

# Disability and Work: The Experiences of American and German Men

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*This paper compares the economic well-being of men with disabilities in the United States and Germany. The results indicate that while the prevalence of disability is similar, the social institutions developed in the two countries result in quite different patterns of employment, transfer receipt, and economic well-being among the population with disabilities. However, while work is more important among German men with disabilities, it also is a very important component of the economic well-being of American men with disabilities. Furthermore, at least initially, a significant fraction of men are able to adjust to their disability and maintain their work status and income.*

Modern industrial societies attempt to ameliorate the consequences of work-related health impairments on the earning capacity and economic well-being of their citizens through a mix of government programs. Transfer programs are used to replace lost earnings or to provide a means-tested income floor. Employment-centered programs are used to offset the effects of an impairment or to encourage employers to hire people with disabilities.

Historically, disability policy in the United States has been dominated by transfer programs and, to a much lesser extent, rehabilitation. There has been very little direct intervention in the job market on behalf of people with disabilities. European countries, in general, have been much more willing to make continued employment a major policy goal of their disability programs. Many have been willing to intervene directly in the labor market through quotas or direct job creation in order to achieve this goal.

In 1990 the United States moved closer to this two-pronged European approach of transfers and employment protection by enacting the Americans with Disabilities Act (ADA). The ADA requires private sector employers to make reasonable efforts, through accommodation, to employ persons with disabilities. One of the hopes underlying the ADA is that accommodation at the onset of a health impairment will delay job exit and subsequent movement onto the disability rolls. Yet, before the ADA was enacted and even now, in 1998, little is known about the labor force experiences of Americans with disabilities and how these experiences compare to people with disabilities in other, more interventionist, countries.

A common misperception about people with disabilities is that very few of them work in the market place. One reason for this misperception is that most research on people with disabilities focuses on the "official" disability transfer population and thus restricts the analysis to individuals who are either receiving transfers or working less than full-time. While this is a reasonable approach for some questions, it severely limits our ability to examine the role that employment can and does play in the economic lives of people with disabilities. A broader picture of the population with disabilities would include those who, despite their health condition, continue to work full-time. This broader view is particularly important when considering the effectiveness of policies that extend and support employment for people

with disabilities and when comparing the economic well-being of Americans with disabilities to people with disabilities in other countries, where full-time employment is a major goal of disability policy.

Another common misperception about people with disabilities is that they are a homogeneous group. However, the population with disabilities is quite diverse with respect to age, health condition, work, and income (Bennefield and McNeil, 1989; Burkhauser and Daly, 1996a). In addition, the great majority of people with disabilities were able-bodied for most of their work life (Burkhauser and Daly, 1996b). Thus, to capture fully the experiences of this population it is necessary to take a more dynamic perspective toward disability. Cross-sectional data limit the analyses to those persons with and without disabilities at a given time. Yearly comparisons of cross-sectional data allow one to track gross movements in the work and economic well-being of these populations. But such analyses cannot distinguish between changes in the population with disabilities and changes in the individual circumstances of population members. Since the vast majority of those with disabilities were not born with them, the transition into disability and subsequent changes in economic well-being and work take on added meaning. Multiperiod data allow individual transitions into disability to be evaluated.

In this paper we expand the scope of the investigation of the economic well-being of the population with disabilities: we include people with disabilities who work full-time; we look at this broader population both in the cross-section and over the critical transition years before and after the onset of the disability; and we compare the outcomes of Americans with disabilities to their counterparts in Germany. Because Germany combines transfers with employment support to mitigate the risk of economic loss following a disabling health impairment, our comparison provides a first glimpse of what such a mixed program might offer to Americans with disabilities.

The results indicate that while the prevalence of disability is similar in the United States and Germany, the social institutions developed in the two countries result in quite different patterns of employment, transfer receipt, and economic well-being among the population with disabilities. However, while work is more important among German men with disabilities, it also is a very important component of the economic well-being of the American men with disabilities. Furthermore, cross-sectional data overstate the drop in labor earnings and economic well-being associated with a disability, implying that, at least initially, a significant fraction of men are able to adjust to their disability and maintain their work status and income.

## I. BRIEF SYNOPSIS OF DISABILITY POLICIES IN THE UNITED STATES AND GERMANY

*United States.* In the United States, rehabilitation and job programs are secondary to transfer payments as a means of helping people with disabilities.<sup>1</sup> The primary public disability transfer programs are: Social Security Disability Insurance (SSDI), Supplemental Security Income (SSI), Veterans' Disability Benefits, and Workers' Compensation. SSDI and SSI are limited to those who are unable to perform any substantial gainful activity; the other two programs require the disability to have been work-related.

In the 1990s, anti-discrimination laws—such as the ADA—supported by cultural pressures to incorporate and accommodate diversity have emerged as major tools to keep people with disabilities in the work force. Title I of the ADA requires employers to make reasonable accommodations to workers with disabilities unless this would cause undue hardship on the operation of business. On July 26, 1992, all employers of 25 or more workers were subject to its rules. On July 26, 1994, the standards of antidiscrimination were extended to all employers of 15 or more workers. Workers who feel they have been discriminated against due to a disability have the right to sue their employer. (For a more complete discussion of the ADA and its provisions, see West 1996.)

