

CHAPTER 8

THE INFLATIONARY DYNAMICS OF CORE AND PERIPHERY: A STRUCTURAL DECOMPOSITION OF INFLATION IN A DUAL ECONOMY

The relationship between inflation and aggregate concentration has not been systematically explored by economists. The prevalent view is that changes in aggregate concentration may affect the inflationary process but the effect is only indirect, working mainly through the impact of aggregate concentration on the structure and behaviour of individual industries. Furthermore, most economists view the relationship between the two phenomena as essentially one-sided. The contention is that, while aggregate concentration can affect inflation, there is no backward link through which inflation affects the process of aggregate concentration.

In this chapter we propose an alternative perspective on the relationship between the two phenomena. Specifically, we argue that inflation and aggregate concentration are two sides of the same dynamic process. Focusing on the U.S. manufacturing and mining sector, we demonstrate that, over the last three decades, the 'business' and 'industrial' experience typical to the largest firms in that sector was drastically different from the comparable experience of smaller firms. In the 'business' sphere, sales revenues for the two groups expanded at different rates, while in the 'industrial' sphere, employment of the two groups not only changed at different rates, but usually moved in *opposite* directions! This heterogeneity unfolded in two related ways. First, we reveal how the different inflationary experiences of the largest and smaller firms determined the overall rate of inflation in the manufacturing and mining sector and, second, we demonstrate how the differences created systematic changes in the rates of aggregate concentration for that sector.

This view on the relationship between inflation and the aggregate concentration process is part of our basic framework which seeks to examine inflation as a dynamic process of *restructuring*. Note that, in contrast to common approaches, we focus specifically on restructuring rather than on structure. In

most inflation theories, 'structure' denotes the overall static framework in which economic agents operate. Theorists would commonly start by assuming a certain structure and then proceed to explore how that structure affected the inflationary behaviour of economic agents. For example, the effect on inflation of a perfectly competitive structure may differ from the effect of monopolistic competition and further differ from the effects of unbalanced oligopoly and monopoly. Other structural considerations (such the extent of unionization, the scope of military spending, the size of the national debt, the nature of industrial policy, or the degree of tariff protection) may also be crucial for inflation. These structural factors are evidently different from each other, but they also have one thing in common: they are all taken as *given* for the purpose of analysis. Of course, this does not mean that structures do not change. For instance, some industries may be transformed from a monopolistically competitive to an oligopolistic structure and this could affect their inflationary experience. Similarly, a change may occur in the functional relationship between union membership and wage demands. Or, the impact of military spending on inflationary expectations could change. These and similar changes occur all the time but, for most inflation theories, they simply mean that we move from one given framework to another.

Here we come to a crucial point which differentiates our own analysis from numerous other attempts to explore inflation. For most theorists, 'structural change' is a singular, exogenously determined 'event' which affects inflation only because it transforms the system from one static structure to the next. We, on the other hand, begin from the *a priori* assumption that economic structure is *inherently unstable*. For us, 'structural change' is not an isolated 'incident,' but rather a *continuous process*, and inflation is related not to static structures but to a *dynamic process of restructuring*. Note that we do not argue here that market structure and institutional arrangements are insignificant for inflation analysis. On the contrary, in our opinion, structures and institutions provide the key toward understanding the inflationary process but, in arresting these into a static framework, we work to conceal the dynamic essence of inflation. If inflation is indeed a process of structural change, we must focus on *structure* but also on *how it changes*.¹

¹ This distinction between static structures and dynamic structural change resembles in some way the complementarity between particles and waves in quantum physics. Louis de Broglie, who first formulated the basic principles of quantum mechanics, was profoundly influenced by Bergson's idea that, in describing the movement of an object as a collection of successive static positions, we in fact violate the very essence of movement (see Feuer, 1974, pp. 219-20). Similarly, if inflation is a process of continuous dynamic restructuring, we cannot fully describe this change as a succession of static

Our analysis proceeds in several stages. We begin with the framework developed in Chapter 7, in which we proposed a new family of dual-variable "Inflation" indices designed to capture the dynamic interaction between 'business' and 'industry.' In the first section, we use this setup to distinguish between the standard industry-based approach to inflation and the alternative framework of 'enterprise-inflation.' The second section provides a simple taxonomy for three dynamic regimes of inflationary restructuring. Based on this taxonomy, we develop in the third section the 'Heterogeneity Principle of Inflation,' stating that, while inflation may be structurally 'neutral' in principle, such neutrality could not exist in practice. In the fourth section, we leave the general discussion of restructuring and focus on the specific process of aggregate concentration. Our empirical analysis pertains to the U.S. manufacturing and mining sector. In the fifth section, we set the basis for this analysis by differentiating between the largest and smaller firms in that sector; here we also define the different variables and assess the available data. The empirical results are reported in the sixth section. Our findings seem to indicate that inflation is indeed a dynamic process of restructuring, involving systematic changes in aggregate concentration. Hence, any attempt to get to the root of inflation must relate to the underlying causes of aggregate concentration. We set the stage for such inquiry in the final section.

8.1 Enterprise "Inflation"

The 'multiprice' and 'value-quantity' (or 'business-industry') perspectives for price indices lead to different views on the relevant framework for inflation analysis. When viewed as an overall increase in the prices of *commodities*, inflation appears as an *industry*-based phenomenon. The conventional classification of commodities according to their physical characteristics leads to a comparable classification of price indices. For example, the prices of Marlboro, Winston and Salem cigarette brands are customarily grouped as elements of the price index for tobacco products; the prices of Mustang, Cadillac, Pontiac and Taurus automobile models contribute to the price index for passenger cars; the prices of *The New York Times*, *The Washington Post* and *Time Magazine* are part of the price index for newspapers; and the prices of Macintosh and PS/2 personal computers are included in the general price

structures.

index of computers. In each of these cases, the price is seen as an attribute of the commodity and, hence, of the industry in which the commodity is produced. It is then only natural to view the rate of inflation as being an industry-based variable too. Most analyses of inflation (macroeconomic as well as structural) seek to explain it as a process of changing prices and, not surprisingly, they take the *industry* as their basic framework.

Note, however, that the adequacy of the industry framework is largely contingent on our basic interpretation of what inflation is. When we focus on price changes only, the industry may seem as the appropriate context for analysis, but when we view inflation as a broad process of interaction between the 'business' and 'industrial' spheres of economic activity, the Standard Industrial Classification becomes an insufficient and even misleading analytical framework.² From the 'business-industry' perspective, inflation is an *enterprise*-based, not an industry-based phenomenon. In the context of modern capitalism, economic activity is carried out for the ultimate purpose of pecuniary gain. The fundamental institution guiding this activity is business enterprise, the elementary building bloc of which is the corporation. The essence of the corporate mode of organization is the pursuit of profit, and it is this essence which links the 'business' and 'industrial' spheres of economic activity.³ The production of any particular commodity may be associated with a certain industry classification, but it is the *corporation*, not the industry, which ultimately guides and directs this production activity. If the production of some commodity works to

² Our notion of the 'industrial sphere' is not synonymous with the customary concept of 'an industry.' When we talk about an industry, we usually refer to the entire range of economic activities relevant for a particular product or groups of products. A reference to the 'steel industry,' for instance, may encompass diverse activities such as the buying of iron ore, the negotiations with the United Steelworkers Union, research and development of production techniques, the actual production of steel, the pricing of steel products, the distribution of steel products to buyers, the dealing with creditors and the relation with governments. On the other hand, when we refer to the industrial sphere, we focus exclusively on the material and technological aspects of economic activity. For example, the 'industrial sphere' for USX includes all the physical and technological aspects of producing steel, but not only steel. Since USX is also involved in oil and gas, chemicals, manufacturing goods, financial services and transportation equipment, its industrial sphere includes the technological and material aspects of all of these areas too. The 'industrial sphere' of USX does not include, however, activities such as the buying of iron ore, the negotiation of a labour contract, the pricing of steel products, the borrowing of money or attempts to influence government tariff policies. Although all of these activities are related to steel, they occur in the 'business,' not 'industrial' sphere.

³ Note the usage of terms here. Economists often debate whether corporations seek to 'maximize profits,' 'satisfy profit,' 'achieve a target rate of return,' 'maximize revenues,' 'satisfy the private goals of its executives,' or, as we claim in Chapter 9, 'attain a differential rate of accumulation.' In each of these cases, however, the *pursuit of profit* remains a fundamental prerequisite for the long-term existence of the corporation.

significantly undermine the general business goal of profit-making, that production will likely be altered or stopped. In general, industrial production and business activity are the instruments of making profits for corporations and, hence, the inflationary interaction between 'business' and 'industry' is first and foremost an *enterprise*-based phenomenon.

Our primary focus on the inflationary experience of *firms* requires that we deal with enterprise-based inflation indices but, unfortunately, these are not readily available. Furthermore, given the extent of corporate diversification, we cannot use standard, industry-based indices of inflation as approximations for enterprise-based inflation.⁴ The mismatch between existing and desirable data is evident. For example, we have comprehensive price indices for industries producing automobiles, financial services, aircraft, locomotives, or guided missiles, but we do not have all-encompassing price indices for General Motors or Ford which produce all those commodities; we have price indices for tobacco products, cosmetic products, diary products or suitcases, yet we do not have a broad price index for R.J.R. Nabisco or Philip Morris which manufacture and sell them; we have price indices for jet engines, medical equipment, leasing services and radar equipment, but we do not have a general price index for one of their main producers, General Electric. Thus, although corporations may be the most appropriate building blocs in the study of inflation, we have no systematic information on their particular inflationary experience.

Our own "Inflation" indices can offer a partial solution for this problem. Recall that the rate of "Inflation" is defined as the difference between a 'business' variable and a corresponding 'industry' variable. By choosing the rate of change of corporate sales as a proxy for 'business' conditions, and the rate of change of employment as an indication for 'industrial' conditions, we can devise a comprehensive, enterprise-based index for "Inflation." For example, the rate of "Inflation" for General Motors will be defined as the difference between the rates of growth of sales and employment of that corporation. Similarly, the rate of "Inflation" for all corporations with assets exceeding \$250 million will be defined

⁴ Scherer and Ross (1990, p. 418) note that our ability to classify firms on the basis of the 'primary' industry in which they operate has been critically impaired by the drive for diversification since the 1960s. They conclude in a rather definite tone that '[i]t is hardly an exaggeration to say that any study using data for the years since the early 1960s classified by the primary industry method, without elaborate quality controls, is virtually worthless.'

as the difference between the rates of growth of their aggregate sales and employment. Such indices could sometimes be computed from readily available data.

Enterprise-based "Inflation" indices are specific to firms, not to what they produce. Since all sales, regardless of their origin, are denominated in monetary units such as dollars, and since all employment, irrespective of its productive purpose, is denominated in employees, the specific product mix of the company (or group of companies) has no bearing on the meaning of the index itself. Of course, changes in product mix or lines of business may have a significant impact on the temporal behaviour of enterprise-based "Inflation" indices. For instance, a transformation involving a reduction in the share of automobile manufacturing coupled with an increase in the share of military business may alter General Motors' rate of "Inflation," by having a different effect on the growth rate of the company's aggregate sales than on the growth rate of its overall employment. Or, the rate of "Inflation" for a group of large firms will be altered by a shift from consumer to producer goods, if this change in emphasis affects the rate of growth of sales and the rate of growth of employment in markedly different ways. But although the nature of economic activity may be of utmost importance when we come to examine *why* the indices change, it has no bearing on *what* the indices represent. An enterprise-based index for "Inflation" reflects the *broad* interaction between the 'business' and 'industrial' domains of the firm. It seeks to encompass the firm's *entire* range of activities and, hence, it must abstract from the particular nature of those activities.

The implications of viewing inflation as an enterprise-based phenomenon are far reaching. We can no longer retain the Standard Industrial Classification as an adequate framework for analysis, since inflation arises in the domain of *firms*, not industries. Our focus is no longer on commodities but on *institutions*. Our ultimate concern is no longer the prices of goods and services, but the *economic relations* behind them. In order to get to the root of inflation we must explore the dynamic interaction between 'business' and 'industry' as a structural interaction between firms. We begin this examination in the following section by developing a simple structural taxonomy for alternative inflationary regimes.

8.2 Inflationary Regimes: A Structural Taxonomy

Consider a universe of firms, such as all the corporations in the economy or in a particular sector. We can define the rate of "Inflation" se for this universe of firms as:

$$(1) \quad se \equiv \Delta S/S - \Delta E/E,$$

where Δ denotes first difference, S is aggregate sales and E is the aggregate employment for the universe of firms. Further assume that we can identify n distinct groups of corporations, classified according to one or more criteria such as size, type of economic activity, membership in distributional coalitions, etc. We can then rewrite Equation (1) with specific reference to each group of firms, such that:

$$(2) \quad se \equiv (\sum_{i=1}^n \Delta S_i)/S - (\sum_{i=1}^n \Delta E_i)/E,$$

or

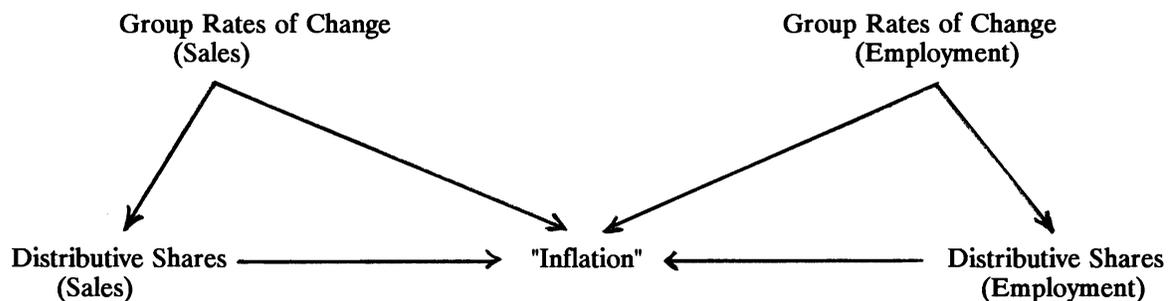
$$(3) \quad se \equiv \sum_{i=1}^n [(\Delta S_i/S_i)(S_i/S)] + \sum_{i=1}^n [(-\Delta E_i/E_i)(E_i/E)],$$

were $\Delta S_i/S_i$ is the rate of growth of sales for the i th group, S_i/S is the share of the i th group in aggregate sales, $\Delta E_i/E_i$ is the rate of growth of employment for the i th group and E_i/E is the share of the i th group in aggregate employment. The elements in the first square brackets denote the business contribution to "Inflation" of the i th group, while those in the second square brackets designate its corresponding industrial contribution. This equation could also be re-arranged, such that

$$(4) \quad se \equiv \sum_{i=1}^n [(\Delta S_i/S_i)(S_i/S) - (\Delta E_i/E_i)(E_i/E)],$$

where the elements in the square brackets now denote the combined business and employment contribution of the i th group of firms to the overall rate of "Inflation."

These decompositions are significant in that they enable us to view inflation and restructuring as two sides of the same dynamic process. Equations (3) and (4) make it clear that, for the aggregate rate of "Inflation" *se* to vary, there must be changes occurring in the individual contributions of the underlying groups. Focusing on the individual groups, we can see that the business and industry contributions of any one of them are determined by two types of factors: firstly by the short-term fluctuations in the group's own sales ($\Delta S_i/S_i$) and employment ($\Delta E_i/E_i$) and, secondly, by the group's respective distributive shares in aggregate sales (S_i/S_i) and aggregate employment (E_i/E_i). Moreover, there is a definite temporal relationship between these two types of factors: over time, the relative pattern of the groups' rates of growth affects their respective distributive shares. There are hence both direct and indirect links between rates of growth, distributive shares and "Inflation," as described schematically by the following diagram:



These relationships could be classified as occurring under one of three distinct inflationary regimes listed in Table 8-1 and which we now turn to examine.

