

## Health, Aging and Retirement

### Long-Term Labor Force Exit and Economic Well-Being: A Cross-National Comparison of Public and Private Income Support\*

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#### Summary

*This paper examines how the economic well-being of households changes after a male household member exits the labor force. We examine, in four countries, labor force exits at various ages and present evidence on household income from various sources before and after the exit occurs. We focus on the rate at which household income is replaced through public and private means after labor force exit. We find that economic well-being is underestimated when researchers follow the traditional focus in this literature and consider replacement of earnings through public pension programs. When one measures total household income, after taxes and transfers, before and after labor force exits, not only is economic well-being greater but cross-country differences are reduced.*

#### 1. Introduction

Work in the marketplace is the primary source of income for most households in modern industrialized societies. A permanent or even a long-term exit from work by a household's principal earner is therefore a potentially risky economic event. A mixture of private and public institutions now exist to ameliorate the economic consequences of such exits in most countries. On the public side, most social insurance systems provide income to those who exit work at older ages (retirement benefits) or at younger ages because of health conditions (disability and workers' compensation benefits). Most countries also offer long-term unemployment benefits for workers of all

ages as part of their social insurance system. In addition to these types of social insurance programs, which target long-term labor market workers, most countries also offer an array of means-tested welfare programs. Such programs typically provide a minimum social safety net for nonworkers that may either be categorical (e.g., older persons, disabled persons, lone parents, etc.) or universal in design. (See Aarts, Burkhauser and de Jong, 1998 for a fuller taxonomy of social welfare systems in a comparative context.)

While many studies of the economic consequences of long-term labor market exits have focused on the ameliorative role of such government programs, private institutions also play an important part in replacing lost earnings following an exit from the labor market. Certainly in the United States, but also in Canada, Great Britain, and in other industrialized countries, private employer fringe benefit packages provide protection following a labor force exit due to redundancy, disability, or retirement. Furthermore, some households can use income from their accumulated wealth or from the added market work of other household members to offset their principal earner's lost income.

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Studies, especially cross-national studies, of post-exit economic well-being often focus on how a given program (e.g., social security retirement or disability insurance, unemployment insurance, etc.) replaces lost earnings. By focusing on benefits from a specific program, these studies attempt to gauge the potential post-exit income available to the households of workers who experience long-term labor market exits. The lack of comparable data, however, often restricts cross-national studies to either a comparison of a hypothetical average worker's earnings history and that worker's subsequent social security benefits across various countries or the use of cross-sectional data from various countries to compare persons of a given age who are working relative to those who are not.<sup>1</sup> (See Gruber and Wise, 1999 for an example of the former strategy and many studies using the comparable cross-sectional data from the Luxembourg Income Study for examples of the latter).

Cross-national comparisons using such data may be of limited value, especially when their intent is to show the relative economic risks across industrial societies of a long-term labor market exit for the households by workers of a given age. These limitations arise, first, because the studies may fail to recognize variation in the importance of social security insurance or any other government program in "income replacement" across countries and second, because they are unable to trace the actual change in economic well-being across given households.<sup>2</sup>

In this paper we take advantage of a newly expanded source of cross-national panel data, the Cross-National Equivalent File (CNEF), which contains comparable socio-economic information on households in four modern industrial societies (Canada, Germany, Great Britain, and the United States). We use these data to trace the economic well-being of the households of long-term employed men who experienced a long-term exit from the labor market in the 1990s. We capture long-term exits by requiring men in our sample to have three consecutive years of employment (measured as at least 52 hours of market work for which a worker is paid in a given year) followed by at least two years of non-employment (measured as working less than 52 hours or having zero labor earnings in a given year).<sup>3</sup> We show that the age-specific risk of a long-term labor market exit is quite low in all four countries prior to age 55, with little difference across countries in this risk at a given age. Thereafter, however, the age-specific risk of an exit rises in all four countries, with the highest age-specific risks in Germany and the lowest in the United States. We then focus on the economic consequences on the households of men who exit at younger ages (25 through 49), middle ages (50 through 61) and older ages (62 and older). We show that the sources and amounts of post-exit income vary both across age at exit and across country. Finally, we show that studies that use a ratio of social security benefits to

earnings replacement concept (post-exit social security benefits divided by pre-exit labor earnings) will not only understate the actual change in household income following a long-term labor market exit but will do so disproportionately for countries like the United States and Canada where a greater component of post-exit income comes from other income sources.