The primary goal of Title I of the ADA is to ensure equal access to employment for people with disabilities. Underlying this goal is a belief that the removal of disability-related barriers to employment will allow greater numbers of individuals with disabilities to choose work over disability benefit receipt, which will, in turn, increase their economic well-being.

*Germany.* The goal of the German system is to provide early detection, rehabilitation, job retraining, and employment whenever possible and to award transfers only when other mechanisms fail. When disability benefits are awarded they can come from the statutory pension system, the unemployment insurance system, the workers' accident insurance fund, or the universal health care system. None of these benefits are conditioned on complete withdrawal from the labor market.

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1. Burkhauser and Hirvonen (1989), for instance, show that, in 1985, 25 people were in supported work or vocational rehabilitation programs for every 100 persons receiving disability transfer benefits in the United States. In contrast, Germany, where medical and vocational rehabilitation as well as a mandated job quota system are the main policy tools for assisting those with disabilities, had a ratio of 45 per 100 in 1995.

Toward the aim of prolonging employment, the government requires employers to seek permission from the local unemployment office to discharge a worker with disabilities. In addition, the government has a quota system mandating all public and private enterprises to employ a handicapped worker for every 16 employees or about 6 percent of their workforce. A fine of 200 DM per month per unfilled quota position is charged to employers who do not comply. This is a rather small fine (approximately \$125), and only 19 percent of employers fulfilled their quotas in 1990. The average proportion of handicapped workers in that year was only 4.5 percent. Although they did not fulfill their quota, 44 percent of the employers employed some officially recognized people with disabilities. The remaining 37 percent employed no persons with disabilities.<sup>2</sup>

## II. DATA SOURCES AND MEASUREMENT ISSUES

The empirical results in this study come from two longitudinal data sets: the *1989 Family-Individual Response-Nonresponse File of the Panel Study of Income Dynamics* (PSID) for the United States; and the *1993 Syracuse University Public Use File of the German Socio-Economic Panel* (GSOEP) for Germany. Although these surveys are not commonly used for studies of disability, their longitudinal nature and their consistent collection of information related to employment behavior, transfer receipt, and economic well-being make them useful sources for studying economic transitions associated with the onset of a disability.

The PSID data span more than two decades from 1968 to 1989. Since 1968, the PSID has interviewed annually a sample of some 5,000 families, representing a disproportionate number of low-income individuals. The PSID currently contains data on over 35,000 persons, approximately 20,000 of whom are current respondents. The GSOEP is a more recent longitudinal data set developed at the Universities of Frankfurt and Mannheim in cooperation with the Deutsches Institut für Wirtschaftsforschung, Berlin (DIW). The GSOEP began with a sample of 5,921 households, representing a disproportionate number of non-German "guest-workers." The GSOEP currently contains data on 6,699 households and 13,669 adult respondents.<sup>3</sup>

2. For a fuller discussion of the German disability system, see Burkhauser and Hirvonen (1989), Jacobs, Kohli, and Rein (1991), Frick (1991), and Sadowski and Frick (1992).

3. For a fuller discussion of the PSID data, see Hill (1992). For a fuller discussion of the GSOEP data, see Wagner, Burkhauser, and Behringer (1993).

*Defining the Sample.* The investigation focuses on the experiences of men aged 25 to 59. This limited age range avoids confusing reductions in work or economic well-being associated with disability with reductions or declines associated with retirement at older ages or initial transitions into and out of the labor force related to job shopping at young ages. This is particularly important for the cross-national comparisons. In Germany individuals may be eligible for retirement as early as age 60. In addition, since the experiences of men and women with disabilities are quite different, and treating them both is beyond the scope of this article, the analysis here is limited to men.<sup>4</sup>

*Defining Disability.* Disability is not a static classification but a dynamic process. It varies with both the health of the individual and the socio-economic environment in which the person functions, confounding attempts to measure it objectively and consistently. Nagi (1969) created the most widely accepted research definition of disability. Nagi's definition distinguishes among three states of diminished health, ranging from a purely medical classification of individuals to one that recognizes the interaction of personal characteristics, the social environment, and health in creating disability:

1. *pathology* - the presence of a physical or mental malfunction and/or the interruption of normal processes;
2. *impairment* - physiological, anatomical, or mental losses or abnormalities that limit a person's capacities and level of functioning;
3. *disability* - inability or limitations in performing roles and tasks that are socially expected.

In Nagi's definition, being disabled—as defined by a work reduction or disability benefit receipt—is not only a function of health, but of personal drive, education, age, and family structure, as well as the incentives to continue working or to apply for disability benefits that spring from the interaction of market forces and public policy in a given country. Until the passage of the ADA, this definition of disability was consistent with most United States public policies targeted at those with disabilities.

The ADA definition of disability significantly broadened the concept of disability proposed by Nagi. Under the

4. In both the United States and Germany, men are the primary earners in a household. Thus the economic well-being of women with disabilities is not as dependent on women's employment and earnings and, in fact, changes very little following the onset of an impairment. In labor market effort, however, men and women are similar and, with caution, the findings for men can be generalized to women with disabilities. For a discussion of women with disabilities in the United States and Germany, see Burkhauser and Daly (1994).

ADA, a person is classified as disabled if he/she has a physical or mental impairment that substantially limits one or more major life activities, a record of such an impairment, or being regarded as having such an impairment. Under the ADA, the population with disabilities is not limited to those whose impairments prevent work, but includes all individuals with pathologies or impairments, regardless of their work-related functional abilities.

