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Operations of "Unfettered" Labor Markets: Exit and Voice in American Labor Markets at the Turn of the Century

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1. *Introduction*

Turn-of-the-century America offers an unusual empirical opportunity to expand our understanding of the operation of largely unregulated labor markets. The American experience between 1890 and 1930 illustrates the roles of exit and voice in determining worker welfare in the absence of unemployment insurance, social security, wage and hour regulations, the National Labor Relations Board, antidiscrimination laws, and many other modern regulatory influences. These markets established the conditions and institutions that helped determine the development of American labor markets and labor regulation throughout the twentieth century.

Neoclassical economists predict that unregulated markets protect workers in settings where there is extensive competition among employers, where information costs are low, and where workers can exit easily. Workers receive higher wages to compensate them for workplace disamenities, which in turn gives employers incentives to eliminate the disamenities when economically feasible. Competition among profit-seeking employers can help erode the impact of discrimination on minorities. Meanwhile, various labor market institutions, like company towns, company unions, and share tenancy, may form to enhance the effectiveness of labor market exchanges. Workers might also protect themselves through collective action, raising wages, and enhancing working conditions. The impact of collective action on productivity in the workplace may vary depending on whether unions are monopolistic or provide mechanisms for enhanced communications between employers and workers (Richard Freeman and James Medoff 1984; Albert Hirschman 1971).

As the costs of information and of switching jobs rise and/or competition among employers declines, the self-regulating features of the labor market become less effective. Progressive era

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reformers, labor historians, and institutional labor economists have emphasized problems with market failure and inadequate compensation for greater economic insecurity. They argue that institutions like the company store, company unions, and share tenancy were primarily designed to capture more rents from workers. To combat these problems, the workers' primary effective recourse was to exercise their voice through the organization of unions and calls for protective legislation and social insurance.[2]

In fact, workers did not switch jobs costlessly. They had to learn about other opportunities, and possibly learn new skills specific to an alternative firm, and in many cases they incurred the costs of a long-distance move, including the disruption of family and personal relationships. In some towns there was only one employer, raising the possibility of employer monopsony. In such a setting it is likely that the labor markets worked imperfectly somewhere along a continuum between pure competition and employer monopsony. This raises a series of empirical questions which this essay seeks to answer. How mobile were workers? What was the extent of monopsonistic exploitation? Did compensating differentials develop for disamenities? How effective was competition among employers in eroding discrimination? What was the nature of institutions like the company town, the company union, and share tenancy? How effective was the early legislation that was adopted to regulate workplace conditions, and what political–economic influences determined the nature of the legislation?

Economic historians over the past two decades have studied many of these issues, and have found that the labor markets circa 1900 functioned better than progressive era reformers described but were by no means functioning perfectly smoothly. Workers were mobile. Turnover rates were higher in the early 1900s than in the modern era and there were strong signs of labor market integration between most regions of the United States. The South, which some consider isolated, offered numerous opportunities for workers to raise their earnings near levels in the North through migration within the region. The combination of competition among employers and the use by workers of both exit and collective action served to limit the extent to which employers could earn monopsonistic rents from their workers in the long run. However, because there were costs to moving, in the short run some workers found themselves in the type of exploitative situations that fueled calls for reform.

The markets worked well enough that many workers received at least partial compensating differentials for disamenities, but the differentials rarely fully covered the expected losses, and workers faced problems in purchasing in-

[2] Labor historians and institutional labor economists, following in the footsteps of John R. Commons and Richard Ely, emphasize labor market failures. For a nice summary of the development of institutional labor economics and its influence on industrial relations, see Bruce Kaufman (1993). A majority of the scholarship on turn-of-the-century laborers can be found in the field of labor history, which offers large numbers of studies of workers in specific industries. On the coal industry, which is discussed in this essay, see David Corbin (1981), Curtis Seltzer (1985), and a recent volume edited by John Laslett (1996). For labor history scholarship that ties many of the studies of specific industries into broader surveys, see the work of David Brody (1980), David Montgomery (1987), Foster Rhea Dulles and Melvyn Dubofsky (1984), and John R. Commons and Associates (1966). Although I believe the studies overemphasize market failure, they are extremely rich resources in many dimensions. They offer excellent discussions of the roles of key individuals, the development and internal politics of unions, the institutional environment, the basic attitudes of workers, and the workers' lifestyles.

surance coverage and/or accumulating enough savings to prevent a decline below subsistence in the event of a calamity. Competition among employers eroded the most obvious form of discrimination, unequal payment in unskilled and entry-level jobs. However, the competition was not powerful enough to eliminate the discrimination that contributed to the low proportions of Black workers in more-skilled and high-wage jobs. These forms of discrimination persisted in part due to costly information and the demands of other workers, while government policy probably exacerbated the problem. Labor market institutions, like the company town, the company union, and sharecropping, were not purely exploitative devices but helped solve a series of transaction cost problems as well.

Reformers, who emphasized the deficiencies in the labor markets, pressured the states for a broad slate of protective legislation. They succeeded in passing only a small subset of the laws they sought because employers had equal or possibly greater political power than did reformers and workers in determining the path of regulation in most state legislatures. Legislation like workers' compensation was passed in large part because employers, workers, and insurance companies all anticipated gains from its adoption. The measured impact of child labor laws and safety legislation often was not as large as the gains that reformers initially sought. Given the employers' political clout, the legislation was unlikely to pass unless a significant subset of employers supported it. In these cases the legislation passed after a number of employers began to establish the practices to be required by the regulations. The progressive employers then agreed to the legislation to force recalcitrant employers to adopt the new policies. As a result, much of the legislation built on and extended changes that progressive employers were instituting in their workplaces.

2. *Workers' Opportunities for Exit*

For market competition among employers to have been an effective regulatory device, workers had to be mobile and able to exit to other opportunities. During the period from 1890 to 1930, workers appeared to have been highly mobile within regions; meanwhile, a significant number took advantage of opportunities in other regions. Rural to urban migration was common. Large numbers of immigrants from eastern Europe flooded the economy in the first decade of the century. When World War I slowed the flood of immigration, an extensive migration developed from the South to the North. While the costs of migration were in part determined by the physical costs of moving, probably the most important factor was the flow of information about job opportunities. Workers obtained information in a variety of ways, including newspaper advertisements, handbills, and visits from recruiters. The most common source of information was informal world-of-mouth networks through friends and relatives (Joshua Rosenbloom 1994; Rosenbloom and William Sundstrom 1991; Price Fishback 1992a; James Laing 1933; and Gavin Wright 1986).

2.1 *Opportunities for Migration*

These flows of information were key factors in the integration of geographically spread labor markets. Most scholars who examined regional and international wage information suggest that prior to the restrictions on immigration during and after World War I, the labor markets in the northern United States were reasonably well integrated, as well

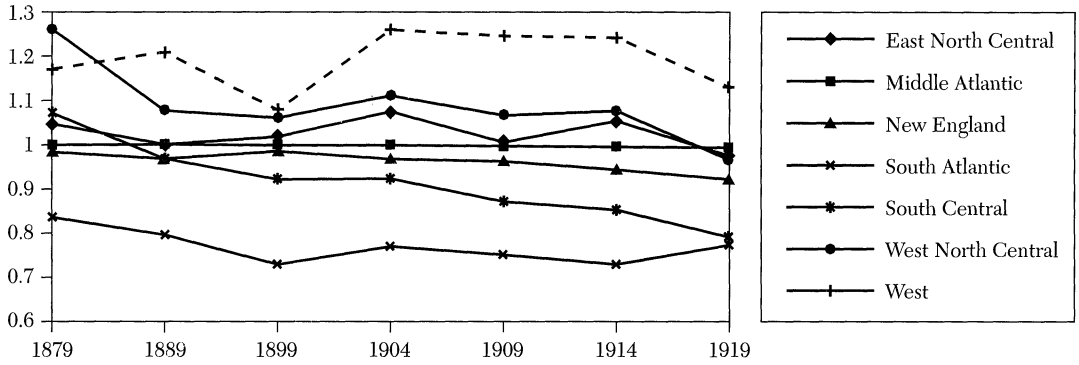

Figure 1. Relative Wages by Region, adjusted for cost of living, 1879–1919 (Middle Atlantic = 1).

Source: Rosenbloom (1996).

as integrated with European labor markets (Rosenbloom 1996; Rosenbloom forthcoming; Wright 1986; Jeffrey Williamson 1995). Integration is a relative concept, because the presence of migration costs generally does not allow regional wage differentials to be completely eliminated. Geographically diverse labor markets are typically considered to be more integrated when wage differentials are smaller. In situations where wage gaps remain persistent, labor markets are considered at least partially integrated when we see substantial migration flows between regions and/or when wages in the regions move together over time.

The agreement that the northern regions of the United States were integrated is based on relatively small wage differentials. Figure 1 shows the ratio of annual manufacturing earnings in U.S. cities in the Middle Atlantic, adjusted for the cost-of-living differences by Rosenbloom (1996), to earnings in other regions of the United States from 1879 to 1919. The differentials between the Middle Atlantic, New England, and East North Central were under 10 percent throughout the period, while wages in the West North Central converged to that range by 1889. Wages were significantly higher in the West, which drew substantial migration from the northern states. Within regions, Rosenbloom (1996, pp. 636–38) finds that the markets were well integrated, displaying low and/or falling coefficients of variation in the average wages for cities within the region. Further, the agricultural and manufacturing labor markets within regions appear to be well integrated. Real wage gaps between agricultural employment and unskilled manufacturing within regions were roughly 5 percent in the late 1920s (Lee Alston and Timothy Hatton 1991).

Rosenbloom (forthcoming) and Wright (1986) argue that the European and northern U.S. labor markets were well integrated. A handful of studies of small groups of workers find relatively small wage differentials between unskilled workers in England and the U.S., although the wage differentials are substantially larger for skilled workers (see Peter Shergold 1983; Robert Allen 1994; Rosenbloom forthcoming). Not all studies, however, find small wage differentials between Europe and the United States. Comparisons of wage series collected by Williamson (1995) and Rosenbloom (1996; forthcoming)

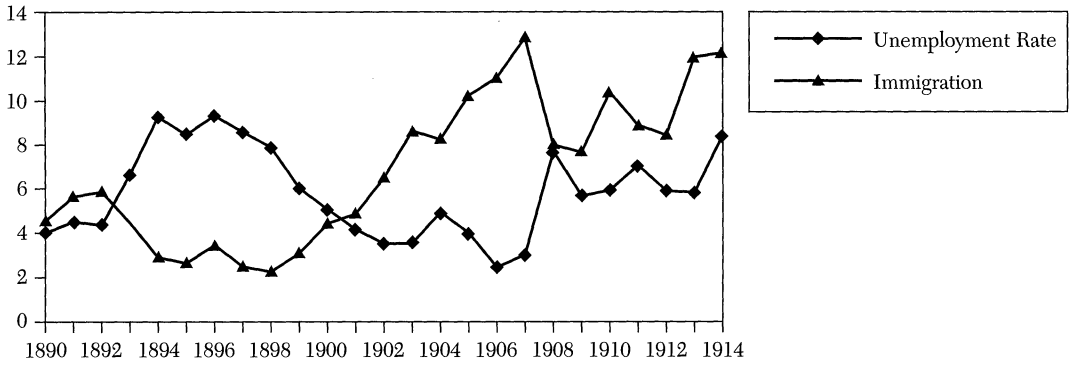

Figure 2. Unemployment Rate and the Number of Immigrants (in 100,000s), 1890-1914.

Sources: For the unemployment rate, Wier (1992, pp. 339-40). For the number of immigrants in 100,000s, U.S. Bureau of Census (1975, Series C-89, 105).

show larger wage gaps between Europe and the United States than between the North and the South.[3] Despite the presence of these wage gaps, many scholars are convinced of a strong connection between Europe and the American North by the large-scale migration between the two regions. An extensive literature shows a strong relationship between these immigration flows and the business cycle prior to the limits on immigration imposed by World War I and the legal limits that followed (Susan Carter and Richard Sutch 1996, pp. 14–16). Between 1890 and 1914, immigration was strongly correlated with the business cycle. Figure 2 shows that immigration declined sharply when U.S. unemployment rates rose; the correlation between the two series is −0.45. The relationship is starkly illustrated by two significant downturns. In the periods 1891–95 and the recession of 1908, the unemployment rate doubled, and the number of immigrants nearly halved, while the number of outmigrants increased.[4]

Wright (1987) and Rosenbloom (1996; forthcoming) argue that the South remained a relatively isolated region prior to the late 1930s because Southern wages were substantially below wages in the other regions and North–South migration flows were relatively limited prior to World War I. My sense is that these scholars overstate the isolation of the South. As discussed above, the wage gaps between the North and the South were substantially smaller than those between the North and Europe. Further, information in Rosenbloom (forthcoming) suggests that the gap between northern and southern wages was much smaller at higher skill levels than at lower skill levels. Finally, the rise in the North–South

[3] Rosenbloom (forthcoming) finds that manufacturing workers in the South Atlantic in 1899 earned roughly 20–30 percent less than in the mid-Atlantic but that the gap between South Central states and the mid-Atlantic was under 10 percent. Rosenbloom's (1996) comparisons in 1914 for male factory wage earners shows that male factory wage earners in the South Atlantic earned approximately 75 percent of the wages earned by factory workers in the Middle Atlantic and 79 percent of the wages earned in New England. Meanwhile, estimates collected by Williamson (1995) show that British wages in 1914 were 65 percent of the U.S. average, German wages were 55 percent, and Italian wages were approximately 32 percent.

