The early 1970s was a period of economic stagnation and policy innovation. National wage-price controls sought to dampen inflation as circumstances rapidly changed. The resulting regional patterns of income, during and after these controls, were quite distinct and different. An interpretation of these patterns is proposed focusing upon the spatial differentiation of production, and especially the consequent spatial division of labor. Regional-industrial specific variables including employment composition and capital intensity are shown to have been closely correlated with patterns of regional real income.

The early 1970s heralded the arrival of a new era of economic instability and uncertainty. Left behind were the 1960s, in retrospect a golden era of unparalleled growth and relative price stability. While worse was to come in later years, the early years of the 1970s decade saw the American economy buffeted by an unprecedented combination of high inflation and high unemployment. In response, the Nixon Administration instituted a radical plan of direct control of wages and prices, essentially an incomes policy. Instead of stabilizing wages and prices indirectly by manipulating factor markets, the traditional Phillips' curve approach, wages and prices were administered by the government. Although there is a good deal of debate over the success of the controls program, wage and price inflation did moderate during 1970-1972. However, after the program lapsed, a sustained burst of "catch-up" inflation followed, overlapping in time another source of price inflation—the dramatic increase in OPEC petroleum prices.

Following Blinder [4], these are general observations for the economy as a whole. What were the regional dimensions of wages and price controls during this period? There are no studies to help answer this question. One explanation for the lack of study of this issue probably has to do with the analytical framework typically used to model regional wages and prices. Most geographical theorists use a structural model to explain stagflation. Spatial mismatches of labor demand and supply, combined with supposed short-run rigidities in labor and capital mobility, are often invoked to explain aggregate wage inflation and unemployment. The theoretical logic employed is essentially neoclassical; wages are assumed...
dependent upon local labor market conditions, while space is assumed to be only a short-run friction hindering complete spatial price equilibrium \[5\].\(^1\) Thus, wages are treated just like any other price.

In this paper, I explore the logic and empirical dimensions for an alternative model of regional income determination. The basic premises for this model were set out in Clark and Tabuchi \[14\]: first, real regional incomes are derived out of local money wage bargains made in expectation of spatially exogenous consumer price movements. Thus, real wages are dependent upon a complex arrangement of decentralized private decisions with respect to money wages and public policies with respect to aggregate consumer prices.\(^2\) In this regard, the first phase of the controls program, instituted by the Nixon Administration, should be interpreted as an attempt to politically administer regional real incomes during this period. It remains to be seen how effective these policies were in controlling regional wages, and how differentiated were the spatial impacts of these controls, during and after the policy episode. The second premise behind the proposed alternative model of regional income determination concerns the logic of production. Specifically, I contend that regional wage indexation depends on variables such as regional capital intensity, capital stock, and the composition of firms' workforces, rather than conventional (commodity-like) demand-supply relationships.

**Local Wages, National Prices**

Begin by assuming firms produce commodities in local labor markets for sale in the wider spatial system. While it is assumed that there is a national price regime for most goods, we also assume that spatial price arbitrage is not complete: there are local price equilibria reflecting access and coordination costs \[33\]. But, it is also assumed that even the most local of commodities which are not traded between regions (like housing) depend upon a significant portion of inputs which are priced according to national price regimes (compare with Samuelson \[31\]). Commodity pricing schedules are then industrial, more than regional, and may be even product specific. Intra-industry competition is an ever present threat to established firms, although these firms continually seek ways to balkanize (by space and product lines) their common markets.

In terms of price levels, it is assumed that industry standards tend to homogenize prices across regions. While there may be distinct differences between regions in the prices of non-tradeable goods, it is assumed that these differences are small and are set within an industry-wide context. In terms of price inflation, however, it is assumed that there are no systematic differences between regions in their rates of price inflation. To the extent that the money supply affects price inflation, then sharing a common money supply will ensure spatially uniform price inflation. But, more plausibly, because of the oligopolistic nature of competition in national commodity markets \[24\], firms will tend to make price decisions on the basis of aggregate macro statistics and then force these decisions down the spatial hierarchy through their various wholesalers and retailers. Thus, at the mini-

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\(^1\) For two exceptions see the essays by Clark \[7\] and Martin \[25\]. It has been suggested by Jones \[22\] that these essays were very much influenced by British neo-Keynesian institutional theories regarding the stickiness of relative money wages. While there may be some truth to Jones' argument, it should also be noted that Clark and Martin were also consistent with an earlier U.S. tradition as exemplified by Dunlop \[16\].

\(^2\) This assumption is directly from Keynes \[23\]. Thirlwall \[35, p.41\] quoted Keynes as arguing: "There may be no method available to labour as a whole whereby it can bring the wage-goods equivalent of the general level of money wages into conformity with the marginal disutility of the current volume of unemployment." Thirlwall noted that "the real wage is a dependent variable in the system not an independent variable."
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mum, prices are assumed spatially inter-
dependent.

