-groups contain (a) combined (heterogeneous) administrative ratios, (b) managerial ratios, (c) professional staff ratios, (d) organizer and representative ratios, and (e) clerical ratios. With four definitions of organization size already noted, sixty working hypotheses can be drawn from the general hypothesis. Only the first major group (combined central and regional administrative ratios) is presented and discussed (all others are noted in Appendix B).

Working Hypotheses--Organization Size

(1) As the number of union members increases, the relative size of the administrative component will decrease at a constant rate.

(2) As average local size (average membership) increases, the relative size of the administrative component will decrease at a constant rate.

(3) As the number of collective bargaining agreements increases, the relative size of the administrative component will decrease at a constant rate.

(4) As the number of employers covered by collective bargaining agreements increases, the relative size of the administrative component will decrease at a constant rate.

These hypotheses refer to the additive effects of organization size on relative administrative size. As previously noted, studies (Chapter II) investigating the relationship between organization size and various administrative ratios have produced a variety of results. However, much of the research supports the contention that relative administrative size decreases as organization size increases. The present argument suggests that many administrative activities stemming from increases in size may not be performed by the local union but may be shifted upward to higher organization levels (central headquarters and regional offices). Larger unions may require proportionately fewer administrative workers than smaller unions for managing their headquarters as well as for coordinating operations



throughout the organization. Due to economies of scale, it is also suggested that increases in union size may foster proportionate declines within the different components of administrative personnel at both organization levels.

### Hypothesis Two--Organization Complexity

#### General Hypothesis Two

The relative size of the administrative component increases (at a constant rate) as organization complexity increases.

To test this hypothesis, three sets of working statements are developed which incorporate measures of structural differentiation, occupational and industrial diversity, and the complexity of contract negotiations, respectively. Within each set, three major groups and five sub-groups of working hypotheses can be defined using the same procedures as in the first general hypothesis. Only the first major group of each set is presented and discussed (see Appendix B for the remaining hypotheses).

#### Working Hypotheses--Complexity--Structural Differentiation

(1) As the number of local unions increases, the relative size of the administrative component will increase proportionately.

(2) As the number of intermediate bodies increases, the relative size of the administrative component will increase proportionately.

(3) As the number of technical and administrative departments (central headquarters) increases, the relative size of the administrative component will increase proportionately.

The intermediate body functions to link and reduce the administrative distance between the rank and file membership and the leadership of the international union. The structuring of these bodies varies from union to union and is shaped by many forces: bargaining structure, size, diversity in constituencies, and others.<sup>32</sup> In some unions there may be a different type of intermediate body for each major problem encountered by the union. This proliferation of intermediate units may dictate a major coordination effort by the central headquarters in solving problems which transcend many subunits. Unions with many local units may require more sophisticated information and communication systems and more comprehensive integrative mechanisms than unions with few locals. Accordingly, with a larger number of local and intermediate units, the greater the need for additional administrative employees to effect coordination.

To aid locals and intermediate bodies, technical and administrative assistance may be provided by central headquarters through various departments. These include law, research, education, accounting and finance, publications, data processing, public relations, and so on. As with the local and intermediate units, the assumption is that the greater the number of departments, the greater the need for coordination and therefore a larger administrative component.

#### Working Hypotheses--Complexity--Occupational Diversity

(1) As the occupational diversity of the membership increases, the relative size of the administrative component will increase at a constant rate.

(2) As the industrial diversity of the membership increases, the relative size of the administrative component will increase at a constant rate.

These hypotheses are approached by considering the number of occupations (industries) in which members are employed and the distribution of members throughout these occupations (industries). If members are concentrated in only one major occupation (industry), the assumption can be advanced that members' occupations (industries) are relatively uniform (occupational or industrial specificity). The opposite assumption is offered if the members are equally distributed among several occupations (occupational or industrial diversity). With greater diversity, unions may be confronted with many different bargaining issues and a greater variety of organizing and servicing problems. To contend with these problems, a larger number of administrative employees may be required.

#### Working Hypotheses--Complexity--Contract Negotiations

(1) As the contracts/locals ratio decreases, the relative size of the administrative component will increase at a constant rate.

(2) As the contracts/employers ratio decreases, the relative size of the administrative component will increase at a constant rate.

(3) As the employers/locals ratio increases, the relative size of the administrative component will increase at a constant rate.

(4) As the centralization of contract negotiations increases, the relative size of the administrative component will increase at a constant rate.



With these hypotheses, it can be argued that unions which engage in multi-plant, company-wide, industry-wide, regional, or national contract negotiations are more likely to make greater use of administrative employees. As contract negotiations become more centralized, there may be greater need for a larger administrative component at regional offices and central headquarters because activity coordination may become more difficult.

To test the fourth hypothesis, weights ranging from one to one hundred thousand will be assigned to the six bargaining levels. These weights will be multiplied by the percentage of contracts negotiated at the various levels and then summed to provide a bargaining centrality index. For example, if a union negotiates an equal percentage of contracts at each level,\* the index would be calculated as follows:

$$1 (.1667) + 10 (.1667) + 100 (.1667) + 1000 (.1667) + \\ 10,000 (.1667) + 100,000 (.1667) = 18,522$$

The largest weight is assigned to the national multi-employer negotiations level because a contract negotiated at this level is likely to cover a larger number of union members than one negotiated at the single-employer local negotiations level.

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\*In order of increasing bargaining centralization, the levels are (1) local single-plant, (2) local company-wide single-employer, (3) company-wide single-employer and local, (4) regional multi-employer and local, (5) national multi-employer and local, and (6) national multi-employer.



## Hypothesis Three--Organization Size and Complexity

### General Hypothesis Three

As the complexity of the organization increases, the size of the organization will increase at a proportionate rate.

With four size definitions and nine complexity factors, thirty-six working statements can be developed by matching each size and complexity measure. To be brief, only the first size measure and the first complexity definition (of the three sets of complexity measures) are combined to form working hypotheses (see Appendix B).

### Working Hypotheses--Size and Complexity

(1) As the number of union members increases, the number of local unions will increase at a proportionate rate.

(2) As the number of union members increases, the occupational diversity of the membership will increase at a proportionate rate.

(3) As the number of union members increases, the contracts/locals ratio will decrease at a proportionate rate.

Considerable theoretical and empirical knowledge (Chapter II) is available to support the contention that size and complexity are directly connected. It can be argued that as a union expands its membership and bargains with an increasing number of employers, it may establish additional local units, represent a more diverse constituency, and develop more complex (multi-local or multi-employer) bargaining procedures. A small, relatively simple-structured union operating in one product class may eventually become a conglomerate

union representing hundreds of thousands of members in almost every occupation and industry.

#### Hypothesis Four--Size-Complexity Interaction

##### General Hypothesis Four

The interaction effect of complexity with size will decrease the relative size of the administrative component as organization size increases.

As with the third general hypothesis, size and complexity measures can be matched to produce a number of working statements. Also, the dependent variable can be sub-divided according to organization level and administrative category to further expand the number of working hypotheses. The following statements reflect only one size measure and the first complexity definition of each set of complexity factors and the entire administrative staff (both levels and all groups) - (see Appendix B).

##### Working Hypotheses--Size-Complexity Interaction

(1) The interaction effect of the number of local unions with the number of union members will decrease the relative size of the administrative component as the number of union members increases.

(2) The interaction effect of occupational diversity with the number of union members will decrease the relative size of the administrative component as the number of union members increases.

(3) The interaction effect of the contracts/locals ratio with the number of union members will decrease the relative size of the

administrative component as the number of union members increases.

With the exception of one study, research evidence indicated that size and complexity interact to suppress the direct effect of complexity on relative administrative size. Increases in size apparently reduce administrative ratios more than increases in complexity enlarge them. This tendency also may be exhibited by unions.

#### Statistical Methods for Analysis of Data

The variables in this study are continuous in form which allows the use of regression analysis as the basic method for investigating their interrelations. Through regression analysis and testing of the partial regression coefficients and the overall regression, the direction and degree of significance of the variables as set forth in the working hypotheses can be determined. Simple linear regression provides a relationship between a dependent variable and one independent variable. With several independent variables, the regression equation takes the form

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + E$$

where the values represent

Y = relative administrative size

B's = the coefficients

X<sub>1</sub> = number of union members

X<sub>2</sub> = average local size (average membership)

X<sub>3</sub> = number of contracts



$N_d$  = number of employers covered by contracts

$E$  = the residuals

In the regression applications, student t-tests will be employed to test whether the beta ( $\beta$ 's) coefficients (slopes) are significantly different from zero. The F ratio will be used as an overall test of the significance of the regression and as a partial test to determine the significance of different groups of regressors. To check for serial (auto) correlation of the residuals from the regression, the Durbin-Watson 'd' statistic will be used.

In addition to testing the beta coefficients, correlation analysis will be utilized to find the association between two variables (one dependent and one independent) and the relationships of several independent factors to one dependent variable. The partial correlation coefficient ( $r$ ) provides a measure of the relationship between two variables with the effect of one or more other variables removed. The multiple correlation coefficient ( $R$ ) represents the simple correlation coefficient between the actual values of the dependent variable and those values estimated from the multiple regression function. The coefficient of determination ( $R^2$ ) reveals the percentage of the variation in the dependent variable which is accounted for by the regression. For example, an  $R^2$  value of .950 indicates that the independent factors as a whole explain 95 per cent of the dependent variable.<sup>33</sup>



Since the interpretation or meaning attached to correlation coefficients is not a standardized procedure and is dependent upon the situation and the judgment of the investigator, a minimum level of significance will be determined before completing calculations. The values of  $r$  and  $R$  for the .05 and .01 levels of significance will vary with the sample size and the number of independent variables.

#### Sample Elements and Data Collection Procedures

The study will be confined to international (central) headquarters of unions with 10,000 members or more. According to the Directory of National and International Labor Unions in the United States and its supplements, there are 120 national or international unions that satisfy this membership requirement.<sup>34</sup> To reduce the field work to manageable proportions and to eliminate widely scattered interviews, the sampled population will be restricted to unions located in Washington, D.C., New York City, and Boston. Seventy unions meet this requirement. Judgmental or purposive sampling will be utilized to select thirty of the seventy unions according to the following criteria: (1) membership size; (2) diversity of members' occupations; (3) kinds of industries dealt with; (4) type of union; (5) pattern of contract negotiations; (6) existence of intermediate bodies; and (7) willingness to cooperate in the study and accessibility. The aim will be to obtain a cross-section of unions in order to capture an adequate range of variables under study.

Interviews with union administrators, documents, and statistical records will constitute the primary sources of data. Interviews with either international union presidents, research directors, education specialists, or other officials will be the most important data sources. The interviews will take place at the central headquarters of the union. Including the time it will take to develop rapport with the respondent and explain the goals of the study, each interview should take no longer than an hour and one half. To solicit the necessary information, a lengthy, structured questionnaire (see Appendix A) will be used to guide the interview and record information. A copy of the questionnaire will be handed to the respondent at the beginning of the interview to enhance understanding and ease of response.

Union constitutions, organization charts, and personnel reports are documents that will furnish information on administrative positions, organization structures, and the number of administrators. Statistical records that may be of value are summaries of collective bargaining coverage and membership. Supplementing these sources will be published documents of the Department of Labor.

#### Chapter Summary

In this chapter, operational definitions of relative administrative size, organization size, and organization complexity were developed and used to formulate several sets of working

hypotheses. These working statements stemmed from four general hypothesis:

(1) The relative size of the administrative component decreases (at a constant rate) as the size of the organization increases.

(2) The relative size of the administrative component increases (at a constant rate) as organization complexity increases.

(3) As the complexity of the organization increases, the size of the organization will increase at a proportionate rate.

(4) The interaction effect of complexity with size will decrease the relative size of the administrative component as organization size increases.

Since the variables are in continuous form, regression and correlation analyses will be employed to evaluate the working hypotheses. Each working statement can be expressed as a multiple regression equation.

Data will be gathered from union officials at each headquarters organization through interviews and a structured questionnaire. Supportive union documents and published government reports will also be used.

## FOOTNOTES TO CHAPTER III

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<sup>2</sup>For inventories of organizational measurements and propositions concerning organizational effectiveness, see: Allen H. Barton and Paul Lazarsfeld, Organizational Measurement and Its Bearing on the Study of College Environments (New York: College Entrance Examination Board, 1961); and James L. Price, Organizational Effectiveness: An Inventory of Propositions (Homewood, Illinois: Richard D. Irwin, Inc., 1968).

<sup>3</sup>Seymour Melman, Dynamic Factors in Industrial Productivity (New York: John Wiley and Sons, Inc., 1956), p. 69.

<sup>4</sup>Reinhard Bendix, Work and Authority in Industry (New York: Harper Torchbook, 1963), p. 216.

<sup>5</sup>David Granick, The Red Executive (Garden City, New York: Doubleday and Company, Inc., 1960), p. 167.

<sup>6</sup>Arthur L. Stinchcombe, "Bureaucratic and Craft Administration of Production: A Comparative Study," Administrative Science Quarterly, Vol. 4 (September, 1959), 171.

<sup>7</sup>Louis R. Pondy, "Effects of Size, Complexity, and Ownership on Administrative Intensity," Administrative Science Quarterly, Vol. 14 (March, 1969), 52.

<sup>8</sup>William A. Rushing, "The Effects of Industry Size and Division of Labor on Administration," Administrative Science Quarterly, Vol. 12 (September, 1967), 278.

<sup>9</sup>Seymour Melman, "The Rise of Administrative Overhead in the Manufacturing Industries of the United States 1899-1947," Oxford Economic Papers, Vol. 3 (February, 1951), 64-65.

<sup>10</sup>Eugene Haas, Richard H. Hall, and Norman J. Johnson, "The Size of the Supportive Component in Organizations: A Multi-Organizational Analysis," Social Forces, Vol. 42 (October, 1963), 11-12.

<sup>11</sup>Peter M. Blau and Richard A. Schoenherr, The Structure of Organizations (New York: Basic Books, Inc., 1971), p. 82.

<sup>12</sup>Harold L. Wilensky, Intellectuals in Labor Unions (Glencoe, Illinois: The Free Press, 1956), p. 22.



<sup>13</sup>Florence Peterson, American Labor Unions (New York: Harper and Row, 1963), pp. 67-77.

<sup>14</sup>Barton and Lazarsfeld, p. 39

<sup>15</sup>Peter M. Blau and W. Richard Scott, Formal Organizations (San Francisco: Chandler Publishing Company, 1962), p. 43.

<sup>16</sup>Woodrow L. Ginsburg, "Union Growth, Government, and Structure," in A Review of Industrial Relations Research, Vol. I (Madison, Wisconsin: Industrial Relations Research Association, 1970), pp. 250-255.

<sup>17</sup>Seymour Martin Lipset, Martin Trow, and James Coleman, Union Democracy (Garden City, New York: Doubleday and Company, Inc., 1956), pp. 413-418.

<sup>18</sup>Edna E. Raphael, "Power Structure and Membership Dispersion in Unions," American Journal of Sociology, Vol. 71 (November, 1965), 274-283.

<sup>19</sup>William A. Faunce, "Size of Locals and Union Democracy," American Journal of Sociology, Vol. 68 (November, 1962), 291-298.

<sup>20</sup>Julia S. Brown, "Union Size as a Function of Intra-Union Conflict," Human Relations, Vol. 9 (June, 1956), 75-89.

<sup>21</sup>Peter M. Blau, "Comments on Two Mathematical Formulations of the Theory of Differentiation in Organizations," American Sociological Review, Vol. 36 (April, 1971), 304.

<sup>22</sup>Peter M. Blau, "A Formal Theory of Differentiation in Organizations," American Sociological Review, Vol. 35 (April, 1970), 207-208.

<sup>23</sup>Derek C. Bok and John T. Dunlop, Labor and the American Community (New York: Simon and Schuster, 1970), p. 155.

<sup>24</sup>Jack Barbash, American Unions: Structure, Government, and Politics (New York: Random House, 1967), p. 5.

<sup>25</sup>Edna E. Raphael, "The Anderson-Warkov Hypotheses in Local Unions: A Comparative Study," American Sociological Review, Vol. 32 (October, 1967), 770.

<sup>26</sup>For discussions of technical and administrative departments, see: J.B.S. Hardman and Maurice F. Neufeld (editors), The House of Labor (New York: Prentice-Hall, 1951), pp. 171-528; and Wilensky, pp. 33-108.

<sup>27</sup>Jerald Hage, "An Axiomatic Theory of Organizations," Administrative Science Quarterly, Vol. 10 (December, 1965), 294.

<sup>28</sup>Raphael, 770-771.

<sup>29</sup>This formula was developed by Gibbs and Martin to measure the division of labor in societies, see: Jack P. Gibbs and Walter T. Martin, "Urbanization, Technology, and the Division of Labor: International Patterns," American Sociological Review, Vol. 27 (October, 1962), 669.

<sup>30</sup>For discussion of the centralization of collective bargaining, see: Marten Estey, The Unions: Structure, Development, and Management (New York: Harcourt, Brace and World, Inc., 1967), pp. 61-65; H. J. Gibbons, "Centralization in the Teamsters Union," in Joel Seidman (editor), Trade Union Government and Collective Bargaining (New York: Praeger Publishers, 1970), pp. 149-166; Helen Baker and Robert R. France, Centralization and Decentralization in Industrial Relations (Princeton, New Jersey: Princeton University, 1954); and Neil W. Chamberlain, "The Structure of Bargaining Units in the United States," Industrial and Labor Relations Review, Vol. 8 (October, 1956), 3-25.

<sup>31</sup>For studies of different bargaining levels, see: Michael Whitehill, "Centralized Versus Decentralized Decision Making in Collective Bargaining: Effects on Substantive Contract Language," Monograph Series No. 11 (Iowa City, Iowa: Center for Labor and Management, University of Iowa, 1968), pp. 28-52; and Herbert J. Lahne, "Union Constitutions and Collective Bargaining Procedures," in Joel Seidman (editor), Trade Union Government and Collective Bargaining (New York: Praeger Publishers, 1970), pp. 167-179.

<sup>32</sup>Barbash, pp. 55-68; and Herbert J. Lahne, "The Intermediate Union Body in Collective Bargaining," Industrial and Labor Relations Review, Vol. 6 (January, 1953), 163-179.

<sup>33</sup>Much of the discussion of statistical methods was drawn from K. W. Smillie, An Introduction to Regression and Correlation (New York: Academic Press, 1966), pp. 39-75; and Arthur S. Goldberger, Econometric Theory (John Wiley and Sons, Inc., 1964), pp. 156-201.

<sup>34</sup>U.S. Department of Labor, Directory of National and International Labor Unions in the United States, 1969 (Washington, D.C.: U.S. Government Printing Office, 1970), p. 69.

CHAPTER IV  
RESULTS OF THE STUDY

This chapter includes results of data collection and analysis accompanied by supportive figures and tables. The chapter will be divided into three areas of discussion: (1) data collection, indicating when and where data gathering took place; (2) sample characteristics, noting the range of membership sizes and the types of unions included in the sample; and (3) testing of hypotheses, analyzing and interpreting the results of the hypotheses presented in the previous chapter.

Data Collection

Initial contacts were made with officials of national and international labor unions through the assistance of the Labor Relations and Research Center of the University of Massachusetts. The Center frequently contacts and is contacted by officials from many international unions. With the aid of the Center's Director, a letter of introduction was developed to inform the respondent of the purposes of the study, explain the method of research, and encourage participation (see Appendix C).

On November 27, 1971, the letter of introduction and a stamped, self-addressed envelope were mailed to a union official (president, secretary-treasurer, research director, or education director) known by the Center's Director in each of 70 unions. Each official was



requested to indicate his willingness to participate (or not to participate) in the study at the bottom of the letter and return it. To those unions for which no responses were received, follow-up letters (see Appendices D and E) were mailed on December 9 and 24, 1971.

#### Response to Letter of Introduction

The first mailing resulted in the return of 38 letters, or 54 per cent response. With the second and third mailings, an additional 20 letters were received making a total return of 58, for an overall percentage of 83. Of the 58 returned letters, 33 unions (57 per cent of returns) indicated their willingness to participate in the research. According to union position, the 33 positive respondents were distributed as follows: President (7), secretary-treasurer (5), research director (17), and education director (4). For an analysis of each mailing stage by position and response, see Table 4-1.

Data collection was conducted through personal visits to the headquarters organizations of 30 unions during the first half of 1972 (exact dates were January 5 through 14, April 13, 14, and 15, and June 5 and 6, 1972). A letter (see Appendix F) and telephone call establishing an appointment preceded each visit. A structured questionnaire (see Appendix A), designed to elicit mostly objective data, was used to guide the interview and record information. An interview with one official usually was sufficient to obtain the required data. Occasionally, another official or secretary was consulted, a document (union constitution, collective bargaining



TABLE 4-1

RESPONSES RECEIVED FOLLOWING EACH MAILING STAGE OF  
NATIONAL AND INTERNATIONAL LABOR UNIONS, 1972N - 70<sup>a</sup>

Mailing Stage	President	Secretary- treasurer	Research Director	Education Director	Total
Original Mailing	5 (5)	5 (3)	21 (13)	7 (3)	38
First Follow-up	2 (1)	3 (2)	6 (3)	2 (1)	13
Second Follow-up	1 (1)	1 (0)	4 (1)	1 (0)	7
Total	8 (7)	9 (5)	31 (17)	10 (4)	58

<sup>a</sup>The number in parenthesis indicates the number of positive responses by position and mailing stage.

agreement, membership report, yearly bargaining and organizing report, or organization chart) skimmed, or an employee directory examined to locate information not readily known by the official. The time required to complete each interview ranged from one hour to two hours.

### Characteristics of the Sample Elements

In Chapter III several criteria were established to guide the selection of unions to be included in the sample. The last criterion (willingness to cooperate in the study and accessibility) became the most important, since arrangements could be made to visit only 30 of the 33 unions which agreed to participate. However, the sample included unions ranging in size from 10,000 to 1,200,000 members, and it contained an equal number of craft and industrial<sup>1</sup> unions (see Table 4-2). With the exception of two unions, one or more types of intermediate bodies (usually a number of regional offices) were integral parts of union structures. The unions displayed an adequate range of variance in members' occupational diversity (specificity) and industrial diversity (specificity). Also, different patterns (complexity) of contract negotiations were observed (see Appendices G through L for presentations of the raw data).

### Testing of Hypotheses

#### Levels of Statistical Significance

The statistical methods for investigating the relationships among the variables involved regression and correlation analyses.

TABLE 4-2

NATIONAL AND INTERNATIONAL UNIONS PARTICIPATING IN  
STUDY BY SIZE AND TYPE, 1972

Type of Union	<u>Number of Union Members</u>				Total
	10,000-49,999	50,000-149,999	150,000-499,999	500,000 and over	
Craft	6	4	3	1	14
Industrial	4	3	2	5	14
Other (Government)	0	1	1	0	2
Total	10	8	6	6	30

In the regression applications,  $t$  and  $F$  tests were used to determine the significance of relationships between two or more variables. The values of  $t$  and  $F$  which denoted levels of significance varied according to sample size and the number of independent factors in the regression equation. For example, with a sample size of 30 and four independent variables in the equation, the significant  $F$  values at the .01 and .05 levels were 4.18 and 2.76 respectively (with 4 degrees of freedom in the numerator of the  $F$  ratio and 25 degrees of freedom in the denominator). The  $F$  values for an equation with only two independent factors (2 degrees of freedom in the numerator and 27 degrees of freedom in the denominator) increased to 5.49 and 3.35 for the .01 and .05 levels of significance.

As mentioned in Chapter III, the interpretation or meaning attached to various correlation coefficients was not a standardized procedure and was dependent upon the situation and the judgment of the researcher. Therefore, a minimum level of acceptance was determined according to the sample size. With a sample of 30 elements, the correlation values at the .01 and .05 levels of significance were .456 and .355 respectively. Even a minimum acceptable correlation value was not necessarily an indicator of the degree of relationship between two factors; consequently, three categories showing degrees of closeness seemed appropriate in analyzing the nature of a relationship. The relationship between any independent variable and relative administrative size was described as being 'high' if the correlation



coefficient had a value of .60 or greater; 'medium' or 'moderate' was the description if the value ranged from .30 to .59; and 'low' or 'weak' referred to a value less than .30.<sup>2</sup>

#### Acceptance or Rejection of General Hypotheses

For each general hypothesis, several groups and sub-groups of working hypotheses were derived. These groups contained a large number of working statements and resulted from sub-dividing the dependent variable according to organization level and administrative category. In order to accept a general hypothesis, significant correlation coefficients (values which exceeded the minimum acceptance level) had to be obtained from the tests of at least half of the working statements.