*Measuring Disability.* In most surveys of income and employment the data available on health come from a small set of questions that ask respondents to assess whether their health limits the kind or amount of work that they can perform. Other surveys ask respondents to rate their health relative to others in their age group. Researchers have been suspicious of these measures for a number of reasons. First, self-evaluated health is a subjective measure that may not be comparable across respondents. Second, these measures may not be independent of the observed variables one wants to explain—such as economic well-being, employment status, or family structure (Chirikos and Nestel 1984). Third, since social pressures make it undesirable to retire before certain ages, reasonably healthy individuals who wish to exit the labor force prematurely may use health as their excuse (Parsons 1980, 1982 and Bazzoli 1985). Finally, in the United States, federal disability transfer benefits are available only to those judged unable to perform any substantial gainful activity, so individuals with some health problems may have a financial incentive to identify themselves as incapable of work because of their health. Misclassification based on self-reported health can underestimate the true number of persons who suffer from a particular condition and overestimate the negative effects of health on economic well-being. These problems are exacerbated when these measures are used to track changes in the population with disabilities over time.

Although the problems inherent in disability measures based on self-evaluated health have led some researchers (Myers 1982, 1983) to conclude that no useful information can be gained from self-evaluated health data, objective measures of health, which are much less available, also suffer from inherent biases (Bound 1991). Moreover, as Bound and Waidmann (1992) show, even when a clear relationship between changes in public policy and changes in disability prevalence rates is demonstrated, it does not imply that those who come under the disability classification are erroneously classified.

Although the information available in most micro-data sources does not allow one to determine the extent to which changes in pathology have contributed to changes in the

prevalence of disability, it is possible to inform the policy debate about the relationship among health, employment, and public policy by consistently applying a definition of disability and being cautious when interpreting the results. To approximate the ADA definition of disability and to ensure that the measures are both longitudinally consistent and comparable across countries, this article relies on self-reported data collected in both the PSID and GSOEP surveys.

In the PSID, the population with disabilities is defined using a survey question that asks respondents, “Do you have any physical or nervous condition that limits the type or the amount of work that you can do?” To eliminate from the analysis individuals whose health limitations are short-term, only those individuals who report a limitation for two consecutive years are included in the sample. In this way the analysis is restricted to the population whose disabilities are long-term.

Unlike surveys in the United States, the GSOEP does not consistently ask respondents if their health limits their ability to work.<sup>5</sup> Instead respondents are asked to report both their overall health satisfaction and whether they have any chronic conditions or persistent disabilities. In addition, respondents are asked whether they have received an official disability certificate. Those with official certificates are asked to report their official assigned disability percentage, which can range from 10 to 100 percent. From these questions we construct a measure of disability that captures a German population with disabilities comparable to the population selected in the United States. We include in our German population with disabilities those men who report they are dissatisfied with their health, those whose official disability certificate ranks them as greater than 50 percent disabled, and those who self-report a chronic impairment or persistent disability. As in the United States the population is limited to those who are classified as disabled (by our definition) for two consecutive periods.

*Measuring Economic Well-Being.* This analysis makes cross-national comparisons of economic well-being. To

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5. For the first four years (1984–1987) the GSOEP asked the work limits question: “Disregarding short periods of illness, does your health constitute an impediment in carrying out day-to-day activities, e.g., job or training?” However, since we want to create a longitudinally consistent measure of disability through 1989 we must rely on the health satisfaction question asked in each year of the panel. The health satisfaction question asks: “How satisfied are you with your health?” to which respondents reply on a 0–10 scale. Correlation tests suggest that the first four points (0–3) are highly correlated with the work limits question.

account for differences in income levels between the two countries and to eliminate biases that may be introduced by calculating exchange rates and living standards, all comparisons are based on the relative position of men with disabilities in each country. Economic well-being is measured in both the presence and absence of government taxes and transfers. Before-government income is the sum of all private sources of income available to the family. After-government income combines private and public income flows and deducts taxes.<sup>6</sup> To account for differences in family size, an equivalence scale weighting factor is applied to each individual household income. There is no universally accepted equivalence scale, so the scale used to set poverty thresholds in the United States is chosen and applied in both countries.<sup>7</sup> (See the Appendix for a description of these weights).

*Measuring Wage Earnings and Labor Force Activity.* The analysis focuses on the role that employment and labor earnings play in the economic well-being of men with disabilities. The measure of labor force activity used throughout the analysis distinguishes among men who work full-time, part-time, or not at all. Men who report that they work more than 1,820 hours per year (more than 35 hours per week) are considered full-time workers.<sup>8</sup> Men who report positive work hours or positive wages but whose annual work hours are less than 1,820 are considered part-time workers. Men with no labor earnings and zero work hours are considered detached from the labor market.<sup>9</sup> Wage earnings account for all income from labor market sources including primary and secondary jobs, professional practices, and bonus

income, including the labor portion of self-employment income.<sup>10</sup>

*Measuring Government Transfer Receipt.* An important component of income for many individuals with disabilities is government-provided transfers. Throughout this study transfers are classified in two ways: individually based and disability related (disability benefits) and family based and of any type or form (public transfers). In the United States, disability transfers include income from workers' compensation, the Social Security Disability Program, veterans' benefits, and Supplemental Security Income. In Germany, all benefits based on being classified as disabled are included as disability transfers. Public transfers include all cash and near cash benefits not specifically received based on health.

