

Chapter Seven

**UNIONS AND
COLLECTIVE BARGAINING**



James E. Annable

CHAPTER SEVEN

UNIONS AND COLLECTIVE BARGAINING

Labor unions have long been important participants in workplace exchange, a significance that macroeconomic textbooks and university reading lists used to reflect. As aggregate modeling has become more exclusively rooted in coherent SVGE thinking, however, attention to the role of unions and collective bargaining in labor pricing and use declined and, at least in the United States, has almost disappeared.

Modern wage analysis instead features Nash bargaining, the generalized solution to which demonstrates the degree to which mainstream analysis has been hollowed out:

$$(7.1) \quad \max (\Pi_j - \Pi_{oj})^\pi (W_j - W_{oj})^{1-\pi},$$

where Π_j denotes profit, Π_{oj} represents reservation profit, W_j is the wage paid, W_{oj} is the worker's reservation wage, and $\pi \in [0,1]$ represents the firm's relative bargaining power.¹ Since π is a reduced-form variable that cannot be measured, Nash labor pricing is functionally indeterminant. SVGE wage bargaining is no more than a black box, wholly relying on free parameters to produce determinate outcomes. The Nash mechanism is a curious replacement for Early Keynesian sticky wages, which were broadly rejected because of their dependence on free parameters.

Beyond the irony, macro theorists' reliance on the Nash framework is deeply problematic. Economists appear satisfied, albeit guiltily, to follow Nash's example and posit that $\pi=0.5$. Making π arbitrarily exogenous, however, is a pernicious model-building strategy. It short-circuits the need to carefully analyze rational firm, union, and worker behavior and, as a result, suppresses substantial portions of what is consequential about labor pricing. Given the nature of

¹ Nash bargaining is used to model wage determination in both intentionally and spontaneously organized workplaces. The focus of this chapter is the intentional class, featuring unions and collective negotiations. For the spontaneous class, most notable is the role of Nash bargaining in modern market search/matching theories. The assessment of veteran macroeconomist Robert Hall (2003, p.149) has been noted earlier: "... the old idea of wage rigidity [is] ... almost forgotten in modern theory where wages are continuously updated through a Nash bargain."

bargaining power, which will be defined as the variegated capacity to impose cost on the other side for disagreeing with your position, theorists who are interested in policy-relevant analysis must resist assigning (reduced-form) π a direct role in their wage models.

Hollowed-out bargaining frameworks become even more inadequate when government participates as a third party in the negotiations. Public power, with its monopoly on most forms of coercion, inherently dominates negotiating processes in which government actively participates, motivating a useful two-part division of the Chapter's analysis. In the first, government is restricted to playing a passive role, confining its influence to the economic environment and legal and regulatory framework within which collective bargaining occurs. The actual negotiations are bimodal, conducted by representatives of employees and employers. In practice, such bargaining is decentralized, operating at the firm or industry level. Bargaining power is rooted in the nature of relevant workplaces and the industries in which they operate.

In the second part, governments are permitted a more active role, participating in the negotiations as well as shaping the legal and economic environments. Such bargaining is typically centralized, with public intervention in the content of negotiated outcomes that cover a substantial share of total employment. Such interventions have macro consequences. Bargaining power is comingled with political power and is less dependent on the particular nature of firms.

Following that template, Part I focuses on decentralized bargaining, positing passive government intervention. It combines formal workplace-equilibrium analysis and the venerable California-School model of unions and collective bargaining. The integrated theory microfounds Nash concepts of reservation profits and wages as well as making reduced-form bargaining power endogenous, making varying wage rents and a low incidence of work stoppages predictable outcomes of optimizing exchange among interacting employers, employees, and unions. Attention is also paid to unions' rational member-acquisition strategy. The model construction is followed by a brief review of the U.S. evidence on wage rents and union organization.

Part II shifts attention to centralized bargaining with active government participation. The nature and use of bargaining power in those circumstances must be substantially political in nature,

rooted in the preferences of government leaders, and will not be the focus of the analysis. Instead, GWET will be used to specify constraints on the exercise of government power and briefly consider the influence of this bargaining structure on macro outcomes.

I. DECENTRALIZED BARGAINING

TVGE theory has modeled employee on-the-job behavior, motivated by the large body of work on worker preferences, in the context of utility- and profit-maximization, costly and asymmetric workplace information, and free-rider limitations on collective activity. The spontaneous organization of mutually beneficial exchange has been the bread and butter of economic theory since Adam Smith's invisible hand. However, the development, maintenance, and rational recalibration of \mathbf{K}_j , which provides the glue for the economic organization of large, specialized workplaces, need not always be spontaneous. The ubiquitous process can be formally organized by unions, with significant implications for macroeconomic outcomes.

California-School Theory

Intentional workplace organization introduces an additional class of specialized, paid agents (labor unions) into formal economic theory. A powerful description of unions as well as the organizing activities and negotiations in which they are engaged is provided by the literary collective-bargaining model developed by Arthur Ross (1948) in collaboration with Clark Kerr, Lloyd Fisher, and other labor economists of the California School.² Most significantly, the model, named *business unionism*, posits self-interested, rational behavior by union leaders and is compatible with the bedrock economic focus on optimizing, price-mediated exchange.

Ross modeled industry-wide bargaining, dividing his analysis into three parts: union objectives, firm objectives, and mechanisms that force a settlement whenever union-management objectives differ.³ California School thinking explicitly drew from foundations provided by A.C. Pigou,

² For a more complete description of the California-school theory in a macroeconomic context, see Annable (1984).

³ For industrial unions (where the firm controls who gets hired), industry-wide bargaining occurs when a single union bargains separately with all the significant firms in the domestic industry; for craft unions (where the union

Alfred Marshall, and F.Y. Edgeworth. Working in the 1920s, Pigou anticipated Nash bargaining by developing his range theory, for which the labor price paid is bounded by management and union “resistance” wages. He investigated the factors influencing the size of the range (drawing on Marshall’s analysis of labor-demand elasticity) and the distribution of bargaining power but was never able to make the wage produced by bilateral bargaining determinate.

Earlier, Edgeworth more generally modeled indeterminacy in market outcomes, arguing that determinant pricing could be found only in perfect competition and pure monopoly. From Edgeworth (1889, p.125): “In pure economics there is only one fundamental theorem, but it is a very difficult one: the theory of the bargain in a wide sense.” Ross critically enriched the Pigou-Edgeworth analysis by identifying workers’ axiomatic preference for equitable treatment by management, preparing the way for GWET’s extension of optimizing price-mediated exchange to the workplace and its consequent determinate negotiated wage.

Management and union objectives. Profit-seeking firms want to minimize unit labor costs, subject to its labor-market constraint and establishment-idleness conditions. Ross posited that the maximum wage consistent with establishment survival is the rate which prevents unit labor costs from rising above those of the firm’s product-market competitors. The firm’s minimum wage consistent with survival is labor’s market-opportunity cost.⁴

Union goals, not surprisingly, are less familiar to economists. The California school posited that unions seek to satisfy members’ objectives subject to a budget constraint. Ross’s argument, in the language of modern theory, is that rational unions facilitate worker optimization of expected

determines who gets hired), the bargain is made with an employers’ association representing the effective (typically local) industry. While formal business unionism is easily adapted to craft unions, that exercise will not (to conserve space) be performed here

⁴ Business unionism identifies four major, not mutually exclusive, factors that influence the size of the range of wages consistent with firm survival: the price-elasticity of product demand, which can be reduced by cartelizing an industry’s labor costs; the ratio of union labor costs to total costs; the relative market wage for the firm within the industry; and government regulation. Those factors are familiar from the analysis of K_j durability in Chapter 3. The factors combine with firm-specific capital to generate residual rents, the distribution of which interest unions and management.

utility, critically including a preference for fair treatment by management.⁵ As a result, close attention is paid by the union to workplace reference standards, as part of its larger strategy to earn the trust and loyalty of its members. The maintenance and enforcement of established \mathbf{K}_j provides legitimacy for the union.⁶ In the California school, successful unions require costly, asymmetric workplace information, which hide true motives and provide a breeding ground for employee-employer distrust that labor leaders seek to exploit.

Ross's union budget constraint with respect to organizing establishment j can be represented as follows:

$$(7.2) \quad \hat{S}_j(0) = E_{oj} \sum (1+r(t)+p_c(t))^{-t} \check{S}_j(t),$$

$$\text{such that } \check{S}_j(t) = \check{D}_j(t) - \check{C}_j^F(t) - \check{C}_j^V(t),$$

where E_{oj} denotes expectations based on the information available to the union at the beginning of the current period ($t=0$); r and p are, respectively, the discount and general inflation rates; the series are summed from $t=0$ to $t=\eta$, the expected life of the j th work establishment; \check{D} represents total payment to the union (typically dues) during time t ; \check{C}^F is the sunk union cost of organizing the j th workplace; and \check{C}^V denotes the union's variable costs of maintaining workplace organization (typically involving periodic negotiations, contract implementation, organizing retaliatory actions, membership communication, and \mathbf{K}_j management). Organizing campaigns are frequently difficult, implying that \check{C}^F is likely to be relatively large.⁷ A necessary condition for the rational union leadership to undertake the organization of firm j at $t=0$ is $\hat{S}_j(0) > 0$.

⁵ More precisely, the California school posited the satisfaction of employed member objectives. For a review of nonmarket optimization via satisfaction of a budget constraint, see Lafont and Martimort, *Incentives* (2002).

