

The Relationship Between Workers' Compensation and Disability Insurance

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Abstract

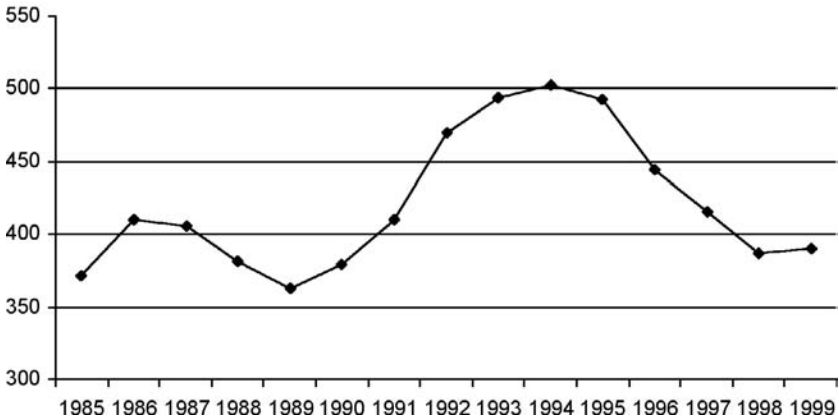
Social Security Disability Insurance (SSDI), a federal program, provides benefits to persons totally disabled from any cause. State workers' compensation (WC) programs provide benefits to persons partially or totally disabled by work-related injuries. The determinants of SSDI applications in a state include the unemployment rate and the disability prevalence rate. SSDI applications increased between 1985 and 1999 as the statutory level of WC cash benefits declined and as the eligibility rules for WC tightened. These results suggest the costs of workplace injuries are being shifted, thus aggravating the financial problems of the federal SSDI program and muting WC safety incentives.

Social Security Disability Insurance (SSDI) is the largest income replacement program for nonelderly Americans. The federal SSDI and Medicare programs provide cash benefits and health care coverage to disabled beneficiaries until they return to work, die, or qualify for Social Security Old Age benefits. The number of SSDI applicants dramatically increased in the late 1980s and early 1990s, which drew considerable attention from policy makers and academics. In this study we examine the period from 1985 to 1999 (covering the years with available data). As Figure 1 shows, 372 people per 100,000 persons applied for SSDI benefits in 1985. This measure of applications jumped 35 percent to 502 in 1994 and then gradually declined to 1999.

Many studies have attempted to explain the growth and decline of SSDI applications and to predict SSDI enrollments in the future. The explanations can be placed in three categories: (1) the supply of SSDI benefits, (2) the demand for SSDI benefits, and (3) the effects of alternative income replacement programs. The supply is determined by the structure of the SSDI program, including the stringency of the eligibility rules and the generosity of

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FIGURE 1
DI Applicants per 100,000 Persons



Source: Burkhauser and Houstenville 2006.

benefits. The demand for SSDI benefits is largely determined by individuals' characteristics, including the health status and financial needs of the population. Alternative income replacement programs pay cash benefits or provide medical care for disabled persons and include Supplemental Security Income (SSI), Aid to Families with Dependent Children (AFDC), Temporary Assistance for Needy Families (TANF), and Medicaid.

Despite the large number of studies of the dynamics of the SSDI program, one important program—namely, workers' compensation (WC)—has been ignored by most researchers. This lack of scholarly attention to the relationship between workers' compensation and SSDI is particularly striking because the connection between the programs has long been of concern to policy makers in state legislatures and in Congress. Workers' compensation programs are the second largest source of cash and medical benefits for disabled workers in the United States.

Workers' compensation and SSDI serve overlapping, although not identical, populations. Both programs pay medical and cash benefits to workers' with chronic, severely disabling conditions. Workers' compensation benefits are limited to persons whose disabilities have work-related origins, while SSDI pays benefits for both work and non-work-related disabilities. However, SSDI benefits are limited to permanently and totally disabled persons, while workers' compensation programs provide benefits for both totally and partially disabled workers and for both temporary and permanent disabilities.