### III. RESULTS

*Prevalence of Disability.* Table 1 provides estimates of the prevalence of disability in 1988 in the United States and Germany for the male working-age population, aged 25 to 59. Our estimates are consistent with those from other studies.<sup>11</sup> Overall, the prevalence of disability in the United States and Germany is similar—9.0 and 10.2, respectively. In both countries the risk of disability increases with age, although the rate of increase varies. In the United States the percentage of younger men with a disability is much higher and the percentage of older men with a disability much lower than is the case in Germany. Thus, the risk of disability is steeper across the age distribution in Germany than in the United States. This is

6. The tax burden for those families in the GSOEP was computed using tax calculation routines first developed by the Special Collaborative Group 3 - project C-8 in Frankfurt Mannheim, FRG. A detailed discussion of the simulations is found in van Essen, Kassella, and Landau (1986). We used updated and modified tax calculation routines developed by Berntsen and described in Berntsen (1992). For the United States we used the tax routine developed by Greg Duncan for PSID families.

7. See Buhmann, Rainwater, Schmaus, and Smeeding (1988) for a discussion of the sensitivity of different equivalence scales in cross-national comparative research.

8. The PSID and GSOEP annual hours variables include paid vacation time. Therefore, 1,820 hours per year or 35 hours per week and 52 weeks per year constitute the correct break point between full-time and part-time workers.

9. This category includes men who are out of the labor force and men who are long-term unemployed (i.e., did not work during the measurement year).

10. For the United States we use the annual hours worked and annual labor market income variables provided in the PSID. There are no equivalent variables in the GSOEP so we construct a measure of annual hours worked and annual labor market income using the following procedures. Annual labor market income is found by multiplying the average monthly earnings from primary and secondary jobs by the number of months the respondent reports working at that job. This sum is added to wage income from special bonuses including 13th and 14th month pay, Christmas pay, and profit sharing. Unlike the income variables which are asked retrospectively about the previous income year, the hours worked questions refer only to the circumstances at the time of the interview. For all waves but the first we are able to reorganize the data and match the income year with the hours worked year and compute an annual hours variable equal to the average hours worked multiplied by the number of months employed on that job. For the first wave of the data we simply assume that the hours worked in the present are a good proxy for the hours worked in the previous year.

11. See Burkhauser and Daly (1994, 1996a) for a comparison of disability prevalence rates across different data sources.

consistent with the German policy of targeting rehabilitation and full-time reemployment at younger workers who develop work limitations and targeting disability transfer benefits at older unemployed workers with health limitations (see Aarts, Burkhauser, and de Jong, 1992).

*A Cross-Sectional View.* Table 2 compares the work and transfer circumstances of U.S. and German working age males with and without disabilities in 1988. The percent employed of men with disabilities in the United States is 71.8 percent. The percent employed of German men with disabilities is 67.8 percent. When these employment rates are compared with those of men without disabilities, the resulting employment ratios in the two countries are nearly the same—0.73 in the United States versus 0.72 in Germany. Hence, the relative employment experience of men with disabilities compared to men without disabilities in the United States is approximately the same as that

of men with disabilities in Germany. In both countries, work is a common activity for the majority of men with disabilities.

However, while U.S. and German men with disabilities have similar employment rates, German men are much more likely to work full-time. Nearly 85 percent of German men with disabilities who work do so full-time, compared to just 64 percent of working American men with disabilities who work full-time. This difference in the level of attachment to the labor force is mirrored by the returns from work earned by men with disabilities in the two countries. Men with disabilities in the United States on average received only 49 percent of the labor earnings of men without disabilities. In Germany men with disabilities on average received 65 percent of the labor earnings of men without disabilities.

Table 2 also shows the proportion of men who live in families in which government transfers are received. Receipt of transfer income in the United States and in Germany is high for men with disabilities. However, because of the broad German social welfare system, receipt of transfers also is high among those without disabilities. In the United States the likelihood that the families of those without disabilities will receive a government transfer is much smaller. Therefore, transfer receipt by men with disabilities relative to men without disabilities is substantially higher in the United States than in Germany—3.2 compared to 1.1, respectively. Yet as subsequent tables show, a greater likelihood of receiving transfer income does not overcome the substantial gap in labor earnings between those with and without disabilities.

In Table 3 we focus on the relative economic well-being of men with disabilities in the United States and Germany

TABLE 1

PERCENT OF WORKING AGE MALES IN THE UNITED STATES AND GERMANY WITH DISABILITIES

	UNITED STATES	GERMANY
Aged 25 to 59	9.0	10.2
Aged 25 to 34	6.5	3.7
Aged 35 to 49	8.5	8.0
Aged 50 to 59	15.0	22.2

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the Syracuse University Public Use File of the German Socio-Economic Panel.

TABLE 2

EMPLOYMENT, EARNINGS, AND TRANSFER RECEIPT AMONG WORKING AGE MEN WITH AND WITHOUT DISABILITIES IN THE UNITED STATES AND GERMANY

	UNITED STATES					GERMANY				
	PERCENT EMPLOYED			MEAN LABOR EARNINGS	RECEIVING TRANSFERS	PERCENT EMPLOYED			MEAN LABOR EARNINGS	RECEIVING TRANSFERS
	TOTAL	FULL-TIME	PART-TIME			TOTAL	FULL-TIME	PART-TIME		
MEN										
with disabilities	71.8	45.9	25.9	19,369	48.7	67.8	58.2	9.6	34,252	65.6
without disabilities	97.8	84.2	13.6	39,819	15.2	95.0	81.4	13.6	53,226	60.4
RATIO	0.73	0.55	1.9	0.49	3.2	0.72	0.72	0.71	0.65	1.1

All amounts are reported in 1991 dollars and 1991 DM for the United States and Germany, respectively.