Table 8-1 Inflationary regimes

	"Inflation"	Distributive Shares
1.	Strongly Neutral	Structural Invariance
2.	Weakly Neutral	Random Restructuring
3.	Non-Neutral	Systematic Restructuring

For the purpose of our subsequent presentation, it is convenient to substitute variable names for the standard mathematical expressions, such that

$$s \equiv \Delta S/S \quad (\text{rate of growth of aggregate sales})$$

$$e \equiv \Delta E/E \quad (\text{rate of growth of aggregate employment})$$

$$s_i \equiv \Delta S_i/S_i \quad (\text{rate of growth of sales for the } i\text{th group})$$

$$e_i \equiv \Delta E_i/E_i \quad (\text{rate of growth of employment for the } i\text{th group})$$

$$SS_i \equiv S_i/S \quad (\text{distributive share of the } i\text{th group in aggregate sales})$$

$$ES_i \equiv E_i/E \quad (\text{distributive share of the } i\text{th group in aggregate employment})$$

Strongly Neutral "Inflation"

"Inflation" is said to be *strongly neutral* if, over a certain time interval T, there are no changes in distributive shares. Symbolically, such *structural invariance* means that

$$(5) \quad \Delta SS_{i,t} = 0$$

and

$$(6) \quad \Delta ES_{i,t} = 0, \text{ for all } i \text{ and for all time periods } t = 1, \dots, T$$

Continuous structural invariance requires that the respective rates of growth of sales and employment be always equal across all groups, such that:

$$(7) \quad s_{i,t} = s_{j,t}$$

and

$$(8) \quad e_{i,t} = e_{j,t}, \text{ for all } i, j \text{ and for all } t = 1, \dots, T.$$

Weakly Neutral "Inflation"

An interval of *weakly neutral* "Inflation" occurs when there are short-term but no long-term variations in distributive shares of sales and employment. During this period,

$$(9) \quad \Delta SS_{i,t} \neq 0$$

and/or

$$(10) \quad \Delta ES_{i,t} \neq 0, \text{ for some } i \text{ and for some } t,$$

yet, over the entire time interval T, these are merely random fluctuations which do not lead to any systematic change in the overall structure of distributive shares.

As defined above, such *random restructuring* means that there must be some temporal differences between the growth patterns of sales and/or employment for the various groups, so

$$(11) \quad s_{i,t} \neq s_{j,t}$$

and/or

$$(12) \quad e_{i,t} \neq e_{j,t}, \text{ for some } i, j \text{ and for some } t.$$

At the same time, the fact that there is no systematic restructuring in distributive shares requires that the average rates of growth of sales and employment be equal across all groups; in other words, that both $\sum_{t=1}^T s_{i,t}$ and $\sum_{t=1}^T e_{i,t}$ be independent of i for the same T.

Non-Neutral "Inflation"

A time interval of *non-neutral* "Inflation" occurs when there are discernable trends in distributive shares for sales and/or for employment. This happens whenever

$$(13) \quad \Delta SS_{i,t} \neq 0$$

and/or

$$(14) \quad \Delta ES_{i,t} \neq 0, \text{ for some } i \text{ and for some } t ,$$

so that over the entire interval of T, there are clear rising or falling trends in the share of aggregate sales and/or aggregate employment accounted for by at least some groups of firms.

As in the case of weakly neutral "Inflation," the restructuring of some distributive shares requires that

$$(15) \quad s_{i,t} \neq s_{j,t}$$

and/or

$$(16) \quad e_{i,t} \neq e_{j,t}, \text{ for some } i \neq j \text{ and for some } t ,$$

but unlike in the weakly neutral case, a non-neutral "Inflation" leads to *systematic restructuring* and that necessitates that the average rates of change for these variables must be different for at least some groups of firms. Symbolically, this latter condition means that $\sum_{t=1}^T s_{i,t} \neq \sum_{t=1}^T s_{j,t}$ and/or $\sum_{t=1}^T e_{i,t} \neq \sum_{t=1}^T e_{j,t}$ for at least some $i \neq j$ for the same T.

To summarize, the structural nature of aggregate "Inflation" depends crucially on the disaggregate business and industrial experience of the underlying groups of firms. If all groups experience the same rates of growth for sales and for employment, then the inflationary regime is strongly neutral in the sense of creating no changes in the relative structure of distributive shares for these two variables. On the other hand, if "Inflation" occurs amid some inter-group variations in the rates of change for sales or employment, then these differentials have a contemporaneous effect on the overall structure of distributive shares. When the variations between the groups are merely random fluctuations around a common average, their effect on distributive shares is only transitory and, in that sense, the structural nature of "Inflation" could be seen as being weakly neutral. When the inter-group differentials are persistent, however, their impact on distributive shares is no longer random. In this case, "Inflation" is non-neutral and is accompanied by a process of systematic restructuring.

To further explore the structural aspects of "Inflation," it is convenient to consider a simple scenario, where we focus on a single group of firms (Group 1) and lump all the remaining companies into a second group (Group 2). It could then be shown that, for both sales and employment, changes in the distributive share of any one group would depend on its rate of growth *relative* to that of the other group. Specifically, the distributive share for a group will rise, remain the same or fall, depending on whether its rate of growth exceeds, equals or falls short of the comparable rate for the other group, respectively. These relationships are summarized in Table 8-2.

Table 8-2 Effect of growth-rate differentials on distributive shares

Growth Rates	Distributive Shares (Group 1)	Distributive Shares (Group 2)
<u>Business Sphere</u>	<u>SS_1</u>	<u>SS_2</u>
$s_1 > s_2$	Rising	Falling
$s_1 = s_2$	Constant	Constant
$s_1 < s_2$	Falling	Rising
<u>Industrial Sphere</u>	<u>ES_1</u>	<u>ES_2</u>
$e_1 > e_2$	Rising	Falling
$e_1 = e_2$	Constant	Constant
$e_1 < e_2$	Falling	Rising

The relationships between rates of growth and distributive shares in turn bear on the contributions of each group to the overall rate of "Inflation." For a two-group division, the rate of "Inflation" se is given by

$$\begin{aligned}
 (17) \quad se &\equiv s - e \\
 &\equiv [s_1 \cdot SS_1 + s_2 \cdot SS_2] - [e_1 \cdot ES_1 + e_2 \cdot ES_2], \\
 &\equiv [s_1 \cdot SS_1 + s_2 \cdot SS_2] + [-e_1 \cdot ES_1 - e_2 \cdot ES_2],
 \end{aligned}$$

where the overall business contribution to "Inflation" (s) is simply the sum of the individual business contributions of the two groups ($\sum_{i=1}^2 s_i \cdot SS_i$), while the overall industrial contribution to "Inflation" ($-e$) is the sum of the individual industry contributions of the two groups ($\sum_{i=1}^2 -e_i \cdot ES_i$). Beginning with the business sphere, we can assess the relative contribution of Group 1, by comparing the overall business contributions to "Inflation" under two distinct circumstances: one where both groups are included in the universe of firms, so the overall business contribution to "Inflation" is given by the groups' individual rates of growth for sales, weighed by their respective distributive shares, and another in which Group 1 is excluded, so the overall business contribution is given by the rate of growth of sales for Group 2 only. The 'business difference' (BD) between the overall contributions under these two situations is given by Equation (18):

$$\begin{aligned}
 (18) \quad BD &\equiv [s_1 \cdot SS_1 + s_2 \cdot SS_2] - s_2 \\
 &= s_1 \cdot SS_1 + s_2 (SS_2 - 1) \\
 &= s_1 \cdot SS_1 - s_2 \cdot SS_1 \\
 &= SS_1 (s_1 - s_2) .
 \end{aligned}$$

When the rate of growth of sales for Group 1 (s_1) exceeds that of the second (s_2), the value for BD is positive, which means that the business contribution of Group 1 tends to *augment* the rate of "Inflation." Furthermore, over time, the positive differential in growth rates will augment the distributive share of Group 1 (SS_1), thus accentuating its business effect on "Inflation." The consequences of the rate of

growth of sales for Group 1 being lower than that of Group 2 are exactly opposite. In this case, the negative value for *BD* implies that the business contribution of Group 1 tends to *abate* the rate of "Inflation" and we also know that, over time, the distributive share of the group decline, hence reducing the relative significance of the group's business contribution. Finally, when the rates of growth of sales are equal for the two groups, the value for *BD* is zero, indicating that the business contribution to "Inflation" of each group is *neutral*. Also, the equality of growth rates means that the associated weights (distributive shares) remain unaltered.

Similar considerations apply when we examine the relative industry contributions of individual groups. Comparing the overall industry contribution to "Inflation" when both groups are included in the universe of firms, to the overall contribution when the first group is excluded, we get the 'industry difference' (*ID*) given by Equation (19):

$$\begin{aligned}
 (19) \quad ID &\equiv [-e_1 \cdot ES_1 - e_2 \cdot ES_2] - [-e_2] \\
 &= -e_1 \cdot ES_1 - e_2 (ES_2 - 1) \\
 &= -e_1 \cdot ES_1 + e_2 \cdot ES_1 \\
 &= -ES_1 (e_1 - e_2)
 \end{aligned}$$

The logic here is identical to the business case but, given that positive growth rates for employment work to *reduce* the rate of "Inflation," the conclusions are different. When the rate of growth of employment for Group 1 is larger than the rate for the second, the value for *ID* is negative, which in this case means that Group 1 tends not to augment, but rather to *abate* the rate of "Inflation." Moreover, the significance of this abating effect will tend to increase over time, since the growth-rate differential raises the distributive share of Group 1 (ES_1). Similarly, when employment for Group 1 changes at a slower rate than employment for Group 2, *ID* is positive, which in turn implies that the relative industry contribution of Group 1 tends to *augment* inflation; furthermore, the significance of this positive contribution will tend to increase with time because the differential growth rates reduce the group's distributive share. Finally, when the rates of growth of employment for both groups are equal, the relative industry contribution of each one of them is *neutral*. The effects of growth-rate differentials on relative contributions to "Inflation" are summarized in Table 8-3.

Table 8-3 Effect of growth-rate differentials on relative contributions to "Inflation"

Growth Rates	Contribution to "Inflation" (Group 1)	Contribution to "Inflation" (Group 2)
<u>Business Sphere</u>		
$s_1 > s_2$	Augmenting	Abating
$s_1 = s_2$	Neutral	Neutral
$s_1 < s_2$	Abating	Augmenting
<u>Industrial Sphere</u>		
$e_1 > e_2$	Abating	Augmenting
$e_1 = e_2$	Neutral	Neutral
$e_1 < e_2$	Augmenting	Abating

In order to assess the *combined* business and industry contribution to "Inflation" of a given group, we can examine the value of the 'business and industry difference' (*BID*) which measures the difference between the rate of "Inflation" when the group is included in the universe of firms, and the rate of "Inflation" when it is excluded. For Group 1, this difference is given by Equation (20):

$$\begin{aligned}
 (20) \quad BID &\equiv se - se_2 \\
 &= [(s_1 \cdot SS_1 + s_2 \cdot SS_2) - (e_1 \cdot ES_1 + e_2 \cdot ES_2)] - [s_2 - e_2] \\
 &= [(s_1 \cdot SS_1 + s_2 (SS_2 - 1)) - [(e_1 \cdot ES_1 + e_2 (ES_2 - 1))] \\
 &= (s_1 \cdot SS_1 - s_2 \cdot SS_1) - (e_1 \cdot ES_1 - e_2 \cdot ES_1) \\
 &= SS_1 (s_1 - s_2) - ES_1 (e_1 - e_2) \\
 &= BD + ID.
 \end{aligned}$$

The combined business and industry contribution of Group 1 could then be classified as being inflation-augmenting, inflation-neutral, or inflation-abating, depending on whether *BID* is positive, zero or negative, respectively. The value for *BID* would in turn depend on the sum of *BD* and *ID*.

8.3 The Principle of Heterogeneity: Inflation as Restructuring

The inflationary interaction between sales and employment (or, between 'business' and 'industry' in general) can arise under three different regimes. (1) In a period of 'structural invariance,' "Inflation" proceeds amid a perfect stability of distributive shares. The percentage of sales and employment accounted for by any particular group of firms remains fixed throughout the period. This inflationary period is one of *strong neutrality*. (2) Under 'random restructuring,' there are some changes in distributive shares, but these changes are transitory. Over the period as a whole, there are no meaningful trends in distributive shares for either sales or employment. This period of inflation is one of *weak neutrality*. (3) Finally, with 'systematic restructuring,' inflation is accompanied by some enduring changes in distributive shares. In such a period, inflation is *non-neutral*.

In reality, the occurrence of strongly neutral "Inflation" is highly unlikely. To illustrate this point, consider a most simple classification for the corporate sector of the U.S. economy, in which every firm is randomly allocated to one of two groups. Even here, where we have only two, presumably similar groups, the probability that, at any point in time, both of these groups will experience identical rates of growth for sales and for employment, must be very small. In general, the likelihood of strong neutrality will diminish as we extend the length of the period considered, or increase the number of groups in our classification. Furthermore, if instead of using a random classification, we group firms according to some specific criteria, the likelihood of strong neutrality becomes even smaller (there are numerous ways to classify any given universe of firms and we can be reasonably sure that *at least some* of these classifications will unveil certain heterogeneities in the inflationary experience of different groups). These *a priori* considerations suggest that, although possible in principle, a regime of strongly neutral inflation is bound to be of little practical significance. Consequently, we are led to conclude that, in reality, inflation must be either weakly neutral or non-neutral. Put somewhat differently, this conclusion means that, to a lesser or greater extent, *inflation is always a process of restructuring*. We label this latter tenet as the 'Heterogeneity Principle of Inflation.'

The Heterogeneity Principle of Inflation stems directly from our very elementary decompositions. We began by decomposing inflation into a dynamic interaction between 'business' and 'industry,' and then further decomposed it into the more elementary interactions experienced by individual groups of firms. Next, we argued that the 'business' and 'industrial' experiences of these groups are bound to be *heterogeneous* and, hence that they must lead to a restructuring of distributive shares. Now, since the general process of "Inflation" is *defined* as a weighted average of the more elementary 'business' and 'industry' experiences of underlying groups of firms, and since these individual experiences are necessarily dissimilar and hence structural, it follows that inflation itself must be a process of restructuring. Note, again, that heterogeneity in the experiences of different groups *need not* lead to overall inflation. The Heterogeneity Principle of Inflation merely states that, *if* these heterogeneous experiences lead to inflation, they must also lead to restructuring.

The Heterogeneity Principle of Inflation suggests that in order to analyze inflation we must focus on the underlying processes of restructuring. The central issue is no longer whether inflation is structural or not, but rather whether the inflationary process of restructuring is *random* or *systematic*; that is, whether inflation is weakly neutral or non-neutral. Note that the Heterogeneity Principle of Inflation -- the view of inflation as a process of restructuring -- is essentially deductive. "Inflation" is deemed to be structural simply because, statistically, we cannot expect it to be otherwise. The *concrete* nature of restructuring, however, cannot be specified by *a priori* deductions and must be explored empirically. Economic restructuring is a complex historical process. The driving forces of restructuring are inherently non-stationary and so is their impact on inflation. Structural change may be quantitative as well as qualitative and it may proceed smoothly or in quantum leaps. All of this suggests that we cannot and need not look for a catch-all, 'universal' theory for inflation. If inflation is indeed the manifestation of an on-going economic restructuring, it, too, must be analyzed as an *historical* process.

In Chapter 6, we followed Olson and Veblen and argued that the early emergence of 'stagflation' during the turn of the century was closely related to the rise of distributional coalitions, and that the subsequent evolution of these coalitions provide the main key toward understanding the modern history of stagnation and inflation. We now turn to approach this link between corporate restructuring

and macroeconomic performance in two related steps. Beginning in this chapter, we focus on the process of aggregate concentration and explore the inflationary dynamics of core and periphery in a dual economy. Then, in Chapter 9, we turn to the mutual causes of inflation and restructuring as they emerge from 'differential pecuniary accumulation.'

