

Economic Restructuring and the
Geography of Organizational Control:
Austria 1973-1981.

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0. INTRODUCTION

This report summarizes the results of research into the changing patterns of direct corporate control of employment in Austria between 1973 and 1981. The starting point of this research has been the fact that while geographers have widely discussed patterns of corporate control and their impact on both headquarters locations and regions dominated by branch plants (cf. Pred, 1976; Hayter and Watts, 1984; Watts, 1980; Westaway, 1974, Gräber et al, 1986), we have rather limited empirical information about patterns of corporate control. Much effort has been invested in empirical analyses of the location of corporate headquarters (Semple, 1973; Borchert, 1978; Semple and Phipps, 1982; Semple, Green and Martz, 1985; Cohen, 1978), and a number of studies have been made of regions dominated by branch plants in order to determine the impact of branch plants on the local economy (Erickson, 1981; Firn, 1975; Dicken, 1976; Smith, 1979; Watts, 1981). None of these studies, however, have been based on comprehensive information about exactly which headquarter locations control which branch plants. The Austrian census of industry of 1973 and 1981 provides complete information about the number of jobs controlled in plants in each of 82 districts, providing a 82 by 82 interaction matrix of organizational control. These data are furthermore disaggregated by economic sectors.

Since these data represent a proxy for the geography of intra-national direct investment, and are available at two points in time, it was thought that they could be used to examine some aspects of the theory of direct investment (cf. Sheppard, 1984). Theories of direct investment are predicated on the assumption that direct investment is increasing over time; they are theories of investment rather than disinvestment. An examination of the Austrian situation, however, showed that external and internal developments during this period have meant that disinvestment, or disintegration, is as important a trend as further investment; a point that has been observed in other contexts.

The orientation of the study, then, has been to attempt to explain the differing strategies of organizational change observable in different industries, and to examine the spatial ramifications of these changes in the case of Austria. It then becomes possible to ask, for example, whether an industry in trouble generally simply closes branch plants in peripheral regions, as is frequently argued, or whether other strategies of disintegration rather than closure are followed. Since the Austrian economy has important manufacturing industries which are owned by the state, it is also possible to make institutional comparisons not only between autonomous firms and multi-regional firms, but also between privately owned and state enterprises.

The report is organized as follows. Section 1 outlines a conceptualization which can be used to explain changes in the organizational structure and location of commodity production based on changes in the global distribution of economic activities, in the nature of demand, and in the production processes being adopted. Section 2 summarizes the nature and limitations of the data. Sections 3 to 8 provide a detailed geographical analysis of changes in the size and organizational control of employment for six

sectors in Austria between 1973 and 1981. Section 9 summarises the empirical results.

1. CONCEPTUAL BACKGROUND

During the decades of the 1950s and the 1960s Austria experienced a deconcentration of industry, largely as a result of the establishment of branch plants in rural areas. The result of this was the addition of a new spatial division of labor within large multilocational enterprises to the traditional concentration of manufacturing jobs in the old industrial areas. The expanded scale of enterprises led to a spatial separation of production from control, using standardized technologies to take advantage of unskilled labor in the peripheral regions of Austria in producing for mass markets. These patterns may be interpreted as the spatial ramifications of the expansion of fordist production methods during the post-war boom (cf. Toedtling, 1983; 1984).

During the 1970s a series of changes occurred affecting the profitability of the industries and production methods found in industrialized nations. First, there was an increase in the degree of international competition. In particular, newly industrializing countries (NICs) emerged, capable of being highly competitive with European firms in sectors using labor and resource intensive production methods. Japanese firms also successfully entered European wage goods markets, and there was an increased degree of competition among the developed countries (Amin and Smith, 1986). Second, consumer demand in the industrialized countries became more sophisticated and differentiated. Third, rapid technological changes were occurring. New production technologies such as micro-processors have allowed for more flexibility in production and lower set-up costs for re-tooling a production line in order to produce a new variant of some product. This reduces the degree to which scale economies can be realized from operating large plants or long production runs. Communications technologies, based on the same innovations in information processing, have made the coordination of production in different facilities in different places much easier. Changes in production levels or unanticipated problems at individual plants can be reported rapidly, and central managers can immediately respond with altered production plans for other facilities which take these changes into account.

These three closely related developments (cf. Storper and Walker, 1984) put pressure for restructuring on the Austrian economy in general, with particular impact in certain sectors. In analyzing the effect of these pressures on the location and organizational structure of different economic sectors in Austria, it is necessary to conceptualize the determinants of organizational and geographical change.

1.1 Organizational Change

1.1.1 Disintegration

Organizational change refers to changes in the structure of ownership and organizational control in a sector. Changes in organizational control reflect processes of integration or disintegration. Whereas integration (growth of enterprises, e.g. via mergers and acquisitions) has traditionally been the dominant mode of organizational change, there is considerable evidence to suggest that disintegration has become much more commonplace in recent years (Friedman, 1977; Scott, 1983; 1986; Cowling, 1986; Holmes, 1986; Shutt and Whittington, 1986). By disintegration we mean a change from wholly owned production facilities to apparently autonomous ones. The latter can take a number of forms; ranging from fully autonomous firms, through autonomous firms which are dependent on orders from larger corporations, to sub-contractors, franchises, and production under licence. The process of disintegration is also varied, including; worker or management buy-outs of subsidiaries, buy-outs by other entrepreneurs, and legal changes of ownership without any change in control. The data available to us do not allow any distinction among these possibilities to be made, so all of them will simply be referred to as a disintegration of organizational control.

We do wish to emphasize, however, that there is an important distinction between direct control and ownership. This can be seen in its clearest form when a corporation converts some subsidiary into a legally autonomous unit while still retaining full financial ownership, a case of disintegration without any decentralization of financial control. In addition, many individual firms may be less independent than their legal status would imply. Legally autonomous sub-contractors, for example, can be dependent to various degrees on the firms to which they are under contract (cf. Holmes, 1986). Since dependency in this sense cannot be observed in our data, we restrict ourselves to a discussion of changes in direct organizational control over production. As a consequence, we would then expect our interpretations to underestimate the degree of economic dependency between plants and regions.

1.1.2 Pressure to Restructure

The profitability of Austrian firms in any given sector of the economy will depend on both the degree of competition and levels of demand for its products. Changes in the degree of competition during this period are largely related to competition from abroad. This in turn is related to the structure of the production process, which can be examined in terms of neo-factor proportion theory (Maier and Tödtling, 1985). Foreign competition would be expected to be greatest in those sectors where there is a high reliance on unskilled labor. The relocation of industry in the 1970s was dominated by movements of those parts of the production process requiring large amounts of unskilled labor to locations in the third world and in the periphery of the developed world with low labor costs (Froebel et al., 1980; Storper and Walker,

1981). Sectors where this kind of production is most prevalent would be under greatest competition from these new locations.

The growth of demand would depend on the rate of expansion of domestic demand and on export possibilities to foreign markets. In the 1970s consumer demand was no longer expanding at a rapid rate either in Austria or in other West European countries, placing particular pressure on services and wage good industries. Expanded demand for capital goods in the NICs in particular was a potential compensating factor for capital goods industries, although Austria was not as well placed to take advantage of this as were other nations with stronger links to the NICs.

1.1.3 Production Characteristics and the Speed and Nature of Organizational Response

The reaction to be expected under pressure to restructure is also related to the kind of production processes used in a sector. In order to approximate this, we differentiate between the degree of capital intensity of production, and the degree to which unskilled labor is used; dimensions which in turn reflect differences in the types of labor process used in production (for a classification of the latter see Storper and Walker, 1984). These two factors first of all influence the entry and exit barriers in a sector. Capital intensive industries exhibit high inertia due to the expensive fixed costs associated with opening a new plant or closing an old one; although the costs of closure depend on the degree to which fixed capital has already been depreciated. This inertia is both due to the cost of fixed capital, and to the fact that capital intensive industries tend to have considerable scale economies making it necessary to operate large plants in order to be competitive. Labor intensive industries using mostly skilled labor face fewer fixed capital costs, but do face the fixed costs of training labor which makes entry or exit more expensive than in industries relying on unskilled labor. These relationships are summarized in Table 1.1.

TABLE 1.1 Entry and exit barriers for different types of industries

	SKILLED LABOR	UNSKILLED LABOR
LABOR INTENSIVE	medium entry and exit barriers	low entry and exit barriers
CAPITAL INTENSIVE	high entry and exit barriers	high entry and exit barriers

We expect that the nature of entry and exit barriers would influence the observed response to pressure for restructuring. Industries with high entry and exit barriers would respond more slowly, and the nature of the response to pressure for restructuring is more likely to be a concentration of capital and owner-

ship. The scale economies of capital intensive production mean that plant size must continue to remain high when firms are operating at less than full capacity. Thus when a crisis of profitability occurs, corporations will respond by either undercutting their competitors thus closing them down, or by engineering takeovers followed with branch plant closures to rationalize production into a fewer number of facilities operating at closer to full capacity. Industries with low entry and exit barriers would show a high turnover of plants, with less pressure for mergers and concentration of capital because scale economies are lower.

In the empirical work to be reported below, we divide manufacturing into the four categories of Table 1.1 in order to assess the usefulness of these distinctions in accounting for the geography of corporate control. Since we are examining a period of rapid technological changes, however, it is also necessary to take into account the possible effects of the new production and communication technologies on the production processes used in different industries and on the possibilities for organizational restructuring. Labor intensive industries are most likely to benefit from the new methods of flexible automation, and this is likely to be particularly the case where skilled workers are used. In the higher skilled labor intensive industries, relocation of production to low wage locations is, at least to date, relatively difficult (but see Scott, 1987) and greater savings can be made by replacing skilled labor. Capital intensive sectors with stable demand are likely to benefit least because high levels of automation have already been achieved, and stable demand means that there is less need for flexible production processes. In mass production industries such as paper or steel therefore, strategies of maintaining scale economies and reducing production costs are more likely. In general, however, the new technologies reduce scale economies and make disaggregated production systems, with each stage in the production process located where it can be carried out most profitably, easier to coordinate.

The nature of demand will generally affect the organizational strategy followed in an industry. Unpredictable demand can create considerable costs for large production facilities, and the risks associated with this uncertainty can be reduced by passing it on to sub-contractors (Scott, 1983, 1986; Holmes, 1986). Thus there is more pressure to disintegrate if demand is unstable. Machinery and specialty goods industries, where demand is unstable, custom designs are common, and production runs are typically short (Schoenberger, 1985), benefit from the flexibility of the new technology. Disintegrated production is therefore more probable in such cases.