⁶ The model is consistent with the analysis of Chaison and Bigelow (2002), which employs legitimacy as the unifying concept in their modeling of union activities. They identify three alternative strategies a labor organization can use to manage legitimacy. (a) Adopt, as the union's own objectives, the prevailing workplace norms. (b) Attempt to modify the established norms to conform to the union's existing practices and procedures. (c) Identify with social institutions or larger social practices that have already earned widespread legitimacy. Note that only the first two strategies potentially conflict. Formal business unionism helps us understand that conflict. Adopting established workplace reference standards (\mathbf{K}_j) reduces the costs of organizing workers. (Workers will be satisfied, and management costs will be little changed.) But circumstances, most notably an organizational campaign when the union's preexisting members have reference standards that translate into higher wages, could force a rational union to expend the resources required to alter established \mathbf{K}_j in the target establishment.

⁷ It is noteworthy that the cost of formal organization has increased (especially in the United States where government plays a modest referee role) as managements figure out how to compete with unions for worker loyalty, largely by investing in personnel policies that incorporate equity-based workplace reference standards and in

Investment in worker organization. From an economist's perspective, workers find unions helpful because they solve free-rider limitations on their capacity to cooperate in the workplace. In particular, formal organization and maintenance of workplace K_j powerfully augment the retaliatory power of unbundled OJB by legitimizing overt (not hidden) activities that impose costs on the firm, significantly increasing employee bargaining power. Work stoppages are especially costly to employers, increasing labor capacity to maintain the reference wage (W_j^n) despite adverse product-market conditions.

Other overt tactics that impose cost on management include organized slowdowns (partially withholding cooperative input (E_j) on the job, usually by working strictly to formal workplace rules), exploitation of workplace procedures (such as mechanisms to resolve grievances), and legal harassment. Absent a union, the exclusion principle inhibits the spontaneous organization of worker activities that openly impose costs on the firm. Free riders choosing not to join in overtly hostile actions increase the probability that participating employees will be fired, losing their wage rents.

Absent government intervention, the California school demonstrated that the costs of organizing a workplace are most influenced by three factors. First is the substitutability of veteran employees and new hires. Increasing costs of replacing workers reduce workers' expectation of punishment by the firm for engaging in union activities, making them cheaper to organize. Substitution costs increase with (a) specific human-capital requirements of the production

communicating the firm's commitment to fair treatment. (See Chapter 8.) In the language of the formal business-unionism model, employers are investing in correcting inherent workplace information asymmetries that motivate both employees' distrust in management's true intentions and their interest in joining a union. Freeman and Medoff (1984) argue that the decline in union density since the mid-1950s in the United States resulted largely from the efforts of employers to prevent organization. Moreover, the rational management response to membership campaigns by a business union leads to a prediction about the long swings in formal organization. Absent government intervention, the share of employees who are unionized rises when firms are inexperienced with unionization efforts and struggle to respond effectively. The share then stabilizes and eventually recedes as managements become effective competitors for employee loyalty by focusing on equitable treatment in the workplace. Note that, in workplace-equilibrium theory, the incidence of optimal nonmarket labor pricing and use, governed by workplace reference standards, is not reduced by the decline of union membership. It is argued below that K_j durability, not the existence of wage rents, is most affected by whether or not the establishment is formally organized.

process and (b) the costs and asymmetries of workplace information available to management. Both factors tend to increase with establishment scale and capital intensity.

Second is the nature of the job. The greater the inherent satisfaction in doing the work itself, the more costly it is to convince employees to engage and pay for a trade union to help protect their interests. Using workplace-equilibrium terminology, type-I jobs are cheaper to organize. Third is the cost of establishing a consensus set of workplace reference standards for the prospective members. (The cost of designing and implementing \mathbf{K}_j has, in Chapter 3, been denoted by $I_j^{\$}$.) For a union to be effective in a given firm, its members must share common norms about what constitutes satisfactory compensation, acceptable treatment on the job, and the appropriate retaliation for violation of established reference standards. Rational union leaders assess, in its decision to undertake an organization campaign, the likely costs of establishing an effective employee consensus about what constitutes equitable treatment.

As a result, industrial unions prefer to organize the low-hanging fruit of class-I employment in large, specialized establishments. Successful organization is much cheaper in those environments. Indeed, in such large establishments, workers have likely already spontaneously organized workplace \mathbf{K}_j . The usefulness of a union to its membership is then largely confined to its greater capacity to maintain established \mathbf{K}_j .⁸

Workplace analysis, therefore, identifies a two-way relationship between unions and wages. First is the traditional causation from formal organization to increased wages, resulting from enhanced rents generated by initial organization and from unions' capacity to make established W_j^n more durable in circumstances of unfavorable product-market conditions. Second is causation from high wages to unionism. As noted, rational unions prefer lower-cost organizing opportunities, i.e. where class-I employees in large establishments have already spontaneously established workplace reference standards and are receiving the corresponding wage rents.

⁸ Noteworthy here is the elephant-in-the-room incentive that unions may cost-efficiently use in organization campaigns: the recalibration of the target workers' \mathbf{K}_j to accommodate higher wages. That is, of course, a promise that has substantial appeal. The increased bargaining power resulting from the union's resolution of the employees' free-rider problem provides credibility to a pledge to secure higher wages. After the initial recalibration, however, the union rationally directs its efforts to maintaining the new (now established) reference standards. GWET-enriched business unionism indicates that the relative wage increase is a one-off affair.

Rational behavior also helps explain unions' urge to organize multiple workplaces. The advantage of greater institutional scale is partly related to the fixed costs of maintaining the union itself. The more extensive the organization of workers, the lower are the union's per-member fixed costs. The union also benefits from a more diversified portfolio of assets. Moreover, the urge to expand is rooted in the greater effectiveness and institutional security of the union when the entire industry is organized. The union can deliver satisfactory wages to its members over a wider range of product-market conditions when labor-related aspects of an industry are cartelized, enabling greater pass-through of higher labor costs as higher product prices.

The California school emphasized that, once the j th workplace is successfully organized, the union shop and dues check-off will be among the first demands in initial negotiations with management. The top priority of the union, once employees are organized and collective bargaining begins, is to solve its own free-rider problem, obtaining contract provisions that make all workers in the bargaining unit union members (typically after a probationary period) whose dues are deducted from paychecks by the firm.

The Efficient Bargain

Employee preferences. The compatibility of GWET and Ross's business unionism is largely rooted in their shared treatment of employee utility. California-School economists anticipated formal efficiency-wage theory by extending worker preferences to include the desire for fair treatment by management, identifying the critical influence of established interpersonal and intertemporal wage reference standards on union efforts to keep their members satisfied. From Arthur Ross (1968, p.227): "The rank and file always wants more. There are two circumstances under which the pressure is likely to be imperative. One is a strain upon established standards of living brought about by inflation in the price level.... The other is an individual's comparison with the wages, or wage increases, of other groups of workers." In describing the latter reference standard, Ross coined the colorful term, "orbits of coercive comparison".

Chapter 2 demonstrated that, in GWET, the reference wage (W_j^n) that maximizes worker utility equals the efficiency wage (W_j^n) that maximizes profits. Even with the introduction of a union, unbundled workplace exchange implies that there is no compensation rate that makes the negotiating parties in ongoing baseline collective bargaining better off than $W_j = W_j^n = \sup \mathbf{K}_j > W^n$. It is the efficient bargain.⁹ Identifying the efficiency/reference wage as the efficient bargain also helps explain the relatively low incidence of strikes once the union-management relationship has matured.¹⁰ Once the union's enhanced bargaining power is recognized, formal workplace organization makes W_j^n more durable.¹¹

The key to reformulating business unionism within the formal economic method is that the utility and workplace-exchange relations implicitly used by Ross and the California school reflect their careful observation of actual practice and are, as a result, consistent with the baseline general

⁹ An exception to the efficient-bargain rule may occur in an organizational campaign, during which a union (attempting to win employee support or to reconcile \mathbf{K}_j with reference standards used in other member firms) may rationally invest, using overt methods to reduce profits, in recalibrating \mathbf{K}_j , resulting in a one-time increase in rent.

¹⁰ By contrast, formal bargaining models constructed by economic theorists produce indeterminate wages, as well as process descriptions uncomfortably at odds with those of practitioners. The models preferred by economists especially go astray in their specification of union/worker goals. They make workers problematically simple, lacking any frame of reference from which to make judgments about their satisfaction with wages. Those unrecognizable employees simply wish to maximize the wage received relative to the disutility of work, while their union balances the trade-off between higher compensation and members' jobs. In such models, no intuitive, determinant solution for the wage-determination problem can be derived from reasonable first principles. (See below.) Fortunately, given a richer, more realistic description of what workers prefer, the union and management are forced to assess wages relative to interpersonal and intertemporal reference standards, resulting in a determinant wage. Recall Matthew Rabin's (1998, p.13) conclusion: "Overwhelming evidence shows that humans are often more sensitive to how their current situation differs from some reference level than to the absolute characteristics of the situation."

¹¹ The most significant source of union bargaining power is an organized work stoppage. Business-unionism theorists identified four key determinants of the capacity of a strike to impose cost upon the firm:

- *The necessity of union labor in the production process.* If operations can continue largely unabated during a work stoppage – for example, at a petroleum refinery – then the firm's relative bargaining power is enhanced.
- *The ability of the firm to displace production over time.* If the product is a nonperishable good, the firm can adjust its inventory policies to reduce, at least for a time, the deleterious effect of a work stoppage.
- *The ratio of liquid assets to fixed costs for both management and the union.* If the firm's overhead labor, debt-service payments, tax liabilities, rent and other outlays that continue when production is interrupted are small relative to its liquid assets, the firm's bargaining power is enhanced. On the other side of the table, a large strike fund increases the union's ability to impose cost on the firm.
- *The presence of alternative revenue sources.* For the firm, bargaining power is increased by the continued operation of other lines of business, strike insurance or income-sharing arrangements with other firms that continue to operate. For the union, power is enhanced if striking workers can readily obtain temporary jobs, credit, or public assistance (especially unemployment benefits).