There is some evidence to support these assumptions. It has been observed that aggregate price inflation hardly var-
ies between U.S. cities. Considering the period 1950–1980, I have argued else-
where that a national inflation time-series model is a good (in a statistical sense) proxy for local price inflation series [10]. Moreover, it has been observed that tem-
poral variations in price inflation are statistically more important than spatial variations in price inflation. Even when we look at specific components of local and national price series, it has been noted that there is no temporal evidence of systematic divergences in price inflation between cities [11]. Granted, there are short-run spatial variations, especially in housing and to a lesser extent energy, but such divergences are not maintained from one time period to the next, and they are not systematic enough to shift local price inflation series away from national price inflation.

In contrast, it is assumed that local labor markets are local. Liberal ideology [6], coupled with quite conservative anti-
union organization laws (especially the federal Taft-Hartley Amendments of 1947) and the various states’ right-to-
work laws, combine to spatially fragment money wage bargaining. The result is a system of local labor markets relatively highly integrated in terms of the consu-
mer prices faced by workers, but other-
wise relatively poorly integrated in terms of local working conditions.

By assumption, the kind of spatial economy envisaged is one where product markets are centralized and labor mar-
kets decentralized. Thus, consumer costs appear exogenous to workers’ groups. Money wages are set so as to achieve cer-
tain targeted real wages based upon fore-
casts of likely consumer prices. Notice that it is money wages which are the prox-
imate decision variables.3 Money wages are assumed to be set according to two relati-
veties—one based upon the national commodity price regimes facing like firms in an industry, the other based upon the local history of customary labor prac-
tices. Clearly, some multiplant firms may be large enough to control the whole (spatial) market for a good. Even where this is not the case, pricing practices are presumed to be linked to the structure of the national (even international) industry. In this sense, there is little in the way of local commodity pricing. Consequently, industry pricing practices are a practical ceiling on local money wage negotiations. These practices are also effective trans-
spatial reference points for more organi-
zied and militant workers.

In this context, conventional short-run neoclassical demand and supply logic is quite irrelevant for local labor markets. Indeed, I would suggest that this is the conclusion of even conservative econo-
mists concerning the past ten to fifteen years [18]. Local money wages, like national money wage aggregates, have tracked national prices with barely a shudder at changes in local labor supply and demand conditions [13]. It is this real-
ity which has prompted the development of implicit contract theory as an explana-
tion of the short-run macroeconomic patterns of wages and prices.4 Only in the tightest of local labor markets is there any

3 It is sometimes asserted that organized labor causes price inflation, indicating a causal sequence beginning with wages to prices to wages, etc. The evidence does not support this assertion, nor is it consistent with the structural arrangement of U.S. labor markets [14]. Robinson and Wilkinson [30, p.
9], writing on the British scene, remarked ironically that it is just as plausible that “inflation causes trade unions.” The struggle for real wages is a real one, but one which is nevertheless fought through other variables.

4 Implicit contract theory (ICT) does not imply that there are no fluctuations. Rather, ICT implies that adjustment is forestalled until the end of the contract period [2]. This may result in Walrasian-
like price-quantity relations, although temporarily distributed. A new theme in this literature has been to structure ICT in terms of asymmetric information (between workers and firms), thereby avoiding the Walrasian implications of earlier theories (see Hart [19] for an extended view).
evidence that labor supply, particularly rapid and repeated voluntary job switching, affects the pace of local money inflation [8].

**Firms’ Production Strategies**

Given these assumptions relating to firms’ pricing practices, it is further supposed that firms make four kinds of production decisions. In their logical (if not their historical) order of importance, these decisions are: what to produce, how much to produce, how to produce, and where to produce. Notice that the first two decisions can be paired together as can the last two decisions. It is these decisions, when taken in the context of national commodity pricing regimes and local labor market practices, which ultimately determine regional wage indexation.

Before going into the details of this decision framework, it is crucial that we identify the substantive assumptions behind what is proposed. Basically, I assume firms to be portfolio managers. That is, they are presumed to act strategically with regard to their desired corporate returns. Given a set of possible ventures, products, and inherited capital, it is assumed that firms choose amongst these kinds of variables so as to maximize short-run revenues [1]. The more strategic, or adaptive, the more likely such firms will be able to plan their long-run returns. Here, the crucial issue is the internal capacity of firms to switch activities within their corporate portfolios. Obviously, what is envisaged in this conception of the modern firm is quite different from the standard, single-function neoclassical firm. The latter kind of firm appears passive, not strategic—acting within a tightly defined competitive environment which never allows the generation of necessary “surplus” revenues for internal restructuring. In the strategic firm, prices are “set,” not “taken” [3].