Another reason for disintegration is to reduce labor costs. Over the years, labor unions have successfully increased wages for their members in large corporations; due to both the ease of organizing the workforce in such large institutions, and the ability of oligopolistic corporations to pass cost increases due to higher wages on to the consumer through price increases. Turning production over to apparently autonomous small firms operating under more openly competitive conditions both reduces the bargaining power of labor unions and also subjects the wages of a proportion of the workforce to pressures of the open market

(Friedman, 1977; Scott, 1983; Holmes, 1986; Shutt and Whittingdon, 1986). According to this theory, pressure to disintegrate will be higher in those labor intensive industries and enterprises where unions are more active. One important feature of the Austrian economy in the 1970s was a distinction between the labor practices of state run enterprises and those of private enterprises. In the 1970s the socialist government pursued a policy of 'labor hoarding', whereby layoffs and redundancies were minimized as part of a more general full employment policy. As will be seen, the contrast between this and the practices of private enterprises seeking to reduce their labor costs has had an observable impact on different organizational strategies followed in different industries.

Finally, Scott (1983) has argued that the location pattern of plants in an industry affects the profitability of a strategy of disintegration. Since disintegration increases the linkages between separate plants, industries where many related plants are already clustered together are more likely to be ones where further disintegration occurs. The traditional association of spatial clustering and disintegrated production captured in the concept of localization economies has, however, been questioned (Holmes, 1986).

1.2 Geographical Change

In general, we can observe two types of changes in the economic geography of Austria between 1973 and 1981: changes in the location of employment in a particular industry, and changes in the configuration of organizational control. We will be directing more attention to the latter process, both looking at how integration and disintegration processes influence the mix of autonomous firms, branch plants and headquarters in a region, and at changes in the internal spatial division of labor within multi-regional firms. A systematic relation will be sought between the type of integration or disintegration going on (such as horizontal, vertical or diversified integration, on the one hand, or sub-contracting, devolvement or disintegration on the other: Dicken, 1976; Wood, 1978; Watts, 1981; Massey, 1984; Holmes, 1986; Shutt and Whittingdon, 1986) and these spatial characteristics.

In attempting to understand these changes, however, it is necessary to take into account both the spatial structure of employment and ownership in 1973 and the likely effects of organizational and employment changes in the industry as a whole on these structures. The spatial structure in 1973 is important because, as Scott indicates, the spatial clustering of plants may have an influence on organizational change. It is also important because the spatial division of labor and control already extant in 1973 delimits the options available to firms after that point in time.

Geographical changes are likely to be difficult to predict. First, the economic geography of Austria is complex. Neighboring districts can have very different economic structures because of the complex physical geography of the country. Contiguous regions

may not be closely linked together because a mountain range lies in between. As a result there is considerable small scale variation in economic characteristics making it hard to discern broader regional patterns. In addition, the districts used in this analysis are small, and considerable changes can be observed simply as a result of actions taken with respect to a single plant. As a result, changes that may be dependent on the peculiar characteristics of a particular plant, such as a history of poor management in a single enterprise, cannot easily be filtered out from more systematic trends. For both of these reasons, the small size of our spatial units and the difficulty of aggregating them together, there is likely to be a significant amount of variation which is unexplainable by the general arguments used in this paper. It is not likely, therefore, that we will have a proper idea of the power of our explanatory concepts until this analysis is complemented by intensive case studies of those enterprises whose actions seem unexplainable. Only with case studies will it be possible to determine whether such cases are peculiar because they are special cases, or whether their peculiarity reflects significant inadequacies in our conceptual apparatus.

Notwithstanding these reservations, however, there clearly are cases where the general economic health of a region seems to affect actions of firms in that region, no matter which sector they belong to. In addition, the organizational structure extant in a region will clearly affect the options available to firms there.

Autonomous firms are more likely to have the power to make their own decisions about change (limited by the degree to which they may be dependent on particular customers; see previous section). Yet, they must rely on their own resources and economic prosperity at that location in order to finance, or raise capital to finance, such changes. The degree of decision-making autonomy is then constrained by limited resources. Branch plants have more resources available, because in principle they can draw on the financial resources and prosperity of the multi-regional corporation at all locations where it operates in order to underwrite change. Yet they have much less autonomy: profitable branches may be run down, or unprofitable ones subsidized, if that suits the purposes of the parent enterprise. In short, greater potential resources are constrained by less decision-making power, because the parent enterprise can act to shield a branch plant from its local economic environment.

The result is that the goals of, and means available to, a firm which is responding to pressure for restructuring are more closely related to the economic conditions in the local region (such as availability of inputs, contact potential and access to information) if it is autonomous than if it is part of a multi-regional enterprise. The implications of this for regional economic change have been widely discussed in the literature (Firn, 1975; Dicken, 1976; Lever, 1978; Smith, 1979; Muller, 1981).

In Austria, an important additional dimension to organizational structure is the existence of state enterprises. State enterprises, like multi-regional firms, have resources that need

not be limited to the local situation, In addition, the goals driving response to pressure for restructuring are formulated by an institution whose interests transcend the local situation. Unlike private multi-regional firms, however, these goals are not restricted to questions of profitability because the state has to coordinate economic growth with social programs. As mentioned above, a particularly important goal of the socialist government in the 1970s was maintaining employment. In addition, we would expect the state to be more sensitive to the negative consequences of economic change on the local region than a private corporation. The social costs of such change are a responsibility of the state, and there are political costs as well for a socialist government faced with potential economic decline in traditional industrial and working class regions.

2. RESEARCH METHODOLOGY

2.1 The Control Matrix

The data for this research stem from the industrial census carried out by the Austrian Bureau of Statistics in 1973 and 1981. This survey of all non-agricultural plants and enterprises in Austria collected information on: the location of each plant, the enterprise to which it belongs, a classification into economic sectors based on the nature of the principal product of the plant, the location of the headquarters of the enterprise, and the number of workers employed in the plant. These data were then aggregated by enterprise and economic sector to derive a matrix of organizational control for each sector in each year.

The nature of the control matrix is shown in Figure 2.1. Here, x_{ij} is the number of jobs in plants located in district j which are controlled by firms headquartered in district i . In the case of the off-diagonal elements of this matrix, the entry unambiguously refers to organizational linkages among plants and firms controlled by multi-regional firms. The diagonal elements, however, represent a mixture of intra- and inter-firm organizational links. The diagonal elements include employment in: Autonomous single plant firms, headquarters and branch plants of those multi-plant firms where all plants are located in the same district, headquarters of multi-regional firms headquartered in the district, and branch plants of these multi-regional firms which are located in the same district as the headquarters. As a consequence, during the process of aggregating multi-regional enterprise data into sectors we had to define branch plants for the purposes of this analysis as plants located in a district other than that occupied by the headquarters of the enterprise, and define headquarters employment as all employment in the same district as the headquarters. Similarly, all enterprises with all of their employment in just one district were defined as simply autonomous firms.

The row sums X_i , represent the total number of jobs controlled by headquarters in district i , the kind of data often used in studies of headquarters locations (cf. Borchert, 1978). The column sums, X_j , represent the total number of jobs in district j . An entry in the matrix refers to the existence of direct organizational control, but the data clearly do not include all forms of intra-corporate relations. Recall that firms can appear to be independent according to these data while they are still financially dependent on some parent corporation; an arrangement that is particularly common in financial holding companies.

The data are available for 82 "politische Bezirke", hereafter referred to as districts, representing a fine regional subdivision of Austria including as separate districts the major cities together with their immediate hinterland (Figure 2.2). These districts approximate a functional regionalization of the nation according to local labor markets, with districts generally organized around a city or town that represents the center of the

labor market. In the case of the larger agglomerations local labor market boundaries do clearly transcend the boundaries of a single district. In these cases we attempted to compensate for this by aggregating districts of the immediate hinterland together with districts representing the cities themselves. Such aggregations also reduce the likelihood that suburbanization moves by industry might turn up as shifts in the geography of organizational control. The definition of what constitutes a multi-regional firm in this study, and the general importance of multi-regional firms, are both determined by the size of these districts, much as migration rates depend on the size of the regions used in a migration study.

2.2 Choice of Economic Sectors

The sectors analyzed in this study are: Manufacturing; finance, insurance and producer services; and wholesaling and retailing. While data were available for the other sectors of the economy they were eliminated from the study. For reasons of consistency and comparability we wished to restrict ourselves to these sectors where a headquarters location that controls decision-making over production can clearly be identified, and where the institutions involved are multi-regional enterprises whose activities are oriented towards and subject to the operation of the private market.

The mining and water supply and transportation sectors involve such a high level of public ownership that they are insulated from the private economy and are not subject to market forces. As a result they are difficult to interpret using the conceptualization developed for this study. Tourism shows virtually no external control because it is dominated by individual autonomous hotels and inns. Construction was eliminated because the definition of a production plant, a construction site, is a temporary facility, making it distinctly different from other sectors. Finally the sector including public and private personal services was eliminated because it is dominated by the public sector. In general, it is hard to identify the functional headquarters of public services because they are simply recorded as being controlled by the relevant federal ministry. In addition this includes such obviously special cases as the armed forces.

We then subdivided the manufacturing sector according to the technological requirements of the different industries. Since there is reason to believe that the degree of capital intensity and the degree to which skilled workers are required represent important differentiating characteristics with respect to organizational behavior (see section 1), these were used to divide manufacturing industries into four categories (Table 2.1). In performing this classification, capital intensity was measured by the capital to labor ratio in an industry, and skilled workers by the ratio of the sum of white collar and craft workers to the total labor force of the industry.

TABLE 2.1: Sub-division of manufacturing

	SKILLED LABOR	UNSKILLED LABOR
LABOR INTENSIVE	metal products wood products optical instruments transportation equipment sports equipment	textiles clothing shoe manufacture leather wood processing
CAPITAL INTENSIVE	oil refining stone and glass food manufacturing machinery metal processing printing and publishing	iron and steel chemicals plastics electrical equipment paper

This gave us then six sectors to analyze; four manufacturing sectors, financial and producer services, and retailing and wholesaling.

2.3 Summary of Data Analysis

A series of measures were calculated in an effort to gain insight into the changing spatial structure of organizational control. General indices comparing the degree of external control exerted on a district (inward control) with the degree of external control exerted from that district elsewhere (outward control) were calculated in order to measure the degree of control that a district has over other districts. These showed that indeed the principal cities which had the largest number of headquarters tended to exert the most control; but that the dominance of these districts in terms of headquarters was mitigated by the fact that they also contain many branch plants of firms headquartered elsewhere. In short, there are high levels of cross-investment between the major urban centers. As a result, the ratio of outward to inward control was sometimes as high in rural peripheral areas as in major cities (cf. Figure 2.3: Maps for all sectors in 1973 and 1981 are available from the authors).

The geographical patterns of control were examined in a number of ways. Maps of the largest flows show the dominant patterns of control (cf. Figure 2.4). These were computed by ranking the non-diagonal elements of the control matrix from largest to smallest and retaining those largest flows that together constitute 75% of all external control. These turned out to be most useful in describing the geographical consequences of changing organizational structure, and are used extensively in the empirical analysis. Maps showing for each district the other district that exerted the largest external control over it, thus hierarchically dominating it, were drawn to indicate the hierarchical structure of control (Figure 2.5; cf. Nystuen and Dacey, 1961). These maps, however, provided little new information. Wind maps (cf. Tobler, 1981), indicating the mean geographical direction from which

external control into each district comes, gave an indication of the relative influence of the various sources of external control on each district (cf. Figure 2.6), but again added little to other maps (cf. Figure 2.4). Finally, an examination of both direct and indirect control patterns was carried out using potential theory and eigenvector analysis, but again bringing little additional insight.