To the list, GWET adds employee expectations of establishment-specific job destruction. As demonstrated in Chapter 3, anticipating permanent job losses, and the reduced consumption that implies, weakens the willingness of employees to defend the established reference wage.

workplace-equilibrium theory (GWET) constructed in Chapter 2. Rational (homogeneous) union members employed at the j th firm maximize expected utility:

$$(7.3) \quad \max E_0 \sum (1+r)^t \dot{U}(C(t), L^H(t), W_j(t)/W^n(t)),$$

such that $(\Delta \dot{U} / \Delta (W_j / W^n) \mid W_j \leq W^n) > 0$.¹²

GWET baseline constraints and rationality conditions for the profit-seeking j th firm are:

$$(7.4a) \quad \dot{Z}_j = \dot{Z}_j(W_j, W^n, W^m, \dot{Z}_j^m),$$

such that if $W_j \in [W^n, W^m]$, $(\Delta \dot{Z}_j / \dot{Z}_j^m) / (\Delta W_j / W^n) > 1$;

$$(7.4b) \quad W_j = W^n = W^{\dot{n}} = \sup \mathbf{K}_j \geq W^m.$$

The reference wage ($W^{\dot{n}}_j$) in business unionism is governed by the same three-argument reference standard ($\mathbf{K}_j = \{W^a_j, W^b_j, W^c_j\}$, such that $W^{\dot{n}}_j = \sup \mathbf{K}_j$) as is spontaneous workplace equilibrium. Indeed, the California School notably provided economists early identification of the importance of fair treatment in the specification of worker preferences. It is also worth reiterating here that modern behavioral economists, in their reworking of economic axioms to be more consistent with psychological evidence, have rediscovered the central role of perceived equity in worker preferences.¹³

Rational use of bargaining power. Workplace-equilibrium theory produces a determinate wage in both spontaneous and intentional intra-establishment organization. GWET, as constructed in Chapters 2 and 3, endows employees with spontaneous bargaining power. In baseline workplace equilibrium, employees have sufficient spontaneous capacity to impose cost on their employer to prevent the imposition of W^n_j reductions on them.¹⁴ The baseline condition holds over business cycles and likely well into the medium term. (See below.)

¹² Worker utility is further restricted by $(\Delta \dot{U}_i / \Delta (W_{ij} / W^{\dot{n}}_j) \mid W_j > W^{\dot{n}}_j) = 0$, $\Delta \dot{U}_i / \Delta C_i > 0$, $\Delta \dot{U}_i / \Delta L^H_i > 0$, $\Delta L^H_i / \Delta H_i < 0$, $W_{ij} \geq W^m$, and $W^{\dot{n}}_j = \sup \mathbf{K}_j$.

¹³ See Chapter 2.

¹⁴ In illustration of spontaneous bargaining power, recall the mean response from Campbell and Kamlani's (1997) survey of large-firm compensation executives, i.e., that workplace productivity would decrease 20 percent if wages were cut 10 percent. Most of the surveyed executives also thought that \dot{Z}_j would be most impacted if employees believe that their employer is profitable and least affected if there are credible financial losses that threaten jobs.

Intentional bargaining power is associated with union-organized collective actions and is largely rooted in work stoppages. In the workplace-equilibrium model, unions enable overt strikes, which are unavailable to spontaneously-organized employees, by eliminating the lower boundary on discretionary OJB (rooted in firm monitoring and denoted, absent unions, by $\dot{Z}_{Dij} = \dot{Z}_{ij} - \dot{Z}_j^m$); in union-organized workplaces, $\dot{Z}_{Dij} = \dot{Z}_{ij}$. Dissatisfied unionized workers are provided the effective capacity to shut production down and thereby impose greater costs on a recalcitrant management.

Four points are particularly significant. First, the use of strikes and other overt forms of bargaining power further restricts management latitude to offer individual employees wage cuts in lieu of job loss, resulting in the greater suppression of wage recontracting. Second, given the nature of the efficient bargain, unions variably use their power to impose cost on the firm.¹⁵ Seeking to maintain the established reference wage, the optimal use of available union power is conditional on nonstationary product-market conditions that interact with wage rents to influence the incidence of job destruction. (See Chapter 3.) Third, intentional workplace organization critically limits aggressive management efforts to undermine worker attachment to established K_j by variously endeavoring to convince employees that unsatisfactory job/consumption loss would result from collective refusal to accept wage reductions. (See Chapter 8.) Fourth, measured wage premiums in the circumstances of formal workplace organization cannot be wholly attributed to the exercise of union bargaining power. Rational membership-acquisition strategy targets firms where spontaneous workplace organization has already generated labor rents consistent with downward nominal wage rigidity.

¹⁵ By contrast, macroeconomists are constrained by their SVGME perspective and almost always (incorrectly) assume that unions are monopolists, implying that a given level of unionization generates a constant wage premium that eliminates the effect of stable labor organization in dynamic wage analysis. James Tobin (1972, p.14) was typical, arguing that rational unions must always exhaust their bargaining power: “Monopolists have no reason to hold reserves of unexploited power.”

Reference-Wage Durability

The general bargaining problem is therefore critically informed by the durability of the established reference wage ($W_j^n = \sup \mathbf{K}_j^n$).¹⁶ Union intentional organization solves the workers' free-rider problem, enhances the capacity of dissatisfied employees to impose cost on the firm, and helps organize labor-cost cartelization of the relevant industry. Given the nature of the efficient bargain, increased labor power is not used to increase labor pricing above the efficiency wage implied by \mathbf{K}_j . Instead, the enhanced power is invested in making W_j^n more durable.

Union power is restricted by a set of robust market forces. WMS has identified particularly potent drivers of job destruction and rational reductions from the established reference wage, including the availability of lower-cost imports and the existence of lower-wage regions for establishment relocation as well as production outsourcing, escaping the influence of established \mathbf{K}_j . The postwar trend toward greater product-market integration and production dispersion significantly influences the nexus between wage rents and job destruction and, therefore, the management-union distribution of bargaining power.

In illustration, postwar capital mobility in the United States allowed unionized industries to shift away from the northeast and Great Lakes states to the south and west. Unions rationally sought to organize the new operations and their success (or failure) helped determined the sustainability (over time) of established \mathbf{K}_j . Not surprisingly, government regulation often played a critical role here, especially the incidence of state "right-to-work" laws, which make organizing activities more costly. Moreover, the incidence of "labor-cost" bankruptcy in steel, airlines, auto, and other unionized industries (where writing down equity investment is used to induce bankruptcy courts to rewrite labor contracts, including pensions and medical-care insurance) is consistent with the GWET prediction of increased \mathbf{K}_j durability, frustrating timely responses to inadequate profits and involuntary job losses, in formally organized workplaces.

In Chapter 3, the WMS identified employer-employee expectations of real residual rents as the critical influence on permanent job destruction, linking labor rents and nonstationary involuntary

¹⁶ Chapter 3 identified the marginal nonstationary profit expectations (H_j^*) that are consistent with unchanged workplace reference standards: If $H_j^*(t) \geq H_j(t)$, then $\mathbf{K}_j(t) = \mathbf{K}_j^n$ such that $\Delta \mathbf{K}_j^n = 0$.

job loss. The incidence of job loss ($\acute{\omega}_j$) was separated into its nonstationary ($\acute{\omega}_j^T$) and stationary ($\acute{\omega}_j^V$) components:

$$(7.5) \quad \acute{\omega}_j^T(t) = \acute{\omega}(q_j(t)), \text{ such that } \acute{\omega}_j^T(t) \in [0, 1], (\acute{\omega}_j^T(t) \mid q_j(t) > 1) = 0, \\ 0 < (\acute{\omega}_j^T(t) \mid 0 \leq q_j(t) \leq 1) < 1, \text{ and } (\acute{\omega}_j^T(t) \mid q_j(t) < 0) = 1.$$

Given $q_j > 0$, the established efficiency wage ($W_j^n = \sup \mathbf{K}_j$) is more durable (i) the greater is capacity of a work stoppage to damage the firm, (ii) the greater is the share of total capital investment that is sunk, (iii) the larger are the rates of return required by investors in new sunk capital to offset the hold-up problem and risk aversion, (iv) the greater the establishment's capacity to pass on wage rents to higher product prices, (v) the smaller the ratio of labor to total costs, making q_j less sensitive to changes in G_j , and (vi) the greater are the individual worker costs of recalibrating existing reference standards.¹⁷ Wage-rent durability was further shown to be enhanced by the hold-up problem, labor-cost cartelization, monopolistic product pricing, increasing returns, myopic worker forecasting, and government intervention.

The last influence, government intervention, has a potent effect on union wage-rent durability, working through three channels. The first is the *regulation of product price and entry*. Economists have long argued that the interaction of unions and government regulation affects industry outcomes, including wages, profits, and employment. Perhaps the earliest model of this process is Annable (1973), which explored the consequences of the (implicit) joint management of U.S. long-haul trucking by the Interstate Commerce Commission (ICC) and the Teamsters union.¹⁸ Using the California-school model, it was shown that ICC regulation generated

¹⁷ The factors influencing established reference-wage durability (and factor-income distribution) are, of course, closely related to the determinants of inelastic input demand, originally enumerated by Marshall to explicate the capacity of unionized workers to obtain wage rents: labor services are (nearly) "essential" to production; final product demand is "stiff and inelastic"; labor costs are a relatively small share of total production costs; and nonlabor (capital) inputs are largely establishment-specific (lacking mobility). Workplace equilibrium generalizes Marshall's analysis to all nonsupervisory workers in large, specialized establishments offering class-I jobs.