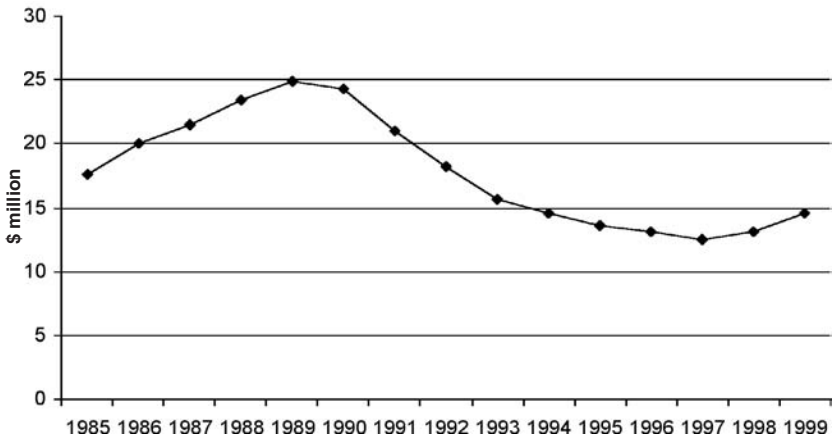
There is evidence indicating that many workers' compensation claimants

have persistent health problems that may eventually result in SSDI benefits (Baldwin and Johnson 1998; Butler, Johnson, and Baldwin 1995). As of December 2006, about 15.8 percent of SSDI beneficiaries had a current or previous connection to workers' compensation or similar programs for government employees (Sengupta, Reno, and Burton 2007, Table 16).

Figure 2 indicates that the national average of workers' compensation benefits per 100,000 workers experienced a cycle that contrasted with the cycle for SSDI applications during 1985–1999. Workers' compensation benefits per 100,000 workers increased from \$18.6 billion, in 1982–84 dollars, in 1985 to \$25.1 billion in 1989, when the rate of SSDI applications hit its low point. Then workers' compensation benefits continuously declined until the mid-1990s, while SSDI applications soared. The changes for both programs were relatively limited in the last few years of the 1990s.

This paper examines the effects of several parameters of the workers' compensation programs on the rate of SSDI applications. We are particularly interested in determining the extent to which employers and insurers may be engaged in shifting costs from state workers' compensation programs to the federal SSDI program. In addition, controlling for the characteristics of workers' compensation programs may provide better information about how key variables used in studies of the SSDI program affect the SSDI application rate.

FIGURE 2
Workers Compensation Cash Benefits per 100,000
Workers (in 1982–84 dollars)



Source: Blum and Burton 2006.

Literature Review: The Determinants of Disability Insurance Growth

Autor and Duggan (2003) identified two major sources of the SSDI applicant growth in recent decades: the liberalization of the screening system for applicants and the higher replacement rates of the SSDI program for lower-income workers. In response to the outcry of the dramatic decline of SSDI benefits in early 1980s, Congress enacted legislation in 1984 that significantly altered the eligibility criteria for the SSDI program. The determination of eligibility changed the focus from objective medical criteria to relative subjective evidence based on applicants' reported pain and discomfort. The Social Security Administration (SSA) was also asked to relax its strict screening on mental illness and to consider multiple nonsevere ailments as establishing eligibility.

Burkhauser, Butler, and Weathers (1999) use the SSDI acceptance rate of applicants for SSDI benefits as an administration stringency variable. They found that higher acceptance rates in a state increased the number of SSDI applications. Parsons (1991) estimated that a 10 percent increase in denial rates from 1977 to 1978 decreased applications by 4.5 percent from 1978 to 1980. Gruber and Kubik (1997) came to similar conclusions. After controlling for the unemployment and aging population, Rupp and Stapleton (1995) largely replicated Parsons's findings but reduced the estimated effects of administrative stringency on the application rate by about 50 percent.