[4] For an extensive discussion of immigration and the American economy, see Carter and Sutch 1996.

TABLE 1
LENGTH OF CENSORED JOB SPELLS, 1910s AND 1973

Year	Manufacturing	Automobiles	Chemicals	Machinery	Metals	Textiles and Apparel
			Percent of (Censored) Job Spells Over Five Years			
1913–14	31	21	10	32	32	51
1917–18	25	21	10	32	24	29
1973	49	60	55	48	55	44
			Percent of (Censored) Job Spells Under One Year			
1913–14	38	42	64	37	24	15
1917–18	42	52	65	37	44	31
1973	22	15	16	22	18	25

Source: Jacoby and Sharma (1992, pp. 173–74). The estimates for early years are based on samples of 49,970 workers in 28 manufacturing establishments in 1913–14 and 45,791 workers in 40 manufacturing establishments in 1917–18. The title in the lower half of the table corrects a mistake in the title in the original source.

wage gap during the 1910s contributed to the sharp rise in northbound migration during that decade. Even without settling the issue of the isolation of southern labor markets, economic historians would generally agree with the following statements. Labor markets within the South were reasonably well integrated (Wright 1986; Rosenbloom 1996). Further, southern workers in the lowest wage South Atlantic region had opportunities to enhance their welfare within the South by moving westward, by moving to urban areas, or by obtaining more skills. All three would have allowed them to receive earnings much closer to Northern earnings without leaving the South.

2.2 *Turnover and Worker Welfare*

The mobility of workers is further reflected by quantitative information on turnover during the period. Labor turnover, primarily in the form of voluntary quits, was relatively high during this period, particularly from 1910 through the 1920s (John James and Mark Thomas 1996, p. 20).

Table 1 offers information on censored job spells in the 1910s and in 1973 (Sanford Jacoby and Sunil Sharma 1992). The number of workers with censored job spells lasting longer than five years was substantially lower in the 1910s than in 1973. Similarly, the number of workers with censored spells under one year was cut in half for all but one industry in the listings. An alternative estimate of completed job spells by Carter and Elizabeth Savoca (1990) also suggests higher turnover in 1890 than in the 1970s. After developing a job duration model based on estimates of a hazard model on individual-level data in San Francisco in 1892, they estimate that the average length of a completed job spell in the United States in the 1890s was approximately 13 years, compared with 18 years in modern data.[5]

Turnover rates in coal mining were similar to those found in manufacturing despite the fact that many miners were in more isolated areas where there were

[5] For contemporary studies of turnover, see Sumner Slichter (1919) and W. Jett Lauck and Edgar Sydenstricker (1917).

likely to be far fewer employers within a one-mile radius. Evidence from the U.S. Coal Commission in 1921 showed that separation rates—the number of separations from the payroll lasting longer than a month divided by the average number of workers on the payroll—averaged around 115 percent in coal mining, a level almost identical to the average for manufacturing firms with fewer than 1000 workers in 1913–14 (Fishback 1992a, p. 28).

While many industrial jobs and workers displayed high turnover in the early 1900s, Jacoby and Sharma (1992) argue that there was also a small, stable sector of workers whose relative size and importance increased after World War I. The workers displaying lower turnover tended to be more skilled, home owners, and married with dependents (Carter and Savoca 1992). Stable work forces were more likely to develop in unionized districts and in sectors with greater capital intensity (Fishback, 1992a, p. 28; Carter and Savoca 1992).

The presence of high turnover is not always a positive feature of the economy. High turnover might be a sign of fluidity of the labor market and worker freedom to move easily from place to place, but it may also be a sign of worker dissatisfaction with conditions. During the 1910s and 1920s a number of large employers became dissatisfied with productivity problems associated with high turnover and simultaneously sought to stave off union organization of their workplaces. In consequence, they began to improve conditions for the workers in their firms, developed welfare capitalism, and rewarded workers with firm-specific and general human capital through the formation of internal labor markets (see Stuart Brandes 1976; Jacoby 1985; Laura Owen 1995).

The high degree of turnover was associated with average unemployment rates that were below the rates we have seen since the 1960s and did not prevent workers from experiencing improvements in their working conditions. Figure 3 shows David Weir's (1992) estimates of the unemployment rate between 1890 and 1930. The mean over the period was 5.6 percent, which exceeds the average levels of 4.7 and 4.9 percent in the 1950s and 1960s but is below the means of 6.1 percent in the 1970s and 7.3 percent in the 1980s (Weir 1992, pp. 340–43; see also Christian Romer 1986; Richard Vedder and Lowell Galloway 1993, p. 4; and Stanley Lebergott 1992).[6] Similar to the com-

[6] Modern measures of employment and unemployment are based on household surveys that started in the late 1930s. Lebergott (1964) was the first to develop estimates of the modern concept of unemployment for the period 1890 through the 1930s. To develop his estimates, he used census data as benchmarks and then interpolated between census years using various sectoral measures of employment fluctuations. Typically, the sectoral measures were based on surveys of establishments. Romer (1986) noted that modern comparisons of establishment surveys with household surveys show that employment measures based on establishment surveys are more volatile than those based on household surveys, which led her to readjust Lebergott's (1964) unemployment statistics for the period from 1890 to 1930. David Weir (1992) then reexamined the construction of the statistics. For the period from 1890 to 1900, economic historians, including Lebergott (1992), agree that Weir's (1992) estimates are the best to date. Lebergott originally had assumed that employment between 1890 to 1900 fluctuated one-for-one with manufacturing employment, but manufacturing employment is more volatile than nonmanufacturing employment. Weir's estimates for 1890 to 1900 are superior to Romer's (1986) estimates because Romer applied her corrections to the Lebergott data without adjusting for the fact that Lebergott constructed his measures prior to 1900 much differently than he did for the 1900 to 1930 period. Weir, on the other hand, rebuilt the employment estimates from sector-specific series to create a more complete series. Some controversy remains over the estimates from 1900 to 1930. In general, Lebergott's original estimate of the average level of unemployment for the period from 1900 to 1930 is slightly lower at 4.84 percent than Weir's estimate of 5.27 and Romer's estimate of 5.26. The differences in the series show up in the size of the fluctuations in the unemployment

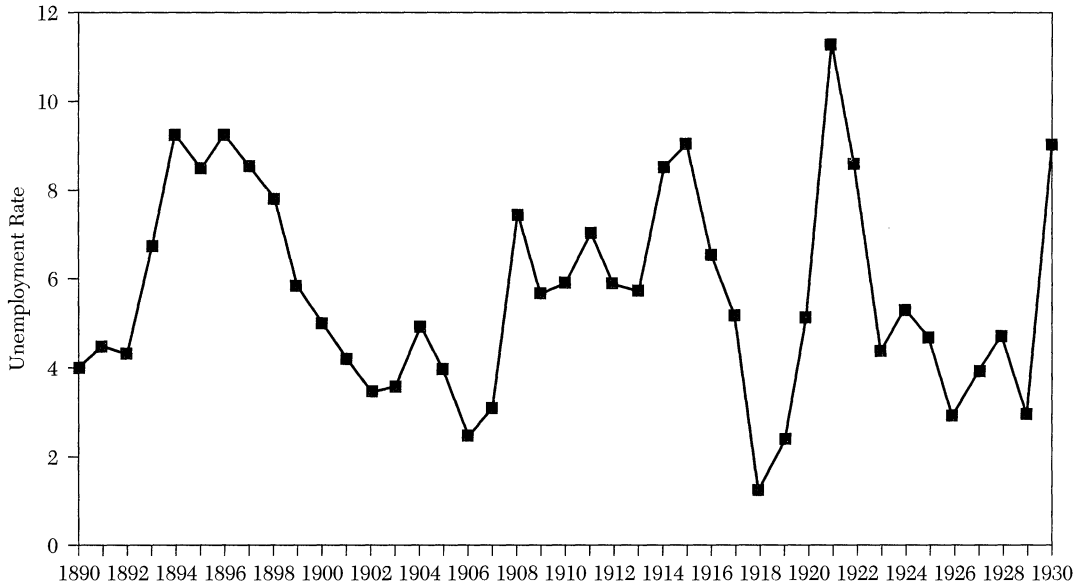

Figure 3. The Unemployment Rate in the United States, 1890–1930.

Source: Wier (1992, pp. 339–40).

parisons above, James and Thomas (1995, p. 16) estimated a natural rate of unemployment of around 5.15 percent around 1910, using an extensive database they developed from surveys of individual workers by various state labor departments. Their estimate is lower than the estimated modern natural rate of 6 percent, and it exceeds the 4 percent natural rate of the 1960s.

Workers faced more volatility in unemployment from year to year during the 1890–1930 period than in the period from 1950 to 1990. The standard deviation of the annual unemployment series was at most 37 percent higher in the earlier than in the later period.[7] The nature of unemployment was probably different during this period. Carter and Sutch (1992) suggest that during the 1890s temporary shutdowns of entire plants for periods as short as a day or two were more common. A higher percentage of workers was unemployed

rate. The standard deviation of Romer's series for 1900 to 1930 is 1.39, which is substantially below Lebergott's estimate of 2.38 and Weir's estimate of 2.30. Differences in the size of the fluctuations arise from differences in the methods used to develop employment measures from the Bureau of Labor Statistics survey of establishments. Romer used postwar data to estimate the excess volatility of Lebergott's original procedures and then revised Lebergott's estimates on the basis of her findings. Weir went back through the calculations readjusting the estimates of excess volatility after making adjustments for shifts in the distribution of employment across sectors (e.g., manufacturing, construction, etc.) between the prewar and postwar era. He also made adjustments in Lebergott's original aggregation procedures. See Weir (1992), Romer (1986), and Lebergott (1992) for details of the estimation procedures.

[7] For the period from 1890 to 1930, the standard deviation of Weir's (1992) series is 2.33. It is 2.46 for Lebergott's series with Weir's new 1890–1900 estimates. The standard deviation of Romer's series is 2.60, but she has not yet taken the opportunity to revise her series from 1890 to 1900 in response to Weir's adjustments. If she did, it is likely that her estimates of the standard deviation for 1890–1930 would be lower than those reported above because the standard deviation for her series for 1900–30 is much lower than those for either Weir or Lebergott. The standard deviation of annual unemployment for the years 1950–90 was 1.79.

at some time during the year in 1909 than in a "normal year" of 1974, roughly 25 percent compared to 15 percent, but the average spell in 1909 was shorter, 13.5 weeks compared with 15 weeks in 1974.[8]

Workers shared in the gains from economic growth during the period, as real earnings trended upward. Albert Rees's (1961, pp. 3–5) estimates of average hourly earnings in manufacturing rose an average of 1.48 percent per year from 1900 to 1914, with the average growth rate rising to 2.3 percent per year from 1914 to 1930 (Rees 1960, p. 3; U.S. Bureau of Census 1975, p. 211).[9] Average annual earnings for all manufacturing workers rose at a slower pace of 1.43 percent annually from 1900 to 1929. The growth in annual earnings was slower than the 2.35 percent per year growth between 1948 and 1973, but substantially more rapid than the 0.46 percent annual growth experienced from 1973 into the early 1990s (Goldin forthcoming, p. 11). One reason that annual earnings grew more slowly than hourly earnings, was that workers succeeded in obtaining a shorter workweek. Average hours worked per week fell from around 59 in 1890 to 48 in 1929 (Robert Whaples 1990b, pp. 33–35).[10]

Not all workers experienced the same rise in earnings. The period from 1890 through 1914 may have been a period of rising inequality of earnings. William-son and Peter Lindert (1976; 1980) use wage ratios for skilled and unskilled workers and for educated and unskilled workers as proxies for wage inequality. Claudia Goldin and Lawrence Katz (1995) use the change in wage ratios for educated and production workers as approximations for changes in the size of education premiums. As seen in Table 2, the earnings of carpenters rose faster than those for unskilled workers through 1914, which may imply that the returns to skilled work were rising over the period. The evidence on the returns to education is less clear. The earnings ratio for public school teachers to unskilled workers rose over the period, which might have been driven by a strong surge in the demand for teachers related to the movement to establish high schools. Meanwhile the clerk/production worker ratio stayed relatively constant.