8.4 Aggregate Concentration: The Inflationary Dynamics of a Dual Economy

One of the most important transformations underlying the development of modern capitalism since the mid-19th century has been the process of aggregate concentration, or the gradual temporal increase in the share of total activity accounted for by the largest firms in the economy. The potential significance of that process was already pointed out by Marx, Hilferding and Veblen, but it became a major focus for research only after the merger wave of the 1920s.⁵ Following the publication of Berle and Means' *The Modern Corporation and Private Property* in 1932, many writers began to identify a new 'dual-economy' structure, consisting of a 'core' of a few hundred large oligopolies, surrounded by a 'periphery' of numerous, relatively small firms with little or no market power. The relative size of these two sectors have not remained stable, of course, and kept changing with the process of aggregate concentration. Most students of the subject have tended to perceive this process as having an indirect effect on inflation. The common view of price as an 'industry variable' implies that the level of aggregate concentration affects inflation only inasmuch as it influences the structure and behaviour of individual *industries*. The primary focus of attention is on the degree of 'competition.' For example, if the process of aggregate concentration increases the concentration ratios in specific industries, there may be a reduction in the intensity of price competition which, in turn, may affect the nature of inflation in the relevant markets. Or, if the process of aggregate concentration involves an increased diversification for large firms, the reciprocity of relations among them may induce a live-and-let-live strategy, lessen the degree of intra-industry competition and, hence, affect the nature of inflation in some markets. It should be noted that while the process of aggregate concentration may reduce the extent of industrial competition, this, in itself, need not lead to higher inflation. While there is some agreement among

⁵ For review and selected bibliography on aggregate concentration, see for example Scherer and Ross (1990, ch. 3) and Weiss (1983).

economists that reduced competition raises price-cost margins, there is wide disagreement regarding its effect on inflation (see Chapter 4).

For our own purpose, however, the significance of existing analyses in this area stems not so much from their different conclusions, but more from their common methodological assumptions. Since the 1930s, most researchers have tended to consider economic structure (including aggregate concentration) as an *independent* variable, an *exogenous* factor which merely affects the process of inflation. Mainstream macroeconomists, for example, prefer to focus on a perfectly competitive structure and analyze the effect of supply and demand on the inflationary mechanism. Structural theorists, on the other hand, emphasize the effects on inflation of non-competitive institutions such as oligopolistic interdependency, markup pricing, or 'pull-push' interactions. But in both of these general approaches, economic structure remains essentially an independent, *given* factor. There is no denial, of course, that structures can and do change. Moreover, some economists would readily concede that changes in structure may themselves be affected by the on-going process of inflation. Yet these aspects are extraneous to the analysis of inflation itself. When there is a 'structural change' (usually interpreted as an isolated qualitative shift in functional relationships), the effects of that change on inflation need to be evaluated, but the *source* of the change itself can be left outside the scope of analysis.

Our own view on the relationship between structure and inflation is radically different. For us, inflation is not 'influenced' by changes in structures, but is rather a *manifestation* of those changes. We do not seek to identify the 'effect' of structural change on inflation, nor do we look for the 'impact' inflation has on structure. Instead of considering these as two distinct (though interrelated) processes, we view inflation and structural change as being *two sides of the same process*: the process of inflation *is* a process of restructuring. From this perspective, aggregate concentration is no longer an external 'factor' which may or may not affect inflation. Instead, we propose the view that aggregate concentration is an inflationary process, or, conversely, that inflation is, in itself, a manifestation of aggregate concentration processes. Let us explore this proposition in some detail.

When we refer to level of aggregate concentration, we customary focus on some key variable such as sales, value added, assets or employment. For example, the degree of aggregate concentration in the universe of non-financial corporations may be approximated by the share of total assets accounted for by the largest 1,000 non-financial firms. Or, the level of aggregate concentration among industrial companies may be estimated by the share of total sales accounted for by the 500 largest industrial corporations. Similarly, the extent of aggregate concentration in manufacturing can be indicated by the share of total employment accounted for by the largest 200 manufacturing corporations. An aggregate-concentration ratio is customarily defined as:

$$(21) \quad ACR_X \equiv X_L/X ,$$

where ACR_X is the aggregate concentration ratio for the key variable (such as sales or employment), X_L denotes the key variable for a given group of the largest corporations and X is the key variable for all corporations in the relevant universe. Given this definition for the level of aggregate concentration, we can similarly define an alternative index indicating the degree of 'aggregate dispersion,' such that

$$(22) \quad ADR_X \equiv X_O/X ,$$

where ADR_X denotes the aggregate-dispersion ratio for the key variable, X_O is the key variable for all corporations other than the largest ones and X is the key variable for all corporations in the relevant universe. The choice of 'aggregate dispersion' as a label for this ratio seems appropriate since it is simply the complement of the aggregate-concentration ratio ($ADR_X = 1 - ACR_X$). Because the 'other' firms are by definition smaller than the largest, an increase in the rate of aggregate dispersion (a decrease in the rate of aggregate concentration) implies that X is more equally distributed between the two types of firms.

Note that the levels of aggregate concentration and aggregate dispersion are nothing but the relevant distributive shares associated with the group of largest firms and the group of 'other' firms, respectively. Focusing our inquiry specifically on aggregate sales (S) and aggregate employment (E) as

the two key variables for a given universe of firms, we can write:

$$(21a) \quad ACR_S = S_L/S ,$$

$$(22a) \quad ADR_S = S_O/S ,$$

$$(21b) \quad ACR_E = E_L/E$$

and

$$(22b) \quad ADR_E = E_O/E ,$$

where ACR_S and ADR_S denote the respective aggregate concentration and dispersion ratios for sales, ACR_E and ADR_E denote the corresponding aggregate concentration and dispersion ratios for employment, the subscript L refers to a specified group of the largest corporations and the subscript O denotes all 'other' companies. These aggregate concentration and dispersion ratios could be readily used in our structural decomposition of "Inflation" as described by Equation (4) in Section 8-2. There we defined the rate of "Inflation" in a specific universe as a weighted average of the separate contributions made by n different groups of firms, such that

$$se \equiv \sum_{i=1}^n [(\Delta S_i/S_i)(S_i/S) - (\Delta E_i/E_i)(E_i/E)] ,$$

or

$$se \equiv \sum_{i=1}^n [s_i \cdot SS_i - e_i \cdot ES_i]$$

were s_i was the rate of growth of sales for the i th group ($\Delta S_i/S_i$), SS_i denoted the share of the i th group in aggregate sales (S_i/S), e_i designated the rate of growth of employment for the i th group ($\Delta E_i/E_i$) and ES_i stood for the share of the i th group in aggregate employment ($\Delta E_i/E$). With only two underlying

groups of corporations, we can substitute L for $i=1$ (denoting the largest corporations) and O for $i=2$ (denoting the 'other' companies) and obtain the following definition for "Inflation":

$$(23) \quad se \equiv [s_L \cdot SS_L - e_L \cdot ES_L] + [s_O \cdot SS_O - e_O \cdot ES_O]$$

This could be also rewritten with explicit reference to aggregate concentration and dispersion ratios, such that

$$(23a) \quad se \equiv [s_L \cdot ACR_S - e_L \cdot ACR_E] + [s_O \cdot ADR_S - e_O \cdot ADR_E]$$

According to Equation (23a), the rate of "Inflation" is determined by two different 'business-industry' interactions: one occurring in the realm of the largest corporations and the other occurring in the domain of 'other,' smaller firms. Furthermore, the Heterogeneity Principle of Inflation suggests that, over time, the rates of growth of both sales and employment will undoubtedly differ between the two groups, causing changes in the corresponding aggregate concentration and dispersion ratios. Viewed from this particular perspective, "Inflation" and the dynamics of a dual corporate structure are intimately related processes: to the extent that differences between the rates of growth of sales and employment for larger and smaller firms do lead to overall "Inflation," they also work to change the aggregate concentration ratios for these two variables.

The crucial question, again, is whether these structural dynamics are *random* or *systematic*. In a regime of random restructuring, where there are no clear long-term changes in distributive shares, it is hard to view the process of aggregate concentration as a crucial inflationary force. A regime of systematic restructuring, on the other hand, means the distributive shares of either sales, employment, or both, are subject to long-term changes and, hence, that inflation may be driven, at least partially, by underlying changes in aggregate concentration. It is those systematic, 'non-neutral' structural transformations which we seek to explore. In the remaining part of this chapter we examine the inflationary restructuring of the U.S. Manufacturing and Mining sector during the three decades extending from the mid-1950s until the mid-1980s.

8.5 The Manufacturing and Mining Sector: Definitions and Data

Our empirical analysis focuses on the U.S. Manufacturing and Mining sector which we label M&M for convenience. We define the M&M sector as the universe of all U.S.-based corporations for which the largest single line of activity in terms of sales is either in manufacturing or in mining. M&M firms may be involved in additional, non-M&M areas; furthermore, the combined sales revenues from two or more of those other lines of activity may exceed those coming from manufacturing or mining proper. The sole criterion for including a corporation in this universe is that manufacturing or mining contribute to its sales more than any other single type of business. Our focus on M&M corporations (which roughly corresponds to the so-called 'industrial sector' of the U.S. economy) can be justified on two grounds. First, although the relative size of the manufacturing and mining has declined in recent decades, it is still the largest sector in the U.S. economy, accounting for over 25 percent of the GDP. Second, much of the research on aggregate concentration focused on the 'industrial sector' (particularly manufacturing) and it would hence be interesting to explore the inflationary aspects of this specific concentration process.

We define the rate of "Inflation" in the M&M sector as the difference between the rate of change of aggregate sales and the rate of change of aggregate employment of all M&M companies. Because M&M "Inflation" is an enterprise-based process, the basic series of aggregate sales and aggregate employment should encompass the entire domain of M&M activities. These variables must reflect manufacturing and mining, *as well as* other areas in which M&M corporations happen to be involved; furthermore, in addition to domestic activity, the variables must also include all foreign operations of M&M companies. From our perspective, then, the rate of M&M "Inflation" is a comprehensive index, describing the inflationary interaction between the entire, worldwide 'business' and 'industrial' domains of all M&M corporations.

Given this framework, our task is to decompose M&M "Inflation" to the separate contributions of the large and smaller firms, in the manner suggested by equations (23) and (23a) of the previous

section. This empirical decomposition seems to require only several simple sets of data. Ideally, we would begin with time-series for aggregate sales and aggregate employment of the M&M sector. These data would be further classified by corporate size, with separate series for the largest and 'other' corporations. For example, we may have sales and employment time-series for, say, the largest 50, 100, 200, 500 and 1,000 corporations in the M&M universe. Each of these time-series corresponds, of course, to a different definition of the 'core' group of largest firms. The series for the complementary groups of 'other,' 'periphery' corporations could then be calculated as the difference between the aggregate M&M series and the appropriate series for the largest firms. For instance, if we chose the 500 largest corporations as our group of large firms, the sales of the 'other' corporations would amount to aggregate M&M sales less the sales revenues accounted for by the largest 500 firms. The existence of alternative size-breakdowns for the data would enable us to analyze the inflationary dynamics of core and periphery in considerable detail. We would be able to explore the temporal dynamics occurring in the rates of change of sales and employment for the largest and 'other' corporations, the related changes in distributive shares and the consequent evolution of the overall rate of "Inflation" in the M&M sector -- and this we could do for *each* of the different cutoff levels between the largest and 'other' corporations. By examining the results emerging from such alternative size-breakdowns, we could better discern systematic aspects of inflationary restructuring.⁶

The time-series necessary for this type of analysis seem simple enough, but unfortunately, such data are not readily available. In the United States, official statistics on sales and employment are reported under separate and often incompatible classifications. Corporate sales data are available, for example, from *Statistics of Income, Corporations Income Tax Returns*, published by the Internal Revenue Service, or from *Quarterly Financial Reports for Manufacturing, Mining and Trade Corporations*, published by the Bureau of the Census. These data are classified according to major industry and size of reporting unit. The above publications do not provide any employment statistics, however. Those latter data are

⁶ A decomposition of "Inflation" based on a single cutoff level may fail to reveal important aspects of restructuring. For example, suppose the inflationary experience typical to the 500 largest corporations is markedly different from the experience characterizing the remaining 'other' firms. Now, assume that instead of choosing 500 as our appropriate cutoff number for the largest corporations, we choose 50. This will surely 'contaminate' the indices of the 'other' firms with the different experience of large firms and, if this data contamination is sufficiently significant, it may mislead us to conclude that there was no systematic restructuring.

collated by establishment surveys and censuses and are reported on the basis of industrial rather than corporate classifications. Some of these employment figures, such as the ones reported in the *County Business Patterns* of the U.S. Bureau of the Census, are broken down by plant size, but there is no simple relationship between this establishment-based classification and available size breakdowns for corporations.⁷ Given these incompatibilities, it seems evident that existing statistics are far from being fully adequate for our purpose. At the same time, these data are not altogether useless. As we demonstrate below, it is possible to combine information from several sources, which although not perfect, may still help us unveil some important aspects in the dynamic interaction of inflation and aggregate concentration.

As noted earlier, the choice of the M&M sector as the subject of analysis was affected by the relative size of that sector in the economy and by its apparent significance for research on aggregate concentration. A third important reason for this choice was the relative accessibility of large-firm data. The M&M sector seems to be the only sector in the U.S. economy for which we have readily available, coherent and uninterrupted data series for the sales and employment of the largest corporations. Such information is available from the annual 'Fortune 500' directory. This listing, which includes the 500 largest industrial firms in the U.S., has been published by *Fortune Magazine* since 1954.⁸ The fact the 'Fortune 500' directory provides the only easily accessible set of data for the sales and employment of large M&M firms means that, for the purpose of this work, we have no flexibility in choosing the 'appropriate' cutoff between the largest and 'other' corporations; given these data, then, we provisionally define the 'core' as consisting of the Fortune-500 firms and the 'periphery' as including all remaining M&M corporations.

⁷ An exception is the study by Churchill (1954) who analyzed the size distribution of all U.S. private, nonfarm enterprises (except professional services) between 1945 and 1951. Unfortunately, her analysis focused solely on employment and did not contain any information on other variables such as sales, or value added.

⁸ *Fortune Magazine* publishes several additional directories for large firms operating in other sectors, such as banking, retail, utilities, transportation, or services. Unfortunately, these directories are somewhat deficient for our purpose. First, the size of the large group has often been modified (for example, from 50 to 100 in the case of both commercial banks and diversified service companies). Second, all of these other directories contain a considerable time gap in their employment series (no employment data were reported between 1957 and 1964, inclusive). Of course, these listings could still be used for studies covering a shorter time span.

With these comments, we have completed the general setup of our empirical framework. Having outlined the broad boundaries of the M&M sector and the dividing line between largest and 'other' firms composing this universe, we can now turn to a more precise discussion of the variables and data sources. Our analysis requires 6 basic time-series: 3 sales series (for the M&M sector, for the Fortune 500 and for the 'Others') and 3 corresponding employment series (again, for the M&M sector, the Fortune 500 and the 'Others'). Let us examine the definition and sources for each of these variables.

M&M Sales consist of gross worldwide operating receipts of all U.S.-based manufacturing and mining corporations. Separate annual data for manufacturing and for mining are published by the Internal Revenue Service (IRS) of the U.S. Department of the Treasury in its *Statistics of Income, Corporations Income Tax Returns*. The IRS defines manufacturing corporations as ones for which the largest single line of activity is in manufacturing, while mining corporations are those for which mining operations constitute the largest line of business. By combining the data for these two groups, we get the total sales of all U.S.-based corporations for which manufacturing *or* mining are the largest single source of revenues.

Fortune-500 Sales include the aggregate worldwide sales of the 500 largest industrial corporations based in the United States. These data are published annually by the *Fortune Magazine* in its 'Fortune 500' listings. *Fortune* defines industrial corporations as those which derive 50 percent or more of their sales from manufacturing and/or mining activity. This definition is more restricted than our own in that it excludes those firms for which manufacturing and mining -- though the largest single line of activity -- still account for less than 50 percent of total sales.

'Others' Sales denote the total worldwide sales of all U.S.-based manufacturing and mining corporations, excluding the sales of Fortune-500 corporations. This variable is computed as the difference between M&M sales and the sales revenues obtained by the Fortune 500. It may thus reflect the sales of large M&M corporations which were nevertheless excluded from the Fortune-500 listing because less than 50 percent of their sales revenues came from manufacturing and/or mining.