Autor and Duggan (2003) found that for every 10 percent increase in the SSDI replacement rate, the share of nonelderly adults receiving SSDI increased by 4.6 to 6.7 percent between 1984 and 1999. Part of the explanation of the magnitude of this finding is that American workers have experienced a significant increase in income dispersion since the 1980s. The benefit formula of SSDI is more favorable for applicants with a record of lower earnings, and the decline in real wages for low-skilled workers has made SSDI benefits more attractive for these workers. Black, Daniel, and Sanders (2002) found that SSDI expenditures in a jurisdiction are negatively correlated with state and local earnings.

The onset of a slack labor market makes it relatively more difficult for a person who is disabled to find or maintain a job. Individuals with disabilities are more likely to seek assistance from social programs in a weak economy. Most empirical studies support this prediction (Autor and Duggan 2003; Kreider 1999; Rupp and Stapleton 1995). The unemployment rate was usually positively correlated with disability insurance (DI) applications.

Soss and Keiser (2006) provided evidence that the disability prevalence rate in a state is also a factor explaining SSDI applications. They found that as

the disability prevalence rate per capita increased by 1 percent between 1991 and 1993, the SSDI applicants per 10,000 state residents increased by 15.4 percent. The disability prevalence rate substantially increases as the population ages. Rupp and Stapleton (1995) estimated that population growth and aging between 1988 and 1992 together accounted for a 1.3 percent average annual increase in SSDI applications. Easier eligibility rules and higher benefits in alternative programs for disabled workers, such as General Assistance, should reduce the number of applications for SSDI benefits. However, Rupp and Stapleton's (1995) paper is the only study so far to find supporting evidence for this hypothesis, despite attempts in many other studies.

The Workers' Compensation Program and Its Developments in the 1990s

Each state has a workers' compensation program that provides cash benefits, medical care, and rehabilitation benefits to workers who are disabled by work-related injuries and diseases. There are no federal standards for workers' compensation, and there are considerable differences among states in the level of benefits, the coverage of employers and employees, and the rules used to determine which disabled workers are eligible for benefits.

Workers' compensation is the only disability income program, either private or public, that pays benefits to workers who are partially disabled. However, the criteria used to determine whether a worker is totally disabled differ from those used for the SSDI program. Consequently, it is possible for an injured worker to be judged totally disabled by the SSA, and thus eligible for SSDI benefits, but only partially disabled by the state workers' compensation program. Furthermore, the criteria used to determine total disability vary among state workers' compensation programs. We expect that these differences will systematically affect the SSDI application rates in various states.

Congress has long been concerned about the relationship between workers' compensation programs and the SSDI program. The payment of SSDI and workers' compensation benefits has been coordinated since 1965. Specifically, combined SSDI and workers' compensation benefits are limited to 80 percent of the claimant's pre-injury wage. Federal law provides as a "default" that SSDI benefits are reduced or "offset" in order to achieve the 80 percent limit. Initially, states could enact laws that reduced workers' compensation benefits rather than SSDI benefits (which are known as "reverse offset" laws). However, in 1981 Congress eliminated this option for all but the sixteen states that already had "reverse offset" legislation.

The type of offset in a state should affect the employers' incentives to encourage disabled workers to apply for SSDI benefits. Both SSDI and workers' compensation are funded by a payroll tax. The payroll tax for the SSDI

program (part of the payroll tax for the Social Security Program) is uniform for all employers. However, workers' compensation assessments for large employers are linked to the cost of workers' compensation benefits paid to the firms' employees by experience rating, so that as benefit payments increase, so do the employers' costs. This institutional feature provides employers (or their insurance carriers) in states with a "reverse offset" law with an incentive to encourage SSDI applications on behalf of their work-disabled employees. Employees in other states with the normal "offset" rule will have less incentive to encourage their workers to apply for SSDI benefits, since successful applications will not result in lower workers' compensation benefits and employers' costs.

Regardless of the offset rule used in a state to coordinate workers' compensation and SSDI benefits, other institutional features of workers' compensation are also likely to affect SSDI applications and awards. Many states limit the duration of workers' compensation benefit payments. Variation in the formula used to calculate weekly or monthly benefits under workers' compensation may be similarly expected to affect the value of workers' compensation benefits relative to SSDI benefits and as a result influence the SSDI application rate. If a state has very generous workers' compensation benefits, workers are less likely to apply for SSDI benefits.