Other than maps of the major control links, the most fruitful material for helping understand the restructuring of organizational and geographical control between 1973 and 1981 were computations of three kinds of changes for each district. Changes in the main diagonal of the control matrix for any sector between 1973 and 1981, DIAG, represent changes in the number of jobs in autonomous firms. Changes in the number of jobs controlled from outside, ECJ (the column sum less the main diagonal), represent changes in branch plant employment. Changes in the number of jobs that firms headquartered in the district control elsewhere, ACJ (the row sum less the main diagonal), represent changes in the fortunes of multi-regional firms headquartered here and thus in the degree of organizational control exerted from the district.

These three numbers can be used to develop an interpretation scheme to help identify the kinds of changes occurring in a district. For example, the takeover of a local autonomous firm in a district by a corporation headquartered elsewhere would lead to a decline in DIAG and an increase in ECJ in that district; whereas the simple closing of branch plants would result in a decrease of ECJ with no effect on DIAG or ACJ. A large number of scenarios, representing various combinations of changes of ownership, of direct investment strategies and of branch plant employment can be constructed. Some of the simpler and most pertinent ones, together with an indication of their impact on DIAG, ECJ and ACJ, are provided in Table 2.2. These scenarios represented the basis on which we used ACJ, ECJ and DIAG to interpret the kinds of changes likely to be occurring in any given district.

Note that these scenarios are most accurate if they are applied to individual plants. For a district as a whole, the observed aggregate changes for all plants located there may not be consistent with the relevant interpretation unless all plants behave similarly, or one plant dominates the others in terms of its employment. The problems that aggregation poses for consistent interpretation is mitigated in this study by the small size of the districts, but nevertheless these interpretations must be used with caution. For this reason, we only attempted to interpret changes in those districts where there was a large absolute change in at least one of the three categories. Furthermore when alternative scenarios were suggested by the data we used ancillary information to choose between them. If this still did not narrow the possibilities down to one scenario, we chose that one which was the simplest.

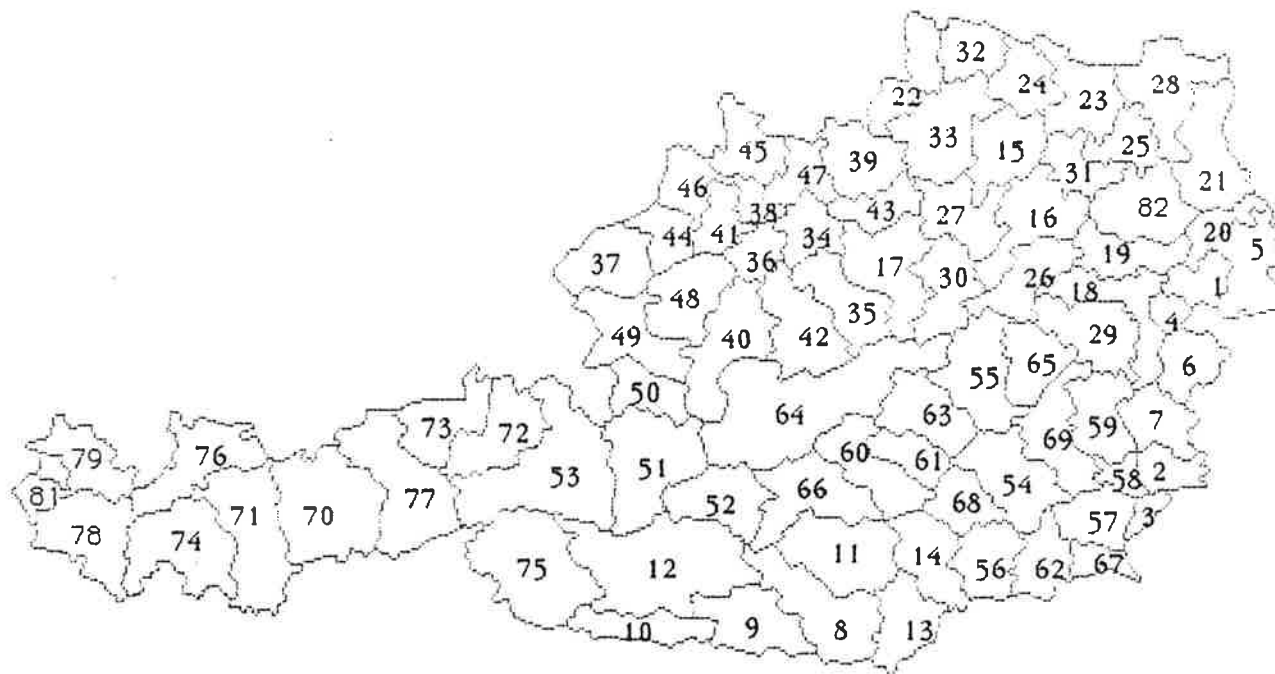
2.4 Structure of Empirical Sections

The following six sections describe the empirical results of this analysis. Each section begins with a discussion of the characteristics of that sector, together with our expectations about the kind of organizational and employment changes which we would expect. We examine external pressure to restructure, entry and exit barriers, the potential impact of new technology, and the spatial division of labor. We then go on to analyze the patterns of employment and control in 1973, and the changes in these patterns between 1973 and 1981.

Figure 2.1: The Control Matrix

		districts in which jobs are controlled					Row sum	
		j=	1	2	3	4	
	i=1							X_{1*}
sources	2							X_{2*}
of								
control	3			X_{ij}				X_{3*}
	4							
Column sums		X_{*1}	X_{*2}				X_{**}

Figure 2.2: Politische Bezirke (districts) of Austria



- | | | | |
|---------------------------|--------------------------|-------------------------|-------------------|
| 1. Eisenstadt/hinterland | 23. Hollabrunn | 45. Rohrbach | 67. Radkersburg |
| 2. Güssing | 24. Horn | 46. Scharding | 68. Voitsberg |
| 3. Jennersdorf | 25. Korneuburg | 47. Urfahr | 69. Weiz |
| 4. Mattersburg | 26. Lilienfeld | 48. Vöcklabruck | 70. Innsbruck |
| 5. Neusiedl am See | 27. Melk | 49. Salzburg/hinterland | 71. Imst |
| 6. Oberpullendorf | 28. Mistelbach | 50. Hallein | 72. Kitzbühel |
| 7. Oberwart | 29. Neunkirchen | 51. St Johann im Pongau | 73. Kufstein |
| 8. Klagenfurt/hinterland | 30. Scheibbs | 52. Tamsweg | 74. Landeck |
| 9. Villach/hinterland | 31. Tulln | 53. Zell am See | 75. Lienz |
| 10. Hermagor | 32. Waidhofen/Thaya | 54. Graz/hinterland | 76. Reutte |
| 11. Sankt Veit a. d. Glan | 33. Zwettl | 55. Bruck a.d. Mur | 77. Schwaz |
| 12. Spittal a. d. Drau | 34. Linz/hinterland | 56. Deutschlandsberg | 78. Bludenz |
| 13. Völkermarkt | 35. Steyr/hinterland | 57. Feldbach | 79. Bregenz |
| 14. Wolfsburg | 36. Wels/hinterland | 58. Fürstenfeld | 80. Dornbirn |
| 15. Krems/hinterland | 37. Braunau am Inn | 59. Hartberg | 81. Feldkirch |
| 16. St. Pölten/hinterland | 38. Eferding | 60. Judenberg | 82. Vienna/htland |
| 17. Waidhofen a. d. Ybbs | 39. Freistadt | 61. Knittelfeld | |
| 18. Wiener Neustadt/htld | 40. Gmunden | 62. Leibnitz | |
| 19. Baden | 41. Grieskirchen | 63. Leoben | |
| 20. Bruck a. d. Leitha | 42. Kirchdorf a.d. Krems | 64. Liezen | |
| 21. Gänzersdorf | 43. Perg | 65. Mürzschlag | |
| 22. Gmünd | 44. Reid im Innkreis | 66. Murau | |