¹⁸ That early model of rent distribution in regulated industries has been refined and extended by a number of researchers, with little change in its conclusions. Ehrenberg (1979) investigated the wage premium in regulated telephone services in New York; Rose (1987) updated the trucking analysis for the period of deregulation; and Hendricks (1975) looked at regulated electric utilities in the United States and found the same pattern of union behavior and regulator response earlier discovered in trucking. Hendricks (1986) later provided a limited survey of this literature. More recently, a model-building exercise by Dalen, von der Fehr, and Moen (2003) formalized optimal regulatory conduct in an environment of wage bargaining at the firm level.

sufficient residual rents to prevent job destruction from rising wage rents, enhancing \mathbf{K}_j durability.

The second is *protectionism*. Tariffs and other government “home-market” actions to limit imports reduce relevant price elasticities of demand, weakening firm-specific job-loss forces and their capacity to constrain wage rents. In response, \mathbf{K}_j becomes more durable, allowing market inefficiencies to accumulate. Workplace-equilibrium analysis implies that the costs of protection are complex. Efficiency losses from existing barriers, for example, would be aggravated by adverse terms-of-trade shocks that increase wage rents; as a result, efficiency-loss estimates would likely vary over time. For a review of static evidence on the costs of import protection in the United States, see Feenstra (1992).

Third are *limitations on labor management*. Public authority can also be used to endow workers with property rights in their jobs, a practice that varies sharply from country to country. Many European countries imposed administrative and legal costs on firms attempting to reduce the number of their employees in “home-market” establishments. (See below.) Imposing significant costs of job reductions on employers makes firm-specific wage rents more durable. Ultimately, such regulations reduce firms’ capacities to adjust to changing market conditions, limiting downsizing, capital mobility, out-sourcing, and the various other job-destruction forces used to increase cost efficiency when market wage inefficiencies become large. From the perspective of workplace equilibrium, this class of government action reduces the capacity of firm-specific job destruction to motivate workers’ voluntary recalibration of \mathbf{K}_j .

Unions and \mathbf{K}_j Recalibration

Unions formally organize the j th establishment’s workplace, notably including the maintenance of \mathbf{K}_j , providing latitude to influence the established reference wage over time. Upward revisions of established workplace reference standards (and, therefore, the reference wage) can be engineered by the union. In order to implement such a policy, the union must invest sufficient resources to credibly recalibrate \mathbf{K}_j to force management to accept higher unit labor costs. That class of investment is found most frequently in organization campaigns or in response to

challenges from other labor organizations or from insurgents within the union itself.¹⁹ In less challenging circumstances, the least-cost union strategy to secure membership loyalty is to preserve established K_j .

In particular circumstances, downward recalibrations of K_j (reducing W_j^n) can also be engineered by the union. Altering established workplace reference standards to produce less costly outcomes requires convincing workers to accept an outcome perceived to be inequitable. It is a virtually impossible sale absent heavy past and prospective establishment job losses. The power of product-market forces to produce job losses in response to wage rents varies by industry; therefore, the maintenance of fixed wage relativities among union members from multiple industries over time is typically problematic.

More generally, formal workplace organization influences K_j durability in two ways. First, using the relatively greater trust that workers place in their own organization relative to management, the union can manage workplace reference standards to inhibit (or enhance) the firm's efforts to reduce the reference wage in a hostile product-market environment. Second, unions can choose to use (or not use) more overt methods of reducing worker productivity (relative to those available to employees who are spontaneously organized) in order to force management to continue paying W_j^n in deteriorating market conditions.²⁰

¹⁹ Moreover, the desire of the union to increase its size (and consequently its power and security as an organization) can result in representation of workers from diverse industries. Membership diversity, in part because interpersonal comparisons within a union is commonplace, pressures the union to invest in creating a single orbit of comparison (and wage norm) covering members from different industries.

²⁰ The business union's willingness to lead a revision of reference standards that have moved sufficiently out of line with market conditions to induce substantial employment loss is influenced by its own institutional security. Most important, if the revision of K_j in one membership area compromises the union's capacity to maintain reference standards in another (more important) membership branch, the union will be recalcitrant. And, as noted, after a successful organization campaign, union bargaining power (the use of overt collective action to harm firm residual rents) is largely used to enhance K_j persistence in difficult market circumstances. For example, the UAW refused wage concessions at heavy equipment manufacturer Caterpillar in the circumstances of intense cost competition from Japan and with the knowledge that K_j maintenance would translate into large job losses. The union's main franchise is autoworkers, and the UAW leadership feared that concessions in Peoria could damage the established wage orbit in the auto industry. Costly and asymmetric information available to workers about union leaders' true objectives provided latitude to pursue a bargaining strategy counter to the interests of many heavy equipment employees. As a result, the Caterpillar management took the lead in attempting to improve the quality of available information, with a campaign to convince its employees of the need for a rational revision of workplace norms. Management eventually secured sufficient worker defections from the UAW to defeat the union after a multi-year strike, during which Caterpillar continued to operate. Note that top management did not concede in the damaging conflict because, given existing K_j , it concluded that $q_j(t) < 0$.

Informing Nash Bargaining

Recall, from above, the generalized solution to the ubiquitous Nash bargaining model:

$$\max (\Pi_j - \Pi_{oj})^\pi (W_j - W_{oj})^{1-\pi}.$$

The merger of business-unionism theory into GWET provides content for Nash's black-box formulation. In baseline equilibrium (characterized by unchanged \mathbf{K}_j), Nash bargaining is considerably enriched. Workplace-exchange optimization implies $W_j = W_j^n = W_j^{\hat{n}} = \sup \mathbf{K}_j \geq W_{oj} = W^m$ and $\Pi_j = \Pi_j^n \geq \Pi_{oj}$, where Π_j^n denotes profit-maximizing residual-rent that is therefore consistent with both the payment of the efficiency wage ($W_j = W_j^n = W_j^{\hat{n}}$) and the maintenance of cooperative labor input Z_j^n . (Meanwhile, Π_{oj} is best understood, along with the California School, as the minimum profit consistent with firm survival.) Instead of being maximized, which no longer makes sense, the enhanced-content Nash formulation $((\Pi_j^n - \Pi_{oj})^\pi (W_j^{\hat{n}} - W_{oj})^{1-\pi})$ can be used – at least conceptually – to solve for π , which now reflects the relative employer-employee utilization of *market* power. (Depending in large part upon the interaction between Π and W , rational utilization of available market power may be less than unity.) The reinterpreted Nash model is rooted in optimizing exchange organized around continuous equilibrium and yields a determinate wage (W_j^n).

Baseline TVGE modeling restricts employer-employee *bargaining* power to influencing the durability of established reference standards. Such power, defined above as the ability to impose cost on the other side for disagreeing with your position, has been subsumed in workplace optimization processes that comprise the TVGE theory. (Recall that unions, in solving the employees' free-rider problem, enhance labor capacity to impose cost and, therefore, $\mathbf{K}_j^{\hat{n}}$ durability.) Those processes, however, were demonstrated in Chapter 3 to include a range of circumstances in which embedded labor power is no longer sufficient to defend established reference standards.

Workers' intertemporal substitution of expected consumption for fair treatment, modeled in formal workplace economics as a dynamic programming/Bellman problem, motivates rational \mathbf{K}_j recalibration, extending the analysis beyond baseline equilibrium. The analysis critically

demonstrates the existence of a range of expected nonstationary residual rents that rationally mandates wage givebacks in response to changing market conditions. In particular, inadequate profits ($q_j(t) < 1$) induce job downsizing that eventually undermines worker rents (and the consumption path they support) sufficiently to motivate \mathbf{K}_j recalibrations and reference-wage reductions. The resulting continuous-equilibrium paths of employment and labor pricing are ratified in the bargaining process, which in the compact GWET has become an information-discovery exercise.

Significant factors that influence \mathbf{K}_j durability were also analyzed in Chapter 3 and have been summarized above. Coming more indirectly at the same analytical issue, the California school (building on Marshall) closely considered the distribution of bargaining power. Given the damage to employer residual rents from work stoppages, limiting their use to increasing \mathbf{K}_j durability is a powerful tendency of the GWET business-unionism model, helping to make union power consistent with the available evidence on the incidence and circumstances of strikes.

Market Efficiency

The transition from spontaneous to formal governance of workplace reference standards in workplace-equilibrium analysis affects economic performance largely via three interrelated channels:

- The size of the endogenous wage market rents,
- The durability of \mathbf{K}_j , and
- The relative size of that part of the economy that pays nonmarket wages.

Wage rents. Unbundled worker OJB enables the rational payment of wage rent ($G_j(t) > 1$), measured by the ratio of the efficiency wage ($W_j^n(t)$) to market-opportunity cost ($W^m(t)$). Unions, to the extent that they augment labor's bargaining power, become an additional determinant of labor-rent size. Their role has stimulated considerable research by SVGE economists, who predict that, given a constant union share of the total labor force, the aggregate wage premium must also remain constant. Later in this section, GWET business unionism will be used to take a fresh look at the dynamic relation between unionization and market efficiency.

