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Changes in the Economic Well-Being of Widows Following the Death of Their Husband: A Four Country Comparison*

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Abstract

Using Cross-National Equivalent File (CNEF) data for the United States, Germany, Great Britain, and Canada, we investigate the economic loss widows experience. We find that, unadjusted for changes in household size, the loss measured by the household income replacement rate is smaller than the loss measured by the social security replacement rate. The household income replacement rate also varies less than does the social security replacement rate across countries and across groups of women whose husbands died at different ages. The median widow's household size-adjusted income in the year after her husband's death relative to the year before is about 0.9 when his death occurs at older ages and about 0.8 at younger ages in all four countries.

JEL Classification: I 31, J 14, J 26, J 32

1. Introduction

A mixture of private and public institutions offset the risk of economic loss to women following the death of their husband. Yet, most cross-national studies focus on the income protection against this loss provided by a single pro-

* Multinational projects that attempt to document economic outcomes using complex data sets must rely on help from scholars familiar with the institutions and data of their home countries. This paper is no exception. We are indebted to Stephen Jenkins, Elena Bardasi, John Rigg, Nick Buck of Essex University, and Andrew Henley of the University of Wales Aberystwyth for their work in preparing the data needed to create the BHPS equivalent file. We thank Markus Grabka, John Haisken-DeNew, and Joachim Frick of the DIW Berlin for their continuing help with the GSOEP files. We thank Tecla Loup and Yeong-Song Kim for their help with the PSID files. We also thank Paola Valenti and Nigar Nargis who provided able research assistance and Florence Allen who prepared the manuscript. Funding for this project came from the United States Social Security Administration through the University of Michigan Retirement Research Center.

gram: social security.[1] Lack of data has required these comparisons be made either with cross-sectional data or even worse, using a hypothetical average of a worker's earnings history and his widow's subsequent social security benefit across various countries. Here we use a newly expanded source of cross-national panel data, the Cross-National Equivalent File (CNEF), to trace the economic well-being of women as they transition from wife to widow. (For a fuller discussion of these data see Burkhauser et al. 2001).

We take full advantage of the CNEF by using an event history based longitudinal sample design to examine the economic well-being of a women's household prior to and following the death of her spouse. Our sample consists of the households of 450 German, 244 British, 627 Canadian, and 591 United States women whose husband died sometime during the life of the panel.[2] To measure changes in her household's economic well-being, we track all sources of household income.[3] Because the members of her household will change over time (e.g. her husband dies, she moves in with relatives, etc.) we follow the women from the year just before to the year just after her husband dies. Since a husband's death is a relatively rare event in each of our country data sets, in each of our country samples we pool our women by their husband's age at death across all years available in each of the country panels. To do so, we realign our calendar year data into an event history framework where we label the year of her husband's death as year (t). Our data include income years 1976 through 1997 for the United States Panel of Study Income Dynamics (PSID), 1984 through 2000 for the German Socio-Economic Panel (GSOEP), including respondents from the eastern states, 1991 through 1999 for the British Household Panel Study (BHPS), and 1993 through 1999 for the Canadian Survey of Labour and Income Dynamics (SLID).

2. How the Economic Well-Being of Women Change Following Their Husband's Death

Table 1 shows how the mean household income of women and its sources change from the year before to the year after the death of their husband within four age categories across four countries.[4] The sign (+, 0, –) in each cell indi-

[1] In this paper we use the term social security programs to refer to public, industry-wide, insurance-based retirement, disability, and survivors programs where benefits are based on the worker's earnings record. In some countries, social security programs could also include unemployment insurance, child benefits, etc. See Appendix Table 1A in Burkhauser et al. (2002) for a full description of the programs we include in our analysis.

[2] See Burkhauser et al. (2002) for a full discussion of the data used in this paper.

[3] The sources of income in each of these categories are described in more detail in Appendix Table 1A of Burkhauser et al. (2002).

cates whether income from that source increases, stays the same, or declines after their husband's death. Asterisks indicate the income categories that account for the largest fraction of the total of the income increases and income decreases across all income categories.[5]

As can be seen in Table 1, when a husband dies between ages 25 and 49, total household income declines and his lost labor earnings has the largest negative effect on household income in all four countries. But the importance of offsetting increases varies across the countries. The widow's labor earnings increase in Germany and Great Britain, remains at about the same level in Canada, and falls in the United States. Income from the labor earnings of other household members increases in all countries. But the primary source of increased income comes from social security benefits in the United States and Great Britain, from the widow's labor earnings in Germany and from private transfers in Canada.

