THE DYNAMICS OF MANUFACTURING EMPLOYMENT LOCATION WITHIN THE NEW ORLEANS METROPOLITAN AREA

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The primary concern of this study is to enhance the understanding of the process of manufacturing employment location in the New Orleans Metropolitan Area (NOMA) from 1965 to 1969.[1]

Builders of urban economic models often characterize manufacturing as the most significant population-leading industry in intraurban spatial development. However, the methodology of studying manufacturing employment location has been less than satisfactory. Cross-section studies may have been deceptive in that, by emphasizing average levels, they failed to capture the time-dimensioned marginal changes occurring: the impact over time of continuing employment changes within stationary establishments and employment changes due to marginal movers, births, and deaths of establishments. Moreover, misgiving may be entertained relative to the predictive power of models which develop equations mechanistically--solely by good fit, without attempting to explain any rationale for their equations' forms and variables. Theoretically consistent behavioral and technological relationships are necessary to understand why employment location within an area has evolved in its particular fashion.

A major obstacle to intrametropolitan studies has been a serious shortage of adequate data. Years for which spatially precise data were obtainable for this study of NOMA are 1965, 1967, 1968, and 1969. The data used are a composite of Dun & Bradstreet (D&B) figure from the Market Identifier File, address corrected by telephone books and employment corrected by figures from the Louisiana Division of Employment Security. On an individual establishment basis, the data contain this information: the establishment name, four-digit SIC code, street and zip-code address, functional type,[2] founding year of the establishment for all but branch establishments, number of employees at the establishment site, and unique DUNS (Data Universal Numbers System) number for identification and computer access.

To test specific urban-economic hypotheses about the location of manufacturing employment and establishments, locations were taxonomized by zip-code groupings into four categories similar to those used by Hoover and Vernon:[3] the central industrial district (CID), a generously expanded central business district; the annulus surrounding it, equal to the core city minus the CID; the inner-ring (IR), principally the post-World-War-II suburbs; and the outer ring (OR). The criterion for demarking these four zones was, as was Hoover and Vernon's, a combination of population density and age-plus-intensity of land development. The CID was historically a continuous center of commercial and industrial activity. For the rest of the core, often only a large portion of a particular zip-code area--that portion closest to the CID--was evenly developed historically. On the whole, zip-code areas were grouped which were more like the zone they were gathered into than like other contiguous zones.

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OVERVIEW

New Orleans, like every metropolis, is a unique city, with its peculiarities affecting the dynamics of its manufacturing development. In brief, because of geographical differences, the diverse vintages of cities' technologies, the traditions modifying the supply of productive factors, the force of dynamic comparative advantage or disadvantage, and varying political constraints, it is imperative to carefully study NOMA's background as a particular city. Hence the first part of this paper gives results from regional economic analysis of metropolitan aggregates to articulate an understanding of the forces which have created NOMA in the past. The analysis of the six aggregated parishes contrasts NOMA with southeastern United States metropolitan areas (SE SMSAs) and all United States metropolitan areas (US SMSAs).

There are significant theoretical reasons to expect the CID to fare well over a prosperity phase of the metropolitan business cycle, relative to its performance during a slow or declining phase. The next section develops these reasons and characterizes the phase of NOMA's business cycle over the period of the data set.

The vantage point from which the study of manufacturing location dynamics within NOMA is undertaken is with the aid of theories presently proposed. These theories are summarized into three sets of hypotheses to be tested for NOMA by use of taxonomical tables from the data set.

Conclusions from the hypothesis sets are then presented, with accompanying theoretical reflections on the process which has been transforming NOMA's manufacturing employment location.

Finally, directions are indicated for subsequent study of employment location dynamics in NOMA.

A BACKGROUND UNDERSTANDING OF NOMA

In 1960, Census figures indicate, NOMA fell considerably short of US SMSAs and SE SMSAs in manufacturing employment as a share of its total employment; figures for manufacturing employment as a percentage of private nonfarm employment in US SMSAs, SE SMSAs, and NOMA were 29.5, 21.3, and 16.0%.

Over 1940-1950 and 1950-1960, shift-share analysis of NOMA's nonfarm employment relative to its immediate comparison aggregate, SE SMSAs, indicated that NOMA's sole positive share was in mining. Despite the fact that it had a favorable industry mix, NOMA's share fell short over the two decades by 21,414 and 25,463 employees respectively.