#### Data Presentation and Discussion of Results

##### General Hypothesis One

The relative size of the administrative component decreases (at a constant rate) as the size of the organization increases.

In testing the working statements extracted from this general hypothesis, few significant relationships were uncovered. The heterogeneous (all administrative groups) administrative ratios for the central headquarters organization, regional offices, and combined central and regional offices were not associated with any of the measures of organization size (number of union members, average local membership, number of contracts, and number of employers). However,

one of the administrative sub-group (managers and administrators) ratios was significantly connected with the first measure of size (number of members). While the relationship between the proportion of top managers and the number of union members was statistically significant (see Table 4-3), the scatter diagram (Figure 4-1) revealed a negative regression line with a convex curve. This indicated that the decline in the managerial ratio occurred at a decreasing rate very rapidly for unions with up to about 175,000 members, but for larger unions, the ratio declined more gradually. The curvilinear relationship was exhibited at both the central headquarters and regional levels of the organization.

Of the remaining size definitions, moderate relationships were obtained from correlations between number of contracts and employers and the per cent of top administrators (see Table 4-3). These relationships were also negative and approximated convex curves (see Figures 4-2 and 4-3). The rate of decline of the central managerial ratio fell substantially for unions with up to about 1600 contracts and for unions dealing with about 8000 employers, beyond these points the rate of decline was more gradual and leveled off.

Another relationship, while not statistically significant (see Table 4-4), also illustrated a curvilinear association (see Figure 4-4). The proportion of professional employees at the headquarters organization declined rapidly up to about 200,000 members, then leveled off and displayed a tendency to increase again.

TABLE 4-3

MULTIPLE REGRESSION AND CORRELATION OF MANAGERIAL RATIO AT CENTRAL HEADQUARTERS ORGANIZATION ON MEASURES OF ORGANIZATION SIZE, 1972

N = 30

Independent Variable	t Statistic	F Statistic	Simple Correlation	Multiple Correlation
Number of Members	2.16 <sup>a</sup>	3.60 <sup>a</sup>	-.56 <sup>b</sup>	.60 <sup>b</sup>
Average Local Membership	1.43		.14	
Number of Contracts	.46		-.42 <sup>a</sup>	
Number of Employers	.06		-.33	
Durbin-Watson	.42			
t <sub>.01</sub> = 2.76	F <sub>.01</sub> = 4.18	r <sub>.01</sub> = .456	R <sub>.01</sub> = .600	
t <sub>.05</sub> = 2.04	F <sub>.05</sub> = 2.76	r <sub>.05</sub> = .355	R <sub>.05</sub> = .514	
<sup>a</sup> Significant at the .05 level				
<sup>b</sup> Significant at the .01 level				

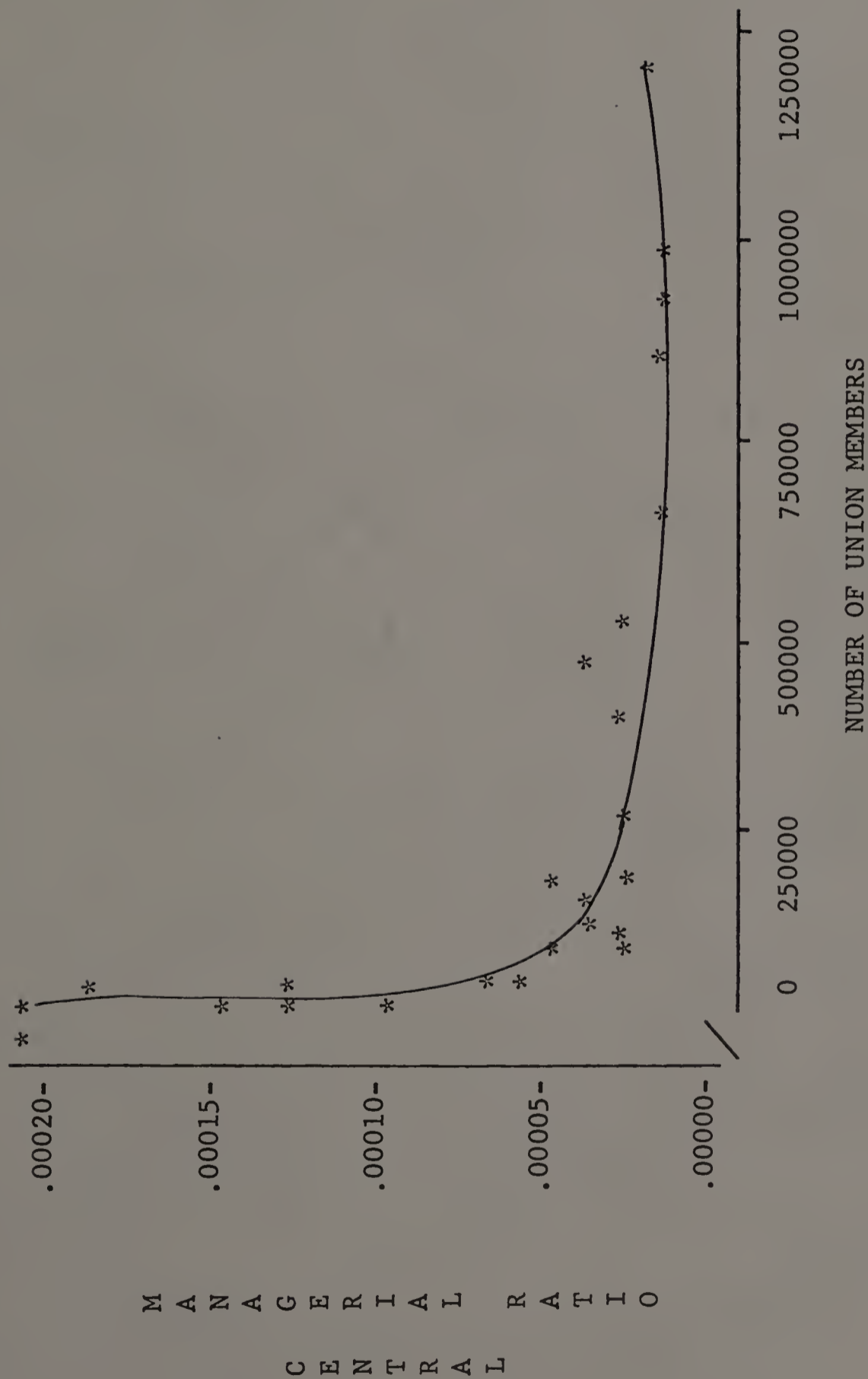


FIGURE 4-1 Scatter Diagram of Managerial Ratio at the Central Headquarters Organization and Organization Size, 1972



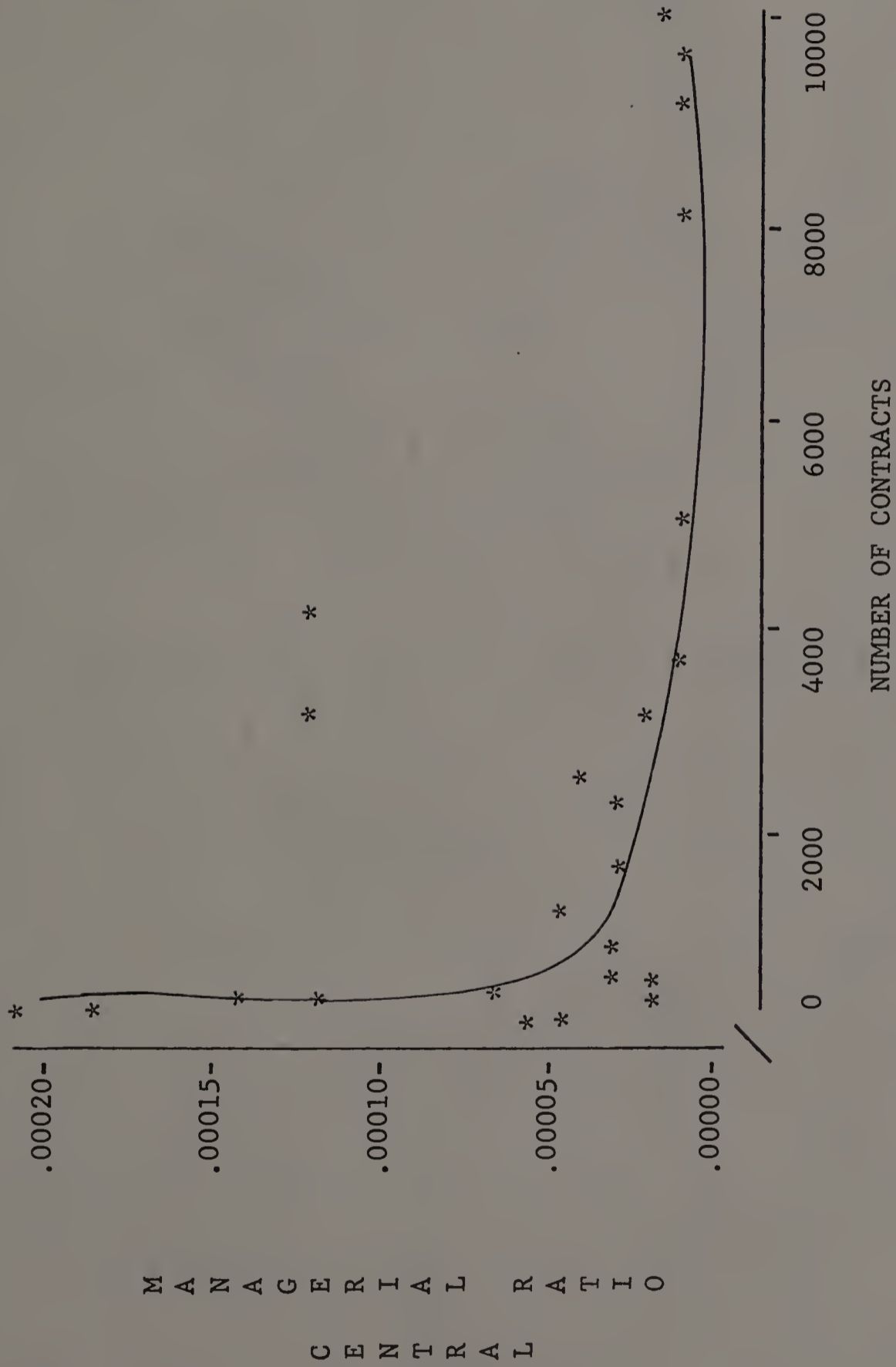


FIGURE 4-2 Scatter Diagram of Managerial Ratio at the Central Headquarters Organization and Organization Size, 1972



TABLE 4-4

MULTIPLE REGRESSION AND CORRELATION OF PROFESSIONAL RATIO AT CENTRAL  
HEADQUARTERS ORGANIZATION ON MEASURES OF ORGANIZATION SIZE, 1972

N = 30

Independent Variable	t Statistic	F Statistic	Simple Correlation	Multiple Correlation
Number of Members	.12	.34	-.16	.23
Average Local Membership	.53		.06	
Number of Contractors	.39		-.18	
Number of Employers	.38		-.18	
Durbin-Watson	1.88			
$t_{.01} = 2.76$	$F_{.01} = 4.18$	$r_{.01} = .456$	$R_{.01} = .600$	
$t_{.05} = 2.04$	$F_{.05} = 2.76$	$r_{.05} = .355$	$R_{.05} = .514$	

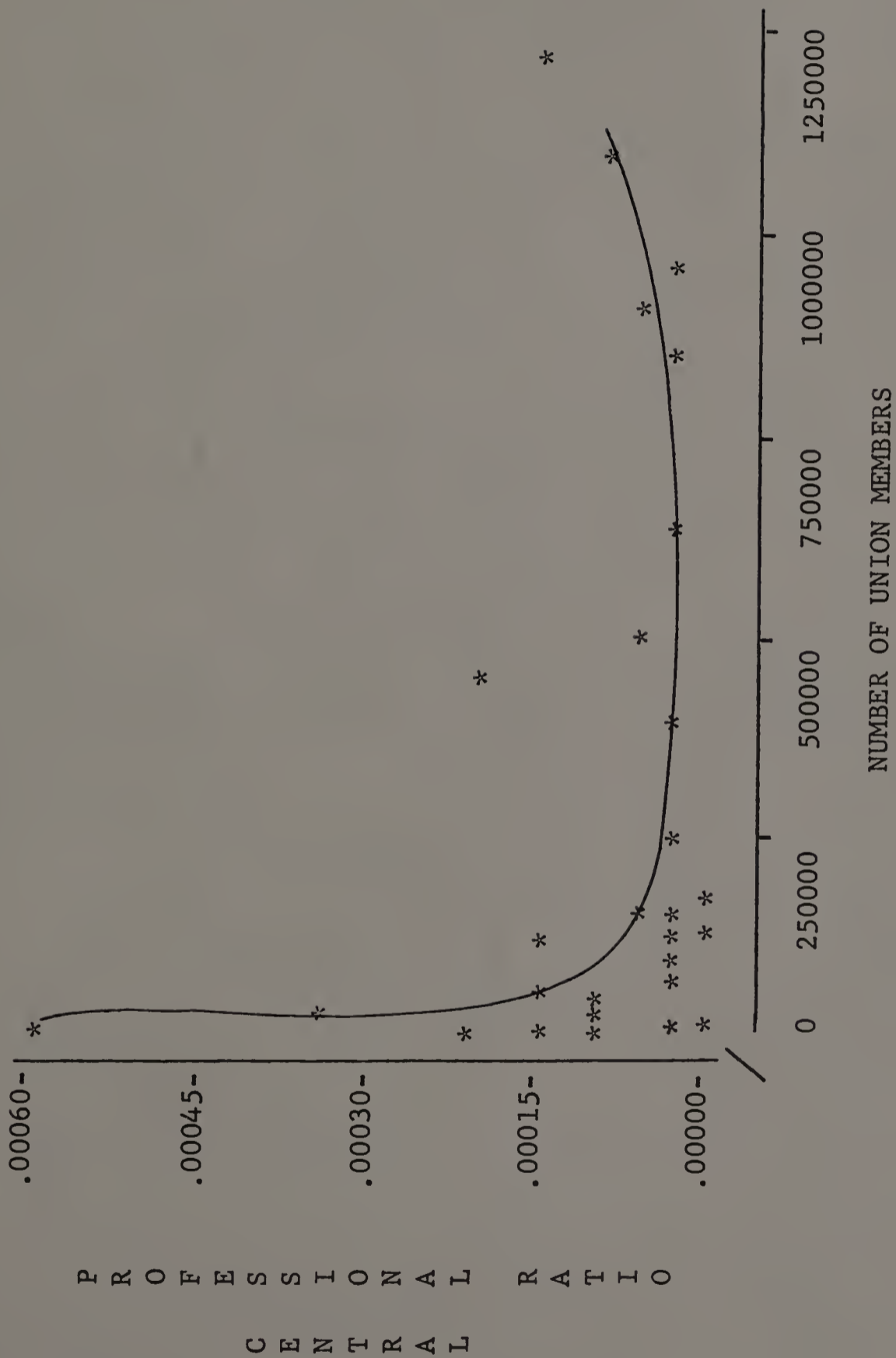


FIGURE 4-4 Scatter Diagram of Professional Ratio at the Central Headquarters Organization and Organization Size, 1972



Other than the relationships mentioned above, there were no significant connections between measures of organization size and relative administrative size at the headquarters or regional levels of organization. Apparently, union size has little impact upon the relative size of the administrative component. Therefore, general hypothesis one cannot be accepted.

#### Discussion of Results--General Hypothesis One

With the exception of the managerial ratio, the above findings indicate that organization size may not be a significant variable when analyzing the size of the administrative proportion of labor unions. The smaller proportion of top administrators in larger unions and the lack of an association between the other administrative groups and organization size suggests four explanatory factors: (1) the major activities (collective bargaining, organizing, education, research, etc.) of most labor unions may be very similar; (2) major activity decisions and policy formulations are likely to be made (with the consent of the membership) by only one or a few officials (president, secretary-treasurer, and executive board); (3) the semi-autonomous or relatively independent status of local unions apparently does not require an extensive supervisory and control system; and (4) large unions may not allocate their greater financial resources to enlarging the clerical and consultative staffs.

As long as unions engage in a similar number and set of major activities, each union will need a minimum number of administrative

employees to perform these tasks. For some of these activities the minimum number of administrative employees may have little or no relationship to the size of the union, since one or two employees can probably perform an activity in a union of 100,000 members as easily as in a union of 10,000 members. For example, one or two professional staff employees can probably write, edit, and take care of the printing and distribution of a monthly union news letter in a large as well as a small union. In addition, some major activities (legal representation and publications) may be performed by outside agencies through a sub-contracting or retainer arrangement in both large and small unions.

In Chapter I, several forces were discussed as administrative centralizing tendencies in unions. Coupling these forces with the considerable constitutional power granted to many union executives, it becomes apparent that few administrative limitations are placed upon top union officials. The union executive may have virtually unrestricted authority in directing the affairs of the union. Consequently, there may be little need for an elaborate administrative network.

International unions are federations of many local unions. Each local develops a constitution and elects or appoints member officials to enforce and administer the constitution. Even though a local may be obligated to conform to the international's constitution and follow the directives of the international officers, the

local may have relatively infrequent dealings with the international. Therefore, an extensive supervisory and control system may not be required. During certain periods (contract negotiations) and under emergency conditions (strikes or lockouts), however, local unions may develop very intimate (though temporary) associations with the central headquarters. On these occasions, close supervision may be necessary.

The financial resources of an international union are derived through assessments of affiliated local unions and their members. These assessments vary from union to union, but generally larger unions will have greater financial resources than smaller unions. In providing various services to local unions and performing administrative tasks, larger unions may employ their greater financial resources to lease or purchase automated information processing equipment instead of hiring additional administrative employees.

#### General Hypothesis Two

The relative size of the administrative component increases (at a constant rate) as organization complexity increases.

#### Structural Differentiation

The more differentiated (complex) the formal structure of labor unions, the greater the number of administrators needed to manage union affairs. Only one of the administrative group ratios was significantly affected by structural complexity (see Tables 4-5 and 4-6). However, the moderate relationships were in the opposite

TABLE 4-5

MULTIPLE REGRESSION AND CORRELATION OF MANAGERIAL RATIO AT CENTRAL HEADQUARTERS ORGANIZATION ON MEASURES OF ORGANIZATION COMPLEXITY, 1972

N = 30

Independent Variable	t Statistic	F Statistic	Simple Correlation	Multiple Correlation
Number of Locals	1.67	4.85 <sup>b</sup>	-.57 <sup>b</sup>	.60 <sup>b</sup>
Number of Intermediate Bodies	1.04		-.42 <sup>a</sup>	
Number of Departments	.74		-.45 <sup>a</sup>	
Durbin-Watson	.75			

t <sub>.01</sub> = 2.76	F <sub>.01</sub> = 4.64	r <sub>.01</sub> = .456	R <sub>.01</sub> = .546
t <sub>.05</sub> = 2.04	F <sub>.05</sub> = 2.98	r <sub>.05</sub> = .355	R <sub>.05</sub> = .454

<sup>a</sup>Significant at the .05 level<sup>b</sup>Significant at the .01 level



TABLE 4-6

MULTIPLE REGRESSION AND CORRELATION OF MANAGERIAL RATIO AT CENTRAL AND REGIONAL LEVELS ON MEASURES OF ORGANIZATION COMPLEXITY, 1972

N = 30

Independent Variable	t Statistic	F. Statistic	Simple Correlation	Multiple Correlation
Number of Locals	.64	2.05	-.37 <sup>a</sup>	.44
Number of Intermediate Bodies	1.21		-.37 <sup>a</sup>	
Number of Departments	.57		-.31	
Durbin-Watson	1.91			

t<sub>.01</sub> = 2.76      F<sub>.01</sub> = 4.64      r<sub>.01</sub> = .456      R<sub>.01</sub> = .546

t<sub>.05</sub> = 2.04      F<sub>.05</sub> = 2.98      r<sub>.05</sub> = .355      R<sub>.05</sub> = .454

<sup>a</sup>Significant at the .05 level

<sup>b</sup>Significant at the .01 level

direction from that proposed. The headquarters managerial ratio (see Figures 4-5, 4-6, and 4-7) and the combined headquarters and regional managerial ratio (see Figures 4-8, 4-9, and 4-10) tended to decline rapidly as the number of local unions, intermediate bodies, and departments increased. The ratio declined more gradually and leveled off beyond about 600 local unions, 25 intermediate bodies, and 6 departments.

There were no significant correlations between measures of structural differentiation and the other administrative group ratios, but many of the scatter diagrams revealed a tendency for the ratios to drop as complexity increased. For example, the combined headquarters and regional clerical ratio decreased as the number of intermediate bodies increased (see Figure 4-11). The regional organizer ratio displayed a downward trend when the number of intermediate bodies increased (see Figure 4-12).

#### Occupational and Industrial Diversity

No significant relationships were obtained between any of the administrative ratios and measures of occupational and industrial diversity. Apparently the number of occupations (industries) in which members worked and the distribution of members among these occupations (industries) had little, if any, effect on the relative size of the administrative component. Figures 4-13 and 4-14 are representative of the lack of a relationship between these complexity factors and relative administrative size.