A substantial reduction in wage inequality occurred during World War I. All of the ratios in Table 2 dropped sharply as rewards for unskilled and production workers rose in response to the sharp increase in labor demand and the reduction in the inflow of immigrants during World War I. Following the war, wage inequality probably did not return to the prewar levels. The carpenter/unskilled wage ratio rose to its 1914 level again. However, the ratios for educated workers generally did not reach their prewar levels because the high school movement delivered a relatively large number of workers with high school degrees to the labor market (Goldin and Katz 1995).

3. *A Case Study of Exit and Voice: The Bituminous Coal Industry*

The high degree of mobility of workers offers evidence that workers exercised their opportunities to exit despite

[8] For further discussions of the nature and level of unemployment, see Robert Margo (1990b; forthcoming); James (1994; 1995); Alexander Keyssar (1986).

[9] The degree to which real wages rose varies to some degree with the deflator used. Deflating wages with Paul Douglas's cost-of-living deflator reduces real wage growth, although my sense is that Rees's cost-of-living deflator, which the conclusions in the text are based on, is more accurate.

[10] For a comprehensive discussion of the trends in labor markets throughout the twentieth century, see Goldin (forthcoming).

TABLE 2
OCCUPATIONAL PAY RATIOS, 1890–1930

Year	Carpenter/ Unskilled Worker	Clerk/ Production Worker		College Assistant Professor/Male Production Worker	Public School Teachers
		Male	Female		
1890	1.702	n.a.	1.848		1.222
1895	1.718	1.691	1.936		1.341
1900	1.825	n.a.	n.a.		1.421
1905	1.857	n.a.	n.a.		1.470
1909	1.909	1.656	1.956	2.451	1.550
1914	1.989	1.696	2.073	2.418	1.576
1919	1.722	1.202	1.525	1.345	0.94[a]
1924	1.933	1.097	1.399	1.798	1.456
1929	1.893	1.128	1.527	1.765	1.53[a]

Source: Carpenter/Unskilled and Public School Teachers/Unskilled from Lindert and Williamson (1976), pp. 121, 123. The information on clerks/production workers and assistant professors relative to production workers is from Goldin and Katz (1995, Tables 5 and 7).
[a] Interpolated from information in adjacent years.

the presence of migration and information costs. A question remains as to how well worker exit limited employer monopsony. Direct tests of employer monopsony have been performed on the bituminous coal industry in West Virginia. Estimates for this setting probably establish an upper bound on the extent of employer monopsony because the historical literature portrays the West Virginia coal industry as the site of the worst abuses. Monopsonistic employers were said to have limited miners' mobility and extracted rents from them through ownership of company stores and housing in isolated mining towns (see Corbin 1981; Seltzer 1985). On closer inspection, one of the striking features of the coal industry, particularly in West Virginia, was the high degree of geographic mobility displayed by coal miners. The number of separations per person on the payroll in the West Virginia districts ranged from 133 to 211, a figure substantially higher than the national average of 115. Such turnover was widely recognized in the historical studies but the view of monopsony and exploitation still prevailed in the historical analysis of the industry. A series of studies offers a quite different picture of the coal industry, one in which the miners' mobility and exit play a substantially more powerful role than previously believed (William Boal 1995; Boal and John Pencavel 1994; Fishback 1992a; and Crandal Shifflett 1991). In West Virginia there were hundreds of mines, and the number of mines increased rapidly through World War I. Mine owners competed for labor not only with mine owners in other company towns but with mines located near independent towns.

Boal (1995) empirically examined the extent of employer monopsony using a panel of county average wage rates and employment in West Virginia over the period from 1900 to 1932. Boal estimated inverse labor supply elasticities in the short run and in the long run. Inverse labor supply elasticities near

zero imply a more highly elastic labor supply and less opportunity to exploit a labor monopsony. Estimates of short-run inverse elasticities ranged between 0.15 and 0.53, which were substantially below estimates for nurses in a later period. The estimates of the long-run inverse elasticity were essentially zero. The combination of the long-run and short-run inverse elasticities suggests that coal employers had a limited degree of monopsony power in the short run, less than a year. Yet, given a longer time horizon, coal miners were highly mobile and were able to exit to better opportunities. The longer-run mobility of coal workers limited the monopsony exploitation rate in coal mining to approximately 3 percent of earnings when the employers' discount rate was 5 percent, which was similar to the rates of returns on assets during the period, or 5 percent of earnings when the employer discount rate was 10 percent.[11] Boal also argues that his estimates of the inverse elasticities and the exploitation rates are likely to be biased upward because he had to use county average wages rather than the wages paid by firms.

It is important to note that exit was not the workers' only option for seeking to protect themselves. In some industries and geographic areas, workers turned to unionization and strikes. The extent of unionization was much smaller than in the union's heyday in the late 1930s through the early 1950s. Nationwide, union members accounted for less than 12 percent of the nonagricultural labor force throughout most of the period, while union strength and strike activity varied greatly across industries (see Leo Wolman 1936; Leo Troy 1965; John Griffin 1968). The extent to which workers relied upon unions depended in part upon the legal climate, which for most of the period was much less favorable than that following the New Deal labor legislation in the 1930s. Union influence peaked during and just after World War I, when the federal government pressured a number of employers to recognize unions or at least bargain collectively with groups of workers. After the war ended, the combination of weaker pressure from the federal government and recession conditions led many employers to repudiate their relations with unions. Extensive labor strife followed. The 1920s saw some of the strongest unions weaken sharply before the comeback experienced after the New Deal labor legislation was passed in the next decade.

The bituminous coal industry offers a microcosm of the impact of unionization during this period. The geographic expansion of the UMWA's organization through World War I and its decline through the 1920s offers an opportunity to examine their impact on miners' wages. The first major study of union wage effects in coal mining was performed by H. Gregg Lewis (1963, pp. 73–80). By comparing mean wages

[11] The exploitation rate is 9 percent at a discount rate of 20 percent. The monopsony exploitation is defined as the difference between the marginal revenue product and the wage as a percentage of the wage. For a maximizing employer, the exploitation rate can also be written as

$$e_{sr}^{-1}\, r/(1+r) + e_{lr}^{-1}\, 1/(1+r),$$

where e_{sr}^{-1} is the short run inverse supply elasticity and r is the employer's discount rate (see Boal 1995; Boal and Michael Ransom 1997, pp. 89–90, 105–106). Lawrence Boyd (1994), in an unpublished study that cannot compare the long- and short-run dynamics, tried to estimate exploitation rates in cross-sections of mines in two West Virginia counties in the early 1900s by comparing estimated marginal revenue product with actual wages. His estimates of marginal revenue product varied dramatically over the period, with some very much lower than the wage. In pooling over several years he could not reject the hypothesis of a zero exploitation rate, although his point estimate was 24 percent.

across union and nonunion districts in the United States, Lewis found union–nonunion wage differentials between 40 and 61 percent during the period 1924–33. Lewis' estimate, however, may be an overstatement of the union effect. Recent estimates for West Virginia counties between 1897 and 1938, and for the 23 leading coal states between 1912 and 1923, find much lower estimates of the union effect. For example, Fishback (1992a, pp. 94–97) performed fixed effects analysis on a panel of the average hourly wages paid to daymen in the 23 leading coal states for the years from 1912 to 1923. After controlling for a variety of factors (see Table 3), a move from no unionization to full unionization raised the wage by 6.3 or 11.9 percent. Boal and Pencavel examined average county-level wage rates using a panel of West Virginia counties for the years 1897 to 1938. After differencing the data, they estimated a regression with county fixed effects and interaction terms that would allow them to estimate separate union effects for various time periods. The estimates in Table 3 suggest that the union effect on wages was also substantially lower than that found by Lewis, with effects under 12 percent prior to 1920, under 18.2 percent between 1921 and 1930, and 23.3–33 percent during the large-scale union expansion of the 1930s.[12]

Fishback (1992a) also attempted to examine the relative contribution of exit and voice to the substantial rise in coal hourly earnings that occurred between 1892 and 1929. After estimating the time-series relationships between coal hourly earnings and the coal price, the extent of unionization, wages in manufacturing, and work opportunities, he decomposed the rise in coal hourly earnings. For the entire time period, approximately 66 percent of the rise in coal earnings could be attributed to a rise in manufacturing wages, which measured the miners' next best alternative for exit. The contribution of better opportunities in alternative employment was nearly double the contribution of approximately 36 percent that could be attributed to changes in unionization. The relative role of exit and voice was not uniform throughout the period. For example, between 1890 and 1902 when the UMWA established itself as a major force in the coal fields, unionization contributed roughly four times as much to the rise in coal earnings relative to the contribution of increases in opportunities in manufacturing. Later, when there was a significant reduction in the strength of unions between 1923 and 1929, the decline in unionization accounted for 60 percent of the decline in wages during the period, while the changes in manufacturing wages had almost no explanatory power.

The UMWA had significant effects beyond wage effects. Union districts obtained a reduction from ten-hour days to eight-hour days earlier than nonunion districts. The UMWA appears to have had a very limited impact on workplace safety. In the course of estimating a structural equation system with labor demand, labor supply, and workplace accident prevention on a panel of the 23 leading coal states during the period from 1912 to 1923, Fishback (1992a, pp. 110, 242–49) estimated the relationship between the percentage of members in the UMWA and the level of fatal accident risk and could not reject the hypothesis that there was no relationship. In general, it appears that the UMWA's central focus was on organizing the nonunion regions

[12] The focus here was on bituminous coal mining; for estimates of other union effects, see Lewis (1963, 1986), Barry Eichengreen and Henry Gemery (1986), and Fishback and Kantor (1992).

TABLE 3
UNION WAGE EFFECTS IN BITUMINOUS COAL MINING IN THE EARLY 1900s

Geographic Area	Period	Source	Union Effect in Percentages	Method
Indiana and Illinois vs. Alabama, Virginia, and Tennessee	1924–33	Lewis (1963, pp. 79–80)	40–61	Comparison of mean average daily earnings by region
23 Major Coal States	1912–23	Fishback (1992, pp. 94–97)	11.9[a] or 6.3	Fixed effects analysis of panel of average hourly wage rates for inside daymen
West Virginia Counties	1897–1912	Boal and Pencavel (1994, p. 283)	5.2 or 12	Regression on panel of wage rates with first differences including county fixed effects
West Virginia Counties	1913–20	Boal and Pencavel (1994, p. 283)	−1.4 or 7.8[a]	Regression on panel of wage rates with first differences including county fixed effects
West Virginia Counties	1921–30	Boal and Pencavel (1994, p. 283)	3.7 or 18.2[a]	Regression on panel of wage rates with first differences including county fixed effects
West Virginia Counties	1931–38	Boal and Pencavel (1994, p. 283)	33[a] or 23.3[a]	Regression on panel of wage rates with first differences including county fixed effects

[a] In *t*-tests at 10 percent level, can reject hypothesis that coefficient underlying the estimate is statistically different from zero.
Notes: The Fishback (1992) study included controls for coal price, days worked, output per man hour, accident risk, and strike activity. The Boal and Pencavel study (1994) included controls for coal price, cost of mining machinery, wages in alternative employment, and a cost of living index.

of the country and enhancing the employment package through higher wages and reduced hours.[13]

[13] For an extensive discussion of the role of the United Mine Workers, see the volume edited by Laslett (1996).

4. *The Extent of Compensating Differentials*

One test of the functioning of labor markets is to examine the extent to which workers are rewarded for work-

place disamenities. While a large literature exists on the extent of compensating differentials in modern labor markets (Michael Moore and W. Kip Viscusi 1991), until recently scholars had not explored the issue quantitatively with data sets from the turn of the century. Most of the empirical tests for labor markets circa 1900 suggest that workers received at least partial compensation for negative features of employment.[14] Table 4 summarizes estimates of compensating differentials for accident risk, unemployment risk, risk of illness, cost-of-living differences, and postaccident benefits. Rosenbloom (1996) finds that manufacturing wages were higher in cities with higher cost of living, higher housing costs, and possibly overcrowding, but he finds no evidence of compensating differentials for differences in infant mortality rates or weather.

Compensation for workplace accident risk came to workers through both postaccident compensation and compensating differentials. Under the common law, workers had rights to obtain compensation when they could show that the accident resulted from employer negligence and that the worker had not assumed the risk of the accident when accepting employment (assumption of risk), that their own negligence had not contributed to the accident (contributory negligence), and that a fellow worker had not caused the accident (fellow–servant). Samples of fatal accidents, typically collected from county coroner reports and then supplemented with interviews with the victim's family, show that most families of workers that received payments obtained settlements outside the court system. The average payment for a fatal accident was about a half-year's income; roughly half of the families received payments that averaged about one-year's income. The few families that received large payments were counterbalanced by the large number of families receiving burial expenses or no payments at all (Fishback and Shawn E. Kantor 1995).