The primary explanation of NOMA's peculiar industry structure and poor performance appears to be that the area possesses an unusually large secondary-market labor force. Many facts indicate this explanation. Among the comparison areas, NOMA had the highest percentage of nonwhites in 1940; and, while in SE SMSAs from 1940 to 1960 the percentage of nonwhites declined from 27.3 to 22.7%, in NOMA it rose from 19.6 to 30.5%. As indicated in Table 1, NOMA's employment/population ratio was strikingly low. Analysis of income data from the Regional Economics Division showed that, relative to US SMSAs and SE SMSAs, by 1960 NOMA had the lowest share in wage and salary payments and proprietors' income and the highest share of property income. Yet, using shift-share terms, NOMA had positive shares in average earnings over both decades relative to both comparison areas.

And since 1958, Census of Manufactures' figures show a rapid growth in NOMA's average manufacturing earnings--which resulted in their being higher than U.S. average manufacturing earnings by 1967.

TABLE 1. EMPLOYMENT AS PER CENT OF POPULATION

	1940	1950	1960
US SMSAs	38.62	42.21	40.66
SE SMSAs	40.13	42.35	40.18
NOMA	34.89	37.19	34.70

Sources: U.S. Department of Commerce, Growth Patterns in Employment by County, Volume 5, Southeast, 1965; and Bureau of Business Statistics, Regional Economics Division, computer printouts.

Enhancing the evidence for a secondary labor pool without a tradition of industrial discipline or work skills is NOMA's location in the Mississippi Delta, the major source of population displacement in the United States. The effects of migration are intensified by the largely nonwhite character of displaced immigrants into NOMA and their ghettoization in the central city (CC). Between 1940 and 1970, the nonwhite percentage of CC inhabitants increased from 30.3 to 44.5% while in each of the other five NOMA parishes the nonwhite percentage dropped.

Meanwhile, the CC suffered the lot of its counterparts throughout most of the metropolitan United States. Relative to the other parishes, the CC by 1966 had a considerably larger tax share (especially property tax share) as a component of its total revenue, the fastest growth in per capita public debt, and the lowest per capita expenditures (due to its ever diminishing tax base). By 1966, it also lagged considerably in expenditures on public education.

THE PHASE OF THE NOMA BUSINESS CYCLE

All aspects of manufacturing activity, including employment and establishment location decisions, might be expected to be influenced by the phase through which the metropolitan business cycle is passing. During a prosperous phase, available low-cost buildings in the core might be the most efficient capital with which to quickly produce products in high demand. Moreover, a core location would be more accessible to semi-skilled and low-skilled expansion labor. And with prosperity, a real estate boom might be expected on the periphery of the area, increasing the site values and rents beyond those which more marginal establishments--establishments which would gain the least from a decentralized site--could afford to pay.

During a declining phase, on the other hand, reverse forces could be operative in centrifugal fashion. The most efficient plants would be maintained, which would be the newest, located at some distance from the CID. If the decline is such that managerial personnel are more fully employed than workers with lower skills, a location near their suburban residences would be more attractive for holding and recruiting employees.[4] Moreover, the decision-maker himself might take the opportunity to move his establishment closer to his personal home, especially if he is encountering increased congestion along his home-work axis. And if the metropolitan business cycle is notably slack, the more marginal establishments might be encouraged to migrate to the periphery.

Data on the real-estate and building cycle would obviously be necessary for a direct test of these land-market hypotheses. The fact is that it could be of great importance to be aware of the metropolitan cyclical phases over the period studied.

A New Orleans Metropolitan Business Activity Index for the SMSA has been calculated by Louisiana State University in New Orleans for the period now under consideration. It is possible to use the Index to compare the period studies with the two preceding periods. The percentage change in the Index has been calculated for three periods, 1957-1961, 1961-1965, and 1965-1969, using the months of April for each year, since that was the month used from employment security records to correct employment figures for the data set. The percentages of increase found were 8.1, 50.2, and 16.6%, respectively. From the Index, therefore, a pointwise comparison indicates this conclusion: the period studied was one of slow growth in general business activity for the New Orleans SMSA.

THREE HYPOTHESES

Three sets of hypotheses were tested by use of taxonomical tables--one macrometropolitan set and two intrametropolitan sets. The sets synthesized the predicted effects of current theories and their empirical specifications by other researchers, as these would be expected to apply to NOMA.

