

Industrial & Labor Relations Review

Volume 59, Issue 1

2005

Article 4

Did American Welfare Capitalists Breach Their Implicit Contracts During the Great Depression? Preliminary Findings from Company-Level Data

Chiaki Moriguchi*

*Northwestern University,

Copyright ©2005 by the authors. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher, bepress, which has been given certain exclusive rights by the author. *Industrial & Labor Relations Review* is produced by The Berkeley Electronic Press (bepress). <http://digitalcommons.ilr.cornell.edu/ilrreview>

DID AMERICAN WELFARE CAPITALISTS BREACH THEIR
IMPLICIT CONTRACTS DURING THE GREAT DEPRESSION?
PRELIMINARY FINDINGS FROM COMPANY-LEVEL DATA

CHIAKI MORIGUCHI*

It has been claimed that American employers' experiments in private welfare capitalism collapsed during the Great Depression, giving place to the welfare state and industrial unionism. Recent studies, however, reveal considerable differences in experience across firms. The author of this study, who characterizes private welfare capitalism as a set of human resource management practices constituting an implicit contract equilibrium, tests the implications of implicit contract theory using data from fourteen leading manufacturing firms. The repudiation of implicit contracts, she finds, was positively correlated with the severity of the depression's impact experienced by firms and negatively correlated with the effectiveness of "internal enforcement mechanisms" instituted by firms. Furthermore, she finds that greater breaches of implicit contracts were associated with greater employee support for industrial unions and more explicit employment contracts concluded under the New Deal. A comparative case study complements the quantitative analysis by exploring internal dynamics.

Recent empirical studies have documented that the choice of human resource management (HRM) practices pertaining to blue-collar employees can have a substantial impact on labor productivity

(Jones and Kato 1995; Ichniowski et al. 1997; Lazear 2000; Knez and Simester 2001; Kato and Morishima 2002). HRM policies, including compensation, job design and assignments, training and education, and promotion, thus have important implications for economic efficiency and industrial performance. The objective of this paper is to study the dynamic evolution of HRM practices in large American firms from 1920 to 1940 from a contract-theoretic perspective.

*The author is Assistant Professor, Department of Economics, Northwestern University, and Faculty Research Fellow, NBER. She thanks Megan MacGarvie, Erika McCaffrey, and Hilah Geer for their research assistance. For valuable comments, she also thanks Ran Abramitzky, Lee Alston, Louis Cain, Joseph Ferrie, Price Fishback, Robert Gibbons, Avner Greif, Roger Horowitz, Luojia Hu, Sanford Jacoby, Zorina Khan, Joel Mokyr, Robert Porter, Peter Temin, Eric Van den Steen, and seminar participants at the NBER, Northwestern University, Stanford University, U.C. Berkeley, the University of Michigan, the University of Toronto, and MIT. Finally, she gratefully acknowledges financial support received from the Harvard Business School Division of Research when she was a faculty member.

This paper's data appendix contains much of the information other researchers would need in order to follow up on this study. Address inquiries to the author at Department of Economics, Northwestern University, 2001 Sheridan Rd., Evanston, IL 60208; Chiaki@northwestern.edu.

Historians have traced the development of personnel management to the advent of big business in the beginning of the twentieth century (Nelson 1975; Jacoby 1985). During the next three decades, the movement known as “private welfare capitalism,” which refers to employers’ voluntary provision of non-wage benefits, greater employment security, and employee representation to their blue-collar workers, gradually spread among large industrial concerns. It has been argued, however, that private welfare capitalism collapsed during the Great Depression and subsequently was replaced by the welfare state and trade unionism under the New Deal regime (Bernstein 1960; Brody 1980). In this view, an extraordinary economic shock constituted a sufficient condition to extinguish corporate welfarism: “Three decades after the New Deal,” observed Brandes (1970), “only vestiges of welfare capitalism remained” (p. 30).

More recently, a growing number of historians have revisited this view, adding richer and more complex pictures to the simple story of discontinuation and replacement. (See, for example, Schatz 1983; Zahavi 1988; Nelson 1989; Cohen 1990; Gitelman 1992; Fairris 1997; Bordo et al. 1998.) Berkowitz and McQuaid (1988) and Tone (1997) emphasized the continuing influence of welfare capitalists in the post-World War Two period that shaped a “mixed” social welfare system built on private welfarism precedents. Jacoby (1997) observed that not all corporations abandoned their innovative HRM practices during the Great Depression, suggesting substantial heterogeneity across firms. In particular, he hypothesized that employers who implemented welfare capitalism more wholeheartedly during the 1920s and were less affected by the depression were more likely to maintain their personnel practices and nonunion status (Chapter 1).

While the welfare capitalism debate has stimulated numerous historical studies, it has been difficult to synthesize evidence across disparate studies due to the absence of an analytical framework and systematic measurement. The purpose of this paper is

threefold: to introduce a game-theoretic framework and substantiate Jacoby’s hypothesis; to test the derived implications using company-level data; and to offer a comparative case study to investigate internal dynamics.

Recent applications of game theory to institutions in historical contexts highlight the merits of modeling an institution as a self-enforcing equilibrium rather than as the rules of the game (Greif 1993; Greif et al. 1994). In particular, implicit contract theory captures the essential features of private welfare capitalism and provides a useful tool for examining strategic interactions between management and workers (Moriguchi 2000, 2003). First, the theory indicates that when employment contracts are written contingent on unverifiable variables and cannot be enforced by the court—that is, when they are implicit contracts—they require “internal enforcement mechanisms” that enable workers to monitor management and deter its opportunism. The theory also implies that for the firm to benefit from honoring the implicit contracts, it must have a sufficiently long time horizon in repeated employment relations. From these two postulates, it follows that a managerial decision to breach the implicit contracts is a function of the effectiveness of internal enforcement mechanisms (hereafter IEMs) and the severity of a business contraction. Second, the theory implies the existence of multiple equilibria, with the expectations of management and workers playing a critical role in equilibrium selection. In particular, once mutual trust breaks down and labor-management relations become adversarial, the theory predicts that the implicit contracts will likely be replaced by explicit contracts that can be enforced by a third party.

To test the above implications, in this paper I analyze company-level data that I compiled using several primary and secondary sources. The sample currently consists of fourteen firms that were considered to have been major welfare capitalists before the depression. I examine whether, controlling for the level of effectiveness of IEMs, companies that were hit harder by

the Great Depression more strongly repudiated their implicit contracts (that is, abandoned more of their HRM policies). Second, I investigate whether, for a given economic impact of the depression (which varied across companies), the presence of strong IEMs reduced firms' tendency to repudiate their implicit contracts. Finally, I explore possible links between companies' tendency to abandon their HRM policies and the change in subsequent labor-management relations, such as employee support for industrial unions and the use of more explicit employment contracts.

The case study complements the quantitative analysis. I compare two companies, General Electric and General Motors, that experienced comparably severe economic effects from the depression but differed in the extent to which they maintained their implicit contracts. The analysis highlights a subtle but important role of IEMs. In the absence of labor-management communication and employee representation, GM management unilaterally changed its HRM policies during the depression; by contrast, at GE, most revisions were made upon consultation with employees. Although both companies were unionized in the late 1930s, GE reinstated much of the implicit contract under cooperative labor-management relations, whereas mutual mistrust between management and workers at GM led to the development of explicit and legalistic employment contracts.

By combining a theory and new evidence, this study sheds better light on the welfare capitalism debate. Its contribution, however, is not confined to the understanding of historical experience. Recent empirical work has shown that the 1980s were a period of declining job security during which workers faced an increasing prospect of involuntary job displacement (Kletzer 1998; Neumark et al. 2000). Much recent and current research has been devoted to explaining why. For example, Shliefer and Summers (1988) suggested that increasing hostile takeovers generated wealth for shareholders by enabling them to renege on existing contracts with stakeholders, most notably employees. Similarly, Valletta

(1999) interpreted the declining job security as a result of managerial default on implicit incentive contracts due to an unexpected change in the value of employee human capital. As the Great Depression was a time of unprecedented corporate downsizing, by studying this unique historical episode, this study helps explore the causes, as well as the long-run consequences, of the breach of implicit contracts vis-à-vis employees.

2. Conceptual Framework

2.1 Historical Observations

Private welfare capitalism refers to employers' provision to production workers of compensation and benefits that were above spot market wages and beyond legal obligations.

Early efforts in this direction, undertaken largely to forestall trade unions, were often erratic, incoherent, and short-lived (Brandes 1970). During the 1920s, however, American welfare capitalism matured into a set of sophisticated HRM policies whose primary goal was to foster a stable and committed work force. Union avoidance continued to be a motive, but it became part of the larger push for efficiency improvements (Slichter 1929; Berkowitz and McQuaid 1980:56; Jacoby 1985:174; Cohen 1990:430). Throughout the 1920s private welfare capitalism was confined mainly to a "progressive minority" of large firms in capital-intensive industries. Nonetheless it was a sizable and growing minority (Table 1).

By the end of the decade, at least 200 firms (with 400 establishments) employing more than 1.5 million production workers (or 15% of all production workers) instituted comprehensive HRM programs that encompassed (1) implicit incentive contracts, (2) human capital investment, and (3) internal enforcement mechanisms (Table 2). (See U.S. Department of Labor 1919, 1928; NICB 1929, 1934.)

First, management offered a variety of pecuniary incentive contracts (for example, retirement pensions; life insurance; acci-

Table 1. Growth of Human Resource Management Programs, 1917 and 1926.

HRM Program	Establishments with Program (% of total)	
	In 1917	In 1926
A. Incentive Contracts		
Retirement Pension Plan	75 (17%)	N.A.
Disability Benefit Plan	80 (19)	214 (50%)
Group Insurance Plan	32 (7.4)	186 (43)
Savings Plan	188 (44)	196 (46)
Stock Ownership Plan	N.A.	123 (29)
Profit Sharing Plan	N.A.	50 (12)
Paid Vacation Plan	16 (3.7)	133 (31)
B. Human Capital Investment		
Employee Classes	72 (17)	140 (33)
Company Libraries	99 (23)	127 (30)
C. Internal Enforcement Mechanisms		
Company Picnics	140 (33)	177 (41)
Social Gatherings	239 (56)	316 (74)
Athletic Teams	142 (33)	223 (52)
Recreational Facilities	152 (35)	235 (55)
Joint Administration	200 (46)	343 (80)
Total Number of Establishments	431 (100)	430 (100)

Source: U.S. Department of Labor (1919, 1928).

Notes: The 1917 sample consists of 431 establishments with 1.7 million employees; the 1926 sample, 430 establishments, many of which were revisited since 1917, with 2.0 million employees. All programs were for blue-collar workers. Employers bore a part or all of the cost of each program. Disability benefits covered sickness and accident injury cases that were not covered by the workmen's compensation laws. Group insurance plans included life, sickness, and accident insurance. Savings plans included savings and loan funds, savings and investment funds, and building and loan funds. Joint administration included employee participation in welfare administration through ERPs, mutual benefit associations, employee committees, and other employee organizations.

dent, sickness, and disability benefits; employee stock ownership; profit sharing; paid vacations; and housing plans) contingent on employees' firm-specific tenure and other desirable characteristics, such as merit, workmanship, dependability, and company loyalty. In these programs, management promised employment security and benefits that increased with tenure to employees with "good" employment records. Because the provision of these benefits was voluntary and not required by law, management retained the right to grant, withhold, reduce, or terminate the benefits in individual cases, as well as to change or discontinue the programs altogether at will with legal impunity (Commons et al. 1935:338-39; Jacoby 1985:197; Moriguchi 2003:631-41). In other words,

even though these contracts were often explicitly spelled out, they were legally unenforceable and thus "implicit contracts" in contract-theoretic terminology.¹

Second, while offering incentive contracts to encourage long and meritorious service, management also invested in the human capital of blue-collar employees. As elaborated in the case study of General Electric and General Motors (described later in this paper), leading employers established company training programs, provided technical, safety, and health education, and disseminated practical informa-

¹For the literature on implicit contract theory, see Bull (1987); MacLeod and Malcomson (1989).

Table 2. Prevalence of Human Resource Management Programs in 1928.

<i>HRM Program</i>	<i>Small Establishments with Program</i>	<i>Large Establishments with Program</i>	<i>Total</i>
A. Incentive Contracts			
Retirement Pension Plan	121 (4.8%)	474 (28%)	685
Group Life Insurance Plan	1,600 (36)	774 (47)	2,374
Stock Ownership Plan	163 (3.7)	287 (17)	450
Profit Sharing Plan	168 (3.8)	80 (4.8)	248
Savings Plan	168 (3.8)	328 (20)	496
Housing Plan	264 (6.0)	386 (23)	650
Length-of-Service Bonus	384 (8.7)	183 (11)	567
Paid Vacation Plan	926 (21)	427 (25)	1,353
B. Human Capital Investment			
Apprenticeship Training	683 (16)	499 (30)	1,182
Training for Unskilled or Semi-Skilled	472 (11)	330 (20)	802
General Education	35 (0.8)	119 (7.1)	154
Internal Promotion	176 (4.0)	401 (24)	577
C. Internal Enforcement Mechanisms			
Picnics or Outings	666 (15)	657 (39)	1,323
Athletic Teams	454 (10)	717 (43)	1,171
Employees' Club	106 (2.4)	288 (17)	394
Employee Magazine	97 (2.2)	303 (18)	400
Centralized Employment	273 (6.2)	701 (42)	974
Centralized Discharge	194 (4.4)	401 (24)	595
Foreman Training	216 (4.9)	322 (19)	538
Personnel Department	110 (2.5)	575 (34)	685
Suggestion System	212 (4.8)	389 (23)	601
Group Meetings	300 (6.8)	251 (15)	551
Employee Representation Plan	110 (2.5)	146 (8.7)	256
Total Number of Establishments	4,409 (100)	1,676 (100)	6,085

Sources: NICB (1929, Chap. 2).