So, if one uses this logic in terms of the four kinds of production decisions introduced above, it should be clear why these decisions have their particular logical order. What to produce takes precedence over other decisions because it refers directly to the level of returns that corporate planners might expect from a set of alternative production options. Once this decision is taken, paying due regard to the implications of the other three production decisions, then firms allocate funds for production over a specified time horizon. Clearly, all four production decisions are strategic and interact with one another. My assumption of logical order stems from a desire to understand portfolio management as a process which takes place outside the immediate site of production. From that position, at the center or the top of the corporate organization, it becomes easier to understand how and why decisions are made with respect to the other three production issues. Indeed, we can provide a rationale for the multi-locational corporation.

What to produce and how much to produce are obviously related, but none-theless separable decisions. For instance, the former decision is influenced by firms’ existing technical capacities and expectations of the type and degree of competition they would face in the marketplace. Since it is the flow of disposable revenue which is crucial for many firms’ investment plans (assuming management avoids public financial markets as much as possible [13]), there are strong incentives to produce commodities which can be sold in many markets. Commodity standardization simultaneously allows for wide spatial market penetration and, of course, large scale production. The net effect of these two factors will likely be low per unit costs of production—scale economies. Moreover, scale economies can be used to maximize labor productivity while at the same time allowing for the routinization of job tasks (deskilling). In these ways, scale economies can reduce the relative importance of labor input of production. To the extent that labor derives bilateral power from technical complimentsaries with capital (what Oi [27] termed quasi-fixed coefficients), then
standardization can effectively reduce labors' claims on firms' incomes.

Notice, however, that standardization invites competition. Whatever the advantages of producing a standardized product, standardization may encourage other competing firms to introduce related-but-differentiated products. Thus, there are strong imperatives for market balkanization—along spatial and product lines. Even the largest of firms, those holding monopoly power, may be forced into a circular process of product innovation, production, and reproduction. Without a continual stream of product innovations, firms will be forced into a defensive posture: market protection and balkanization by ruinous competitive pricing—a strategy which would effectively reduce investment over the long term. Inevitably, firms and industries are variegated entities, operating over a wide spatial system producing many commodities.

How to produce and where to produce are decisions which depend upon the prior decisions regarding scale and output. And as before, how to produce and where to produce are intimately connected. There are at least two ways in which the two prior decisions impinge upon the two subsequent decisions. Functionally, firms may have a portfolio of products aimed at maintaining product innovation and protecting markets. Such functional differentiation will "map" upon production technique and location. Highly specialized innovative functions which require particular capital and specialized labor typically face a limited set of possible locations [9]. And it may be very important (for control reasons) to centralize this process.

Routine commodity production, on the other hand, requires a rather different configuration of labor and capital. Labor is less skill-based, and capital itself is more general, as in routine assembly tasks. One consequence of this kind of rationale is a spatial division of labor based on production technique. By now, this argument is quite well-known in the literature [9; 28; 34; 26]. It depends upon differentiated capital-labor complimentarities and a differentiated map of labor relations. As firms locate plants according to their production imperatives, they thereby reproduce the aggregate map of differentiated local labor markets.

How can this model of spatial economic differentiation help understand variations in regional wage indexation? Most immediately, it is clear that by focusing upon the organization of production, rather than conventional neoclassical price-quantity relations, different independent variables claim precedence when we come to analyze local wage-price relations. For instance, local scale economies, labor-capital complimentarities, the composition of local employment, and the flow of revenue given national commodity pricing regimes are quite different variables than the volume of local unemployment and local labor force participation rates which are proxies for labor supply. As shall be seen in latter sections, production-oriented variables can be made more explicit by identifying factors such as capital stock, capital-labor ratios, the ratio of production to overhead labor, scale of output, and the like. However, I should caution the reader that despite being able to specify different independent variables, ambiguities remain built-in to the logic of the model.

To explain, consider Figure 1 which summarizes in short-hand fashion the available strategies open to firms operating in centralized commodity markets and decentralized labor markets. Across the top of the figure are firms' commodity market strategies, ranging from mass standardized production to spatial and commodity balkanization. In between are two conditional strategies, one based on mass market production with significant production innovation, the other based upon specialized production with limited substitutability between competing products. On the left-hand side are firms' labor market strategies beginning at the top with completely integrated (spatially and functionally) labor markets
Commodity Market Strategy

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<td>low productivity</td>
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<td>low K/L ratios</td>
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<td>medium scale</td>
<td>high K/L ratios</td>
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<td>high productivity</td>
<td>labor intensive</td>
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<td>medium scale</td>
<td>high K/L ratios</td>
<td>specialized labor</td>
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Fig. 1. Strategies available to firms operating in centralized commodity markets and decentralized labor markets.

to (at the bottom) completely segmented (spatially and functionally) labor markets. In between these two extremes are two other strategies: internal labor differentiation through skill or salary-based exclusion clauses and two classes of labor—one employed within the firm, the other employed by other firms who contract or are “outsources” for portions of production. The former strategy creates and maintains in one plant, or in a series of linked plants, internal labor market differentiation. The second strategy divides labor by maintaining a privileged labor elite within a firm while allocating routine tasks to outside firms.