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the Syracuse University Public Use File of the German Socio-Economic Panel.

using a single year of data. We report mean before- and after-government household income adjusted for family size for persons with and without disabilities. We find that, in the absence of government, household income of the average man with a disability in the United States is less than two-thirds that of his counterpart without disabilities. This gap approximates the difference in privately generated income that government tax and transfer policies must fill to offset losses from disability. In Germany there is a substantially smaller gap in the privately generated income of those with and without a disability. Thus, direct tax and transfer policies need to do much less in Germany than in the United States in order to offset the effect of disability on economic well-being.

Government tax and transfer policies clearly reduce the gap in before-government income between those with and without disabilities in the United States. The after-government mean income of men with disabilities rises, while the mean income of those without disabilities falls. Despite this equilibrating change, the gap between those with and without disabilities remains. The mean man with a disability lives in a household with income equal to only 73 percent of that of the average man without a disability. The smaller gap in before-government income in Germany is consistent with a disability policy designed to minimize the economic losses surrounding disability by maintaining a worker's connection to the labor market. Hence, in Germany when tax and transfers are included, mean income falls for both men with and without disabilities—tax payments exceed transfers for both. Still, the gap in income between men with and without disabilities is substantially reduced. In Germany tax and transfer policies virtually equalize household income between those with and without disabilities.

These findings suggest that on average the economic well-being of working age males with disabilities in the United States is improved by government tax and transfer policies in general and by disability transfer policy in particular, but that the large difference in labor earnings between those with and without disabilities is not fully offset by such policies. In contrast, because the labor earnings difference is much smaller in Germany, tax and transfer policies virtually bridge the gap for the average working age male with disabilities in Germany.

*A Multi-Period View.* Tables 2 and 3 show that Germans with disabilities are more reliant on labor earnings and less reliant on transfers to generate household income than are American men with disabilities. However, this kind of yearly data cannot reveal why this difference exists. A number of alternatives are possible including (1) the differences are a direct result of the disability, (2) the differences predate the disability, and (3) the differences are a statistical artifact arising from the fact that cross-sectional data oversample "long-stayers" (Cox, 1972; Bane and Ellwood, 1983).<sup>12</sup> To examine which of these explanations is correct we use longitudinal data to follow men who experience a disability during the survey period and to track changes in their labor earnings and household income as they transition into disability.

12. That is, the cross-section of men with disabilities in 1988 will have a greater percentage of men whose disability occurred long ago than would a random sample of completed spells of men who experience the onset of a work-limiting health condition. If work and economic well-being deteriorate as one's spell of disability lengthens, then cross-sectional comparisons may exaggerate the typical experience of a worker following the onset of a health-related work limitation.

TABLE 3

ECONOMIC WELL-BEING OF WORKING AGE MEN WITH AND WITHOUT DISABILITIES  
IN THE UNITED STATES AND GERMANY

	UNITED STATES (MEAN 1991 DOLLARS)		GERMANY (MEAN 1991 DM)	
	BEFORE-GOVERNMENT INCOME	AFTER-GOVERNMENT INCOME	BEFORE-GOVERNMENT INCOME	AFTER-GOVERNMENT INCOME
MEN				
with disabilities	25,419	23,968	40,562	34,382
without disabilities	38,851	32,434	51,789	39,186
RATIO	0.65	0.73	0.78	0.88

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the Syracuse University Public Use File of the German Socio-Economic Panel.

The longitudinal sample is constructed from the 1983 to 1989 waves of the PSID and GSOEP and contains men who report two consecutive periods of non-disability followed by two consecutive periods of disability. The analysis is restricted to men who experience the onset of their disability after their 25th but before their 60th birthday.

*Changes in Absolute Economic Well-Being.* Table 4 shows the short-run consequences of disability by tracing the path of changes in work and the absolute economic well-being of men with disabilities surrounding the onset of a disability. The first row of Table 4 shows that two years prior to the onset of their health-related work limitation, about 96 percent of both American and German males worked. Subsequent rows show that after the onset of the disability, work declines in both countries, but more so in the United States. But as was true in Table 2, it is in the United States that labor earnings are most seriously affected. Mean labor earnings fall from about \$29,000 the year before onset to about \$25,000 the year following onset and to about \$23,000 two years after onset, declines of 15.8 and 18.8 percent, respectively. In Germany there is a similar decline one year after onset, but by two years after onset mean labor earnings return to their pre-onset level.

Two points are worth noting from this comparison. First, American men experience larger declines in labor earnings than their German counterparts. This difference is related, in part, to the larger percentage of American men compared to German men who stop working following the onset of their disability. Second, although the decline in labor earnings among American men with dis-

abilities is substantially larger than the decline among their German counterparts, it is much smaller than might be inferred from the cross-sectional differences in labor earnings reported in Table 2.