## 2. Data

Researchers at Cornell University, along with colleagues from the German Institute for Economic Research in Berlin, the Survey Research Center at the University of Michigan, the Economic and Social Research Council Research Centre at the University of Essex, and Statistics Canada in Ottawa, have developed and tested algorithms that place information from the German Socio-Economic Panel (GSOEP), the United States Panel Study of Income Dynamics (PSID), the British Household Panel Study (BHPS) and the Canadian Survey of Labour and Income Dynamics (SLID) into a framework of comparably defined variables for use in cross-national research. The result of these efforts is a longitudinal micro-database known as the Cross-National Equivalent File (CNEF). This file provides a set of constructed variables (e.g., pre- and post-government household income, estimates of annual taxes paid by respondents, a selection of household equivalent weights based on equivalence scales, etc.) that are not immediately available in the original surveys. The CNEF data file currently contains data from 1980 to 1997 for the United States, from 1984 to 1998 for Germany, from 1990 to 1997 for Great Britain and from 1993 to 1994 for Canada.<sup>4</sup> The CNEF data include standard demographic information, household income and its components, and individual information on employment and labor earnings. The CNEF data file is updated annually with additional years of the panels and newly created comparable variables. (For a fuller discussion of these data see Burkhauser, Butrica, Daly and Lillard, 2000).

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<sup>1</sup> In this paper we use the term social security programs to refer to public, industry-wide, insurance-based retirement and disability (including survivor and family benefit based on the worker's record) programs. In some countries, social security programs could also include unemployment insurance, child benefits, etc.

<sup>2</sup> Some studies employ a synthetic cohort approach using repeated cross-sections to show how income changes across age groups. Such methods may confound composition and age effects.

<sup>3</sup> Because the Canadian panel is much shorter, we only require two consecutive years of work followed by two years of non-employment.

<sup>4</sup> Although data for Canada are only publicly available for 1993-1994, SLID data from 1995-1998 can be analyzed by special arrangement with Statistics Canada. To inquire about access to any of the data in this paper contact Dean Lillard at [DRL3@cornell.edu](mailto:DRL3@cornell.edu). We thank Phil Giles of Statistic Canada for assisting us on this paper.

In this paper, we take full advantage of the panel nature of the CNEF data to first estimate the age-specific risk of long-term labor market exit for men across the four countries in the 1990s and then to trace the consequences of such exits on their household income by source. To do so, we use an event history based longitudinal sample design that allows us to examine the labor market activity and economic well-being of men prior to and following a long-term labor market exit. Applying our definition of labor force exits, we collect a sample of 16,627 German, 8,602 British, 16,206 Canadian, and 14,614 United States observations of men at risk of a labor market exit between the ages of 25 through 75.<sup>5</sup> Each of these men experienced the beginning of a long-term labor market exit sometime between 1990 and 1998.<sup>6</sup>

### 3. Risk of Labor Market Exit By Age

Cross-sectional studies of employment compare the employment rate of random samples of men of different ages in a given year and infer exit rates across age categories or, in a more sophisticated manner, compare employment rates between matched age cells of two consecutive yearly cross-sections. Here we are able to follow the employment behavior of the same men as they age. Small sample sizes require us to pool our sample of men by age across all years of the 1990s. To do so we realign our calendar year data into an event history framework where the event begins in the last year of employment ( $t$ ). We then assign the age at survey interview year minus 1 as the age of exit in year ( $t$ ).<sup>7</sup> This approach allows us to estimate the risk of a worker experiencing a long-term labor market exit at any given age.<sup>8</sup> The sample periods under study as a possible last year of long-term employment are income years 1990 through 1997 for the GSOEP, 1990 through 1996 for the PSID, 1990 through 1997 for the BHPS, and 1993 through 1998 for the SLID.<sup>9</sup>

Figure 1 shows the pattern of long-term labor market exits for men aged 55 to 67.<sup>10</sup> Long-term age-specific exit rates vary substantially across ages and across countries. With few exceptions, long-term age-specific exit rates are highest in Germany and lowest in the United States at all ages in Figure 1. German exit rates exceed 10 percent as early as age 58 and rise rapidly to nearly 30 percent by age 61. They approach 50 percent by age 64. In contrast, United States exit rates do not hit 10 percent until age 60 and do not hit 30 percent until age 65. British exit rates remain near 10 percent until age 62 at which point they begin to rise, peaking at age 65. Canadian exit rates reach 10 percent by age 59 and remain between 10 and 20 percent until they rise sharply at ages 64 and 65.