The macrometropolitan set of hypotheses and the two intrametropolitan sets were not mutually exclusive. The macrometropolitan set explicated for the entire area some of the expected agents of change and consequences of the general process of change which are implicit in urban location theory. The first intrametropolitan set further detailed this process, expecting that zonal location alone was sufficient to predict the quality and relative quantities of changes. It considered that land was now sufficiently homogeneous and the CID sufficiently constrained, that CID-dominated manufacturing employment was passe. Hence a general diaspora was expected to be taking place from the CID.[5]

The second intrametropolitan set modified the first, anticipating for different types of establishments some centripetal forces operating to the advantage of the CID. It considered that land homogenization sufficient for location alone to be predictive of employment changes had by no means been achieved. On the contrary, increased markets and rapid changes in demand and in supply technology had made central locations more important to some classes of firms. Hence land-use specialization would still be manifest in NOMA's anatomy and anatomical dynamics, with the direction of change in employment location over time varying across taxonomies of industries, firm structures, and marginal agents. As land uses were re-sorted, there would be identifiable centripetal movements which indicated not only continued but also some heightened site advantages in the CID. Therefore the CID would be expected to suffer specific rather than general losses, along with other specific gains. Although the net effect of this set of hypotheses might not differ from the former set, modifications of many elements of the former set would be evident.

However, it was not possible to predict a priori how evident these centripetal forces would be over a slow-growth phase of a metropolitan business cycle. If the centripetal forces are heavily dependent upon a rapid-growth phase of the business cycle, they may be dormant during a slow-growth phase, or their muted effects may be overcome by centrifugal forces.

Conclusions from the tests of the macrometropolitan and intrametropolitan hypothesis sets will be presented in this paper, with verified hypothesis stated as facts and nonverified hypotheses indicated.

MACROMETROPOLITAN HYPOTHESES SET

The macrometropolitan manufacturing performance from 1950 to 1960 was continued from 1965 to 1969: the beat went on of a city in a crisis of relative decline. The decline of National Aeronautics and Space Administration (NASA) employment was precipitous (-5,596); but as NASA waned, Avondale Shipyards waxed (+3,581), principally through acquiring federal and federal-subsidized contracts. If the large employment increases at Avondale were subtracted from the observed figures, a study of manufacturing experience in NOMA in the latter half of the 1960's would read as a chapter from the dismal sciences. For NOMA, an area not widely recognized as critically dependent on federal defense plant expenditures, the roles of NASA and of Avondale were indeed critical.

Otherwise, NOMA's dynamic comparative disadvantage in manufacturing continued during the 1965-1969 period.

NOMA's manufacturing labor market was decidedly active, showing a gross average yearly employment-location change of almost 11% of the area's total manufacturing employment.[6] The large amount of annual change which took place in manufacturing employment location suggests that it may be possible to achieve many social goals in a short time, given enlightened policies which direct market dynamics.

With NASA establishments set aside for separate modeling,[7] and only interzonal movers considered as movers, the descending-order ranking of the importance of the four marginal agents is well in accord with the predicted ranking (with the exception of nonmovers, which was predicted to be the most important agent). The ranking was: deaths, births, nonmovers, and movers.[8] Thus the major conclusion of the investigation concerning the importance of the four marginal agents of employment changes is to accept the minimal importance of movers and to evaluate the importance of nonmovers, births, and deaths according to the phase of the metropolitan business cycle.

Employment losses due to establishment deaths accounted for 10.6% of the 1965 base-year employment. Establishment deaths declined consistently as establishment size increased.

Between 1965 and 1969, new establishments accounted for new employment equal to about 7% of the 1965 employment figure. There was a high variance across SIC categories in average size of NOMA's manufacturing establishments--and the average size of new establishments, in each SIC instance smaller than the base-year average establishment size, ranked in general in similar order to SIC base-year ranking by average size.

As a general rule, employment in new establishments was associated with the employment growth or decline in the industries of NOMA as a whole. This was predicted as a cyclical phenomenon: in slow times, individual entrepreneurs would be more risk adverse than in prosperity and more carefully studious of opportunities or their lack before initiating a new establishment.

Gross employment changes due to stationary establishments were less than those due to deaths and births. This was consistent with the slow-growth phase of the NOMA business cycle--and particularly so when it is considered that the net result of nonmovers' employment changes was positive in each zone, contrary to the total NOMA employment losses. NASA losses aside, the single marginal agent responsible for growth of employment in every zone of NOMA was nonmovers' growth, especially large nonmoving establishments' growth in transportation, fabricated metals, and chemicals. This was ex-

plainable as due to dynamics factor advantage, sharper awareness of demand and supply opportunities, and economies of scale.[9]

Employment in establishments which moved within NOMA amounted to 8.4% of the 1965 total NOMA employment. The major share (70%) of the employment of moving establishments moved within the establishment's zone of origin, leaving movers an easy last in effecting interzonal locational changes. Moreover, interzonal movers moved short distances.