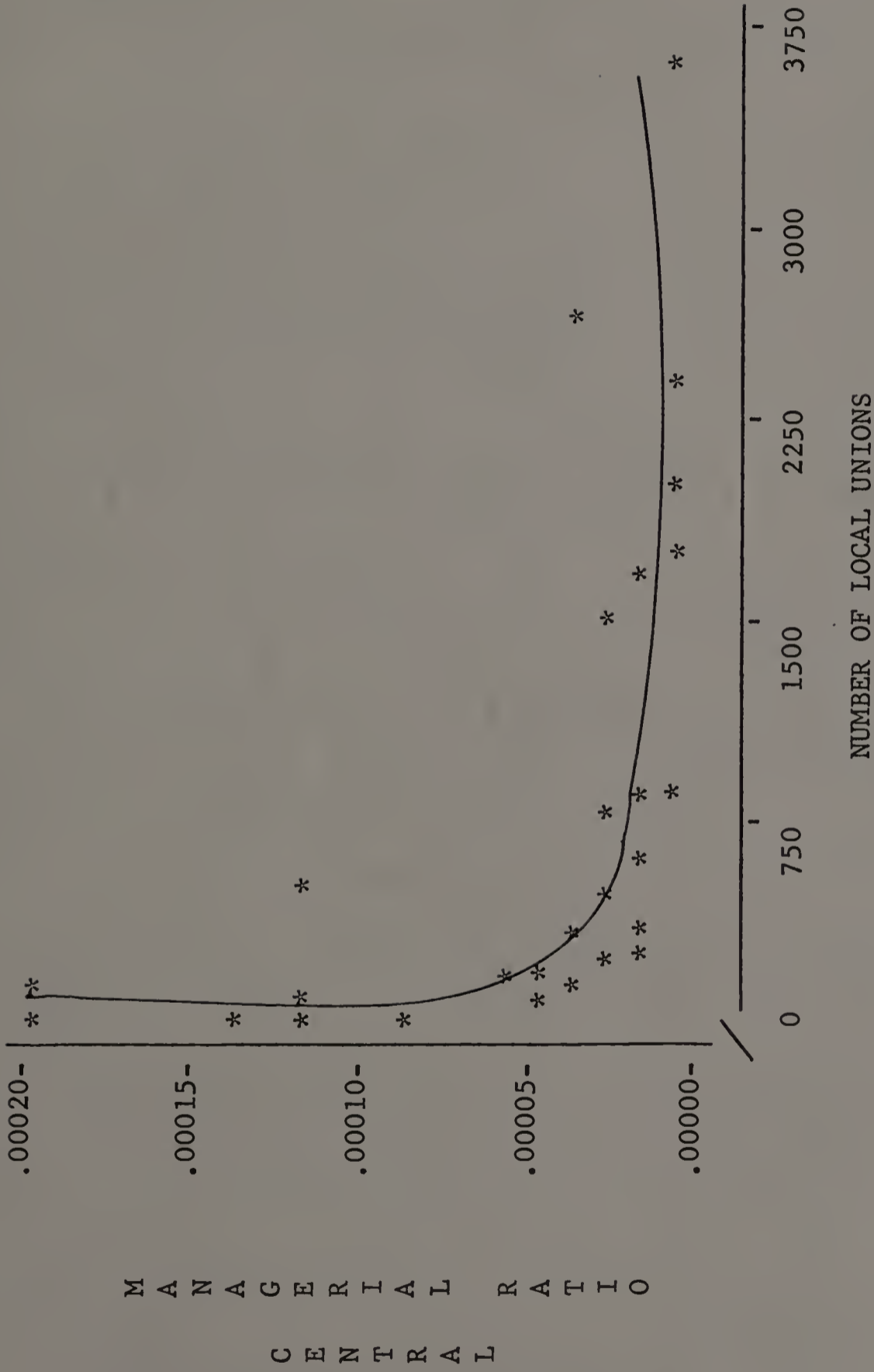


FIGURE 4-5 Scatter Diagram of Managerial Ratio at the Central Headquarters Organization and Complexity, 1972

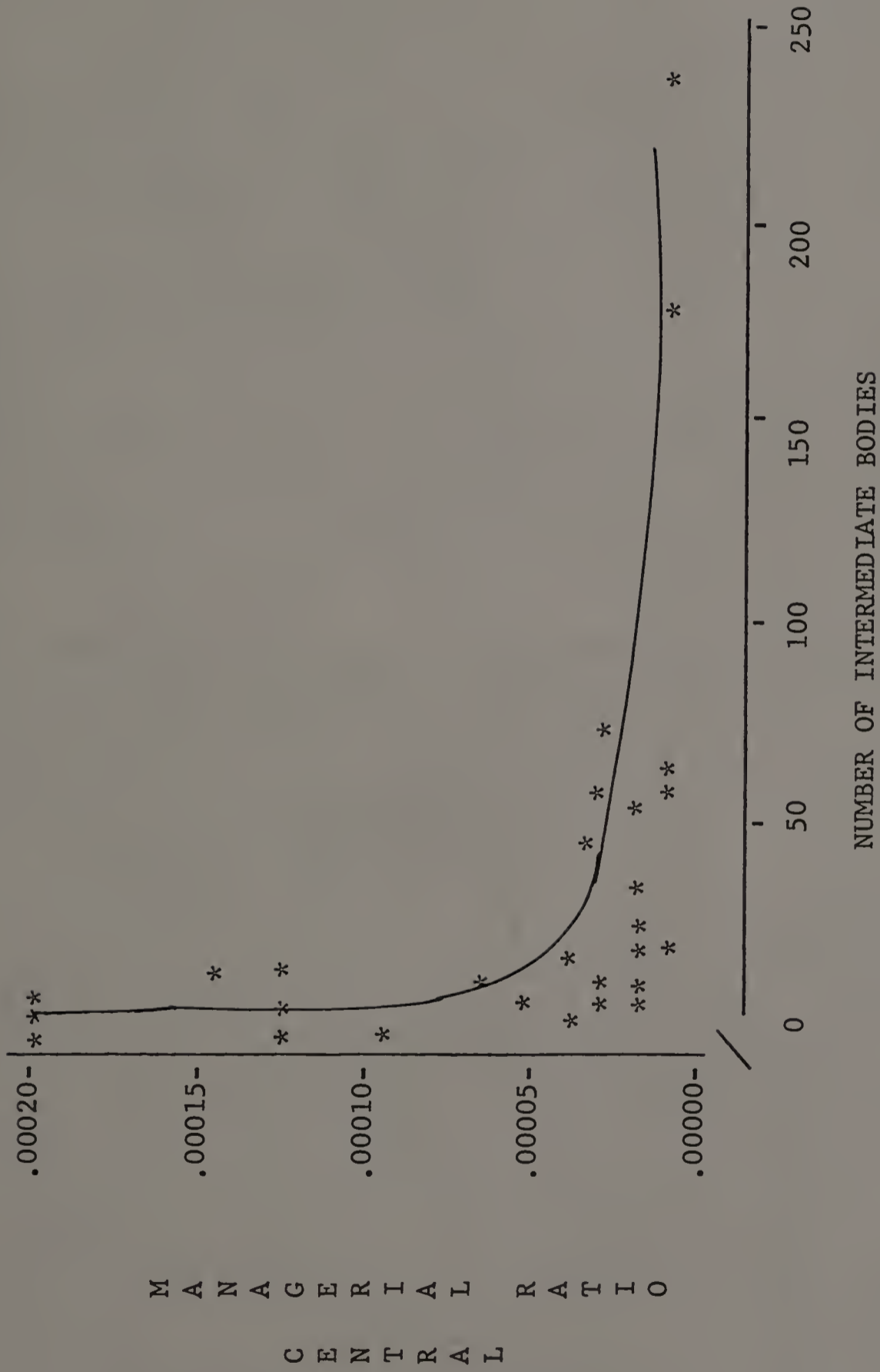


FIGURE 4-6 Scatter Diagram of Managerial Ratio at the Central Headquarters Organization and Complexity, 1972



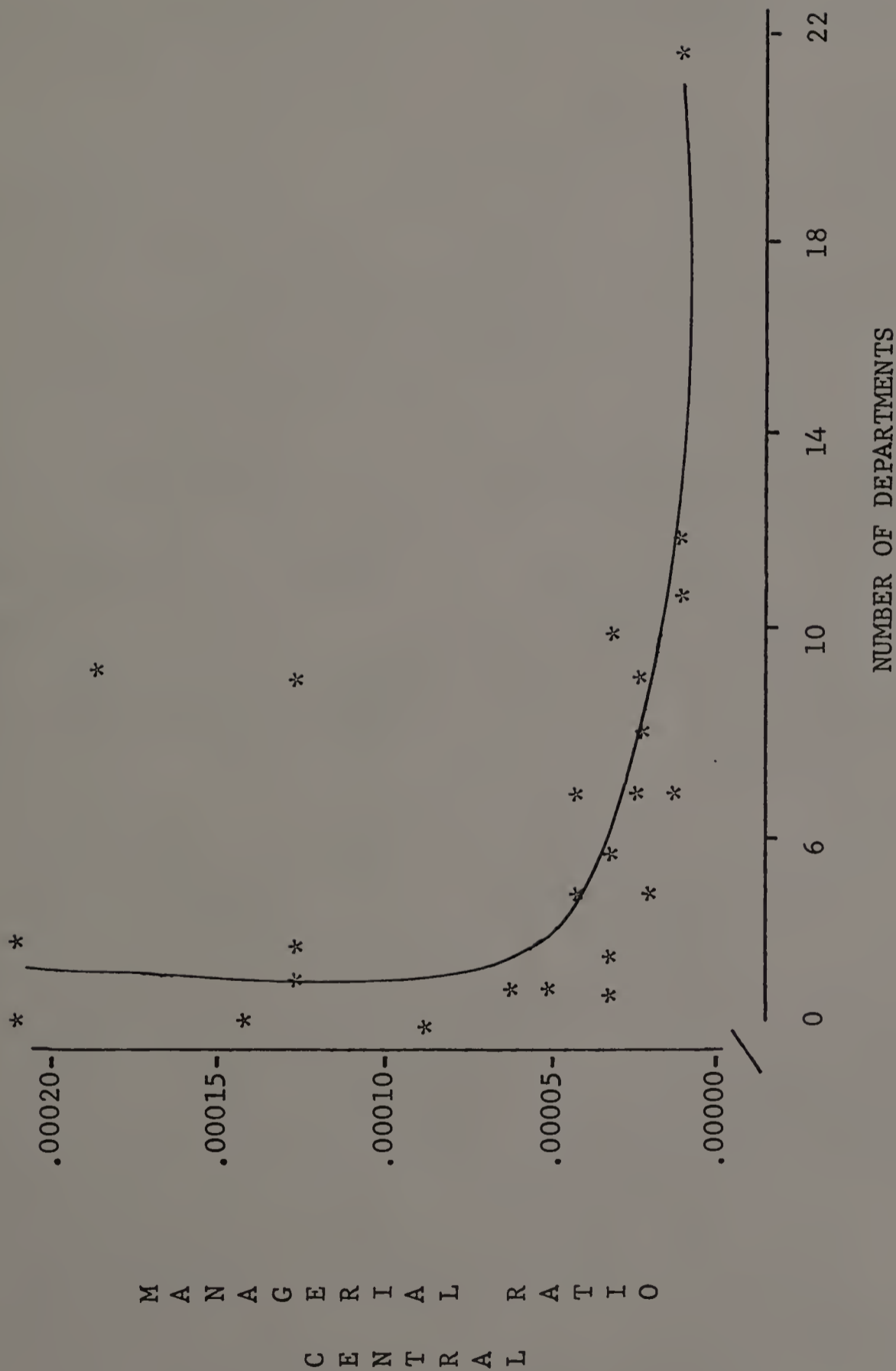


FIGURE 4-7 Scatter Diagram of Managerial Ratio at the Central Headquarters Organization and Complexity, 1972



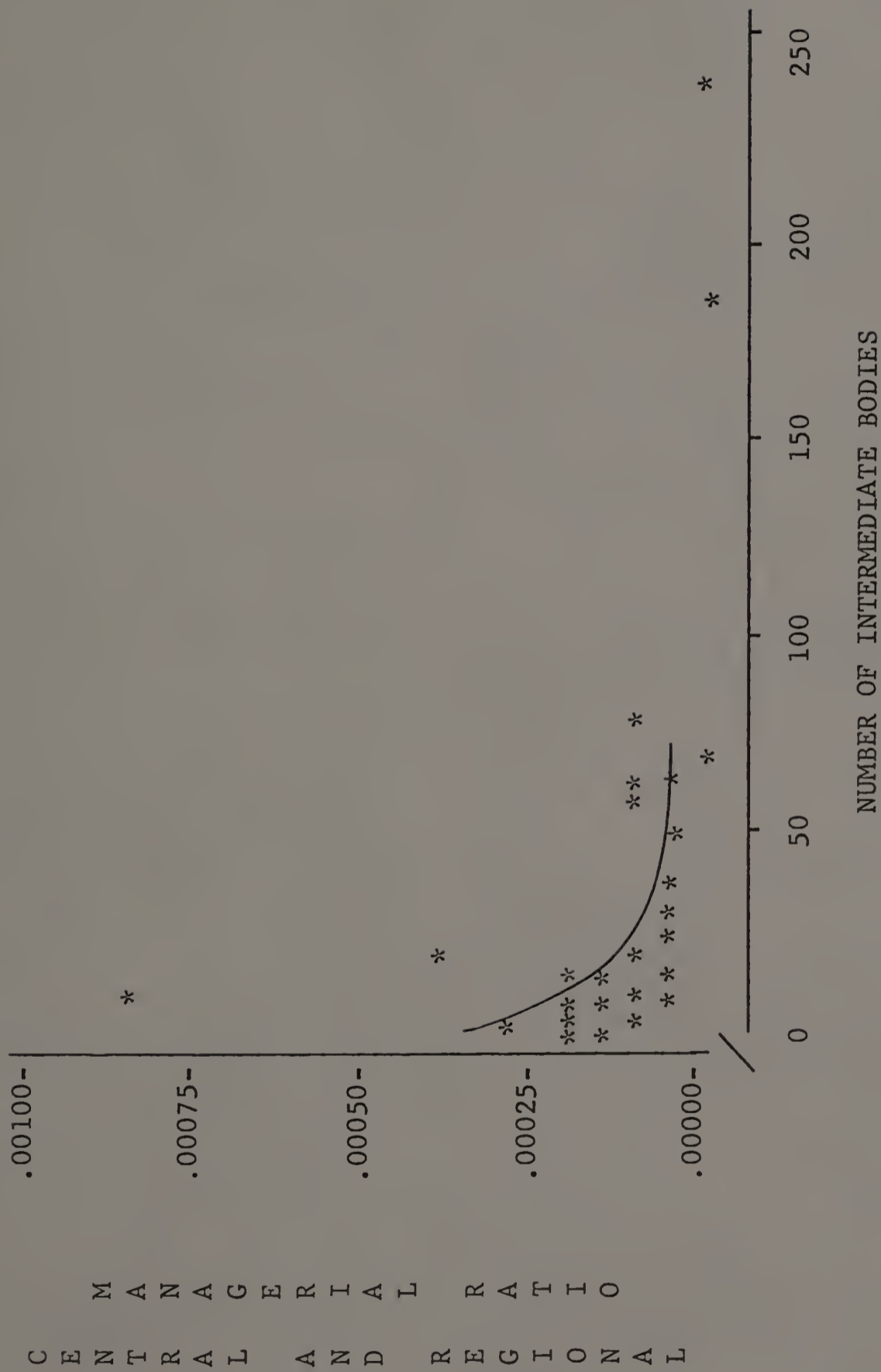


FIGURE 4-9 Scatter Diagram of Managerial Ratio at the Central Headquarters and Regional Organization Levels and Complexity, 1972





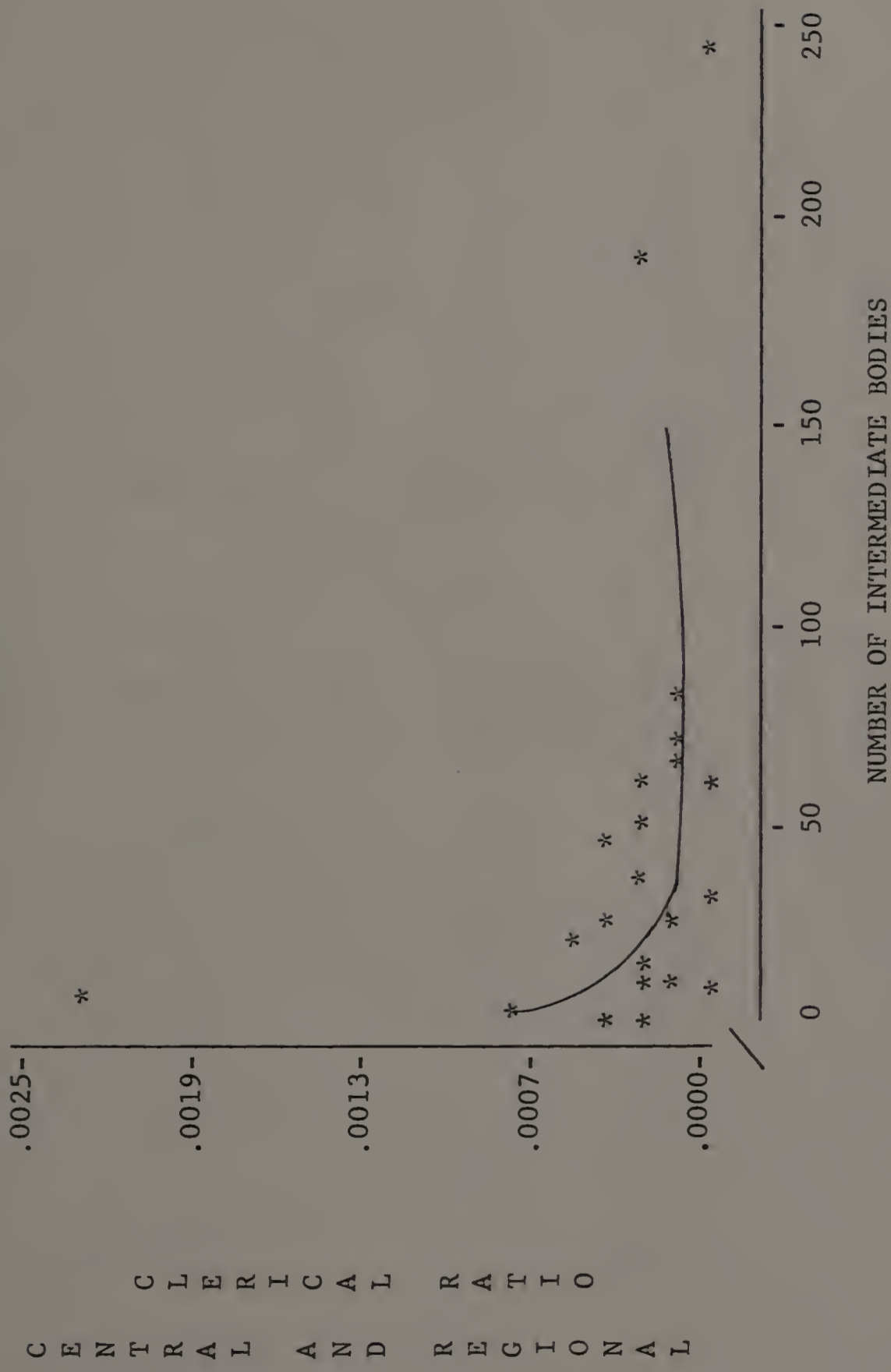


FIGURE 4-11 Scatter Diagram of Clerical Ratio at the Central Headquarters and Regional Organization Levels and Complexity, 1972



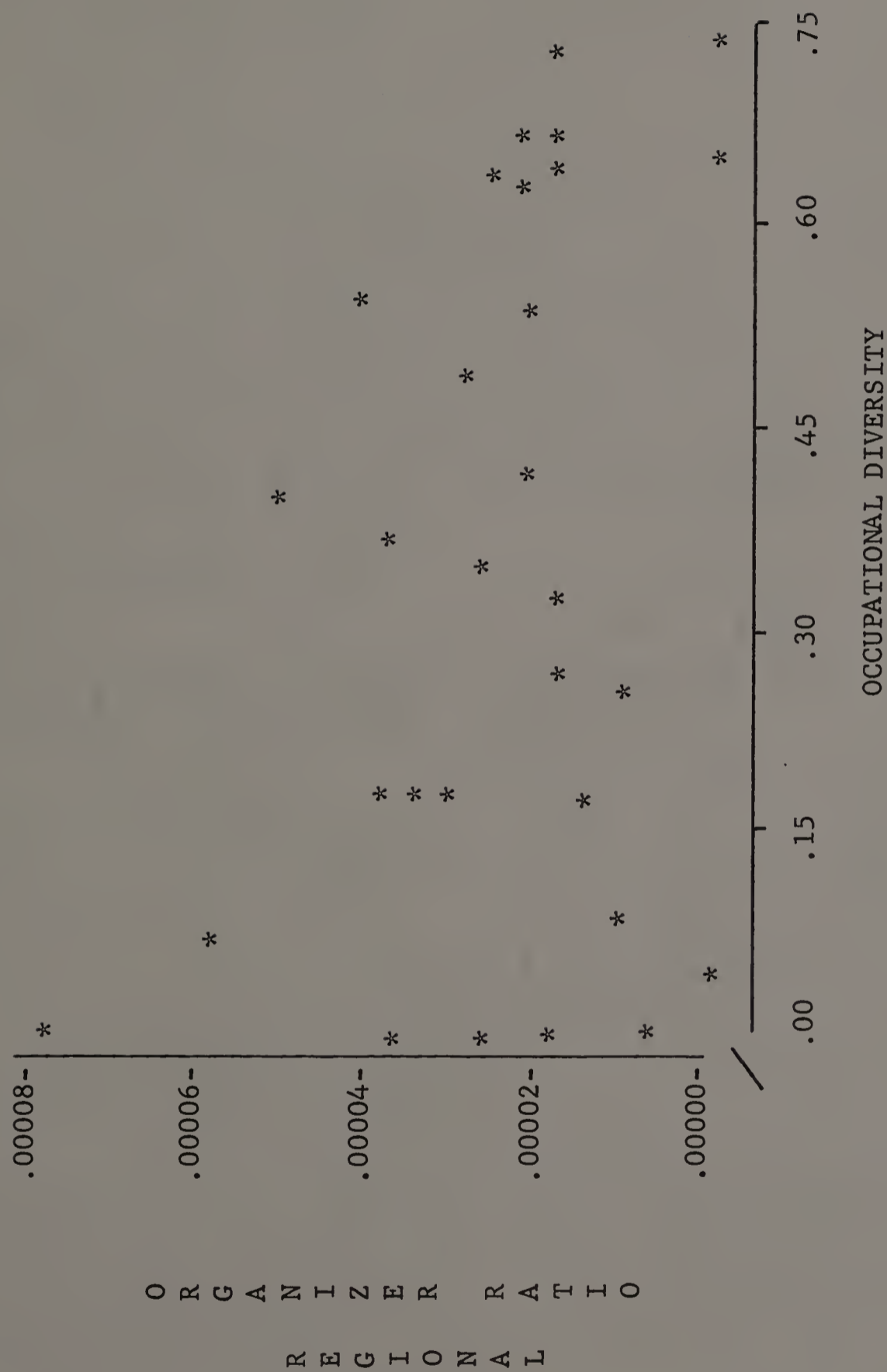


FIGURE 4-13 Scatter Diagram of Organizer Ratio at the Regional Level and Complexity, 1972





### Complexity of the Bargaining Process

Of the four measures of bargaining complexity (major activity coordination), only the bargaining centrality index appeared to have any relation to measures of relative administrative size. A strong positive association existed between the regional managerial ratio (see Table 4-7 and Figure 4-15) and the combined central and regional managerial ratio (see Table 4-8 and Figure 4-16) and the bargaining centrality index. Unions which negotiate on a regional or national multi-employer basis apparently require a larger proportion of top administrators. However, as can be seen from Figures 4-15 and 4-16, one union appeared to dominate this relationship. If this union were eliminated from the analysis, the association may not be as strong.

Very few significant relationships were found between measures of organization complexity and relative administrative size. Most of the relationships that did exist were not in the direction hypothesized. Apparently, there was little or no relationship between the complexity of labor unions and the proportion of people involved in union administrative activities. Thus, general hypothesis two cannot be accepted.