M&M Employment is defined as the sum of domestic employment in manufacturing and mining industries and the imputed employment of foreign affiliates of U.S.-based M&M firms. In principle, M&M employment should denote the total worldwide employment of M&M corporations but, as we explained earlier, such data are not readily available. Existing data are deficient for two principal reasons. Firstly, domestic employment figures are available on an industry-based classification only and, secondly, data on the employment of foreign affiliates of U.S.-based companies became available only since 1982. These restrictions force us to use some approximations and imputations. For the domestic component of M&M employment we use the employment figures for manufacturing and mining industries as published by the Bureau of Labor Statistics of the U.S. Department of Labor (BLS) in *The Employment Situation -- Establishment Survey Employment and Earnings* [data were retrieved from *Citibase* (1990), series LPEM and LPMI, p. IX-2-1]. These are industry-based series and, hence, they exclude all domestic M&M employment in areas *other* than manufacturing and mining. On the other hand, the series include the manufacturing and mining employment of non-M&M firms (firms for which manufacturing or mining are not the largest single line of business).⁹ The foreign component of M&M employment (namely, employment by foreign affiliates of M&M corporations) is imputed on the basis of data on multinational companies published by the U.S. Bureau of Economic Analysis in the *Survey of Current Business*. (The exact method of imputation and its rationale are explained in Appendix B.) Unlike the domestic data, the imputed figures for foreign employment reflect all foreign employees of M&M firms, including those who work in industries other than manufacturing or mining. Together, these considerations indicate that the variable of M&M Employment is likely to be inaccurate to some extent. We feel that the exclusion of domestic employees working in areas other than manufacturing and mining is likely to outweigh the improper inclusion of non-M&M employees and, hence, that our final numbers will tend to underestimate the actual employment of M&M corporations. Unfortunately, it is hard to assess the extent of this potential bias without additional evidence. The imputation of foreign

⁹ Note that establishment-based employment statistics published by the BLS include, in addition to corporate employment, also the employment of proprietorships and partnerships. This does not present any serious problem for our purpose here, because the extent of non-corporate employment in manufacturing and mining is only marginal.

M&M employment may also be imprecise, but here, too, we have no additional data to assess the scope of potential bias.

Fortune-500 Employment represents the total worldwide labour force employed by the 500 largest industrial corporations based in the United States. The data are derived from the 'Fortune 500' listings discussed above. They differ from the overall M&M employment figures in that they include domestic M&M employment in fields other than manufacturing and mining but exclude domestic manufacturing and mining employment by non-M&M firms. Furthermore, the data exclude the employment of M&M firms for which manufacturing and mining account for less than 50 percent of overall sales. Again, the extent of these inaccuracies is hopefully limited, but this is hard to ascertain with available information.

'Others' Employment is computed as the difference between M&M Employment and Fortune-500 Employment. Given the incompatibilities between the definitions of these latter variables and given the potential inaccuracies in their estimation, the variable for 'Others' Employment must be taken as only a rough approximation for employment by smaller M&M corporations.¹⁰

The significance of inaccuracies in these sales and employment series should not be over-emphasized, however. In analyzing the inflationary aspects of aggregate concentration, our primary focus is not so much on the absolute levels of sales or employment, but rather on their rates of growth and distributive shares. These latter ratios are likely to be less sensitive to potential inaccuracies than the raw data are. Furthermore, in examining rates of change, distributive shares and even the raw data themselves, we are not concerned with exact levels, but only with *general* trends and *overall* tendencies. This makes any data imprecision less significant. Indeed, as we demonstrate below, the existence of such

¹⁰ Note that smaller M&M firms are likely to be more confined to manufacturing or mining than are the larger diversified Fortune-500 corporations. Note also that most of these smaller firms are bound to concentrate primarily on domestic activity and to have relatively small foreign operations. In principle, then, 'Others' Employment is likely to be a subset of *domestic* employment in manufacturing and mining industries. Yet, because of data deficiencies, we must paradoxically approximate this variable as a residual between the *worldwide* employment of M&M and Fortune-500 firms.

inaccuracies would matter little to the questions we seek to answer and to the conclusions at which we arrive.

8.6 Aggregate Concentration and Inflation in the Manufacturing and Mining Sector

To facilitate our presentation, we adopt the following notations for variables pertaining to the M&M universe, the Fortune 500 and the 'Others.'

Table 8-4 Variable definitions and names for the M&M sector

Variable Definition	Variable Name		
	M&M	Fortune 500	'Others'
Sales (\$ billion) S_i	<i>MS</i>	<i>FS</i>	<i>OS</i>
Sales Growth (annual rate of change, percent) $\Delta S_i/S_i$	<i>ms</i>	<i>fs</i>	<i>os</i>
Distributive Share in Aggregate Sales S_i/S	--	<i>FSS</i>	<i>OSS</i>
Employment (millions) E_i	<i>ME</i>	<i>FE</i>	<i>OE</i>
Employment Growth (annual rate of change, percent) $\Delta E_i/E_i$	<i>me</i>	<i>fe</i>	<i>oe</i>
Distributive Share in Aggregate Employment E_i/E	--	<i>FES</i>	<i>OES</i>
"Inflation" (annual rate of change, percent) se_i	<i>mse</i>	<i>fse</i>	<i>ose</i>
Contribution to "Inflation" (percentage points) $(\Delta S_i/S_i)(S_i/S) - (\Delta E_i/E_i)(E_i/E)$	--	<i>FCON</i>	<i>OCON</i>

We begin our empirical analysis with a simple graphical presentation of M&M "Inflation" between 1955 and 1986. (This is the time span for which we have a complete data set. Data for some variables extend beyond that period and are reported whenever they are available.) Figure 8-1a describes the basic interaction between 'business' and 'industry' in the M&M sector, as proposed earlier in Chapter 7. There are two lines in the figure, one denoting the annual rate of growth of sales *ms*, and

Figure 8-1a A decomposition of M&M "Inflation"

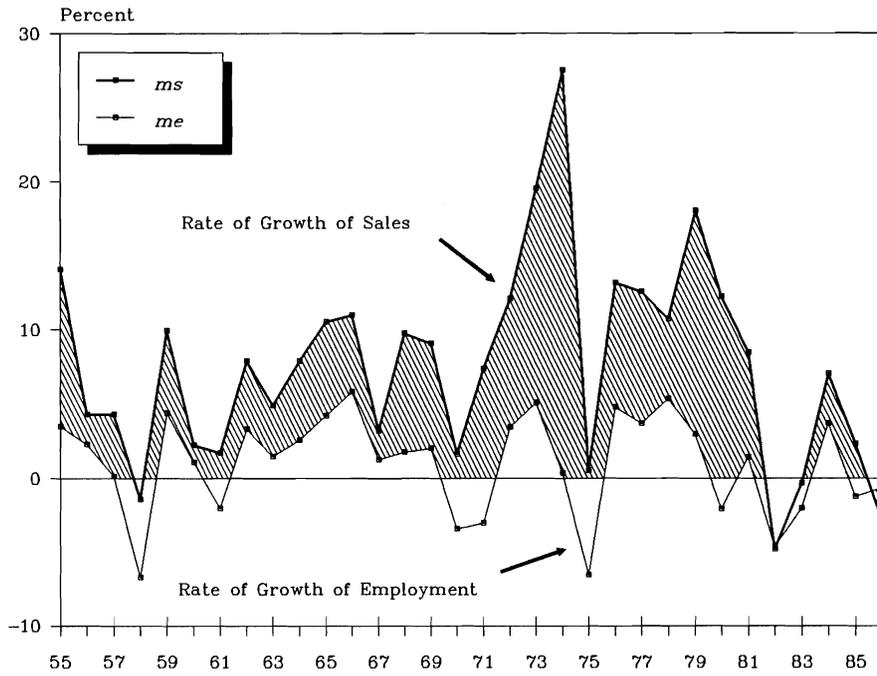
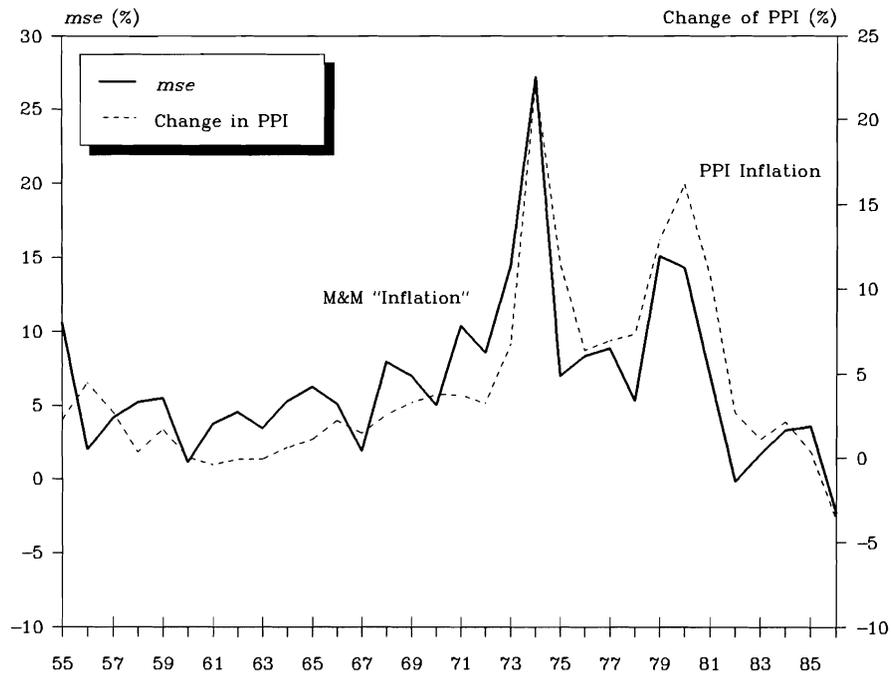


Figure 8-1b M&M "Inflation" and the rate of change of the Producer Price Index for industrial commodities



the other describing the annual rate of growth of employment *me*. The rate of "Inflation" *mse* is defined as the difference between these two rates of growth and, graphically, it is designated by the area between the two lines in the diagram. Note that the "Inflation" area between the two lines is either shaded or white. Intervals for which the "Inflation" area is completely shaded denote periods in which both sales and employment were growing; intervals for which the "Inflation" area is completely white designate periods in which both sales and employment were falling; finally, intervals for the "Inflation" area is partly shaded and partly white, describe periods in which sales were rising and employment was falling. (The year of 1986, when both "Inflation" and the rate of growth of employment were negative, constitutes an exception to these rules). In Figure 8-1b we chart the actual values for the rate of M&M "Inflation" and contrast them with the annual rates of change of the Producer Price Index for industrial commodities.¹¹ This latter comparison demonstrates the validity of our claim in Chapter 7 on the underlying link between "Inflation" and more traditional, price-based indices for inflation. The close positive correlation between M&M "Inflation" and the rate of change of the PPI for industrial commodities seems to support the view that both indices reflect the same dynamic interaction between 'business' and 'industry.'¹² In Table 8-5 we supply summary statistics for the data charted in the figures.

Table 8-5 Average rates for sales growth, employment growth and "Inflation" in the M&M sector (percent)^{*}

Period	Sales Growth (<i>ms</i>)	Employment Growth (<i>me</i>)	"Inflation" (<i>mse</i>)
1955-69	6.6 (4.2)	1.7 (2.0)	4.9 (4.9)
1970-86	8.5 (8.6)	0.4 (3.7)	8.1 (7.0)
1955-86	7.6 (6.9)	1.0 (3.4)	6.6 (5.5)

* Standard deviations (in percentage points) are denoted in brackets.

¹¹ Data on the Producer Price Index for industrial commodities are from *Citibase* (1990), series PWIC, p. V-1-3, 1982=1.00. These data are originally published by the Bureau of Labor Statistics of the U.S. Department of Commerce, in *Producer Price Indexes*.

¹² The high correlation is even more interesting when we note that M&M "Inflation" covers worldwide activities of M&M firms (including areas other than manufacturing and mining) while the rate of change of the PPI index for industrial commodities is restricted only to manufacturing and mining commodities sold in the United States.

In examining Figures 8-1a and 8-1b together with the summary data provided in Table 8-5, we can roughly distinguish between two main periods: one beginning in the mid 1950s and ending in the late 1960s and, another, starting in the early 1970s and extending until the mid 1980s. (In Table 8-5 we choose 1969/1970 as the point of 'transition' between the two period. This particular choice is of course arbitrary to some extent and a somewhat earlier or latter date may be equally valid.) In the first period, the rates of growth of sales and employment were relatively close to each other and their temporal behaviour was quite similar. This pattern of interaction generated a relatively low and stable rate of "Inflation" for the M&M sector (the degree of stability or volatility for each variable could be assessed in reference to standard deviations reported in Table 8-5). The temporal relationship between the variables seems to have changed in the subsequent period after 1970. There was an increase in the average rate of growth of sales, coupled with a marked decline in the average rate of growth of employment which, together, caused a rise in average rate of "Inflation." Also, the earlier synchronization between the rates of growth of sales and employment broke down, with a resulting increase in the volatility of "Inflation." (It would appear that, during the early 1980s, there was a return to the earlier pattern of interaction but, as we show below, there are strong reasons to keep those latter years as part of the post-1970 period.) This historical shift from a low and stable "Inflation" in the pre-1970 period, to a higher and more volatile "Inflation" in the subsequent period, is intimately linked to underlying processes of aggregate concentration which we now turn to explore.

Based on Equations (23) in Section 8-4, the rate of M&M "Inflation" (*mse*) could be written, such that

$$(24) \quad mse \equiv (fs \cdot FSS - fe \cdot FES) + (os \cdot OSS - oe \cdot OES) \\ \equiv FCON + OCON ,$$

where the elements in the first brackets denote the percent-point contribution to inflation of the Fortune-500 group of corporations (*FCON*), while those in the second brackets designate the corresponding contribution of the 'Others' (*OCON*). Following the taxonomy developed in Section 8-2,

we expect that the course of M&M "Inflation" be affected by two factors: (1) the rates of growth of sales and employment unique to each group (and hence the group-specific rates of "Inflation"), and (2) the aggregate concentration and dispersion ratios (or distributive shares) for sales and employment. We examine the related evolution of these two factors in reference to Figures 8-2a and 8-2b.

Figure 8-2a charts the annual rate of "Inflation" for the Fortune 500 (*fse*) between 1955 and 1989, and the annual rate of "Inflation" for the 'Others' (*ose*) between 1955 and 1986. Two other variables are plotted in Figure 8-2b. The first is the aggregate concentration ratio for sales, measured by the share of M&M sales accounted for by the Fortune 500 (*FSS*). Values for this variable are available for the period between 1954 and 1986. The second variable is the aggregate concentration ratio for employment, calculated as the share of these firms in M&M employment (*FES*). Data for this variable are available for the 1954-1988 period. Based on these two figures, we can provisionally distinguish between two main inflationary regimes separated by a short interval of time. First, there was a long period of systematic restructuring, occurring between 1954 and 1970; this phase was followed by brief transitional interval of random restructuring, taking place between 1971 and 1974; finally, there was another long period of systematic restructuring, extending between 1975 and 1986. Summary statistics for these three periods are given in Table 8-6.