Average movers were smaller than the average establishment for their SIC class.

Employment expansion was not a prime motive for moving--which was expected due to the phase of the metropolitan business cycle and the fact that the employment-change figures concern only the first year in which the firm moved.

Relatively declining industries did show a low moving rate and in general declined when they moved.

Increasing specialization was occurring in NOMA, but it was not occurring in growth in importance of single-establishment firms, which declined in employment (-1,264) and in average size. Also, insignificant changes took place in the number and employment share of subsidiaries. These phenomena may be explained as due to the disadvantages of single-establishment firms over slow phases of the business cycle. They might also be related to the particular industries in which single-establishment firms predominated and to their more regional-market character (assuming the slow-growth phase was a regional phenomenon).

In accord with predictions concerning amoebic specialization within firms, headquarters' employment grew significantly (+3,148); contrary to predictions, so also did employment in branches (+4,288, NASA aside) and in office branches (+1,130). It appears that NOMA may have been profiting from a force frequently discussed today in regional economic literature. In many national multi-establishment firms, technological innovations in transportation and communication have led to greater branch employment concentration in large nodal centers, with declines at traditionally dispersed regional locations. NOMA may be enjoying its advantage as a southeastern regional center for branches of national-market firms and as a regional headquarters for regional-market firms.

Within NOMA, an unpredicted decline occurred in employment in office headquarters (-405), reducing total employment in this category to an insignificant 166. The area was obviously not a prestige center for major manufacturing headquarters, nor a location for management's contact with the keenest manufacturing entrepreneurs.

INTRAMETROPOLITAN DISPERSION HYPOTHESES SET

From 1965 to 1969, the general dispersion theory obtained in NOMA for the CID (-1,496). The annulus, as expected due to its available sites and advantages relative to the CID, gained in employment (+752). As a result of Avondale Shipyards' increased employment, the IR gained more than the annulus (+3,326). And the OR, NASA aside, grew slightly more than the annulus (+917).

And not only were the net results CID-decentralizing, but changes in employment due to the rate of natural increase, to stationary establishments,

and to net movers all followed this scenario.

Changes in employment due to the rate of natural increase of establishments were in accord with the decentralizing theory, with the IR gain surpassing that of the OR. The annulus showed unusually strong employment in new establishments, coupled with even more unusual losses of employment in dying establishments. With the exception of the annulus, employment losses due to establishment deaths were as the hypothesis set indicated. Due to deaths of establishments in NOMA's six largest declining industries, the CID did suffer a more-than-proportionate loss of employment.

Relative to each zone's base share, the effect of the employment changes due to nonmovers was strictly decentralizing for the core city--although there was suggestive evidence that, over a slow-growth phase of the business cycle, change-in-the-employment-of-nonmovers was not as harmful to the CID as were the other marginal agents.

Employment-location changes due to net movers were as predicted for all but the OR: -1,331 for the CID, +846 for the annulus, +266 for the IR, and -32 for the OR. Approximately 30% of the employment in movers from the CID migrated to the annulus (1,115 employees). Movers-from followed a core-city-decentralizing pattern, but movers-to were in total conflict with this pattern. The need to net out intrazonal movers was evident, in order to analyze in detail locational shifts due to moving establishments.

In NOMA, the incubator hypothesis' primary ingredients favored the theory for the annulus and not for the CID: the annulus was a spawning pond with a high birth rate of small establishments and a high death rate (predicted as due to infant mortality), and movers from the annulus were expanding. Each of these elements was contrary to the facts for the CID. An incubating annulus gives further evidence to support the argument that, in NOMA, the annulus had most of the advantages and few of the disadvantages of the CID.[10]

Over a phase in which employment losses due to establishment deaths were foreseen as exceeding employment gains due to establishment births, the annulus grew as expected: as a combined result of immigration from the CID and growth in the employment of its stationary establishments.

As anticipated during a slow phase of NOMA's business cycle, the "trickle down" theory predicting high utilization of the CID's rundown rentable space was not verified.

The airport hypothesis--that airports might be expected to generate industrial parks for manufacturing--was not verified in NOMA.