Figure 2.3: Index of Control, all Manufacturing, 1973

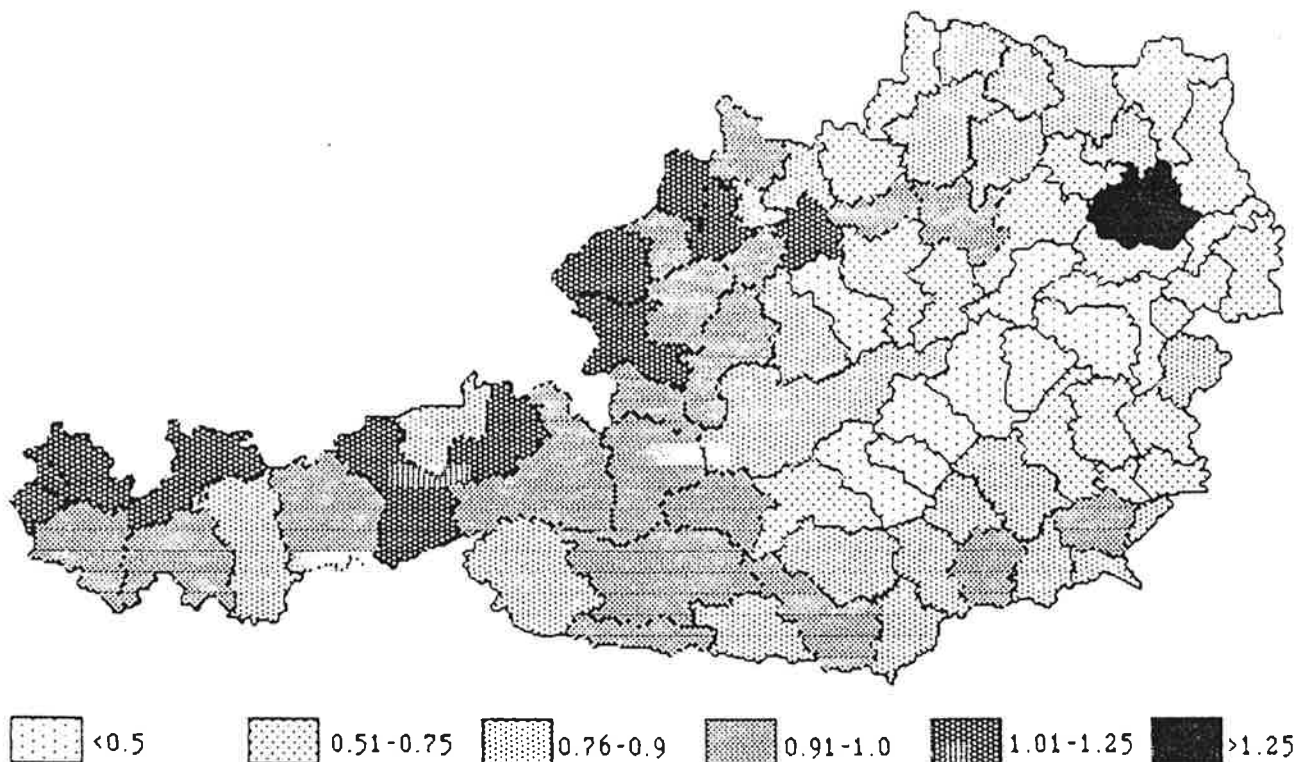


Figure 2.4: Largest Control Links, all Manufacturing, 1973

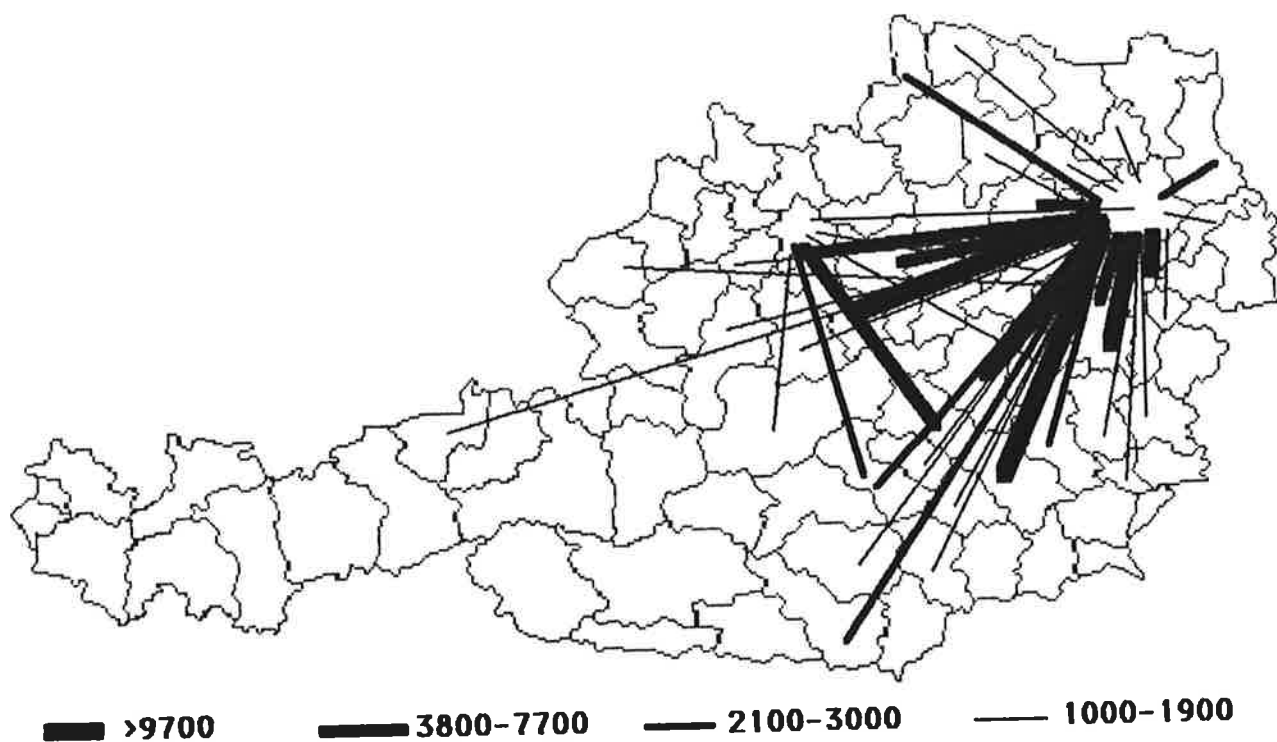


Figure 2.5: Chains of Dominant Control, all Manufacturing, 1973

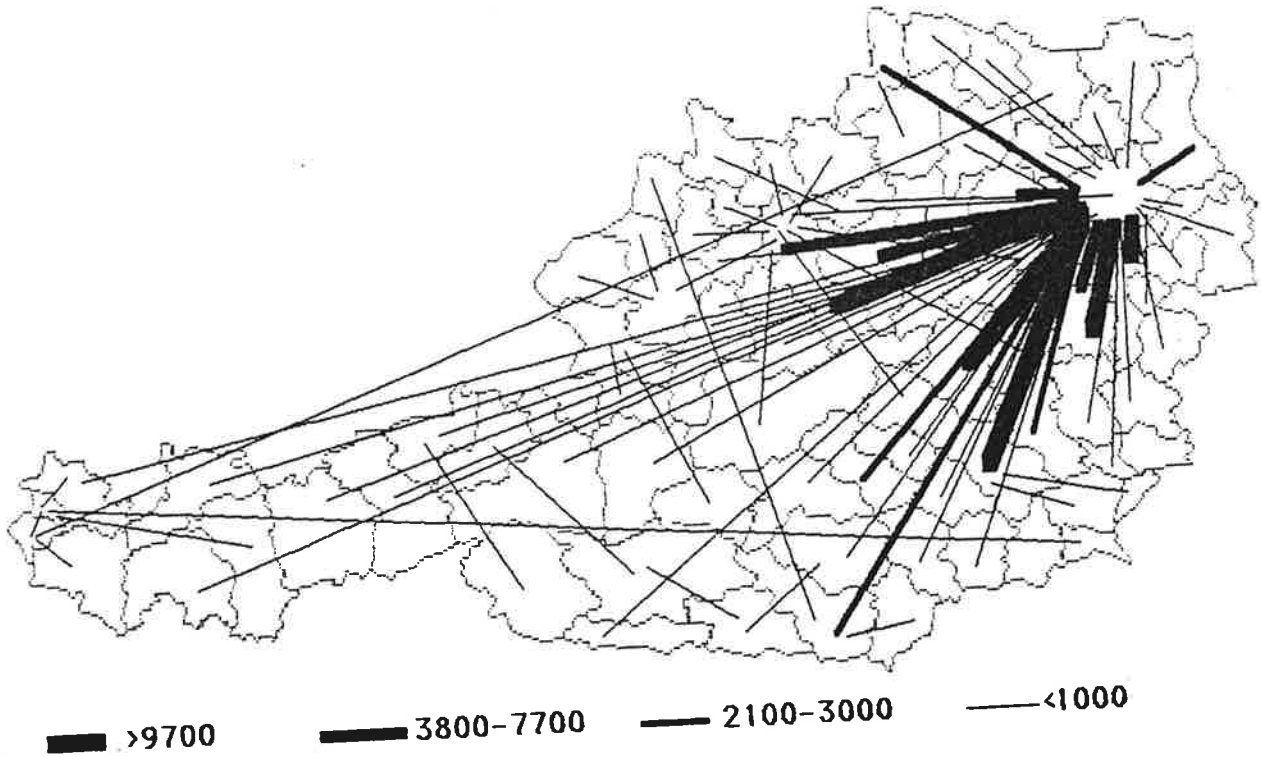


Figure 2.6: Wind Maps of Organizational Control, all Manufacturing, 1973

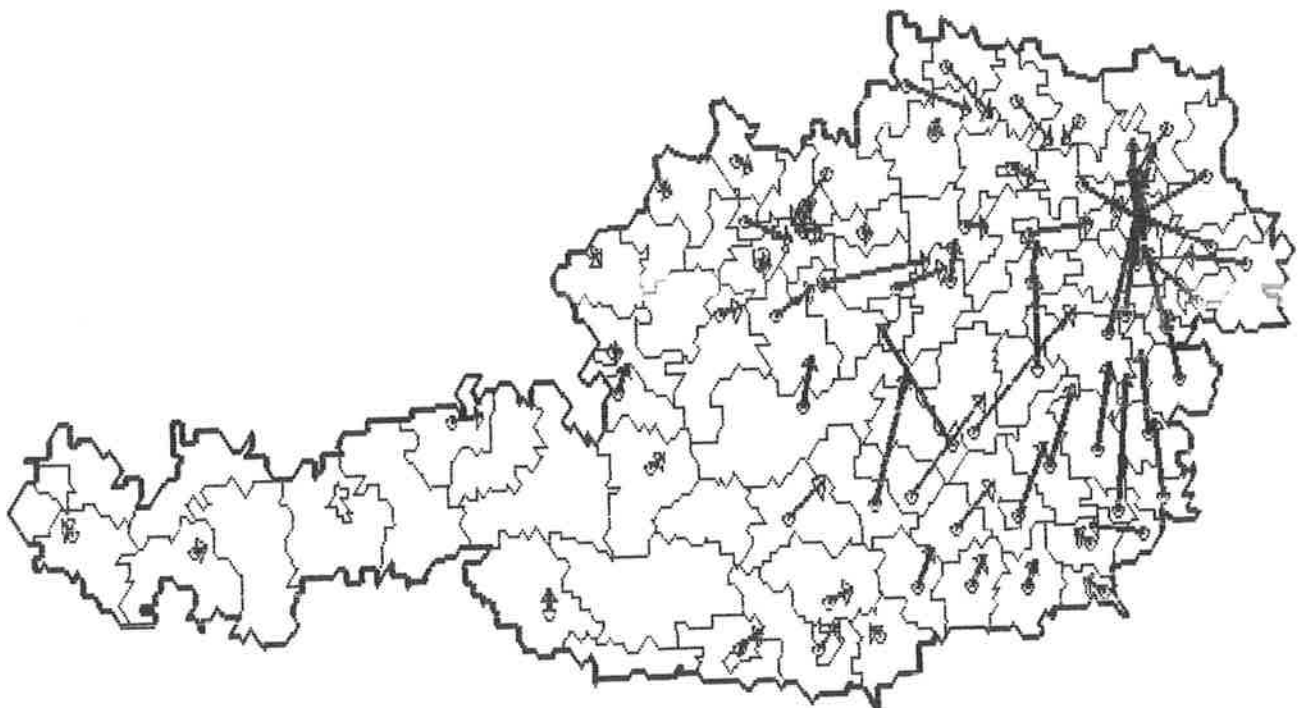


Table 2.2. Interpretation Scheme for Changes in Control and Dependency

Cat.	Type of change	ACJ	ECJ	DIAG
A	External takeover of local independent firm	0	+	-
E	Purchase of externally controlled branch by local independent firm	0	-	+
C	Closing of branch plant in region	0	-	0
D	Expansion (opening) of branch plant in region	0	+	0
I	Movement of headquarter out of region (leaving branch plant)	(-)	+	-
F	Movement of headquarter function into region to join a branch plant	(+)	-	+
H	Movement of headquarter out of region (leaving nothing)	-	0	-
G	Movement of headquarter function into region as autonomous unit	+	0	+
K	Closing of local firm	0	0	-
L	Expansion (opening) of local firm	0	0	+
P	Regional headquarter: decline of branch plant employment outside region	-	0	0
M	Regional headquarter: expansion of branch plant employment outside region	+	0	0
O	Movement of branch plant from headquarter	-	0	+
N	Movement of branch plant to headquarter	+	0	-

NOTE: Terms in brackets would be 0 if there are no branch plants in other regions.