### Discussion of Results--General Hypothesis Two

The analysis of this hypothesis produced inconsistent findings. Different measures of organization complexity were linked with the

TABLE 4-7

MULTIPLE REGRESSION AND CORRELATION OF MANAGERIAL RATIO AT REGIONAL  
LEVEL OF ORGANIZATION ON MEASURES OF ORGANIZATION COMPLEXITY, 1972

N = 30

Independent Variable	t Statistic	F Statistic	Simple Correlation	Multiple Correlation
Contracts/Locals	.52	6.80 <sup>b</sup>	.11	.72 <sup>b</sup>
Contracts/Employers	1.30		-.21	
Employers/Locals	.86		-.14	
Bargaining Centrality Index	4.60 <sup>b</sup>		.70 <sup>b</sup>	
Durbin-Watson	1.97			
t <sub>.01</sub> = 2.76	F <sub>.01</sub> = 4.18	r <sub>.01</sub> = .456	R <sub>.01</sub> = .600	
t <sub>.05</sub> = 2.04	F <sub>.05</sub> = 2.76	r <sub>.05</sub> = .355	R <sub>.05</sub> = .514	

<sup>a</sup>Significant at the .05 level  
<sup>b</sup>Significant at the .01 level



TABLE 4-8

MULTIPLE REGRESSION AND CORRELATION OF MANAGERIAL RATIO AT CENTRAL AND REGIONAL LEVELS ON MEASURES OF ORGANIZATION COMPLEXITY, 1972

N = 30

Independent Variable	t Statistic	F Statistic	Simple Correlation	Multiple Correlation
Contracts/Locals	.80	5.25 <sup>b</sup>	-.10	.68 <sup>b</sup>
Contracts/Employers	1.46		-.20	
Employers/Locals	1.34		-.19	
Bargaining Centrality Index	3.80 <sup>b</sup>		.63 <sup>b</sup>	
Durbin-Watson	1.02			
t <sub>.01</sub> = 2.76	F <sub>.01</sub> = 4.18	r <sub>.01</sub> = .456	R <sub>.01</sub> = .600	
t <sub>.05</sub> = 2.04	F <sub>.05</sub> = 2.76	r <sub>.05</sub> = .355	R <sub>.05</sub> = .514	

<sup>a</sup>Significant at the .05 level

<sup>b</sup>Significant at the .01 level



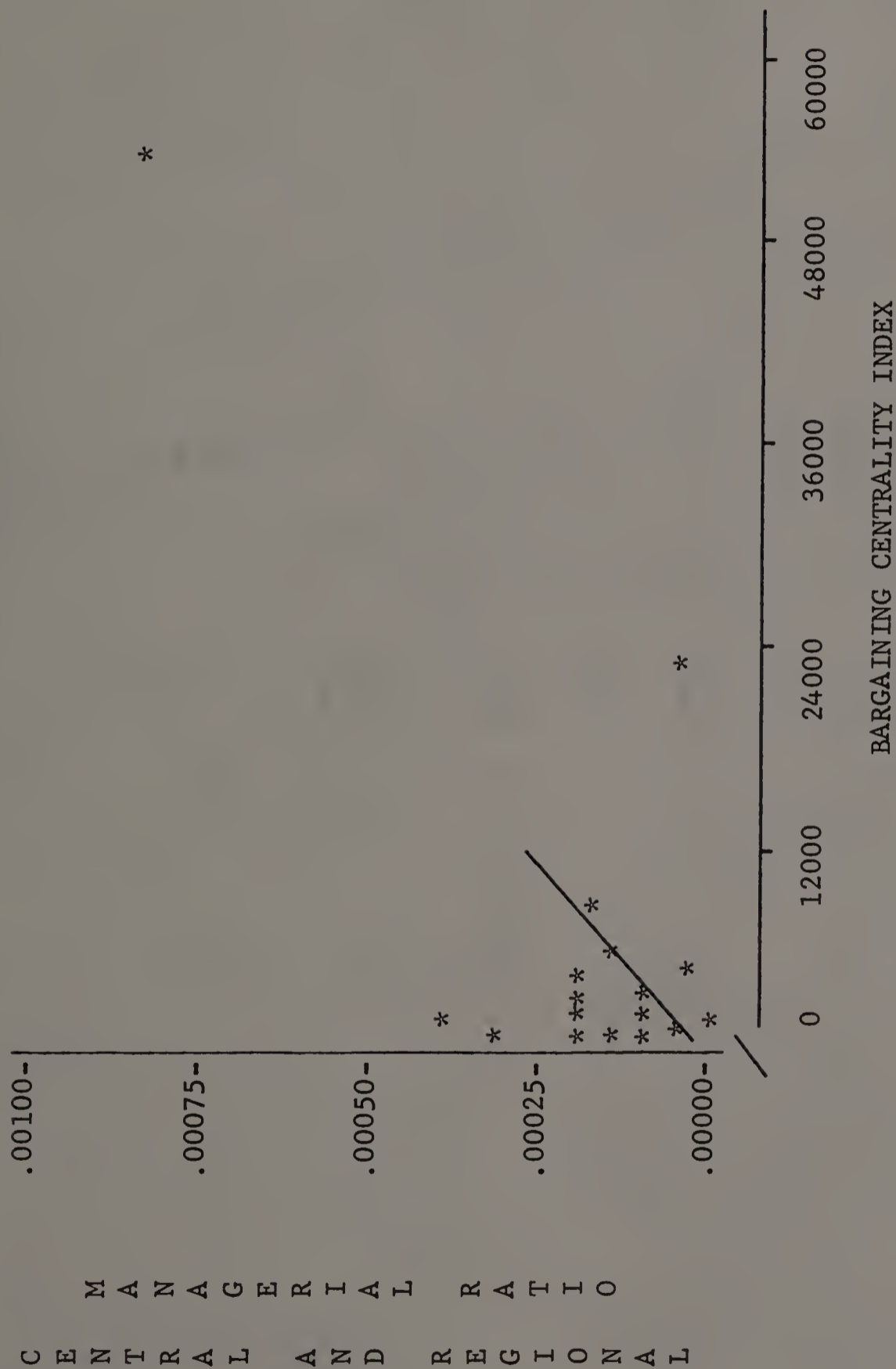


FIGURE 4-16 Scatter Diagram of Managerial Ratio at the Central Headquarters and Regional Organization Levels and Complexity, 1972

managerial ratio in contrasting ways. The managerial ratio declined with increasing structural differentiation and increased with greater centralization (complexity) of the bargaining (negotiations) process. Aside from these findings, no other significant associations were uncovered between measures of relative administrative size and organization complexity. This general lack of a relationship between complexity and the administrative proportion suggests that five explanatory variables may be involved (1) most of the activity coordination and handling of members' problems takes place within the local union; (2) coordination may be through personal contact rather than rules and written communications; (3) historically, unions have attempted to standardize the employment relationship through similar wages, hours, and working conditions regardless of the location and qualifications of the individual; (4) labor unions may be viewed as voluntary associations; and (5) the tendency for some unions to reduce structural differentiation by eliminating intermediate bodies and merging of locals.

Bargaining for changes in work rules, soliciting new members, and adjusting grievances are primarily local union activities which take place on a continuous basis. International union officials may be consulted only infrequently on these matters. Other activities, such as dues collection and maintaining seniority rosters, are frequently performed by management. Hence, there may be little need for a large administrative component at the central headquarters or regional office to coordinate these activities.

Another factor explaining the relatively small administrative apparatus in labor unions may be that many activities are accomplished through face-to-face interaction. The coordinative mechanism may be personal contact rather than a rule or document. As one moves up the union hierarchy from local to regional office to central headquarters, coordination may become less personal, but there may still be many occasions when the presence of an international representative at the bargaining table or on the plant floor will result in the expeditious handling of a management-union problem.

Over the years, unions have attempted to standardize the wage and effort bargain within their respective jurisdictions. The greater the degree of standardization in the employment contract and relationship, the less the need for a large administrative component to supervise and control various union activities.

Even though a labor union may be described as a voluntary organization, employees may be obligated to join the union under the terms of a collective bargaining agreement. However, only a small portion of the members may actively engage in union activities. With few members participating in the union, it may not be difficult to coordinate (integrate) the actions of almost all members with a relatively small number of administrative employees.

When gathering the information for this study, officials of several unions mentioned programs that had been developed to encourage and facilitate the merger of locals and to reduce the number of

intermediate bodies. These changes would presumably simplify union structure and reduce problems of coordination.

### General Hypothesis Three

As the complexity of the organization increases, the size of the organization will increase at a proportionate rate.

The data analysis revealed several significant associations between measures of organization size and complexity (see Table 4-9). The relationships are discussed in groups below.

#### Organization Size and Structural Differentiation

Three definitions of organization size were closely associated with the three measures of structural complexity. The highest correlation occurred between the number of union members and the number of local unions (see Figure 4-17). From Figures 4-18 and 4-19, the larger a union was (by number of members), the greater the number of departments and intermediate bodies it contained. Moderate to high relationships were also found between the number of contracts and employers and definitions of structural complexity (see Figures 4-20, 4-21, 4-22, 4-23, 4-24, and 4-25).

At this point, the intercorrelations among the size measures and structural complexity factors should be reported. The number of union members was highly associated with the number of collective bargaining agreements (.72) and moderately related to number of employers (.52). Low degrees of correlation existed between average



TABLE 4-9

VALUE OF CORRELATION COEFFICIENTS COMPUTED  
BETWEEN MEASURES OF ORGANIZATION SIZE AND  
MEASURES OF ORGANIZATION COMPLEXITY

N = 30

Correlation Between	Coefficient
Number of Union Members and:	
Number of Local Unions	.84 <sup>b</sup>
Number of Departments	.72 <sup>b</sup>
Number of Intermediate Bodies	.63 <sup>b</sup>
Occupational Diversity	.22
Industrial Diversity	.58 <sup>b</sup>
Contracts/Locals	.05
Contracts/Employers	-.03
Employers/Locals	.25
Bargaining Centrality Index	.15
Average Local Size and:	
Number of Local Unions	-.21
Number of Departments	.31
Number of Intermediate Bodies	-.10
Occupational Diversity	.06
Industrial Diversity	.02
Contracts/Locals	.48 <sup>b</sup>
Contracts/Employers	-.05
Employers/Locals	.29
Bargaining Centrality Index	-.12

TABLE 4-9--continued

Correlation Between	Coefficient
Number of Contracts and:	
Number of Local Unions	.50 <sup>b</sup>
Number of Departments	.60 <sup>b</sup>
Number of Intermediate Bodies	.67 <sup>b</sup>
Occupational Diversity	.12
Industrial Diversity	.55 <sup>b</sup>
Contracts/Locals	.55 <sup>b</sup>
Contracts/Employers	-.25
Employers/Locals	.52 <sup>b</sup>
Bargaining Centrality Index	-.13
Number of Employers and:	
Number of Local Unions	.37 <sup>a</sup>
Number of Departments	.38 <sup>a</sup>
Number of Intermediate Bodies	.67 <sup>b</sup>
Occupational Diversity	.02
Industrial Diversity	.25
Contracts/Locals	.11
Contracts/Employers	-.45 <sup>a</sup>
Employers/Locals	.75 <sup>b</sup>
Bargaining Centrality Index	-.12

d/f = 29       $r_{.01} = .456$        $r_{.05} = .355$

<sup>a</sup>Significant at the .05 level

<sup>b</sup>Significant at the .01 level

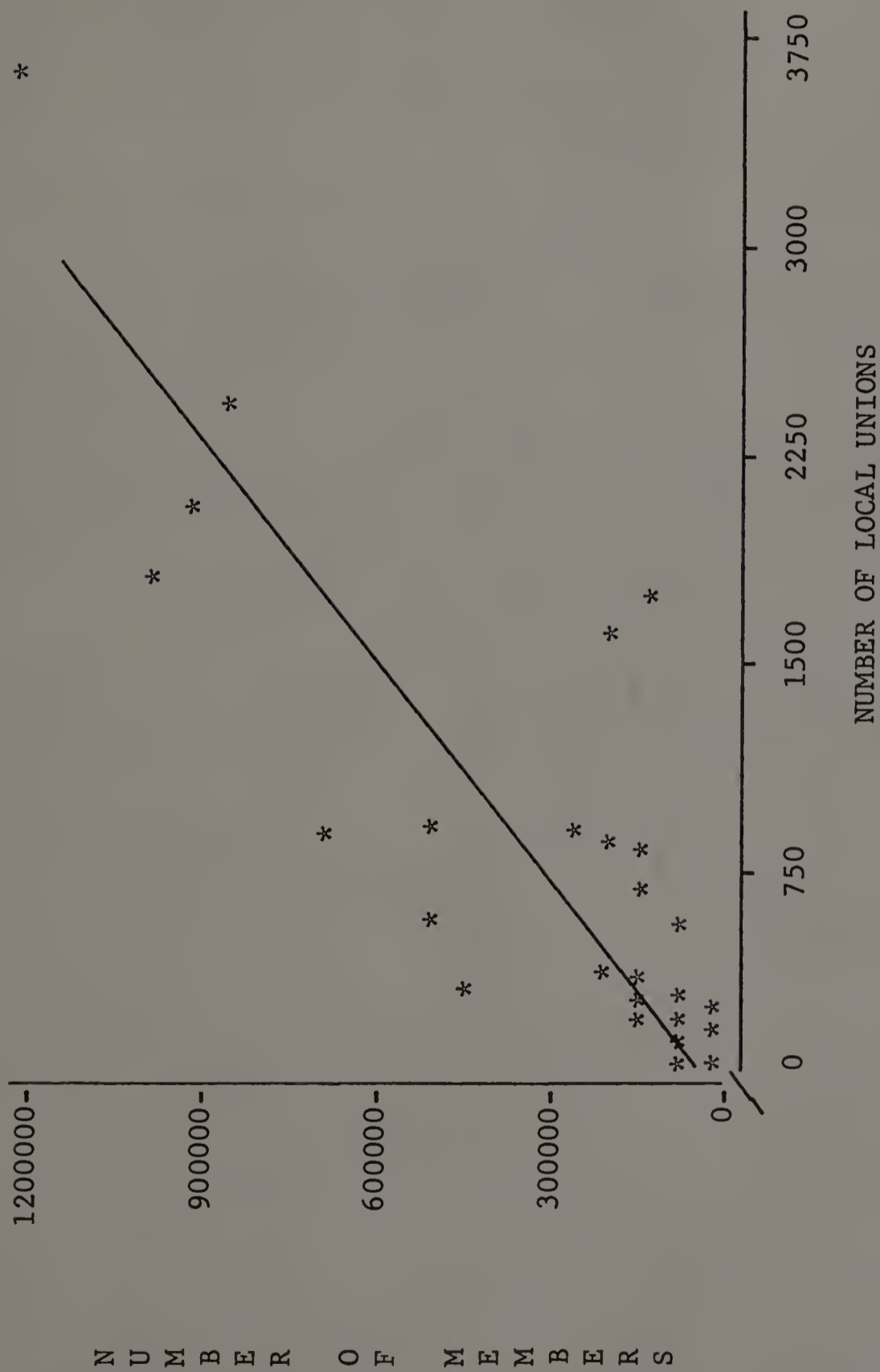


FIGURE 4-17 Scatter Diagram of Organization Size and Structural Differentiation, 1972

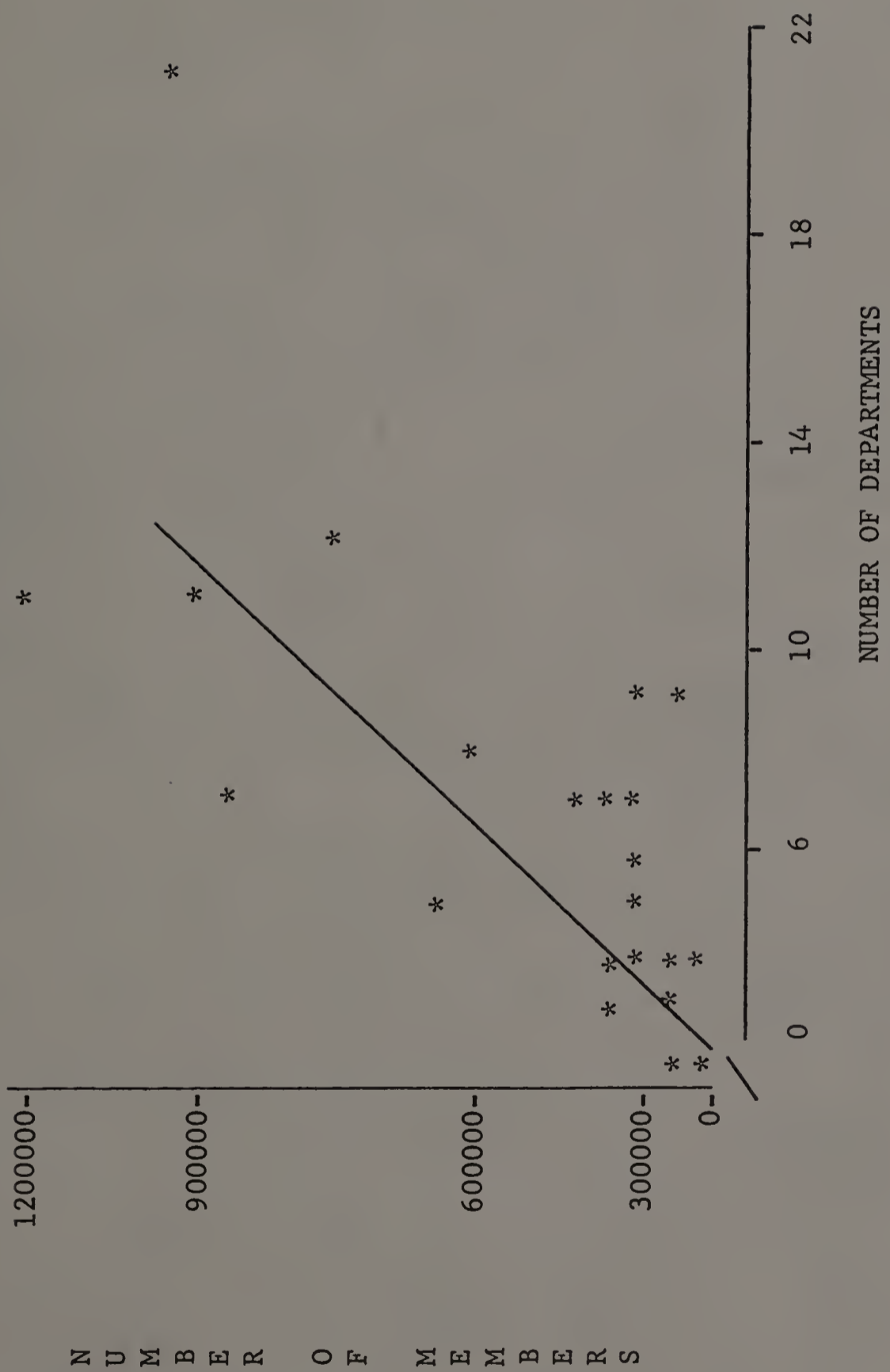


FIGURE 4-18 Scatter Diagram of Organization Size and Structural Differentiation, 1972



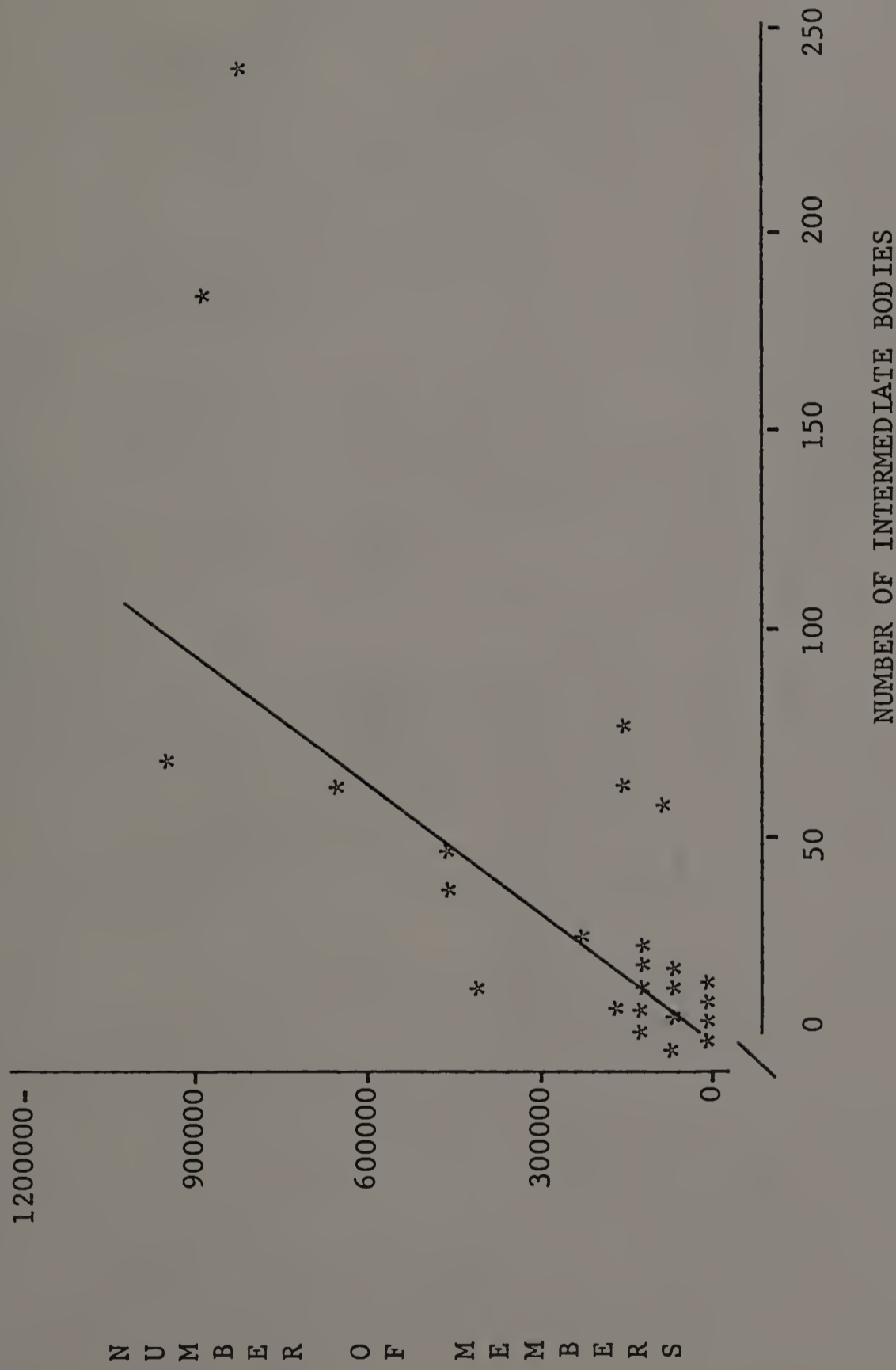


FIGURE 4-19 Scatter Diagram of Organization Size and Structural Differentiation, 1972

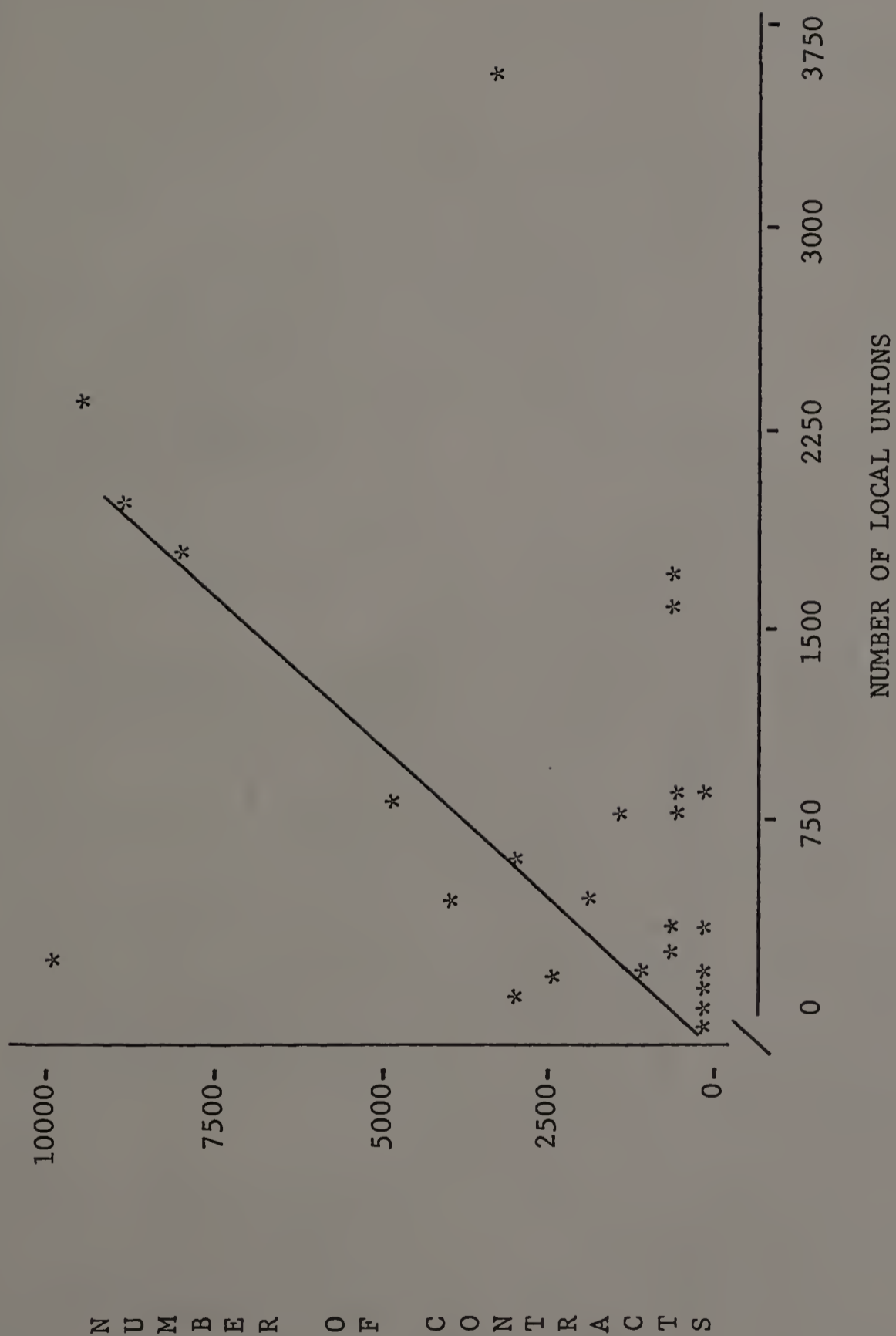


FIGURE 4-20 Scatter Diagram of Organization Size and Structural Differentiation, 1972