INTRAMETROPOLITAN CENTRIPETAL DYNAMICS

In 1965, CID preference was manifest in NOMA for communications, image, and below-average-capital-intensity industries, for small establishments, for headquarters in general, and for office headquarters in particular. But the specific centripetal forces predicted by the second intrametropolitan set of hypotheses appeared to be at best dormant or muted during NOMA's slow-growth phase of its short-run cycle, over which the CID suffered erosion in all major categories which were expected to favor it. These included the above CID-preference and new CID-preference establishments, industries with a slow rate of increase in capital intensification, single-establishment firms, all size categories beyond the 1-10 class in new establishments, and new office branches.[11]

Loss of employment in single-establishment firms intensified the CID's decline; the CID's net employment loss in single-establishment firms was

greater than its total employment loss. In addition, the CID employment share in new single-establishment firms was less than its base share.

Headquarters and office headquarters were in different zones than those in which their industries' concentrations were located and from 1965 to 1969 were not increasing within the zones of their industries' concentrations--facts which argue advantages of land-use specialization available to multi-establishment firms. Headquarters' employment tended to almost maintain the CID's initial employment share.

DIRECTIONS FOR CONTINUING RESEARCH

This study has developed and utilized data on NOMA's manufacturing industry over a slow-growth phase of its business cycle. It has elaborated theoretical expectations concerning such phases and found many of them verified by facts during a slow-growth phase. How consistent and sensitive these theories are over recession, depression, and prosperity can only be evaluated by similar data over these other cyclical phases.

For employment analysis, the technique of employment data development utilized in this study could be continued and expanded at relatively small cost. D&B data were an indispensable beginning. The continued cooperation of the Louisiana Division of Employment Security should enable the urban economist to follow the development of NOMA's employment over the successive phases of the metropolitan business cycle.

More in-depth research could be undertaken by following new establishments for some years, in order to discern the differing characteristics of growing and declining new establishments. The same pattern of research could be undertaken in reverse for establishments which died, in order to study their symptoms prior to their demise. And the study over time of establishments which moved could serve either to further diminish or to enhance the employment importance of moving establishments.

Finally, it is important to point out that this microeconomic study of manufacturing may be viewed as a first step along the road to the construction of part of a computer simulation model: the development of a software module of manufacturing employment in NOMA. The next steps towards completing a module of manufacturing employment location within NOMA include the following.

Continuing effort on the manufacturing module will separate the NASA establishments for peculiar handling.

It will search for more cohesive geographical groupings for NOMA than the Hoover-Vernon zones to reveal valuable differences netted out by use of the four zones. For example, given the traditional rail-port-transit orientation within the CID, it is possible that separation of the CBD within the CID could prove of value in understanding the areal changes taking place. The annulus, as identified, collects territories from Orleans and Jefferson Parishes, although taxes in Orleans are considerably higher than in Jefferson. It also collects areas on both banks of the Mississippi River. A parish and river-bank breakout of more intra-annulus zones might distinguish areas of concentration, growth, or decline. The same type of breakout could occur in the IR, which embraces areas from four of NOMA's parishes. And a "beyond the OR" zone could be effectively delineated.

A further aid to demarcating and characterizing zones may be the definition of "traditional" zones, as suggested by Struyk and James.

"Zones in the central city were considered to be a traditional center if the zone contained 5 or more percent of the total SMSA manufacturing employment in 1965 and/or has been indicated to be a once important industrial center by knowledgeable persons. For non-central-city zones, the zone had to contain 5 or more percent of total SMSA manufacturing employment in 1947."[12]

Another criterion of zonal selection may be the identification of industrial concentrations. While external economies may be expected to be conducive to concentrations, other forces are working toward dispersion--especially congestion and internal savings. Growth in total employment and SIC concentration did take place within the OR which was not noticeable in its aggregated form. For example, St. Charles Parish to the far west of NOMA grew from 52.1% to 71.5% of NOMA in chemicals, by a gain of 1,269 employees. To the east of NOMA, St. Bernard Parish grew from 84.9% of NOMA to 96.6% in primary metals, with a gain of 38 employees.

For NOMA, the major transportation network and its changes--new freeways, highways, and bridges--should be carefully studied. The four-city National Bureau of Economic Research (NBER) study found that the effects of major innovations depended upon the extent of congestion and of the total system's developments. Since NOMA's system is congested and underdeveloped in many ways, Struyk and James's conclusion suggests that this would be a major operative force in location decisions within NOMA.