3. LABOR INTENSIVE MANUFACTURING WITH UNSKILLED WORKERS

This sector includes textiles, clothing, shoe manufacture, leather, and wood processing.

3.1 Sectoral Characteristics

This sector of manufacturing, with its high demand for unskilled workers, was the one under strongest external competition in the period 1973-1981, particularly from nations of the third world with plentiful supplies of cheap unskilled labor. This can be seen in the decline in employment in this sector from 188,065 to 142,760 employees between 1973 and 1981; a loss of more than 45,000 jobs (a 24% decline) in eight years. This represents a greater decline than in any other sector during this period. External competition placed considerable pressure on these industries to rationalize production, particularly in those locations within Austria where production costs were highest. The relatively low exit costs associated with untrained labor and low levels of fixed capital mean that this sector is geographically more mobile; so a logical response to pressure for restructuring would be the closure of plants and the relocation of production to locations with cheaper labor both within Austria and abroad.

The use of unskilled labor would imply that the newly developed technologies allowing for more flexible production systems and for the better coordination of geographically separated production systems could have considerable impact in this sector. This would be expected to take the form of separating out different parts of the production process and locating them in places where they can be most cheaply carried out. The geographical decentralization of those parts of the production process which can be automated or routinised might then be expected.

While the relatively low capital requirements of this sector mean that there is less pressure for the creation of large production facilities, large corporations showing a marked internal spatial division of labor emerged in the 1960s and early 1970s at both the interregional and international scales (Fröbel et al, 1980). This involved the location of administrative and control components of the enterprise in higher order centers and production facilities in areas of cheap labor; which in the Austrian context would often be rural areas. High pressure for restructuring would be expected to lead to major organizational and financial changes. It is difficult to predict the general direction of organizational changes. The application of new technologies to extend the production processes that can be automated could act as a centralizing and integrating force; although the converse would be the case to the extent that these technologies enable the disarticulation of production processes. External competition, forcing down prices, would make domestic markets more uncertain for Austrian producers. This might exert pressure to disintegrate the production process; devolving production to legally independent enterprises in order to pass the risks of production under uncertainty on to them (Scott, 1983). However such disintegration of ownership need not imply a

disintegration of financial control, since companies can be given legal autonomy without divorcing them completely from the parent company. We would expect that continued centralization of financial control would be occurring, but this cannot be evaluated from these data.

Given that the 1970s were a period of decoupling of production processes and relocation to cheap labor locations particularly in the third world, and given the increased uncertainty of demand for domestically manufactured products that the resulting competition created, it might be expected that the overall balance of these contrasting influences would be in favor of branch plant closures and disintegration. Indeed the proportion of jobs in this sector in Austria as a whole that were externally controlled fell from 15.7% to 13.1% between 1973 and 1981.

3.2 The Geography of Control in 1973

In 1973 the main areas subject to external control were located along the northern and eastern borders of Austria (the Waldviertel, Weinviertel, Burgenland and the southern Vienna basin; Figure 3.1). The first three of these are mainly areas with abundant low skilled labor and low wages. In addition, state subsidies were available for new firms locating in these districts. The southern Vienna basin is a traditional textile manufacturing region, dating back to the 19th century, which gradually came under the control of firms headquartered in Vienna during the centralization of the textile industry. By far the most important center of control was Vienna, controlling 60% of all externally controlled jobs. In addition a series of small plants were controlled from firms headquartered in Austria's second principal textile and clothing manufacturing region, Vorarlberg (Figure 3.2).

3.3 Changes in the Geography of Control 1973-1981

The most notable change has been the decline of Vienna as a center of control; losing 13,000 controlled jobs and reducing its overall share of such jobs from 60% to 25.8%. Secondary centers also losing control were Waidhofen/Thaya, Graz, Feldkirch and Gmünd (Figure 3.3). Vienna, as a relatively 'expensive' location was losing both autonomous and multiregional headquarter activities during this period. The other losses are in traditional locations of the textile industry where older plants were probably being closed. New centers of control were developing in Wiener Neustadt and Krems, and to a lesser extent in Spittal/Drau, Bregenz, Jennersdorf and Dornbirn.

Two broad kinds of changes could be observed in those districts where there was a high degree of external control in 1973 (Figures 3.4, 3.5, 3.6):

Devolution of external control was the more common pattern, involving a change in the form of ownership whereby former branch plants become legally autonomous enterprises. This pattern is the more common change, generally located in the eastern districts

(Mistelbach, Wiener Neustadt, Neunkirchen, Oberwart and Güssing). This may be the result of converting branch plants into legally autonomous entities, while they continue to remain financially linked to the parent corporation, and perhaps just as dependent in the parent for financing and strategic planning as before. It could also be that headquarter functions have been moved to the regions in question, joining a relatively new production facility there, while other older branch plants in other regions were closed. Other possible explanations are that branch plants were simply sold to local entrepreneurs, or that there was a coincidental closing of a branch plant and opening of a new firm in the same economic sector in the same region during this time periods. It is, however, unlikely that either of these latter events would be common enough to explain the number of changes of this kind observed.

Branch plant closure, the kind of change generally referred to in the literature, also occurred although it was less common. This was observed in Gmünd, Waidhofen/Thaya and Leoben (Figures 3.4, 3.6). The two former districts show changes that are part of a general economic decline in the Waldviertel district along the border with Czechoslovakia. Possible reasons for branch plant closure include; a less organized workforce unable to assemble credible resistance to the closure, the higher accessibility costs of these peripheral locations, and the possibility that these branch plants were originally designed as horizontal extensions of production using older machinery and a flexible labor force designed to cope with a period of peak demand. The subsidies provided by the state to encourage the location of branch plants would have encouraged such behavior.

The rise of Wiener Neustadt as a center of control clearly represents a movement of headquarters out of Vienna, because the districts now controlled from Wiener Neustadt were formerly controlled from Vienna (Figures 3.2, 3.7). During this period, a state supported rationalization of the eastern component of the textile industry "Textillösung Ost" (textile solution, east) occurred, and the shifts to Wiener Neustadt were a part of this process. For this same reason, almost all of the organizational restructuring of this sector took place in the eastern regions, whereas the geography of control emanating out of the other textile district, Vorarlberg, showed very little change during this period.

Overall, by 1981 there had been a decline in external dependency in the regions surrounding Vienna (Figure 3.8) partly due to disintegration of control and partly due to branch plant closure.

The rationalization of employment in this sector in Vorarlberg has been dominated by the decline of employment in autonomous plants, while externally controlled employment has changed little (Figures 3.5, 3.6). This implies a relative increase in the importance of externally controlled jobs as a proportion of all jobs controlled from Vorarlberg in the sector. Since 1981, the western component of the textile industry has also been substantially restructured through the "Textillösung West", and further significant changes have occurred in the eastern region.

Figure 3.1: External Dependency: Labor Intensive Manufacturing with Unskilled Workers, 1973
(externally controlled jobs as a proportion of all jobs)

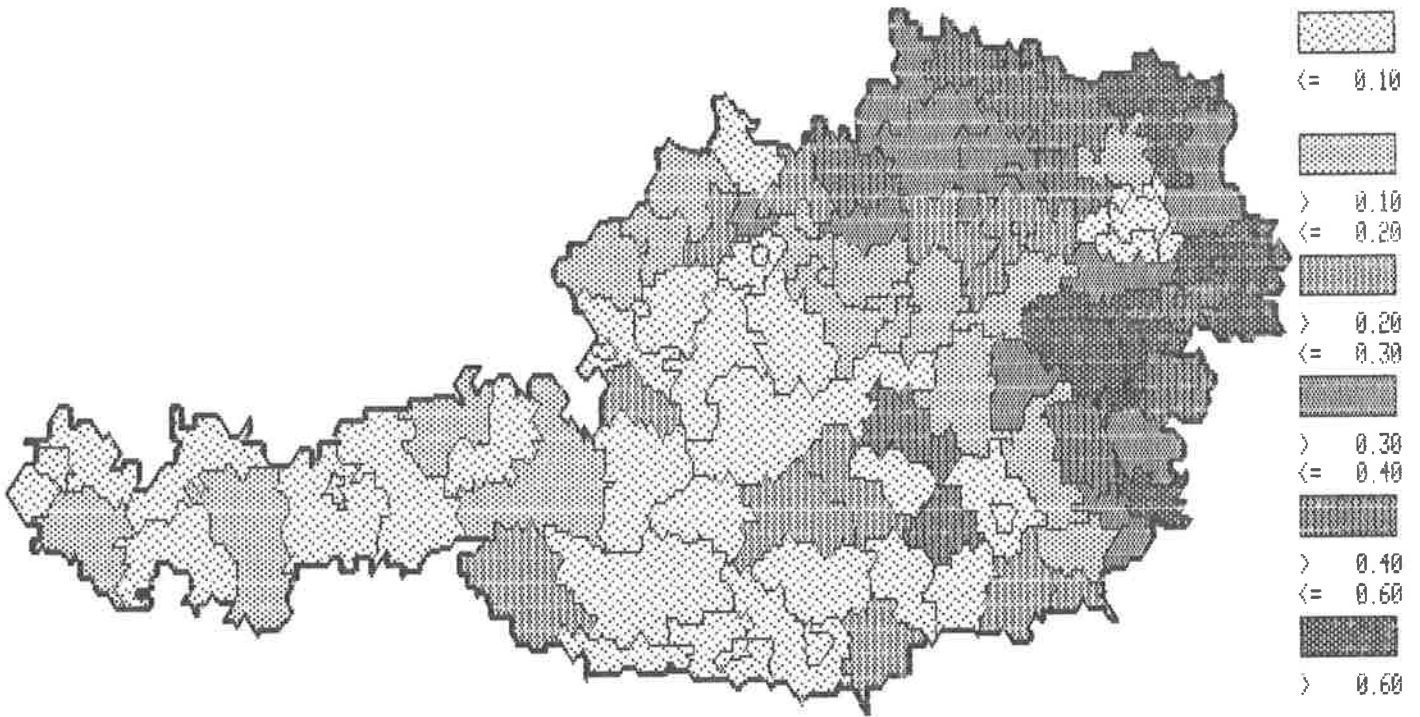


Figure 3.2a All Major Control Links: Labor Intensive Manufacturing with Unskilled Workers, 1973
(number of jobs)