To supplement the relatively low levels of postaccident compensation, employers paid workers higher wages in jobs displaying more risk of fatal accidents. The values of life implied by the studies listed in Table 4 ranged from $4,830 to $36,000 in 1967 dollars in railroad work, to workers' demands for $60,000 to $200,000 in 1967 dollars in coal mining. These estimates are substantially below Viscusi's modern value of life estimates (1992, p. 39), which range from $153,000 to $460,000 in 1967 dollars. However, part of the rise in the value-of-life estimates can be attributed to the three- to fourfold increase in the average annual earnings of workers over the period.

In studies where the accident risk measures are based on insurance premiums, which measure the combined expected loss of fatal and nonfatal accidents, the compensating differentials in most cases less than fully offset the expected losses (probability of accident times the loss from the accident) from the accident. California wage earners in 1892 fared the best, earning risk premia that more than doubled the expected losses, but workers in Kansas from 1884 to 1887 and in Maine in 1890 received risk premia that covered less than two-thirds of the expected loss. The compensating differentials also penalized workers when conditions improved. Tests summarized in Table 4 show that when workers' compensation laws raised postaccident benefits, wages

[14] For a summary of the extensive literature on compensating differentials in modern labor markets, see Chapter 8 of Ronald Ehrenberg and Robert Smith (1994).

TABLE 4
ESTIMATES OF COMPENSATING DIFFERENTIALS AT THE TURN OF THE CENTURY

Workplace Condition	Setting	Type of Data	Nature of Test	Finding
Fatalities per Million Man Hours[a]	Class I railroads 1893–1909	Panel of means for occupational categories	Fixed effects regression (OLS, WLS)	Market value of life of $30,000 to $36,000 in 1967 dollars, approximately equal to present value of lifetime stream of earnings
Fatalities per Million Man Hours[a]	Class I railroads 1926–32	Panel of means for occupational categories	Fixed effects regression (OLS, WLS)	Market value of life of $4,830 in 1967 dollars
Fatalities per Million Man Hours[a]	Class I railroads 1934–45	Panel of means for occupational categories	Fixed effects regression (OLS, WLS)	Negative and statistically insignificant coefficient
Nonfatal Accidents per Million Man Hours[a]	Class I railroads 1893–1909	Panel of means for occupational categories	Fixed effects regression (OLS, WLS)	Market value of accident of roughly one year's income
Nonfatal Accidents per Million Man Hours[a]	Class I railroads 1926–32	Panel of means for occupational categories	Fixed effects regression (OLS, WLS)	Market value of accident of roughly 7 percent of one year's income
Nonfatal Accidents per Million Man Hours[a]	Class I railroads 1934–45	Panel of means for occupational categories	Fixed effects regression (OLS, WLS)	Market value of accident of roughly a half-year's income
Accident Risk Based on Insurance Premiums[b]	California wage earners, 1892	Cross-section of individuals	Regression (OLS)	Risk premium is 2.275 times expected wage loss reflected by insurance premium
Accident Risk Based on Insurance Premiums[b]	Kansas workers, 1884–87	Cross-section of individuals	Regression (OLS)	Risk premium is 0.625 times expected wage loss reflected by insurance premium[g]
Accident Risk Based on Insurance Premiums[b]	Maine workers, 1890	Cross-section of individuals	Regression (OLS)	Risk premium is 0.375 times expected wage loss reflected by insurance premium[g]
Accident Risk Based on Insurance Premiums[b]	Female workers in Indianapolis, 1892	Cross-section of individuals	Regression (OLS)	Risk premium absent
Accident Risk Based on Insurance Premiums[b]	Child workers in New Jersey, 1903	Cross-section of individuals	Regression (OLS)	Risk premium absent
Fatalities per 10 Million Man Hours[c]	Coal workers, 1912–23	Panel of state averages, labor supply	Regression (WLS)	Estimates of workers' value of life between $60,000 and $200,000 in 1967 dollars

TABLE 4 (*Cont.*)

Workplace Condition	Setting	Type of Data	Nature of Test	Finding
Post-Accident Benefits[d]	Coal miners, 1912–23	Panel of state averages for occupations	Fixed effects regression (OLS, WLS)	Decline in wage equal to between 1 and 1.5 times the employers' insurance premium
Post-Accident Benefits[d]	Lumber workers, 1907–23	Panel of state averages for occupations	Fixed effects regression (OLS, WLS)	Decline in wage equal to between 0.4 and 0.6 times the employers' insurance premium
Post-Accident Benefits[d]	Unionized building trades, 1907–23	Panel of state averages for occupations	Fixed effects regression (OLS, WLS)	No decline in wages
Unemployment Risk—Industry Means of Days Lost Due to No Work[b]	California wage earners, 1892	Cross-section of individuals	Regression (OLS)	Risk premium is roughly 1.8 times expected loss in annual income
Unemployment Risk—Industry Means of Days Lost Due to No Work[b]	Kansas workers, 1884–87	Cross-section of individuals	Regression (OLS)	Risk premium is roughly 0.55 times expected loss in annual income
Unemployment Risk—Industry Means of Days Lost Due to No Work[b]	Maine workers, 1890	Cross-section of individuals	Regression (OLS)	Risk premium is roughly 0.7 times expected loss in annual income
Unemployment Risk—Industry Means of Days Lost Due to No Work[b]	Female workers in Indianapolis 1892	Cross-section of individuals	Regression (OLS)	Risk premium is roughly equal to the expected loss in annual income
Unemployment Risk—Predicted Number of Months Lost[e]	Michigan farm laborers, 1892	Cross-section of individuals	Regression with instrumental variables	Risk premium is roughly 1.3 times expected loss in annual income
Unemployment Risk—Predicted Number of Weeks Lost[e]	Michigan building laborers, 1892	Cross-section of individuals	Regression with instrumental variables	Risk premium is roughly 0.4 times expected loss in annual income

TABLE 4 (*Cont.*)

Workplace Condition	Setting	Type of Data	Nature of Test	Finding
Unemployment Risk—Predicted Number of Months Lost[e]	Michigan railway laborers, 1892	Cross-section of individuals	Regression with instrumental variables	Risk premium is roughly 0.67 times expected loss in annual income
Illness Risk—Industry Means of Days Lost Due to Illness[b]	Child workers in New Jersey, 1903	Cross-section of individuals	Regression (OLS)	Risk premium is roughly equal to the expected loss in annual income
Illness Risk—Industry Means of Days Lost Due to Illness[b]	California (1892), Maine (1890), Kansas (1884–87), Indianapolis women (1892)	Cross-section of individuals for each state	Regression (OLS)	No risk premium found
Cost of Living[f]	Male manufacturing workers in the U.S., 1879–1919	Panel of state averages	Regression	Close to full compensating differential in all years except 1914
Various Measures of City Disamenities[f]	Male manufacturing workers in the U.S., 1899	Cross-section of state averages	Regression	No compensating differential found for infant mortality or weather measures. Wages higher in larger cities, possibly in response to overcrowding or higher housing costs.

Note: All results were statistically significantly different from zero in *t*-tests at 10 percent level unless otherwise specified. OLS is Ordinary Least Squares. WLS is Weighted Least Squares.
Sources. [a] Fishback and Kim (1993), [b] Fishback and Kantor (1992), [c] Fishback (1992, p. 110), [d] Fishback and Kantor (1995), [e] Hatton and Williamson (1991), [f] Rosenbloom (1996b).
[g] Some specifications not statistically significant.

adjusted downward for nonunion coal miners and lumber workers.

Another major source of insecurity for workers was the risk of layoffs, particularly given the absence of unemployment compensation. As seen in Table 4, wages at least partially adjusted upward in the late nineteenth century in settings where workers experienced more nonemployment, but the risk premiums in many situations did not fully cover the expected loss in annual income. California wage earners in 1892 and Michigan farm laborers in 1892 fared well, as they received layoff premia that exceeded the expected loss,

but workers in Kansas and Maine, and nonagricultural laborers in Michigan, received premia that were less than 70 percent of the expected losses from layoffs. Compensating differences might also have been incorporated in the structure of wage payments. Hatton and Williamson (1991), and Margo and Georgia Villaflor (1987) have speculated that workers paid by the month were much less susceptible to layoff risk than were workers paid by the day. In a study of California in 1892, workers paid by the day received 13.7 percent higher hourly earnings than workers paid by the week, and 29.4 percent higher hourly earnings than workers paid by the month (Fishback and Kantor 1992, p. 834).

The compensating differentials were not entirely associated with worker mobility and exit. David Fairris (1989) suggests that collective bargaining through unions can either raise or lower the size of compensating differentials. Unions can increase the size of risk premia in settings where they provide workers with better information about accident risks, counteract an employer monopsony, or more effectively represent the interests of inframarginal workers. Risk premia would be lower in union settings where the union seeks to level wages for equity reasons, where the union establishes rigid pay scales for jobs based on seniority rather than on risk, or where multiple unions negotiate with an employer for different job categories and rewards to risk are subject to a free rider problem in the negotiations for each category. Empirical tests show that the impact of unions on compensating differences varies from sample to sample. In California in 1892, unionized workers received larger compensating differentials than nonunion workers. Similarly, unionized workers were more successful at staving off wage reductions associated with workers' compensation in the coal and building trades industries than were nonunion workers in coal mining and in lumber. On the other hand, in the railroad industry a wage squeeze, which was associated with increased unionization and government arbitration, led to smaller compensating differentials for accident risk following World War I than during the prewar period (Fishback and Kantor 1992, 1995; Kim and Fishback 1993).

If many workers were receiving risk premia to accept more accident or unemployment risk, why do we see so many reformers and workers at the time pressing for workers' compensation and unemployment compensation? One reason may be that the majority of estimates of risk premia in Table 4 fell short of fully covering the expected loss from the accident. Even if workers had received a risk premium equal to the expected loss of the accident, they still might have sought legislative solutions to the extent that they faced problems in using the risk premium to purchase insurance.

If the workers could have taken their risk premium and purchased actuarially fair insurance with coverage that would have paid the full loss, they would have had no need for government compensation systems. The purchase of such insurance would have allowed workers to replace an extensive amount of their lost income in the event of an accident or a long spell of unemployment, preventing a descent into poverty. Unfortunately, insurance companies offered only very limited amounts of accident insurance. The accident insurance they did offer carried the highest load factors in the industry and often strongly limited benefits to counteract problems with adverse selection and moral hazard. Institutions like union funds, benefit societies, and employer-sponsored funds (that typically collected contributions

from workers) helped fill some of the gap, but the benefits they offered were typically meager. Payments for fatalities often covered less than a year's income, and disability benefits were low and often ended after six months to a year. A substantial number of workers used savings to protect against accident risk, but this was a much more expensive way to protect against accident risk than to purchase insurance, and rarely could families accumulate enough savings to offset the loss of a primary breadwinner (Fishback and Kantor 1996a; Kantor and Fishback 1996). In the case of unemployment risk, there was virtually no private unemployment insurance, establishment funds were ineffective when the entire establishment was closed, and there were virtually no union funds. Hatton and Williamson (1991) suggest that the savings and relief funds were not enough to prevent a significant number of unskilled workmen who experienced long layoffs in the 1890s from falling below subsistence.

Given the absence of full risk premia and the limited amount of insurance to which workers had access, the drive for legislation to establish workers' compensation and unemployment insurance made sense as a means of reducing the gap between the workers' loss and their postcalamity compensation. Even so, workers' compensation in the 1910s and 1920s and unemployment insurance in the late 1930s did not fully replace lost income. The value of benefits was limited to at most two-thirds of the loss, and weekly maximums often reduced the replacement rate still lower. The relative generosity of the programs today is much greater than that of the early 1900s, in part because of rising maximums and in part because income tax rates were substantially lower back then. In 1915, when only 2 percent of the working population paid taxes, the fact that workers' compensation benefits were nontaxable meant that benefits replaced less than two-thirds of after-tax income. Today, with substantially higher tax rates, workers' compensation can replace as much as 85–100 percent of after-tax income.

5. *Competition and Erosion of Employer-Based Discrimination*

One of Gary Becker's (1971) chief insights about the economics of discrimination is that competition among employers can serve to erode the impact of employers' discriminatory tastes on workers' incomes. In examining the extent of discrimination against Black workers and immigrants at the turn of the century, we see signs that market competition eroded some forms of discrimination, although many forms of discrimination still limited the economic advancement of minorities.