In addition, workers are more likely to apply for SSDI benefits if they cannot qualify for workers' compensation benefits. A number of states changed their workers' compensation laws during the 1990s to reduce eligibility for benefits (Spieler and Burton 1998). These provisions included limits on the compensability of particular medical diagnoses, such as stress claims and carpal tunnel syndrome; limits on coverage when the injury involved the aggravation of a preexisting condition; restrictions on the compensability of permanent total disability cases; and changes in procedural rules and evidentiary standards, such as the requirement that medical conditions be documented by "objective medical" evidence. Burton and Spieler (2001 and 2004) suggested that these changes are likely to have a disproportional effect on older workers, who in turn are the most likely applicants for SSDI benefits.

Research indicates that these legislative changes have affected the workers' compensation benefits received by injured workers. For example, in 1990 Oregon adopted legislation that required that the work injury be the "major contributing cause" of the claimant's disability for the worker to qualify for workers' compensation benefits. Thomason and Burton (2005) estimated that this and similar changes reduced the amount of benefits received by Oregon workers by about 25 percent by the mid-1990s. Research also indicates that these legislative changes in workers' compensation eligibility rules may be partially responsible for the recent decline in reported occupational injury

rates (Boden and Ruser 2003). Significantly, the opposite trends in workers' compensation and SSDI benefits during much of the past twenty-five years suggests that the two programs may be substitutes for a certain segment of the disabled population (Sengupta, Reno, and Burton 2007, 35).

A finding that SSDI benefits are paid to persons with disabilities resulting from occupational injuries would have significant public policy implications. Economic theory suggests that social welfare is optimized when the individual firm pays for the cost of occupational injuries suffered by its workers. To the extent that work injury costs are partially subsidized by SSDI, the employers' safety incentives are distorted and a suboptimal level of social welfare is obtained.

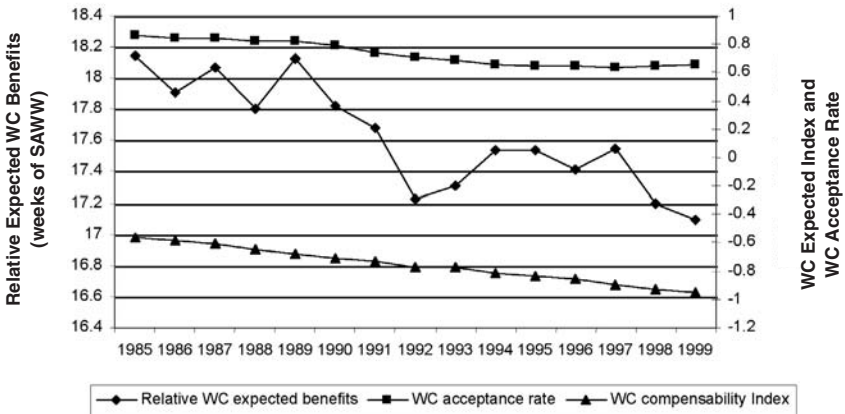
Variables and Hypothesis

The dependable variable of this study is SSDI applicants per 100,000 persons. We obtained the data of DI applicants by state from 1981 to 2001 from Burkhauser and Houtenville (2006). We use the total number of SSDI applicants, including those who only applied for DI benefits and those who concurrently applied for DI and SSI benefits. Three variables are used to capture the possible effects of workers' compensation programs on applications for SSDI benefits: relative expected WC benefits, the WC compensability index, and the WC acceptance rate.

Expected WC benefits are the amount of expected cash benefits per claim in 1982–84 dollars prescribed by the state workers' compensation statutes. Thomason, Schmidle, and Burton (2001, Appendix D) used a sophisticated actuarial procedure to calculate the expected cash payments for four types of workers' compensation benefits: temporary total disability (TTD), permanent partial disability (PPD), permanent total disability (PTD), and fatal benefits. The procedure uses information on state workers' compensation laws, federal and state income taxes, social security taxes, and state average wages to produce expected workers' compensation cash benefits for each state for each year between 1972 and 1999. Expected WC benefits is the weighted average of the four types of benefits.