Notes: The survey covered 4,409 small establishments (employing 250 or fewer workers) and 1,676 large establishments (employing more than 250 workers). The number of establishment adopting each HRM program and its percentage of the total is reported. All programs were for blue-collar workers and none were required by law. Employers bore a part or all of the cost of each program. Savings plans included savings and loan funds, savings and investment funds, and building and loan funds. Housing plans included company housing and home ownership plans.

tion through employee magazines. In a typical corporate apprenticeship program, young workers enrolled in two- to four-year courses that combined on-the-job training and in-class instructions, and they received job offers from their employer upon graduation with satisfactory performance. The corporate training was tied to a policy of *internal promotion* that offered career prospects to production workers based on their merits, skills, and tenure. To use human capital at the shopfloor, some firms established a formal suggestion system with monetary awards soliciting suggestions for effi-

ciency improvements from blue-collar employees (Allen 1943; Rumm 1989; Nelson-Rowe 1991; Young and Tuttle 1969; Schacht 1975).

Third, welfare capitalists instituted various programs promoting cooperative labor-management relations, information sharing, and joint administration, which I refer to as "internal enforcement mechanisms" (IEMs) for the reasons discussed in the next section. First, to win employees' trust and instill corporate loyalty, most employers sponsored social and recreational activities, such as company picnics,

athletic teams, and employee clubs, involving employees and their families. Second, to establish a clear policy, management formalized HRM programs, announced their rules and regulations through bulletin board postings, and distributed handbooks and benefit pamphlets to employees. To ensure consistent implementation of the policy, many firms established a personnel department, kept employee records, centralized hiring and firing, and placed limits on foremen's discretion. Furthermore, some employers set up employee benefit funds or pension trusts to commit corporate resources *ex ante* to meet future obligations. Employee magazines were important in facilitating information sharing, as they periodically reported the operations of benefit programs and updated employees with any revisions.

Last but not least, leading employers incorporated some form of *joint administration* in operating HRM programs. To encourage employee participation, management initiated suggestion systems, joint committees, and group meetings with employees. The most formal of such institutions were *employee representation plans* (ERPs), also known as company unions. In ERPs, employee representatives were elected from among blue-collar employees and regularly met with management representatives to discuss matters of mutual concern, including personnel programs. Even though ERPs were by no means collective bargaining units comparable to trade unions, they provided regular forums for information sharing and joint labor-management consultation that previously had been nonexistent (Houser 1927:15–20; Slichter 1929:413; Nelson 1982).

Company-specific evidence indicates that in a number of instances, corporate welfarism developed into a *mutually binding commitment* between management and workers. In general, employers were concerned that terminating HRM programs might damage employee morale, trigger labor disputes, and have negative consequences for future recruitment. At Endicott Johnson, once management introduced corporate HRM policies, these policies be-

came an “independent code of just behavior” by which employees judged corporate actions. Managers felt that they could not abandon the programs “for fear of violating the explicit and implicit expectations” they had created among employees. At Eastman Kodak, a formula for the company's profit-sharing plan was maintained regardless of business conditions for decades, as management was “deathly afraid” that workers would misunderstand any change as renegeing on a deal. At Bethlehem Steel, International Harvester, and Goodyear Tire and Rubber, ERPs provided employees with opportunities to discuss HRM programs, voice their discontent, and coordinate their expectations and actions *vis-à-vis* management (NICB 1931a:13; Zahavi 1988:105, 143; Jacoby 1997:79; Slichter 1929:413; Ozanne 1967; Nelson 1982; Schatz 1983:41).

2.2 Implicit Contract Analysis

Based on the above observations, I develop an analytical framework that characterizes corporate welfarism as a set of HRM practices constituting an implicit contract equilibrium.² Consider a game between, on the one hand, an infinitely long-lived firm, and, on the other, overlapping generations of workers each of which lives for two periods.³ Assume that a worker can make costly human capital investment in the first period that will increase his labor productivity in the second period. Assume also that the human capital investment, which materializes as high employee quality such as “workmanship” and “loyalty,” is noncontractable (that is, observable within the firm but unverifiable by a third party) and thus does not change workers' outside options. This includes, but is not limited

²For a discussion of alternative theories of corporate welfarism, see Moriguchi (2003:628–31). In the present paper, I focus on the implicit contract theory and test its consistency with data.

³A formal model can be found in the theoretical appendix in Moriguchi (2001), which modifies and extends the work by Kanemoto and MacLeod (1989).

to, the case in which human capital is firm-specific. Assume that the output is also noncontractable.⁴ Suppose that the human capital investment generates positive joint surplus for the firm and a worker. To induce a worker to invest, the firm can design an implicit contract that provides the worker with an “employment guarantee” for two periods and promises extra compensation in the second period contingent on his human capital acquisition.⁵ If the game is played only once, a worker never invests in human capital, because he anticipates that the employer will renege on the promise once the investment is sunk.

Under what conditions can the implicit contract be self-enforced? I assume that reputation is a primary enforcement mechanism: an employer’s breach of contract will cause current and future employees to withdraw cooperation by curtailing work effort, to stop investing in human capital, and to support outside unions in order to increase their bargaining power. The *self-enforcement* condition requires that the employer’s gain from appropriating extra compensation today be smaller than the present value of the future losses resulting from such appropriation. I focus on two subgame perfect Nash equilibria of the repeated employment game that resemble spot contracting and corporate welfarism, respectively. The *spot contract equilibrium* is characterized by short-term employment relations, no human capital investment, a spot market wage paid to both junior and senior workers, and low labor productivity. In contrast, the *implicit contract equilibrium* is characterized by long-term employment relations, high human capital investment, extra compensation paid to senior workers in addition to the spot market wage, high labor productivity, and internal enforce-

ment by reputation.

Theoretically, IEMs are the mechanisms that implement the implicit contract equilibrium in the absence of third-party enforcement. As such, IEMs perform four functions: they coordinate expectations, articulate the equilibrium, facilitate monitoring, and make deviation from the contract costly. An important implication of the existence conditions for the two equilibria is that whenever the implicit contract equilibrium exists the spot contract equilibrium also exists. Under such multiple equilibria, management cannot unilaterally select a desired equilibrium, as its realization depends on workers’ expectations. It is thus critical for management to signal its goodwill and win employees’ trust in achieving the implicit contract equilibrium.

Observe also that enforcement by reputation requires a clear understanding of the contractual terms by employees and their ability to observe and judge managerial actions. Articulating the HRM policy, centralizing personnel management, and sharing the information concerning the HRM programs are thus important parts of IEMs. Finally, to establish *credible* commitment, management has an incentive to voluntarily increase the cost of breaching the implicit contract. For example, employers may commit financial resource ex ante or empower employees through joint administration. These implications are broadly consistent with the historical observations presented in the previous section.

The theory thus captures the complementarity among pecuniary incentive contracts, corporate training, and IEMs. That is, the returns from instituting incentive contracts and training programs are higher when management also adopts IEMs. This implication is consistent with recent empirical work identifying complementarities across innovative HRM practices (Osterman 1994; McDuffie 1995; Ichniowski et al. 1997; Kato and Morishima 2002).

Now I derive further implications that can be tested with company-level data. First, the theory implies that the implicit contract equilibrium is vulnerable to business fluctuations. Consider that an exogenous

⁴Even though the quantity of output may be verifiable, the quality and other dimensions of the output are assumed to be unverifiable.

⁵The firm thus compensates the worker for the cost of human capital investment in the second period.

decline in demand shortens the firm's time horizon and lowers its time discount factor. A sufficiently deep depression will move the firm's discount factor below the "threshold" given by the self-enforcement condition. However, since stronger IEMs increase the cost of breaching an implicit contract, the threshold discount factor is lower if a firm has more effective IEMs in place. Therefore, the theory predicts that (1) holding the effectiveness of IEMs constant, a firm is more likely to breach the implicit contract if the impact of a depression is more severe, and that (2) holding the severity of a depression's impact constant, a firm is less likely to breach the implicit contract if it has stronger IEMs.

Second, the theory indicates that the greater the breach of the implicit contract, the greater will be employee support for outside unions. It further implies that, after the breakdown of the implicit contract equilibrium and the reversion to spot contracting, management and labor may advance an alternative contractual arrangement based on third-party enforcement. That is, in the presence of mutual distrust after the repudiation, the employer and union may agree to develop contractible proxies for noncontractible human capital to minimize discretion, and write explicit contracts that can be enforced by a third party. This *explicit contract equilibrium* can attain labor productivity that is higher than in the spot contract equilibrium but lower than in the implicit contract equilibrium. The explicit contract requires no IEMs and is able to withstand business fluctuations, however. In short, the theory predicts that (3) compared to other firms, a firm that has more seriously breached its implicit contracts is more likely to be organized by outside unions, and is likely to develop more explicit and legalistic employment contracts.

3. Evidence from Company-Level Data

Although there is extensive literature on American welfare capitalism, existing work tends to fall into two categories: comprehensive macro-level studies (Bernstein 1960;

Brandes 1970; Brody 1980; Jacoby 1985; Fairris 1997; Tone 1997) or in-depth company studies (Ozanne 1967; Fine 1969; Schatz 1983; Nelson 1988; Zahavi 1988; Jacoby 1997). Available evidence is predominantly descriptive and qualitative. One notable exception is a series of National Industrial Conference Board studies (NICB 1928, 1929, 1934, 1936), which surveyed a large number of U.S. establishments.⁶ The difficulties of using the NICB data for the present purpose, however, are twofold. First, aggregated to the industry or national level, the data hide firm-level heterogeneity that could be substantial, judging from the company studies. Second, the sample size and composition of the surveys vary from year to year, making comparisons across years difficult. To my knowledge, the original questionnaires used in the NICB surveys did not survive.

In order to test the implications of implicit contract theory, I compile company-level data from several primary and secondary sources (see the Data Appendix for a detailed description). The sample at present consists of fourteen manufacturing firms: Bethlehem Steel (BS), Eastman Kodak (Kodak), DuPont (DP), Endicott Johnson (EJ), Ford Motor (Ford), General Electric (GE), General Motors (GM), Goodyear Tire and Rubber (GTR), International Business Machines (IBM), International Harvester Company (IHC), Procter and Gamble (P&G), Standard Oil of New Jersey (SONJ), U.S. Steel (USS), and Western Electric of AT&T (WE). Table 3 reports company characteristics, including age, products, technology, size, payroll, and capital-labor ratio. All of the firms were well-known proponents of private welfare capitalism in the 1920s, and each was one of the largest and most resourceful employers in its industry.⁷ The sample is deliberately

⁶See Baron et al. (1988) and Dobbin (1992) for the studies using the NICB data.

⁷Nine of the sample firms were members of the Special Conference Committee established in 1919 by business leaders to study trends in HRM policies and exchange information.

Table 3. Company Characteristics.

Statistic	Ford	GM	US Steel	B-Steel	IHC	GTR	GE
Year of Establishment	1903	1908	1901	1904	1902	1898	1892
Year of Incorporation	1903	1908	1901	1904	1902	1898	1892
Main Products	automobile	automobile	steel & iron	steel & Iron	agricultural machinery	rubber tires & tubes	electrical machinery
Technology	mass production	mass production	continuous process	continuous process	mass production	continuous process	mass production
Employment ^a	170,000	233,000	225,000	64,000	48,000	47,000	88,000
Payroll per Employee ^b	1,710	1,670	1,870	1,940	N.A.	1,751	1,860
Total Assets (million dollars) ^a	760	1,230	2,280	800	380	240	490
Capital-Labor Ratio ^c	4,480	5,280	10,130	12,520	7,920	5,170	5,590
	WE	DuPont	SO of NJ	P&G	Ej	Kodak	IBM
Year of Establishment	1887	1802	1870	1837	1890	1880	1911
Year of Incorporation	1915	1903	1882	1890	1919	1901	1918
Main Products	telephone equipment	explosives, dye	petroleum	soap, oil	leather shoes	film, camera	business machines
Technology	mass production	continuous process	continuous process	continuous process	labor-intensive	continuous process	job lot system
Employment ^a	80,000	35,000	57,000	10,000	17,000	22,000	4,000
Payroll per Employee ^b	1,570	1,753	N.A.	1,480	1,340	N.A.	N.A.
Total Assets (million dollars) ^a	370	540	1,060	130	51	160	44
Capital-Labor Ratio ^c	4,660	15,490	18,600	5,800	3,000	7,410	11,000

Source: Moody's Manual of Investments: Corporate Annual Reports.