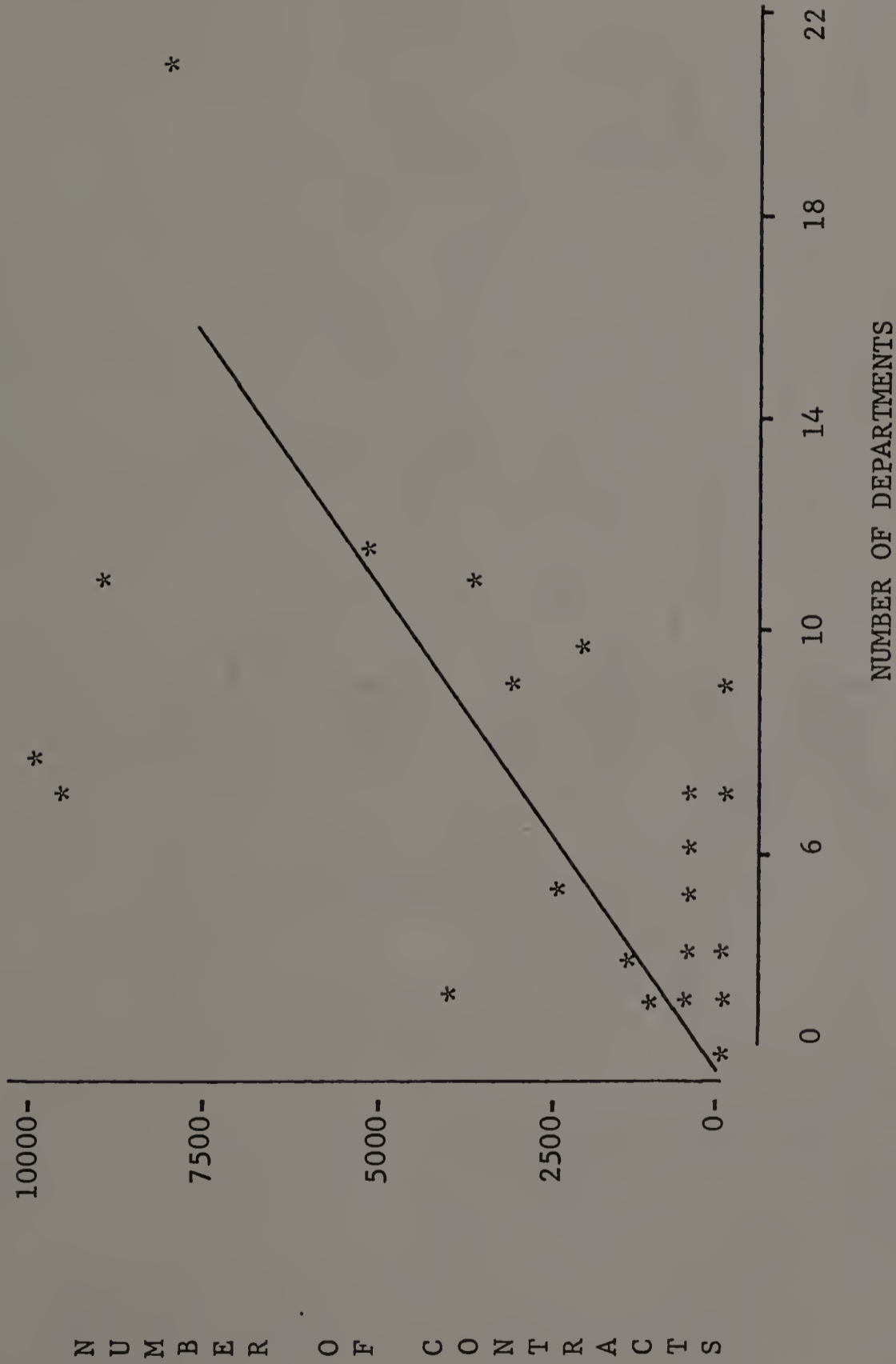


FIGURE 4-21 Scatter Diagram of Organization Size and Structural Differentiation, 1972

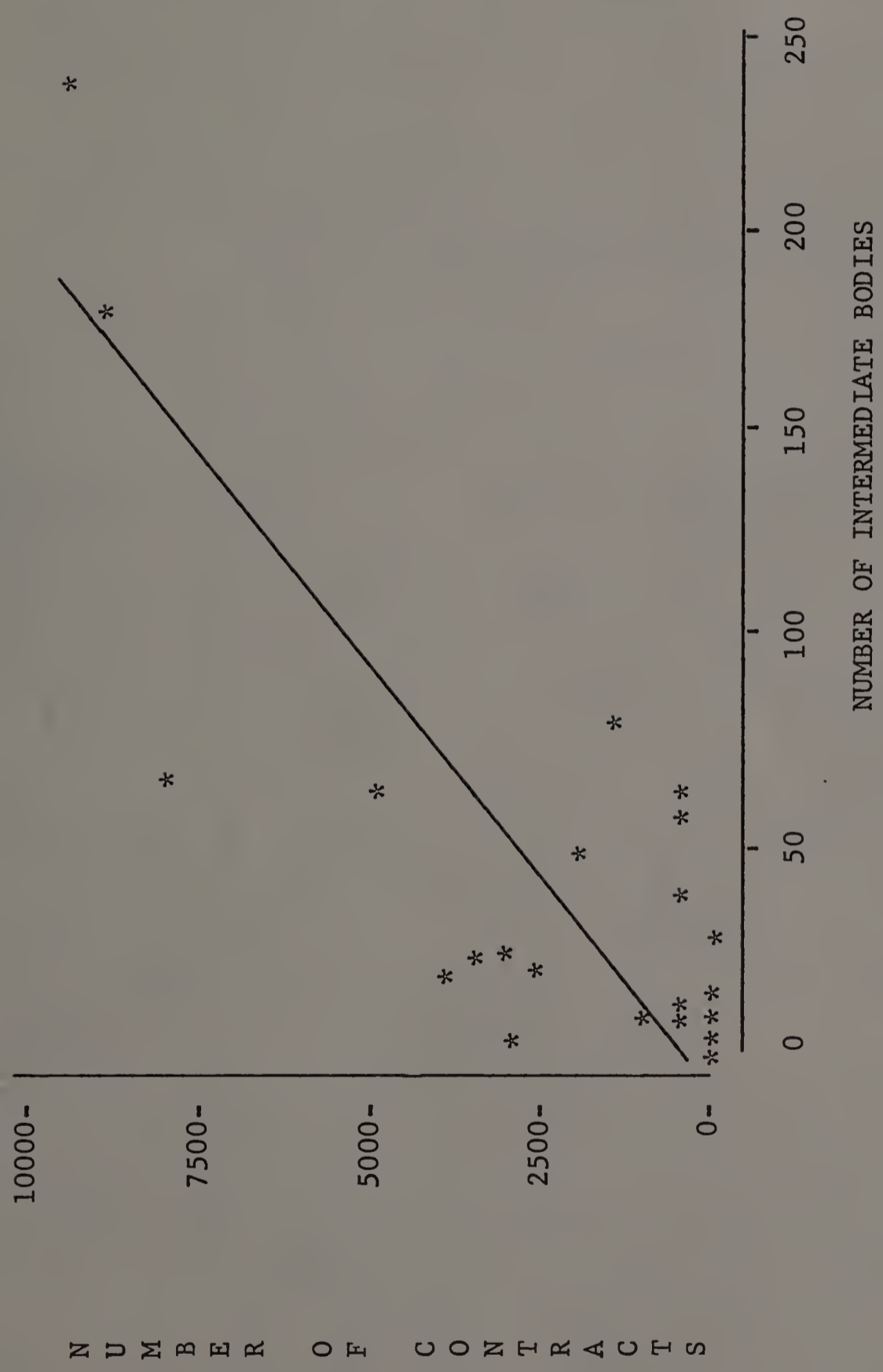


FIGURE 4-22 Scatter Diagram of Organization Size and Structural Differentiation, 1972





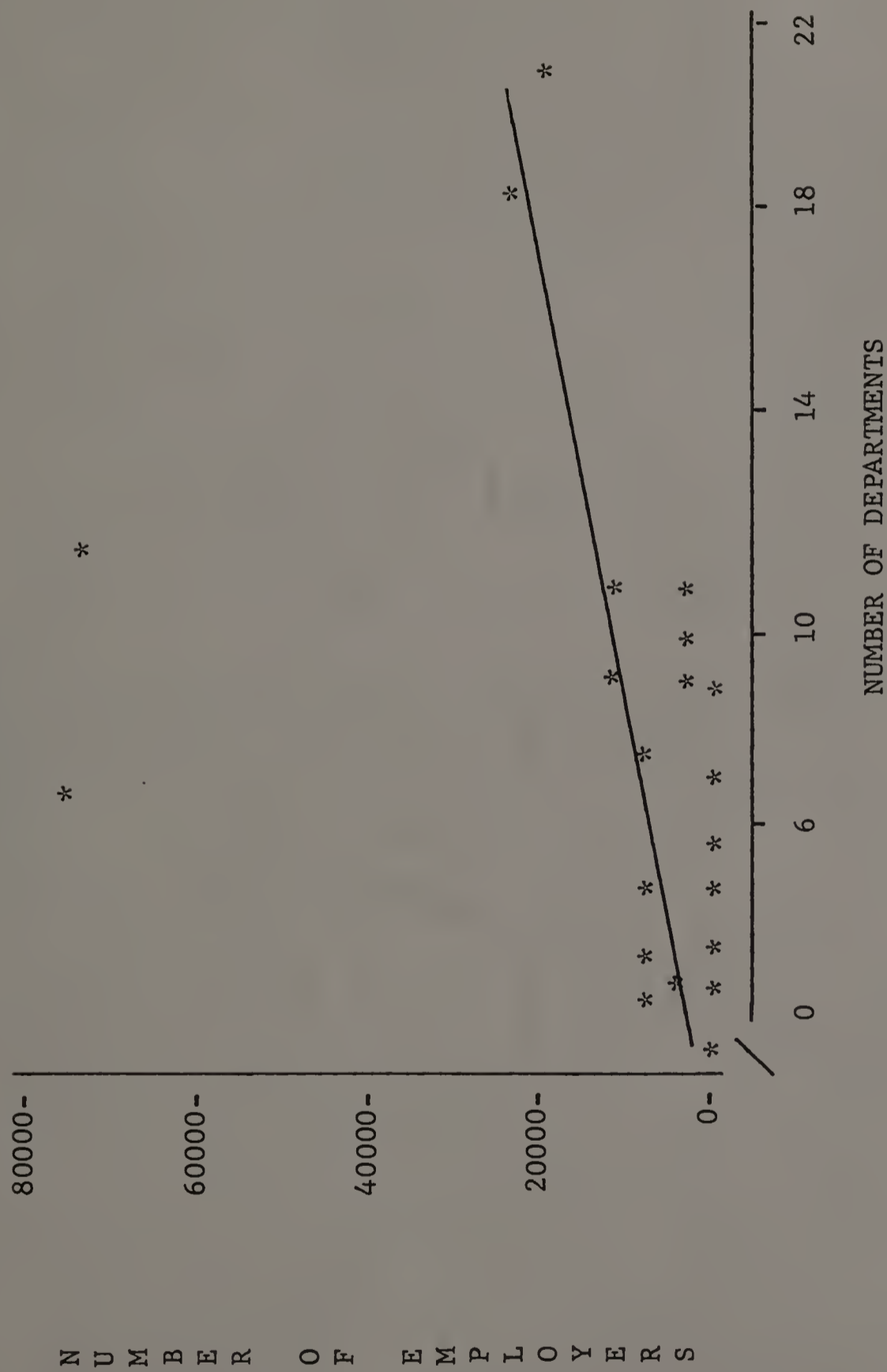


FIGURE 4-24 Scatter Diagram of Organization Size and Structural Differentiation, 1972



local size and number of members (.13), number of contracts (.25), and number of employers (.08). A close association occurred between number of contracts and number of employers (.62).

With regard to measures of structural differentiation, the number of locals was moderately related to the number of departments (.50) and highly associated with the number of intermediate bodies (.64). The analysis produced a low moderate relationship between number of departments and number of intermediate bodies (.31).

#### Organization Size and Occupational and Industrial Diversity

Correlations indicating a relationship between occupational diversity and number of members (.22) and number of contracts (.12) were considered weak. Moderate correlations were computed between industrial diversity and number of members and number of contracts (see Figures 4-26 and 4-27). Industrial diversity was moderately associated with occupational diversity (.31).

#### Organization Size and Complexity of Bargaining Process

In five of sixteen computations between measures of size and bargaining complexity, correlation analysis yielded values which exceeded the .05 acceptance level of .355. Moderate relationships were obtained from correlations between the contracts/locals ratio and average local size (see Figure 4-28), number of contracts and the contracts/locals ratio (see Figure 4-29), number of contracts and the employers/locals ratio (see Figure 4-30), and number of