Based upon the aforegoing discussion concerning the hierarchy of firms’ production decisions, it should be apparent that there are specific commodity-cum-labor market combinations which can be identified. Given these combinations, each relevant diagonal cell contains a brief description of firms production configurations. Beginning with mass market production, the most likely labor market
strategy would be completely segmented local labor markets. Since competitive position depends upon lowering per unit costs, production is segmented to its most efficient functions, and these functions are located in their “best” local labor markets. Again, notice that these decisions are presumably made simultaneously. The scale of output is very large, capital investment a continual process, and cost efficiency the watchword. Without a continual stream of capital investment, production would have to be moved on a regular basis from low to even lower cost labor markets—from large urban areas in industrial countries to small rural areas in Third World countries. The crucial issue is labor productivity given a national price regime. So as to maximize labors’ productivity, there are significant numbers of overhead staff (so-called NP workers [12]).

The in-between strategies of mass market with partial product differentiation, coupled with internal labor market differentiation and segmented specialized product markets coupled with decentralized outsourcing and specialized production staffs, are more ambiguous in their industry characteristics. In the first instance, partial product differentiation may require a large volume of capital investment with accompanying overhead/supervisory labor. At the same time, their mass market functions may require production and location strategies consistent with total mass market production. Here, there is a labor elite differentiated internally from a laboring proletariat. Elite workers may have significantly bilateral power due to their skill specificity. The laboring proletariat will be likely totally exploited; and, while the first group workers will have significant capital complementarities, the latter group will only be loosely related to the production process through their crude labor power. In a more specialized commodity production strategy, outsourcing would accomplish much the same result. The only difference would be that outsourcing may not be so decentralized because fragmentation of ownership would make any local labor referencing more difficult to legitimate than if the same functions were carried out by one firm in the same locality but in different plants.

In balkanized commodity markets, competition is avoided as much as possible. Because of spatial balkanization, scale is limited and the flow of revenue restricted. Similarly, capital intensity is restricted and capital-labor ratios low. Production is an integrated local phenomenon. The combination of limited revenue and low capital intensity makes firms’ in such industries very vulnerable to outside competition. Limited scale effectively reduces any incentive to restructure, while lack of investment sources impoverishes production technique. Labor is similarly impoverished.

Figure 1 is then a map of labor’s bilateral power. For instance, considering mass commodity production and spatially differentiated labor markets, it should be obvious that labor is at a relative disadvantage in these circumstances. Labors’ tasks are routine and undifferentiated by skill. There may be many labor markets available for management to locate these functions. Since the legal institution of U.S. labor relations is based upon an ethic of decentralized negotiation, any spatially integrative bargaining strategy by labor would be difficult to implement, let alone make inroads into firms’ pricing regimes. This is not to say that wage indexation would be impossible—in some regions indexation might be highly developed because of class consciousness, perhaps reflected through control of the state. And, it is also possible that there may be significant industry-related patterns of wage negotiation which cut across regional patterns, a result of firms using national commodity pricing. The point is that wage indexation would be variably linked to production factors such as capital intensity, and this variation will have regional and industrial dimensions.

Two implications of the discussion above deserve recognition and emphasis.
First, it is apparent that regional wage indexation will be ambiguously related to such variables as regional scale, employment composition, capital stock, capital intensity, and the like. In any industry, firms may be spatially decentralized for one function but centralized for another. Thus, in any one industry there will be significant spatial variations in wage indexation. Similarly, between industries there may be marked differences in wage indexation. This was precisely the finding of Clark and Tabuchi [14]. Secondly, it should be acknowledged that the model begins with regional differentiation and then reproduces it through the hypothesized actions of firms. The institutional structure of a spatial economic system is an intimate and internal aspect of the model.

In this regard, the model proposed here is consistent with a new movement in social theory to theorize behavior as a historically, spatially, and institutionally contingent process (see Thrift’s [36] review of this emerging literature in geography). No uniform, homogeneous, original position is used to derive these conclusions. Rather, my mode of theorizing is to take seriously spatial differentiation. This methodological stance is quite different from most economists’ (radical and conventional) notions of theorizing. For that I make no apology and contend that the “original position” conception of theorizing has fundamental flaws. I would suggest that the “original position” lacks context, a real basis for individual decision making. To assume individuals are motivated outside of context is to believe in some natural conception of autonomously self-contained individuals. Whatever the ideological appeal of this image, it has very dubious analytical claims [32].