^aEmployment and total assets are 1929 figures.

^bPayroll is total of wages and salaries paid in 1929 except for GTR in 1928, WE in 1928, DuPont in 1930, and P&G in 1925.

^cThe capital-labor ratio is the ratio of total assets to employment.

biased toward such “elite” welfare capitalists for two reasons. First, the objective of this study is to measure the impact of the Great Depression on corporate welfarism *conditional* on having comprehensive HRM programs prior to the depression. Second, given the extraordinary severity of the depression, the likelihood of finding employers that maintained corporate welfarism during the depression is nonzero only at the upper end of the distribution.

For each company, I develop proxies for two independent variables (the effectiveness of IEMs and the severity of the depression’s economic impact experienced by the firm) and two dependent variables (the degree of contract repudiation and the change in labor-management relations). I then rank the firms and use the rank order correlation statistics to test the theoretical implications. Clearly, the ideal unit of observation is a plant rather than a company, as each company operated multiple plants and delegated the implementation of HRM practices to local plant managers. Due to the difficulty of collecting plant-level data, however, I instead use company-level data and assume that intra-firm heterogeneity was less than inter-firm heterogeneity. This assumption is supported by the fact that most HRM programs were designed at the corporate level and introduced to plants.

3.1 Main Findings

3.1.1 HRM Programs before the Great Depression

Table 4 reports the extent of corporate welfarism instituted by the firms prior to the depression. The first section of the table lists 17 representative HRM programs divided into (1) pecuniary incentive contracts, (2) human capital investment, and (3) IEMs. Each cell reports whether or not a company had a given program in 1929 and, for each program that was in effect that year, the number of years it had been in operation. If a company had a program but abolished it before 1929, the notation is “no (past).” If a program was exclusively for white-collar employees, the notation is

“no.” A question mark indicates a lack of information: a firm might or might not have had a program. Where sufficient financial data are available, I also estimate the cost to the company of operating major pecuniary programs. A lower-bound estimate of corporate welfare expenditures in 1929 (expressed also as a percentage of annual payroll) is reported in the lower portion of Table 4. I measure the effectiveness of IEMs by a composite of (1) the average years of experience in operating existing HRM programs as of 1929 (a proxy for reputation) and (2) the number of programs under the IEM category. The “IEM index,” reported in the last row of Table 4, is calculated as the average of the (normalized) years of experience and the percentage of IEM programs instituted.

To summarize Table 4, all firms adopted fairly comprehensive HRM programs prior to the Great Depression, and many of them annually spent several million dollars in pecuniary programs for their blue-collar workers. BS, IHC, GTR, GE, and WE instituted the most comprehensive HRM programs, and less comprehensive programs were found at Ford, GM, and IBM.⁸ According to the IEM index, the effectiveness of IEMs varied considerably across the elite welfare capitalists. P&G, GTR, IHC, GE, and DP rank among the highest in effectiveness, as they either had an established reputation as welfare capitalists or had all IEM programs in place, if not both. By contrast, GM, EJ, USS, IBM, and Ford belong to the “low commitment” group, as they either had only brief experience in corporate welfarism or instituted few IEM programs.

3.1.2 The Impact of the Great Depression

Section I of Table 5 documents the severity of economic effects experienced by each

⁸Ford was an early adopter of corporate welfarism but also an early quitter (for example, its famous profit sharing plan, the five dollar day, was introduced in 1914 and abandoned in 1921), whereas IBM was a latecomer that adopted comprehensive programs in the late 1930s (Meyer 1981; Engelbourg 1976).

Table 4. Human Resource Management Programs in 1929.

Program	Ford	GM	US Steel	B-Steel	IHC	GTR	GE	WE	DuPont	SO of NJ	P&G	EJ	Kodak	IBM
HRM Programs in 1929 and Years of Experience														
<i>(1) Incentive Contracts</i>														
Disability Benefit Group	yes 23	no	no (past)	yes	yes 19	yes 20	yes 27	yes 16	no	yes 11	yes 14	yes 11	yes 18	yes 18
Insurance	no	yes 3	yes 2	yes 3	no	yes 15	yes 19	yes	yes 10	no	no	no	yes 1	no
Retirement Pension	no	no	yes 18	yes 6	yes 21	yes 15	yes 17	yes 23	yes 25	yes 11	yes 35	yes 11	yes	no
Stock Ownership	no	yes 5	yes 16	yes 5	yes 9	no (past)	no (past)	yes 8	yes 20	yes 8	yes 26	no	no	no
Savings and Investment	yes 8	yes 9	no	?	?	?	yes 8	yes 3	?	no	no	yes 7	yes 8	?
Profit Sharing	yes	no (past)	no	yes 18	yes 20	?	yes 14	no	yes 25	no	no	yes 10	yes 17	?
Paid Vacation	no	no	no	no	yes 1	yes 15	yes 12	yes 3	no	yes 7	no	yes 10	no	no
Housing Plan	no	yes 19	yes 9	yes 5	?	yes 17	yes 4	yes 7	yes 11	yes 11	?	yes 7	yes 9	?
<i>(2) Human Capital Investment</i>														
Training and Education	yes 13	yes 3	yes	?	yes 22	yes 26	yes 28	yes 11	?	yes 11	?	?	?	yes 11
Internal Promotion	?	yes	?	?	?	yes	yes	yes	yes	yes 7	yes	yes	yes 9	?
Employment Guarantee	no	no	no	no	no	no	no	no	no	no	yes 6	no	yes	no
<i>(3) Internal Enforcement Mechanisms (IEMs)</i>														
Recreation	?	yes	yes	yes	yes	yes 6	yes	yes 10	yes	yes	yes	yes	yes	yes
Employee Magazine	yes 13	no	no	yes 5	yes 20	yes 17	yes 12	yes 17	no	yes 11	no (past)	yes 10	no	yes 10
Personnel Department	yes 15	?	yes	yes	yes 11	yes 17	?	yes	yes 10	yes 11	yes 10	?	yes 10	?
Suggestion System	?	no	?	yes 3	yes 3	yes	yes 7	?	yes 15	yes 11	yes 3	?	yes 32	?
ERP	no	no	no	yes 11	yes 9	yes 10	yes 11	no	yes 10	yes 11	yes 11	no	no (past)	no
Employee Benefit Fund	no	no	yes 18	yes	yes 7	yes	?	yes 23	yes 10	yes	yes 35	?	yes	no
Corporate Welfare Expenditures in 1929														
Welfare Expenditures	?	\$9 million	\$9 million	\$4 million	?	?	\$10 million	\$7 million	\$2 million	\$4 million	?	\$1.3 million	?	?
As % of Payroll	?	2.3%	2.0%	3.0%	?	?	6.4%	5.8%	3.5%	5%	6%	6%	?	?
Total No. of Programs	6 to 9	7 to 8	8 to 10	12 to 15	12 to 15	14 to 15	14 to 15	13 to 14	11 to 13	13	10 to 12	9 to 13	12 to 13	4 to 10
Avg. Years of Experience	14.4	7.8	12.6	7.0	13.5	15.8	13.8	12.1	15.1	10.0	17.5	9.4	13.0	13.0
Normalized (A)	0.82	0.45	0.72	0.40	0.77	0.90	0.79	0.69	0.86	0.57	1.00	0.54	0.74	0.74
No. of IEM Programs	2 to 4	1 to 2	3 to 4	6	6	5 to 6	5 to 6	4 to 5	5	6	5	2 to 5	4	2 to 4
% of IEM Instituted (B)	50%	25%	58%	100%	100%	92%	92%	75%	83%	100%	83%	58%	67%	50%
"IEM" Index (avg. of A & B)	0.66	0.35	0.65	0.70	0.89	0.91	0.85	0.72	0.85	0.79	0.92	0.56	0.71	0.62

Source: See the Data Appendix.

Table 5. Impact of the Great Depression.

Program	Ford	GM	US Steel	B-Steel	IHC	GTR	GE	WE	DuPont	SO of NJ	P&G	EJ	Kodak	IBM
(1) The Severity of the Great Depression's Impact														
Net Sales Change	-79%	-71%	-66%	-71%	-74%	-57%	-67%	-83%	N.A.	-49%	-51%	-37%	-25%	-5.6%
Net Income Change	-122%	-100%	-99%	-97%	-110%	-95%	-94%	-115%	-66%	N.A.	-45%	-79%	-77%	-14%
Stock Price Change	N.A.	-90%	-93%	-95%	-92%	-96%	-91%	N.A.	-90%	-68%	-78%	-80%	-82%	-70%
"Severity" Index (A)	-1.00	-0.87	-0.86	-0.88	-0.92	-0.83	-0.84	-0.99	-0.78	-0.58	-0.38	-0.65	-0.61	-0.30
(2) Managerial Responses to the Great Depression														
Wage Change (B)	-30%	-30 to -20%	-20%	-15%	-25 to -15%	?	-20 to -10%	-10%	-10 to 0%	-10 to 0%	?	-10%	-5%	0%
Ratio of B to A (B')	0.30	0.29	0.23	0.17	0.22	?	0.18	0.10	0.06	0.09	?	0.15	0.08	0.00
Employment Change (C)	-72%	-50%	-30%	-53%	-58%	-50%	-53%	-80%	-20%	-20%	-28%	-12%	-24%	+18%
Ratio of C to A (C')	0.72	0.58	0.35	0.60	0.63	0.60	0.63	0.81	0.26	0.35	0.48	0.18	0.39	-0.60
<i>HRM Programs In Operation as of 1934</i>														
Disability Benefit	yes	—	—	yes	yes	yes	yes	yes	yes	curtailed	discont.	yes	yes	yes
Group Insurance	—	yes	curtailed	yes	—	yes	yes	yes	yes	yes	introduced	—	yes	introduced
Retirement Pension	—	—	curtailed	yes	yes	?	yes	yes	yes	curtailed	yes	curtailed	yes	—
Stock Ownership	—	discont.	discont.	discont.	suspended	—	—	discont.	—	discont.	yes	—	—	—
Savings & Investment	suspended	suspended	—	—	—	—	curtailed	discont.	—	—	—	yes	yes	—
Profit Sharing	discont.	—	—	discont.	?	—	suspended	—	—	—	—	curtailed	yes	—
Paid Vacation	—	—	—	—	?	?	suspended	yes	—	—	—	?	—	—
Housing Plan	—	discont.	discont.	suspended	—	yes	discont.	curtailed	discont.	?	—	curtailed	yes	—
Employee Magazine	yes	—	—	curtailed	yes	yes	yes	discont.	—	yes	—	?	—	yes
No. of Programs	2	3	2	3	1 to 3	0 to 2	3	3	2	1 to 2	0	0 to 2	0	0
Discont. or Suspended	2	3	2	3	1 to 3	0 to 2	3	3	2	1 to 2	0	0 to 2	0	0
% of Programs Discont.	50%	75%	50%	43%	17 to 50%	0 to 33%	38%	38%	40%	14 to 29%	0%	0 to 29%	0%	0%
Ratio of D to A (D')	0.50	0.86	0.58	0.49	0.36	0.20	0.45	0.38	0.51	0.37	0.00	0.22	0.00	0.00
<i>Emergency Relief Plans in 1929-1933</i>														
Work Sharing	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Relief Assistance	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
Dismissal Allowance	no	no	no	yes	no	yes	yes	yes	yes	yes	no	no	no	N.A.
Unemployment Benefit	no	no	no	no	yes	no	yes	no	no	no	yes	no	yes	N.A.
% of Plans Not Instituted (E)	75%	75%	50%	25%	25%	25%	0%	25%	25%	25%	25%	50%	25%	25%
Ratio of E to A (E')	0.75	0.86	0.58	0.29	0.27	0.30	0.00	0.25	0.32	0.43	0.43	0.77	0.41	0.83
"HRM Change" Index (avg. of B-E)	0.37	0.56	0.37	0.34	0.34	0.31	0.26	0.39	0.23	0.22	0.18	0.22	0.14	0.02
"Reputation" Index (avg. of B'-E')	0.56	0.65	0.44	0.39	0.37	0.37	0.31	0.38	0.29	0.31	0.30	0.33	0.22	0.06

Source: See the Data Appendix.

company as a result of the Great Depression. I define the “severity index” by the average of peak-to-trough declines in net sales, net income, and stock price between 1929 and 1933.⁹ The data again reveal substantial inter-firm variation, reflecting the different experiences of industries ranging from investment goods to consumer durables to consumption goods. The companies hardest hit by the depression were Ford, IHC, and WE, as their sales declined by approximately 80% and their profits turned negative at the trough of the depression. BS, GM, USS, BS, GE, and GTR were close behind, with a 60–70% decline in sales and more than a 90% decline in net income. The companies that suffered relatively less during the depression—DP, P&G, SONJ, EJ, and Kodak—experienced a 20–50% decline in sales and a 40–80% decline in net income. IBM was virtually untouched by the depression.