This same surprising pattern is found with respect to economic well-being. Mean real household size-adjusted income remains virtually unchanged in both countries immediately following the onset of a disability. This is true for both before-government income as well as for after-government income. In the United States, before-government income dropped from \$28,147 one year before to \$28,073 one year after onset. In Germany, before-government income actually increased from DM 43,735 one year before onset to DM 43,911 one year after onset. Changes in after-government income are even more surprising. In both countries, mean after-government income rises from one year before to one year after onset. Looking at the mean percentage change over the one-year period, before-government income falls by less than 1 percent in the United States and actually increases in Germany. After-government income increases in both countries. The mean change in the United States was an increase of 4.0 percent. In Germany it was 3.8 percent. These findings suggest that the drop in economic well-being implied by cross-sectional comparisons may exaggerate the importance of disability as its cause.

*Differences in Initial Conditions.* One explanation for the large discrepancy between the cross-sectional and longitudinal characterizations of disability is that the earnings and income differences observed in the cross-section pre-

TABLE 4

SHORT-RUN ECONOMIC CONSEQUENCES OF A DISABILITY AMONG WORKING AGE MEN  
IN THE UNITED STATES AND GERMANY

DISABILITY EVENT	UNITED STATES				GERMANY			
	PERCENT EMPLOYED	MEAN LABOR EARNINGS	EQUIVALENT MEAN 1991 DOLLARS		PERCENT EMPLOYED	MEAN LABOR EARNINGS	EQUIVALENT MEAN 1991 DM	
			BEFORE- GOVERNMENT INCOME	AFTER- GOVERNMENT INCOME			BEFORE- GOVERNMENT INCOME	AFTER- GOVERNMENT INCOME
Two Years Prior	95.6	28,428	26,128	22,196	96.3	52,765	45,862	34,733
One Year Prior	96.7	29,300	28,147	24,066	96.3	47,553	43,735	33,739
Year of Disability Event	89.5	27,636	27,853	24,191	95.4	47,644	45,861	34,867
One Year After	80.1	24,663	28,073	25,028	89.9	39,794	43,911	35,014
Two Years After	78.0	23,777	27,916	25,273	83.3	47,680	49,727	39,464

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the Syracuse University Public Use File of the German Socio-Economic Panel.

date the disability. In other words, men with low economic status in the United States are more likely to become disabled. To test whether this explanation is true we compare the pre-disability earnings and income distributions (periods  $t-2$  and  $t-1$ ) of men with disabilities to the earnings and income distributions among all men ages 25 to 59. The statistical significance of any differences is examined using a Chi-Squared Goodness of Fit test.<sup>13</sup>

Table 5 shows that in the United States where the differences were large in the cross-section, there is no significant difference between the distribution of labor earnings for men with and without disabilities in either periods  $t-2$  or  $t-1$ . In Germany where the differences in the cross-section were small, the labor earnings distribution for men with disabilities prior to onset were significantly lower than for men without disabilities prior to onset. In the two years preceding the onset of a work-limiting health condition, more than 50 percent of German men fell into the lowest two labor earnings quintiles. Less than 40 percent of German men without disabilities had labor earnings in these two quintiles. Thus, while American men with disabilities are surprisingly similar to American men without disabilities, some of the small cross-sectional difference in labor earnings between men with and without disabilities in Germany can be explained by differences in their initial positions in the labor earnings distribution.

In contrast to the labor earnings results, the distributions of before- and after-government income of German men with disabilities are not significantly different from those without disabilities in the year prior to onset. Moreover, in the United States, only the before-government income of those who subsequently have a disability is significantly lower in the year prior to onset compared to the rest of the population. Taken together, these results suggest that the discrepancies observed between the cross-section and

multi-period analysis cannot be explained by differences in initial conditions.

*Changes in Relative Economic Well-Being.* The analysis thus far suggests that the onset of a disability does not dramatically alter the absolute economic well-being of American or German men. However, for many of these men, staying near or at the same absolute income level, over time, may translate into a significant decline in their relative income position. In Tables 6–8 we explore whether U.S. and German men with disabilities maintain or lose their relative standing in the income distribution after the onset of their disability. The relative position of men with disabilities is measured by assigning each sample member to a labor earnings, before-government, and after-government income quintile in each year surrounding the transition into disability. The quintile cutoffs are computed over the entire population of men 25 to 59 with and without disabilities between 1983 and 1989.

Table 6 reports the results for the labor earnings distribution. In the United States the labor earnings distribution of men with disabilities shifts down following onset. One year prior to onset just over 45 percent of these men were in the lowest two quintiles of the labor earnings distribution. One year after onset almost 54 percent had labor earnings in the lowest two quintiles of the distribution. This finding is consistent with the falling mean labor income reported in Table 2.

In Germany, the mean change in labor earnings among men with disabilities just after onset was small, but the relative position of these men declined over the period from just before to just after onset. One year prior to onset 43 percent of German men with disabilities were in the two lowest quintiles, with less than 15 percent falling into the bottom quintile. One year after onset over 50 percent were in the lowest two quintiles and more than 30 percent had fallen into the bottom quintile. Thus, although the mean change in labor earnings among men with disabilities over this period was zero, real growth in labor earnings among men without disabilities left men with disabilities relatively worse off.