In this study we have calculated the relative expected WC benefits, that is, expected WC benefits divided by the state's average weekly wage (also measured in 1982–84 dollars). Relative expected WC benefits is, therefore, a measure of the generosity of a state's workers' compensation benefits. We expect a negative relationship between relative expected WC benefits and SSDI applications since more generous WC benefits should reduce the incentives to seek other sources of support. As shown in Figure 3, relative expected WC benefits declined during the period from 1985 to 1999, which should have resulted in more applications for DI benefits.

FIGURE 3
Workers Compensation Program Changes



The WC compensability index is an independent variable that captures changes in state compensability rules for workers' compensation benefits. As previously discussed, many states tightened the eligibility standards for worker's compensation benefits during the 1990s. Those changes presumably resulted in significant declines in both cash and medical benefits. Year-to-year changes in the WC expected benefits variable captures statutory benefit changes in the duration and weekly amounts of cash benefits but does not include statutory changes in eligibility standards. However, the National Council on Compensation Insurance (NCCI) publishes estimates of the total effects of legislative changes that include the effects of both changes in expected benefits and changes in compensability rules (NCCI 2007 and earlier editions, Exhibit III). The difference between the NCCI estimates of the total effects of legislative changes and our estimates of the effects of changes in WC expected benefits produces an estimate of the effects of compensability changes. We calculated accumulated changes in the compensability index using the year of 1972 as the baseline. We expect a negative relationship between the compensability index and applications for the DI program since workers who are unable to qualify for workers' compensation benefits are more likely to apply for benefits from other programs for disabled persons. As shown in Figure 3, the WC compensability index declined between 1985 and 1999, which should have resulted in more applications for DI benefits.

The WC acceptance rate compares compensable WC claims and the total workplace injury rate. Blum and Burton (2006) published data on the number

of cases per 100,000 workers in which workers qualified for cash benefits. Since these data only included claims that qualified for cash benefits, we adjusted their data to account for the cases that did not qualify for temporary total disability benefits because of the waiting period. The result is the compensable claim rate (CCR), which estimates the frequency of cases that would have qualified for workers' compensation benefits if the state did not have a waiting period. The Bureau of Labor Statistics' (BLS) lost-time injury rate (IR) per 100 workers includes both injuries that resulted in worker' compensation benefits and injuries that were not compensated. The ratio between these two measures of workplace disability (CCR/IR) measures the WC acceptance rate in the state. Higher values of the WC acceptance rate indicate that a greater proportion of injured workers in a state qualify for workers' compensation benefits and are thus less likely to file for SSDI benefits, and so we expect a negative coefficient for this variable. The WC acceptance rate generally declined during the period in our study, which should have also led to more applications for SSDI benefits.

We also include three other independent variables: the disability prevalence rate (which measures the proportion of a state's population that is disabled), the SSDI acceptance rate (which is the proportion of the DI applications in a state that are approved), and the unemployment rate. Based on the findings in previous studies, we expect these three variables will be positively associated with DI applicants per 100,000 persons.

Results and Discussion

The descriptive statistics are presented in Table 1, and the regression results are reported in two models in Table 2. Model 1 is a regression without state and year fixed effects, and Model 2 includes both fixed effects. Model 2 is our preferred model because fixed effects can largely correct for biases due to unconsidered or unobservable factors. To correct for heteroskedasticity resulting from observations from different sizes of states, we use state employment as weights for regression models. The investigation period is from 1985 to 1999, and the total number of observations is 525. (We do not have observations for the six states without private insurance carriers and for those states for which the BLS does not publish injury rates.)