Section II of Table 5 documents managerial responses to the depression. I assess the change in HRM policies between 1929 and 1934 by four different measures: wages, employment, HRM programs, and emergency relief plans. All firms maintained a relatively stable work force size and hourly wage level until early 1931 *despite* a sharp decline in sales. In 1932, however, most firms resorted to wage and employment reductions. In particular, Ford, GM, BS, IHC, GTR, WE, and GE implemented massive dismissals, cutting 50–80% of their work force. In addition, most firms discontinued, suspended, or curtailed their HRM programs. In Table 5, “discontinuation” indicates that a plan was discontinued at once or permanently suspended, while “suspension” indicates that a plan was inactive as of 1934 but reinstated by 1937. “Curtailement” can indicate a reduction of benefits, tighter restrictions on eligibility, or an increase in employee contributions.

As firms often covertly inactivated or revised their programs, Table 5 likely understates the extent of these incidents.

Nevertheless, the data show that a majority of stock ownership plans, profit-sharing plans, and housing plans were discontinued. The rate of discontinuation/suspension was particularly high among Ford, GM, USS, and BS. Some employers, however, instituted costly relief plans during the depression. Work sharing was ubiquitous, and relief assistance, such as food baskets and emergency loans, was widely seen. BS, GTR, WE, DP, and SONJ went further to provide dismissal compensation to their blue-collar workers; most impressive, IHC, GE, P&G, and Kodak introduced private unemployment benefit plans.

I develop two proxies for breach of implicit contracts: the change in HRM policies in 1929–34 (which I call the “HRM change index”), and the change in HRM controlling for the severity of the depression’s impact experienced by a firm (the “repudiation index”). Theoretically, the latter is a better proxy for what employees perceive as “breach of contract” by management if they can observe business conditions. Anecdotal evidence, however, is mixed: some workers deemed any changes in stated HRM policies a violation of trust, while others viewed some revisions as inevitable; and most workers had incomplete information about their firm’s financial conditions. Therefore, what constituted breach of contract in the eyes of employees is an important empirical question. I define the “HRM change index” as the average of the four components (the percentage of wages cut, proportion of workers laid off, percentage of HRM programs discontinued, and percentage of common relief plans not instituted). The “repudiation index” is defined similarly except that each component is *divided* by the severity index. As reported in Table 5, measured by either index, Ford, GM, and USS breached the implicit contracts the most, while P&G, Kodak, and IBM maintained them the best.

3.1.3 Labor-Management Relations after the Depression

Table 6 documents the change in labor-management relations under the New Deal

⁹The main results are substantively unchanged in alternative specifications.

Table 6. Labor-Management Relations after 1935.

<i>Measure</i>	<i>Ford</i>	<i>GM</i>	<i>US Steel</i>	<i>B-Steel</i>	<i>IHC</i>	<i>GTR</i>	<i>GE</i>
Union Status	1941-CIO	1937-CIO	1937-CIO	1939-CIO	1941-CIO	1941-CIO	1936-CIO
Votes Cast for ILU or Nonunion	5% in 1941	3% in 1938	N.A.	26% in 1939	33% in 1938	27% & 45% in 1936	44% in 1936
Nature of Employment Contract	explicit	explicit	short, explicit	explicit	?	?	short, implicit
	<i>WE</i>	<i>DuPont</i>	<i>SO of NJ</i>	<i>P&G</i>	<i>EJ</i>	<i>Kodak</i>	<i>IBM</i>
Union Status	ILU	mostly ILU	mostly ILU	ILU	Nonunion	Nonunion	Nonunion
Votes Cast for ILU or Nonunion	Majority	57% in 1941	80% in 1942	Majority	82% in 1940	75% in 1956	N.A.
Nature of Employment Contract	?	implicit	implicit	simple, implicit	?	implicit	?

Source: See the Data Appendix.

labor laws. When the National Industrial Recovery Act (NIRA) of 1933 recognized workers' right to bargain collectively, a large number of employers instituted ERPs for the first time to meet the letter of the law. The Wagner Act of 1935 subsequently outlawed ERPs (or any employer-sponsored labor organizations, for that matter) and created a powerful legal enforcement agency, the National Labor Relations Board (NLRB). Employers dissolved their ERPs in compliance, but some of the programs were reconstituted as *independent local unions* (ILUs) unaffiliated with any national unions. A fierce rivalry between ILUs and industrial unions ensued in major companies. Eventually, a majority of ILUs either were disestablished by the NLRB or lost against industrial unions in representation elections, and the number of ILUs declined from more than 1,500 in 1935 to fewer than 300 in 1947 (Harris 1982; Millis and Montgomery 1945:523, 852–53; Jacoby 2000). I measure the change in labor-management relations after the depression by a composite of (1) union status, (2) the percentage of votes cast either for ILUs or for remaining nonunion in representation elections, and (3) the nature of employment contracts developed after 1935.

The sample firms can be divided into two groups by their union status. The first

group was organized by industrial unions by the early 1940s. Within this group, the management of GE and USS voluntarily recognized the industrial unions early, in 1936–37. GM was unionized in 1937 after the famous sit-down strike. Ford, BS, IHC, and GTR took a more combative stance, but their major establishments were unionized by the CIO by 1941. The second group of firms, by contrast, remained largely unorganized by outside unions. At major establishments at WE, DP, SONJ, and P&G, their ILUs received majority votes in elections throughout the 1940s despite repeated challenges by the industrial unions. Because the ILUs were the successors of ERPs, employees' continuing support after the Wagner Act can be seen as an indication of their approval of corporate welfarism. All or almost all establishments of Kodak, EJ, and IBM remained nonunion, uncontested by the industrial unions, well into the post-war period. To obtain a finer measure of employee support, I report the percentage of votes cast either for ILUs or for remaining nonunion in the earliest representation elections held by the NLRB.¹⁰ As Table

¹⁰The results of all NLRB certified representation elections after 1935 are reported in *The Decisions and Orders by the National Labor Relations Board*.

Table 7. Company Ranking.

<i>A. Effectiveness of IEMs</i>	<i>B. Severity of Great Depression's Impact</i>	<i>C. HRM Change during Depression</i>	<i>D. "Repudiation" during Depression</i>	<i>E. Change in L-M Relations after Depression</i>
1. P&G	1. Ford	1. Ford	1. GM	1. GM
2. GTR	2. Western Electric	2. GM	2. Ford	2. Ford
3. IHC	3. IHC	3. Western Electric	3. US Steel	3. US Steel
4. GE	4. B-Steel	4. US Steel	4. B-Steel	4. B-Steel
5. DuPont	5. GM	5. IHC	5. Western Electric	5. IHC
6. SO of NJ	6. US Steel	6. B-Steel	6. IHC	6. GTR
7. Western Electric	7. GE	7. GTR	7. GTR	7. GE
8. Kodak	8. GTR	8. GE	8. EJ	8. DuPont
9. B-Steel	9. DuPont	9. IHC	9. GE	9. SO of NJ
10. Ford	10. EJ	10. EJ	10. SO of NJ	10. Western Electric
11. IBM	11. Kodak	11. SO of NJ	11. P&G	11. EJ
12. US Steel	12. SO of NJ	12. P&G	12. DuPont	12. P&G
13. EJ	13. P&G	13. Kodak	13. Kodak	13. Kodak
14. GM	14. IBM	14. IBM	14. IBM	14. IBM

Source: Tables 4, 5, and 6.

6 shows, even though the industrial unions won a majority, a sizable proportion of employees at BS, IHC, GTR, and GE voted for the ILUs.

The last row of Table 6 reports the nature of union contracts (or, at nonunion establishments, employment contracts) at major establishments concluded after the depression. Reflecting relatively cooperative labor-management relations, the employment contracts at GE, DP, SONJ, P&G, and Kodak were implicit, often short and simple, restating much of the content of existing corporate HRM policies without specifying details. By contrast, reflecting adversarial union-management relations, the union contracts at Ford, GM, USS, and BS were explicit and more detailed. These contracts established seniority rules that minimized managerial discretion in layoffs and rehiring, and set up a formal grievance procedure with third-party arbitration.

Aggregating these factors into a numerical index is difficult, but the data exhibit three distinct patterns. Ford, GM, and USS

underwent a discontinuous change from nonunion to industrial unionism and from implicit to explicit contractual relations. WE, DP, SONJ, P&G, EJ, Kodak, and IBM underwent only minor change, remaining unaffiliated with the industrial unions and maintaining implicit and discretionary employment contracts. Intermediate between those two groups were BS, IHC, GE, and GTR: although these firms were organized by the industrial unions, their ILUs received nontrivial employee support in the representation elections, and their early union contracts were simpler and less explicit than those at Ford, GM, and USS.

3.2 Interpretation

The company-level data presented above reveal considerable heterogeneity across the elite welfare capitalists. Table 7 reports the rank order of the fourteen firms based on five variables: (a) the effectiveness of IEMs that were in place prior to the depression, (b) the severity of the depression's

Table 8. Rank Order Correlation Coefficients.

	<i>Effectiveness of IEMs</i>	<i>Severity of Depression's Impact</i>	<i>HRM Change</i>	<i>"Repudiation"</i>	<i>Change in L-M Relations</i>
Effectiveness of IEMs	1.00	-0.13	-0.24	-0.38*	-0.22
Severity of Depression's Impact		1.00	0.93**	0.84**	0.75**
HRM Change			1.00	0.95**	0.86**
"Repudiation"				1.00	0.87**
Change in L-M Relations					1.00

*Statistically significant at the 10% level; **at the 1% level.

economic impact, (c) HRM change during the depression, (d) the degree of "repudiation" (that is, HRM change conditional on the severity of the depression's impact), and (e) the change in labor-management relations under the New Deal regime. Table 8 reports the Spearman rank order correlation coefficients. The merit of using rank order correlation, at the expense of cardinal information, is twofold: it is a nonparametric estimation that requires no distributional assumptions, and it is more robust with respect to measurement errors. Recall that the predictions of the implicit contract theory are that (1) controlling for the effectiveness of IEMs, more severe economic effects from the depression will induce a greater change in HRM policies; (2) controlling for the severity of the depression's impact, weaker IEMs will be associated with greater breaches of contracts; and (3) greater breaches of contracts will be associated with greater change in labor-management relations.

First, observe that the correlation between the severity of the depression's impact and the HRM change is positive and significant at the 1% level ($r = 0.93$).¹¹ Although this does not control for the level of IEMs, given little correlation between the depression and the IEMs, it supports the first theoretical prediction. Second, the

correlation coefficient between the effectiveness of IEMs and the degree of "repudiation" is negative and significant at the 10% level ($r = -0.38$), confirming the second prediction. Turning to the third implication, recall that theoretically the "breach of contract" can be proxied by either the HRM change index or the repudiation index. The correlation coefficient between the change in labor-management relations and the first proxy is 0.86, while the coefficient between that and the second proxy is 0.87 (both are significant at the 1% level). Thus, with the present data, I am unable to determine which proxy better represents employees' perception of the breach of contract. Nevertheless, the results are consistent with the third implication, indicating that greater breaches of implicit contracts during the depression led to greater changes in union status and employment contracts.

The above analysis treats both the level of IEMs and the severity of the depression's impact as sources of exogenous variation. Needless to say, the former is endogenous to managerial decisions. In particular, it seems reasonable to suppose that when a business contraction is anticipated, firms in more cyclical industries are less likely than other firms to commit to implicit contracts, and thus are likely to choose weaker IEMs. This concern turns out to be unfounded: Table 8 shows no statistically significant correlation between the level of IEMs and the severity of the depression's economic impact ($r = -0.13$). A potentially more serious concern is that the choice of

¹¹The one-sided test for the rank order correlation statistics is based on its exact distribution reported by Otten (1973).

Table 9. Summary.

	<i>Mild Impact from Depression</i>	<i>Severe Impact from Depression</i>
Strong IEMs	I: P&G, DuPont, SO of NJ	II: GE, IHC, GTR
Weak IEMs		III: GM, US Steel, Ford

IEMs may be correlated with firm characteristics, such as technology, which in turn are correlated with the managerial response to the depression. If this is the case, IEMs by themselves might not have restrained firms from repudiating the contract. Unfortunately, the current sample size does not allow me to control for other firm characteristics. Partly to address this concern, in the following section I conduct a comparative case study and investigate the role of IEMs.

To present the main findings in another way, Table 9 splits the sample firms into three groups according to the two independent variables. The first set of firms (P&G, DP, and SONJ) implemented corporate welfarism with strong IEMs and experienced a relatively “mild” depression impact. The second set of firms (GE, IHC, and GTR) had similarly strong IEMs in place but experienced a severe business contraction. The third set of firms (GM, USS, and Ford) had only weak IEMs but experienced comparably severe depression effects.¹² In terms of the dependent variables, the first set of firms exhibited a small change in HRM policies, remained largely nonunion or covered by an ILU, and continued to use implicit employment contracts. The third set of firms, by contrast, witnessed a drastic change in HRM policies, the advent of industrial unionism, and the conclusion of explicit employment contracts. Firms in the second set were an intermediate case: although these firms were organized by

industrial unions, their ILUs received higher employee support, and their employment contracts were less explicit and legalistic, than those of the third set of firms.