As shown in Tables 7 and 8, the experiences of American and German men are very similar with respect to before- and after-government income. Although before-government relative economic well-being for men with disabilities declines following the onset of a work-limiting health condition, it does not fall by as much as the labor earnings distribution. Moreover, much of the relative decline in before-government income is eliminated by the tax and transfer system. In the United States 48.4 percent of men with disabilities fell into the bottom two quintiles of before-government income one year after onset but only 44.4 percent did with respect

13. The specific test used was a test of association that relies on the computation of a Pearson chi-square statistic. The null hypothesis is that there is no association between income and the onset of disability. The alternative hypothesis is that some general association is present. Essentially this test compares the expected to the observed frequencies for those with and without disabilities and rejects the null if at least one of the distributions differs from the expected or mean distribution. The exact computation of the test statistic is:

$$Q_p = \sum_i \sum_j (n_{ij} - m_{ij})^2 / m_{ij} \quad (r-1)(c-1) \text{ degrees of freedom}$$

where

$$m_{ij} = n_i n_j / n$$

$$n_j = \sum_i n_{ij} \quad (\text{row total})$$

$$n_i = \sum_j n_{ij} \quad (\text{column total}).$$

See Fienberg (1977).

TABLE 5

## PRE-ONSET COMPARISON GROUP FOR MEN WITH DISABILITIES IN THE UNITED STATES AND GERMANY

QUINTILE	UNITED STATES											
	LABOR EARNINGS				BEFORE-GOVERNMENT INCOME				AFTER-GOVERNMENT INCOME			
	MENWITH DISABILITIES		MENWITHOUT DISABILITIES		MEN WITH DISABILITIES		MENWITHOUT DISABILITIES		MENWITH DISABILITIES		MENWITHOUT DISABILITIES	
	<i>t</i> -2	<i>t</i> -1	<i>t</i> -2	<i>t</i> -1	<i>t</i> -2	<i>t</i> -1*	<i>t</i> -2	<i>t</i> -1*	<i>t</i> -2	<i>t</i> -1	<i>t</i> -2	<i>t</i> -1
Lowest	22.8	22.2	17.9	17.7	24.4	26.7	18.6	18.2	25.0	22.8	18.8	18.4
Next Lowest	22.2	20.0	19.9	18.9	18.9	15.6	20.1	19.8	20.0	15.6	20.2	19.8
Middle	18.3	21.7	20.1	19.9	25.0	21.1	20.5	20.2	22.2	23.9	20.4	20.2
Next Highest	21.1	18.9	20.9	21.3	16.7	18.9	20.8	20.9	17.2	19.4	20.6	20.9
Highest	15.6	17.2	21.2	22.2	15.0	17.8	20.1	20.8	15.6	18.3	20.0	20.7

  

QUINTILE	GERMANY											
	LABOR EARNINGS				BEFORE-GOVERNMENT INCOME				AFTER-GOVERNMENT INCOME			
	MENWITH DISABILITIES		MENWITHOUT DISABILITIES		MEN WITH DISABILITIES		MENWITHOUT DISABILITIES		MENWITH DISABILITIES		MENWITHOUT DISABILITIES	
	<i>t</i> -2	<i>t</i> -1*	<i>t</i> -2	<i>t</i> -1*	<i>t</i> -2	<i>t</i> -1	<i>t</i> -2	<i>t</i> -1	<i>t</i> -2	<i>t</i> -1	<i>t</i> -2	<i>t</i> -1
Lowest	13.6	15.5	17.5	16.9	15.5	17.3	19.3	18.9	16.4	20.0	19.4	19.3
Next Lowest	29.1	28.2	20.5	20.3	20.0	20.0	20.7	20.7	23.6	21.8	20.3	20.3
Middle	14.5	18.2	20.6	20.8	21.8	24.5	19.6	19.9	19.1	20.0	20.1	20.2
Next Highest	20.0	17.3	20.9	21.3	22.7	18.2	20.9	20.5	22.7	18.2	20.7	20.5
Highest	22.7	20.9	20.6	20.7	20.0	20.0	19.6	19.9	18.2	20.0	19.5	19.8

\*Significant at the 5 percent level.

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the 1993 Syracuse University Public Use File of the German Socio-Economic Panel.

TABLE 6

LABOR EARNINGS BY QUINTILE FOR WORKING AGE MEN WITH DISABILITIES  
IN THE UNITED STATES AND GERMANY

QUINTILE	UNITED STATES					GERMANY				
	<i>t</i> -2	<i>t</i> -1	<i>t</i>	<i>t</i> +1	<i>t</i> +2	<i>t</i> -2	<i>t</i> -1	<i>t</i>	<i>t</i> +1	<i>t</i> +2
Lowest	22.8	22.2	29.4	35.6	32.5	13.6	15.5	19.1	31.8	27.1
Next Lowest	22.2	20.0	17.2	17.8	23.9	29.1	28.2	27.3	20.0	16.5
Middle	18.3	21.7	17.8	18.9	16.2	14.5	18.2	14.5	12.7	15.3
Next Highest	21.1	18.9	19.4	17.2	15.4	20.0	17.3	17.3	17.3	23.5
Highest	15.6	17.2	16.1	10.6	12.0	22.7	20.9	21.8	18.2	17.6
Mean	28,428	29,300	27,636	24,663	23,777	52,765	47,553	47,644	39,794	47,680

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the 1993 Syracuse University Public Use File of the German Socio-Economic Panel.