In the introduction of their edited volume, Gruber and Wise (1999) argue that variations in social security pro-

gram rules that cause age-specific social security wealth values to vary across the life cycle may explain differences in retirement rates across modern industrial societies.<sup>11</sup> The individual country authors in the Gruber and Wise (1999) volume for the most part use simulated individual earning histories to demonstrate a correlation between peak changes in social security wealth across life and age-specific employment rates in their countries. Our longitudinal results are consistent with this point. Social security wealth values peak at earlier ages in Germany than in Canada, Great Britain and the United States.<sup>12</sup>

<sup>5</sup> Though data on the residents of the eastern states of Germany are available starting in 1990, we restrict our German sample to men with five years of continuous residence in the western states of Germany.

<sup>6</sup> Very few men experienced more than one labor market exit over the period of our data.

<sup>7</sup> Because we are interested in both labor market exit and changes in economic well-being by age we use a yearly frame for both definitions. Age is reported at the time of the interview but we are measuring employment and household income in the previous year. Because our data are based on the year and not actually on the day of exit we will not precisely capture income flows before and after the day of labor market exit. This is why we focus on the years prior to and after exit and do not include the actual year of exit in our tables.

<sup>8</sup> All observations in our sample are weighted. Longitudinal weights of the last year of work ( $t$ ) are assigned. These weights make the sample representative of the population born in the range of years consistent with each age group and sample period. For example, in the PSID our sample period is from 1990 to 1996. Our sample weights in the PSID makes the 2549 year-old sample representative of men born between 1941 and 1971 who exited the labor force sometime between 1990 and 1996. The sample weights in the other data sets and age groups yield samples that represent populations similarly defined.

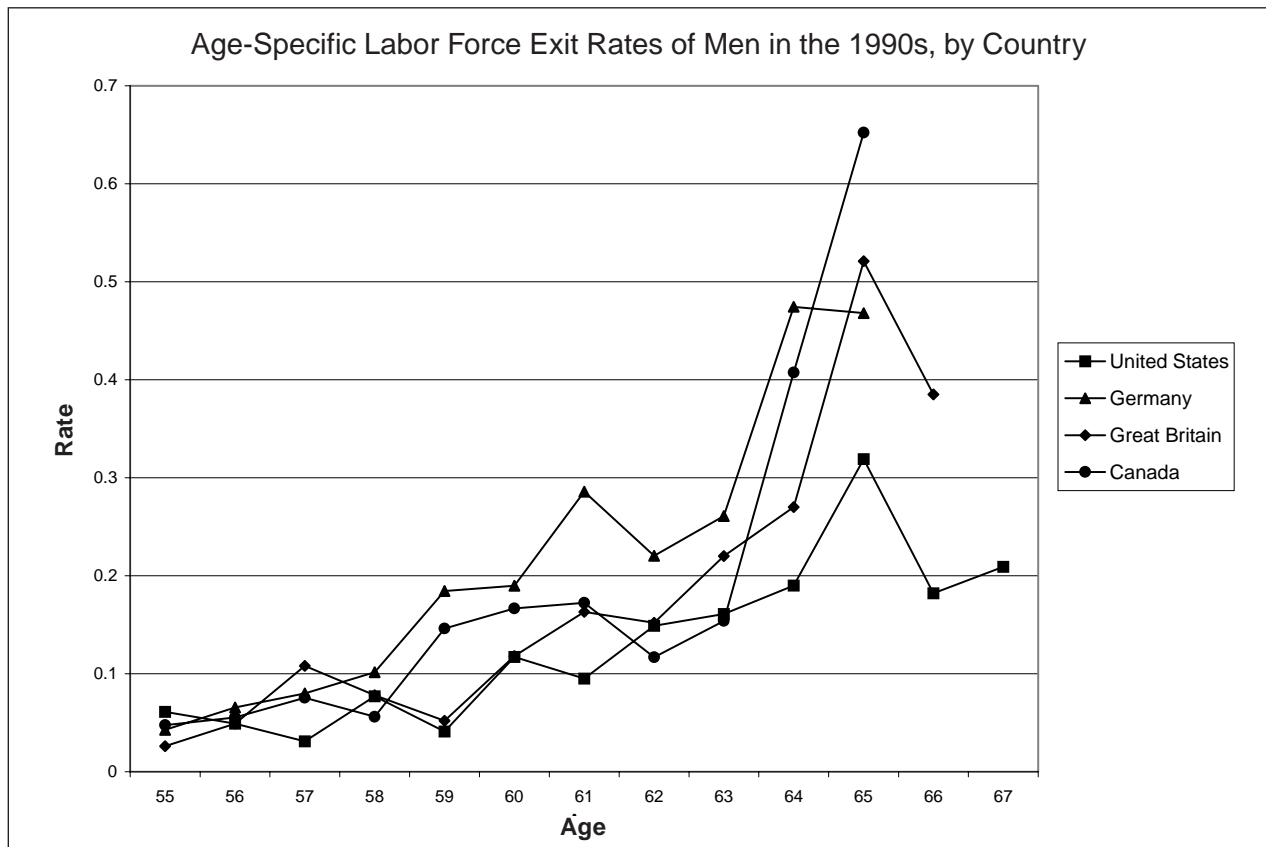
<sup>9</sup> GSOEP, PSID and SLID data are collected on labor earnings and labor force participation in the preceding calendar year. BHPS data on labor earnings and labor force participation are for September 1 of the previous year to September 1 of the current (survey) year. To be in our sample a worker must have experienced his last year of work no earlier than 1990. In tables showing income for up to three years prior to exit, we use PSID and GSOEP data from income years 1987-1989 for those who last worked in 1990. Note also that we use unbalanced panels in these tables.