Table 8-6 Inflationary regimes in the M&M sector: summary statistics

Period of Restructuring	Average Rate of "Inflation" (percent)		Aggregate Concentration	
	Fortune 500 (<i>fse</i>)	'Others' (<i>ose</i>)	Sales (<i>FSS</i>)	Employment (<i>FES</i>)
Systematic 1954-70	4.0	5.7	Rising	Rising
Random 1971-74	14.8	15.7	Stable	Stable
Systematic 1975-86	7.5	3.8	Stable	Falling

Figure 8-2a "Inflation": Fortune 500 versus the 'Others'

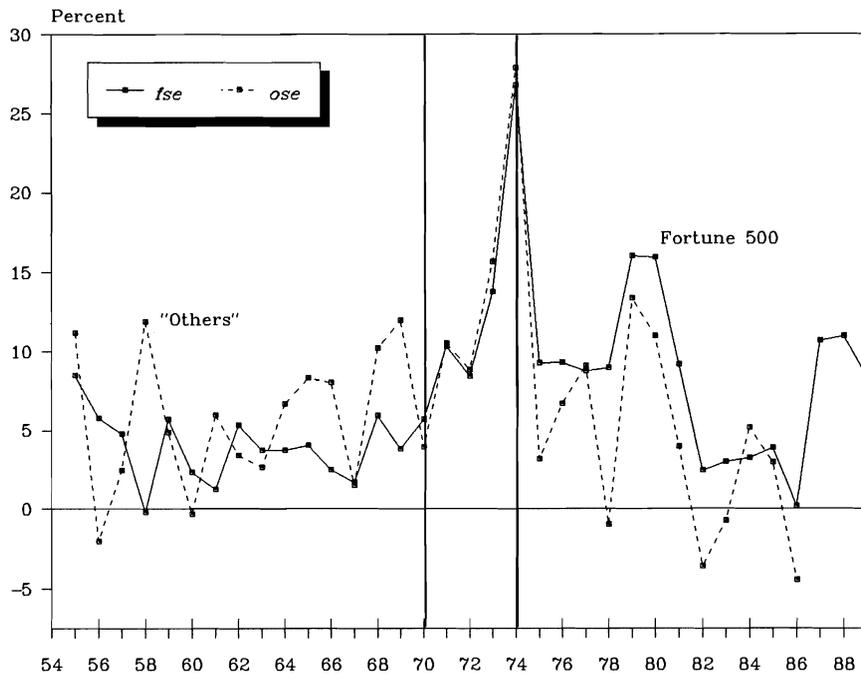
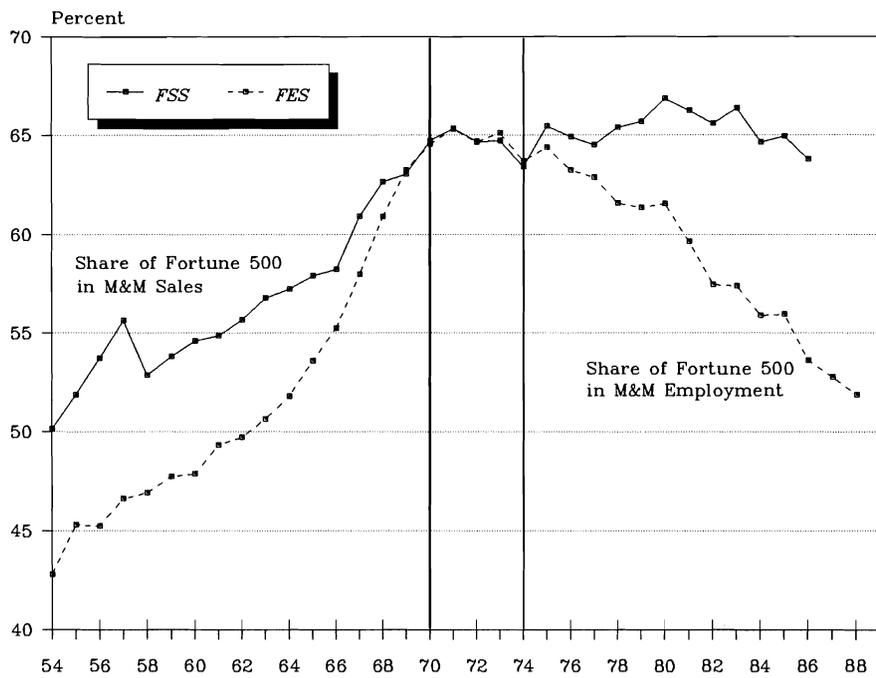


Figure 8-2b Aggregate concentration: the share of M&M sales and employment accounted for by the Fortune 500



Note that while the precise demarcation of the periods is necessarily arbitrary, the existence of at least two (and possibly three) distinctly different inflationary regimes seems evident. The first period, between 1954 and 1970, was marked by an almost continuous increase in the aggregate concentration ratios for both sales and employment. The Fortune-500 firms raised their share of aggregate M&M sales from 50 percent in 1954, to 65 percent in 1970. The increase in the aggregate concentration ratio for employment was even faster, with the share of Fortune-500 corporations in total M&M employment rising from 43 percent in 1954, to 65 percent in 1970. The fact that the share of Fortune-500 companies in M&M employment rose faster than their share in M&M sales acted to mitigate their own rate of "Inflation" when compared with that of the 'other' firms.¹³ This disparity between the two rates of "Inflation" can be seen in Figure 8-2a. (As indicated in Table 8-6, over the entire 1955-1970 period, the average rate of "Inflation" for the 'Others' was 5.7 percent, while the corresponding rate for the Fortune 500 was only 4.0.)

The short interval between 1971 and 1974 can be viewed as a separate transitory period. During those years, the M&M sector experienced very little changes in aggregate concentration ratios for either sales or employment, both of which fluctuated mildly around the 65-percent mark. Moreover, the moderate variations in the two variables were almost identical to each other. The relative stability and similarity of these aggregate concentration ratios was associated with a parallel similarity between the rates of "Inflation" for Fortune 500 and the 'Others,' as can be seen in Figure 8-2a.¹⁴ (Over this period, the average rate of "Inflation" was 14.8 percent for the Fortune 500 and 15.7 for the 'Others.')

¹³ To explain this relationship, let us define the 'sales ratio' SR , as the ratio between the sales of the Fortune 500 and the 'Others,' such that $SR \equiv FS/OS$. Similarly, let the 'employment ratio' ER be equal to the ratio between the employment of the two groups, so $ER \equiv FE/OE$. It could then be shown that when the rate of change for aggregate concentration in the business sphere FSS is lower than the rate of change of aggregate concentration in the industrial sphere FES , such that $\Delta FSS/FSS < \Delta FES/FES$, the rate of change of the 'sales ratio' must also be lower than the rate of change of the 'employment ratio,' so $\Delta SR/SR < \Delta ER/ER$. Given the definitions for SR and ER , this last inequality implies that $(fs - os) < (fe - oe)$, which in turn means that $(fs - fe) < (os - oe)$, so that $fse < ose$. We can thus conclude that, in order for the rate of growth of aggregate concentration for employment to exceed the rate of growth of aggregate concentration for sales, as happened during the 1950s and 1960s, the rate of "Inflation" for the Fortune 500 must be lower than the comparable rate for the 'other' firms.

¹⁴ Following the argument presented in the preceding footnote, we know that, when the aggregate concentration ratios in the business and industrial sphere are approximately equal, such that $FSS \approx FES$, we can also write that $(fs - os) \approx (fe - oe)$, or $fse \approx ose$. In other words, for the rates of aggregate concentration in the two spheres to move more or less together, the two groups must experience similar rates of "Inflation."

The final period between 1975 and 1986 was, again, marked by systematic restructuring. The aggregate concentration ratio for sales appears to have been relatively stable. The aggregate concentration ratio for employment, on the other hand, experienced a clear pattern of continuous decline between 1975 and 1988. The effects of these two related developments on the group-specific rates of "Inflation" were quite clear. The fact that Fortune-500 firms maintained their relative share of M&M sales at a time when their share of M&M employment was falling, implies that their rate of "Inflation" was necessarily higher than the comparable rate for the 'other' firms in that sector.¹⁵ The consistent difference between the two rates of "Inflation" is evident from the data charted in Figure 8-2a. (The summary statistics in Table 8-6 indicate that, over the 1975-86 period, the average rate of "Inflation" for the 'Others' was 3.8 percent, while the comparable average for the Fortune-500 firms was almost double, at 7.5 percent.)

In summary, these observations reveal that beneath the simple appearance of price inflation in the M&M sector there is indeed another, perhaps more fundamental, process of dynamic restructuring. Furthermore, it seems that, over the past three decades, this process of inflationary restructuring was remarkably *systematic* in nature. With the possible exception of a short transitory phase, the inflationary process of restructuring followed two distinctly different patterns.¹⁶ The first part of this period, extending between the mid 1950s and the late 1960s, was marked by a relatively low and stable "Inflation," with the rates for the large Fortune-500 firms being generally lower than the comparable rates for the 'other' smaller firms. The systematic restructuring underlying this inflationary pattern involved a continuous increase in the aggregate concentration ratio for sales, coupled with an even faster rise in the aggregate concentration ratio for employment. The second part of the period, beginning in the early 1970s and continuing into the late 1980s, was marked by a much higher and more volatile "Inflation." In addition, the relative inflationary experience of each group of firms now seemed to have

¹⁵ When FSS is approximately stable while FES is actually falling (or, in general, when $\Delta FSS/FSS > \Delta FES/FES$), we know that $(fs - os) > (fe - oe)$, which in turn implies that $(fs - fe) > (os - oe)$, or that $fse > ose$, so "Inflation" for the Fortune 500 must exceed that of the 'Others.'

¹⁶ Note that it is not necessary to identify the 1971-1974 period as a separate phase. Based on Figure 8-2b, it is also plausible to consider the entire post-1970 period as single phase of systematic restructuring.

been reversed. After a short transitory phase (1971-1974) in which the rates of "Inflation" for both large and smaller firms were more or less equal, the Fortune-500 companies started to experience systematically higher rates than their smaller counterparts. Much like the earlier experience, "Inflation" in this period too was propelled by an underlying process of systematic restructuring, but the specific nature of this restructuring differed from the pre-1970 pattern. The rapid increase in the aggregate concentration ratio for sales has ended and the ratio remained relatively stable. The focus of restructuring shifted to the employment arena, where the earlier rapid increases in aggregate concentration were now replaced by a systematic decline in the share of total M&M employment accounted for by the Fortune-500 firms.

So far, the data suggest that M&M "Inflation" is intimately related to the dynamic process of aggregate concentration. Yet these data on "Inflation" and distributive shares for the large and small groups do not tell us enough about heterogeneities and similarities in the experience of these two groups. For instance, a higher rate of "Inflation" for the Fortune-500 may arise when both groups experience increases in sales and employment, but also when these two variables are falling, provided the difference between the rate of decline of sales and the rate of decline of employment is larger for the Fortune-500 than for the 'Others.' Or, an increase in the aggregate concentration ratio for sales can occur when both groups raise their sales at different rates, when the Fortune-500 group experiences an increase while the 'Others' go through a decline, or when the two groups cut their sales, provided that the 'Others' do it more quickly. To explore such potential differences, we turn now to a more detailed examination, focusing first on sales data and then on the employment numbers.

Information on the sales arena (or the 'business' sphere) is given in the four separate charts of Figure 8-3. Figure 8-3a plots the levels of sales for the Fortune-500 and the 'Others' for the 1954-1989 and 1954-1986 periods, respectively. In Figure 8-3b, we chart the same information somewhat differently, contrasting the Fortune-500 sales on the vertical axis with the 'Others' sales on the horizontal axis. Figure 8-3c provides data on the annual rates of growth of sales for the two groups, covering the 1955-1989 period for the Fortune 500 and the 1955-1986 period for the 'Others.' This same information is given in Figure 8-3d, with the Fortune-500 scale charted on the vertical axis and the 'Others' scale charted on the horizontal axis.

Figure 8-3a Sales: Fortune 500 and the 'Others'

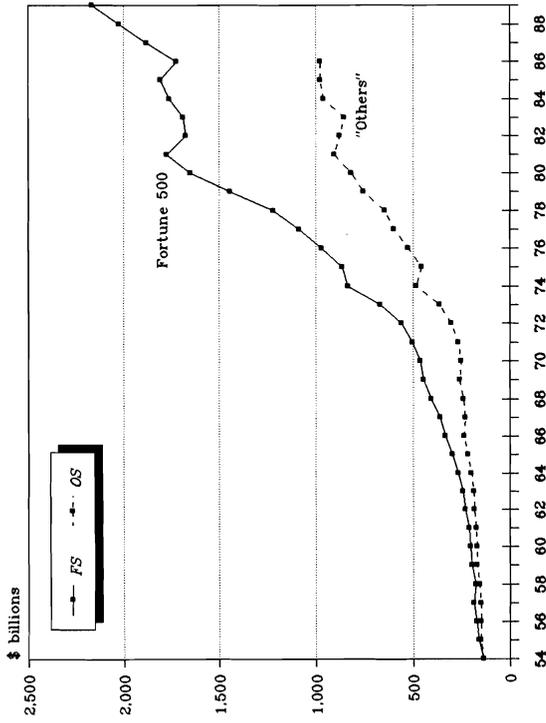


Figure 8-3c Sales: rates of growth for Fortune 500 and the 'Others'

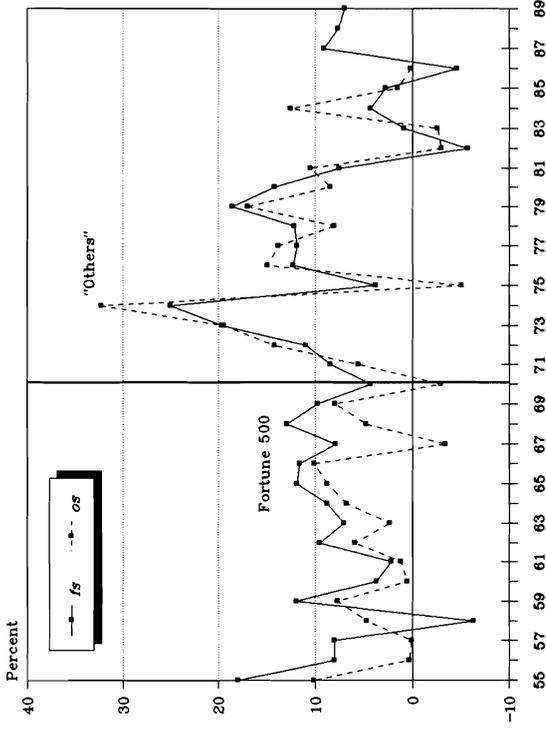


Figure 8-3b Sales: Fortune 500 versus the 'Others'

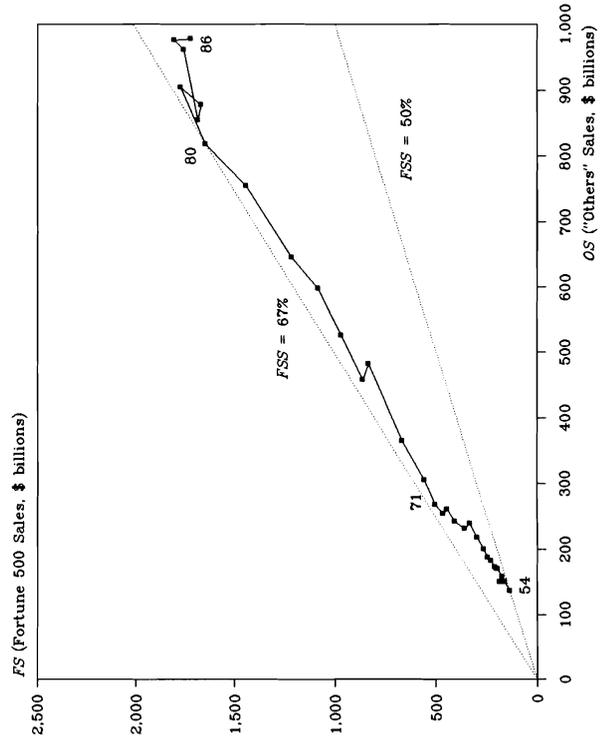
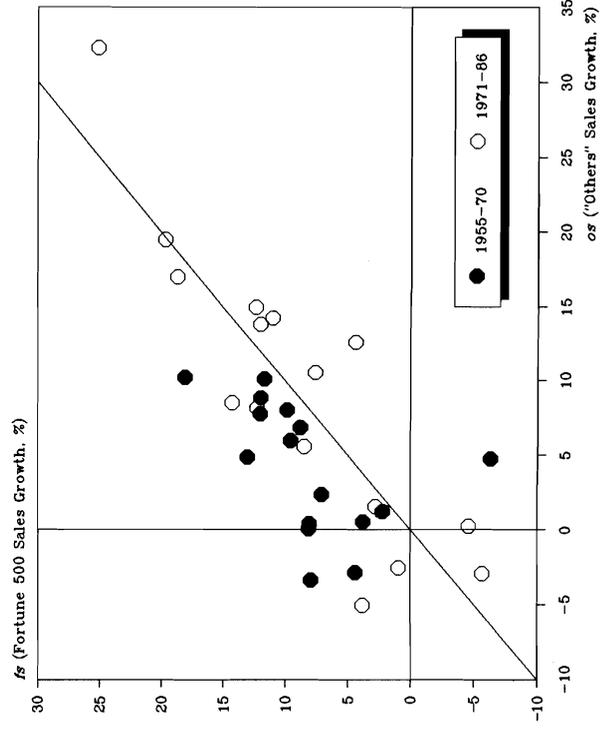


Figure 8-3d Sales: rates of growth for Fortune 500 versus the 'Others'



As can be seen from Figure 8-3a, sales revenues for both groups have been increasing more or less throughout the entire period examined: the Fortune-500 group increased its sales from \$137 billion in 1954, to \$1,723 billion in 1986, to \$2,164 billion in 1989, while sales of the 'Others' rose from \$136 billion in 1954, to \$878 billion in 1986. In general, then, changes in the aggregate concentration ratio for sales arose primarily from differences between the positive pace of expansion of the two groups. This can be observed more clearly from the presentation of Figure 8-3b. Note that any ray beginning from the origin of this chart represents a fixed ratio for aggregate concentration and, hence, can be labelled an *isoconcentration* ray. Here we have two such isoconcentration lines, representing the lowest and highest boundaries for aggregate concentration ratios experienced during the 1954-1986 period. Turning to the data, we can see how, until the early 1970s, Fortune-500 sales grew faster than the sales of the 'Others,' causing the aggregate concentration ratio to increase from 50 to 65 percent, and, how, in the subsequent period, the sales of the two groups grew more or less at the same rate, causing the aggregate concentration ratio to remain stable, approximately around the 65-percent mark.