Meanwhile, it should be reiterated that government, not surprisingly, is capable of more powerful effects. Public power influences rents directly, by mandating specific rates of pay, or indirectly, by altering the either the share of the workforce receiving rents or \mathbb{K}_j durability.

Durability of the established reference wage. Product-market forces eventually produce job downsizing in response to high and rising wage rents. Once ongoing establishment-specific employment losses become sufficiently large, \mathbb{K}_j becomes more malleable. In GWET business unionism, $W_j^n(t)$ durability depends on its eventual adverse effect on j th employment, the time path of which can be influenced by unions or government.

Union influence is largely rooted in its bargaining power and its capacity to effectively cartelize the relevant industry with respect to labor costs, decreasing the individual firm's product-price demand elasticity. As has been emphasized, formal workplace organization adds work stoppages to labor's bargaining power, substantially extending \mathbb{K}_j durability. Meanwhile, industry-wide bargaining decreases the probability of permanent job loss from the product-market response to wage rents. After unions have solved employees' free-rider problem, effective threats to employment and the longevity of established \mathbb{K}_j largely come from outside j th-labor's orbit of comparison (most notably, imports) or from the firm's strategic response to high labor costs, including capital-labor substitution, capital mobility to lower-wage regions, and outsourcing.

Government influence on \mathbb{K}_j durability easily trumps union power. While unions are largely limited to cartelizing industries with respect to their labor costs, public authorities can alter import competition, impose national workplace standards, and restrict (or encourage) strategic moves by firms by changing their capacity to fire, hire, and manage their workforces.

Relative size of the high-wage venue. Recall from Chapter 4 that the relative size (Φ) of the sector that rationally pays wage rents is defined in terms of total labor income:

$$(7.6a) \quad W(t)H(t) = W^n(t)H^n(t) + W^m(t)H^m(t), \text{ and}$$

$$(7.6b) \quad W^n(t)H^n(t) = \Phi(W(t)H(t)).$$

where W stands for the aggregate wage rate, H denotes aggregate labor hours worked, n and m denote respectively the firms paying wage rents and the remaining firms that pay market opportunity costs, and $1 \geq \Phi \geq 0$.

Expanding the TVGE model to include formal workplace organization (with respect to reference standards as well as the responses to their violation) has implications for Φ . The analysis of rational member-acquisition above demonstrated that union power with respect to Φ is limited. The channel of intentional governance with the greatest capacity to alter the relative size of the nonmarket-wage sector is public power. Government intervention is the most important of the factors that influence \mathbf{K}_j maintenance and propagation. (See below.)

Economic effects: wage rents. The rational equivalence of the reference and efficiency wages solves the labor-pricing problem in formally, as well as spontaneously, organized workplaces. As a result, bilateral bargaining implies a union effect on wage rents that both varies over time and is exaggerated by a simultaneity bias.

Economists, restricted by their preference for SVGME thinking, assume that a given level of unionization has a one-way causation to a constant wage premium, eliminating the effect of stable labor organization in wage macrodynamics. James Tobin (1972) was typical, arguing that the degree of unionization affects the level of wages but cannot influence their growth. For Tobin, rational unions must always exhaust their bargaining power: “Monopolists have no reason to hold reserves of unexploited power.” (p.14)

The monopolist story has long been the consensus approach, despite inconsistencies with the evidence. H. Greg Lewis (1963, 1986) conducted two benchmark surveys of estimates of union wage premiums in the United States. The first covered 20 studies published prior to 1961. The second reviewed almost 200 studies for the period 1967-1979. From the findings, he deduced mean estimates of the union wage premium over time (Lewis (1986), p.9):

- 1957-58: 12-1/2 %,
- 1967-69: 12%, and
- 1976-79: 18%.

A 50 percent increase in the effect of unions on wages from the late 1960s to the late 1970s is deeply damaging for the consensus monopolist story. Variable premiums, however, are easily accommodated by GWET. Real terms-of-trade shocks, beginning in the mid-1970s, chronically pushed up relative efficiency wages, making higher labor rent a predictable result of self-interested employer-employee-union workplace interaction.²¹

A variable union premium is not unique to the U.S. Layard, Nickell, and Jackman (2005, p.197) used 3-digit industry data in the United Kingdom to estimate, over time, the effect of union coverage on wages (after controlling for a number of other influences):

- 1956-59: 15%,
- 1960-64: 17%,
- 1965-69: 19%,
- 1970-74: 27%,
- 1975-79: 27%,
- 1980-84: 32%, and
- 1985-87: 22%.

The pattern again indicates the interrelated effects of commodity (especially oil) price shocks in the early 1970s and early 1980s and the capacity of powerful unions to extend the durability of established K_j in hostile product-market circumstances. The pattern also reflects subsequent restrictions on the power of unions that occurred in early 1980s, resulting from the Thatcher government's recalibration of the role of trade unions in the British economy.²²

²¹ For elaboration, see Chapter 4. The first two decades after World War II were characterized robust labor productivity growth and terms of trade advantageous to U.S. workers. The TVGE model demonstrates that both factors help constrain union wage gaps. The 1970s were a different story. Given the sharp increase in oil and other commodity prices as well as the depreciation of the dollar, terms of trade shifted against labor. Moreover, productivity growth slowed substantially. From the perspective of the OJB theory, the macroeconomic disturbances of the 1970s, given its relatively compact inter-industry wage structure, would have increased the union wage premium; and the evidence indicates that they did. See Annable (1984). Also note that union organization in the United States did not increase from the mid-1960s to the mid-1970s.

²² The Employment Acts of 1980 and 1982 generally eliminated union immunity from breach-of-contracts suits when actions are taken against employees who are secondary to the dispute or when workers picket other than their own place of work. The Trade Union Act of 1984 further limited immunity, making it contingent upon certain balloting requirements.

Economic effects: simultaneity. The TVGE theory additionally indicates that the simple estimates of the union effect on wages are biased high. With unions pursuing cost-effective strategies to acquire members, some of the measured average rent must result from prior spontaneous organization of workplace behavior.

Rational LEV workplace behavior creates a two-way causation between unionization and wages. In one direction, formal organization helps shape worker response functions better to achieve and maintain labor rents. In the other, existing rents attract unionization. Class-I workers in large establishments spontaneously establish reference wages, producing premiums over the market rate. As has been analyzed, such employees are relatively cheap to organize; and business unions rationally seek those opportunities for investing their scarce resources. GWET suggests that this second line of causation is, in most market circumstances, more powerful than the first.

Indeed, a number of U.S. econometric studies in the 1970s found significantly more robust effects from wages to unionization than from unionism to wages. Ashenfelter and Johnson (1972), Pencavel (1970), and Schmidt and Strauss (1976) all reported that the former crowded out the latter, producing insignificant effects from unions on wages.²³ Subsequent studies refined those early results, restoring significant positive effects from unions on labor pricing, while typically confirming the more substantial effects from wages to the degree of unionization. (For example, see Kahn (1979).)

Size of the high-wage sector. One somewhat surprising TVGE message is that unions, given their preference for formally organizing workplaces with prior spontaneously established \mathbb{K} , have by themselves a relatively small impact on the size of the sector paying nonmarket wages. It also follows that Φ is larger than the unionized enclave.

Another message is that firms have incentives to learn how to manage workplaces characterized by unbundled \dot{Z}_j . (See, for more elaboration, the next chapter.) They learn the importance of competing for employee loyalty and the benefits that accrue if workers accept the organization's goals. To make those goals more palatable, firms typically learn to accommodate established

²³ See also Duncan and Leigh (1985).

workplace reference standards, while developing sophisticated policies to influence K calibration. By emphasizing fair treatment and responding to employee dissatisfaction, rational management increases the cost to a union attempting to organize its workforce. (See Pencavel, 1991, pp. 172-80; also note that Japanese auto transplants in the U.S., wishing to remain non-union, pay union wage rents.) Keeping labor unions out of workplace governance makes K more malleable, affecting the establishment's capacity to manage unit costs. The additional malleability is especially helpful if the firm needs to adjust to increasingly hostile market conditions.

Other Decentralized Bargaining Models

The California-school methodology is wholly literary. As a result, modern economic research on labor-pricing and use has ignored business unionism. When unions and collective negotiations with management are considered, theorists instead rely on black-box models, employing some variation of (inherently indeterminate) Nash bargaining.

Layard, Nickel, and Jackman's model. In their ambitious analysis of postwar unemployment in OECD countries, Layard, Nickel, and Jackman (2005), denoted by LNJ, are typical in their use of a Nash-bargaining variant to sketch a model union influence on labor pricing and use. Using the LNJ notation, the wage produced by union-management negotiations maximizes $\beta \log(W_i - A)S_i + \log \Pi_i$. "Here $(W_i - A)S_i$ represents the worker's rent: W_i is the wage paid by the firm, A is the worker's expected income outside the firm, and S_i is the probability that the worker will remain employed in this firm (which is clearly an increasing function of the level of employment which can be expected, N_i^e). β reflects the degree of bargaining power." (p.26)

The LNJ model also preserves the limiting features of the Nash framework. The objective functions of workers and the union leadership are poorly developed, ignoring available evidence on axiomatic preferences of both groups; more critically, the nature of reduced-form β is characteristically arbitrary. As a result, wage determination remains a black-box process, wholly dependent on free parameters. Moreover, especially damaging in a policy-relevant study of

unemployment, the model demonstrates downward labor-price flexibility as market conditions deteriorate. Such flexibility is inconsistent with the actual behavior of union wages.