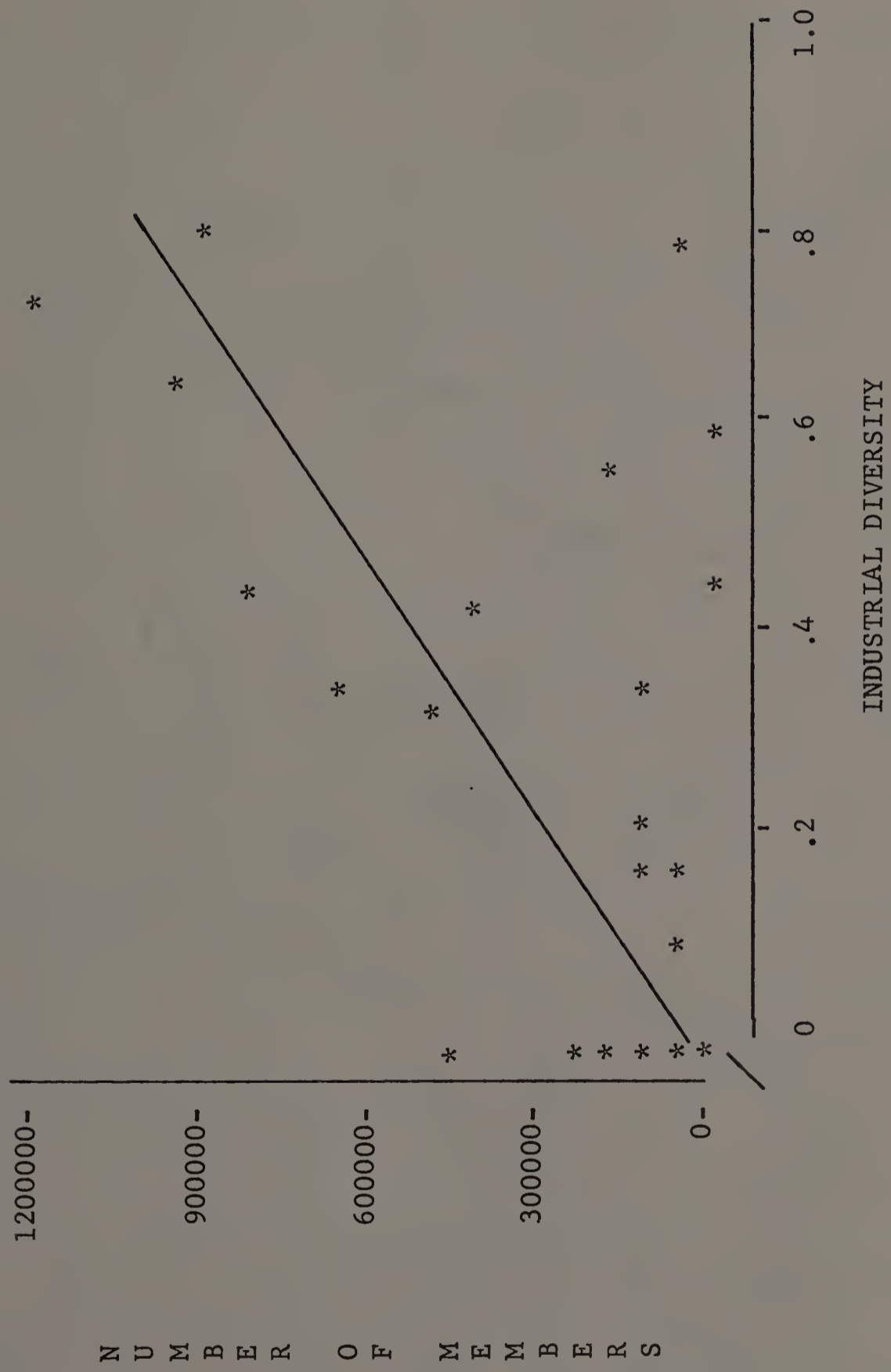


FIGURE 4-26 Scatter Diagram of Organization Size and Industrial Diversity, 1972

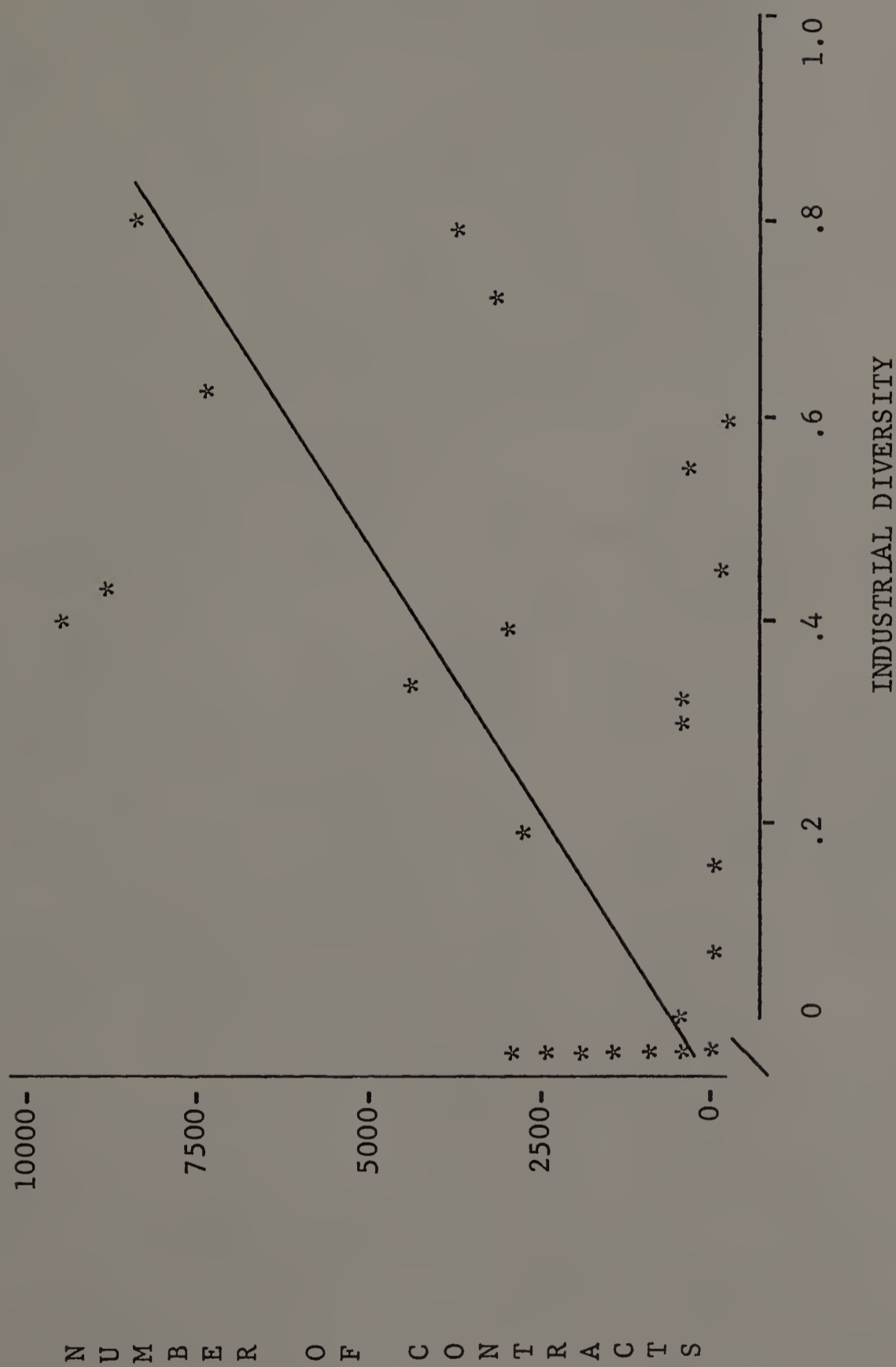


FIGURE 4-27 Scatter Diagram of Organization Size and Industrial Diversity, 1972

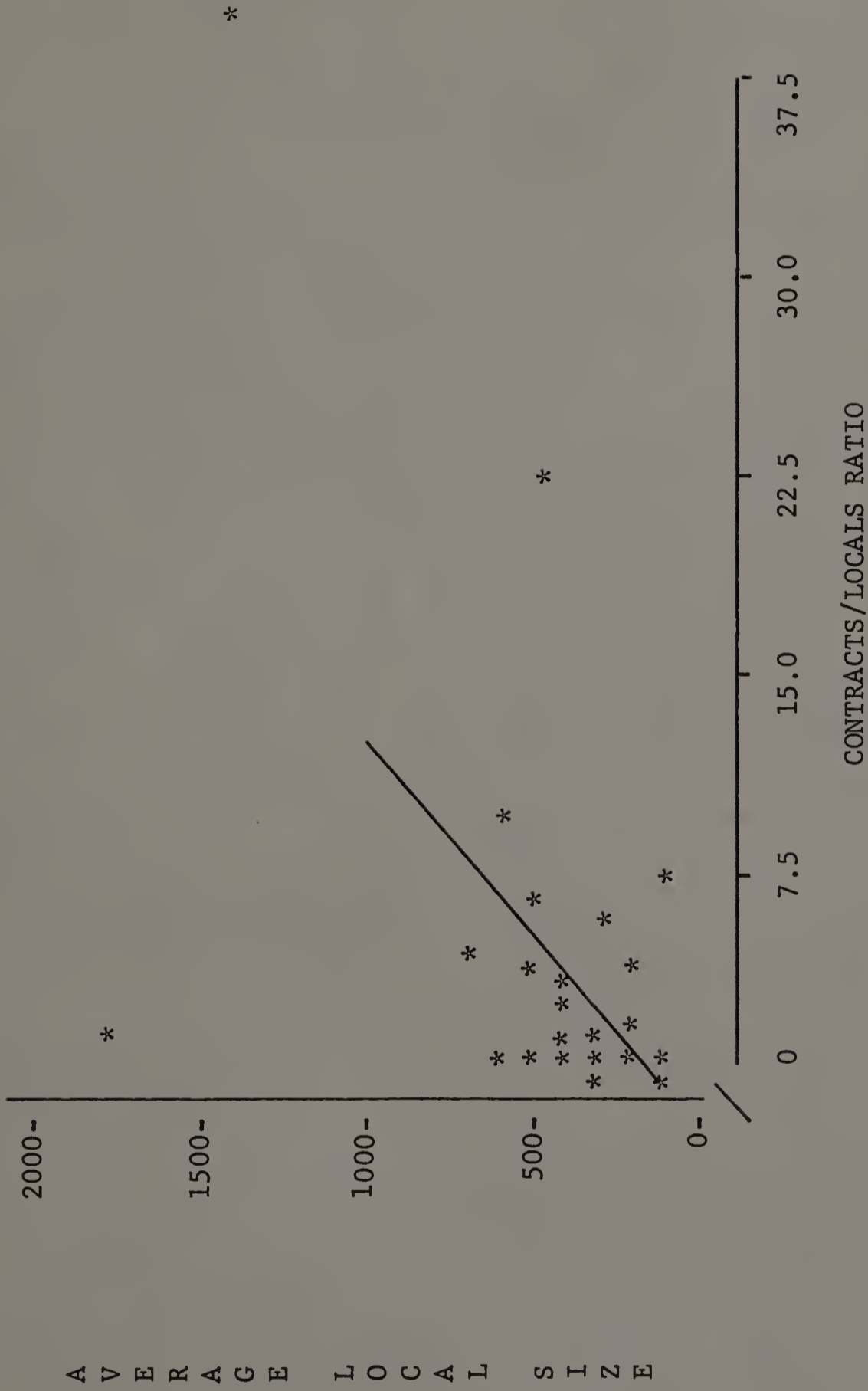


FIGURE 4-28 Scatter Diagram of Organization Size and Bargaining Complexity, 1972

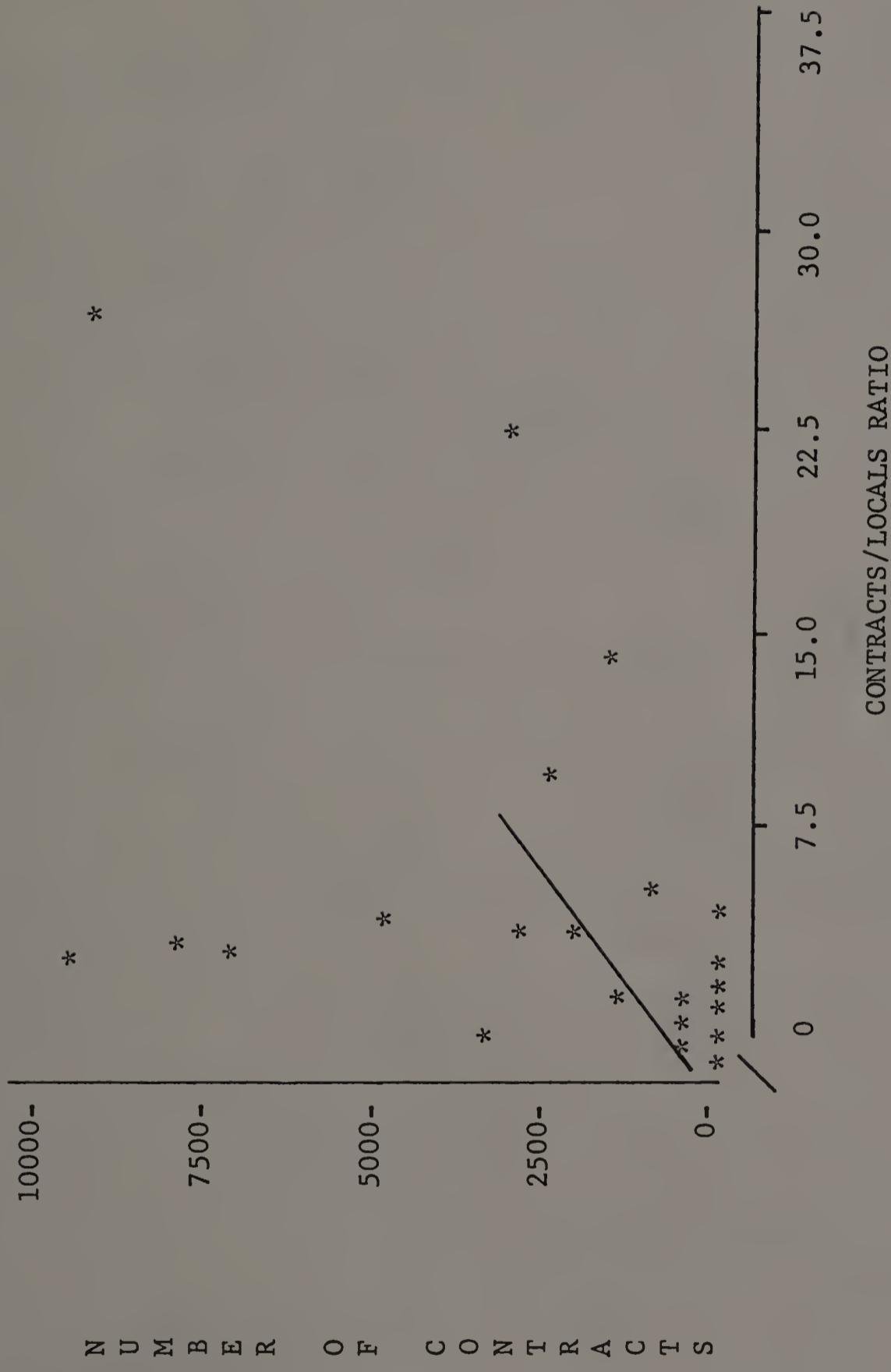


FIGURE 4-29 Scatter Diagram of Organization Size and Bargaining Complexity, 1972





employers and the contracts/employers ratio (see Figure 4-31). With the exception of the last moderate relationship, the associations were positive. A very close association resulted from the correlation between number of employers and the employers/locals ratio (see Figure 4-32).

Only two significant intercorrelations occurred among the bargaining complexity measures. A moderate positive connection (.54) existed between the contracts/locals ratio and the employers/locals ratio. The association between the contracts/employers ratio and the employers/locals ratio was moderate and negative (-.46).

Significant moderate to high relationships were obtained between measures of organization size and complexity in 16 of 36 computations. Following the decision rule established earlier in the chapter of accepting only those general hypotheses in which at least one half of the working hypotheses yielded significant associations, general hypothesis three cannot be accepted.

#### Discussion of Results--General Hypothesis Three

Despite a number of statistically significant associations, the findings concerning this hypothesis were inconclusive. Larger unions didn't consistently display a tendency to be more complex. Associations between size and complexity indicators appeared to be limited to a few factors. The evidence revealed a moderate to high

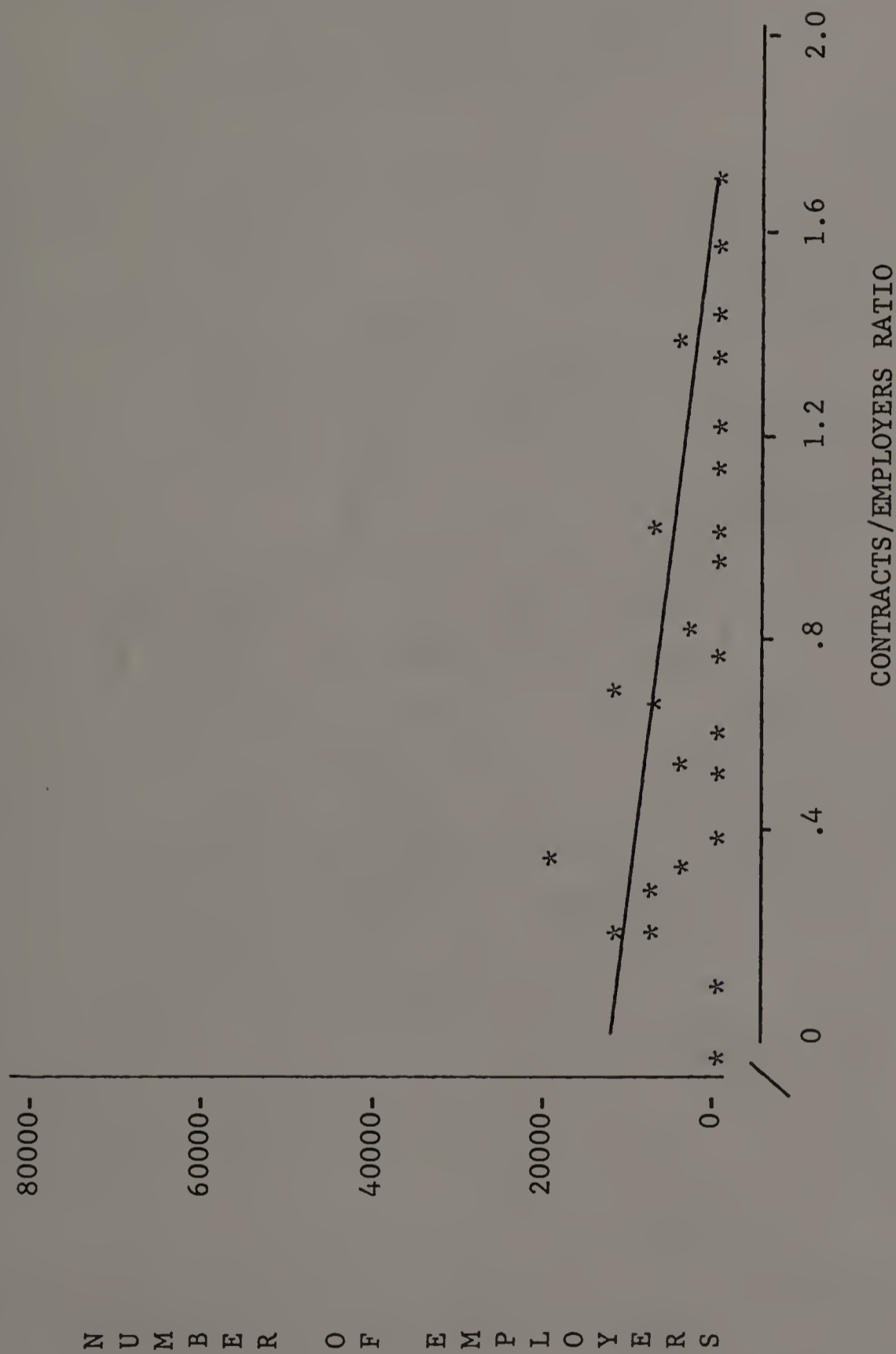


FIGURE 4-31 Scatter Diagram of Organization Size and Bargaining Complexity, 1972



relationship between size and structural differentiation and very weak to non-existent associations between size and the other groups of complexity measures (industrial and occupational diversity and collective bargaining complexity). Accordingly, these findings raise doubts about the proposition that large organizations are more complex than small organizations.

One inference of these findings is that structural complexity may be implied from knowledge of organization size. This study partially supports previous evidence (refer to Chapter II) which revealed a strong positive relationship between size and structural configuration and differentiation. However, a word of caution accompanies this evaluation. While size indicators were similar among the studies (including this one), the measures of structural complexity varied in number and character. Comparisons of results across different types of organizations and definitions of complexity become ambiguous and conclusions can only be very tentative. When standardized measures of the organizational attributes under study become available, firmer conclusions will undoubtedly be drawn.

No clear implications can be formulated from the correlations between union size and complexity of task and industrial environments. Of eight computations involving size indicators and measures of occupational and industrial diversity, only two approached significance. Apparently, larger unions (measured by members and



contracts) engage in collective bargaining activities in a greater number of industries and members are more equally distributed among these industries. However, there is an important limiting factor which minimizes the significance of this association. The relationship between industrial diversity and occupational diversity was not statistically significant. It would seem that if a union organized workers in many industries, it necessarily would have drawn members from a number of major occupational groups. On the other hand, even if a union had an occupationally diverse membership, the overwhelming majority of members might be concentrated in only one major occupation.

With regard to the relationships between size and the complexity-collective bargaining activity measures, the results were inconsistent and contradictory. An assumption underlying the hypothesis was that greater activity coordination would be associated with smaller contracts/locals and contracts/employers ratios. Smaller ratios would indicate that two or more locals were coordinating their bargaining efforts.

Significant positive associations were obtained between size indicators (average local size and number of contracts) and the contracts/locals ratio. This would suggest that unions with larger locals and a greater number of contracts may experience less difficulty in coordinating contract negotiations. The data analysis produced negative correlation coefficients between the contracts/

employers ratio and size measures. Only one correlational value (between number of employers and the contracts/employers ratio) was statistically significant. This relationship would mean that unions which deal with a greater number of employers experience greater difficulty in coordinating bargaining activities. Apparently, these two activity ratios are different indicators of collective bargaining complexity since their connections with union size are in opposite directions and they are uncorrelated.

To further complicate the interpretation of these results, positive connections were obtained between size indicators and the employers/locals ratio. Two associations were above the .01 level of significance. The higher this complexity-activity ratio, the greater the degree of activity coordination which may be required. For example, a group of five locals may coordinate their bargaining with 100 employers. These unions would have to obtain considerable information from as many as 100 different groups of employees and work sites in order to develop a strong bargaining program. This may create a complex information gathering and exchange system. According to the results, larger unions apparently must contend with greater bargaining activity coordination than smaller unions.

#### General Hypothesis Four

The interaction effect of complexity with size will decrease the relative size of the administrative component as organization size increases.

This hypothesis was tested using the following regression model:

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_1X_2 + E$$

where the values represent

Y = relative administrative size

B's = the coefficients

X<sub>1</sub> = union size (number of members)

X<sub>2</sub> = complexity (number of locals)

X<sub>1</sub>X<sub>2</sub> = interaction of size and complexity

E = residuals

The analysis included only those size and complexity variables which were significantly related to one another or to a measure of relative administrative size. Using various combinations of these factors, the above equation was computed several times. Only one interaction term approached statistical significance (see Table 4-10 and Figure 4-33).

As independent variables, the number of members and the number of locals were negatively associated with the central headquarters managerial ratio. The combined or interaction effect of these two factors on the managerial ratio produced a steep downward sloping curve which rapidly leveled (became horizontal) off at a managerial ratio of .000025. Consequently, the interactive influence of these two variables on the managerial ratio was very similar to their independent effects.



TABLE 4-10

MULTIPLE REGRESSION AND CORRELATION OF MANAGERIAL RATIO AT  
CENTRAL HEADQUARTERS ORGANIZATION ON INTERACTION OF SIZE AND COMPLEXITY, 1972

N = 30

Independent Variable	t Statistic	F Statistic	Simple Correlation	Multiple Correlation
Number of Members	3.79 <sup>b</sup>	10.90 <sup>b</sup>	-.56 <sup>b</sup>	.79 <sup>b</sup>
Number of Locals	4.07 <sup>b</sup>		-.57 <sup>b</sup>	
Interaction of Size and Complexity	3.32 <sup>b</sup>		-.37 <sup>a</sup>	
Durbin-Watson	1.29			
t <sub>.01</sub> = 2.76	F <sub>.01</sub> = 4.64	r <sub>.01</sub> = .456	R <sub>.01</sub> = .546	
t <sub>.05</sub> = 2.04	F <sub>.05</sub> = 2.98	r <sub>.05</sub> = .355	R <sub>.05</sub> = .454	

<sup>a</sup>Significant at the .05 level

<sup>b</sup>Significant at the .01 level

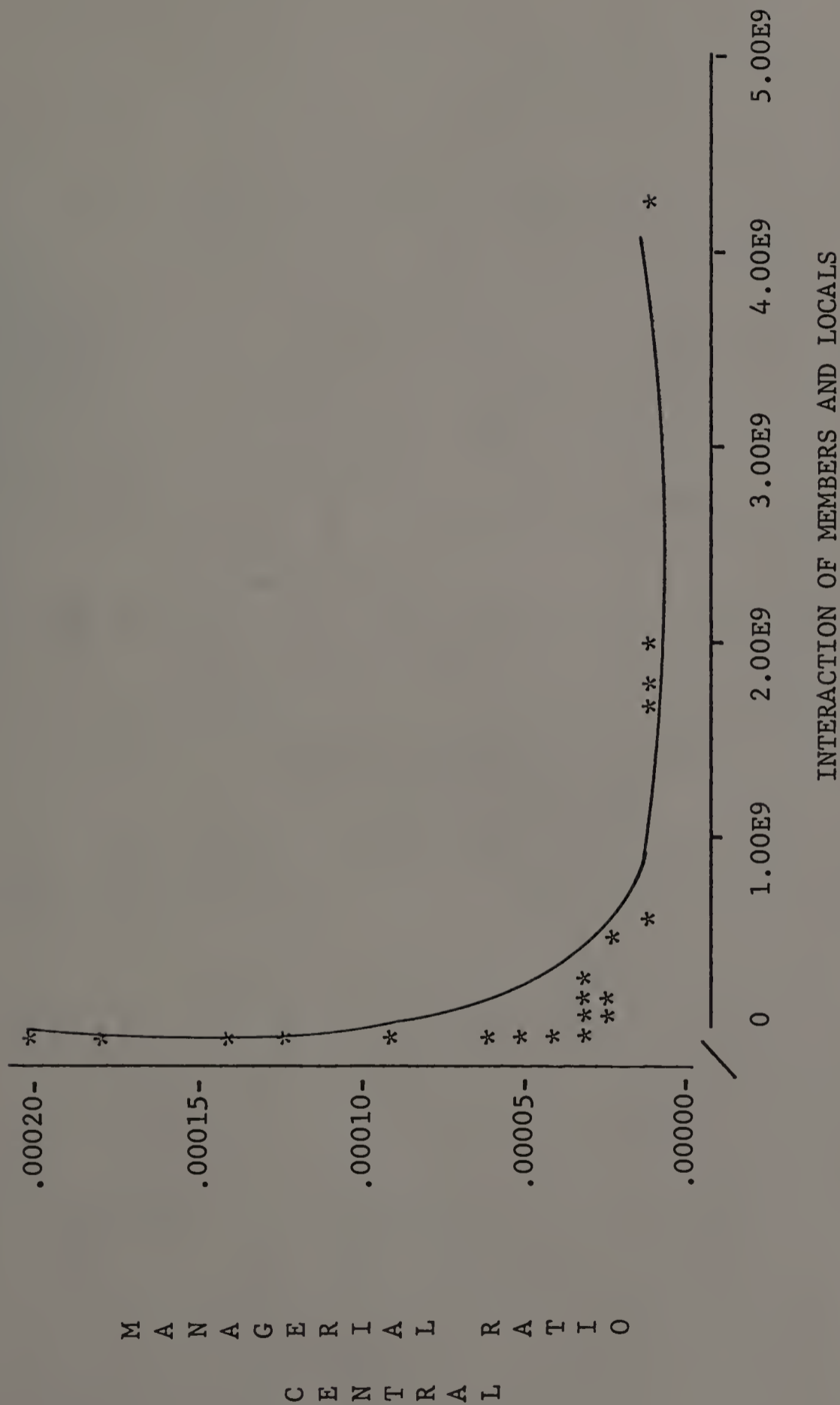


FIGURE 4-33 Scatter Diagram of Managerial Ratio at the Central Headquarters Organization and Interaction of Size and Complexity, 1972



The above finding supports the general hypothesis, but all other interaction equations yielded insignificant values. Therefore, general hypothesis four cannot be accepted.

#### Discussion of Results--General Hypothesis Four

Three interpretations can be advanced for the findings (or lack of) concerning the interaction hypothesis. First, since some of the size and complexity definitions and one size-complexity interaction measure were similarly related to a limited number of measures of relative administrative size, a number of the size and complexity indicators may be measuring the same phenomenon, union jurisdiction. The jurisdiction (area of organization) of a union may consist of an entire industry, a skill or trade, a set of occupations, or a geographic area. A single measure of jurisdiction, rather than several measures of size and complexity, may explain to a greater extent why some unions have larger proportions of administrative employees.

A second interpretation suggests that most unions utilize similar mechanisms of coordination regardless of size and degree of complexity. At the local union level, coordination may be achieved through personal means, influence and persuasion. Organizers and representatives, operating from regional offices, may bring about coordination through periodic interventions into local conflicts and issues and applying their expert knowledge. The international

union president promotes coordination via the administrative hierarchy and formal communication channels.

As a third explanation of these results, there may be other independent variables and sets of factors which form relationships with definitions of relative administrative size. Some of these variables may intervene between the independent and dependent variables of this study. Two behavioral factors might be the leadership style exhibited by the union's chief executive officer and the degree of apathy or lack of participation displayed by rank and file members. A dynamic and aggressive union president may surround himself with many professional experts and internal political allies and use this power base to maintain his position in the union. A high degree of membership apathy may encourage the development of a larger administrative component since fewer checks would be exerted on the power and authority of union officials.

Another explanatory variable may be the differences in democratic procedures within unions. A union which elects its regional directors from their respective regions may contain larger regional administrative components. An elected regional director may have closer ties to his constituents and therefore attempt to more adequately meet their needs. He could accomplish this through employing a greater number of representatives and organizers.

### Chapter Summary

In this chapter, several sets of working hypotheses were statistically evaluated using regression and correlation analysis. These working statements represented four general hypotheses. Significant correlation coefficients had to be obtained from tests of at least half of the working statements in order to accept a general hypothesis. Following this decision rule, none of the general hypothetical relationships could be accepted. However, a number of the specific (working) hypotheses were supported. The following comprise a sample of these relationships:

(1) The relative size of the managerial component decreases (rapidly and then leveled off) as the number of members, contracts, and employers increased.

(2) The relative size of the managerial component decreased (rapidly and then leveled off) as the number of locals, intermediate bodies, and departments increased.

(3) The relative size of the managerial component increased proportionately as the collective bargaining process became more centralized.

(4) The number of locals, intermediate bodies, and departments increased proportionately with the number of members, contracts, and employers.

(5) Industrial diversity increased proportionately with the number of members and contracts.

(6) Two measures of collective bargaining complexity (contracts/locals ratio and employers/locals ratio) increased proportionately with average local size, number of contracts, and number of employers; whereas, a third measure (contracts/employers ratio) decreased proportionately as the number of contracts and employers increased.

## FOOTNOTES TO CHAPTER IV

<sup>1</sup>Jack Barbash, American Unions: Structure, Government, and Politics (New York: Random House, 1967), pp. 7-25.

<sup>2</sup>Leona E. Tyler, The Psychology of Human Differences (New York: Appleton-Century-Crofts, 1965), p. 44.



## CHAPTER V

## SUMMARY AND CONCLUSIONS

The research question of this study was to determine how the variables of organization size and complexity were linked to the relative size of the administrative component in a multi-level organizational system, national and international labor unions.

To answer this question, a sample of 30 labor unions with 10,000 members or more was surveyed. Union presidents, secretary-treasurers, research and education directors were asked a series of questions designed to elicit information concerning union size, structural differentiation, occupational and industrial distribution of the membership, and the complexity of the collective bargaining process. The data gathered were continuous in form which permitted the use of regression and correlation analysis for investigating the relationships among the variables.

This final chapter of the study will (1) summarize the results which were presented in the preceding chapter; (2) seek to identify general implications of the study; (3) mention the study's limitations; and (4) enumerate possible future research projects on the structure and complexity of labor unions and other organizations.

Results Summary

From an analysis of the literature bearing on the research question, four general hypotheses were formulated for testing. A

number of operational definitions of organization size and complexity and relative administrative size were developed and used to enumerate several working hypotheses for each general hypothesis. Only the general hypotheses will be restated in summarizing the results.

#### General Hypothesis One

The relative size of the administrative component decreases (at a constant rate) as the size of the organization increases.

The dependent variable in this hypothesis and the second and fourth hypotheses was decomposed according to organization level (central headquarters and regional office) and administrative category (managers and administrators, professional staff experts, organizers and representatives, and clerical workers). Union size was measured by the number of members, average local membership, number of labor agreements, and number of employers dealt with.

No association was uncovered between the heterogeneous (all administrative groups) measure of relative administrative size and union size. However, one administrative group ratio (managers and administrators) was significantly linked to the number of members, labor agreements, and employers. In all three cases, the relationship was negative and formed a downward sloping curve which eventually leveled off.

The above findings were not sufficient for accepting the general hypothesis. Apparently, there is little or no relationship between union size and the relative size of union administrative components.

### General Hypothesis Two

The relative size of the administrative component increases (at a constant rate) as organization complexity increases.

Organization complexity can be defined in terms of an organization's internal differentiation and the variability and heterogeneity of its task and economic environment. Number of local unions, intermediate bodies, and departments at the central headquarters provided measures of internal (structural) differentiation. Each of these measures was significantly related to the managerial ratio. No other measure of relative administrative size was associated with structural complexity.

Two sets of factors were used to measure the complexity of unions' task and economic environments. The first set included measures of the number of occupations and industries in which members worked and the distribution of members among these occupations and industries. No significant associations were found between any of the administrative ratios and these two measures.

The second set of indicators contained measures of the complexity of a major union activity (task), collective bargaining. Three bargaining-activity ratios (contracts/locals, contracts/employers, and employers/locals) and a bargaining centrality index were used in testing this hypothesis. The data analysis produced only one significant relationship. A strong positive association existed between the managerial ratio (regional and combined regional and central headquarters) and the bargaining centrality index.