5.1 *Racial Discrimination*

Most scholars now agree that unskilled Black and White workers typically received the same wages for the same jobs from their employers. In a unique data set collected by the Virginia Department of Labor, which showed Black and White wages by occupation by firm across the state, Robert Higgs (1977a, 1977b) and Gavin Wright (1986, pp. 182–85) found that firms generally paid unskilled Blacks and Whites the same wages for the same jobs. Based on a variety of sources, Fishback (1992a, pp. 176–77) found that Blacks and Whites typically received the same piece-rate wages in coal mining.[15] In agriculture at the turn of the century White harvest labor and

[15] For other examples of Black–White comparisons, see Whatley (1990) and Higgs (1989). For discussion of the same issue for multiple ethnic groups in Hawaii at the turn of the century, see LaCroix and Fishback (1989).

ordinary labor earned on average about 8 percent more than Black labor, although Higgs (1977a, pp. 64–65) argues that the difference was driven by differences in the skills of Black and White farm workers and larger in-kind payments to Blacks than to Whites.

Although labor market competition was successful at reducing unskilled wage differentials, there still remained significant gaps between Black and White incomes. Black incomes were still only 30 to 40 percent of the level of White incomes around 1910. The percentage represented a marked improvement from the 25 percent level in 1870, but still fell well short of the 70 percent level we see today. The vast majority of Black–White income differences came about through differences in the proportions of Blacks and Whites in higher-paying and/or better-skilled jobs. For example, in the Virginia samples Wright (1986, pp. 172–97) finds that despite the similarity of Black and White wages in the same jobs, the mean wage for Whites was substantially higher than for Blacks because there were relatively few Blacks in high-paying jobs. In fact, the situation worsened between 1900 and the 1920s, as both Black and White mean wages rose, but there was a far higher percentage of Whites than Blacks in high-wage positions. There is substantial evidence of both horizontal segregation across industries and vertical segregation across occupations (Edward Meeker and James Kau 1977; Margo 1990, ch. 6; Wright 1986; Higgs 1977).

Wright (1986) places special emphasis on the presence of industry segregation, noting that textiles in the South were "lily-white," while iron and steel was a major employer of Blacks. Using evidence from the Virginia sample, Wright (1986, pp. 172–97) finds that the wage distribution for Blacks was skewed left relative to the White distribution in part due to being focused in lower-wage industries. The relative position of Black workers worsened between 1900 and the 1920s, as wages in the "White" industries grew faster than in the "Black" industries. Industry segregation did not always mean that Black workers were limited to the lowest-wage industries. Evidence from the occupational censuses and the manufacturing and mining censuses in Alabama, Virginia, and North Carolina, shows that the textile industry, which hired so few Blacks, was among the lowest-wage industries during the period, and that Blacks were a significant percentage of the workforce in some of the highest-wage industries—iron and steel, coal mining, quarry operations, furniture production, and shipping and boating—in Alabama, Virginia, and North Carolina (Fishback 1991). The more serious problem was probably the other kind that Wright (1986) discusses: the proportion of Black workers advancing to more skilled and higher-paying jobs was relatively small.

The source of the differential access to higher-paying positions might be classified in several ways: Black/White differences in human capital, discrimination by employers, discrimination by other workers, and pre-market discrimination often by governmental authorities. No one as yet has been able to assign definitive weights to each source, but it is clear that each played an economically significant role.

There are numerous signs that differences in human capital contributed to racial inequality. We know the most about differences in access to education in the segregated and unequal schools of the South. Black workers were less likely to be literate and the quality of their schooling was substantially lower (Margo 1990). Although education may

not have been a specific requirement for some manufacturing jobs at the time, schooling offered general skills that aided in the learning of industrial skills. As workers moved up the job ladder or sought professional positions, schooling became increasingly important. Margo (1990, ch. 6) offers a comprehensive look at the importance of various attributes in influencing the segregation of workers across broad occupational and industry categories. Literacy differences accounted for about 8 to 9 percent of the extent of segregation in 1900 and 1910. In 1940 and 1950 when he had more precise measures of education, he found that the gap in years of schooling accounted for 18 to 20 percent of the segregation. After also controlling for the impact of migration, Margo found that unexplained differences in segregation associated with race accounted for 23 to 32 percent of the segregation in 1900 and 1910, and 21 to 37 percent in 1940 and 1950 (see also Sundstrom 1994). Another sign that human capital was important was that the reduction in the Black/White educational gap played a significant role in the closure of the Black/White income gap between 1940 and 1980 (see Smith 1984, and Smith and Finis Welch 1986). Even after controlling for other forms of human capital, it is likely that there would still remain a significant gap in the cause of segregation that could be associated with racial discrimination.

Wright (1986), Warren Whatley (1990), and Thomas Maloney (1995) suggest that employers practiced statistical discrimination, using race as a signal of the individual worker's productivity. Competition in labor markets is less effective at eliminating statistical discrimination, in part because the discrimination is based on inadequate information about the productivity of individuals. The costs of experimenting to obtain the information necessary for eliminating the discrimination may have been higher than the employers' gains in profits. Wright (1986, pp. 172–97) suggests that industry segregation in the South may have been caused by differences in the industry-specific experience of Blacks and Whites that developed along a path determined by the initial hiring patterns in the industry. For example, southern textiles started with an all-White workforce. Because many Whites had grown up in mill villages with constant exposure to textile knowledge, Blacks from outside the villages could not effectively compete for the jobs. As time passed, employers began using race as a signal of industry-specific experience. The use of race as a signal of productivity could be altered when firms experimented. In studies of hiring patterns in Cincinnati in 1918 and in the auto industry in Detroit in the 1910s and 1920s, Warren Whatley (1990) and Thomas Maloney and Whatley (1995) find that firms changed their policies toward Black workers once the workers were able to get their "foot in the door." Maloney (1995) finds that differences in the costs of experimentation, based on the flexibility of internal hiring procedures in firms, helps explain why Black workers during the 1920s and 1930s advanced more in the northern meat-packing industry than in the northern steel industry.

Although much of modern public policy discussion is directed at discrimination by employers, there was substantial discrimination by other workers that slowed Black progress. If White workers could force employers to discriminate, not only could they reduce their contact with Blacks but they also could gain income by reducing the competitive threat from Black workers. Most White workers at the time refused to

take directions from Blacks, which meant that there were almost no Black managers except in all-Black workforces (Donald Dewey 1952; Fishback 1992a, pp. 183–84; Sundstrom 1994).[16] Meanwhile, many White workers pressed employers not to hire Blacks. The pressure was most visibly manifested in the actions of labor unions. The vast majority of unions excluded Blacks. Some, like the railroad porters, established separate organizations. The unions that integrated, for example, the United Mine Workers of America and the Longshoremen, recruited Black workers in part because they were already a major part of the industry before the unions had been established. In these settings the failure to recruit Black workers would have diminished the effectiveness of the union. Even in the integrated unions, union locals violated national policy by discriminating. For example, in the coal industry union locals in the northern coal fields often actively excluded Blacks (Fishback 1992; Sundstrom 1990).

State and local governments practiced some of the most damaging forms of discrimination against Black workers. Blacks were educated in separate and unequal schools, they received unequal protection of their property rights, court decisions favored Whites over Blacks, the police enforced the laws unequally, and Jim Crow laws enforced the social separation of Blacks and Whites (Higgs 1977; Jennifer Roback 1984; Gunnar Myrdal 1972, p. 530; Margo 1990). Inadequate education not only limited skills but reduced the probability of migration to better opportunities (Margo 1990). Inadequate protection of the civil rights and property rights of Blacks led a number of Black agricultural workers to rent rather than own, remaining under the protection of White landlords, who could more likely obtain recourse from the law for vandalism (Higgs 1977; Lee Alston and Joseph Ferrie 1993).[17] Finally, the combination of social separation established by Jim Crow and inadequate schooling fostered an environment in which White beliefs in Black inferiority were constantly reinforced and thus maintained. The impact of most forms of governmental discrimination cannot generally be measured in straightforward labor market studies. In many cases the impact shows up in the residuals assigned to racial discrimination, as well as the coefficients on some human capital variables.

In summary, competition among employers helped to reduce the simplest form of racial discrimination in the labor market, unequal payment of similarly skilled workers. The competition was not as effective at eliminating discrimination that prevented Blacks from obtaining the skills that would allow their advancement, in part because there were information costs about worker productivity that were not easily overcome and in part because the competitive forces were not effective at eliminating governmental discrimination. Government discrimination was not entirely immune to competitive forces. West Virginia coal employers ac-

[16] Dewey also argued that Whites refused to work alongside Blacks. However, there were numerous situations where unskilled Blacks and Whites worked together.

[17] Southern plantation owners in the early 1900s provided nonmarket services to Black workers, including protection from racial violence, help with legal problems, access to health care, and help with debts. In return, workers were loyal and tended to stay with the same planter for longer periods of time. Alston and Ferrie (1993) argue that the planters sought to maintain these forms of paternalism; therefore, the planters contributed to maintaining the racist state of the Jim Crow South and actively opposed attempts to provide social insurance and other programs during the New Deal and into the 1960s.

TABLE 5
ESTIMATES OF IMMIGRANT–NATIVE DIFFERENTIAL AFTER CONTROLS FOR PRODUCTIVITY

Study	Dataset	Immigrant Group	Other Correlates	Mean Earnings of Immigrants Were This Percentage Less	Immigrants with Same Attributes as Comparison Group Earned This Percentage Less
McGouldrick and Tannen (1977)	U.S. cross-section of immigrant group means by industry, 1908–10	Southern and Eastern Europeans vs. Northern Europeans	English speaking, literacy, time in U.S., age, prior experience, industry sales growth, firm size, capital/labor ratio	26.9	–0.4 to 9.9
McGouldrick and Tannen (1977)	U.S. cross-section, 1890	Northern Europeans vs. natives	Age, age^2, region dummies, industry dummies	Not reported	0
McGouldrick and Tannen (1977)	U.S. cross-section, 1890	Irish and French Canadians vs. natives	Age, age^2, region dummies, industry dummies	Not reported	roughly 10
Blau (1980, p. 34)	U.S. cross-section of male workers in ethnic groups by industry, 1908–10	Southern and Eastern Europeans vs. Northern Europeans	Literacy, marital status, English speaking, age, age^2, capital/labor ratio, industry sales growth, firm size, location, time in U.S.	24	5.6
Blau (1980, p. 34)	U.S. cross-section of female workers in ethnic groups by industry, 1908–10	Southern and Eastern Europeans vs. Northern Europeans	Literacy, marital status, English speaking, age, age^2, capital/labor ratio, industry sales growth, firm size, location, time in U.S.	14.1	4.3

tually contributed to equalizing school expenditures for Blacks and Whites when they sought to attract Black workers to the mines (Fishback 1987). Meanwhile, streetcar companies actively opposed Jim Crow streetcar laws because they felt they would lose income (Roback 1986). Yet, the number of successful cases documented so far are few.

5.2 *Discrimination Against Immigrants*

European immigrants appear to have experienced more success in avoiding discrimination than Black workers. The wage gap between European immigrant groups and native workers tended to be smaller than between Black and White workers. As shown in Table 5, the gap in mean wages between workers born in

TABLE 5 (*Cont.*)

Study	Dataset	Immigrant Group	Other Correlates	Mean Earnings of Immigrants Were This Percentage Less	Immigrants with Same Attributes as Comparison Group Earned This Percentage Less
Hannon (1982b)	Michigan copper miners, 1888	Immigrants versus natives with native parents	Married, uses age and age began work to develop experience and schooling measures	9.8	24.3
Hannon (182a, p. 835)	Michigan agricultural implement workers and iron workers, 1890	Immigrants vs. natives with native parents	Age, age^2, years in US, age of migration	8.2	5 in large cities, 10 in small cities
Eichengreen and Gemery (1986)	Iowa male wage earners 1894–95	Mostly Northern Europeans vs. natives	Age, age^2, union, single, occupation dummies	4.7	5.5 to 7.4
Buffum and Whaples (1995)	Michigan furniture workers, 1890	Mostly Northern Europeans vs. natives with native parents	Age, age^2, years in occupation, years with firm, married, firm size, education, literacy, city dummies, skilled, semiskilled, manager, artisan	1.4	2 or 6.4

Notes. The percentage difference in the actual means is calculated as the difference in the logs of the sample means multiplied by 100. Not all of the sources report estimates of the extent of discrimination in the same way. In the case of decompositions, the percentage is the differential in logs attributable to ethnicity multiplied by 100. Where the coefficients of dummies are used in semilog wage equations, it is the coefficient of the dummy times 100. Where coefficients of dummies are used in unlogged wage equations, it is the coefficient of the dummy as a percentage of the mean wage in the sample.

The references used the following estimation methods: McGouldrick and Tannen (1977) used the difference in intercepts and coefficients on some other attributes, Eichengreen and Gemery (1986) used the difference in intercepts, Blau (1980), Hannon (1982a,b), and Buffum and Whaples (1995) used decompositions.

the United States and northern European immigrants was very small, while the gap for the southern and eastern Europeans who began flooding into the country after 1890 was larger. A substantial part of the gap can be explained by the latter immigrants' lack of industrial background, relative illiteracy, and inability to speak English. Immigrants' wages typically rose relative to Whites as they lived longer in the United States, although estimates of the time until immigrant wages caught up to those of native workers vary

significantly (Hatton 1997, Christopher Hanes 1996).