<sup>10</sup> We focus on men aged 55 to 67 in Figure 1 because these are the ages at which the hazard of a long-term labor market exit rises substantially in all four countries. In tables available from the authors we show that at earlier ages exit rates are modest (less than 5 percent in each country) and there is little difference in these rates across the four countries. We do not present or plot values at ages with fewer than 35 men.

<sup>11</sup> The conceptualization of a worker's pension and social security rights as an asset whose value varies over his or her life cycle is an important innovation in the retirement literature. See Quinn, Burkhauser, and Myers (1990) for an early use and review of this conceptualization and its importance in modeling retirement decisions and Quinn and Burkhauser (1998) and Lumsdaine and Mitchell (1999) for more recent reviews.

<sup>12</sup> See Borsch-Supan and Schnable (1999) for Germany, Diamond and Gruber (1999) for the United States, Blundell and Johnson (1999) for Great Britain, and Gruber (1999) for Canada for a discussion of the behavioral impact of social security programs on retirement in these countries.

Figure 1



#### 4. Economic Well-Being Before and After Long-Term Labor Market Exit

Figure 1 demonstrates that long-term labor market exit rates vary greatly across the life cycle and across our four countries. We now use our panel data to focus on how household income and its sources change as these men transition out of the workforce. Because social insurance systems tend to provide more protection to those who exit at older ages, we divide our country samples into three age groups defined by the worker's age at exit — younger workers (aged 25 through 49), middle-aged workers (aged 50 through 61), and older workers (aged 62 and over). In so doing, we show the relative importance of public and private sources of income and how important these sources are in maintaining pre-exit household income levels.

Table 1 provides information on mean average post-tax, post-transfer household income (i.e., total gross household income minus all taxes) as well as by key sources of that income for the two years before and after a labor market exit of men in our four countries in the 1990s. By definition, own labor income falls to near zero in the two years following labor market exit in all countries.<sup>13</sup> A list of the subcomponents that make up each of the income categories is available from the authors.

In the United States, decreases in the earnings of men who exit the labor force at older ages are almost equally offset by increases in their household's social security and private pension income. For men who exit at middle ages, increases in private pension income dominate. At younger ages, increases in other public and private income dominate.

In Germany, decreases in the labor earnings of men who exit at either older or middle ages are primarily offset by increases in social security income, although increases in other public income are also important at middle ages. At younger ages, increases in other public income dominate.

In Great Britain, decreases in the labor earnings of men who exit at older ages are almost equally offset by increases in social security and other public and private income. At middle ages, increases in private pension and other private and public income are most important. At

<sup>13</sup> Income is non-zero in  $t + 1$  and  $t + 2$  because men who work no more than 52 hours per year are considered to have effectively left the labor force even if they have positive labor earnings. However, in Great Britain, the differences in the time unit for yearly income may also play a role at younger ages.