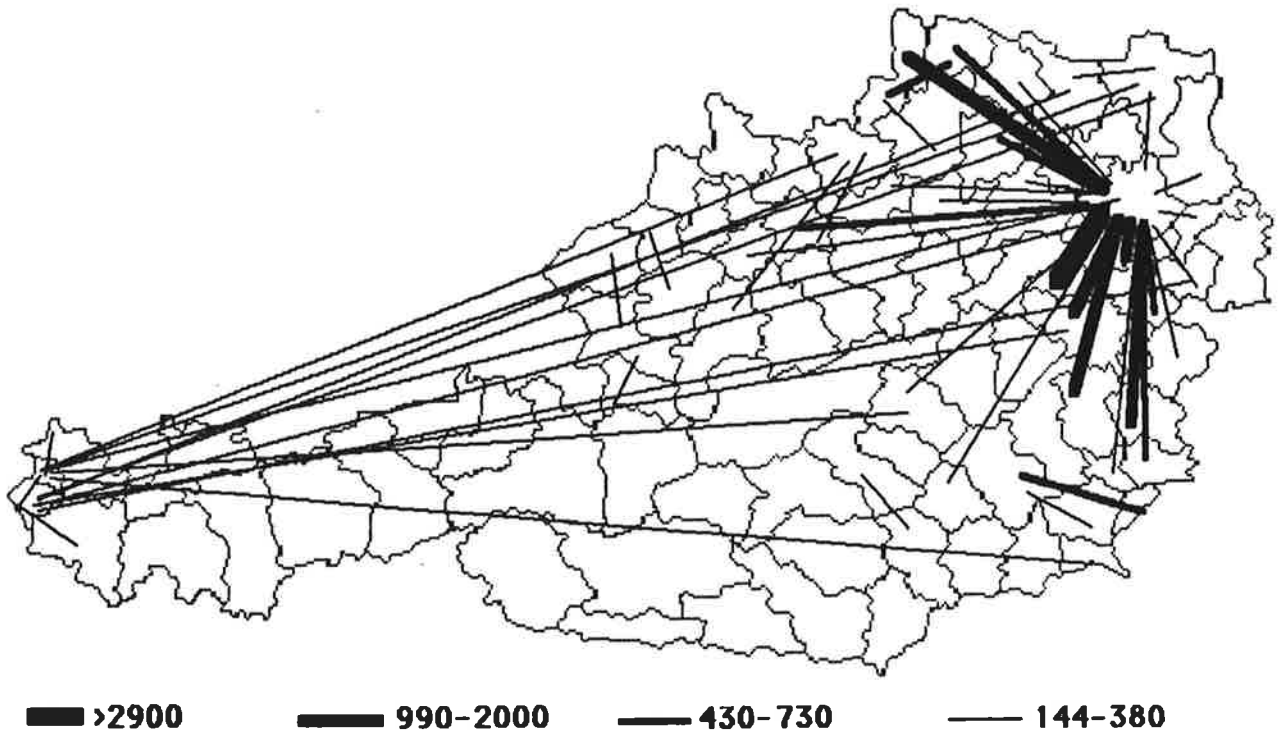


Figure 3.2b Major Control Links from Vienna: Labor Intensive Manufacturing with Unskilled Workers, 1973
(number of jobs)

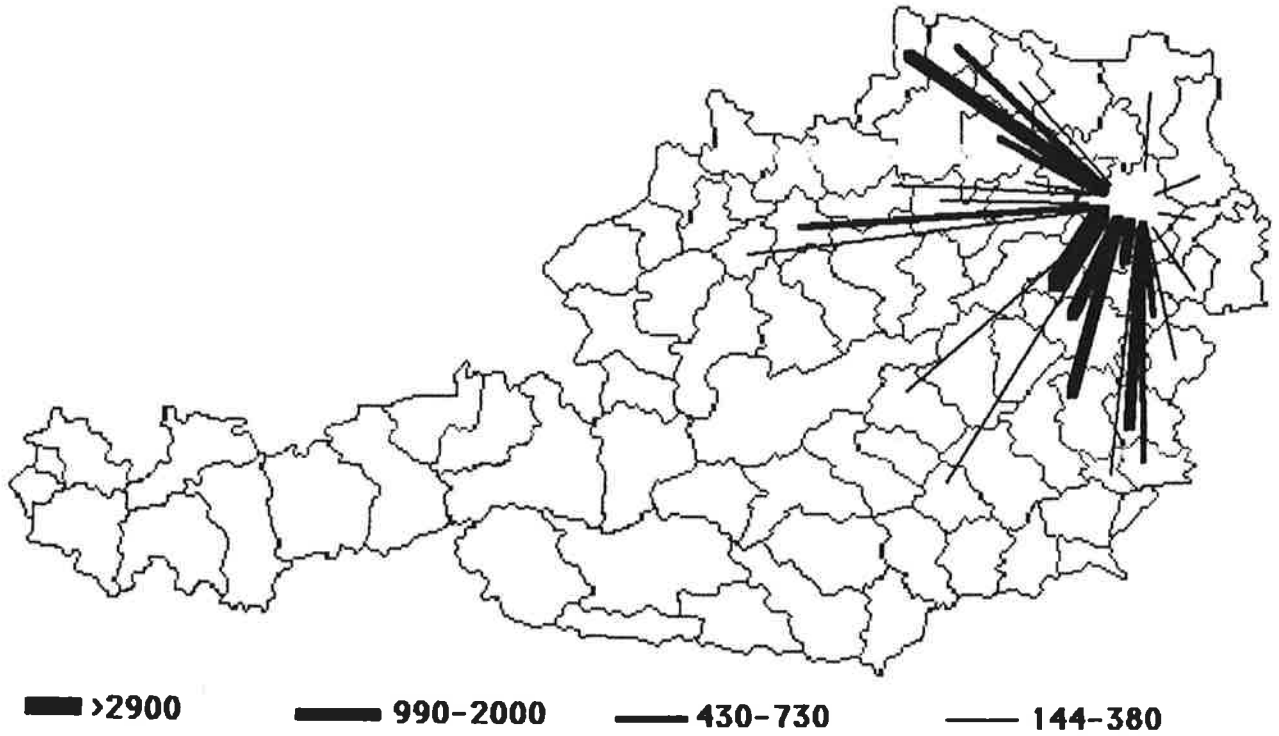


Figure 3.2c Major Control Links Excluding Control from Vienna: Labor Intensive Manufacturing with Unskilled Workers, 1973
(number of jobs)

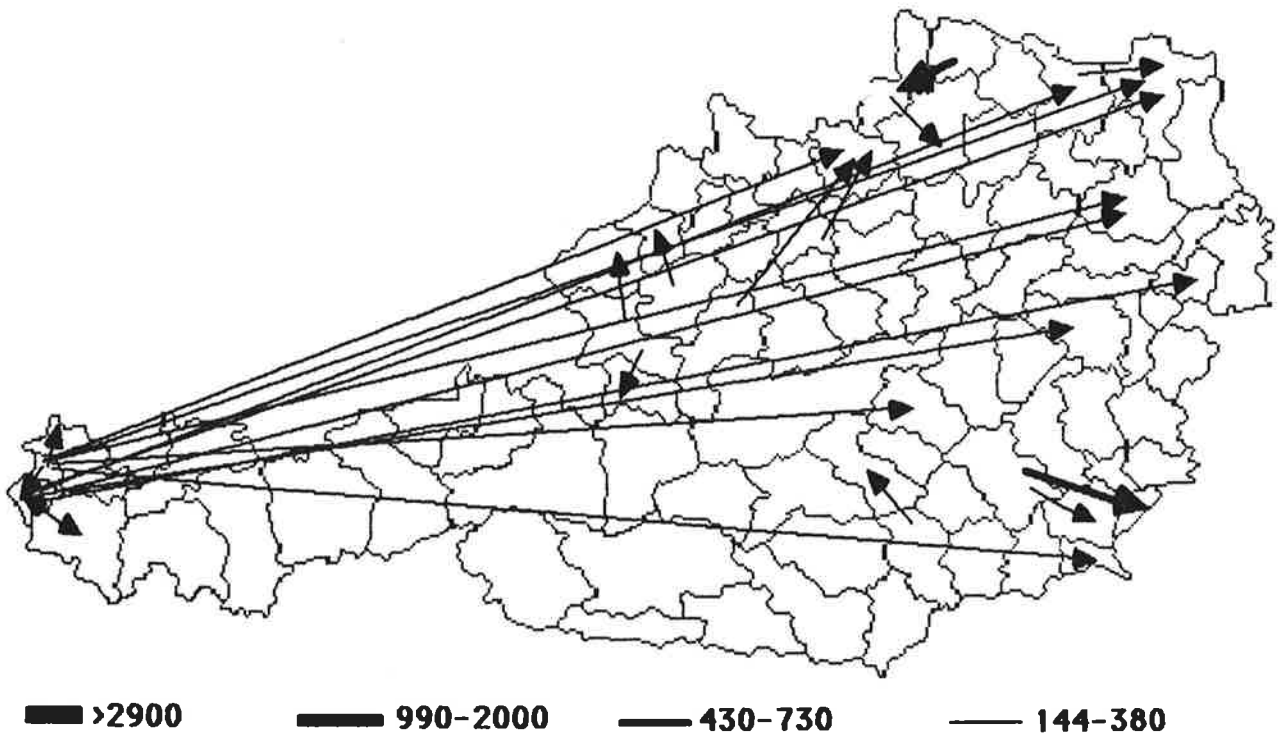


Figure 3.3: Change in Number of Jobs Controlled Elsewhere (ACJ): Labor Intensive Manufacturing with Unskilled Workers, 1973-1981