A number of scholars have used evidence from government surveys to calculate residual estimates of "wage discrimination," which essentially show differences in wages that cannot be assigned to differences in measured productivity attributes (see Oaxaca 1973). The studies vary in their method of estimating discrimination. Some of the studies estimated differences in the wage intercept using a dummy variable for immigrant status, assuming that the rewards to productivity attributes were the same for natives and immigrants. Other studies include interaction terms with the productivity attributes to identify possible differences in the rewards paid to immigrants and natives. Table 5 summarizes several representative studies. With one exception (Joan Hannon 1982b), the studies suggest that immigrants earned between 0 and 10 percent less than native workers with the same characteristics. These results are similar to the levels of "wage discrimination" we see for many immigrants in 1979 (Leonard Carlson and Caroline Swartz 1988).

The large-scale immigration of the period was a central issue in the discussions of labor markets at the time. The period around 1900 saw the largest per capita inflows of migration at any time in American history (George Borjas, 1994, p. 1668). Similar to the debates today, a primary worry among workers was that the influx of immigrants was increasing the supply of labor and thus lowering the standard of living of native workers. Many cross-city studies of modern data suggest that the impact of immigrants on native workers' wages are relatively small, although Borjas claims that these types of studies understate the macroeconomic effects of immigration. Similar cross-city studies for the period 1897 to 1914 show substantially larger effects of immigrants on the wages of native workers than do modern studies (Goldin 1994). Hatton and Williamson (1995) find in a macroeconomic analysis that the influx of immigrants retarded real wage growth by about 6–9 percent from 1890 to 1914, compared with 35 percent growth in real wages at the time. Carter and Sutch (1996, pp. 48–49) argue, however, that Hatton and Williamson's estimates of retardation are overstated because they exclude by assumption a number of dynamic features that are hypothesized to generate a positive effect of immigration on real wages.

Given a negative impact on standards of living, workers' groups sought to sharply limit the influx of new workers from abroad, in essence, asking the government to discriminate against foreign workers by limiting their entry into the American labor market. Goldin (1994) finds that support for immigration restriction was stronger in cities where the impact of immigration on wages was greatest. The workers' demands for immigration restrictions eventually succeeded in several stages culminating with the strong limits established in the early 1920s.

The legal bans on immigrants were most severe for Asian immigrants. Chinese immigrants were excluded in 1882, while Japanese immigration was slowed considerably by the Gentlemen's Agreement, which went into effect in 1908. California, Washington and seven other states passed alien land laws banning ownership and leasing of agricultural land by Japanese immigrants between 1913 and 1925. Japanese workers made significant strides despite these limitations. Prior to 1900, Japanese farm workers and railroad workers earned substantially less than did native workers for similar jobs, but by 1911 changes

leading to greater competition caused Japanese workers to earn similar wages for the same work (Higgs 1978; Yuzo Murayama 1984). Further, the proportion of Japanese workers in higher-paying jobs rose significantly, although Masao Suzuki (1995) claims that much of the perceived movement up the ladder after 1920 was driven by return migration to Japan by less successful workers.

5.3 *Discrimination Against Women*

Many of the same themes of competition and discrimination also arise in the study of male–female earnings differences, although the gender comparisons are complicated by social norms governing the roles of men and women. Goldin (1990) has written a comprehensive analysis of women's role in the economy in the early 1900s and changes in their economic well-being over the past two centuries. The female–male ratio of full-time earnings ranged from 0.54 to 0.62 between 1890 and 1930, which is below the range of 0.61 to 0.66 in the 1980s (pp. 59–63). After controlling for measurable productivity attributes, however, estimates of a wage discrimination residual accounted for at most 20 percent of the male–female earnings difference around 1900.[18] The discriminatory residual rose to 55 percent of the male–female differential in 1940, which is similar to modern estimates (ch. 4).

As in the studies of racial discrimination, Goldin finds that male and female workers were typically offered the same wage rates in entry-level positions. The residual gap in earnings developed largely because of differences in the occupations in which males and females were employed (chapter 3). Goldin suggests that the discriminatory residual rose between 1900 and 1940, in part due to a combination of the development of internal promotion policies based on statistical discrimination. In the manufacturing sector, women encountered few formal barriers, but actual requirements, "say, strength and various normative influences that defined certain industries as male only, deterred women from requesting entry (p. 118)." In the clerical sector, where men and women started with the same entry wages, women were explicitly barred from entry to certain jobs leading to promotion, in part because employers could not identify at low enough cost which women were likely to remain in the workforce and make use of their training.

6. *An Alternative View of Labor Market Institutions*

The use of exit and voice by workers to protect themselves suggests that we should take a fresh look at "peculiar" labor market institutions, like the company town in mining, company unions, and agricultural share tenancy. These institutions are often described as exploitative: the company town was designed to restrict mobility, the company union was a means of preventing workers from organizing their own unions, and sharecropping in essence "just replaced slavery." Once we recognize the mobility of workers in these various settings, it is worth reexamining these institutions to see if there are other reasons for their adoption and persistence.

6.1 *The Company Town*

The company store and the company town are often described as the most exploitative of institutions (Corbin 1981; Seltzer 1985). Miners "owed their

[18] To make the estimate comparable to the information in Table 5 for immigrants, if 20 percent of the male–female difference was due to wage discrimination, it would imply that females earned about 10 percent less than males with the same productivity attributes.

souls to the company store." The presence of substantial competition among employers and high mobility of miners opens the door for alternative interpretations of the development of many of the "peculiar" institutions in the coal industry, like the company town. Even if an employer owned the only store and housing in the town in an isolated area, his ability to charge monopoly rents and store prices was limited because he had to hire miners in a regional market where there were hundreds of other coal mines. If he charged monopoly store prices, he ran the risk of losing workers to other mines unless he raised wages or improved other conditions at the mines. For analytical purposes, it is better to treat the situation at each mine as an employment package that included the wage rate, store prices, rents, and safety. In fact, Fishback (1992a, 1992b) found several examples of settings where wages adjusted upward to at least partially offset negative features of the employment package, like higher company housing rents, worse conditions in company towns, and lesser employment opportunities. It is clear that these markets were not functioning so well that full compensating differentials were established. Given that there were costs of moving, employers might have been able to raise store prices, for example, above the average for the region in the short run. However, as Boal (1995) shows, miners had enough mobility to impose limits on the employers' ability to exploit any monopoly or monopsony power based on geographic isolation.

The mobility of the miners also readjusts our picture of why company stores and mines may have developed. Were these designed to limit mobility and prevent unionization, or did they have other purposes? Fishback (1992, 1992b) reexamined the issue and suggests that the company town was a solution to the problem of isolated mines from which both workers and employers gained. Companies generally did not charge monopolistic rents. Rents on housing were similar to or lower than those in many cities, while the internal rates of return on housing investments were similar to those on alternative investments. By owning housing, coal employers could eliminate the transaction costs of contracting with independent housing agents and deny them the quasi-rents from charging high housing prices in an isolated area. Employers owned housing in part to limit the workers' ability to block new hiring by staying in the house, particularly during strikes. Yet workers also had incentives not to own homes near an isolated mine. Renting allowed the worker to avoid giving the employer short-run monopsony power over his labor and to escape capital losses in a risky industry. The timing and location of coal company towns is consistent with this analysis. Because collective action and strikes were ubiquitous in union and nonunion areas, we might expect that all mines would have sought to establish company housing if the primary goal was to limit unionization. Yet there were a number of coal areas where company housing was not dominant. Company towns were found in areas where there was less agricultural activity, smaller communities, and more rapid growth in coal mining employment.

6.2 *The Company Union*

Company unions primarily developed during and after World War I. Roughly a half-dozen companies employed company unions prior to World War I. The federal government helped establish over 100 "shop committees" during the war, but most either disbanded or changed significantly after the war

ended. By 1926, there were 913 company unions in 432 companies, involving roughly 1.37 million workers (Daniel Nelson 1982, p. 338; Fairris 1995). Most company unions did not engage in collective bargaining, although they gave workers a voice over issues like plant safety and sanitation.

The absence of collective bargaining and the fact that a number of employers used company unions as a means of preventing unionization led labor historians to consider company unions to be ineffective for workers. However, Fairris (1995; forthcoming) cites a wide-ranging literature on company unions establishing that workers benefited from the institution, particularly in the problematic areas of workplace public goods described by Freeman and Medoff (1984). Many workers held favorable attitudes toward company unions and initiated company representation plans. When filing grievances through company unions, the workers' success rate varied from setting to setting between 28 and 70 percent. Both workers and firms benefited from company unions through reductions in turnover, enhanced labor productivity, and lower accident risk in some situations. Comparisons of turnover rates, productivity growth, and accident risk before and after World War I are consistent with this interpretation. An analysis of the relationship between company union concentration in eight manufacturing industries and trends in productivity and injury rates led Fairris to conclude that company unions significantly enhance safety and productivity simultaneously.

6.3 *Land Tenure Arrangements in Southern Agricultural Labor Markets*

The rise of sharecropping and other land tenure arrangements in the South after emancipation caused a number of historians to conclude that sharecropping replaced slavery by establishing a new set of customary relationships that kept Black workers impoverished and contributed to the poverty of rural Whites. Development economists will recognize the land tenure arrangements in the South as being quite similar to institutions that have developed in many rural, agricultural areas around the world. Since sharecropping is often found in agricultural areas with low incomes, there is a tendency to ascribe the low incomes to the presence of share tenancy. Yet there is a large literature in American economic history, which builds on the work of Department of Agriculture investigators in the early 1900s, that shows that the land tenure arrangements were responses to a series of specific problems. In many ways sharecropping and other tenancy arrangements were responses to the causes of poverty, rather than a root cause of poverty.[19]

In southern agricultural labor markets circa 1900 land tenure arrangements ranged from wage labor to sharecropping to share tenancy to fixed-rent tenancy to land ownership. The terms of sharecropping and tenancy contracts varied widely across region, across crops, and across time, while including innumerable side arrangements (Alston and Higgs 1982). The nature of the tenure arrangements chosen was determined by a number of factors, ranging from the accumulation of human and physical capital, risk-sharing, the costs of enforcing contracts, and the costs of monitoring labor. Although when schol-

[19] Sharecropping and share tenancy are distinctly different tenure arrangements. The sharecropping arrangement is a labor contract in which the landowner hires a worker and pays him a share of the crop as his wage. The share tenancy agreement is a land rental agreement in which the tenant pays the landowner a share of the crop as rent for the land.

ars proposed these explanations, they emphasized one factor more than others, the factors are not mutually exclusive explanations. Each seems to explain a set of facts about share arrangements, and no single factor alone explains all of the facts. Joseph Reid (1979) argued that a central determinant of the contract was the human capital of the worker. Young workers with little experience typically started as wage workers. As they accumulated human capital from interactions with the landowner, they became sharecroppers, still working as laborers but receiving a share of the crop. After accumulating still more experience, they began renting land for shares or as fixed-rent tenants, and eventually became owner–operators themselves. Reid found that the ages of workers in the various categories were generally consistent with his theory.

Wright (1979) suggests that accumulation of physical capital—mules, other work stock, and tools—was just as important to the move up the tenure ladder. He finds a negative relationship between the extent of share tenancy and the extent of Black wealth in 33 Georgia cotton counties in 1900. Scholars have also suggested that sharecropping and share tenancy were means of sharing risk between the employer and the landlord. Higgs (1973) found that a positive relationship between risk and the extent of share arrangements will develop in settings where the landlord is less risk averse than the tenant. Using cross-sectional data of 1910, he found a positive relationship between share tenancy and the extent of share arrangements.

Alston and Higgs (1982) suggest that share arrangements contributed to the reduction of costs of contract enforcement and supervision. Landowners faced problems with enforcing annual wage contracts during the harvest, because the demand for labor rose sharply in rural areas, which caused workers to leave for higher harvest wages without finishing their contractual duties. Share arrangements offered a self-enforcing mechanism for the annual contract because workers were paid on the basis of the size of the crop after the harvest ended. On farms near urban areas the worker-exit problem was less severe because the pool of labor available was larger. Alston (1981) examined a panel of 1000 counties for the census years between 1930 and 1960 and found that share arrangements were less common near urban areas.