In the fixed-effects model (Model 2), the results for relative WC expected benefits, the WC compensability index, and the unemployment rate confirm our hypotheses. If the workers' compensation cash benefits are increased by an amount equal to one week of a state's average weekly wage, DI applicants per 100,000 persons will decrease by 1.32. Since relative WC expected benefits actually decreased between 1985 and 1999, this variable helps explain the increase in DI applications during the period rate. If the WC compens-

TABLE 1
Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
DI Applicants per 100,000 Persons	435	115	205	839
Relative Expected WC Benefits	18.84	8.35	6.57	129.47
WC Compensability Index	-0.79	0.57	-3.84	0.58
WC Acceptance Rate	0.73	0.16	0.36	1.1
DI Acceptance Rate	0.37	0.07	0.2	0.56
Disability Prevalence Rate	0.08	0.02	0.04	0.15
Unemployment Rate	0.06	0.02	0.02	0.13

TABLE 2
The Impact on DI Applicants per 100, 000 Persons

Independent Variables	Model 1	Model 2
Relative Expected WC Benefits	0.35 (0.55)	-1.32° (0.5)
WC Compensability Index	-22.23° (8.9)	-57.95° (14.23)
WC Acceptance Rate	-163.79° (22.09)	21.1 (18.34)
DI Acceptance Rate	-193.06° (58.9)	-279.94° (42.6)
Disability Prevalence Rate	3,276.62° (226.36)	151.68 (147.59)
Unemployment Rate	1,702.79° (220.07)	461.72° (154.31)
Fixed Effects	No	Yes
Number of Observations	525	525
Adjusted R-square	0.5261	0.9254

Note: Standard errors are reported in parentheses.

° statistically insignificant at the 0.01 level

ability index of workers' compensation increases by 1 percentage point, the DI applicants per 100,000 workers will decrease by 0.58. Again, since the WC compensability index declined during the period of our study, the changes in the index help explain the increase in the DI application rate. The reduction in relative WC expected benefits was limited during our study period. However, the WC compensability index experienced substantial reductions in the early 1990s. In many states, the index dropped by more than 100 percent; thus, this factor alone could explain most of the growth of DI applications.

In Model 1 the WC acceptance rate and the disability prevalence rate were significantly associated with the dependent variable, and their impacts match our expectations. However, their effects disappeared in the fixed-effects model. The most surprising results are for the DI acceptance rate, which is negatively correlated with DI applications in both models, contrary to our expectations and previous research. One possible explanation could be the reverse causality between the DI acceptance rate and applications for the benefits. States with higher application rates may react by tightening eligibility standards.

Conclusion and Future Research

We examined the determinants of the application rates for Social Security DI benefits in approximately forty-five jurisdictions for the years between 1985 and 1999. The results indicate that higher levels of expected cash benefits provided by workers' compensation programs relative to the states' average wages are associated with lower application rates for DI benefits. The results also indicate that the tightening of compensability rules in state workers' compensation programs is associated with higher application rates for DI benefits. These results provide the first evidence we have seen that changes in workers' compensation programs affect the applications for the DI program. Given the concerns about the financial status of the Social Security program, including the trust fund for the SSDI program, our findings raise questions about the shifting of costs associated with workplace injuries and diseases from workers' compensation programs to the SSDI program, thereby aggravating the financial problems of the federal program. The shifting of costs from workers' compensation, which is largely funded by premiums that encourage employers to improve safety and health, to the DI program, which is funded by taxes that do not vary among employers, also suggests that financial incentives for safety and health are being muted.

We plan to extend our research into the relationship between the workers' compensation and the Social Security Disability Insurance programs by adding additional years and additional variables to our analysis. We are particularly interested in examining whether the empirical relationships we have found will vary between states that are subject to the normal offset rule for DI and workers' benefits (in which the DI benefits are reduced to limit benefits to 80 percent of previous earnings) and states using the reverse offset rule. We will also examine the apparently anomalous result suggesting that states with higher acceptance rates for DI benefits have lower DI application rates. While our research agenda is not completed, we believe the current results add to our knowledge of the important topic of the relationships among programs for persons with disabilities.

Acknowledgements

Terry Thomason participated in the early stages of this research before his death. Monroe Berkowitz commented on a draft of this paper. The research was supported by the NIDRR Employment Policy RRTIC Project at the Rehabilitation Research and Training Center on Employment Policy for People with Disabilities, School of Industrial and Labor Relations, Cornell University.

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