In summary, the data show that, for a given level of IEMs, the change in HRM policies was greater if the impact felt from the depression was more severe, and for a given magnitude of the depression’s effects, the change in HRM policies was smaller if the IEMs were more effective. The extent to which implicit contracts were breached (as measured by the change in HRM policies either with or without controlling for the depression’s impact) was positively associated with the change in labor-management relations under the New Deal regime. The company-level data are thus consistent with the implications of implicit contract theory, confirming Jacoby’s original insights.

4. Case Study Analysis

To supplement the quantitative data and investigate the causal relations implied by implicit contract theory, in this section I present a comparative study of General Electric and General Motors. Both GE and GM were founding members of the Special Conference Committee (an exclusive committee devoted to the study of personnel policies), and the Great Depression’s effects on the two were of comparable severity. Yet, as documented above, they differed considerably in their responses to the depression and subsequent developments in HRM policies. Did the internal enforcement mechanisms really matter? Did management’s “repudiation” of implicit contracts affect employees’ beliefs? The following analysis documents internal dy-

¹²There is a fourth set of firms (Endicott Johnson) with weak IEMs and a “mild” depression impact, conditions that are associated with an intermediate change in HRM, nonunion, and implicit contracts.

namics that led to the divergent outcomes and confirms the subtle but important role of IEMs.

4.1 General Electric

4.1.1 *GE Benefit Plans*

Among the fourteen companies, GE is notable for having instituted one of the most comprehensive HRM programs. At the Schenectady Works, its largest plant, management introduced a non-contributory pension plan in 1912, and in 1915 it inaugurated a supplementary compensation plan that offered 5% of annual wages to employees with five or more years of service. A paid vacation plan was introduced in 1917 and liberalized in 1929, providing employees with one week of vacation after three years of service and two weeks after ten years of service. An employee stock ownership plan and a non-contributory group life insurance plan were instituted in 1920 (Annual Reports 1912–29).

The experience of the 1921 recession prompted GE to increase the financial stability of its benefit plans. In 1922, in addition to setting up a pension reserve, GE replaced the stock ownership plan with a savings and investment plan and established the GE Employees Securities Corporation (GEESC). Under the new plan, an employee could purchase ten-year bonds issued by the GEESC paying 6% interest, to which the company promised to add 2% as long as the original purchaser remained employed and retained the bonds (AR 1930).¹³ The GEESC invested its funds in GE stocks and public utility securities, and it soon became the largest single holder of GE common stock. In the late 1920s, consistently over 40% of employees participated in the savings and investment plan, holding on average \$800 to \$1,000 worth of bonds (AR 1925–30). In 1924, GE adopted a corporate housing plan to help employees purchase homes (AR 1925). In 1928, it

established a pension trust with an initial corporate contribution of \$5 million. In addition, it introduced a contributory pension plan with a lower retirement age, in which employees with more than five years of service were required to participate. By 1929, GE had accumulated more than \$12 million in the pension trust, which helped the company keep its pension plan during the Great Depression without any revisions (AR 1929).

4.1.2 *Human Capital Investment at GE*

GE was a leading manufacturer of electrical products in both capital and consumer goods. In 1930, approximately 25% of GE workers in major plants were skilled, 60% were semiskilled, and the rest were unskilled (Schatz 1979:588). At Schenectady, except for the refrigerator department, the major divisions did not employ mass production technology, and product quality was emphasized over quantity. Management considered the retention of semiskilled workers no less important than the retention of skilled craftsmen. Internal studies had found that the cost of turnover could be higher for the semiskilled than for the skilled, because machine tenders obtained most of their skills through on-the-job training (Alexander 1914). Management believed that employees with longer tenure possessed greater experience and skills and hence were more valuable to the company, acknowledging a firm-specific component of human capital (AR 1928).

GE had operated formal apprentice schools since 1902, offering extensive training courses. The courses combined practical training in the shop with classroom instruction given by full-time company instructors. Each apprentice was paid low wages during the program and awarded a bonus at its completion, contingent on satisfactory performance. The company offered jobs to qualified graduates of the program, insofar as business conditions permitted (*The Apprentice System, West Lynn* 1924; Nelson-Rowe 1991:36–38). The company viewed the apprentice system as a means not merely to increase the supply of

¹³The 8% interest rate was substantially higher than the risk-free interest rate of 4% at that time.

skilled labor, but also to foster favorable employer-employee relations, instill diligence and loyalty, reduce labor turnover, and identify potential foremen. Almost three-quarters of the apprentice graduates subsequently moved into skilled occupations or supervisory positions at GE or other companies, and those who stayed with GE were much more likely to be promoted to foreman and beyond than those who went to other firms (Nelson-Rowe 1991:40–41). GE retained 28% of the 1903–17 apprentice graduates as its employees in 1931. In addition to the apprentice training, GE offered electrical courses and business training courses for high school graduates, business and factory training for college graduates, and foremen training courses (Duncan 1932:41–53).

4.1.3 Internal Enforcement Mechanisms at GE

GE employees were actively involved in the administration of the HRM programs. A joint safety committee was introduced to every shop by the late 1910s. A formal suggestion system was introduced in 1922, accepting suggestions for improving working conditions, safety, and efficiency. Awards were offered for suggestions that led to tangible savings for the company, and to ensure fairness, employee representatives were present when suggestions were reviewed. In a typical year, GE employees made more than 16,000 suggestions, and management adopted 30% of them and awarded a total of \$60,000 (AR 1928–30, 1942). To better communicate with employees, starting in the 1910s the company issued a monthly employee magazine, *General Electric News*, at each plant. The magazine reported a summary of ERP meetings and reprinted the balance sheet and income account of the GEESC (*General Electric News*, Schenectady, April 6, 1928). The company distributed employee handbooks and benefit pamphlets that clearly laid out the rules and regulations of benefit plans, notifying workers of any revisions. In a characteristic manner, the company pension pamphlet tabulated expected pension

benefits according to weekly earnings and years of service (*GE Group Life Insurance Plan*, 1929; *Pension Plan*, 1929; *Additional Pension Plan*, 1929). At each plant, employees sponsored recreational activities, such as athletic teams and social gatherings, with company assistance.

At GE, an ERP was first introduced at Lynn in 1918. Due to employees' opposition, no ERP was introduced at Schenectady until 1924. At Erie, the ERP consisted of six joint committees with equal numbers of employee and management representatives, covering ERP elections and administration; the adjustment of wages and working conditions; efficiency, economy, and suggestions; safety; athletics, health, and entertainment; and education (*Plans of Representation of Employees, GE Erie Works*, 1920). The ERP thus facilitated joint administration in major areas of personnel management. The representatives met monthly, and the records and minutes of the meetings were posted on bulletin boards. Since most employee benefits were determined based on length of service, a policy concerning discharge and layoff became an important issue. While giving foremen full authority, the ERP explicitly protected employees' right to appeal to the joint committee decisions concerning transfers, layoffs, or discharges (*GE Lynn Plan of Representation*, 1923; *GE Information and Rules for Employees*, 1922).

After interviewing managers and workers at Lynn, Morrow (1921) reported that, although various criticisms were voiced, most agreed that the ERP provided communication channels between employees and management; trained employee and company representatives to base their judgments on fact; acquainted management with shopfloor conditions; educated employees in business economics; and increased production. Even though management retained the final say, out of 476 cases handled by the ERP during 1919–25, 205 cases, or 43%, were settled in favor of employees (Burton 1926:270). Based on his first-hand observations at Schenectady, Derber reported that, although initially the ERP was just a "sounding board" for management

policies, as workers realized that no other means of representation was near, they used and extended the plan (Millis 1942:749 [Chapter 14, by Milton Derber]). During the 1920s, employee representatives played an increasingly active role in communicating employees' viewpoints to management, which resulted in the adoption or modification of several HRM programs (Morrow 1921; Millis 1942:750; AR 1927; Hirao 1998, Chapter 6).

Reflecting the comprehensive HRM programs, GE's welfare expenditures were non-trivial. In my estimate, in the late 1920s, the company annually spent \$7 to \$10 million, or 5.3–6.4% of total payroll, on major programs, which amounted to more than \$100 per employee.¹⁴ During the 1920s, the company reported low accident rates, virtually no labor disputes, and low employee turnover, which management attributed largely to its HRM policies. At Schenectady, the number of lost-time accidents fell by a factor of ten between 1914 and 1926 (Wise n.d.:283). At the end of the 1910s, labor turnover at major GE plants was over 50%. As the layoffs of the 1921 recession cut back the work forces to core employees, turnover fell by half in 1922, and it remained low for the rest of the decade.¹⁵ In 1928, 58% of GE employees had more than five years of service at the company, and 26% had more than twenty years (AR 1928).

4.1.4 GE during the Great Depression

The electrical industry was hard hit by the Great Depression, recording a 76%

peak-to-trough decline in production. From 1929 to 1933, GE's sales declined by 67% and its stock price by 91%. Although GE remained in the black throughout the 1930s, after paying dividends to stockholders the company recorded deficits between 1931 and 1934 (AR 1929–34). During the depression, management tried to protect the "corps of skilled and loyal employees" in which the company had invested during the previous decades (Schatz 1983:58–60). Management instituted work sharing to prevent large-scale layoffs and provided extensive relief effort. In 1930, after conferring with the ERPs, the company announced an employment stabilization program. At its core was an unemployment benefit plan, which operated under the principle of equal contribution and joint administration between management and employees (*GE Unemployment Pension Plan*, 1930). For the first two years of the depression, despite a 50% decline in sales, GE maintained 75% of its work force.

By the end of 1931, however, GE announced a 10% wage cut, breaking its earlier pledge to President Hoover. By 1933, the work force was reduced to less than half of its 1929 level. According to the company rules, employees who had been laid off for more than 12 months lost their service records (*GE Information and Rules for Employees*, 1922). Moreover, GE discontinued home-mortgage assistance, canceled paid vacations, and suspended the 5% supplementary compensation for blue-collar employees, while keeping an extra compensation plan for salaried employees (AR 1932–33; Schatz 1983:60). The company also revised the savings and investment plan and lowered its interest payments. Accordingly, estimated welfare expenditures at GE declined from \$10 million in 1931 to \$6 million in 1933. Workers were deeply disturbed by reduced earnings, depression layoffs, and discontinued benefits (Millis 1942:751). In addition, as the depression deepened, HRM plans that had satisfied employees in the expansive economy began to invite resentment. For example, the policy that weighed merit and family needs as well as seniority in determining layoffs

¹⁴The estimate is based on GE annual reports, employee magazines, and benefit pamphlets. It includes corporate expenses for pensions, supplementary compensation, group life insurance, savings and investment plans, paid vacation, suggestion plans, and employee magazines. I find no data for training and education, ERPs, medical services, recreational activities, or administrative costs. The expenditures are net of employee contributions, and any plans pertaining only to white-collar employees are excluded.

¹⁵Labor turnover in U.S. factories declined in general in the 1920s, which can be attributed partly to labor supply conditions and partly to corporate HRM policies. See Berridge (1929) and Owen (1995).

caused little difficulty in the 1920s, but discontent flared during the depression (Schatz 1983:61). Similarly, employees with more than five years of service were required to enroll in the additional contributory pension plan. Although the employees largely welcomed these arrangements in the 1920s, the payments became a burden as their earnings declined 30% during the depression.

4.1.5 Unionization of GE

Stimulated by the discontent, a group of GE workers at several plants secretly started unions around 1932. With the passage of the NIRA in 1933, these unions came into the open and began organizing in earnest. In response, management renamed the existing ERPs "Workers' Councils" and withdrew management representatives. As the business recovered, the company gave increasing concessions to workers through Workers' Councils, including wage increases, new overtime pay, and the restoration of the supplementary compensation plan. Even after the passage of the Wagner Act in 1935, the Workers' Council at Schenectady received 86% of employees' votes in a company-held election. The union, which became a local of the United Electrical and Radio Workers of America (UE), challenged the election result and filed a petition with the NLRB in 1936. Contrary to widely held expectations, the UE local won against the Schenectady Workers' Council in a representation election, receiving 56% of total votes. The Council was disbanded three days later. Top management of GE subsequently decided to accept the UE at the corporate level, which took even union officials by surprise (Millis 1942:751; Schatz 1983:63).

Despite corporate acceptance, the UE had difficulty organizing GE workers. By 1938, seven establishments employing 30,000 workers were unionized, but more than 45,000 workers remained nonunion. After the Supreme Court's 1937 decision validating the Wagner Act, remaining Workers' Councils at GE became independent local unions and kept challenging the UE.

Contemporaries noted employees' loyalty to the company, which was nurtured by extensive benefit plans and a variety of social and recreational facilities over the years, as the major obstacle to unionization (Millis 1942:759). In fact, my estimates indicate that although GE's welfare expenditures declined by 40% from 1929 to 1933, the company still spent \$6 million on the programs every year between 1933 and 1936, \$2 million of which went to unemployment benefit disbursements. As GE restored supplementary compensation in 1934 and paid vacations in 1935, and introduced a cost-of-living adjustment plan in 1937, its welfare expenditures at the end of the 1930s surpassed the pre-depression level.