A husband's death between ages 50 and 61 also reduces household income and the major loss in household income is due to his lost labor earnings. Now, however, the widow's labor earnings either remain the same or fall. Others' labor income falls in Germany, and rises in the other three countries. Increases in social security benefits offset lost labor earnings in all countries, but only in Great Britain is it most important. In the United States, increases in asset income (e.g. life insurance) are most important, while in Germany and Canada, it is a reduction in tax payments.

While household income also declines after a husband's death between ages 62 and 69, the husband's lost labor earnings are primary only in the United States and Great Britain. In Germany and Canada the husband's labor earnings have already declined substantially prior to his death and were not a factor. In Canada, declines in private pension benefits are most important. In Germany, declines in social security benefits are most important. The most important source of offsetting increases in household income also varies across the four countries. In the United States, Great Britain, and Canada, reduced tax payments are most important. In Germany, it is the increased labor earnings of the widow.

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[4] Appendix Tables 6A, 7A, 8A, and 9A, in Burkhauser et al. (2002) provide the widow's mean household income and its sources for three year before and three years after the death of her husband for the United States (Table 6A), Germany (Table 7A), Great Britain (Table 8A), and Canada (Table 9A). We use mean values unadjusted for household size to focus on the changes in the relative importance of various sources of income following her husband's death.

[5] To decide whether to assign a (+, 0, -) to each income source, we first separately sum increases and decreases in mean household income across all sources after death. Each increase (decrease) in mean household income is calculated as a fraction of the total increase (decrease). For increases (decreases) greater than 10 percent a "+" ("-") was assigned. A "0" was entered in all other cells. A decrease in tax obligations is treated as an increase in income.

Table 1

Direction of Change in Widows' Mean Post-Government Household Income by Source After the Death of Their Husband by Country and Age of Husband at Death

Income Source	Aged 25 through 49				Aged 50 through 61			
	United States	Germany	Great Britain	Canada	United States	Germany	Great Britain	Canada
Total Post-Government	-	-	-	-	-	-	-	-
Private Sources								
Husband's Labor Income	-*	-*	-*	-*	-*	-*	-*	-*
Widow's Labor Income	-	+*	+	0	0	-	0	-
Others' Labor Income	+	+	+	+	+	-	+	+
Private Transfers	0	0	0	+*	0	+	0	-
Private Pensions	+	+	+	+	0	+	0	-
Assets	+	+	0	0	+*	0	+	+
Public Source								
Transfers	0	-	-	+	0	0	-	0
Social Security	+*	+	+*	+	+	+	+*	+
Taxes	0	+	+	+	+	+*	+	+*

Income Source	Aged 62 through 69				Aged 70 and over			
	United States	Germany	Great Britain	Canada	United States	Germany	Great Britain	Canada
Total Post-Government	-	-	-	-	-	-	-	-
Private Sources								
Husband's Labor Income	-*	0	-*	0	-	-	-	0
Widow's Labor Income	-	+*	-	0	0	+	0	0
Others' Labor Income	+	+	-	+	+*	0	0	+*
Private Transfers	0	0	0	0	-	0	0	0
Private Pensions	-	0	-	-*	-	-	-	-
Assets	0	+	0	-	-	+	-	0
Public Source								
Transfers	0	0	-	0	0	0	-	+
Social Security	-	-*	+	-	-*	-*	-*	-*
Taxes	+*	+	+*	+*	+	+*	+*	0

Source: Based on yearly information from the year prior to the year following the death of a woman's husband. Authors' calculations from the Panel Study of Income Dynamics 1976 – 1997, German Socio-Economic Panel 1984 – 2000, British Household Panel Study 1991 – 1999, and Survey of Labour and Income Dynamics 1993 – 1999.

Notes: Sign is negative if change in sources accounted for at least a 10 percent decline in post-government income. Sign is positive if change in source accounted for at least 10 percent increase in post-government income. Sign is zero if change is less than 10 percent. Asterisks indicate the income categories that account for the largest fraction of the total of the income increases and income decreases across all income categories. This is an unbalanced panel. Sample size varies across years. See Appendix Tables 10A and 11A of Burkhauser, Giles, Lillard and Schwarze (2002). A detailed list of the income types included in each category and all mean values can be found in of Burkhauser, Giles, Lillard, and Schwarze (2002). No adjustments are made for household size.