EMPIRICAL ANALYSIS

In this paper, it is not possible to test directly the micro-decision framework sketched above. Nevertheless, it is possible to analyze regional wage indexation patterns using the previous framework as an interpretive base. Specifically, the empirical issue is the relationship between regional wage indexation and the structure of production. Here, the dependent variable is regional real wage change, and the independent variables include capital-stock, intensity and scale, and the composition of employment. Since the discussion above emphasized the spatial and industrial dimensions of these variables and interrelationships, one goal of this paper is to demonstrate empirically the heterogeneity of wage indexation patterns. As well, because of the emphasis placed on the organization of production as a crucial facet of regional income determination, another goal is to demonstrate the regional and industrial variations in the derived relationships. In contrast to conventional regional econometric analyses, which homogenize space through their cross-sectional estimation techniques, the goal is to demonstrate spatial heterogeneity as much as industrial heterogeneity.

In this paper, the empirical strategy is episodic, concentrating upon a five-year period, 1970–1975, itself composed of two episodes: real wage decline from 1970–1972 and real wage increase from 1973–1975. The first episode is dominated by the Nixon Administration’s wage-price controls. Thus, to the extent that these controls were an important factor in controlling real wages, our analysis is also an analysis of the regional-industrial dimensions of these controls. The second episode was dominated by two quite separate events—the collapse of wage-price controls and rapid energy price inflation. The collapse of controls prompted an extraordinary rise in money wages as workers sought to recover the

5In this regard, recent studies of the structure of business cycles have noted that there is little agreement concerning the symmetry of their structure. At the aggregate level, Dulong and Summers [15] have suggested that cycles are symmetrical. But at the local level, Johnston [21] suggests that cycles are asymmetrical. Perhaps the difference between economists and geographers on this matter has to do with the geographical scale of analysis. See also footnote 6.
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ground lost in the previous episode. At the same time though, OPEC drastically inflated energy prices, initiating a further round of price inflation. The issues are then: How different were the resulting maps of real income? and, What production-oriented factors were associated with these patterns?

Data were collected for four industries, textiles (SIC 22), apparel (SIC 23), fabricated metals (SIC 34), and electrical and electronic equipment (SIC 36), over some 74 state and industry combinations. Four regions were constructed, the Northeast, North Central, South, and Southwest. Due to data restrictions, the West Coast Region was not included. For those seeking a full documentation of the data, Clark [14] and Gertler [17] give an exhaustive description. It is worth noting, however, that industries 22 and 23 are relatively ununionized, more labor intensive, and have lower average wages than industries 34 and 36. While the two former industries have rapidly increased their capital stock over the past 20 years (as well as their overhead supervisory staff), they remain relatively less capital intensive than industries 34 and 36. Of course, there are significant regional variations in this broad description. Even so, it is suggested here that industries 22 and 23 are more peripheral than industries 34 and 36.

Two related ordinary least squares regression models were estimated in the following sections. One was regionally oriented, and the other was industrially oriented. In the first and second episodes, the dependent variables were change in real income per employee, region and industry specific: generally defined as DRY1 and DRY2, respectively. The independent variables were similarly region and industry specific, including capital stock \((K)\), capital intensity measured as capital labor ratios \((K/L)\), scale of production (output) measured in terms of real value added \((VA)\), flow of revenue measured as gross received real profit \((PR)\), the composition of employment measured as the ratio of non-production to production labor \((NP/P)\), and labor productivity \((VA/L)\). The independent variables were measured at 1970, essentially the prior peak year relative to the 1960s in terms of national economic activity. Thus, we have a constant reference point to evaluate changes in real income from one episode to the next, making full use of available regional and industrial data.

So as to ensure econometric consistency, the independent variables were log-transformed \((L)\) prior to analysis. Each model was then estimated using a stepwise OLS regression technique. The results of these analyses are summarized in the following sections.

**Episode One: Wage-Price Controls**

In August 1971, President Nixon proclaimed the advent of a “new economic plan”: wage-price controls and suspension of the Bretton Woods international currency exchange system. Wage-price controls began with a 90-day freeze, affecting virtually all sectors of the economy, and then in Phase II (late 1971) it was translated into a mandatory review system. In Phase II the Pay Board had authority to set wages and prices according to fairly simple rules regarding profit margins and effective real wages. In effect, the Pay Board attempted to impose “normal” changes in wages and prices.

While our previous results have indicated that textiles and apparel are quite similar industries, and that fabricated metals and electrical and electronic equipment are similarly similar to one another, Reich [29] suggested that only the last of these four industries is a core industry, the others being peripheral. He suggested, on the basis of aggregate data, that the first three industries are very alike in terms of labor’s rewards, capital intensity, and the like. Yet, all our regional data suggest that our initial pairing above is more appropriate [13]. I suspect the issue is one of spatial patterning and the homogenizing effects of aggregate data. See, for a recent industry related study of the heterogeneity of firms’ production functions, the working paper by Inchinowski [20].

Blinder [4] suggested that Nixon was probably unaware of Lenin’s similarly named, although fundamentally different “new economic plan” of some fifty years earlier.
While Phase III was begun in January 1973, the effectiveness of the controls program had already significantly declined. Even though the phasing-out of the controls program was planned, it happened much quicker than most expected. Dismantling of the controls program coupled with unanticipated rapid increases in food prices in mid-1973 essentially demolished the controls program. Thus, any reading of the history of the controls program distinguishes two episodes—1970–1972 and 1973–1975. The first episode was one of gradual and administrated inflation. The second episode was one of dramatic catch-up inflation, as the controls program rapidly lost its veracity [4].