Even though the economic crisis and unionization process strained GE's labor-management relations, its HRM policies showed strong continuity before and after the depression. The first GE-UE contract signed in 1938 was, in principle, a restatement of existing corporate policies. During the contract negotiation, the UE proposed to convert a company booklet into a one-year national contract with minor changes, to which GE management agreed. The contract was short and simple, and was drafted without the aid of lawyers, as "neither party had the slightest intention of going to court" to seek its interpretation or enforcement (Matles and Higgins 1974:83-88). As a result, HRM programs pertaining to blue-collar workers at GE continued with little modification *except for* two important changes. First, when the Social Security Act instituted public pensions and unemployment insurance, GE de facto discontinued the pension plan for blue-collar employees and abolished the unemployment benefit plan (AR 1935-36). Second, as the UE pressed for seniority rules to protect its officials, seniority was applied with growing strictness at GE, and the burden of proving that ability and other factors outweighed the length of service fell increasingly on management (Millis 1942:752-55). These changes notwithstanding, corporate welfarism based on implicit incentive contracts and cooperative employer-employee relations continued to characterize GE.

4.2 General Motors

4.2.1 GM Benefit Plans

To contemporaries in the 1920s, General Motors was not only a leading automobile manufacturer but also a prominent welfare capitalist. The company had operated a large-scale housing program since 1910, selling houses to its employees at cost less a liberal allowance. GM's annual investment in housing developments exceeded \$10 million in the late 1920s (AR 1925–30). The company instituted a bonus plan in 1918 to reward employees with "conspicuous service" and a savings and investment (S&I) plan in 1919. The 1921 recession, during which GM incurred a loss of \$38 million, led to some revisions. Management restricted the eligibility of the bonus plan to employees with an annual salary of \$5,000 and above, disqualifying blue-collar employees, and reduced the corporate contribution to the S&I plan by one-half (AR 1921).

Under the amended S&I plan, an employee could make an annual deposit up to \$300 into a savings fund that would bear 6% interest. The corporation would contribute an amount equal to 50% of the employee's savings to a separate investment fund, which would be invested in GM common stock. The total amount in the investment fund was credited to the employee after five years *if* he remained employed and kept his savings undisturbed.¹⁶ Forfeitures in the investment funds due to withdrawals before maturity or separation from the company would revert to the company. To reduce financial risk, the company guaranteed employees a minimum benefit equal to 50% of their original savings.

During the 1920s, the S&I plan proved to be highly profitable for both the employer and employees thanks to capital appreciation. Accordingly, the number of employees participating in the S&I plan increased dramatically, exceeding 70% of the GM

work force by the end of the 1920s. The percentage of employees receiving benefits at maturity was much smaller but also increasing: in 1930 approximately 12% of GM employees received average payments of \$435 for the initial savings of \$124. Of the deposits made in 1925, one-third were withdrawn before maturity and two-thirds remained intact (AR 1920–30).

In addition to the S&I plan, GM established an employee stock ownership plan in 1924 under which the company paid \$2 per share purchased by employees for five years as a special inducement. In 1927, management introduced a joint-contributory group insurance plan that assisted employees with three months of service to purchase \$1,000 life insurance policies. The plan was soon expanded to include health and non-occupational accident benefits. In 1929, 99% of eligible employees participated in the plan, receiving on average \$18 of insurance payments for death, disability, sickness, and injury (AR 1924–29).

4.2.2 Human Capital Investment at GM

Starting in the early 1920s, GM operated training programs for autoworkers in Flint. Upon sponsoring education programs for blue-collar workers, the company emphasized two objectives: to offer practical courses, and to "identify and train promising young men" for future leadership positions. In 1922, the company began offering four-year apprenticeship programs at the Flint Institute of Technology, in addition to executive and sales training courses. The programs covered such subjects as auto mechanics, metallurgy, electricity, accounting, automotive design, tool design, and die design. By 1926, the Institute was renamed the General Motors Institute of Technology and was incorporated as a non-profit educational institution, extending its service to other GM divisions. The number of students enrolled at the institute surpassed 11,000 in 1928. It continued to operate throughout the Great Depression, but its total registration fell by 80% from 1930 to 1932 (Young and Tuttle 1969:26–33, 61).

¹⁶Employees could apply their savings to mortgage payments under the GM housing plan without losing any benefits.

It is worth noting that the U.S. automobile industry was still in the early stage of mass production in the 1920s, with less than 20% of automobile workers engaged in assembly-line operations. According to the 1930 Census of Manufacturing, 24% of wage earners in the industry were skilled and 76% were semiskilled or unskilled. In 1935, 24% of GM employees in Flint factories were skilled mechanics, machinists, or blacksmiths, and 55% were semiskilled operators (Fine 1969:54). In other words, the skill composition of the GM work force was fairly comparable to that of the GE work force.

4.2.3 *Internal Enforcement Mechanisms at GM*

In sharp contrast to GE, GM instituted few policies that facilitated labor-management communication and employee involvement in the 1920s. GM sponsored a variety of recreational programs in Flint and other cities where its plants were located, and a majority of GM employees participated in these programs. The company, however, had no ERP prior to the passage of the NIRA, and foremen assumed the primary responsibility for adjusting individual grievances at each plant before 1933. The company's first employee magazine, *GM Folks*, was published in 1930. It was only in 1934 that the first director of the industrial relations department was appointed in the central office, and not until 1937 were personnel programs centralized in a single department at GM (Fine 1969:23–28). Although management claimed that it had been a corporate policy to encourage suggestions from employees, a formal suggestion system comparable to GE's was established only in 1942 (AR 1942–43).

According to my estimate, in the late 1920s, GM annually spent \$4–9 million on major HRM programs, which was on average 2% of its annual payroll, or \$40 per employee.¹⁷ The reasons for the lower cor-

porate welfare expenditures per employee at GM than at GE are twofold. First, GM instituted fewer programs pertaining to blue-collar employees. The company did not have a pension or paid vacation plan, and its supplementary compensation plan was restricted to higher-income employees. Second, many of the programs at GM were joint-contributory ones, with employees sharing the cost.

4.2.4 *GM during the Great Depression*

The automobile industry was severely affected by the Great Depression, recording a 74% decline in production. At GM, total sales declined by 71% and the stock price by 90% during 1929–33. Like GE, GM remained in the black throughout the depression, but dividend payments far exceeded net income in 1931 and 1932. In 1932, the company paid no executive bonuses and cut back its dividends on common stock by 60% (AR 1932). During the first year of the depression the company laid off 25% of its workers, and by the end of 1932, 50% of GM workers had lost their jobs. Compared to GE, GM reduced its work force more quickly without resorting to extensive work sharing, and it instituted no corporate-wide relief programs.

In 1930, management discreetly discontinued the stock ownership plan, although it kept paying the special inducement for those who had already subscribed. The company also dropped the clause in the S&I plan that guaranteed payments at maturity equal to 50% of the original deposit (AR 1930–35). In 1931, management emphasized that the S&I plan was serving as an emergency reserve for employees as intended, observing that employees had withdrawn \$35 million from the S&I funds during 1930–31 (AR 1931; Fine 1969:26). By 1932, total withdrawals reached \$78 million, at which point management an-

¹⁷The estimate is based on GM annual reports and includes the cost of operating the S&I plan, the stock

ownership plan, the group insurance plan, and medical and health services. No data are available for the housing program, training and education, recreational activities, or administrative costs.

nounced the suspension of the S&I plan. In the same year, reporting an increasing number of cancellations of housing contracts and employees' inability to maintain payments, GM stopped building houses and began to liquidate its housing investment.¹⁸ The S&I plan was resumed in August 1933, but the corporate contribution was curtailed to 25% from 50% and interest was lowered to 5% from 6%. In the early 1930s, forfeitures in the investment fund rose dramatically. For instance, 82% of employees who had participated in the plan in 1928 did not receive benefits, either because they made early withdrawals or because they were laid off. Since all forfeited benefits reverted to the company, ironically the corporation made a profit from the S&I plan in 1933 and 1935 (AR 1928–36).

Reflecting these changes, estimated welfare expenditures at GM fell from over \$9 million in 1931 to an annual average of less than \$2 million during 1933–36. According to Fine (1969), during the depression years there were increasingly bitter complaints from workers: some lost their GM homes because they could not maintain their payments; others felt that the S&I plan was a “big detriment” to them because the principal benefit was lost when they lost their jobs; and, above all, employees resented the fact that they had no say in the administration and that management could unilaterally change the rules or abandon the HRM programs whenever it saw fit (p. 26).

4.2.5 Unionization of GM

The process of unionization at GM was bitter and confrontational. Management decided to introduce ERPs immediately after the passage of the NIRA in 1933. The plan was drafted and distributed to its divisions and was inaugurated without asking for employees' approval. The ERPs nevertheless provided a formal mechanism through which employees could voice their grievances for the first time, contributing

¹⁸By 1939 GM had completely divested from the subsidiary housing companies.

to some improvements in working conditions. Management also developed foremen courses at the GMI to help implement the ERPs. GM's effort to facilitate bilateral communication and employee involvement, however, came too late. Most workers deemed the ERPs managerial instruments, and foremen had difficulty accepting the concept of employee representation, as it was a radical departure from the past methods (Fine 1969:44–46; Young and Tuttle 1969:63).

In the meantime, the United Automobile Workers of America (UAW) began organizing GM plants. Initially, in the face of managerial opposition, the UAW had little success. In 1936, GM workers occupied production facilities at Flint, which culminated in the famous sit-down strike that lasted six weeks. In a concurrent development, congressional hearings led by the La Follette Committee uncovered illegal anti-union practices conducted by GM management since 1933.¹⁹ As the findings were widely publicized, the reputation of GM as a welfare capitalist fell apart. Even though the sit-down strike was effectively an illegal seizure of private property, state government did not intervene. In 1937, GM eventually agreed to recognize the UAW as a bargaining agency in its 17 plants. In the 1938 NLRB-certified election held at the Chevrolet plant, only 3% of GM employees voted against the UAW. The UAW won representation at 48 GM plants employing 120,000 workers in 1940 alone (Fine 1969:323–29).

GM signed the first union contract with the UAW in March 1937. Compared to the GE-UE contract, the GM-UAW contract exhibited two notable features.²⁰ First, it

¹⁹According to the committee report, GM employed 14 detective agencies for extensive labor espionage against unions and spent more than \$1 million on espionage, strikebreaking, and munitions over the years 1933–36 (U.S. Senate 1937).

²⁰*Agreement between General Motors Corporation and the International Union of United Automobile Workers of America*, February 11, 1937, and March 12, 1937, Box 9, Non-Current Collective Bargaining Agreements Files 6030, Labor-Management Documentation and Archives, Cornell University.

explicitly stipulated the application of seniority rules in layoff and rehiring, eliminating managerial discretion to use other criteria. Second, the contract spelled out the grievance procedure in great detail. The formal grievance procedure provided an effective mechanism for conflict resolution in the presence of adversarial labor-management relations.

The Great Depression and New Deal legislation brought about a discontinuous change in HRM policies and employment relations at GM. The S&I plan was discontinued in 1935 due to “uncertainty concerning legal requirements” under the Securities Exchange Act and the Social Security Act (AR 1935–36). The only remaining benefit program pertaining to blue-collar employees was the group insurance plan.²¹ Accordingly, welfare expenditures at GM remained below the pre-depression level throughout the 1930s and the early 1940s. By contrast, in 1940, GM established a pension plan and a separation allowance plan exclusively for salaried employees (AR 1940–42). While GM maintained implicit contractual relations with the white-collar employees, labor-management relations with the blue-collar employees evolved toward explicit contracts and industrial jurisprudence after the 1930s.

4.3 Discussion

The comparative analysis of GE and GM confirms the role of IEMs and lends further empirical support to implicit contract theory. In the absence of labor-management communication and joint administration, GM management could and did unilaterally discontinue its major pecuniary programs during the depression. By contrast, at GE, most changes were made upon consultation with employee representatives. Similarly, while GM’s ERPs were introduced in haste after the passage of the NIRA and received little support from em-

ployees, GE’s ERPs were in operation starting in the 1920s and continued to receive substantial employee support throughout the 1930s. By the early 1940s, adversarial labor relations at GM resulted in the development of explicit and detailed union contracts, while relatively cooperative labor-management relations at GE led to the reinstatement of implicit and discretionary contracts.

The case study also provides new insights that merit further theoretical and empirical investigation. Why was GE more committed to corporate welfarism than GM? The analysis so far treats the level of IEMs as an exogenous firm characteristic. Although endogenizing the choice of IEMs is beyond the scope of this paper, the case study suggests several hypotheses.²² First, the choice may reflect differences between the two companies in the nature of human capital. Recall that the capital-labor ratios at GE and GM (in Table 3), as well as the two companies’ skill compositions, were similar, indicating that human capital was equally important for them. The evidence, however, suggests that GE workers might have been more “irreplaceable” than GM workers in at least two ways: first, their skills and knowledge were more firm-specific, and second, GE had access to smaller labor markets, given its relatively isolated plant locations. If so, the implicit contract theory predicts that higher returns from human capital investment at GE should lead to a higher level of corporate commitment.

Alternatively, the choice of IEMs may reflect corporate culture or the ideology held by top management independent of economic calculations. In particular, GE’s progressive CEO, Gerard Swope, was often portrayed as a major force behind its HRM policy (McQaid 1977). Or it may reflect the difference in organizational structure. As an early adopter of the multi-divisional form, GM might have had a wider division

²¹An income security and layoff benefit plan was introduced in 1939 but discontinued after two years.