The process is presented from a somewhat different perspective in Figures 8-3c and 8-3d, where we substitute rates of change for levels. Summary statistics for sales growth are given in Table 8-7.

Table 8-7 Sales in the M&M sector: average rates of growth (percent)

Period	Fortune 500 (fs)	'Others' (os)
1955-70	8.1	4.0
1971-86	8.9	9.2

In Figure 8-3c we can see that, until 1970, the rates of growth of sales for the Fortune-500 group were persistently higher than those for the 'other' firms (with the sole exception of 1958). In the subsequent, post-1970 period, there was no systematic disparity and the sales of the two groups grew at a similar pace. This difference between the two periods is heightened in Figure 8-3d. The 45-degree line going through the origin of this chart denotes the *isogrowth* for sales of the two groups. Observations lying on this isogrowth represent the same rate of growth of sales for the two groups. The farther an observation

is from this isogrowth line, the greater is the disparity between the growth experience of the two groups. Figure 8-3d is also divided into 4 quadrants. The north-east and south-west quadrants include observations of equal signs (positive and negative, respectively). The north-west and south-east quadrants, on the other hand, include observations of opposite signs (the north-west quadrant represents a positive rate of growth for Fortune-500 sales and a negative rate for the 'Others,' while the south-east quadrant represents negative growth for the Fortune 500 and positive growth for the 'Others'). Given this division of Figure 8-3d, we can see how, until 1970, all but one observation (for 1957) lay above the 45-degree isogrowth, while the observations for the subsequent period were more or less scattered around that diagonal. It is also interesting to note that, while during most of the 1955-1986 period, the two sub-sectors grew in the same direction, there were still six years (or 19 percent of the total) in which developments in the two sub-sectors proceeded in *opposite* directions.

The difference between the experience of the two groups is much more pronounced in regards to the 'industrial' sphere. The development of employment in the two sub-sectors is described by the 4 charts in Figure 8-4. The structure and arrangement of these charts is similar to those included in Figure 8-3, with Figures 8-4a and 8-4b depicting levels, and Figures 8-4c and 8-4d portraying rates of change.

The historical pattern of restructuring in the 'industrial' sphere was different than that of the 'business' sphere. In examining Figure 8-4a, we can provisionally distinguish between three distinct periods. In the first of these periods, extending between 1955 and 1969, there was a rapid and continuous increase in the number of employees working for the Fortune-500 corporations from 7.9 million in 1954 to 14.8 million in 1969. Employment in smaller firms, on the other hand, experienced an actual decline, falling from 10.5 million in 1955 and to 8.6 million in 1969. This relationship changed during the 1970-1980 period. The pace of increase for the Fortune 500 seemed to have been reduced, while the previous declines experienced by the 'Others' were now reversed into moderate increases. Contrary to the inverse performance experienced in the earlier period, employment levels for both groups were now moving more or less together, with some cyclical fluctuations around a positive trend. Between 1970 and 1980, employment of Fortune-500 firms rose from 14.6 million to 15.9 million, while employment by the 'other'

Figure 8-4a Employment: Fortune 500 and the 'Others'

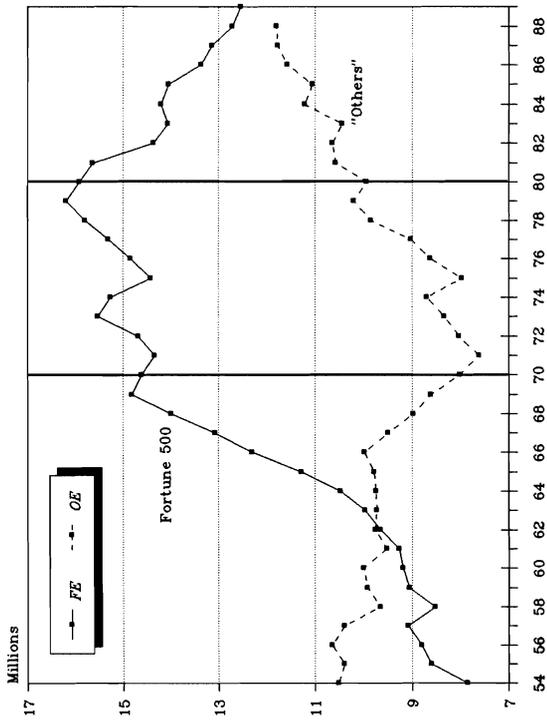


Figure 8-4c Employment: rates of growth for Fortune 500 and the 'Others'

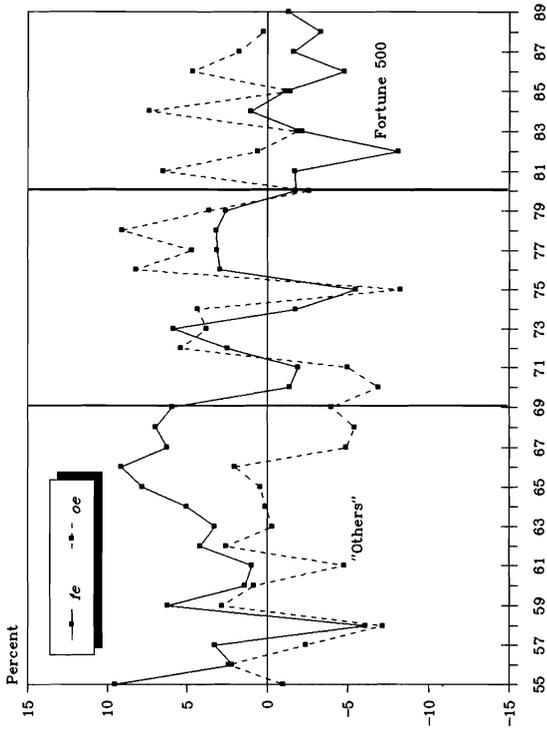


Figure 8-4b Employment: Fortune 500 versus the 'Others'

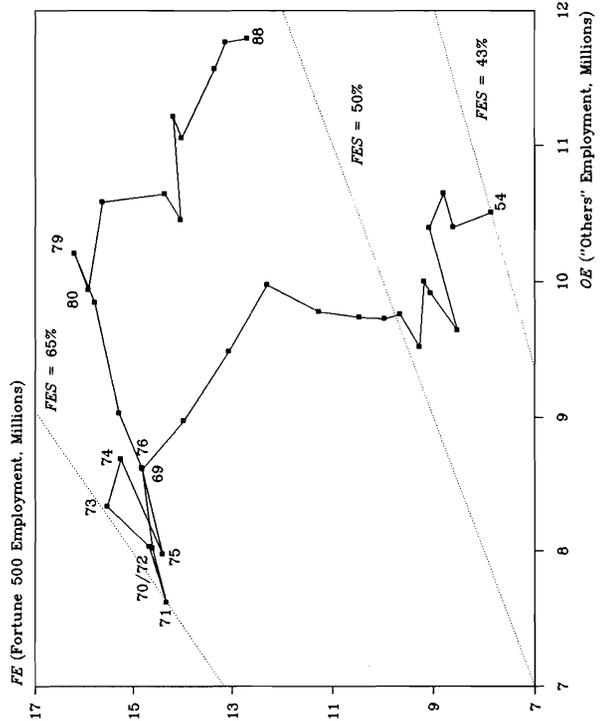
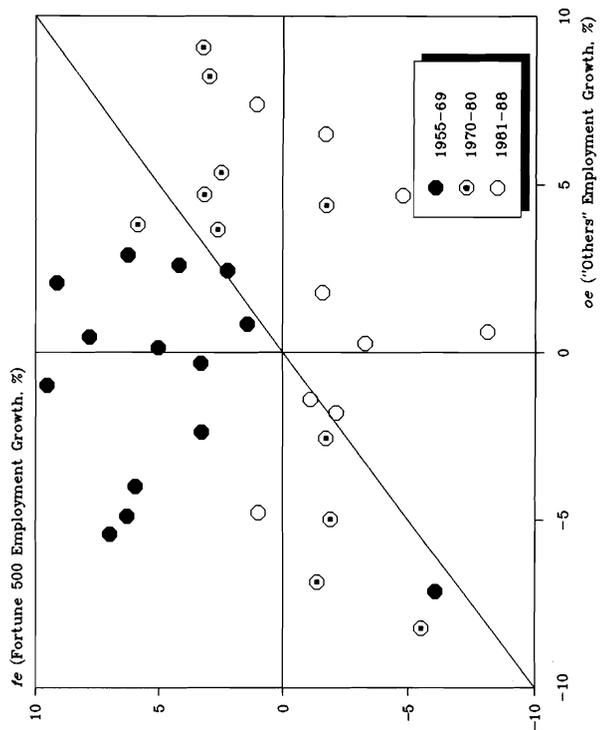


Figure 8-4d Employment: rates of growth for Fortune 500 versus the 'Others'



firms increased from 8.0 million to 9.9 million. The situation changed again by the early 1980s. During this last period, employment by the 'Others' continued to expand from 10.6 million in 1981 to 11.8 by 1988, while Fortune-500 employment was systematically falling from 15.6 million in 1981 to 12.5 million in 1989.

These historical changes are also depicted in Figure 8-4b, where we plot the annual employment figures of the two sectors against each other, rather than against time. The chart contains three different isoconcentration rays. Two of them represent the lower and upper boundaries for the aggregate concentration ratio reached over the 1954-1988 period, while a third one denotes the benchmark ratio of 50 percent. The three restructuring phases are apparent here. First, the rise in Fortune-500 employment and the concurrent decline in employment of the 'Others,' then the reduction in the rate of expansion of Fortune-500 employment at the same time that the 'Others' began to expand their labour force and, finally, the drop in employment of Fortune-500 firms when 'other' firms continued to increase their employment numbers.

Unlike the case of sales, changes in the aggregate concentration ratio for employment were dominated by drastically different developments in the two sectors. Indeed, during most of the period, employment of the two groups seemed to have moved in *opposite* directions. (For that matter, the 1970-1980 interval could reasonably be interpreted as a transitory phase in which employment in larger companies levelled off before its imminent decline, while employment in smaller firms changed its course from a long-term decline toward a period of sustained growth.) At a risk of some oversimplification, we can say that the positive trend in aggregate concentration for employment occurring in the pre-1970 period was primarily affected by rising Fortune-500 employment and falling employment for the 'Others,' while the general reduction in aggregate concentration experienced during the subsequent, post-1970 period, was brought about mainly by a downward trend for employment of Fortune-500 corporations, coupled with an upward tendency in the number of employees working for the 'other' firms.

These marked differences in the experience of the two sectors are further described in Figures 8-4c and 8-4d and are summarized in Table 8-8.

Table 8-8 Employment in the M&M sector: average rates of growth (percent)

Period	Fortune 500 (<i>fe</i>)	'Others' (<i>oe</i>)
1955-69	4.4	-1.3
1970-80	0.7	1.5
1981-88	-2.7	2.2

In Figure 8-4c we can see how, between 1955 and 1969, the rate of growth of employment in Fortune-500 firms was systematically positive (excluding 1958), while the comparable rate for the 'other' firms was much lower and, on average, negative. The transition occurring during the 1970-1980 phase is also clear in this figure. We can see the gradual increase in the rate of growth of employment in 'other' firms and a progressive decline in the comparable rate for the Fortune-500 corporations. This transition has been completed after 1980, when the rates of growth of employment for the Fortune-500 group became negative (with the exception of 1984), while the rates of growth for the 'Others' were higher and, on average, positive. These growth data are contrasted in Figure 8-4d. The general impression arising from this chart is the lack of homogeneity in the experience of the two groups. Most observations lie far from the 45-degree isogrowth and in 13 out of the 34 years of the sample (38 percent), the rates of growth of the two groups have *opposite* signs. This heterogeneity is particularly pronounced in the first period, for which all but one observation are above the 45-degree isogrowth, and during the last period when all but one observation are below this isogrowth. During the transitional period, the observations were first above the isogrowth line and then below it.

Let us now combine developments in the 'business' and 'industrial' spheres in order to draw separate pictures of the "Inflation" process occurring in the two groups of firms. The four charts in Figure 8-5 contrast the rate of growth of sales on the vertical scale, with the rate of growth of employment on the horizontal scale. Each of these individual charts focuses on the experience of one group in a specified sub-period. The charts on the left (Figures 8-5a and 8-5b) are for the Fortune-500 group, and those on the right (Figures 8-5c and 8-5d) are for the 'Others.' The top two charts refer to

Figure 8-5a A business-industry decomposition of Fortune-500 "Inflation," 1955-69

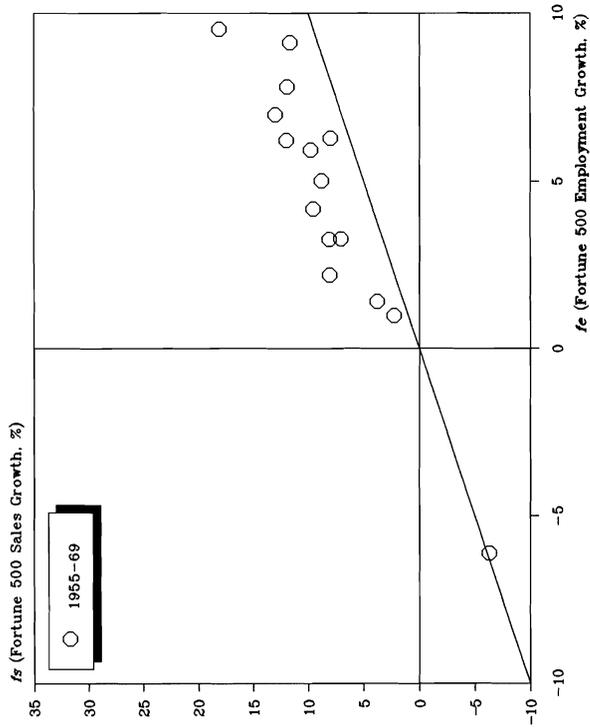


Figure 8-5c A business-industry decomposition of 'Others' "Inflation," 1955-71

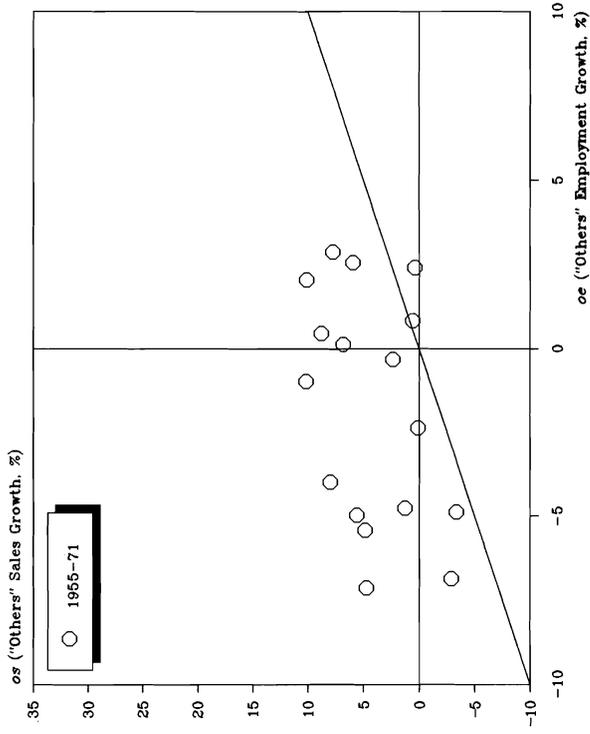


Figure 8-5b A business-industry decomposition of Fortune-500 "Inflation," 1970-89