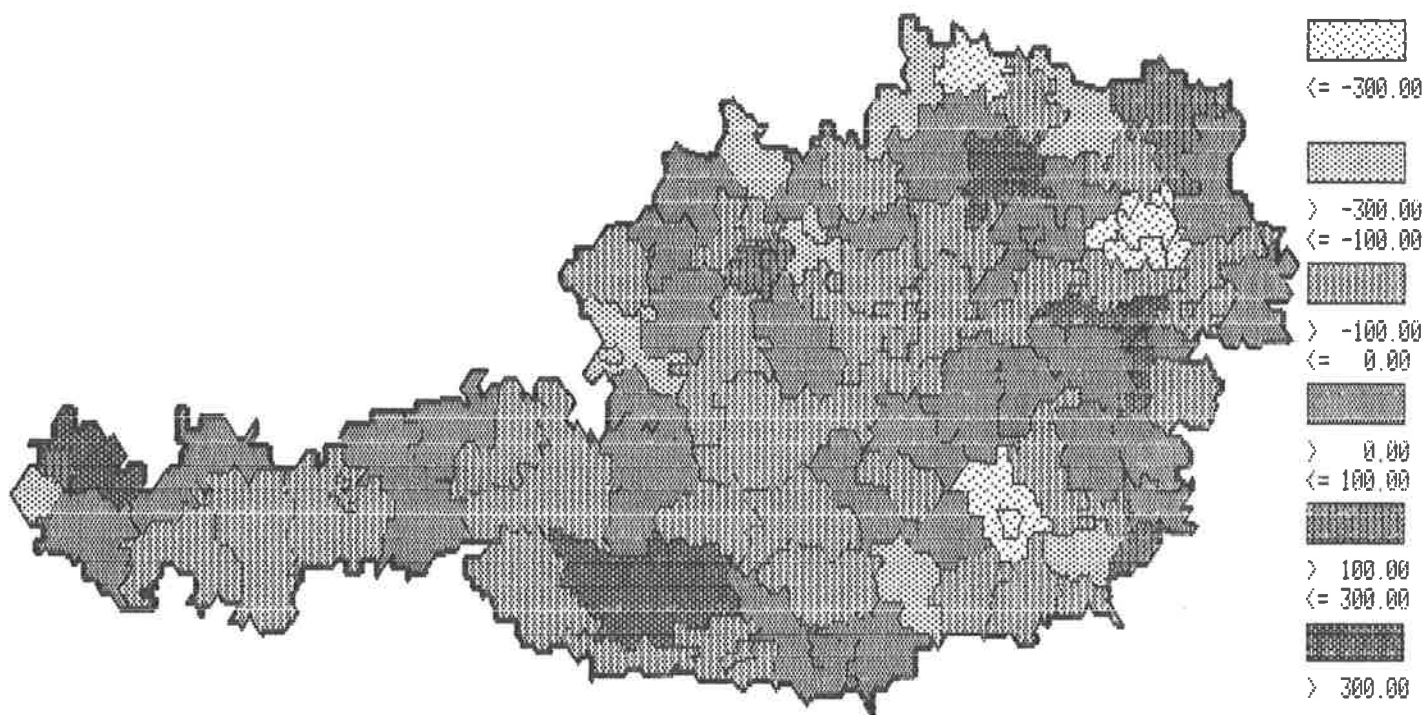


Figure 3.4: Change in Number of Jobs Controlled from other Districts (ECJ) Labor Intensive Manufacturing with Unskilled Workers, 1973-1981

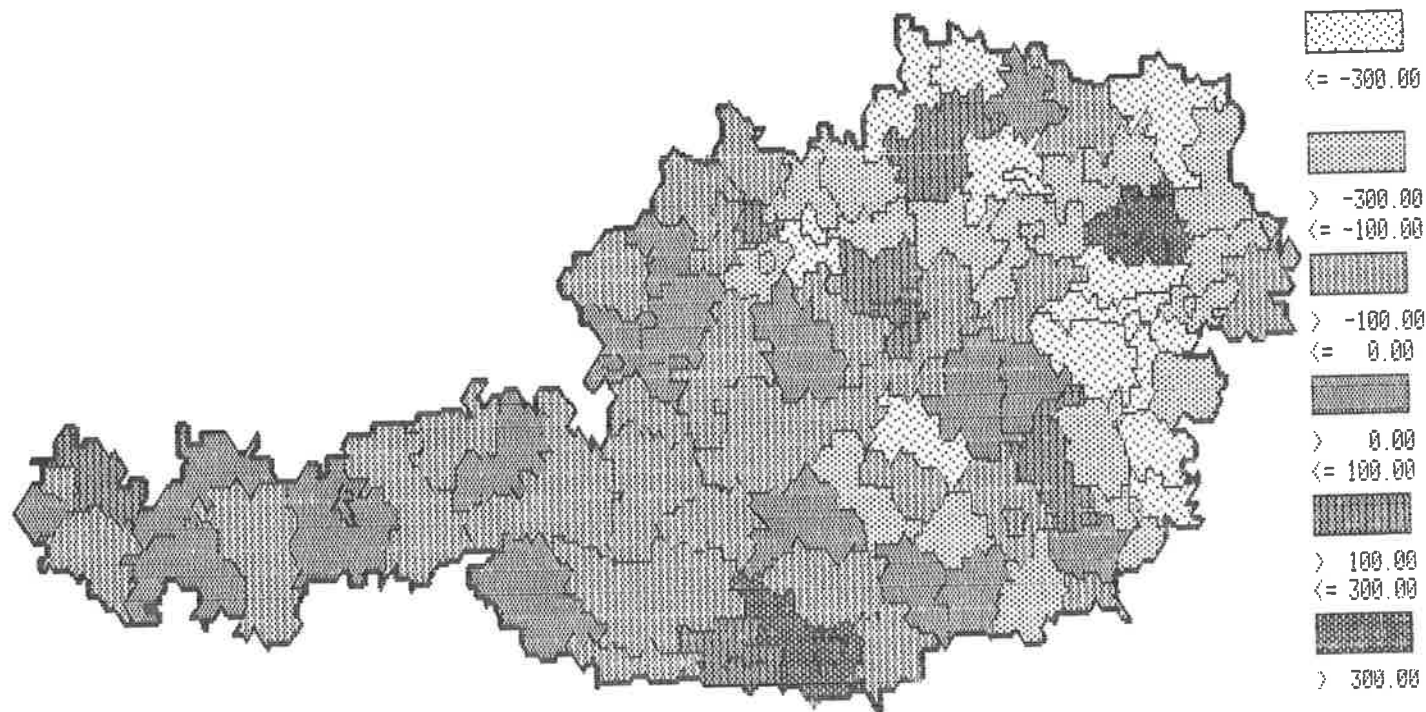


Figure 3.5: Change in Number of Jobs in Autonomous Firms (DIAG): Labor Intensive Manufacturing with Unskilled Workers, 1973-1981

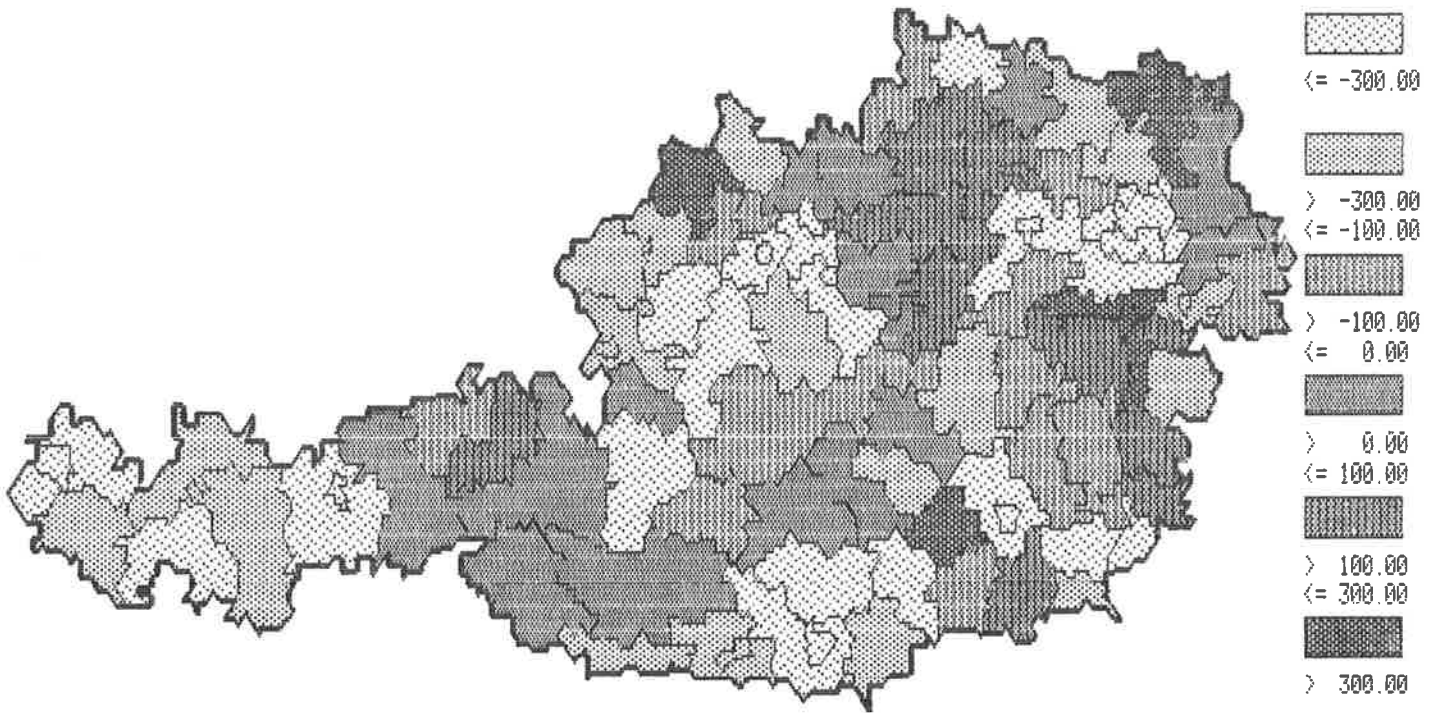
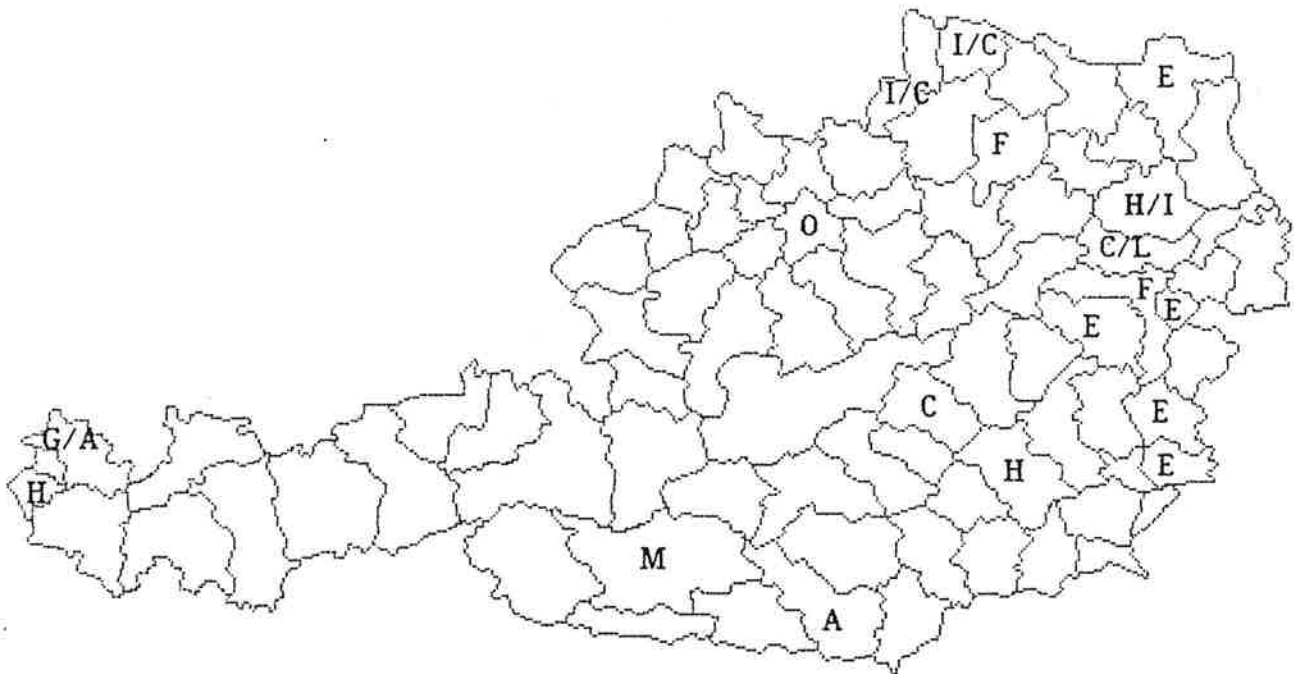