Share arrangements reduced supervision costs relative to wage contracts by tying the worker's payments more directly to his productivity; therefore, the proportion of share arrangements to wage contracts is expected to be higher in settings where supervision of wage work was more costly. Alston and Higgs argue that supervision costs were higher for wage work on larger farms. Supervising wage workers was less costly on farms where the landlord used tractors and/or provided tools and mules because he tended to monitor the use of his capital, which lowered the additional cost of supervising workers. In a series of econometric studies, they show that share arrangements were indeed more common on larger farms and less common in areas where the landlord provided work stock or used tractors.[20]

[20] There has been a heated debate about credit provision to tenants in the south in the 1870s and 1880s. Ransom and Sutch (1977) claimed that southern tenants and croppers were locked into credit arrangements with nearby country stores, which exercised monopoly power. *Explorations in Economic History* in 1979 published a conference issue on the topic, in which scholars questioned several aspects of the Ransom and Sutch argument. Critics suggested that Ransom and Sutch's calculations overstated the implicit interest rate calculated from cash and credit prices at the store. A key issue that has never been resolved is the number and type of people who purchased on

The descriptions of company towns, company unions, and sharecropping above have emphasized the economic reasons for their existence, in response to the largely negative images attached to these institutions. The discussion is not meant to entirely discount the presence of problems associated with these institutions. Coal employers at a number of mines used their control of company housing to keep union organizers away from the mines and in some settings inflamed disputes with their miners by hiring mine guards. Employers clearly preferred a company union to an independent union, because they preferred dealing with only their own employees and not a union strengthened by its organization of a large number of workers across the country. Despite abuses, the discussions show that company towns and unions in many settings developed for numerous reasons, not simply because employers could use them to exert monopsony power. In plantation areas, sharecropping coexisted with a system of paternalism where planters protected their Black workers from a racist state and then helped maintain the racial policies that helped keep their workers tied to them. Yet sharecropping persisted outside these plantation regions and in areas where workers were highly mobile too. Thus, while sharecropping may have been found in areas of poverty, the institution was not necessarily the cause of poverty.

7. *The Development of Protective Legislation*

Reformers at the turn of the century proposed much of the workplace legislation we have today. They succeeded in obtaining limits on child labor and on working time for women, minimum wages for women, and safety legislation and workers' compensation laws. However, minimum wage laws for men, unemployment insurance laws, mandatory health insurance, old-age pensions, and state insurance for workers' compensation either failed to pass or were adopted in only a small number of states.

The reformers faced two structural hurdles in the political system of the period. Most labor issues were considered the domain of state and local governments. The reformers therefore had to pass legislation in numerous states simultaneously and were constantly faced with arguments by employers that such legislation would place them at a competitive disadvantage. In addition, the courts ruled against the early attempts to regulate wages and hours for men on the grounds that they limited the freedom to contract, although the courts did allow such limits for women and children (David Moss 1996).

The passage of legislation involved a bargaining process between employers and workers that was filtered through state-level politics. Employers had enough political power in most states that they could significantly change the legislation proposed by reformers. In

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credit. Ransom and Sutch suggested that most people in the area bought an extensive amount on credit from one store and thus paid the high credit prices. Goldin (1979) argues that a much lower percentage of people bought on credit, which would imply that high implicit interest rates reflected significant worries about repayment risk for that group. More research also needs to be done on the extent to which workers shopped at multiple stores. Ransom and Sutch argues that the credit lock-in reduced mobility. However, it is important to note that few workers owed money to the landlord or the store after the harvest payments; thus, hardly anybody was locked in until after they had fully spent their earnings sometime later in the next season (Fishback 1989). Wright (1986) offers evidence that rural southerners were highly mobile within the South, raising some doubts about the extent to which workers were locked into one place.

consequence, many of the laws that passed a majority of the legislatures, like workers' compensation, were ones from which employers anticipated that they would gain. Other laws, like child labor laws and safety legislation, codified the practices of a significant subgroup of employers. These employers may then have supported the legislation to ensure that the remaining employers followed suit, which reduced any competitive advantages gained by less progressive employers. A final set of laws, including women's hours laws, had indirect effects on other groups that were more important than the effects on the targeted group.

7.1 *Workers' Compensation*

One of the leading progressive reforms was the adoption of workers' compensation. Fishback and Kantor (forthcoming 1998) find that the general concept of workers' compensation was supported by workers, employers, and insurers. Employers supported workers' compensation but not other forms of social insurance, in part because the common law already forced them to compensate some workers for accidents. There were no legal requirements that they compensate unemployed or unhealthy workers. Employers became interested in workers' compensation due to increasing dissatisfaction with the existing system of negligence liability, which generated friction with their workers and which seemed to be generating increasing costs of workplace accidents. Further, the costs of increasing the expected level of postaccident compensation for workers were not large because employers were able to pass a portion of the costs back to nonunion workers in the form of lower wages. Workers gained, even if they "bought" workers' compensation through wage reductions, because they ended up better insured against workplace accident risk. Insurers were happy because they could sell more insurance because workers' compensation overcame several adverse selection and moral hazard problems that had sharply limited the amount of accident insurance they could offer workers.

Bitter struggles developed, not over the fundamental issue of workers' compensation, but instead over specific aspects, like benefit levels and state insurance of the compensation, that determined the distribution of the gains from enacting the law. In the vast majority of states, employers and insurers were effective at limiting the demands of organized labor. For example, organized labor actively lobbied for the elimination of private insurance of workers' compensation risk. They succeeded in only seven states, where organized labor was a very strong force or it could combine forces with a strong progressive movement that gained hegemony in both houses of the legislature. In ten other states, they reached compromises where both private and state insurance was allowed, while in the majority of states no state insurance scheme was established (Fishback and Kantor 1996b). Employers also influenced the setting of benefit levels. Employers in more dangerous industries and in high-wage states succeeded in pressing legislatures for lower benefits, although workers succeeded in obtaining higher benefits in states where unions were strong, party control of the legislature had shifted (often in favor of reform groups), and an agency was established to administer workers' compensation (Fishback and Kantor forthcoming).

7.2 *Child Labor Laws*

Between 1880 and 1920, a well-organized social movement developed and pressured state legislatures to enact

limits on child employment. During the same period, the labor market participation rates of children fell nearly sixfold (Carter and Sutch 1996b, p. 7). The question that arises is how much of the decline in child participation rates can be attributed to the presence of child labor legislation. A variety of studies show that the employers' demand for child labor was reduced substantially by changes in technology, increases in the supply of unskilled workers due to massive immigration, and rising real wages (see Allen Sanderson 1974; Paul Osterman 1979; Martin Brown, Jens Christiansen, and Peter Phillips 1982; Carter and Sutch 1996b). As their demand for child labor fell, the employers who had already eliminated child labor reduced their opposition to child labor laws. In fact, they may have actively supported the legislation to force other employers to follow in their footsteps. Brown, Christiansen, and Phillips (1992) studied child labor in the fruit and vegetable canning industry in the early 1900s. Combining case studies with an analysis of a panel of U.S. state averages between 1905 and 1919, they found that shifts in technology were the leading cause of the decline in the proportion of child workers in the industry. Child labor and schooling laws also reduced the children's proportion, primarily in the technologically backward canneries.

In a broader study using individual level information from the federal censuses of 1880, 1900, and 1910 (the Integrated Public Use Microdata Series), Carolyn Moehling (1997) examines the impact of minimum-age restrictions on the manufacturing occupations reported by families for their children. The results of her study indicate that child labor legislation typically followed rather than initiated changes in the labor market participation of children. Moehling suggests that an effective minimum age law would have raised the labor force participation of children over the minimum age and reduced participation among those below, thus leading to a large difference in the participation of 13 and 14 year olds. She finds that states that first adopted minimum age laws already had much larger differences in the participation rates than other states before they adopted the law. Further, the adoption of the law did not lead to an increase in the difference between 13- and 14-year-old participation rates. In the states that adopted later, the adoption of the law was preceded by a substantial increase in the difference between 13- and 14-year-old participation rates. After the states adopted age minimums there was only a small increase in the difference. As further evidence, Moehling compares changes in boys' labor force participation in industries covered by the law and those uncovered by the law. She finds that changes across states and time in boys' participation rates were the same in covered and uncovered industries. Thus, it appears that the child labor laws codified practices already adopted by a large number of employers. The laws had some impact on child-hiring practices because they forced recalcitrant employers to follow suit.

7.3 *Women's Hours Laws*

State laws limiting the number of hours for women may also have passed after many employers had substantially reduced hours for women. Goldin (1990, pp. 192–98) examined the impact of the hours law by estimating a regression on a cross-section of state average weekly hours for all workers in 1919. The regression included a southern dummy and measures of urbanization and the female percentage of the workforce. The regression showed that the presence of a restriction on women's

hours in 1914 lowered the average workweek for all workers in 1919 by about 1.8 hours per week. Whaples (1990a, pp. 290–94) performed a similar exercise on city-level data, where he was able to control for a wider range of explanatory variables. When Whaples estimated Goldin's equation for the level of weekly hours in 1919 using his city-level data, he found, as Goldin did, that hours laws enacted prior to 1914 reduced the hours in 1919. However, once he included several additional explanatory variables—measures of firm size, capital, foreign-born workers, population size, an instrument for the wage—the hours laws had little or no effect.

The presence of hours laws and changes in laws potentially affected not only the level of hours but also changes in hours over time. Whaples (1990a, pp. 357–58; 1990b, pp. 398–402) examined the change in hours between 1914 and 1919 in one sample of 274 cities and the change between 1909 and 1919 in another sample of 118 industries. To examine the impact of state hours laws in the regression analysis, he developed a variable measuring how much hours would have changed had the state hours laws been binding. In decompositions, the state hours laws accounted for only 1.2 percent of the reduction in wages between 1914 and 1919 in the city sample, and 9.0 percent of the reduction between 1909 and 1919 in the industrial sample. Whaples concluded that most of the reduction in hours per week came through wage–hour tradeoffs negotiated by workers, expansion in manufacturing employment, changes in the foreign-born percentage of the population, and technological change.

While Whaples estimated the direct impact of the hours laws, Goldin offers evidence that an indirect effect on the hours of workers not covered by the law may have been the more important result. Goldin (1990, pp. 196–97) examined the change in average scheduled hours worked between 1914 and 1919 separately for males and females, using a cross-section of state averages. Her regression results suggest that, similar to Whaples' finding, limits on women's hours in 1914 had no impact on the change in women's hours. On the other hand, the limits on women's hours in 1914 were associated with a decline in male weekly work hours between 1914 and 1919, while women experienced a small decline in employment. Goldin therefore concluded that women's hours laws actually benefited males more than females, by shifting employers' demands away from employing women toward employing more men. The result is consistent with active lobbying by labor in male-intensive industries for female hours laws.

7.4 *Safety Regulation*

As found in numerous studies of modern safety regulation (Viscusi 1992), safety regulations often had limited impact. The studies summarized in Table 6 suggested that only a small number of safety regulations reduced accident rates in the coal industry. Fishback (1986; 1992, pp. 115–20) estimated the impact of a wide range of coal safety regulations using a panel from the 23 leading coal states between 1903 and 1923. Many of the specific regulations enacted had little impact on fatal accident rates, possibly because they just codified existing practices. Three specific regulations passed statistical significance tests in reducing accident rates: requirements that foreman visit workplaces more often, that miners use permissible explosives, and that miners not ride on coal cars. Mark Aldrich (1997, pp. 211–58) suggests that the safety legislation often had complex effects on mine safety. Requirements for new technology or

TABLE 6
IMPACT OF SAFETY REGULATION AND LIABILITY LAWS ON ACCIDENT RISK

Type of Law	Citation	Dependent Variable	Sample	Other Controls	Results
Safety Legislation and Inspection Budgets	Fishback (1992, pp. 115–25)	Fatal accident rate in bituminous coal mining	Panel of 23 coal states, 1903–30	State effects, coal price, machinery, days worked, workers' comp., employer liability laws, bureau of mines	Of 14 specific regulations, only bans on riding coal cars, requiring use of permissible explosives, and foreman visits to workplace reduced accident rates in statistically significant fashion. Higher state spending on mine inspection lowered accident rates.*
State Regulatory System Using Enforceable Safety Standards	Chelius (1977, p. 79)	Nonfatal machinery accidents per member of labor force in state as ratio to national average	Panel of 26 states from 1900 to 1940	State effects, dummy for presence of regulation	Presence of system did not reduce accident risk
State Unspection Budget	Buffum (1992, p. 149)	Nonfatal machinery accidents per member of labor force	Panel of 26 states from 1900 to 1940	Employer liability law, workers' comp. laws, % employed in mining, % in railroads, % female, % foreign born, % illiterate, % union, % large firms, U.S. national average	More spending lowers accident risk but not statistically significant
State Inspection Budgets	Buffum (1992, pp. 109–11, 153)	Fatal Industrial accidents per 100,000 workers	Panel of 8 states from 1900 to 1940	Workers' comp., employer liability law, % employed in mining, % in railroads, % female, % foreign born, % illiterate, % union, % large firms, U.S. national average	Workers' comp. raises accident rate* and employer liability lowers accident rate