Finally, poverty areas should be collected for special consideration.

Once adequately disaggregated zones have been demarcated and characterized, intrazonal movers will be separated from interzonal, to more effectively weigh the area-transforming effects of establishment movement.

Separate analysis will be undertaken of the largest establishments, in order to relate their changes to total NOMA dynamics. A tabulation of NOMA's industries by size showed that in 1969 the 52 establishments with employment over 240 persons accounted for 28,424 employee--almost 50% of NOMA's total. A total of 170 establishments of between 40 and 240 employment accounted for 16,659 employees, bringing the total of 222 firms to approximately 75% of NOMA's manufacturing employment. Especially for annual forecasts, a survey of the largest firms may be an important predictive ingredient.

Throughout this effort to model the demand side of manufacturing location, the urban economist must take a page from the observational scientist and consider[13] the taxonomized tables--to search for patterns not captured by the three sets of hypotheses. When enough dynamic patterns have been uncovered, experimentation for parameters of location demand equations may be in order by use of such tools as discriminant or probit analysis. It is clear that data on site supply are necessary, especially for transport-bound and raw-materials-consuming establishments; with such data available, factor analysis might prove to be the best tool.

To attain the goal of a module predictive of basic manufacturing employment location, many behavioral and technological relationships in NOMA's performance are yet to be disentangled. But it is a fundamental conviction of the author of this paper that a contribution to this type of general disequilibrium flow model is more valuable than a presentation based on more easily available data which perpetuates less adequate theoretical tools.

FOOTNOTES

[1]The metropolitan area studied contains two parishes in addition to the four-parish SMSA.

[2]The following nonmutually exclusive categories were given: single-establishment firm, subsidiary, headquarters, branch, office headquarters, and office branch.

[3]Edgar M. Hoover and Raymond Vernon, Anatomy of a Metropolis, Harvard University Press, 1959.

[4]Cf. Benjamin Cohen, "Employment Trends Within Large Metropolitan Areas," mimeographed, Yale University, 1971, p. 3.

[5]This theoretical expectation was developed in general for the core city--both the CID and the annulus. But considering the relatively underdeveloped state of its manufacturing, NOMA's annulus was quite dissimilar to that of the theoretical SMSA. The theoretical annulus was characterized as having all of the disadvantages and few of the advantages of the CID. It appears that the annulus in NOMA may have possessed many of the advantages and few of the disadvantages of the CID, due to its available vacant space and its lack of obsolete structures and of the knotted congestion found in the CID. Moreover, compared with other metropolitan areas, from which the theory was derived, the relatively underdeveloped state of NOMA's limited access highways would make its annulus considerably more accessible relative to its OR. In short, before theoretical predictions were finalized, site supply and access routes were considered for NOMA.

[6]Gross figures add across the four zones the absolute values of employment changes.

[7]A persuasive rationale exists for treating the NASA establishments separately--in that it is highly probable that the location decision may have been arrived at by giving greater weight to political rather than to market considerations.

[8]This ranking has significant policy implications. In contrast to policy priorities derived from casual empiricism (especially the popularized "flight to the suburbs"), movers are expected to rank last in marginal-agent importance. Such priorities could be explained as due to a combination of accepting a priori theorizing as fact and of movers' visibility as a result of the political and public-relational fanfare which surrounds them. Hence emphasis on efforts to hold potential emigrants or charm potential immigrants could be seriously misplaced, unless local movers are considerably more susceptible to policy influence than other marginal agents.

[9]Local government policy implications of the marginal-agent ordering and of the generally positive impact of nonmovers may well be to emphasize the promotion of existing successful industry and to attempt to effectively induce immigration of new establishments in national growth industries.

[10]However, it was true that movers from the CID were young--and larger than the average size of movers-from--while movers from the annulus were not young and were smaller than the average size of movers-from. Industry breakdowns might reveal the cause of these differences between the two zones.

[11]Minor-ingredient exceptions were size group 1-10, paper, fabricated

metals, and new apparel and scientific-instruments establishments; in addition, the CID did not suffer employment losses proportionate to its base share due to deaths of establishments in CID-preference industries.

[12]Raymond J. Struyk and Franklin James, Intrametropolitan Industrial Location: The Pattern and Process of Change in Four Metropolitan Areas, mimeographed, National Bureau of Economic Research, August 1971, pp. 2-12.

[13]In the etymological sense, cum sideribus--the image being the mid-Eastern astronomer-astrologist.