Rubinstein's model. The major postwar contribution to camouflaging the black-box nature of the Nash bargaining model is Rubinstein (1982). He endows both sides to the negotiations with an impatience quotient (δ) that discounts the future benefits of a completed bargain, effectively assuming that the willingness to compromise is increasing in the time spent negotiating. Time pressures in the context of deteriorating outcomes replace bargaining power as the repository of the free parameters that motivate determinate wages. The Rubinstein game has a unique subgame perfect equilibrium, defining bargaining power in the generalized Nash solution wholly in terms of the time pressure to compromise: $\pi = (1 - \delta)^{-1}$.

In addition to a continuing reliance on free parameters, the model's assumption that time pressure alone forces a bargaining solution does not make sense. Absent some additional force or forces compelling compromise, profit-seeking firms (already paying small wage premiums to discourage turnover and the loss of specific human capital) would almost always negotiate forever with a recalcitrant union. (More precisely, firm optimizing behavior mandates a comparison of the direct costs of negotiating, likely to be relatively small versus the costs of compromise.) Rubinstein's model has almost no intuitive explanatory power – a worrisome feature that suggests considerable caution in its use.

Hahn-Solow bargaining model. Hahn and Solow (1995) provide the other interesting, in the context of this compact statement of the workplace equilibrium, contribution to the formal bargaining literature. They embed Rubinstein wage-setting in a larger game designed to make unemployed workers reluctant to undercut wage premiums paid to their employed counterparts. The core argument is that, if one job-seeker undercuts the established wage, then all unemployed workers would quickly follow suite, eliminating rents. As a result, deviating from the established wage – called the “fair equilibrium” by Hahn and Solow – has no payoff for unemployed workers.

Substantial problems burden the Hahn-Solow calibration of the Nash equilibrium, even setting aside the inherent weaknesses of the embedded Rubinstein formulation. If workers prefer higher to lower wages, the their model can defend only minimally small wage premiums that, in fact, need no defending. They are already rationally paid by firms to control voluntary quitting in order to preserve firm-specific human capital. That small constant premium would also preserve some positive payoff for undercutting employee wages that exceed the rational premium. The model, especially when considered in conjunction with profit-seeking insider-outsider analysis, does not do much and, as a result, is not very interesting.

Moreover, using unemployed workers to enforce employee rents does not map well into real-world experience. All firms that pay nonmarket wage premiums have queues of job seekers who recognize that such jobs are hard to get and who would work for a lower wage, implying that the uninteresting model is also inconsistent with actual behavior. In large-establishment workplace exchange, optimizing employees, not job applicants, defend labor rents, a model configuration much more consistent with what managers tell us about their reluctance to cut wages.

The Hahn-Solow model and formal business unionism, despite mutual reference to fairness, are fundamentally different. The former relies on market behavior to produce a bit of (constant) labor-price stickiness. The latter motivates variable, substantial wage rents by moving a significant portion of rational labor-pricing out of the market and into the firm. It does that, in an optimizing, price-focused framework, by both extending utility to include an axiomatic preference for perceived fair treatment and accommodating technological heterogeneities with respect to workplace monitoring costs. As argued above, the California-School union model can be usefully embedded in the workplace-equilibrium framework, producing both determinate negotiated wages and a superior treatment of formal labor organization.

Assessment. Business unionism provides a much more recognizable picture of unions and collective bargaining than do alternatives available in modern economic theory. The California-school approach has fallen into disuse not because of its intuitive explanatory power but, rather, its incompatibility with mainstream SVGE modeling.

Once optimizing workplace exchange is introduced into formal modeling, however, the problematic incompatibility disappears. Indeed, with the addition of a third rational (union) agent endowed with axiomatic preferences and constraints, formal business unionism is easily derived as an integral part of GWET. TVGE modeling is then endowed with an intuitively expanded set of labor mechanisms (notably including overt work stoppages) to impose costs on management and suppress otherwise rational wage recontracting.

II. CENTRALIZED BARGAINING

TVGE modeling generally describes workplace behavior in specialized market economies. Fundamental employee preferences for equitable treatment as well as for greater consumption and leisure, the ubiquitous management quest for profits, workplace information costs and asymmetries, and the heterogeneous capacities of jobs to provide nonpecuniary satisfaction do not mutate at national borders. Government institutional practices as well as legal and regulatory structures, however, do vary significantly by country, influencing the size and distribution of wage and residual rents, market efficiency, employment and inflation stability, economic growth, and innovation. Of particular interest in this chapter, government differences have notably affected the national capacities to adjust to macro disturbances.

Government intervention in the employer-employee relationship affects the development and durability of workplace reference standards, a critical process that in formal macroeconomics is uniquely accommodated and organized by the TVGE analytical framework.²⁴ The good news is the broader, cross-national focus helps two-venue modeling accommodate substantial differences

²⁴ Fully integrating the government sector into the expanded neoclassical theory would generalize households' nonmarket activities to be self-interested in the voting booth as well in the workplace. There would then be two distinct classes of nonmarket feedbacks to explore, one between employees and employers focused on wages and another between households (as potential voters) and elected officials focused on public policy. While both types of feedback affect the distribution of rents, the formal modeling the public-policy effect has been somewhat more developed by economists. See, for example, Tullock (1993). In order to concentrate on explicating rational workplace behavior, the remainder of this chapter will simply assume the existence of government, positing that it responds to the ubiquitous, axiomatic desire among worker/voters for fair treatment. In particular, governments are intuitively motivated to manage national wage negotiations to produce results that are broadly perceived to be fair.

in national economic performance.²⁵ The bad news is that country-specific institutions are complex and resistant to compact formal analysis.

As a result, the compact analysis that follows is descriptive, using TVGE modeling as an informal guide, rather than derived using the formal economic method. The remainder of the chapter investigates the active intervention of government in wage setting and use, largely manifest in two broad, interacting classes of intercession. First, public authority can extend the reach of nonmarket wage determination (resulting in labor rents) beyond unionized or large establishments. The relative size of the rent-paying venue has been denoted by Φ . Second, government can actively participate in the wage-setting process, introducing bargaining structure into the analysis. Consistent with TVGE modeling, the emphasis remains on the effect of public intervention on the size and durability of wage rents.

Size of Φ

Government power is frequently used to expand the share of the economy that is independent of the labor market. Extending the size of the j th venue promotes the effectiveness of government active participation in a centralized bargaining process. Given passive government intervention, Φ has been shown to be determined by the incidence of workplaces characterized by costly, asymmetric information and Class-I jobs.

The incidence of the active government management of Φ , influencing labor pricing and use as well as associated macro outcomes, is substantial. Among the 30-member countries of the OECD, the average share of national employment receiving wages covered by collective-bargaining agreements is 60 percent. By contrast, collective bargaining coverage in the United States, characterized by passive government intervention, is well below 20%. The influence of formal bargaining in the U.S. has always been relatively low and has weakened further as a result of job downsizing in the high-wage venue that began in the 1980s.

²⁵ The institutional evidence in support of this section's analysis is drawn from North America and Europe. For a much more detailed analysis of government intervention in the employment relation and labor markets in Europe and the United States, see Layard, Nickell, and Jackman (1991).

Union membership as a share of total employment in OECD countries is reported in more detail Table 7.1. As can be seen, union penetration varies sharply from nation to nation. For market efficiency, however, union coverage is more significant than membership. Coverage is defined as the proportion of wage and salary workers covered by the terms of a collective bargaining agreement. As a result, covered employees need not be members of any union participating in the negotiations. Coverage provides a rough measure of Φ and is reported in Table 7.2.

TABLE 7.1 UNION DENSITY BY COUNTRY*

	1980	1994
Australia	48%	35%
Austria	56	42
Belgium	56	54
Canada	36	38
Denmark	76	76
Finland	70	81
France	18	9
Germany	36	29
Italy	49	39
Japan	31	24
Netherlands	35	26
New Zealand	56	30
Norway	57	58
Sweden	80	91
Switzerland	31	27
United Kingdom	50	34
United States	22	16

* Density is defined as the proportion of total wage and salary employees who are union members. *Source:* OECD (1997), p. 71.

TABLE 7.2 COLLECTIVE BARGAINING AGREEMENT COVERAGE BY COUNTRY*

	1980	1994	2000
Australia	88%	80%	
Austria	98	98	
Belgium	90	90	
Canada	37	36	
Denmark	69	69	
Finland	95	95	
France	85	95	90+
Germany	91	92	68
Italy	85	82	80+
Japan	28	21	15+
Netherlands	76	81	
New Zealand	67	31	
Norway	75	74	
Sweden	86	89	90+
Switzerland	53	50	
United Kingdom	70	47	30+
United States	26	18	14

* Coverage is defined as the proportion of total wage and salary employees covered by terms of a collective bargaining agreement. *Source: OECD (1997), p.71.*

Relevant legal and quasi-legal arrangements differ country by country. Some require that collective-bargaining agreements cover a given share of sector employees before mandating extension to their non-union counterparts. Others mandate extension for economically similar, but unorganized, workers. Employer associations also typically require their members to abide by agreements negotiated by the associations, even if the member's employees are not unionized.

Whatever the particular practices, government actions to extend the coverage of formal collective bargaining have substantially enlarged the relative size of the rent-paying sector in continental Europe – an effect likely enhanced by free-rider behavior on the part of unorganized workers. A notable example of government power expanding Φ occurred between 1975 and 1982 in the United Kingdom when the Fair Wages Resolution directive gave all employees of firms contracting with public authorities a legal claim to the generally prevailing wage for their area and occupation, based on terms agreed in national collective agreements.