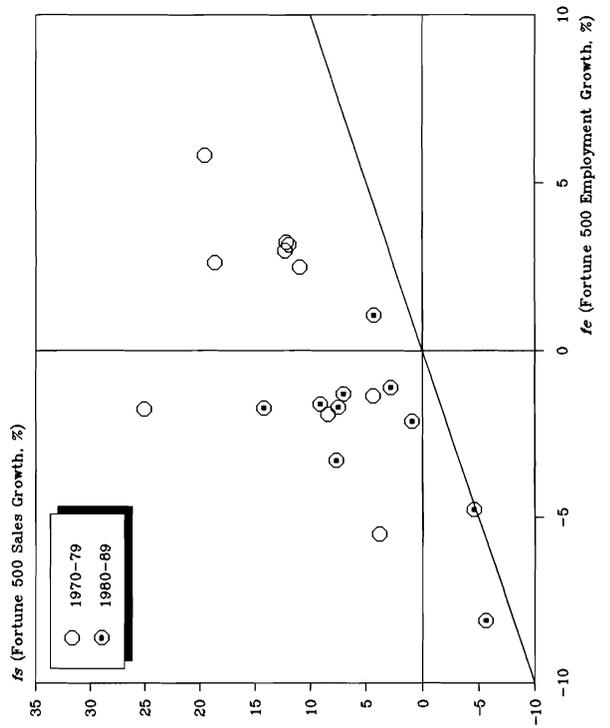
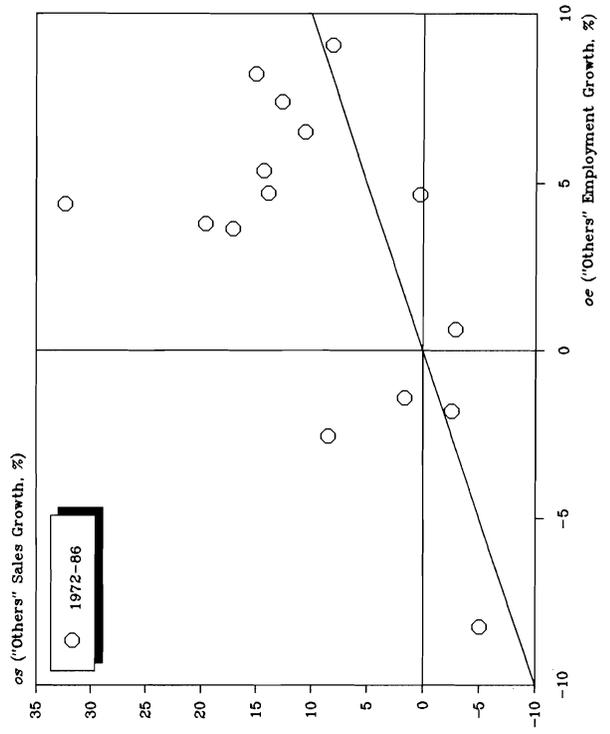


Figure 8-5d A business-industry decomposition of 'Others' "Inflation," 1972-86



the period of the 1950s and 1960s, while the lower graphs focus on the period of the 1970s and 1980s. (The precise cutoff years for the sub-periods correspond to 'turning points' apparent in Figure 8-6a below.) In analyzing these charts it is useful to identify three reference lines. The horizontal line going through the origin of each graph represents a zero business isogrowth. Observations lying above it designate a positive rate of growth for sales, while those lying below it denote falling sales. Similarly, the vertical line going through the origin is the zero industry isogrowth. Observations lying to the right of this isogrowth denote rising employment, while those lying to its left represent falling employment. Finally, the diagonal (45-degree) line is a zero isogrowth for the rate of "Inflation." Observations lying above this diagonal denote a positive rate of "Inflation" and those lying below it represent a negative rate.

Turning to the data, we can see that in the first sub-period, during the 1950s and 1960s, the Fortune 500 firms displayed a relatively low rate of "Inflation," stemming from a combination of rising sales and employment (the zero "Inflation" in 1958 arose from identical rates of decline for sales and employment). The experience of the 'Others' during that period was different. Their average rate of "Inflation" was slightly higher than the one experienced by the Fortune 500 (their observations are generally higher above the diagonal isogrowth than those of the Fortune 500) and this higher "Inflation" resulted from relatively lower rates of growth for sales combined with mainly *negative* rates of growth for employment. In the second sub-period, that of the 1970s and 1980s, the 'business-industry' interactions for the two groups have changed. The average rate of "Inflation" of the Fortune-500 was now higher than that of the 'Others.' The rates of growth of sales for the two groups were roughly the same and the main source of difference came from the 'industrial' sphere: while employment growth for the 'Others' was generally positive, it was mainly negative for the Fortune-500 firms, particularly during the 1980s.

The separate analyses presented in Figure 8-5 reaffirm that the interaction between the 'business' and 'industrial' spheres of the M&M sector was indeed dynamic in nature and changed over time. They further demonstrate that the "Inflation" experience of the two groups of firms was not at all similar. In fact, the 'business-industry' interaction for the Fortune 500 looked more like the *inverse*,

mirror-image of the comparable interaction experienced by the 'Others'! This is illustrated even more clearly in Figure 8-6a, where we chart the sales-employment relationship for both the Fortune 500 and for the 'Others.' (The diagram is useful in comparing not only the direction of change, but also the absolute levels of the variables.) During the 1950s and 1960s, the Fortune-500 exhibited almost a linear positive relationship between their sales and employment. For the 'other' firms, however, the general relationship between sales and employment in that period appeared to have been *negative*! In the following decades of the 1970s and 1980s, the experience of the two groups seemed to have been reversed. The 'other' firms now embarked on what was tantamount to a brisk 'growth-inflation,' while the Fortune-500 entered a period of stagnating employment despite the growing sales. Finally, during the 1980s, when the 'Others' continued their dual expansion of sales and employment, the relationship between these variables for the Fortune 500 turned *negative*, with rising sales and falling employment.

Consider now Figure 8-6b, where we trace the relationship between sales and employment for the entire M&M sector over the 1954-1986 period. This latter chart indicates a general positive relationship in the 1950s and 1960s, a positive -- though much less tighter -- relationship during the 1970s, and a mixture of positive and negative interactions during the 1980s. A comparison between Figure 8-6a and Figure 8-6b points to the hazard of over-aggregation. It is clear that, at least since the mid-1950, the overall macroeconomic interaction between 'business' and 'industry' in the M&M sector involved not parallel, but *conflicting* developments for the underlying groups of firms. The apparent 'growth-inflation' of the 1950s and 1960s involved rising employment for the Fortune-500, but *falling* employment for the 'Others.' The creeping 'stagflation' of the 1970s and the severe 'stagflation' of the 1980s were brought primarily by the Fortune 500, for employment by the 'Others' has *increased* throughout that period! If we were to rely only on the overall numbers, we would have completely missed this remarkable discordancy in the experience of the two groups.

The significance of this latter point could not be overstated. As our empirical analysis indicates, "Inflation" in the M&M sector arose from the different experience of the largest firms as opposed to that of smaller firms. This disparity also led to systematic processes of restructuring in both the 'business' and 'industrial' spheres of the M&M sector. Specifically, the 'growth-inflation' of the 1950s and 1960s

Figure 8-6a Sales versus employment for Fortune 500 and the 'Others'

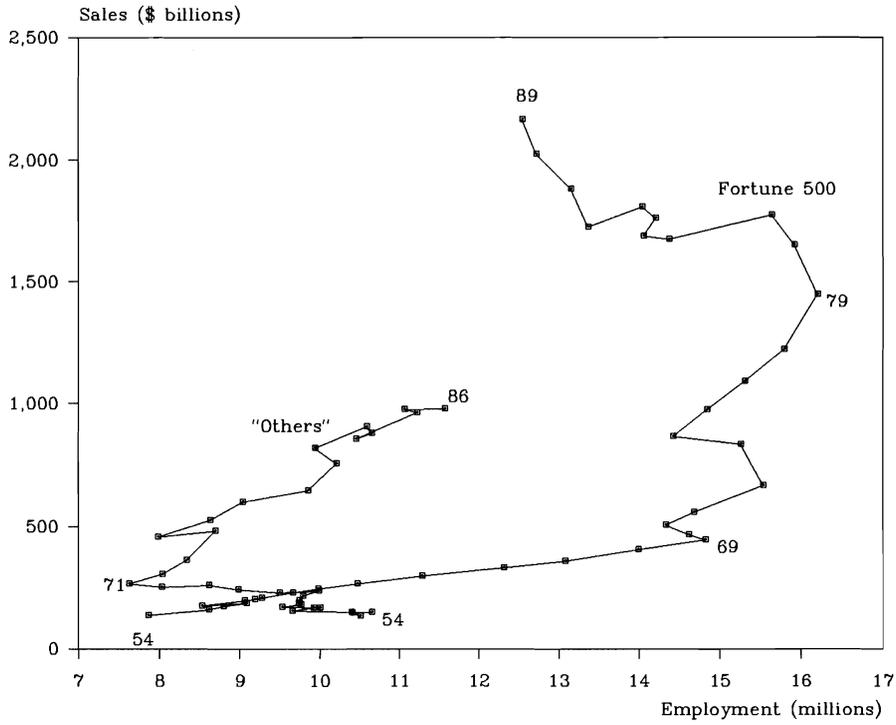
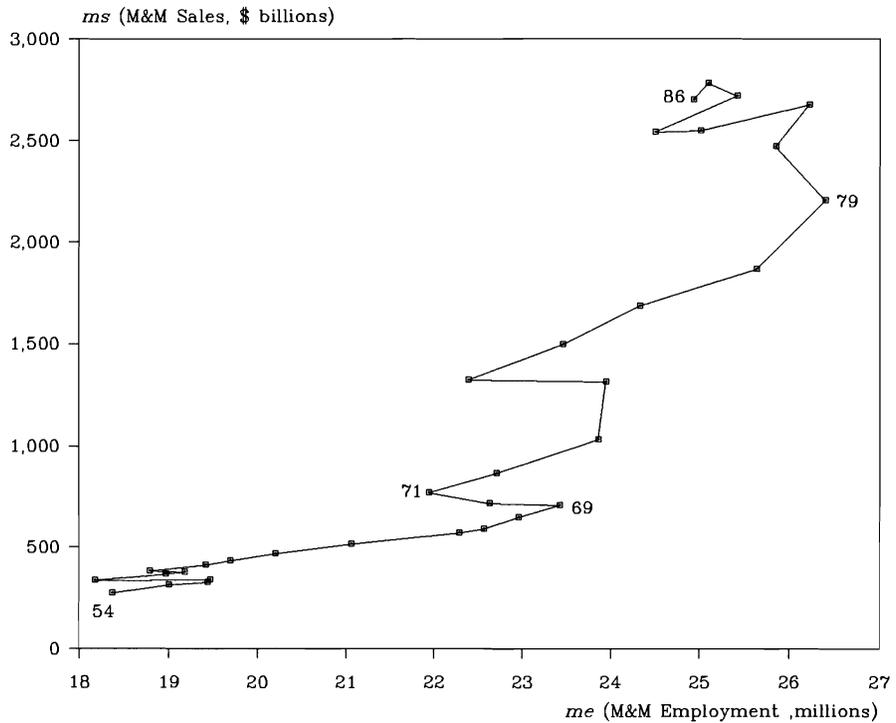


Figure 8-6b Sales versus employment in the M&M sector



involved rising aggregate concentration ratios for both sales and employment, while the so-called 'stagflation' of the 1970s and 1980s was associated with a stable aggregate concentration ratio for sales and a declining ratio for employment. From a macroeconomic perspective, however, these restructuring processes would have been wholly invisible. A strictly aggregate approach is equivalent to suggesting that "Inflation" is structurally 'neutral,' or if it is 'non-neutral,' that the consequent restructuring is simply immaterial; in other words, a macroeconomic framework implies that we could safely ignore the very structural roots underlying the inflationary process!

The systematic differences between the inflationary experiences of the large as opposed to smaller firms have altered the relative significance of each of those groups for the aggregate inflationary process in the M&M sector. These changes could be examined in a number of different ways and we begin by exploring the effect of the Fortune 500 group on the direction of "Inflation." Following the taxonomy presented in Section 8-2 of this chapter, we can define the 'business difference' (*BD*), the 'industry difference' (*ID*) and the combined 'business and industry difference' (*BID*) for the Fortune 500, as given by equations (25), (26) and (27), respectively:

$$(25) \quad BD \equiv FSS (fs - os)$$

$$(26) \quad ID \equiv -FES (fe - oe)$$

$$(27) \quad BID \equiv BD + ID .$$

Figure 8-7a charts the annual values of *BD* between 1955 and 1986, and of *ID* for the period between 1955 and 1988. In Figure 8-7b we plot the annual values of *BID* over the 1955-86 period.

In examining these figures, we can discern certain systematic patterns which differentiate the experience of the 1950s and 1960s from that of the subsequent period of the 1970s and 1980s. During the first period, the business contribution of the Fortune 500 was inflation-augmenting, as indicated by the generally positive values of *BD* (the average value for *BD* over the 1955-70 period was 2.4 percent).

Figure 8-7a The 'Business Difference' and 'Industry Difference' for the Fortune 500

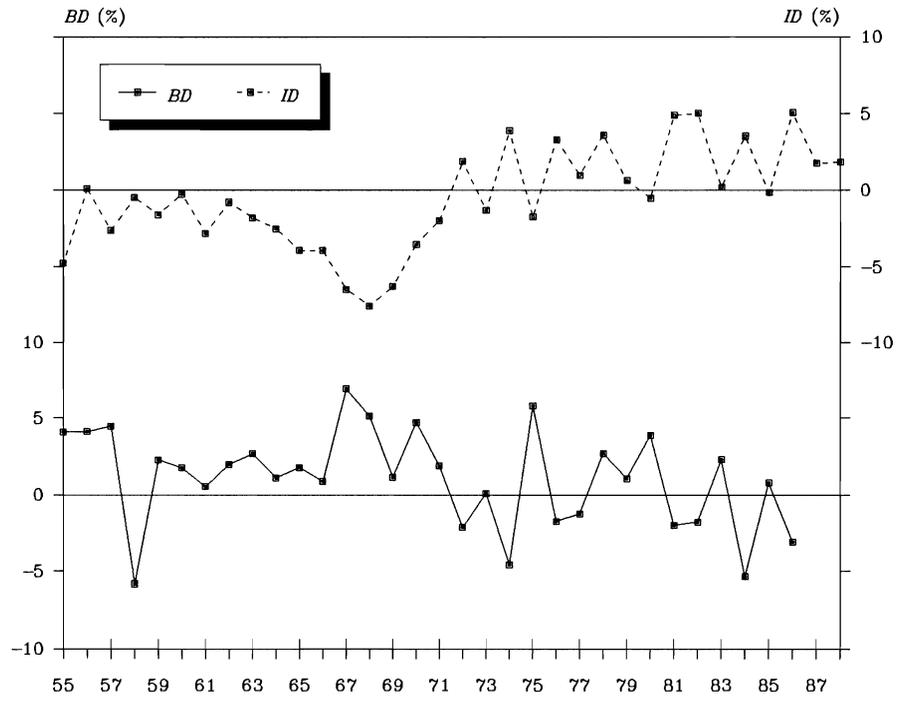
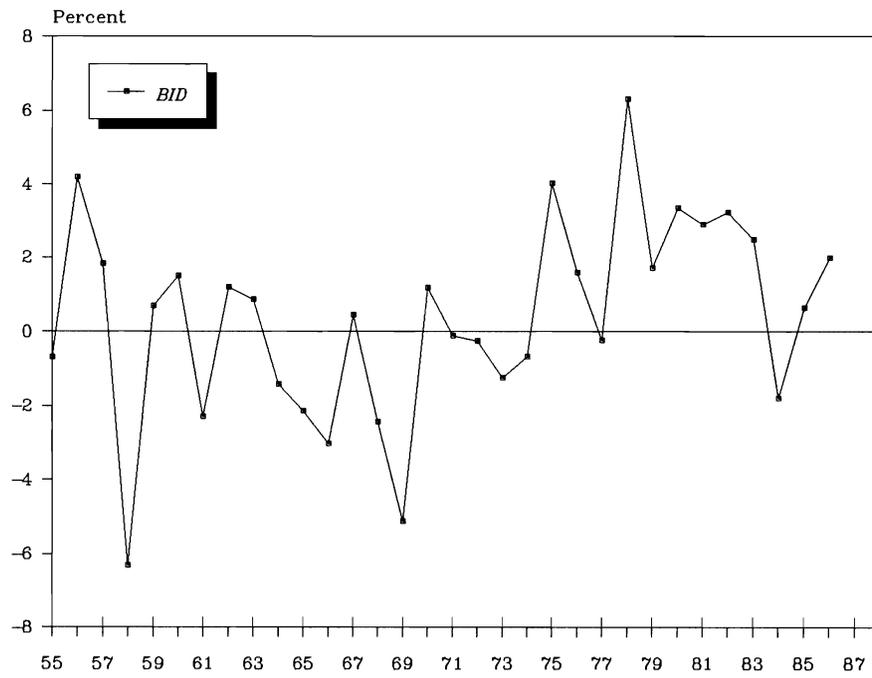