Table 1

## Mean Household Income of Men Before and After Exit, by Source, Country and Age at Exit

Income Source	United States (Dollars)		Germany (Marks)		Great Britain (Pounds)		Canada (Dollars)	
	Before	After	Before	After	Before	After	Before	After
Aged 25 through 49								
Own market work	23 172	516	36 255	1 468	14 384	2 704	22 781	1 495
Private pensions	1 958	2 186	142	567	173	854	492	1 251
Other private	21 760	17 741	19 358	22 202	7 831	14 084	13 095	18 100
Social security	2 507	1 287	939	2 723	330	816	344	778
Other public	1 086	1 601	2 104	11 318	1 868	5 603	816	5 143
Post-government	46 481	22 463	43 179	32 037	19 174	16 647	35 901	28 721
Aged 50 through 61								
Own market work	47 830	1 118	64 213	4 110	17 125	236	40 212	3 372
Private pensions	2 948	13 515	58	3 526	1 136	5 705	1 481	13 898
Other private	36 808	28 623	33 782	29 685	12 182	17 203	24 338	31 690
Social security	1 046	3 347	1 271	18 061	1 130	1 639	203	681
Other public	710	610	922	8 248	1 456	4 165	1 189	5 224
Post-government	78 455	46 613	71 311	55 813	27 185	20 930	55 093	40 860
Aged 62 and over								
Own market work	30 339	514	57 319	172	13 604	130	27 656	1 941
Private pensions	4 856	9 304	55	3 192	3 515	3 855	2 199	8 281
Other private	24 670	15 008	29 655	19 266	12 419	14 863	11 943	15 392
Social security	4 105	9 863	6 464	31 302	2 401	5 452	804	6 568
Other public	189	271	264	1 201	2 352	6 100	397	1 034
Post-government	58 756	34 571	71 030	52 073	25 630	18 087	40 710	33 664

Notes: Household income is averaged over years t-2 and t-1 (before) and over years t+1 and t+2 (after), where (t) is the last year of long-term employment. Income values are in constant 1996 United States dollars, 1995 German marks, 1996 British pounds, and 1997 Canadian dollars.

Source: PSID income years 1988-1996, GSOEP income years 1988-1997, BHPS income years 1990-1997, SLID income years 1993-1998. Sample sizes for men aged 25-49, 50-61 and 62 and over respectively are: PSID (209, 85, 86), GSOEP (94, 241, 72), BHPS (49, 78, 48), and SLID (134, 179, 83).

younger ages, increases in other public and private income dominate.

In Canada, decreases in the labor earnings of men who exit at older ages are offset by increases in social security and private pension income. At middle ages, increases in private pension income dominate. At younger ages, increases in other public and private income dominate.

Table 1 shows that the sources of household income that replace lost labor earnings in the years immediately following a long-term exit from the labor market vary both within a country, depending on age of exit, and across our four countries. Social security income plays an important role in replacing the lost earnings of men who exit the labor market after age 61 in all countries, but it is far more important in Germany and Great Britain than in the United States or Canada as a share of total post-government household income. Social security income plays much less of a role for men who exit the labor force at middle ages. Only in Germany does social security continue to play a dominant role. But other public transfer programs are important for men who exit at this age, except in United States. At younger ages, other public transfers

dominate in all four countries. However, in the United States, increases in other public transfers are quite small relative to the other countries. This variation in the relative importance of sources of post-exit income has important implication for interpreting various measures of "replacement rate" across countries.

Table 2 shows the relative success of social security benefits (i.e., total household post-exit social security benefits divided by pre-exit own labor earnings) and of private pension benefits (i.e., total household post-exit private pension benefits divided by pre-exit own labor earnings) in replacing the labor earnings of men who exit the labor force at various ages. A social security earnings replacement measure is often used not only to show how much social security income replaces a typical worker's lost earnings in a country but is also used to infer how much a household's income is likely to fall following a long-term labor market exit. Table 2 shows that simple social security replacement rates of this type substantially understate how much total post-government household income is available following such an exit and does so disproportionately for the United States and Canada.