Regional and industrial patterns in real incomes during the two episodes are summarized in Tables 1 and 3. Keeping with the episode 1970–1972 (Table 1) for the moment, it is apparent that there were just a few exceptional regional-industrial combinations which recorded real wage losses of more than ten percent. Most were in the range of four to six percent. The most obvious region-industry combination to lose more than ten percent was southern electrical and electronic equipment (−15.5%). Otherwise, the North Central Region also seemed to record generally higher rates of real income loss during this period than most other regions. An analysis of variance (chi-squared test) on just the four industries (making no effort to distinguish regional identity) indicated that there was no significant difference between these industries in their average real income loss. However, a similar test on the four regions (making no effort to distinguish industrial identity) did indicate that there were significant regional differences in real income loss (at the 95% confidence level). As to be expected, the South and North Central had clearly greater losses (of about the same magnitudes) than the Northeast and Southwest regions.

Since the wage-price controls program had a significant industrial-targeting component, these results should not come as too much of a surprise. As I contended above, national commodity pricing practices provide effective reference points for wage determination at the local level, within specific industries. On the other hand, regional variations in real income changes, undifferentiated by industrial composition, were more problematic. I would argue that regional differences in real wage indexation reflect two issues: first, “local” labor practices, wherein functional specialization brings with it particular kinds of employment practices; and, second, the composition of local industry structure, especially those branches of industries which have lower employment and wage practices.

More quantitatively, associations were also identified on the production side to help us interpret these results. Table 2 provides a summary of the results of estimating a set of equations where the dependent variable was $DRY_1$—change in real income over the first episode, differentiated by industry and region. In Tables 2 and 4 the parameters reported (either by sign or by estimated value) were significant at the 95% level or better. Where signs are just reported, that indicates a parameter which was significant in the first round of analysis—where each variable was entered separately. In the second round of analysis, the equations were multivariate regressions. The asterisk (*) indicates estimated parameters significant at either the first or second rounds of analysis.

### Table 1

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<tr>
<td>South</td>
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<td>Southwest</td>
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### Table 3

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<td>North Central</td>
<td>1.3</td>
</tr>
<tr>
<td>South</td>
<td>7.9</td>
</tr>
<tr>
<td>Southwest</td>
<td>7.4</td>
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</table>
TABLE 2
REAL REGIONAL INCOME AND PRODUCTION-ORIENTED FACTORS, 1970–1972

<table>
<thead>
<tr>
<th>Industry and Region</th>
<th>Intercept</th>
<th>( \text{LNP/P} )</th>
<th>( \text{LCA}P )</th>
<th>( \text{LK/L} )</th>
<th>( \text{LPR/K} )</th>
<th>( \text{LPR} )</th>
<th>( \text{LVA/L} )</th>
<th>( \text{LVA} )</th>
<th>( R^2 )</th>
<th>( F ) Value</th>
<th>Best</th>
<th>Best</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIC 22</td>
<td>Yes</td>
<td>-</td>
<td>-</td>
<td>(-530.6)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>(-564.9)</td>
<td>0.19</td>
<td>3.44</td>
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<tr>
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<td>-</td>
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<td>-</td>
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<td>SIC 34</td>
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<td>0.17</td>
<td>0.49</td>
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<tr>
<td>SIC 36</td>
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<td>17851.2</td>
<td>-21959.5</td>
<td>-</td>
<td>-</td>
<td>(21943.5)</td>
<td>(-21991.2)</td>
<td>0.26</td>
<td>0.26</td>
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<td>-</td>
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<td>0.81</td>
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<td>-</td>
<td>0.40</td>
<td>0.86</td>
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</tbody>
</table>

* No parameters significant at the 95% level.
+ Parameter significant in the first round of analysis.
Yes indicates the intercept to be significant.

introduced above: production factors such as capital intensity (\( \text{LK/L} \)), labor productivity (\( \text{LVA/L} \)), the composition of employment (\( \text{LNP/P} \)), and the like.

Of the significant industry specific results (SIC 22 and 36), only one can be reasonably accepted as being reliable. Analysis of cross-correlations between the independent variables for the SIC 36 equation revealed that all four significant variables are highly intercorrelated. Multicollinearity was a very real problem. No one variable was statistically significant by itself. Thus, I would suggest the result for SIC 36 was spurious, despite a relatively high coefficient of determination. On the other hand, the results for SIC 22 appeared quite robust. By itself real labor productivity was the single most important variable (\( \text{LVA/L} \)). The negative sign on the parameter indicated that largest decreases in real incomes were associated with high levels of labor productivity. However, when capital intensity and scale were introduced, labor productivity dropped out as a significant variable. Nevertheless, the parameter signs remained consistent—the lower the level or scale of production and the lower the capital intensity, the lower the loss of real incomes. This result was consistent with our prior expectations, especially as regards our discussion of the lower tier and outer-firm production strategies. Notice, though, that given the arrangement of the wage-controls system, spatial differentiation of real income in SIC 22 was slight.