Figure 8-7b The 'Business-Industry Difference' for the Fortune 500



The business contribution of the Fortune-500 group tended to augment the rate of "Inflation" because the rate of growth of sales for the Fortune 500 was generally higher than the comparable rate for the 'Others.' This positive differential in growth rates also worked to raise the rate of aggregate concentration in the business sphere (*FSS*), thus increasing the inflation-augmenting effect of the Fortune-500 firms. The industry contribution of the Fortune-500 group, on the other hand, was inflation-abating throughout most of this period, as indicated by the negative values for *ID* (over the 1955-70 interval, the average value for *ID* was -3.1 percent). This tendency to lower the rate of "Inflation" was generated because employment for the Fortune 500 grew faster than the comparable numbers for the smaller firms. The growth-rate differential also intensified the inflation-abating effect of the Fortune-500 group by raising the level of aggregate concentration in this sphere (*FES*). Overall, the combined business and industry contribution of Fortune-500 firms during the 1950s and 1960s tended to be inflation-abating. Given that, on average, the inflation-abating effect in the industrial sphere exceeded the inflation-augmenting impact in the business sphere, their sum, *BID*, tended to be negative (the average value of *BID* for the period was -0.7 percent). We can also discern a downward trend in the *BID* series, which serves to indicate that the combined inflation-abating impact of the Fortune 500 tended to increase over time.

All of this changed in the subsequent period. During the 1970s and 1980s, the business contribution of the Fortune 500 was close to being inflation-neutral (over the 1971-86 period, the average value for *BD* was -0.2). The industry contribution, on the other hand, became inflation-augmenting (fluctuating around an average value of 1.7 percent for the 1971-86 period). Hence, on balance, the combined business and industry contribution of the Fortune 500 was generally inflation-augmenting (between 1971 and 1986, the average value for *BID* was 1.5 percent).

The data charted in Figures 8-7a and 8-7b tell us whether the Fortune 500 pushed up the rate of "Inflation" or pulled it down relative to what it would have been in the hypothetical absence of that group. These data do not indicate, however, the relative magnitude of that impact. That we could see from Figures 8-8a and 8-8b below. In the first of these charts, we contrast the actual percent-point

contributions to M&M "Inflation" (*mse*) made by the largest corporations (*FCON*), and by the smaller firms (*OCON*), where,

$$(28) \quad mse \equiv FCON + OCON .$$

The data portray a highly interesting picture. During the 1950s and 1960s, the percent-point 'contributions' of the two groups were very similar; indeed, over the 1955-69 interval, the average contributions to "Inflation" of both the Fortune 500 and the 'Others' were 2.5 percent. In the subsequent period, however, things looked drastically different. Between 1971 and 1986, the average contribution of the 'Others' fell to 2.3 percent, while, in contrast, the average contribution of the Fortune 500 jumped to 6.0 percent!¹⁷

In Figure 8-8b we present an alternative index for the groups' relative contributions to M&M "Inflation." This index, labelled *FCONR*, is computed as the percentage share of M&M "Inflation" (*mse*) attributed to the Fortune-500 firms, such that

$$(29) \quad FCONR \equiv (FCON/mse) \cdot 100.$$

The graphical interpretation of this index in Figure 8-8b is straightforward. We take the annual rate of "Inflation" as always being equal to 100 percent, and chart the contribution of the Fortune 500 as a share of that total. (The relative contribution of the 'Others' is simply $100 - FCONR$.) Note that the *FCONR* index could have two different meanings, depending on whether the overall rate of M&M "Inflation" is positive or negative. In the former case, a positive or negative value for *FCONR* denotes a corresponding

¹⁷ The data for subsequent years are still incomplete so it is not yet possible to compute the percent-point contributions of each group after 1987. It is nevertheless plausible that the wide differentials in the contributions of each group persisted and even widened during the late 1980s. Sales for the Fortune 500 rose by 9.1 percent in 1987, by 7.7 percent in 1988 and by 7.0 percent in 1989. Employment, on the other hand, continued to decline, falling by 1.6 percent in 1987, by 3.3 percent in 1988 and by 1.3 percent in 1989. (The consequent rates of "Inflation" for the Fortune 500 in those years were 10.7, 11.0 and 8.3 percent, respectively.) We also have reason to believe (although accurate evidence are still unavailable) that the aggregate concentration ratio for sales increased in those years and the aggregate concentration ratio for employment continued its decline. If these latter conjectures are correct, then much of the recent resurgence in manufacturing "Inflation" was originated from the largest firms in that sector.

Figure 8-8a Percent-point contributions of Fortune 500 and the 'Others' to M&M "Inflation"

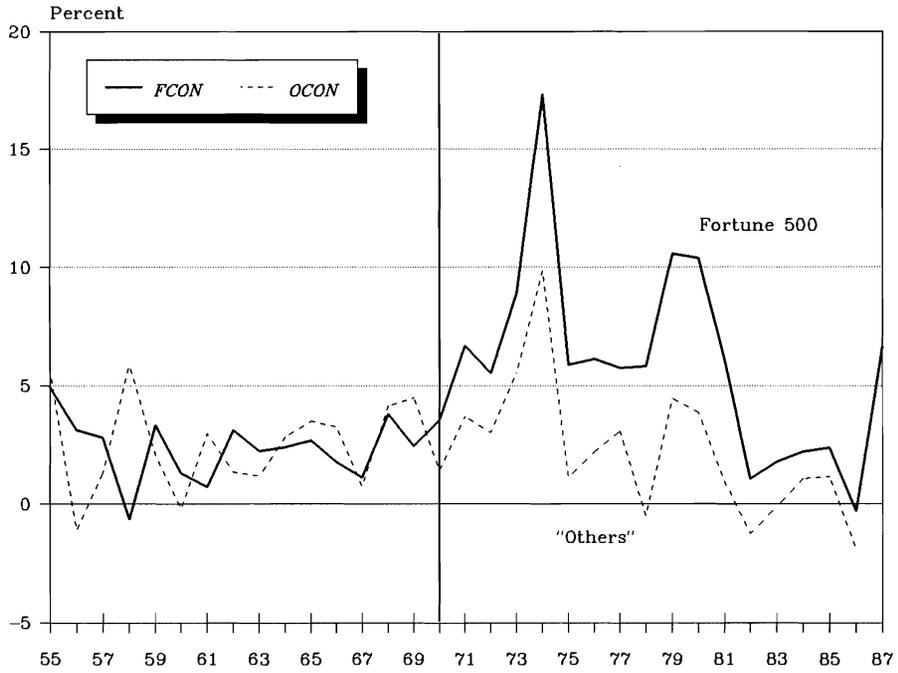
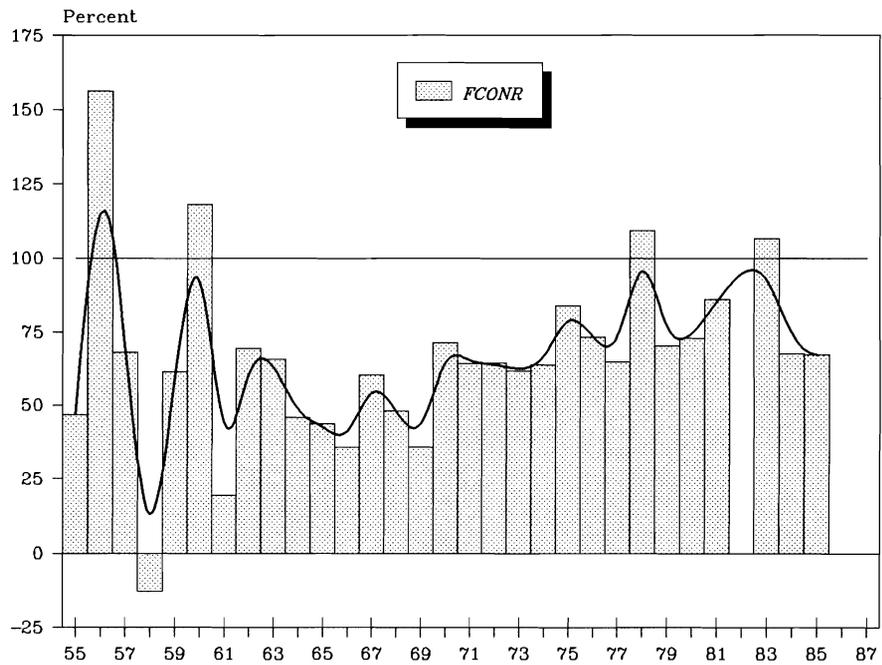


Figure 8-8b The share of Fortune 500 in M&M "Inflation"



positive or negative 'contribution' by the Fortune 500. In the latter case, however, *FCONR* has an opposite meaning, namely, that a negative value denotes a positive contribution, while a positive value represents a negative contribution. During 30 out of the 32 years between 1955 and 1986, the rate of M&M "Inflation" was positive, so, for most of the period, the first interpretation is appropriate. In 1982 and 1986, however, the rate of "Inflation" was negative and for those years we must interpret *FCONR* in an opposite way. In order to avoid confusion, we decided to omit these two observations from the chart.¹⁸ In addition to the actual values of *FCONR*, Figure 8-8b also contains a thick curve representing a smoother path for the temporal behaviour of this variable.¹⁹

The two periods identified in Figure 8-8a are also apparent in Figure 8-8b. During the 1950s and 1960s, the relative contributions of both the Fortune 500 and the 'Others' oscillated around the 50 percent mark. The fluctuations were particularly pronounced during the 1950s, after which their amplitudes seemed to have declined. In this first period, the Fortune 500 were expanding their distributive share of M&M sales, but since the aggregate concentration ratio for employment rose even faster, their relative contribution to "Inflation" remained stable. In the early 1970s, as the rate of "Inflation" started to increase, the relative contribution of the Fortune-500 firms began to rise too. Since the mid-1970s, "Inflation" started to decline but, given the systematic nature of the earlier inflationary restructuring, the Fortune-500 firms were now the predominant inflationary force, accounting on average for more than 75 percent of its annual rate. The distributive shares of both sales and employment accounted for by the Fortune 500 reached their peak during the early 1970s. Since then, the largest corporations have more or less maintained their share in M&M sales; the increase in their relative contribution to "Inflation" stemmed almost exclusively from a fall in their share of M&M employment driven by a continuous contraction of their labour force.

¹⁸ As evident from Figure 8-7b, the combined business and industry contribution of Fortune 500 firms was inflation-augmenting in both 1982 and 1986. The data in Figure 8-8a indicate that, in 1982, the rate of M&M "Inflation" was -0.17 percent, but the contribution of the Fortune 500 group (*FCON*) was positive, amounting to 1.08 percent. In 1986, the rate of M&M "Inflation" was -2.3 percent, while the contribution of the Fortune 500 firms was only -0.33 percent.

¹⁹ Smoothing was generated with the Harvard Graphics software package. The precise smoothing formula is not so important, given that we only seek to convey the *general* path of the variable.

8.7 Inflationary Restructuring: Why?

Differences in the performance of large and small firms have been documented extensively in the dual-economy literature. Economists such as Steindl (1945), Averitt (1968), Edwards (1975) and Bowring (1986), among others, have demonstrated that firms in the 'big economy' enjoyed higher rates of return than their smaller counterparts in the 'small economy' and that their performance in terms of key financial indicators was much more stable and far less risky. The dual-economy distinction has also affected the structural literature on inflation. Writers such as Galbraith (1957), Ackley (1959), Nordhaus and Godley (1972), Eichner (1973), Blair (1974), Beals (1975), Kaldor (1976) and Okun (1981), for example, distinguished between inflation in the fixed-price concentrated sector, and inflation in the flex-price sector of competitive industries. But, for these writers too, differences in the inflationary experience of the two sectors were largely a matter of *degree*. It has often been argued, for instance, that competitive prices experience strong fluctuations, where oligopoly prices oscillate only mildly around a steady inflationary trend, but the general conviction has been that, in both cases, prices move in more or less the same direction (see Chapter 4).²⁰

This apparent similarity breaks down when we go beyond standard inflation indices. In this chapter we proposed that instead of focusing on price changes as a proxy for inflation, we should follow the framework developed in Chapter 7 and decompose the inflationary process into its underlying components. Specifically, we redefined "Inflation" as a dynamic interaction between the rates of change of sales and employment, or, in general, between the 'business' and 'industrial' spheres of economic activity. From this perspective, the inflationary experience of large and small firms is not at all similar. In the U.S. manufacturing and mining sector, differences between the rate of "Inflation" for the two groups were indeed largely a matter of degree, but the 'business' and 'industrial' forces driving the inflationary process in each group were drastically different. The disparity was primarily pronounced in the industrial sphere, where employment of the two groups usually moved in *opposite* directions.

²⁰ Some, like Blair, argued that during recessions, oligopolistic firms tended to raise their prices at a time when competitive market prices were falling. This inverse pattern disappeared with the overall rise in the rate of inflation in the 1970s.

The dual-economy perspective is particularly illuminating when we consider inflation as a process of restructuring. Even when the sales and employment of large firms move in the same direction as those of smaller companies, they do not change at the same rate, and this means that inflation necessarily involves a continuous restructuring of distributive shares for the two groups. Over the past three decades, "Inflation" in the U.S. manufacturing and mining sector was propelled by two main structural regimes -- first, by rising aggregate concentration ratios for both sales and employment and, then, by a falling concentration ratios for employment. Until the late 1960s, the share of the 500 largest firms in aggregate sales grew rapidly, but, since their share of employment rose even faster, their contribution to inflation was relatively low. The adverse ramifications for inflation of these rapid advances in concentration appeared only in the subsequent period. After 1970, the share of sales and employment accounted for by the 500 largest corporations reached an unprecedented level of 65 percent, and this substantially raised the impact of these firms on the overall inflationary experience of their corporate universe. During the 1970s and 1980s, the large firms maintained their share of sales, but started to reduce their employment levels. These relentless cuts in employment created severe stagflation in the 'big economy' and, given that the aggregate concentration ratios were now much higher than earlier, the stagflation in this sub-sector led to an overall stagflation in the manufacturing and mining sector as a whole.

The view of inflation as a process of restructuring opens fascinating areas for research. If the inflationary interaction between 'business' and 'industry' is driven by underlying processes of restructuring, then the *causes* of inflation must lie with these restructuring processes themselves. Thus, in order to explain the low and relatively stable 'growth-inflation' of the 1950s and 1960s, we must explain what caused sales in the big economy to rise faster than sales of smaller firms and why employment in the small economy was falling when it was rapidly rising for the big firms. Similarly, to have a better understanding of recent stagflation, we should be able to explain why, as small firms expanded their employment numbers, large firms worked to drastically reduced them. The question, then, is *why* did the boundaries separating the core and periphery changed in the manner described in this chapter? This 'why' is the last step of our journey and we turn to it now.