Table 2

**Median Private Pension, Social Security and Total Income Replacement Rates of Men,  
by Country and Age of Exit (Percentages)**

Country	Age 25 through 49			Age 50 through 61			Age 62 and over		
	Social Security	Private Pensions	Total Income	Social Security	Private Pensions	Total Income	Social Security	Private Pensions	Total Income
United States	0.0	0.0	46.0	0.0	28.7	62.0	35.0	25.3	52.2
Germany	0.0	0.0	58.2	28.7	0.0	76.8	55.8	0.0	76.9
Great Britain	0.0	0.0	86.0	5.7	25.3	74.9	57.0	14.6	75.0
Canada	0.0	0.0	75.9	0.0	20.5	71.3	28.3	19.6	84.2

Notes: The social security earnings replacement rate is the ratio of household social security income to own labor income. The private pension earnings replacement rate is the ratio of household private pension income to own labor earnings. The total income replacement rate is the ratio of post-government household income after and before labor force exit. In all cases, income before labor force exit is averaged over years t-1 and t-2. Income after labor force exit is averaged over years t+1 and t+2. The median value of each is reported in the cells of this table. The actual median person is different in each cell.

Source: PSID Income years 1988–1996, GSOEP Income years 1988–1997, BHPS Income years 1990–1997, SLID Income years 1993–1998.

The median German man who exits at age 62 and over has a social security replacement rate of 55.8 percent, substantially more than the 35.0 percent social security replacement rate for the median man who exits at those ages in the United States. However, once all sources of income are included in a total income replacement rate measure (post-government household income prior to labor market exit to post-government household income following exit) the total replacement rate for the median German man is 76.9 percent and 52.2 percent for the median man in the United States. In Canada, the difference between the social security (28.3 percent) and the total replacement rate (84.2 percent) for the median man who exits the labor force at this age is even greater. Higher median private pension replacement rates explain part of this difference across countries. While the median total replacement rate in the United States continues to be lower for men who exit at older ages than in the other countries, it is less so than the replacement rate for social security, and surprisingly, it is Canada that has the highest total replacement rate for the median man who exits at these older ages. The common expectation among researchers is that the European countries replace more income post-retirement than do the United States or Canada. The gap between the median social security earnings replacement rate and the median total replacement rate is even greater for men who exit the labor force at younger ages. In the United States, social security retirement benefits are only available for those aged 62 and over. Prior to age 62, social security benefits for men are primarily available only for those eligible based on disability.<sup>14</sup> Hence, it is not surprising that the median man exiting the labor market at middle and younger ages in the United States receives no social security benefits. The

same is true for Canadian men. But this measure grossly understates post-exit household income for men who exit at these ages. Primarily because of greater access to private pension income, the total replacement rate for the median man in the United States who exits at middle ages is higher than that of the median man who exits when he is older. The gap in replacement rates across the four countries is smallest for those who exit at middle ages. No social security or private pension income is received by the median man who exits from long-term work at younger ages in any of our four countries. However, as we saw in Table 1, other public income is available. The median man who exits at younger ages in the United States has the lowest total replacement rate among those in the four countries.

## 5. Conclusions

Lack of comparable multi-period data has made it difficult to determine the importance of social security and other sources of income in replacing the lost earnings of men who exit the labor force at various ages. Here we show that social security income (i.e., income from public, industry-wide, insurance-based, retirement and disability programs) is most important for men who exit at older ages in the four countries (Canada, Germany, Great Brit-

<sup>14</sup> The United States eligibility criteria for disability benefits is among the strictest in industrial countries — inability to perform any substantial gainful activity — and social security beneficiaries per 1000 workers are lower in the United States than in Great Britain or Germany. See Aarts, Burkhauser and de Jong (1998) for a fuller discussion.

ain, and the United States) we consider and less so for men who exit at younger ages in each of those countries. However, focusing solely on social security replacement rates would not only overstate the actual decline in household income that occurs following an exit from the labor market by men in all four countries but would disproportionately do so for the United States and Canada. Private pension income in the United States, Canada, and Great Britain plays a much more important role in replacing the labor earnings of men who exit at older ages than in Germany.

However, even using a total household replacement rate measure, the household of the average man exiting the labor force in the United States still has a relatively lower replacement rate than does the average man in Canada, Great Britain, or Germany at all ages. The overall generosity of the set of retirement programs — social security, other public programs, and private pensions — that provide such income to those men who exit the labor force may in part explain the higher exit rates and lower employment rates of men in these countries relative to the United States.

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