Table 2 records also the results of estimating the model using spatially specific data. The single most significant variable for the North Central Region was the level of real profits, the positive parameter sign indicated that as the level of capitalists’ profits increases, local workers’ real incomes also increased. While this result was not consistent with Marxian studies of regional income distribution, when other variables were introduced, the parameter was no longer significant. Notice, though, if the Marxian thesis is modified to accept oligopolistic behavior [24], it is entirely plausible that highly concentrated industry/region combinations (competitively speaking) will exhibit this kind of behavior. After all, we may well be detecting upper tier and inner firm pricing behavior which protects core workers at the expense of so-called peripheral workers.

In terms of the estimated results for the Southern Region, multicollinearity was again a problem (although less severe than before), when all variables were introduced. By itself, the level of the composition of employment (\( \text{NP/P} \)) was the single most important variable, with a negative parameter sign indicating that a higher quotient of overhead labor to production labor is associated with higher declines of real incomes in that region.
Even though overhead labor may have a more stable employment relation with capital, the extreme volatility in southern production workers tenure with firms will mean drastic declines in the local level of real wages. One also has to assume, however, that the displacement of production workers is coupled with drastic cuts in the hours worked of employed workers. Generally, in the Southern Region the levels of capital stock (LCAP) and the levels of profits (LPR) are closely related, while the levels of capital intensity (LK/L) and profit-on-investment (LPR/K) are not. The signs on the latter two parameters indicated that in the South, real incomes declined greater in industries with higher capital intensity and lower profit-on-capital invested. Again, implied by these results are issues of internal labor market control and a particular configuration of employment relations.

**EPISODE TWO: CATCH-UP INFLATION**

In the previous section it was noted that federal administration of wages and prices was generally quite effective in standardizing industrial patterns of real income changes and, to a lesser extent, regional patterns of real income changes. The fact that so few significant parameters could be estimated for the various equations indicated the importance of this exogenous source of regional real income determination. At the same time, there were significant results, and these results tended to be consistent with our prior theoretical expectations. Notice, of course, that there was little evidence of industrial differentiation in real income over the period 1970–1972. In contrast, chi-squared tests for variation in the regional and industrial patterns of real income changes during the period 1973–1975 indicated that both dimensions were characterized by significant differentiation (at the 95% confidence level). As Table 3 indicates, changes in real income varied significantly by region and industry over the 1973–1975 period—the government controls policy having collapsed in early 1973.

What factors were associated with these spatial and industrial differences in real wage indexation? Table 4 summarizes the results of estimating industry and region specific equations with DRY2 being the dependent variable. It should be immediately obvious that differentiation in real income was strongly related in almost all regional and industrial subsets (except SIC 36) to production-oriented factors. The coefficients of determination were very strong, even for cases like textiles (SIC 22) which only initially had one variable significant (compare with Table 2). But notice also that signs on the parameters varied between cases; the ambiguity inherent in the theoretical position detailed in previous sections is replicated in these empirical results. Beginning with SIC 22, by itself the composition of employment (LNP/P) was the single most important variable. The negative sign on the parameter indicated that large increases in real income were associated with lower levels of overhead labor. Basically, the larger the proportion of production employees (hence the smaller the NP/P ratio), the larger the real income increases. Once when other variables were introduced, this effect disappeared. Notice, though, that capital intensity had an analogous effect: the more labor intensive a production mode (hence a lower capital-labor ratio), the greater the increase in real incomes. Further, high levels of labor productivity had a positive effect on changing real incomes.

In contrast, real income changes in apparel (SIC 23) was only significantly affected by profit-on-capital invested. The sign on the parameter was positive, indicating that as profit increased so too did real wages. Presumably, expanding revenues enabled higher wages. This was not, however, the case in the fabricated metals industry (SIC 34). Higher levels-of-profits were associated with low real wage increases. What is interesting in this case was the positive association between the level of output (LVA) and the level of real wage increase. Clearly, increasing
output contributes to higher real wages, a result consistent with the behavior of firms who produce for a large market, either directly or by contract to other market-oriented firms.

More geographically, only the Southwest Region was found poorly "explained" by the model. And, unlike the case of textiles, labor productivity was inversely related to real wage increases. That is, lower labor productivity in Southwest industry was associated with higher increases in real income. In the other regions a whole range of variables were found to be significant. For the Northeast and the South, scale was significant as evidenced by capital stock (LCAP) and output (LVA). However, the signs were reversed; in the Northeast capital stock had a positive effect but in the South, a negative effect. While in the Northeast output had a negative effect, in the South it had a positive effect. Likewise, capital intensity had different signs—negative in the Northeast and positive in the South. Finally, it should also be noted that labor productivity had a positive effect in the Northeast but a negative effect in the South. All variables are intercorrelated; so we must be cautious of how much weight to give these results.