With only a few significant relationships occurring between measures of organization complexity and relative administrative size, there was insufficient basis for accepting the general hypothesis. There apparently is no connection between the complexity of unions and the relative size of union administrative components.

### General Hypothesis Three

As the complexity of the organization increases, the size of the organization will increase at a proportionate rate.

Several significant relationships were obtained between measures of organization size and complexity. The number of members, contracts, and employers were closely associated (positive correlations) with the number of local unions, intermediate bodies, and departments. Weak to moderate relationships existed between organization size and measures of occupational and industrial diversity (uniformity). Five significant correlation values occurred between indicators of size and bargaining complexity. However, the relationships were mixed. Three associations indicated that larger unions may have developed more complex bargaining procedures and two relationships indicated that larger unions may have been able to simplify contract bargaining procedures.

Despite these findings, less than half of the computations produced significant correlation values between measures of size and complexity. Accordingly, the general hypothesis was not accepted. There appears to be little or no relationship between union size and complexity.

#### General Hypothesis Four

The interaction effect of complexity with size will decrease the relative size of the administrative component as organization size increases.

Various combinations of size and complexity indicators were inserted into an interaction equation to test this hypothesis. Only one equation yielded a significant interaction term. The combined effect of the number of locals and the number of members on the central headquarters managerial ratio produced a rapidly declining curve which flattened out at a relatively low managerial ratio. This finding supported the general hypothesis. However, because of the lack of other supportive evidence, the hypothesis was not accepted.

#### General Implications of the Study

Several substantive and methodological implications can be drawn from the data analysis contained in the previous chapter. The substantive issues will be discussed in this section and the methodological issues (limitations) in the following section.

There was evidence that some of the working hypotheses may be correct statements; however, the preponderance of evidence was insufficient to warrant acceptance of any of the general hypotheses. Several reasons can be advanced to explain this lack of empirical support: (1) a number of other factors may have direct or mediating influences on the relative proportion of administrative personnel; (2) after a union's structure becomes established, it may not change



significantly even though the union doubles or triples in size; (3) even though union jurisdictions vary, unions are similar in structure and primary functions and carry out similar activities; (4) within many unions, the bulk of administrative employees may be attached to the local union rather than located at the regional office or the central headquarters; (5) union leaders may lack a management (administrative) orientation and place little emphasis on developing formal administrative machinery; (6) because of the political aspects of union administration, unions may be slow to adjust to environmental disturbances (automation, the conglomerate, etc.); and (7) the representative aspects of unions may be more important than administrative rationality.

#### Other Influencing Factors

The presence and operation of other direct, interacting or intervening variables may partially explain the lack of conclusive supportive evidence. For example, it may not be large size "as such that disposes to bureaucracy; large size may be important only because it generates other social forces which, in their turn, generate bureaucratic patterns."<sup>1</sup> Three sets of factors may be operating to complicate the relationships hypothesized in this study.

The degree of local union autonomy and the locus and scope of decision-making within the international union comprise one set of conditions. Labor unions can be viewed as political organizations which utilize democratic procedures in determining their leaders and

approving general policies; consequently, authority is vested in the rank and file membership. In most local unions, members and officers are engaged in conducting many day-to-day and longer range activities of the union. With many activities being performed and decisions being made at the local level, there may be less need for an elaborate administrative component at the regional office and the central headquarters levels. Accordingly, two alternative hypotheses might be as follows: (1) The relative size of the administrative component (at the regional office and central headquarters) decreases as local union autonomy increases. (2) The relative size of the administrative component (at the regional office and central headquarters) decreases as the number and scope of decisions made at the local union level increases.

Another set of intervening factors revolve around behavioral patterns of union members and leaders. The degree of rank and file involvement and participation in union activities may be significantly related to relative administrative size within unions. A proportionately large administrative component may develop in unions where members display a very apathetic orientation toward union affairs. Where a relatively large number of members are actively involved in union activities, the administrative component may be considerably smaller.

The leadership style displayed by the top officials (President and Secretary-Treasurer) of the international union may also be

connected to relative administrative size. Within two unions of equal size, one may contain a significantly larger administrative staff because the President displays a very aggressive and dynamic approach to solving problems and dealing with employers. A President who continually attempts to increase and diversify the membership, engage in external interests, and significantly improve wages, hours, and working conditions may retain a greater number of administrative employees than a more reserved President who may be more status quo conscious.

Relative administrative size may also vary according to the uniformity or diversity of major union interests. Unions which are almost entirely concerned with improving wages, hours, and working conditions may not require as large an administrative apparatus as unions which are pursuing these and many other (external) interests (community affairs, health care, consumer financing, urban transportation, foreign trade, etc.).

#### Unchanging Character of Union Structure

As an organization expands and diversifies its activities, it may further differentiate its structure both vertically and horizontally. These changes may bring about improved coordination of activities, people, and units. Within the labor movement, particularly craft unions, structural forms may not change significantly with membership expansion (or decline) because members are employed in the same occupation, union leaders become entrenched in their



positions, bargaining strategies and tactics do not change, and many contract provisions remain intact for relatively long periods of time. If relative administrative size is more closely related to structural features, fluctuations in membership size will not effect the relative number of administrative personnel.

#### Similarity of Union Structures and Activities

Union jurisdictions vary according to geographic area, occupation, industry, employer, and work location. The basis of jurisdiction partially determines the general structure of a union. Unions can be classified into three structural types: craft, industrial, and general (mixed).<sup>2</sup> Despite differences in jurisdiction and structure for collective bargaining representation, most unions have developed similar administrative structures (central headquarters, regional office, and local union hall) and are engaged in similar activities (collective bargaining, organizing new members, political education and legislative action). These similarities may explain the lack of (systematic) variance among the union administrative ratios investigated in this research.

#### Local Union Administration

Many administrative activities are performed within the local union by elected officials, full-time administrative employees, and members. Locals with several hundred members probably will have sufficient funds to support one or more full-time officers and administrators. Larger locals (1000 or more members) may even have



several full-time staff members. A large local of one of the unions included in this study actually had an administrative component larger than its parent international union. In addition to and possibly interacting with local size, the degree of local union autonomy may be associated with relative administrative size at the local as well as regional and central office levels. As an alternative hypothesis, the greater the degree of local autonomy, the larger the proportion of administrative employees at the local level and the smaller the proportion of administrators at the regional and central offices.

#### Lack of Administrative Orientation

In recent years, applications of many innovative management techniques have been developed and adopted by business firms, government agencies, educational institutions, hospitals and other non-profit organizations. Many of these applications consist of sophisticated planning models and control systems. It would be worth asking whether unions could benefit from utilizing more advanced (and more formal) administrative techniques. There is little evidence available to construct an answer to this inquiry. However, one approach would be to determine to what extent unions have utilized computers and information technology. In a recent book (The Impact of Computers on Collective Bargaining),<sup>3</sup> descriptions of a few computer collective bargaining applications were presented. These applications consisted of profiles of organizing drives, computerized contract enforcement

procedures, computer hiring of dock workers, a model of health and welfare fund financial behavior, and computerized industrial contract analyses. Aside from these relatively sophisticated computer applications, few unions use computers in collective bargaining or for expediting internal administrative tasks.<sup>4</sup> There may be a substantial gap between what unions are doing and what could be accomplished with existing computer equipment and techniques. This may explain the lack of an association between the proportion of administrative personnel and union size and complexity.

#### Environmental Disturbances

Thompson has suggested that organizations may need to develop buffering and filtering devices in order to contend with environmental variances.<sup>5</sup> These devices may necessitate enlarging an organization's administrative component. Because of the relatively centralized decision-making process within business organizations, firms can probably respond to environmental fluctuations within a short period of time. Unions, on the other hand, probably respond more slowly, if at all, to external changes because authority to make adjustments is vested in the membership. This authority is exercised through various democratic procedures. In many instances, union members may be very reluctant to approve dues increases to finance the expansion of various administrative groups.

### Representation Versus Administration

An implication which encompasses the other results explanations concerns the relative importance of the administrative and representative aspects of union organization. As a representative organization, the union emphasizes member involvement, local unit autonomy, group (consensus) decision making, all channel communication networks, and membership control. Administrative rationality involves a hierarchy of full time administrative positions, centralized authority, a unified control system, vertical communications, individual decision making, and specialization. These two models of union organization may conflict at times within a union; however, they do exist and function concurrently. Accordingly, two alternate hypotheses might be as follows: (1) The relative size of the administrative component (at the regional office and central headquarters) decreases as more emphasis is placed on effective member representation and less emphasis is devoted to developing a rational administrative system. (2) The relative size of the administrative component (at the regional office and central headquarters) increases as more emphasis is placed on administrative rationality and less emphasis is placed on member representation.

### Limitations of the Study

Although there was an attempt to control which unions would participate in the study, a union's willingness to participate and its accessibility became the most important selection criteria for



inclusion in the sample. Consequently, it must be asserted that the sample was not randomly drawn and was not representative of all national and international unions with 10,000 members or more.

The size of the sample was another limiting factor. When sample sizes are small (under 30), the observations may not be normally distributed; a t distribution should therefore be used. As samples become larger (30 and over), the difference between the t and normal distributions diminishes and the normal distribution can be used.<sup>6</sup> A sample of 30 is obviously a borderline case; however, the observations were assumed to be normally distributed.

Other methodological limitations stem from the use of interview and survey research techniques. The use of a structured questionnaire and interview format does minimize the possibility of respondent's misinterpretation of the question posed, but due to differences in word meanings and terminology, correct (or adequate) responses may not be offered. Additionally, individuals in different union positions were interviewed. This may have produced some incorrect responses (or estimates) because the individual may not have been the most knowledgeable person to respond to a particular question.

Operational measurements of the independent and dependent variables may also have contributed to the lack of supportive evidence for the general hypotheses. Organization size and complexity and relative administrative size are multi-dimensional concepts. Accordingly, measures of each variable were developed and used. However, many of these operational definitions may not have adequately



reflected the characteristics of the general variables; the operational definitions were not valid indicators. For example, relative administrative size might have been more accurately measured by indications of the quantity and quality of union administrative problems.

A final limitation concerns the basic research strategy followed in the study. The comparative approach was utilized and consisted of a cross-sectional analysis of one type of organization. The analysis of data gathered at one point in time does not yield any indication of the time ordering of variables; therefore, no causal inferences or variable sequences can be determined. Only concurrent relationships become identifiable. For example, increases in organization size may precede other factors such as increases in structural differentiation. An association derived from a cross-sectional analysis would not reveal this lag relationship. A more appropriate research strategy would have been to gather data from several points in time and constructed a longitudinal analysis.

#### Future Research

Several questions are raised from this study which might be examined in future research. Utilizing various research techniques, the following research recommendations involve or are related to examinations of relative administrative size in labor unions.

In an earlier section of this chapter, several variables, not researched in this study, were identified as possible determinants or correlates of relative administrative size. Many of these factors

involve the local union. The present study could be replicated using a sample of local unions from one or several international unions. The same general dependent and independent variables would be examined, but operational definitions of these variables might be changed to reflect the characteristics of this level within the union hierarchy. An additional general independent factor to be investigated would be the degree of local union autonomy.

A longitudinal (case) study on the development of administration in two or more unions might be attempted in order to determine a causal sequence of variables affecting the relative size of the administrative component. A study of this nature would be helpful in identifying union growth patterns and developmental stages of administration. This study might focus on the ways in which administrative activities become formalized through programs, standardized procedures, and written reports. In addition, the extent to which unions have developed and used more formalized (and sophisticated) planning models, co-ordinating mechanisms, and control techniques could be researched.

Although the complexity and structure of collective bargaining was not consistently associated with relative administrative size, it would be fruitful to further explore this connection. Collective bargaining is a major activity of labor unions and it would appear that bargaining strategy and tactics as well as other collective bargaining activities have an impact on the development of union administration. An in-depth analysis of a few unions or a survey of

many unions could be conducted to identify the relationship(s) between the structure and complexity of collective bargaining and union administration.

Another avenue of research would be to use a contingency (open systems) view of administration to determine the extent to which industry, technological, legal, labor market, and political variables affect the administrative process within unions. Such a study would involve an attempt to identify those environmental characteristics which strongly affect the relative size of the administrative component.

Finally, several research projects (case studies) could be directed toward determining the impact of certain behavioral factors (leadership style, membership apathy, and leadership succession) on relative administrative size. This research program would involve measuring member participation and interest in local and international union activities and top union officials' concern for meeting the needs of members and preserving the organization.



## FOOTNOTES TO CHAPTER V

<sup>1</sup>Alvin W. Gouldner, "Metaphysical Pathos and the Theory of Bureaucracy," American Political Science Review, Vol. 49 (June, 1955), 500.

<sup>2</sup>Jack Barbash, American Unions: Structure, Government, and Politics (New York: Random House, 1967), pp. 10-14.

<sup>3</sup>Abraham J. Siegel (editor), The Impact of Computers on Collective Bargaining (Cambridge, Massachusetts: The M.I.T. Press, 1969).

<sup>4</sup>David A. Gray, "The Use of the Computer by National and International Labor Unions," (unpublished paper), p. 26.

<sup>5</sup>James D. Thompson, Organizations in Action (New York: McGraw-Hill Book Company, 1967).

<sup>6</sup>Taro Yamane, Statistics: An Introductory Analysis (New York: Harper & Row, Publishers, 1967), p. 417.



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APPENDIX A

FIELD QUESTIONNAIRE AND DATA SHEET



APPENDIX A

FIELD QUESTIONNAIRE AND DATA SHEET

Administrative Staff:

1. Number of full-time administrative employees at national or international headquarters in the following groups:

- (a) Managers and administrators (elected officials and administrative assistants of these officials) \_\_\_\_\_
- (b) Professionals (research, education, organizing directors, etc.) \_\_\_\_\_
- (c) Organizers and representatives \_\_\_\_\_
- (d) Clerical and secretarial \_\_\_\_\_
- (e) Others (specify) \_\_\_\_\_

2. Number of full-time administrative employees at regional or district offices in the following groups:

- (a) Managers and administrators \_\_\_\_\_
- (b) Professionals \_\_\_\_\_
- (c) Organizers and representatives \_\_\_\_\_
- (d) Clerical and secretarial \_\_\_\_\_
- (e) Others (specify) \_\_\_\_\_

3. Are the following functional departments located at the central headquarters? Number of administrative workers in these departments.

	Headquarters	#
(a) Education	_____	_____
(b) Publications	_____	_____
(c) Welfare, Health and Community	_____	_____
(d) Legal	_____	_____
(e) Social Insurance	_____	_____
(f) Legislative	_____	_____
(g) Organizing	_____	_____
(h) Public Relations	_____	_____
(i) Secretary-Treasurer	_____	_____
(j) Research	_____	_____
(k) Other (specify)	_____	_____
_____	_____	_____
_____	_____	_____

## APPENDIX A--continued

## Intermediate Bodies and Locals:

4. Number of regions or districts \_\_\_\_\_
5. Number of other intermediate bodies (local, state, trade, or employer councils) \_\_\_\_\_
6. Number of locals \_\_\_\_\_

## Elected or Appointed Administrative Employees:

7. Number of elected and appointed administrative employees at regional and national levels:

	<u>Regional</u>	<u>National</u>
(a) Elected	_____	_____
(b) Appointed	_____	_____

8. Regional elective procedures (regional director):

(a) Appointed	_____
(b) Elected at large	_____
(c) Elected in convention caucus	_____
(d) Elected by district or region	_____
(e) Elected by delegate body	_____

## Membership:

9. Annual average dues-paying membership count for 1970 \_\_\_\_\_
10. Occupational composition. Approximate percentage in each category:
- |                                             |       |
|---------------------------------------------|-------|
| (a) Technical                               | _____ |
| (b) Clerical                                | _____ |
| (c) Sales                                   | _____ |
| (d) Professional                            | _____ |
| (e) Craftsmen                               | _____ |
| (f) Service                                 | _____ |
| (g) Operatives (Production and maintenance) | _____ |
11. Industry composition of union membership. Approximate percentage in each group:

Per cent

- Manufacturing (durables)
- (a) Ordnance and accessories \_\_\_\_\_

## APPENDIX A--continued

- (b) Lumber and wood products \_\_\_\_\_
- (c) Furniture and fixtures \_\_\_\_\_
- (d) Stone, clay, glass, and concrete \_\_\_\_\_
- (e) Primary metal industries \_\_\_\_\_
- (f) Fabricated metal products \_\_\_\_\_
- (g) Machinery \_\_\_\_\_
- (h) Electrical machinery and supplies \_\_\_\_\_
- (i) Transportation equipment \_\_\_\_\_
- (j) Instrument and related products \_\_\_\_\_

## Manufacturing (nondurables)

- (a) Food and Kindred products \_\_\_\_\_
- (b) Tobacco \_\_\_\_\_
- (c) Textile \_\_\_\_\_
- (d) Apparel and other products \_\_\_\_\_
- (e) Paper and allied products \_\_\_\_\_
- (f) Petroleum \_\_\_\_\_
- (g) Printing \_\_\_\_\_
- (h) Rubber and plastics \_\_\_\_\_
- (i) Chemicals and allied products \_\_\_\_\_
- (j) Leather and leather products \_\_\_\_\_

## Government

- (a) Federal \_\_\_\_\_
- (b) State and local \_\_\_\_\_

## Collective Bargaining:

12. Number of basic collective bargaining agreements with employers \_\_\_\_\_
13. Number of different employers covered by collective bargaining agreements \_\_\_\_\_
14. Approximate percentage of contracts negotiated in each of the following bargaining procedures:

Per cent of  
Contracts

- (a) Contracts are negotiated almost entirely on an industry or national (multiemployer) basis. \_\_\_\_\_

## APPENDIX A--continued

- (b) Major sections of contracts are negotiated on an industry or national (multiemployer) basis with some provisions negotiated at the local union level. \_\_\_\_\_
- (c) Major sections of contracts are negotiated on a regional, district, or conference (multiemployer) basis with some provisions negotiated at the local union level. \_\_\_\_\_
- (d) Major sections of contracts are negotiated on a company-wide (single-employer) basis with some provisions negotiated at the local union level. \_\_\_\_\_
- (e) Contracts are negotiated primarily at the local union level with a few provisions being negotiated on a company-wide (single-employer) basis. \_\_\_\_\_
- (f) Contracts are negotiated entirely by each local union. \_\_\_\_\_



APPENDIX B

WORKING HYPOTHESES DERIVED FROM GENERAL HYPOTHESES

## APPENDIX B

## WORKING HYPOTHESES DERIVED FROM GENERAL HYPOTHESES

## Organization Size

Combined (heterogeneous) Administrative Ratios

(1) As the number of union members increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will decrease at a constant rate.

(2) As average local size (average membership) increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will decrease at a constant rate.

(3) As the number of collective bargaining agreements increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will decrease at a constant rate.

(4) As the number of employers covered by collective bargaining agreements increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will decrease at a constant rate.

(5) As the number of union members increases, the relative size of the administrative component (all administrative groups) at the central headquarters will decrease at a constant rate.

(6) As average local size (average membership) increases, the relative size of the administrative component (all administrative groups) at the central headquarters will decrease at a constant rate.

(7) As the number of collective bargaining agreements increases, the relative size of the administrative component (all administrative groups) at the central headquarters will decrease at a constant rate.

(8) As the number of employers covered by collective bargaining agreements increases, the relative size of the administrative component (all administrative groups) at the central headquarters will decrease at a constant rate.

(9) As the number of union members increases, the relative size of the administrative component (all administrative groups) at regional offices will decrease at a constant rate.

## APPENDIX B--continued

(10) As average local size (average membership) increases, the relative size of the administrative component (all administrative groups) at regional offices will decrease at a constant rate.

(11) As the number of collective bargaining agreements increases, the relative size of the administrative component (all administrative groups) at regional offices will decrease at a constant rate.

(12) As the number of employers covered by collective bargaining agreements increases, the relative size of the administrative component (all administrative groups) at regional offices will decrease at a constant rate.

Managerial Ratios

(1) As the number of union members increases, the relative size of the managerial component at central headquarters and regional offices will decrease at a constant rate.

(2) As average local size (average membership) increases, the relative size of the managerial component at central headquarters and regional offices will decrease at a constant rate.

(3) As the number of collective bargaining agreements increases, the relative size of the managerial component at central headquarters and regional offices will decrease at a constant rate.

(4) As the number of employers covered by collective bargaining agreements increases, the relative size of the managerial component at central headquarters and regional offices will decrease at a constant rate.

(5) As the number of union members increases, the relative size of the managerial component at the central headquarters will decrease at a constant rate.

(6) As average local size (average membership) increases, the relative size of the managerial component at the central headquarters will decrease at a constant rate.

(7) As the number of collective bargaining agreements increases, the relative size of the managerial component at the central headquarters will decrease at a constant rate.

## APPENDIX B--continued

(8) As the number of employers covered by collective bargaining agreements increases, the relative size of the managerial component at the central headquarters will decrease at a constant rate.

(9) As the number of union members increases, the relative size of the managerial component at regional offices will decrease at a constant rate.

(10) As average local size (average membership) increases, the relative size of the managerial ratio at regional offices will decrease at a constant rate.

(11) As the number of collective bargaining agreements increases, the relative size of the managerial component at regional offices will decrease at a constant rate.

(12) As the number of employers covered by collective bargaining agreements increases, the relative size of the managerial component at regional offices will decrease at a constant rate.

Professional Staff Ratios

(1) As the number of union members increases, the relative size of the professional staff component at central headquarters and regional offices will decrease at a constant rate.

(2) As average local size (average membership) increases, the relative size of the professional staff component at central headquarters and regional offices will decrease at a constant rate.

(3) As the number of collective bargaining agreements increases, the relative size of the professional staff component at central headquarters and regional offices will decrease at a constant rate.

(4) As the number of employers covered by collective bargaining agreements increases, the relative size of the professional staff component at central headquarters and regional offices will decrease at a constant rate.

(5) As the number of union members increases, the relative size of the professional staff component at the central headquarters will decrease at a constant rate.

(6) As average local size (average membership) increases, the relative size of the professional staff component at the central headquarters will decrease at a constant rate.



## APPENDIX B--continued

(7) As the number of collective bargaining agreements increases, the relative size of the professional staff component at the central headquarters will decrease at a constant rate.

(8) As the number of employers covered by collective bargaining agreements increases, the relative size of the professional staff component at the central headquarters will decrease at a constant rate.

(9) As the number of union members increases, the relative size of the professional staff component at regional offices will decrease at a constant rate.

(10) As average local size (average membership) increases, the relative size of the professional staff component at regional offices will decrease at a constant rate.

(11) As the number of collective bargaining agreements increases, the relative size of the professional staff component at regional offices will decrease at a constant rate.

(12) As the number of employers covered by collective bargaining agreements increases, the relative size of the professional staff component at regional offices will decrease at a constant rate.

Organizer and Representative Ratios

(1) As the number of union members increases, the relative size of the organizer and representative component at central headquarters and regional offices will decrease at a constant rate.

(2) As average local size (average membership) increases, the relative size of the organizer and representative component at central headquarters and regional offices will decrease at a constant rate.

(3) As the number of collective bargaining agreements increases, the relative size of the organizer and representative component at central headquarters and regional offices will decrease at a constant rate.

(4) As the number of employers covered by collective bargaining agreements increases, the relative size of the organizer and representative component at central headquarters and regional offices will decrease at a constant rate.

## APPENDIX B--continued

(5) As the number of union members increases, the relative size of the organizer and representative component at the central headquarters will decrease at a constant rate.

(6) As average local size (average membership) increases, the relative size of the organizer and representative component at the central headquarters will decrease at a constant rate.

(7) As the number of collective bargaining agreements increases, the relative size of the organizer and representative component at the central headquarters will decrease at a constant rate.

(8) As the number of employers covered by collective bargaining agreements increases, the relative size of the organizer and representative component at the central headquarters will decrease at a constant rate.

(9) As the number of union members increases, the relative size of the organizer and representative component at regional offices will decrease at a constant rate.

(10) As average local size (average membership) increases, the relative size of the organizer and representative component at regional offices will decrease at a constant rate.

(11) As the number of collective bargaining agreements increases, the relative size of the organizer and representative component at regional offices will decrease at a constant rate.

(12) As the number of employers covered by collective bargaining agreements increases, the relative size of the organizer and representative component at regional offices will decrease at a constant rate.