Corporatism Hypothesis

A number of economists, largely European, have investigated the relation between bargaining structure (and, therefore, government active participation in wage setting) and macroeconomic outcomes. Lars Calmfors and John Driffill (1988) helped organize that literature by hypothesizing a hump-shaped relation between the degree of wage-setting centralization (increasing on the y-axis) and the natural rate of unemployment, U^N (increasing on the x-axis):

- “Decentralized” bargaining occurs in single firms. Wage-setting power of firm-specific unions is constrained by product-market competition from other firms in the industry, sharply restricting the capacity to generate wage rents and consequently higher U^N .²⁶
- “Intermediate” bargaining has a single union representing all the workers in a given industry. Its wage-setting power can take advantage of more elastic industry product demand, likely permitting a significantly enhanced capacity to generate wage rents and higher U^N .²⁷

²⁶ From a TVGE analytical perspective, company unions are best understood as part of management’s ongoing efforts to influence workers’ response functions. Non-pattern bargaining at the company level does not extend the size of the norm-driven sector or increase the size or durability of wage gaps from spontaneous workplace organization.

²⁷ Industry-level bargaining was modeled in Part I of this chapter, where it was shown to do little to increase Φ from the level resulting from spontaneous workplace organization. The broader bargaining unit does not alter the unfavorable cost-benefit calculation associated with the organization of class-II workers or those in relatively small establishments (absent substantial general human capital). As noted earlier, it is relatively costly for unions to formally organize such employees for the same reasons that their workplaces are not (spontaneously) informally organized.

- “Centralized” bargaining has a single union (or, more likely, a single association of unions) that bargains (directly and indirectly) for workers economy-wide, a structure argued by Calmfors and Driffill to translate into a more generalized effective concern for market-efficient macro outcomes.²⁸

The *Corporatism hypothesis* asserts the hump-shaped outcome of centralized bargaining with direct participation of elected government. The third agent class is argued to inform the bargaining process with a general public preference for low unemployment, low inflation, and rising living standards. More formally, the corporatist argument predicts that national bargaining structures with government participation effectively internalize the negative externalities (in other bargaining structures) of rising wage rent, especially with respect to market failures producing unemployment as well as credibly low price inflation and the effectiveness of aggregate demand management. Corporatism arrangements, as a result, are thought to produce macroeconomic results superior to wage-setting processes that exclude government.²⁹

Early empirical work provided some support for the corporatism hypothesis. Illustrative are Bruno and Sachs (1985), who reported a negative cross-country correlation between an index of corporatism and the misery index (the sum of the jobless and inflation rates). They also found that centralized bargaining in highly unionized countries appeared to facilitate real wage moderation in response to unemployment. Subsequent testing, however, proved less favorable. For example, the OECD (1997) found no significant cross-country correlations between either

²⁸ Workers’ preferences for equity-based bargaining outcomes have substantial political support and are, therefore, often incorporated into social compacts, drawing on additional government powers to increase the durability of wage rents and the relative size of Φ .

²⁹ It is also argued that government participation is necessary to implement and execute national bargaining arrangements. Some of the corporatist-model analyses is weakened by placing the United States into this third structural category: uncoordinated firm-level bargaining. Most bargaining in the U.S. is coordinated by the relevant union or unions at the effective product-market level. The relatively good American unemployment experience is not the result of firm-level union bargaining structure. The RWT would point, instead, to the lack of government limitations on long-lagged firm-specific job-loss effects on established worker preferences.

bargaining centralization or coordination and national real wage growth, unemployment or inflation in 1980, 1990, or 1994.³⁰

The instability of the relationship between corporatist institutions and macroeconomic results was also vividly demonstrated by Layard, Nickell, and Jackman (1991) and Forslund and Krueger (1994). Layard and his colleagues found, using data from OECD countries in the 1980s, that national coordination significantly enhanced wage responsiveness to unemployment. However, when Forslund and Krueger estimated the same model with 1994 data, they reported contrary results. The signs on the variables measuring bargaining arrangements reversed, and their effects on the unemployment-wage trade-off were not statistically significant.

The available evidence indicates that the relationship between corporatist arrangements and macroeconomic outcomes varies over time. Other influences are apparently playing important roles that need to be specified in order to assess corporatism accurately. And, in order to identify the additional influences, a better model of the behavior motivating corporatist arrangements and results is needed. That conclusion is not new. From Flanagan (1999, p.1157): “Clearly, the notion of corporatism suffers from uncertain theoretical foundations and a lack of attention to the microfoundations of the economic and social processes that purportedly produce superior economic outcomes.”

Corporatism in TVGE Modeling

In the TVGE model, government intervention is necessary for union coverage (Φ) to become sufficiently large to hope to internalize negative wage-contracting externalities that occur in “intermediate” bargaining structures. Absent government power, union cost-benefit assessments of acquiring members outside the core of class-I workers in large establishments or those with substantial general human capital are inherently unfavorable.

³⁰ There is one exception to the uniformity of results. In 1994, there is an unexpected negative correlation between the employment rate and the variables measuring corporatist bargaining structure, suggesting that tripartite negotiations were worsening macroeconomic outcomes.

In effectively centralized bargaining arrangements, public officials directly participate as a distinct third agent. As a result, additional sets of objectives and sources of bargaining power are introduced into the negotiations. Effective modeling, therefore, requires specification of government's utility function, for which a simple specification will suffice. Governments are assumed to maximize expected voter support in the next election.

It is not surprising that the introduction of government as a third party in union-management bargaining alters the process significantly. As has already been emphasized, governments engineer sharp reductions in the union cost of organizing employees outside the LEV venue. In the tripartite system, broad-based membership in labor organizations satisfy larger political interests, resulting in the use of government power to facilitate the acquisition of members by labor organizations as well as to extend the negotiated results to workers who do not belong to unions, pushing Φ toward unity.

The sources of employee bargaining power (defined above as the capacity to impose cost on the other side for disagreeing with your position) are also expanded to include collective actions designed to influence the government – typically block voting and short, general strikes. Labor organizations then have the additional task of organizing such activities.³¹ More consequential, government brings a much wider range of outcomes to the negotiating process: income support for the jobless, public-funded pensions, job training and relocation assistance, regulation of working conditions, workweek length, statutory wage minimums, employment security, regulation of industry price and entry, trade barriers, and more.³² The now available outcomes

³¹ This difference is a matter of degree. In a business union environment, labor organizations organize political activity of their members; but the emphasis is much stronger in a corporatist setting. A full generalization of workplace economics to accommodate corporatism would need to expand the concept of workers' bargaining power to include voting in elections and labor organization leaders' role in organizing employee behavior to include motivating political activity. It would also need to account for the changed incentives for union leaders in tripartite industrial relations arrangements. Union leaders typically occupy more powerful, satisfying, and greater-stature positions in corporatist (relative to a business-unionism) structures, creating a schism between their interests and those of some of their members. Combining more complex workers and their agents with a model of democratic government leader behavior, especially focusing on the mediation of group rent-seeking activity, would produce powerful results. But, given its potential to divert the analysis from its principal task of explicating the economic consequences of permitting workers to pursue their own best interests, the wedding of rational political behavior to the OJB theory is left to others.

³² The government's power to tax funds the income-support and other spending programs, creating redistribution of income and an increasing tax wedge between real-wage cost to firms and real-wage received by workers. Higher

from the expanded bargaining process introduce complex influences on unemployment, inflation, and productivity growth.

Positive Corporatism outcomes. The central Corporatism hypothesis is that centralized bargaining beneficially influences macro outcomes by improved reconciliation of (rent-seeking) wage determination and full employment. The argument is provided support by TVGE thinking. Imposing uniform wage settlements on a broad share of the working population inherently satisfies the critical interpersonal reference standard (W^b) in established \mathbf{K}_j , providing the negotiators greater latitude on labor pricing. Workers' preferences for equity-based outcomes have substantial political support and are, therefore, often incorporated into social compacts that frequently increase negotiators discretion, especially with respect to violating the established intertemporal reference standard (denoted by in Chapter 2). TVGE modeling identifies the key here to be the capacity for nearly universal violation over the employee population of the third reference standard (W^c), setting up an exploitable conflict between W^b and W^b .³³

TVGE microfounds the central corporatism-identified positive influence from centralized bargaining arrangements to overall macroeconomic performance. Given $\Phi \rightarrow I$, effective social compacts can inject some nonstationary downward flexibility of real wages when confronted with macro disturbances that do not alter the industry and firm structure of wage rents.³⁴ An

unemployment insurance and tax wedge both increase the natural rate of unemployment. (See Phelps, 1994). In effect, corporatism internalizes large parts of government economic policy, which is exogenous to industry-wide, business-union bargaining.

³³ The union's goal to take labor out of the market, a result greatly desired by most workers, is implicitly shared (because of its wide popularity) by most elected governments.

³⁴ Social compacts in TVGE models do not motivate nominal wage cuts. More generally, this introductory version of TVGE macro theory ignores practitioner evidence on reference-standard heterogeneity, i.e., that the investment required to convince workers to accept revisions in established wage norms is frequently contingent on which reference standard is being violated. The *best-alternative-job comparison* provides no latitude to management. Firm survival requires at least matching employee opportunity costs. Workers' attachment to *interpersonal comparisons* also appears to be particularly strong, indicating that they interpret violation of this class of reference standards as an overt, hostile action by management. By contrast, to most workers, violation of *intertemporal reference standards* reflects more passive management behavior. Permitting inflation to gradually erode real employee living standards is seen as an act of omission by the firm, less offensive than the act of commission needed to cut relative wages. Reference-standard heterogeneity obviously matters to the firm. Recalibration of \mathbf{K}_j rooted in interpersonal comparisons requires relatively more investment in convincing employees to accept the wage-policy change as well as more hard evidence of prospective job losses than do reference-standard revisions that alter intertemporal comparisons. A more detailed OJB model predicts that relative wage cuts would be rare, occurring much less frequently than wages that are less than fully adjusted for consumer price inflation. Moreover, workplace

important example is a terms-of-trade shift generally adverse to workers and vividly realized in the complex stagflation decade. (See Chapter 4.)