Nevertheless, there are some associations which are highly suggestive of the kind of patterning which occurred in wage indexing during the 1973–1975 episode. Relatively speaking, the South has been more labor intensive than capital intensive, and more oriented towards large scale mass production than specialized commodity production [13]. Capital-labor ratios are somewhat higher in the Northeast, and labor productivity somewhat lower in the Northeast. This is not to say that labor is somehow inefficient, rather it depends upon the type of production scheme. To the extent that the South conforms to this logic, then the previous heuristic model applies as an appropriate means of understanding variations in regional real incomes.

In contrast to these two extreme cases, the results for the North Central Region indicates that labor productivity had a significant positive affect on changes in real incomes. At the same time, relatively higher ratios of employment composition (NP/P) and capital-labor ratios (K/L) were associated with smaller real income increases. Thus, the North Central Region was more similar to the Northeast Region than the South or Southwest regions. A crucial difference, however, between the two former regions was the significance of return-on-capital invested in the North Central Region. Like previous results, the sign on this parameter indicated that increasing returns to capital were associated with lower increases in real regional income—a possible class conflict issue.

**Conclusions**

In this paper I sought to demonstrate the relevance of a production-oriented model of regional wage indexation. Rather than focusing upon short-run local labor demand and supply conditions, aspects of production were emphasized.
Here, recent criticisms in the macroeconomic and regional literatures of conventional neoclassical demand and supply relations were taken seriously. The result was a heuristic model of real wage indexation premised upon two assumptions. First, it was assumed that real wages depend upon local money wage bargains and national consumer prices. Second, it was assumed that the organization of production has a major role to play in differentiating changes in local wages. In this paper, these assumptions were explored with reference to changing regional real incomes during the early 1970s.

While I do not claim to have proved the case for this alternative model of wage indexation, the results presented here cast some favorable light upon these notions. For instance, it was shown that national administration of wages and prices had quite uniform effects across the sample of industries studied during 1970-1972. In this respect, it is apparent that the federal government dominated the wage-price systems of the early 1970s. Simply, the lack of any significant private factors emphasizes the importance of Nixon's radical plan. Hence, our results are consistent with Blinder's [4] aggregate analyses. Outstanding regional effects, especially in the South were associated with variables such as local capital stock and capital intensity.

The tremendous burst of inflation immediately after the controls collapsed (post-1972) had significant regional and industrial dimensions. The South and Southwest seemed to gain most during this latter episode, especially in textiles. In contrast, there were no special industry effects in the first episode and only limited regional effects—especially in the North Central Region. Proposed production-oriented variables were shown to be significantly associated with these regional and industrial patterns of the post-1972 episode. Indeed, on the basis of these results a rationale was constructed to "explain" real regional wage differentiation based on the model proposed in the theoretical section of this paper.

Regional analysis traditionally has used quite conventional models of local wage determination, focusing either on short-run demand and supply relationships or long-run regional comparative advantage. I would contend that both approaches are severely limited in their utility. In the first instance, even quite conventional macroeconomists have been forced to acknowledge the relative rigidity of money wages, that is, relative to output. There is now good evidence at the local scale to similarly question the efficacy of applying the simplest commodity market model to local labor markets [13].

In the second instance, increasing regional homogeneity of U.S. industrial employment questions the relevance of a comparative advantage rationale for regional economic growth and decline. Multilocational firms are now so spatially and functionally segmented that a more subtle intra-industry approach is needed if we are to understand what is produced where. Here, an attempt was made to provide an heuristic model to help understand regional differentiation and changing patterns of real incomes. But in doing so, I sought to avoid the common modeling practice of beginning with an homogeneous non-contextual landscape. One final comment is important to make in this regard. The model proposed is obviously just a first step in a large project aimed at reconstructing our notions of regional industrial structure. To go further will require different analytical tools, perhaps even different empirical tools than currently utilized.

Imagine that you were an economic development planner concerned to foster regional growth in employment and income. What implications could be drawn from these results regarding planning options and priorities? Quite obviously, there is an incredible variety of spatial and industrial real income patterns. Blanket, non-specific conclusions regarding the determinants of regional wage indexation would be worse than useless.
More specifically then, if you were a planner in the South, concerned with the local affects of the textile industry on regional incomes, one would focus upon the composition of local employment. But to radically alter the ratio of overhead to production labor (as a beginning point), planners have also to consider the whole process of production itself: how it is structured, and how it is dispersed to different areas. On the basis of previous studies of local economic development, it is doubtful if planners are sufficiently aware of these issues and what they would do about them.

**Literature Cited**