Clerical Ratios

(1) As the number of union members increases, the relative size of the clerical component at central headquarters and regional offices will decrease at a constant rate.

(2) As average local size (average membership) increases, the relative size of the clerical component at central headquarters and regional offices will decrease at a constant rate.

## APPENDIX B--continued

(3) As the number of collective bargaining agreements increases, the relative size of the clerical component at central headquarters and regional offices will decrease at a constant rate.

(4) As the number of employers covered by collective bargaining agreements increases, the relative size of the clerical component at central headquarters and regional offices will decrease at a constant rate.

(5) As the number of union members increases, the relative size of the clerical component at the central headquarters will decrease at a constant rate.

(6) As average local size (average membership) increases, the relative size of the clerical component at the central headquarters will decrease at a constant rate.

(7) As the number of collective bargaining agreements increases, the relative size of the clerical component at the central headquarters will decrease at a constant rate.

(8) As the number of employers covered by collective bargaining agreements increases, the relative size of the clerical component at the central headquarters will decrease at a constant rate.

(9) As the number of union members increases, the relative size of the clerical component at regional offices will decrease at a constant rate.

(10) As average local size (average membership) increases, the relative size of the clerical component at regional offices will decrease at a constant rate.

(11) As the number of collective bargaining agreements increases, the relative size of the clerical component at regional offices will decrease at a constant rate.

(12) As the number of employers covered by collective bargaining agreements increases, the relative size of the clerical component at regional offices will decrease at a constant rate.



## APPENDIX B--continued

## Organization Complexity

Combined (heterogeneous) Administrative Ratios

(1) As the number of local unions increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase proportionately.

(2) As the number of intermediate bodies increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase proportionately.

(3) As the number of technical and administrative departments at central headquarters increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase proportionately.

(4) As the occupational diversity of the membership increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase at a constant rate.

(5) As the industrial diversity of the membership increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase at a constant rate.

(6) As the contracts/locals ratio decreases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase at a constant rate.

(7) As the contracts/employers ratio decreases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase at a constant rate.

(8) As the employers/locals ratio increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase at a constant rate.

(9) As the centralization of contract negotiations increases, the relative size of the administrative component (all administrative groups) at central headquarters and regional offices will increase at a constant rate.



## APPENDIX B--continued

(10) As the number of local unions increases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase proportionately.

(11) As the number of intermediate bodies increases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase proportionately.

(12) As the number of technical and administrative departments at central headquarters increases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase proportionately.

(13) As the occupational diversity of the membership increases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase at a constant rate.

(14) As the industrial diversity of the membership increases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase at a constant rate.

(15) As the contracts/locals ratio decreases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase at a constant rate.

(16) As the contracts/employers ratio decreases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase at a constant rate.

(17) As the employers/locals ratio increases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase at a constant rate.

(18) As the centralization of contract negotiations increases, the relative size of the administrative component (all administrative groups) at the central headquarters will increase at a constant rate.

(19) As the number of local unions increases, the relative size of the administrative component (all administrative groups) at regional offices will increase proportionately.

(20) As the number of intermediate bodies increases, the relative size of the administrative component (all administrative groups) at regional offices will increase proportionately.

## APPENDIX B--continued

(21) As the number of technical and administrative departments at central headquarters increases, the relative size of the administrative component (all groups) at regional offices will increase proportionately.

(22) As the occupational diversity of the membership increases, the relative size of the administrative component (all administrative groups) at regional offices will increase at a constant rate.

(23) As the industrial diversity of the membership increases, the relative size of the administrative component (all administrative groups) at regional offices will increase at a constant rate.

(24) As the contracts/locals ratio decreases, the relative size of the administrative component (all administrative groups) at regional offices will increase at a constant rate.

(25) As the contracts/employers ratio decreases, the relative size of the administrative component (all administrative groups) at regional offices will increase at a constant rate.

(26) As the employers/locals ratio increases, the relative size of the administrative component (all administrative groups) at regional offices will increase at a constant rate.

(27) As the centralization of contract negotiations increases, the relative size of the administrative component (all administrative groups) at regional offices will increase at a constant rate.

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There are 135 complexity-relative administrative size working hypotheses. Because these hypotheses are stated much like the size-relative administrative size hypotheses (the difference being the independent variable), only the first of the five groups is presented in the appendix. The five groups consist of (1) a heterogeneous administrative category, (2) managers and administrators, (3) professional staff personnel, (4) organizers and representatives, and (5) clerical workers.

## APPENDIX B--continued

## Organization Size and Complexity Interaction

Size--Number of Union Members

(1) As the number of union members increases, the number of local unions will increase at a proportionate rate.

(2) As the number of union members increases, the number of intermediate bodies will increase at a proportionate rate.

(3) As the number of union members increases, the number of technical and administrative departments will increase at a proportionate rate.

(4) As the number of union members increases, the occupational diversity of the membership will increase at a proportionate rate.

(5) As the number of union members increases, the industrial diversity of the membership will increase at a proportionate rate.

(6) As the number of union members increases, the contracts/locals ratio will decrease at a proportionate rate.

(7) As the number of union members increases, the contracts/employers ratio will decrease at a proportionate rate.

(8) As the number of union members increases, the employers/locals ratio will increase at a proportionate rate.

(9) As the number of union members increases, the centralization of contract negotiations will increase at a proportionate rate.

Size--Average Local Size

(1) As average local size (average membership) increases, the number of local unions will increase at a proportionate rate.

(2) As average local size (average membership) increases, the number of intermediate bodies will increase at a proportionate rate.

(3) As average local size (average membership) increases, the number of technical and administrative departments will increase at a proportionate rate.

(4) As average local size (average membership) increases, the occupational diversity of the membership will increase at a proportionate rate.



## APPENDIX B--continued

(5) As average local size (average membership) increases, the industrial diversity of the membership will increase at a proportionate rate.

(6) As average local size (average membership) increases, the contracts/locals ratio will decrease at a proportionate rate.

(7) As average local size (average membership) increases, the contracts/employers ratio will decrease at a proportionate rate.

(8) As average local size (average membership) increases, the employers/locals ratio will increase at a proportionate rate.

(9) As average local size (average membership) increases, the centralization of contract negotiations will increase at a proportionate rate.

Size--Number of Collective Bargaining Agreements

(1) As the number of collective bargaining agreements increases, the number of local unions will increase at a proportionate rate.

(2) As the number of collective bargaining agreements increases, the number of intermediate bodies will increase at a proportionate rate.

(3) As the number of collective bargaining agreements increases, the number of technical and administrative departments will increase at a proportionate rate.

(4) As the number of collective bargaining agreements increases, the occupational diversity of the membership will increase at a proportionate rate.

(5) As the number of collective bargaining agreements increases, the industrial diversity of the membership will increase at a proportionate rate.

(6) As the number of collective bargaining agreements increases, the contracts/locals ratio will decrease at a proportionate rate.

(7) As the number of collective bargaining agreements increases, the contracts/employers ratio will decrease at a proportionate rate.

(8) As the number of collective bargaining agreements increases, the employers/locals ratio will increase at proportionate rate.



## APPENDIX B--continued

(9) As the number of collective bargaining agreements increases, the centralization of contract negotiations will increase at a proportionate rate.

Size--Number of Employers

(1) As the number of employers covered by collective bargaining agreements increases, the number of local unions will increase at a proportionate rate.

(2) As the number of employers covered by collective bargaining agreements increases, the number of intermediate bodies will increase at a proportionate rate.

(3) As the number of employers covered by collective bargaining agreements increases, the number of technical and administrative departments will increase at a proportionate rate.

(4) As the number of employers covered by collective bargaining agreements increases, the occupational diversity of the membership will increase at a proportionate rate.

(5) As the number of employers covered by collective bargaining agreements increases, the industrial diversity of the membership will increase at a proportionate rate.

(6) As the number of employers covered by collective bargaining agreements increases, the contracts/locals ratio will decrease at a proportionate rate.

(7) As the number of employers covered by collective bargaining agreements increases, the contracts/employers ratio will decrease at a proportionate rate.

(8) As the number of employers covered by collective bargaining agreements increases, the employers/locals ratio will increase at a proportionate rate.

(9) As the number of employers covered by collective bargaining agreements increases, the centralization of contract negotiations will increase at a proportionate rate.

## APPENDIX B--continued

Size-Complexity Interaction with Relative  
Administrative SizeCombined (heterogeneous) Administrative Ratios

(1) The interaction effect of the number of local unions with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(2) The interaction effect of the number of intermediate bodies with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(3) The interaction effect of the number of technical and administrative departments (at central headquarters) with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(4) The interaction effect of the occupational diversity of the membership with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(5) The interaction effect of the industrial diversity of the membership with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(6) The interaction effect of the contracts/locals ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(7) The interaction effect of the contracts/employers ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

## APPENDIX B--continued

(8) The interaction effect of the employers/locals ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(9) The interaction effect of centralization of contract negotiations with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters and regional offices as the number of union members increases.

(10) The interaction effect of the number of local unions with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(11) The interaction effect of the number of intermediate bodies with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(12) The interaction effect of the number of technical and administrative departments (at central headquarters) with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(13) The interaction effect of the occupational diversity of the membership with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(14) The interaction effect of the industrial diversity of the membership with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(15) The interaction effect of the contracts/locals ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(16) The interaction effect of the contracts/employers ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at central headquarters as the number of union members increases.



## APPENDIX B--continued

(17) The interaction effect of the employers/locals ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(18) The interaction effect of centralization of contract negotiations with the number of union members will decrease the relative size of the administrative component (all administrative groups) at the central headquarters as the number of union members increases.

(19) The interaction effect of the number of local unions with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

(20) The interaction effect of the number of intermediate bodies with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

(21) The interaction effect of the number of technical and administrative departments (at central headquarters) with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

(22) The interaction effect of the occupational diversity of the membership with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

(23) The interaction effect of the industrial diversity of the membership with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

(24) The interaction effect of the contracts/locals ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

(25) The interaction effect of the contracts/employers ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.



## APPENDIX B--continued

(26) The interaction effect of the employers/locals ratio with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

(27) The interaction effect of centralization of contract negotiations with the number of union members will decrease the relative size of the administrative component (all administrative groups) at regional offices as the number of union members increases.

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There are 540 size-complexity interaction working hypotheses. Because these hypotheses are stated much like those above (the difference being the independent variable), only the first of four subgroups of the first of five major groups is presented in the appendix. The subgroups consist of (1) number of members--complexity interaction, (2) average local size--complexity interaction, (3) number of collective bargaining agreements--complexity interaction, and (4) number of employers--complexity interaction. The five major groups consist of (1) a heterogeneous administrative category, (2) managers and administrators, (3) professional staff personnel, (4) organizers and representatives, and (5) clerical workers.

APPENDIX C

LETTER REQUESTING PARTICIPATION IN THE STUDY

## APPENDIX C

## LETTER REQUESTING PARTICIPATION IN THE STUDY

Dear Sir:

In cooperation with the Labor Relations and Research Center, I am investigating the factors which affect the relative size of administrative staff in national and international labor unions. In this study, administrative staff is defined as union personnel who are primarily oriented to and perform decision-making, control, and service activities. These would include: managers and administrators, clerical and secretarial, organizers and representatives, and professional staff.

I am seeking your cooperation. The information for this study will be gathered through a personal interview with you or some other union official at your headquarters. The interview will take approximately an hour and one half. Since the information required is quantitative in nature, you may need to refer to various union records.

During the first three weeks of January, 1972, I plan to conduct 30 to 40 interviews. I would appreciate your assistance in this project. If you are willing to participate in the study and will be available for an interview during the first part of January, please indicate this at the bottom of the letter. If not, make the appropriate indication. In either case, please return this letter in the stamped, self-addressed envelope provided. If you are willing to help, I will contact you later to arrange a date for the interview.

This study will serve to fulfill the research required for the degree of Ph.D. in Industrial Relations at the University of Massachusetts. Professor Harvey Friedman, Director of the Labor Relations and Research Center, is assisting me in data collection. If you have any questions, please contact Professor Friedman or myself.

Very truly yours,

David A. Gray

I will participate \_\_\_\_\_

I will not participate \_\_\_\_\_

APPENDIX D

FIRST FOLLOW-UP TO LETTER  
REQUESTING PARTICIPATION



## APPENDIX D

FIRST FOLLOW-UP TO LETTER  
REQUESTING PARTICIPATION

Dear Sir:

Two weeks ago, you received a letter requesting cooperation in a study of the factors which affect the relative size of administrative staff in national and international labor unions. I have not received a response from you indicating either your willingness or unwillingness to participate in this project.

The information for this study will be gathered through a personal interview with you or some other union official at your international headquarters. The interview will take no longer than an hour and one half. I would appreciate your assistance. If you are willing to participate in the study, please indicate this at the bottom of the letter. If not, make the appropriate indication. In either case, return the letter in the stamped, self-addressed envelope provided in the first letter. You will be contacted later to arrange a January date for the interview if you have decided to participate.

This study will serve to fulfill the research required for the degree of Ph.D. in Industrial Relations at the University of Massachusetts. Professor Harvey Friedman, Director of the Labor Relations and Research Center, is assisting me in data collection. If you desire additional information or clarification, please contact Professor Friedman or myself.

Very truly yours,

David A. Gray

I will participate \_\_\_\_\_

I will not participate \_\_\_\_\_

APPENDIX E

SECOND FOLLOW-UP TO LETTER  
REQUESTING PARTICIPATION

## APPENDIX E

SECOND FOLLOW-UP TO LETTER  
REQUESTING PARTICIPATION

Dear Sir:

On two occasions during the past four weeks you received a letter requesting cooperation in a study of the factors which affect the relative size of administrative staff in national and international labor unions. Again I am asking for your assistance in this research project. Since I am planning to statistically analyze the data, the information from each union adds significantly to the value of the study. To date, 25 unions have agreed to participate; a sample of at least 30 unions is required.

The information for this study will be gathered through a personal interview with you or some other union official at your international headquarters. The interview will take no longer than an hour and one half. All information will be held in strict confidence and only aggregate data will be analyzed. If you are willing to participate in the study, please indicate this at the bottom of the letter. If not, make the appropriate indication. In either case, return the letter in the stamped, self-addressed envelope provided in the first letter. You will be contacted later to arrange a January date for the interview if you have decided to participate.

This study will serve to fulfill the research required for the degree of Ph.D. in Industrial Relations at the University of Massachusetts. Professor Harvey Friedman, Director of the Labor Relations and Research Center, is assisting me in data collection. If you desire additional information or clarification, please contact Professor Friedman or myself.

Very truly yours,

David A. Gray

I will participate \_\_\_\_\_

I will not participate \_\_\_\_\_

APPENDIX F

APPOINTMENT LETTER TO  
PARTICIPATING UNIONS



## APPENDIX F

APPOINTMENT LETTER TO  
PARTICIPATING UNIONS

Dear Sir:

Recently I received a response from you indicating your willingness to participate in a study of the factors which affect the relative size of administrative staff in national and international labor unions. Your assistance is greatly appreciated.

As I indicated in the previous letter, the information for this study will be gathered through a personal interview with you at your international headquarters. I would like to tentatively schedule this interview for January XX, 1972. I will contact you by phone a day or two before this date to arrange a specific time. If this date is not satisfactory, an alternate can be arranged since I will be in Washington, D. C. from January 5 through 14. I will be staying at the Manger Hamilton Hotel, 14th and K Streets, N. W. (202) 347-2580.

Thank you for your interest and cooperation. I am looking forward to talking with you.

Very truly yours,

David A. Gray

APPENDIX G  
ADMINISTRATIVE CATEGORIES--REGION  
AND CENTRAL HEADQUARTERS

APPENDIX G

ADMINISTRATIVE CATEGORIES--REGION AND CENTRAL HEADQUARTERS

Union	Managers and Administrators	Professionals	Organizers and Representatives	Clerical Workers	Total
1	3	1	4	5	13
2	2	6	48	23	79
3	13	3	0	5	21
4	3	2	4	3	12
5	5	0	12	10	27
6	5	5	9	8	27
7	7	4	30	10	51
8	18	1	19	25	63
9	8	7	0	19	34
10	10	1	13	15	39
11	10	20	20	18	68
12	3	2	24	13	42
13	10	4	40	80	134
14	11	4	23	12	50

APPENDIX G--continued

Union	Managers and Administrators	Professionals	Organizers and Representatives	Clerical Workers	Total
15	9	19	40	61	129
16	4	2	18	16	40
17	17	3	30	27	77
18	16	8	75	34	133
19	13	3	42	30	88
20	15	2	15	30	62
21	11	3	42	33	89
22	9	11	15	30	65
23	17	10	54	53	134
24	32	104	277	149	562
25	30	67	100	155	352
26	17	21	110	92	240
27	17	29	200	110	356
28	12	84	265	300	661
29	20	30	202	212	464
30	38	220	300	270	828



APPENDIX H

ADMINISTRATIVE CATEGORIES--REGIONS

OR DISTRICTS

APPENDIX H

ADMINISTRATIVE CATEGORIES--REGIONS OR DISTRICTS

Union	Managers and Administrators	Professionals	Organizers and Representatives	Clerical Workers	Total
1	1	0	4	0	5
2	0	0	0	0	0
3	10	0	0	0	10
4	0	0	4	0	4
5	2	0	12	2	16
6	1	0	9	0	10
7	5	1	30	2	38
8	13	0	19	13	45
9	0	0	0	0	0
10	7	0	13	5	25
11	3	0	20	0	23
12	0	0	24	0	24
13	6	0	40	40	86
14	9	0	23	0	32
15	7	0	40	6	53

APPENDIX H--continued

Union	Managers and Administrators	Professionals	Organizers and Representatives	Clerical Workers	Total
16	0	0	18	0	18
17	12	0	30	0	42
18	12	0	75	12	99
19	9	0	33	0	42
20	10	0	15	3	28
21	8	0	42	25	75
22	5	0	15	5	25
23	8	2	54	10	74
24	17	15	277	49	358
25	20	40	100	30	190
26	12	0	110	20	142
27	10	16	200	10	236
28	7	24	265	80	376
29	12	0	200	12	224
30	25	40	300	160	525

APPENDIX I

ADMINISTRATIVE CATEGORIES--

CENTRAL HEADQUARTERS



APPENDIX I

ADMINISTRATIVE CATEGORIES--CENTRAL HEADQUARTERS

Union	Managers and Administrators	Professionals	Organizers and Representatives	Clerical Workers	Total
1	2	1	0	5	8
2	2	6	48	23	79
3	3	3	0	5	11
4	3	2	0	3	8
5	3	0	0	8	11
6	4	5	0	8	17
7	2	3	0	8	13
8	5	1	0	12	18
9	8	7	0	19	34
10	3	1	0	10	14
11	7	20	0	18	45
12	3	2	0	13	18
13	4	4	0	40	48
14	2	4	0	12	18
15	2	19	0	55	76

APPENDIX I--continued

Union	Managers and Administrators	Professionals	Organizers and Representatives	Clerical Workers	Total
15	2	19	0	55	76
16	4	2	0	16	22
17	5	3	0	27	35
18	4	8	0	22	34
19	4	3	9	30	46
20	5	2	0	27	34
21	3	3	0	8	14
22	4	11	0	25	40
23	9	8	0	43	60
24	15	89	0	100	204
25	10	27	0	125	162
26	5	21	0	72	98
27	7	13	0	100	120
28	5	60	0	220	285
29	8	30	2	200	240
30	13	180	0	110	303

APPENDIX J

MEASURES OF ORGANIZATION SIZE

APPENDIX J

MEASURES OF ORGANIZATION SIZE

Union	Number Of Members	Average Local Size	Number Of Employers	Number Of Contracts
1	10,000	714	100	78
2	10,000	357	83	45
3	15,000	107	150	2
4	21,000	263	120	140
5	32,000	390	24	35
6	33,200	395	220	226
7	38,000	257	75	75
8	43,000	78	6,000	1,000
9	45,000	1,800	120	65
10	47,000	193	210	243
11	60,000	462	5,000	3,000
12	60,000	316	3,000	1,200
13	100,000	273	250	31
14	100,000	59	300	480
15	124,000	177	13,000	3,000



APPENDIX J--continued

Union	Number Of Members	Average Local Size	Number Of Employers	Number Of Contracts
16	130,000	382	437	521
17	142,000	615	8,000	2,400
18	145,000	182	410	700
19	160,000	100	1,600	700
20	160,000	200	7,000	1,600
21	175,000	467	600	375
22	250,000	278	150	150
23	395,000	1,435	9,500	10,000
24	450,000	902	2,500	2,100
25	500,000	556	250	350
26	650,000	709	73,000	4,972
27	850,000	754	75,000	9,500
28	900,000	450	12,952	9,200
29	950,000	528	20,000	8,000
30	1,200,000	333	2,600	3,600

APPENDIX K

MEASURES OF ORGANIZATION COMPLEXITY

APPENDIX K

MEASURES OF ORGANIZATION COMPLEXITY

Union	Number Of Locals	Number Of Departments	Number Of Other Units	Occupational Diversity	Industrial Diversity
1	14	2	0	0.000	0.485
2	28	4	3	0.049	0.000
3	140	4	10	0.750	0.000
4	80	2	13	0.335	0.618
5	82	2	2	0.180	0.000
6	84	4	8	0.645	0.095
7	148	3	8	0.000	0.000
8	550	3	19	0.555	0.796
9	25	9	0	0.660	0.000
10	243	3	14	0.000	0.180
11	130	9	0	0.180	0.000
12	190	3	8	0.180	0.000
13	367	7	4	0.375	0.187
14	1,700	7	61	0.680	0.000
15	700	9	25	0.500	0.220

APPENDIX K--continued

Union	Number Of Local	Number Of Departments	Number Of Other Units	Occupational Diversity	Industrial Diversity
16	337	4	15	0.095	0.354
17	231	5	21	0.265	0.000
18	800	6	12	0.400	0.039
19	1,600	3	65	0.000	0.000
20	800	4	81	0.000	0.000
21	375	7	9	0.625	0.580
22	900	7	30	0.000	0.000
23	276	8	14	0.253	0.433
24	499	10	51	0.077	0.000
25	900	5	40	0.675	0.346
26	920	12	65	0.180	0.355
27	2,400	7	241	0.420	0.455
28	2,000	11	184	0.344	0.827
29	1,800	21	68	0.645	0.655
30	3,600	11	25	0.540	0.736



APPENDIX L

MEASURES OF THE STRUCTURE AND COMPLEXITY  
OF COLLECTIVE BARGAINING

APPENDIX L

MEASURES OF THE STRUCTURE AND COMPLEXITY OF COLLECTIVE BARGAINING

Union	Contracts/Locals	Contracts/Employers	Employers/Locals	Centrality Index
1	5.57	0.78	7.14	21.07
2	1.61	0.54	2.96	870.67
3	0.01	0.01	1.07	50,000.50
4	1.75	1.17	1.50	1.00
5	0.43	1.46	0.29	20.80
6	2.69	1.03	2.62	19.45
7	0.51	1.00	0.51	50.50
8	7.27	0.67	10.90	38.50
9	2.60	0.54	4.80	3,001.20
10	1.00	1.16	0.86	10.99
11	23.08	0.60	38.47	330.37
12	6.32	0.40	15.78	170.83
13	0.09	0.12	0.68	3,004.00
14	0.28	1.60	0.18	30.97
15	42.85	0.23	18.57	670.33

APPENDIX L--continued

Union	Contracts/Locals	Contracts/Employers	Employers/Locals	Centrality Index
16	1.55	1.19	1.30	5.95
17	10.39	0.30	34.63	301.60
18	0.88	1.71	0.51	22.60
19	0.44	0.44	1.00	1.00
20	2.00	0.23	8.75	600.40
21	1.00	0.63	1.60	5,000.90
22	0.17	1.00	0.17	1.00
23	36.23	1.06	34.41	1.00
24	4.20	0.84	5.00	56.44
25	0.39	1.40	0.27	23,311.00
26	5.04	0.07	79.34	779.45
27	3.96	0.13	31.25	980.05
28	4.60	0.71	6.48	1,211.50
29	4.44	0.40	11.11	1,038.80
30	1.00	1.38	0.72	22,222.00