Figure 3.6. A Classification of Types of Organizational Change:
Labor Intensive Manufacturing with Unskilled Workers,
1973-1981



- A - external takeover of local firm
- E - disintegration of branch plant to an autonomous firm
- C - closure of/layoffs in branch plant
- D - expansion of branch plant
- I - out-migration of HQ (leaving branch plant)
- F - in-migration of HQ to join branch plant
- H - out-migration of HQ (leaving nothing)
- G - in-migration of HQ as autonomous unit
- K - closing of autonomous firm
- L - opening/expansion of local firm
- P - decline of controlled branch plant employment outside region
- M - expansion of controlled branch plant employment outside region
- O - movement of branch plant out of region of HQ
- N - movement of branch plant into region with HQ

Figure 3.7a. All Major Control Links: Labor Intensive Manufacturing with Unskilled Workers, 1981
(number of jobs)

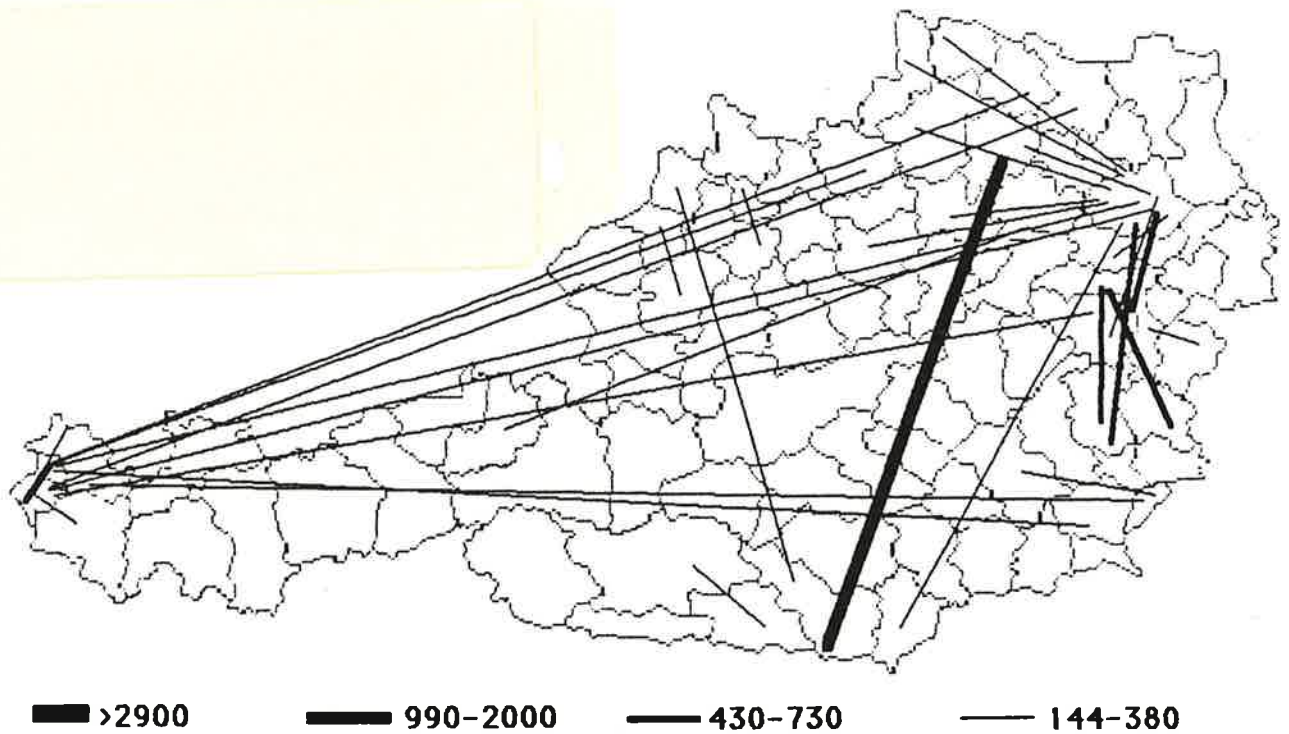


Figure 3.7b. Major Control Links from Vienna: Labor Intensive Manufacturing with Unskilled Workers, 1981.
(number of jobs)

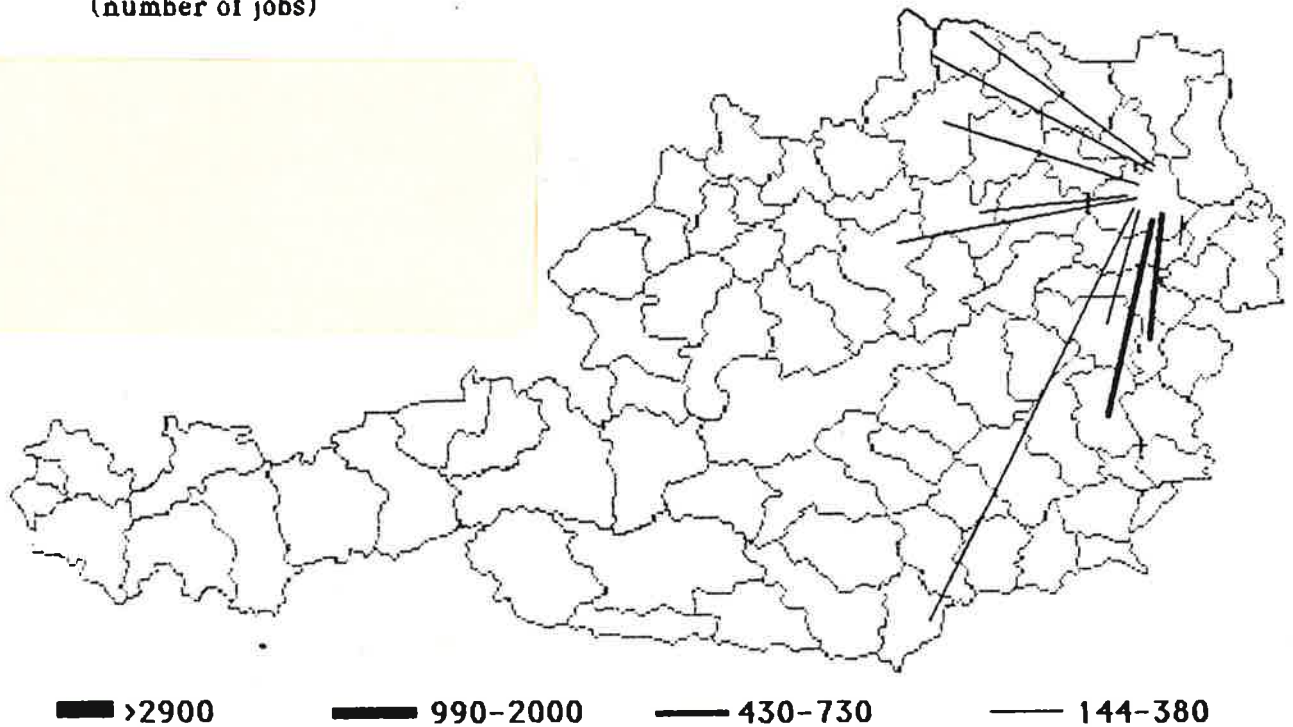


Figure 3.7c. Major Control Links Excluding Control from Vienna: Labor Intensive Manufacturing with Unskilled Workers, 1981. (number of jobs)

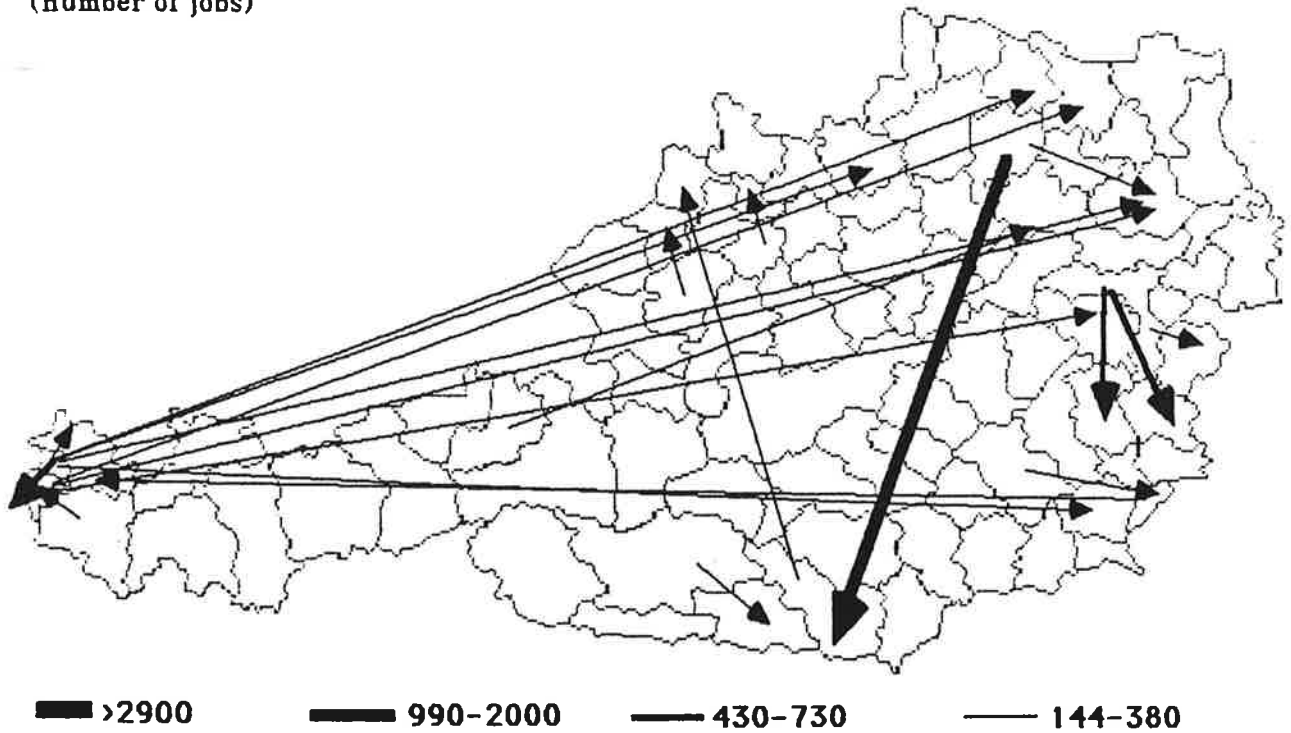


Figure 3.8: External Dependency: Labor Intensive Manufacturing with Unskilled Workers, 1981 (externally controlled jobs as a proportion of all jobs)