In the stagflation crisis, Corporatism exploited synchronized wage-setting arrangements to revise industry wage rents together, supporting the case for equal burden-sharing by maintaining established interpersonal reference standards. Effectively selling a collective intertemporal reference standard revision to workers, of course, is a difficult task that falls heavily on labor leaders.³⁵ From Colin Crouch (1985, p.138): "... Corporatism places enormous reliance on the capacity of organizations to regulate their members." If the labor leaders are successful, government satisfies its objectives of producing bargaining results that are widely perceived to be equitable and macroeconomic results featuring lower unemployment and inflation.

Problematic Corporatism outcomes. Much of the evidence supporting the Corporatism hypothesis occurring during the stagflation decade that began in the early 1970s. The particular nature of labor-adverse terms-of-trade shocks (working through endogenous \mathbf{K}_j as outlined above) suggest caution in generalizing the association of centralized bargaining and good macro outcomes.

Industry- or firm-specific disturbances that require relative labor-cost adjustments to restore market efficiency are both more frequent and more problematic than terms-of-trade shocks. TVGE thinking indicates that Corporatism likely strengthens the labor-rent (\mathbf{K}_j) durability, at least for a substantial period, in response to disturbances that alter the market-efficient structure of wages. Technology shocks, import competition, and the rationalization of regional labor-cost differences, to cite three familiar examples, produce different consequences from industry to industry. The TVGE model has demonstrated that such shifts induce long-lagged job losses that, by their nature, cannot be distributed equitably over the national workforce.

heterogeneities help explain differences in costs to the firm from the various types of actions taken to reduce cooperative effort. Most notably, organized work stoppages typically inflict more damage than spontaneous activities. The introduction of such heterogeneities would significantly enhance the explanatory and predictive capacities of GWET and should be on the agenda for future research.

³⁵ The corporatist policy responding to adverse terms-of-trade shifts is a tough sell to workers because it requires them to revise their established intertemporal reference standards.

The general problem is that not all, indeed likely relatively few, adjustments that enhance market efficiency can be made equitable. Given heterogeneously adverse employment effects from a large class of disturbances, the rational response of an equity-seeking government is twofold. First is to slow down the job loss by reducing product price demand elasticities or by limiting firms' capacity to manage its employees, including downsizing. Second is to provide generous unemployment benefits or publicly-funded pensions or other income transfers in order to soften (or eliminate) the adverse effects from involuntary job loss, which is inherently unfair.³⁶

It is interesting that Teulings and Hartog (1998), with their much more careful consideration of idiosyncratic cross-national differences in wage-setting institutions, emphasize the differences between aggregate and micro (industry-specific) shocks in their assessment of the effect of Corporatism on economic performance. (They name the difference the “fundamental contradiction”.) Their analysis concludes, consistent with TVGE thinking, that Corporatism arrangements reduce wage distortions from aggregate, but not from industry- or firm-specific, disturbances.

Moreover, the general problem is greatly complicated by the capacity of governments to provide interventions that are broadly perceived to be fair while generating generally misunderstood, delayed costs. Part of the problem is a version of the Kydland-Prescott time-consistency theorem. (See Chapter 5). Part of the problem is a version of Mancur Olsen's thesis on government vulnerability to rent-seeking groups. (See Chapter 3.)

TVGE predictions. TVGE modeling helps explain the macro consequences that follow from increasing the formally-negotiated wage coverage in bargaining that features active government participation. Expanding the nonmarket-wage sector on balance reduces, not increases, stationary labor-pricing flexibility, makes established wage rents (and \mathbf{K}_j) more durable, and increases (absent government suppression) the incidence of permanent job loss (ω^T) resulting from adverse

³⁶ It is consistent with the analysis that, across countries, collective-bargaining centralization and wage dispersion have been negatively correlated. (See OECD, 1997, Table 3.5.) Flanagan (1999) calls that the “one durable relationship” between macroeconomic results and industrial-relations arrangements. (p. 1163)

product-market forces.³⁷ It also follows that high- Φ economies more broadly ration employment, restricting job growth in low-productivity as well as high-productivity firms and generating higher trend unemployment (U^N) than low- Φ countries.

The TVGE predictions with respect to the influence on macroeconomic outcomes of centralized wage-setting with active participation by government include the following:

- Nominal wages are almost never cut, providing a robust channel through which adverse nominal disturbances induce involuntary job loss.³⁸
- The relative size of the labor-rent-paying venue (Φ) becomes, and remains, large.
- \mathbb{K}_j durability, especially its powerful interpersonal reference standard (W^b), is strongly reinforced by government power, restricting the economy's capacity to adjust employment and labor costs in response to nonstationary market disturbances.
- Employee ownership of high-rent jobs is at least partially recognized by mandating significant penalties on firm downsizing.
- Generous transfer payments and retirement pensions as an equitable response to involuntary job loss are provided, altering the incentive structure that governs rational labor-market flows.

The likely net outcome of centralized bargaining, i.e., significantly higher natural rate of unemployment (U^N), rejects the Calmfors-Driffill hump-shaped Corporatism hypothesis. As the story plays out, however, structural market failure, and its drag on overall advance in living

³⁷ Additionally note that relatively large nonmarket-wage sectors considerably complicate the measurement of wage rents. Labor rent is defined as the ratio of the wage paid to the market-determined rate and tracks the efficiency of labor markets. As Φ approaches unity, however, the concept of a market wage becomes increasingly abstract and difficult to observe. Empirical work on wage rents, especially in continental Europe, must be done with considerable care.

³⁸ A recent, ambitious study of nominal and real wage rigidity across 14 countries in the European Union found that (a) the incidence both types of nonmarket labor pricing is "quite substantial", (b) downward rigidity of real wages, suggesting explicit or implicit indexing to price inflation, is more prevalent in euro-member states than is nominal stickiness; and (3) that the U.S. and the U.K. also experience substantial downward wage rigidity but have a larger incidence of nominal than real rigidities.³⁸ To reiterate, collective bargaining in the euro-zone tends to be more centralized, in order to accommodate active government participation, than bargaining in North America and Britain bargaining, which is characterized by passive government intervention.

standards, will be identifiable as resulting from government-sponsored labor rents. The identification will help generate a painful, protracted period of countervailing political pressure to reduce direct public intervention in labor pricing and use.³⁹

III. CONCLUSION

In his insightful assessment of the current state of wage theory, Olivier Blanchard identified three significant strands of research: search/matching models, efficiency wages, and collective bargaining. He observed that, over the past three decades, substantial progress has been made on the search/matching approach, while efficiency wages and collective bargaining have remained dormant. From Blanchard (2007, p.414): "... [the search/ matching] line of modeling will not be able to do the job by itself, and the two other lines..., namely collective bargaining and efficiency wages, are very relevant. First, collective bargaining remains, at least in continental Europe, essential to wage determination and, I believe, essential to an understanding of differences in unemployment evolutions across European countries. Second, the formalization of bargaining in the standard DMP model through Nash bargaining, while elegant and powerful, is a very poor description of reality. As a number of researchers have pointed out, real wages appear to move much less than is implied by Nash bargaining. Constraints coming from intrafirm efficiency-wage considerations look like plausible candidates to explain these wage rigidities."

Substantial macro theorist investment in the search/matching approach to wage determination was possible, even predictable, because its action occurs in the marketplace and is, therefore, consistent with modern model-building preferences. Meanwhile, progress on both (original) efficiency-wage and collective-bargaining theories has long been stalled by the absence of an optimizing, price-focused model of workplace exchange organized around continuous equilibrium, a nonmarket exercise that lies outside theorists' comfort zone. Direct, formal modeling of workplace behavior, grounded in well-motivated axioms about preferences and

³⁹ It is telling that the European Monetary Union is understood to have been putting substantial pressure on established wage rents in the wealthier European countries. From Calmfors (2001, pp. 7-8): "... a common currency reduces both transaction costs and exchange-rate risks with international payments, and therefore leads to both more trade and foreign direct investment (FDI). Another reason is that international price comparisons are facilitated. As a consequence, product demand should become more price-elastic."

technology, is a necessary condition for the construction of a policy-useful theory of labor pricing and use in both nonunion and union circumstances.

It is particularly relevant that workplace equilibrium provides a powerful port of entry into formal economic theory for unions, resulting in a much more powerful and intuitive description of labor-rent behavior in the circumstances of collective bargaining than does the ubiquitous Nash framework. Improved results should not be surprising. Unions are fundamentally about the explicit organization of workplace behavior, providing decision rules, mechanisms of exchange, and constraints that are distinct from the marketplace.⁴⁰ Absent the platform provided by a well-motivated theory of such behavior, axiomatic union models are forced to feature naïve objective functions and nonintuitive activity sets, making them unrecognizable to practitioners and producing explanations and predictions of little use to public and private policymakers.

⁴⁰ Indeed, a version of TVGE macrodynamics could focus the high-wage venue wholly on union-employer rational exchange and microfound a weaker MWR Channel that still links nominal disturbances and involuntary job loss. The less ambitious model, however, would badly understate the capacity of specialized economies to generate a fundamentally distinct venue of exchange characterized by meaningful wage rigidity, limiting readers' understanding of the nature macro stabilization challenge with the advent of modern corporations.