²²I thank two anonymous referees for suggesting alternative hypotheses to the human capital explanation.

between blue-collar and white-collar employees than GE did in the 1920s (Chandler 1962). As such, GM might have been more reluctant to institute such IEMs as joint administration and ERPs crossing the collar line. Finally, the level of commitment may have been determined by corporate governance structure. Most notably, a higher degree of employee ownership at GE than at GM might have better represented employee interests vis-à-vis shareholder interests in formulating corporate policies.²³ Further investigation of these alternative hypotheses would be important future work.

5. Conclusion

I have used company-level data and a comparative case study to reassess the impact of the Great Depression on private welfare capitalism. The analysis confirms that the severity of the depression's impact was the primary cause that induced management to abandon corporate welfarism. This breach of implicit contracts in turn led workers to abandon company unionism in favor of industrial unions and to develop explicit contracts that minimized managerial discretion. The analysis also suggests that, among the firms that suffered comparably severe consequences from the depression, those with stronger internal enforcement mechanisms better maintained corporate welfarism and cooperative labor relations. Applying a contract theory to historical data, this paper provides a better understanding of the dynamic evolution of HRM practices during the interwar period.

Projecting the main findings to a broader historical context, note that firms that maintained corporate welfarism throughout the depression were exceptions within the United States. Given the depression's un-

precedented depth and duration, a majority of welfare capitalists followed the path of GM rather than GE or P&G. Under the congressional investigation, GM itself came to symbolize the "fall" of private welfare capitalism, reinforcing a popular belief that it was little more than anti-unionism. In addition, New Deal labor laws, which outlawed ERPs and instituted public welfare programs, put corporate welfarism to further disadvantage. The Great Depression and ensuing legal change thus created path dependence in the course of institutional development (Moriguchi 2000). While corporate provision of nonwage benefits to blue-collar workers was revived during World War Two and proliferated in the postwar era, it was established as employees' legal rights defined by union contracts. The nature of corporate welfarism was thus transformed from implicit to explicit contractual relations in large unionized firms. Implicit incentive contracts, however, continued to be practiced by large nonunion employers and became a precursor of today's "innovative" HRM practices (Jacoby 1997, Chapter 7).

Finally, using unique historical data, this paper contributes to the small but growing literature that provides empirical support for implicit contract theory (Bertrand 1990; Cornwell et al. 1991; Idson and Valletta 1996; Valletta 1999). Due to the small sample size, the findings of this study are not necessarily robust, and building a larger data set is therefore an important next step. This limitation notwithstanding, the study underscores the fragility of implicit contracts under volatile business conditions. In this light, the rise in international competition and rapid technological change in the past twenty years has likely posed a new challenge to implicit contracts covering white-collar workers. Consistent with the findings of various case studies of modern HRM practices (for example, Brown and Reich 1989; Rogers and Beer 1995), this paper highlights the role of managerial commitment, labor-management communication, and employee participation in maintaining implicit contractual relations.

²³Roberts and Van den Steen (2000) showed that a firm may optimize corporate governance structure to encourage specific human capital investment. In this case, the choice of governance structure itself is a function of the nature of human capital.

Data Appendix

A. General Sources for Tables 4–6

HRM programs in 1929 and the years of operation. This information was collected from the texts and balance sheets of corporate annual reports for the years 1910–40, company benefit pamphlets (located at Baker Library, Harvard Business School, Boston, and New York Public Library), and other company-specific sources listed below. Programs offered exclusively for white-collar employees were excluded. The amount of information on HRM policies in annual reports varies across firms. The annual reports issued by Endicott Johnson, Ford, IBM, and P&G were less informative than such reports issued by the other companies. Balance sheet data in the annual reports are comparable across firms. Although their quality prior to the 1934 SEC regulation is a concern, all the annual reports were audited, and I find no major discontinuity before and after 1934 in the financial data.

Corporate welfare expenditures in 1929. Unless otherwise noted, this estimation is based on data for major pecuniary programs (for example, profit-sharing plans, stock ownership plans, pensions, group insurance, paid vacation plans, savings and investment plans) reported in corporate annual reports and employee magazines. The estimates thus provide a lower bound of actual welfare expenditures. If the cost to the company is not reported, the expenditure is estimated based on total benefits received by employees adjusted for employee contributions. For savings and investment plans, I consider the returns to employees above risk-free interest rates to be employer contributions.

Severity of the Great Depression's impact, company by company. Net sales and net income are from *Moody's Manual of Investments* (1927–37) unless otherwise noted. Net income refers to the net income to surplus after tax and before dividends. Stock price is the monthly price of common stock from *CRSP*. I report the peak-to-trough changes in net sales, net income, and stock price between 1928 and 1934. The peak and trough years vary within these years across firms. The shares of Ford and Western Electric were not publicly traded during this period.

Wage and employment changes. This information was collected from corporate annual reports and supplemented by company-specific sources listed below. I report the peak-to-trough change in the number of U.S. employees during 1928–33. Note that the number of employees reported in *Moody's Manual of Investments* is often approximate and inaccurate; I used this figure only when there were no other sources. Wage change refers to a reduction in hourly wages for blue-collar employees during 1929–33 announced in annual reports, unless otherwise noted.

HRM programs in operation as of 1934. This information was collected from corporate annual reports, company benefit pamphlets, and company-specific sources listed below. Even if the discontinuation was not announced in annual reports, if a company stopped reporting any data for a program after a certain year, I considered the program discontinued. Benefit pamphlets are a valuable source of information, as they report the dates of inauguration and subsequent revisions in cover pages.

Emergency relief plans. This information was collected from corporate annual reports and supplemented by company-specific sources listed below. The data on dismissal allowance are from NICB (1931b) and "Termination Wage," a 1930 DuPont internal memorandum (which surveyed the practice in manufacturing industries) (Box 3, Accession 1813, Hagley Museum and Library, Wilmington, Del.).

Change in labor-management relations. The results of representation elections were compiled from *The Decisions and Orders of the National Labor Relations Board* (various years, 1936–60). The year of unionization refers to the year in which a company recognized a union as a collective bargaining agency. Early union contracts of Bethlehem Steel, Ford, GM, and U.S. Steel are located at Non-Current Collective Bargaining Agreements Files 6030, Labor-Management Documentation and Archives, Cornell University. For the union and employment contracts of other firms, see company-specific sources below.

B. Company-Specific Sources for Tables 4–6

Bethlehem Steel. Details on HRM programs were obtained not only from the annual reports, but also from the company magazine *Bethlehem Review* (1924–40). The voting result refers to the 1939 representation election at the Bethlehem Steel Company.

Eastman Kodak. The number of employees is from Chart 1 in the 1938 *Kodak Annual Report*. The annual reports as well as Jacoby (1997), Chapter 3 provide information on the profit-sharing plan, suggestion system, ERP, internal promotion policy, and union status. The voting result refers to the 1956 election at the Los Angeles plant. The nature of employment contracts is based on Jacoby (1997:87).

DuPont. Annual reports provide the details of HRM programs. The estimate of welfare expenditures in 1929 is based on DuPont's internal memorandum in 1936, "Out-of-Pocket Money Cost of Industrial Relations Plans" (Box 22, Accession 1813, Hagley Museum and Library, Wilmington, Del.). The information on ERPs, ILUs, and representation elections is from Weber (1959) and Retzler (1963). The voting result refers to the 1941 election at the Belle plant. The nature of early union contracts is based on Retzler (1963:188).

Endicott Johnson. The employment change is estimated based on *Moody's Manual of Investments* in 1928 and Zahavi (1988:131). The information on HRM programs is from Zahavi (1988), and the estimate of welfare

expenditure is based on pp. 136–37. The union status and representation elections are from Zahavi (1988:166–70). The voting result refers to the 1941 election at Endicott Johnson.

Ford Motor. The information on HRM programs is based on Nevins and Hill (1957). Net sales and the number of U.S. employees are from their Appendix III. The voting result refers to the 1941 election at the River Rouge plant.

General Electric, General Motors. See the references cited in Section 4.

Goodyear Tire and Rubber. Information on HRM programs was obtained from annual reports, from Nelson (1988, Chapter 4), and from the employee magazine, *Wingfoot Clans*. Employment change is estimated based on the statement in Nelson (1988:113). Nelson (1982) provides rich accounts of ERPs. The process of unionization is detailed in Nelson (1989). The voting results refer to the 1937 elections at the Akron and Los Angeles plants.

IBM. The changes in sales, net income, and U.S. employment are from the appendix in Pugh (1995). The information on HRM programs is from Engelbourg (1976) and an article on IBM published in *American Machinist*, Vol. 81, No. 12, June 16, 1937.

International Harvester. Annual reports, as well as Ozanne (1967), provide the information on ERPs and other HRM programs. The employee magazine *Harvester World* (1924–40) reports the details of employee benefit plans. The wage change data are based on Ozanne (1967:144), and the change in hourly earnings at the McCormick plant is taken from Ozanne (1968). Employment change is the change in the number of employees at the McCormick plant reported in Ozanne (1968). The voting result refers to the 1938 election at the Chicago Tractor plant.

Procter and Gamble. The information on HRM programs is from Feis (1928), Lief (1958), and a company document titled *The P&G Company: History and Information*, dated 1937 (Procter and Gamble Corporate Archive, Cincinnati). The change in employment is based on the number of employees at the Ivorydale plant reported in *The P&G Company*. The information on ILUs is based on Lief (1958) and Weber (1959). The nature of early agreements and union contracts is from Lief (1958:205, 311).

Standard Oil of New Jersey. Details on HRM programs were obtained from annual reports, Gibb and Knowlton (1956), Larson et al. (1971), and the employee magazine *The Lamp* (1918–40). The number of employees is reported in Larson et al.'s appendix. Gray and Gullett (1973) provide the details on ERPs. The nature of early union contracts is based on Marshall (1961:825) and Brandt (1960:62). The voting result refers to the 1942 election at the Bayway plant.

United States Steel. Details on HRM programs were obtained from annual reports and from Gulick (1924) and Brody (1960). Due to the corporation's voluntary acceptance of the Steel Workers Organizing Committee in 1937, no representation election was held.

Western Electric. The information on HRM programs was obtained from annual reports, as well as from Schacht (1975), Vallas (1993), and Cohen (1990:173, 244). The employee magazine *Western Electric News* is not very informative. The data on ILUs are based on Cohen (1990:506). The 1947 union contacts between the company and an ILU are located at Non-Current Collective Bargaining Agreements Files 6030, Labor-Management Documentation and Archives, Cornell University.