TABLE 6 (*Cont.*)

Type of Law	Citation	Dependent Variable	Sample	Other Controls	Results
Railroad Safety Laws	Buffum (1992, pp. 92–98, 143)	Railroad workers killed per 100,000 accidents	Time series of national averages, 1888–1940	Tons hauled per train mile, real income of railroads, dummy for FELA 1908, dummy for war years	Appliance Act (1893), Train Stops (1922), Boiler Act of 1915 all lowered fatal accident rates.* Handhold (1894), Drawbar (1895), Air Brake (1899), Ash Pan (1908), Boiler Act of 1911 did not lower fatal accident rates.
Workers' Comp. and Employer Liability	Chelius (1977, p. 79)	Nonfatal machinery accidents per member of labor force in state as ratio to national average	Panel of 26 states from 1900 to 1940	State effects, dummy for presence of regulation	Workers' compensation and employer liability each lower accident rate
Workers' Comp. and Employer Liability	Buffum (1992, pp. 102–103, 149)	Nonfatal machinery accidents per member of labor force	Panel of 26 states from 1900 to 1940	Spending on factory inspection, % employed in mining, % in railroads, % female, % foreign born, % illiterate, % union, % large firms, U.S. national average	Workers' comp. and employer liability each lower accident rate, but not statistically significant
Workers' Comp. and Employer Liability	Buffum (1992, pp. 109–111, 153)	Fatal industrial accidents per 100,000 workers	Panel of 8 states from 1900 to 1940	Spending on factory inspection, % employed in mining, % in railroads, % female, % foreign born, % illiterate, % union, % large firms, U.S. national average	Workers' comp. raises accident rate* and employer liability lowers accident rate

TABLE 6 (*Cont.*)

Type of Law	Citation	Dependent Variable	Sample	Other Controls	Results
Workers' Comp. and Employer Liability	Fishback (1992, pp. 115–25)	Fatal accident rate in bituminous coal mining	Panel of 23 coal states, 1903–30	State effects, coal price, machinery, days worked, vector of 14 safety laws, strike activity, spending on mine regulations, bureau of mines	Workers' comp. raises accident rate by 28 percent*; employer liability raises accident rate by 20 percent*
Workers' Comp. and Employer Liability	Buffum (1992, pp. 84–87, 140–42)	Fatal accident rate in bituminous coal mining	Panel of 24 coal states, 1900–30	State effects, U.S. national average acc. rate, coal price, machinery, days worked, strike activity	Workers' comp. raises accident rate[b]; employer liability raises accident rate[b]
Federal Employer Liability Act of 1908	Buffum (1992, pp. 92–98, 143)	Fatalities in railroads	Time series for national rate, 1888–1940	Tons hauled per train mile, real income of railroads, vector of safety regulations, dummy for war years	FELA of 1908 cut accident rate roughly in half*
Federal Employer Liability Act of 1908	Aldrich (1977, pp. 296–97	Fatalities in railroads	Time Series for National Rate, 1889–1939	Employment growth, density of usage, % of trains with air brakes, % with automatic couplers, manhours per worker, trend, dummies for change in reporting	FELA of 1908 reduced fatal accident rate*

* Coefficients underlying estimates were statistically significant.
[b] Coefficients underlying estimates were statistically significant in negative binomial estimation, not statistically significant in Ordinary Least Squares Estimation.

practices that seemed reasonable on the surface were often resisted by miners. In some settings the new technology created new safety hazards. In other settings miners worried that employers might claim that use of the technology allowed them to eliminate other safety precautions. Inadequate enforcement might also have contributed to the relative ineffectiveness of most accident regulations. Most state mining departments visited mines only once or twice, if at all, during the year. Fishback's (1992) regression analysis did show that increases in the state mine inspection budget helped to lower the number of

fatal accidents. Spending on factory inspection may have been less effective than spending on mine inspection. Estimates by David Buffum (1992) and James Chelius (1977) of the impact of state inspection budgets on measures of fatal accidents in industry do not find statistically significant reductions in accident risk (see Table 6).

A similar story of intermittent success might be told for railroad safety legislation. David Buffum's time-series estimates in Table 6 of the impact of railroad legislation shows that the Appliance Act of 1893, the Train Stoppage Act of 1922, and the Boiler Act of 1915 all statistically significantly lowered accident risk, but several other acts did not. As in mining, legal requirements did not always cause employers to adopt new technologies, and the new technologies did not always work as well as advertised. Aldrich (1997, p. 38) finds, for example, that the Safety Appliance Act did not speed the introduction of air brakes and automatic couplers. Even when they were installed, their effectiveness was determined by how well the brakes were maintained. Further, the air brakes eliminated some forms of danger but increased the probability of other types of dangers.

Many contemporaries anticipated reductions in accident risk from the introduction of workers' compensation. In fact, the response of fatal accident rates to the introduction of workers' compensation and employer liability laws (which limited the defenses of assumption of risk, fellow servant, or contributory negligence) varied across industries: falling in railroading, possibly falling in manufacturing, and rising in coal mining (see Table 6).[21] The differences may have been driven by the costs to employers of preventing the major types of accidents where moral hazard might have occurred.

Chelius (1976) examined the impact of workers' compensation laws on deaths using the number of non–motor vehicle machinery fatalities per member of the labor force, from the Mortality Statistics collected by the U.S. Bureau of the Census for 26 states during the years 1900 to 1940. Chelius argued that this was the only consistent series for manufacturing that reflected industrial accident risks; 87 percent of the deaths in this category occurred in workplaces, while non–motor vehicle machinery accidents accounted for about 16 percent of deaths. While controlling for the presence of safety regulation by the states, Chelius found that both employer liability laws and workers' compensation laws led to reductions in the non–motor vehicle machinery accident death rate. Buffum (1992, pp. 102–109, 149–55) reanalyzed the same set of data with more control variables. When using Chelius's specification, he finds the same reduction in the death rate found by Chelius. However, using alternative specifications, he finds a much smaller and statistically insignificant negative effect of workers' compensation. When Buffum estimated a similar equation using measures of fatal accidents reported by state agencies from eight states from 1900 to 1940, he found that the introduction of workers' compensation raised fatal accident risk while employer liability laws lowered fatal accident risk.

Interstate railroad workers were generally not covered by workers' compensation, in large part because of the passage of the Federal Employer Liability Act of 1908 (FELA), which limited the fellow-servant and contributory negligence defenses in the interstate railroad

[21] To avoid problems with reporting of accidents, all of the studies of the impact of workers' compensation on accident risk have focused on fatal accidents.

industry. Both Buffum (1992, pp. 101, 143–48) and Aldrich (1997, pp. 296–97) studied the impact on railroad fatal accidents of the FELA in 1908. Both found that the federal law reduced accident rates in railroading.

In contrast, the coal industry experienced an increase in accident risk with the introduction of workers' compensation. Fishback (1992, pp. 116–26; 1987) examined the impact of workers' compensation and employer liability laws on fatal accident rates using a panel data set with information on death rates in coal mining from the 23 leading coal states for the years 1903 to 1930. The presence of an employer liability law was associated with a 20 percent increase in the coal death rate, while the presence of a workers' compensation law was associated with a 28 percent increase in accident rates. David Buffum (1992, pp. 86, 140–42) found similar results with a slightly different sample he constructed independently. In his analysis he found that the adoption of workers' compensation increased fatalities by 19 percent, and the passage of employer liability laws increased fatalities by 25 percent.

Why do we see these differences in results across industries? Employer liability laws and workers' compensation generally increased the average postaccident compensation paid to workers; therefore, both types of laws gave employers incentive to increase their accident prevention efforts while potentially giving workers incentives to relax their efforts or to increase the reporting of accidents. Employers' increased prevention efforts appeared to have dominated in manufacturing and the railroads where their costs of preventing accidents through changes in machinery and supervision were relatively low. In contrast, in the coal industry where workers had always played a much greater role in accident prevention deep within the mines, accident rates rose. Problems with moral hazard led to the type of accidents that were very costly to the employer to prevent, therefore employers chose to pay the extra damages to workers. The rise in accident rates does not imply that workers' compensation lowered the welfare of coal workers. Given that most coal workers were paid piece rates, they relaxed safety precautions only because they were trading safety for higher earnings. The increased benefits offered by workers' compensation allowed workers to increase their current earnings by working faster, while better compensating them when injured.[22]

8. *Conclusions*

How did "unfettered" labor markets operate in America at the turn of the century? An extensive amount of scholarship by economic historians shows that they functioned well enough that workers typically had multiple opportunities and were able to move to take advantage of them to improve their situation. This ability to exit, in addition to active use of collective action in some settings, served as a check against employer exploitation of workers. Institutions like the company town, company unions, and share tenancy contained features that helped resolve problems with transactions costs. Yet this was no golden age in which markets worked perfectly. Workers had imperfect

[22] Another potential explanation might be differences across industries in the extent of experience rating, that is, the adjustment of insurance rates to reflect differences in accident rates. Although we do not have full information, the workers' compensation rates across industries seemed to be closely tied to the differences in accident experience. However, experience rating for firms within industries was less successful. Unfortunately, no one as yet has successfully uncovered whether experience rating across firms within manufacturing was better than within coal mining.

mobility because they had to gather information about job possibilities, incur the economic and emotional costs of moving, and sometimes obtain new skills to move. Thus there were settings where workers were stuck for periods of time in exploitative arrangements that led them to choose collective action and to call for reform. While workers received compensating differentials for accepting more risks of accidents and unemployment, in many cases the risk premium did not fully cover the expected cost of the accident, and workers faced problems in purchasing insurance. Similarly, competition among employers largely eliminated the most obvious form of discrimination, unequal pay for the same work. But the competition did not eliminate discrimination stemming from high costs of obtaining information about individuals' productivity, the attitudes of fellow workers who might benefit from the discrimination, and governmental discrimination. If we were to place the labor markets of the early 1900s on a continuum between complete market failure and smooth market operation, these markets would probably be located roughly three-fourths of the way toward the smooth operation end.

The period from 1890 to 1930 was a period of labor unrest, which seems to be prima facie evidence of problems in the labor markets at the time. Labor unrest was driven partly by economic insecurity, partly by some labor market failures, and partly by the legal treatment of unions at the time, which led workers to strike to force employers to recognize their demands for organization. Yet even if labor markets had functioned perfectly, there still might have been labor unrest, as workers sought to expand their share of the economic pie at the expense of the returns to other factors of production. While neoclassical models imply that in a well-functioning economy workers will receive the value of their marginal product, rewards are also paid to the owners of other factors of production. Workers were not ideologically bound by neoclassical economic concepts in their determination of the fair distribution of rewards. They had every reason to subscribe instead to other economic models, like the labor theory of value. Thus, even if the labor market functioned smoothly in the neoclassical sense, workers could still have considered themselves ill-served by the payments they received.

Reformers proposed a wide range of legislation to resolve the economic problems they identified. The bills that became law were more evolutionary than revolutionary. Many of the reform proposals were struck down, and recent empirical studies of the impact of progressive era laws suggest that the successful legislation had relatively small impact on the labor markets. The results of these investigations offer a lesson more about the political economy of the adoption of regulation than about whether the regulations were valuable to society. As long as employers played a powerful role in legislatures, it was unlikely that workers and reformers were going to pass legislation that did not gain support from at least some subset of employers. In general, the regulations adopted either were favorable to employers as well as to workers, as in the case of workers' compensation, or were the result of political compromise. To obtain passage of legislation, workers in many cases had to develop a coalition with employers who were already moving in the directions described by the legislation. These employers were likely to support legislation that codified their own progressive efforts and forced other employers to follow suit. As a result, the measured

impact of the legislation was likely to be relatively small because it actually constrained the actions of only a subset of employers. My sense is that this description of political economy might help explain the passage of many regulations since that time, ranging from the introduction of the minimum wage during the 1930s to modern safety legislation.

What does the "unfettered" past teach us about the present? Here is one interpretation of what the scholarship in economic history implies for the present. The markets today, if unregulated, would probably work better than those of the early 1900s, because information costs and mobility costs are lower and the average person has more general human capital. On the other hand, workers' mobility might be limited if their skills are firm specific, given the greater presence of internal labor markets. Removal of workplace regulation would be neither the panacea expected by conservatives nor the disaster predicted by liberals. If we eliminated workers' compensation and unemployment compensation, there would likely be a rise in the risk premia in wages, but it is not clear that workers would be fully compensated for the loss of their protection against injury and unemployment. Finally, speculation about the elimination of labor regulation is probably moot. The political economy section of this essay shows that many of the progressive-era labor regulations were beneficial both to workers and a significant subset of employers. Given that many employers as well as workers have a stake in the set of regulations that have been put in place, it is unlikely that we will see drastic regulatory changes.

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