TABLE 7

BEFORE-GOVERNMENT EQUIVALENT FAMILY INCOME BY QUINTILE FOR WORKING AGE MEN WITH DISABILITIES IN THE UNITED STATES AND GERMANY

QUINTILE	UNITED STATES					GERMANY				
	<i>t</i> -2	<i>t</i> -1	<i>t</i>	<i>t</i> +1	<i>t</i> +2	<i>t</i> -2	<i>t</i> -1	<i>t</i>	<i>t</i> +1	<i>t</i> +2
Lowest	24.4	26.7	26.1	30.6	27.4	15.5	17.3	20.0	21.8	20.0
Next Lowest	18.9	15.6	18.9	17.8	18.8	20.0	20.0	17.3	24.5	17.6
Middle	25.0	21.1	17.8	20.0	20.5	21.8	24.5	26.4	21.8	27.1
Next Highest	16.7	18.9	19.4	10.6	14.5	22.7	18.2	15.5	17.3	21.2
Highest	15.0	17.8	17.8	21.1	18.8	20.0	20.0	20.9	14.5	14.1
Mean	26,128	28,147	27,853	28,073	27,916	52,765	47,553	47,644	39,794	47,680

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the 1993 Syracuse University Public Use File of the German Socio-Economic Panel.

TABLE 8

AFTER-GOVERNMENT EQUIVALENT FAMILY INCOME BY QUINTILE FOR WORKING AGE MEN WITH DISABILITIES IN THE UNITED STATES AND GERMANY

QUINTILE	UNITED STATES					GERMANY				
	<i>t</i> -2	<i>t</i> -1	<i>t</i>	<i>t</i> +1	<i>t</i> +2	<i>t</i> -2	<i>t</i> -1	<i>t</i>	<i>t</i> +1	<i>t</i> +2
Lowest	25.0	22.8	23.9	23.3	19.7	16.4	20.0	18.2	18.2	16.5
Next Lowest	20.0	15.6	19.4	21.1	21.4	23.6	21.8	17.3	23.6	16.5
Middle	22.2	23.9	18.3	19.4	24.8	19.1	20.0	28.2	27.3	28.2
Next Highest	17.2	19.4	17.8	13.9	14.5	22.7	18.2	15.5	13.6	17.6
Highest	15.6	18.3	20.6	22.2	19.7	18.2	20.0	20.9	17.3	21.2
Mean	22,196	24,066	24,191	25,028	25,273	34,733	33,739	34,867	35,014	39,464

Source: 1989 Response-Nonresponse File of the Panel Study on Income Dynamics and the 1993 Syracuse University Public Use File of the German Socio-Economic Panel.

to after-government income. In Germany the relevant numbers are 46.3 percent and 41.8 percent.

#### IV. DISCUSSION

All modern industrial societies maintain social programs to protect and assist workers who develop health impairments that reduce their earning capacity. In addition, many nations have implemented employment support programs to keep such workers in the labor market. In this paper we examined the economic well-being of men with disabilities in the United States and compared them with their counterparts in Germany. We find, using cross-sectional

data, that the mean German with a disability lives in a household whose income is virtually the same as that of the mean German without a disability. This is not the case in the United States, where the income gap between those with and without disabilities is approximately one-quarter. An even more important finding from a policy perspective is that in Germany the pre-tax and transfer income (composed largely of own wage earnings) of men with disabilities is nearly 80 percent of that of men without disabilities. In the United States the pre-tax and transfer income gap for men is almost 35 percent.

However, based on our longitudinal data, we suggest that the large difference in wage earnings and household

income found in the cross-section may exaggerate the influence that disability has on income in the United States. While the mean household income of men with disabilities in the United States fell somewhat following a disability, this fall was more modest than the income gap found between those with and without disabilities in the cross-section.

What we learn from both our longitudinal and cross-sectional findings is that the labor earnings of those with disabilities are a primary determinant of their economic well-being. Our results indicate that, while Americans and Germans with disabilities are employed at about the same ratio with respect to those without disabilities, the labor earnings of Germans with disabilities are much closer to those of Germans without disabilities than is the case in the United States. This difference, in large part, explains the disparity in economic well-being between people with disabilities in the United States and Germany.

These pieces of information suggest that Germany's commitment to employment for people with disabilities contributes to the relatively solid record of labor earnings by men in Germany. Hence, if the Americans with Disabilities Act and other government initiatives to encourage accommodation of people with disabilities in the labor market are successful in increasing the labor earnings of people with disabilities, this will then reduce some of the income gap between those with and without disabilities. However, our longitudinal results suggest that there are limits to what policy can do. While German men with disabilities did not experience dramatic absolute declines in their economic well-being, they did lose their relative position in the income distribution. This suggests that guaranteeing Americans with disabilities more than their absolute pre-disability standard of living may be beyond the scope of current policy.

## APPENDIX

### UNITED STATES EQUIVALENCE WEIGHTS FOR ADJUSTING HOUSEHOLD INCOME

HOUSEHOLD SIZE	WEIGHT
Single person	1
Couple	1.29
Couple plus child	1.55
Couple plus 2 children	1.95
Couple plus 3 children	2.29
Couple plus 4 children	2.57
Couple plus 5 children	2.88
Couple plus 6 children	3.16
Couple plus 7 children	3.87

Notes: The equivalence weights for the United States are derived from the Census poverty thresholds. U.S. Department of Commerce, 1991.

Equivalence weights for alternative family compositions are not shown here but were included in the calculations of equivalent income.

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