REFERENCES

- Alexander, Magnus. 1914. "Waste in Hiring and Discharging Men." *Iron Age*, Vol. 94, pp. 1032–33.
- Allen, Hugh. 1943. *The House of Goodyear: A Story of Rubber and Modern Business*. Cleveland: Corday & Gross.
- Baron, James, et al. 1986. "War and Peace: The Evolution of Modern Personnel Administration in U.S. Industry." *American Journal of Sociology*, Vol. 92, No. 2 (September), pp. 350–83.
- Berkowitz, Edward, and Kim McQuaid. 1980. *Creating the Welfare State*. New York: Praeger.
- Bernstein, Irving. 1960. *The Lean Years: A History of the American Worker, 1920–1933*. Boston: Houghton Mifflin.
- Berridge, William. 1929. "Labor Turnover in American Factories." *Monthly Labor Review*, Vol. 29 (July), pp. 62–65.
- Bertrand, Marianne. 1990. "From the Invisible Handshake to the Invisible Hand? How Import Competition Changes the Employment Relationship." NBER Working Paper No. 6900.
- Bordo, Michael, et al. 1998. *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century*. Chicago: University of Chicago Press.
- Brandes, Stuart. 1970. *American Welfare Capitalism, 1880–1940*. Chicago: University of Chicago Press.
- Brandt, Floyd. 1960. "Independent and National Unionism in the Oil Refining Industry." D.B.A. thesis, Graduate School of Business Administration, Harvard University.
- Brody, David. 1960. *Steelworkers in America: The Non-union Era*. Cambridge, Mass.: Harvard University Press.
- _____. 1980. *Workers in Industrial America*. New York: Oxford University Press.
- Brown, Clair, and Michael Reich. 1989. "When Does Union-Management Cooperation Work? A Look at NUMMI and GM Van-Nuys." *California Management Review*, Vol. 31 (Summer), pp. 26–44.
- Bull, Clive. 1987. "The Existence of Self-Enforcing Implicit Contracts." *Quarterly Journal of Economics*, Vol. 102, No. 1 (February), pp. 147–59.
- Chandler, Alfred. 1962. *Strategy and Structure*. Cambridge, Mass.: MIT Press.
- Cohen, Lisabeth. 1990. *Making a New Deal: Industrial Workers in Chicago, 1919–1939*. New York: Cambridge University Press.
- Commons, John R., et al. 1935. *History of Labor in the United States, 1896–1932*. New York: MacMillan.
- Cornwell, Christopher, Stuart Dorsey, and Nasser Mehrzad. 1991. "Opportunistic Behavior by Firms in Implicit Pension Contracts." *Journal of Human Resources*, Vol. 26, No. 4 (Fall), pp. 704–25.
- Dobbin, Frank. 1992. "The Origins of Private Social Insurance: Public Policy and Fringe Benefits in America, 1920–1950." *American Journal of Sociology*, Vol. 97, No. 5 (March), pp. 1416–50.
- Duncan, Margaret. 1932. "Personnel Practices of Two Electrical Equipment Companies with Reference to Employee Training and Welfare." Ph.D. thesis, University of Pittsburgh.
- Engelbourg, Saul. 1976. *International Business Machines: A Business History*. New York: Arno.
- Fairris, David. 1997. *Shopfloor Matters: Labor-Management Relations in Twentieth-Century American Manufacturing*. New York: Routledge.
- Feis, Herbert. 1928. *Labor Relations: A Study Made in the Procter and Gamble Company*. New York: Adelphi.
- Fine, Sidney. 1969. *Sit-Down: The General Motors Strike of 1936–1937*. Ann Arbor: University of Michigan Press.
- Gibb, George, and Evelyn Knowlton. 1956. *History of Standard Oil Company (New Jersey), Vol. 2: The Resurgent Years, 1911–1927*. New York: Harper & Brothers.
- Gitelman, Howard. 1992. "Welfare Capitalism Reconsidered." *Labor History*, Vol. 33, No. 1 (Winter), pp. 5–31.
- Gray, Edmund, and Ray Gullett. 1973. "Employee Representation at Standard Oil Company of New Jersey: A Case Study." Occasional Paper Number 11, College of Business Administration, Louisiana State University.
- Greif, Avner. 1993. "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition." *American Economic Review*, Vol. 83, No. 3 (June), pp. 525–48.
- Greif, Avner, et al. 1994. "Coordination, Commitment, and Enforcement: The Case of the Merchant Guild." *Journal of Political Economy*, Vol. 102, No. 3, pp. 745–76.
- Gulick, Charles. 1924. *Labor Policy of the United States Steel Corporation*. New York: Columbia University Press.
- Harris, Howell. 1982. *The Right to Manage: Industrial Relations Policies of American Business in the 1940s*. Madison: University of Wisconsin Press.
- Hirao, T., et al. 1998. *Amerika Daikigyo to Rodosha (Big Business and Workers in the United States in the 1920s)*. Sapporo: Hokkaido Daigaku Toshokan.
- Houser, J. David. 1927. *What the Employer Thinks: Executives' Attitudes toward Employees*. Cambridge, Mass.: Harvard University Press.
- Ichniowski, Casey, Kathryn Shaw, and Giovanna Prennushi. 1997. "The Effects of Human Resource Management Practices on Productivity: A Study of Steel Finishing Lines." *American Economic Review*, Vol. 87, No. 3 (June), pp. 291–313.
- Idson, Todd, and Robert Valletta. 1996. "Seniority, Sectoral Decline, and Employee Retention: An Analysis of Layoff Unemployment Spells." *Journal of Labor Economics*, Vol. 14, No. 4 (October), pp. 654–76.
- Jacoby, Sanford. 1985. *Employing Bureaucracy: Managers, Unions, and the Transformation of Work in American Industry, 1900–1945*. New York: Columbia University Press.
- _____. 1997. *Modern Manors: Welfare Capitalism Since the New Deal*. Princeton: Princeton University Press.
- _____. 2000. "A Road Not Taken: Independent Local Unions in the United States Since 1935." In D. Taras, ed., *Nonunion Employee Representation*. Armonk,

- N.Y.: M. E. Sharpe.
- Jones, Derek, and Takao Kato. 1995. "The Productivity Effects of Employee Stock-Ownership Plans and Bonuses: Evidence from Japanese Panel Data." *American Economic Review*, Vol. 85, No. 3 (June), pp. 391-414.
- Kanemoto, Yoshitsugu, and Bentley MacLeod. 1989. "Optimal Labor Contract with Non-Contractible Human Capital." *Journal of the Japanese and International Economies*, Vol. 3, pp. 385-402.
- Kato, Takao, and Motohiro Morishima. 2002. "The Productivity Effects of Participatory Employment Practices: Evidence from New Japanese Panel Data." *Industrial Relations*, Vol. 41, No. 4 (October), pp. 487-520.
- Kletzer, Lori G. 1998. "Job Displacement." *Journal of Economic Perspectives*, Vol. 12, No. 1 (Winter), pp. 115-36.
- Knez, Marc, and Duncan Simester. 2001. "Firm-Wide Incentives and Mutual Monitoring at Continental Airlines." *Journal of Labor Economics*, Vol. 19, No. 4 (October), pp. 743-72.
- Larson, Henrietta, et al. 1971. *History of Standard Oil Company (New Jersey)*, Vol. 3: *New Horizons, 1927-1950*. New York: Harper & Row.
- Lazear, Edward. 2000. "Performance Pay and Productivity." *American Economic Review*, Vol. 90, No. 5 (December), pp. 1346-61.
- Lief, Alfred. 1958. *"It Floats": The Story of Procter & Gamble*. New York: Rinehard.
- MacLeod, Bentley, and James Malcomson. 1989. "Implicit Contracts, Incentive Compatibility, and Involuntary Unemployment." *Econometrica*, Vol. 57, No. 2 (March), pp. 447-80.
- Marshall, Ray. 1961. "The Union in the Gulf Coast Petroleum Refining Industry." *Labor Law Journal*, Vol. 12, pp. 823-40.
- Matles, James, and James Higgins. 1974. *Them and Us: Struggles of a Rank-and-File Union*. Englewood Cliffs, N.J.: Prentice-Hall.
- McDuffie, John Paul. 1995. "Human Resource Bundles and Manufacturing Performance: Organizational Logic and Flexible Production Systems in the World Auto Industry." *Industrial and Labor Relations Review*, Vol. 48, No. 2 (January), pp. 197-221.
- McQaid, Kim. 1977. "Young, Swope and General Electric's 'New Capitalism': A Study in Corporate Liberalism, 1920-33." *American Journal of Economics and Sociology*, Vol. 36, No. 3 (July), pp. 323-34.
- Meyer, Stephen. 1981. *The Five Dollar Day: Labor, Management, and Social Control in the Ford Motor Company*. Albany: State University of New York Press.
- Millis, Harry. 1942. *How Collective Bargaining Works: A Survey of Experience in Leading American Industries*. New York: Twentieth Century Fund.
- Millis, Harry, and Royal Montgomery. 1945. *Organized Labor*. New York: McGraw-Hill.
- Moriguchi, Chiaki. 2000. "The Evolution of Employment Relations in U.S. and Japanese Manufacturing Firms, 1900-1960: A Comparative Historical and Institutional Analysis." NBER Working Paper No. 7939.
- _____. 2001. "Implicit Contracts, the Great Depression, and Institutional Change: A Comparative Study of U.S. and Japanese Manufacturing Firms, 1910-1940." Unpublished Manuscript.
- _____. 2003. "Implicit Contracts, the Great Depression, and Institutional Change: A Comparative Analysis of U.S. and Japanese Employment Relations, 1920-1940." *Journal of Economic History*, Vol. 63, No. 3 (September), pp. 625-65.
- Morrow, Ellis. 1921. *The Lynn Plan of Representation*. M.B.A. thesis, Harvard University.
- Nelson, Daniel. 1975. *Managers and Workers: Origins of the Twentieth-Century Factory System in the U.S., 1880-1920*. Madison: University of Wisconsin Press.
- _____. 1982. "The Company Union Movement, 1900-1937: A Reexamination." *Business History Review*, Vol. 56, No. 3, pp. 335-357.
- _____. 1988. *American Rubber Workers and Organized Labor, 1900-1941*. Princeton: Princeton University Press.
- _____. 1989. "Managers and Nonunion Workers in the Rubber Industry: Union Avoidance Strategies in the 1930s." *Industrial and Labor Relations Review*, Vol. 43, No. 1 (October), pp. 41-52.
- Nelson-Rowe, Shan. 1991. "Corporation Schooling and the Labor Market at General Electric." *History of Education Quarterly*, Vol. 31, No. 1, pp. 27-46.
- Neumark, David, et al. 2000. *On the Job: Is Long-Term Employment a Thing of the Past?* New York: Russell Sage Foundation.
- Nevins, Allan, and Frank Hill. 1957. *Ford: Expansion and Challenge, 1915-1933*. New York: Scribner's Sons.
- NICB. 1928. *The Economic Status of the Wage Earners in New York and Other States*. New York: National Industrial Conference Board.
- _____. 1929. *Industrial Relations Programs in Small Plants*. New York: National Industrial Conference Board.
- _____. 1931a. *Industrial Relations: Policies and Programs*. New York: National Industrial Conference Board.
- _____. 1931b. *Unemployment Benefits and Insurance*. New York: National Industrial Conference Board.
- _____. 1934. *Effect of the Depression on Industrial Relations Programs*. New York: National Industrial Conference Board.
- _____. 1936. *What Employers Are Doing for Employees: A Survey of Voluntary Activities for Improvement of Working Conditions in American Business Concerns*. New York: National Industrial Conference Board.
- Osterman, Paul. 1994. "How Common Is Workplace Transformation and Who Adopts It?" *Industrial and Labor Relations Review*, Vol. 53, No. 2 (January), pp. 173-87.
- Otten, A. 1973. "Note on the Spearman Rank Correlation Coefficient." *Journal of the American Statistical Association*, Vol. 68, pp. 585.
- Owen, Laura. 1995. "Worker Turnover in the 1920s: What Labor-Supply Arguments Don't Tell Us." *Journal of Economic History*, Vol. 55, No. 4, pp. 822-41.
- Ozanne, Robert. 1967. *A Century of Labor-Management Relations at McCormick and International Harvester*.

- Madison: University of Wisconsin Press.
- _____. 1968. *Wages in Practice and Theory: McCormick and International Harvester, 1860–1960*. Madison: University of Wisconsin Press.
- Retzler, Julius. 1963. "Labor Organization at Du Pont: A Study in Independent Local Unionism." *Labor History*, Vol. 4, pp. 178–95.
- Roberts, John, and Eric Van den Steen. 2000. "Shareholder Interests, Human Capital Investment, and Corporate Governance." Stanford GSB Research Paper No. 1631.
- Rogers, Gregory, and Michael Beer. 1995. "Human Resources at Hewlett-Packard." Harvard Business School Cases 5-495-051 and 5-494-052.
- Rumm, John. 1989. "Mutual Interests: Managers and Workers at the Du Pont Company, 1802–1915." Ph.D. thesis, University of Delaware.
- Schacht, John. 1975. "Toward Industrial Unionism: Bell Telephone Workers and Company Unions, 1919–1937." *Labor History*, Vol. 16, No. 1 (Winter), pp. 5–36.
- Schatz, Ronald. 1979. "Union Pioneers: The Founders of Local Unions at General Electric and Westinghouse, 1933–1937." *Journal of American History*, Vol. 66, pp. 586–602.
- _____. 1983. *The Electrical Workers: A History of Labor at General Electric and Westinghouse, 1923–1960*. Urbana: University of Illinois Press.
- Shleifer, Andrei, and Lawrence Summers. 1988. "Breach of Trust in Hostile Takeovers." In Alan J. Auerbach, ed., *Corporate Takeovers: Causes and Consequences*. Chicago: University of Chicago Press, pp. 33–56.
- Slichter, Sumner. 1929. "The Current Labor Policies of American Industries." *Quarterly Journal of Economics*, Vol. 43, No. 2 (May), pp. 393–435.
- Tone, Andrea. 1997. *The Business of Benevolence: Industrial Paternalism in Progressive America*. Ithaca, N.Y.: Cornell University Press.
- U.S. Department of Labor, Bureau of Labor Statistics. 1919. *Bulletin No. 250: Welfare Work for Employees in Industrial Establishments in the United States*. Washington, D.C.: Government Printing Office.
- _____. 1928. *Bulletin No. 458: Health and Recreation Activities in Industrial Establishments, 1926*. Washington, D.C.: Government Printing Office.
- U.S. Senate, Committee on Education and Labor. 1937. *Industrial Espionage*. Report No. 46, Part 3, 75th Congress, 2nd Session. Washington, D.C.: Government Printing Office.
- Vallas, Steven P. 1993. *Power in the Workplace: The Politics of Production at AT&T*. Albany: State University of New York.
- Valletta, Robert. 1999. "Declining Job Security." *Journal of Labor Economics*, Vol. 17, No. 4, Part 2, pp. S170–S197.
- Weber, Arnold. 1959. "Competitive Unionism in the Chemical Industry." *Industrial and Labor Relations Review*, Vol. 13, No. 1 (October), pp. 16–37.
- Wise, George. Undated. "General Electric's Century: A History of the General Electric Company from Its Origins to 1986." Unpublished manuscript.
- Young, Clarence, and Robert Tuttle. 1969. *The Years 1919–1969: A History of General Motors Institute*. Flint, Mich.: General Motors Institute.
- Zahavi, Gerald. 1988. *Workers, Managers, and Welfare Capitalism: The Shoeworkers and Tanners of Endicott Johnson, 1890–1950*. Urbana: University of Illinois Press.