A husband's death at ages 70 and above also reduces household income but the loss of his labor earnings is even less important. In all four countries, declines in social security income are most important. In Germany and Great Britain, reduced tax payments are the most important offset of this decline. In the United States and Canada, the increased labor earnings of other household members are most important. Note, however, that this could relate to a change in household composition rather than an increase in the labor earnings of those who were in the household prior to the husband's death.

Table 1 shows that total household income unadjusted for change in household size falls in all four countries following a husband's death. Moreover, the pattern of loses and gains are closer across countries than across age groups within each country. None-the-less, there are some important differences in the primary source of offsetting income gains across countries. However, such differences are critical from a policy perspective only if they lead to important differences in the relative change in economic well-being of surviving household members across these countries. Before determining if this is the case, we discuss how adjustments to household income that account for differences in household size will affect measures of the change in the economic well-being of women following the death their husband in all countries.

2.1 Evaluating the economic well-being of individuals in households of different size

Table 1 reports changes in the mean post-government income of widow's households before and after the death of their husband. These values were not adjusted for household size. A large literature exists detailing the problems associated with measuring the economic well-being of individuals who live in households of different size. (See Moon / Smolensky, 1977; Burkhauser / Smeeding / Merz, 1996 for examples of this literature).

Simply comparing a women's net-of-tax total household income, unadjusted for household size, before and after the death of her husband, as we did in Table 1, effectively assumes perfect returns to scale in household production. Alternatively, assigning each survivor a per capita share of net-of-tax household income, effectively assumes no returns to scale. Buhmann et al. (1988) propose a formula that accommodates these two extreme assumptions. Their formula is:

$$E = D/S^e \tag{1}$$

where an individual's equivalent income (E) equals total household income (D) divided by household size (S) raised to the power (e). Assumptions about economies of scale in household production or consumption are captured in

the value one adopts for (*e*). At one extreme, when (*e*) equals 1, no economies of scale exist. Operationally, per capita income is assigned to each person in the household. At the other extreme, when (*e*) equals zero, economies of scale are perfect. Operationally, each person is assigned equivalent income exactly equal to household income.

Burkhauser / Smeeding / Merz (1996) show the sensitivity of income inequality and poverty measures to variations in the value of (*e*) but recognize that economic theory does not suggest a particular value. They point out, however, that a common value used in the literature is (*e*) equals 0.5.

In Table 2, we use the above formula to adjust post-government household income values in the year prior to the husband's death ($t - 1$) and the year following the husband's death ($t + 1$) using alternative values of (*e*). As can be seen in Table 2, higher values of (*e*) reduce the post-government household income of each individual in the household. More importantly for our purpose, the ratio of mean household size-adjusted post-government income in ($t + 1$) to mean household size-adjusted post-government income in ($t - 1$) varies dramatically with the choice of (*e*). When (*e*) equals zero the widow's household size-adjusted income falls in all countries following her husband's death. This result is found in Table 1. At the other extreme, (*e*) equals 1, the widow's household size-adjusted income rises for most ages of their husband's death in all countries.

Table 2 shows that differences in the household size-adjusted income ratios across values of (*e*) are in general greater than the differences across age groups within a country or within an age group across countries. Burkhauser / Smeeding / Merz (1996) have shown that the choice of (*e*) does not have a substantial effect when one compares income distributions or poverty rates across countries. However, they note that the choice of (*e*) can have dramatic effects on the demographic characteristics of households that are found in the lower end of the income distribution. For instance, because older persons live in smaller households, the smaller the value of (*e*) (i.e. the higher the assumed returns to scale) used to estimate equivalized income, the older will be the poverty population. Tables 2 provide evidence of a corollary to this rule. The smaller the value of (*e*) used to estimate equivalized income, following the death of her husband, the greater is the drop in measured economic well-being of the widow's household.

2.2. Comparing social security and household size-adjusted replacement rates across countries

We follow Burkhauser / Smeeding / Merz (1996) and use an (*e*) value of 0.5 in our analysis of the change in widows' household income following the death of their husband. Most cross-national comparisons of how household

Table 2: **Widows' Mean Post-Government Household Size-Adjusted Income Before and After the Death of Their Husband by Country and Various Returns-to-Scale Values**

Country Scale Value	Aged 25 through 49			Aged 50 through 61			Aged 62 through 69			Aged 70 and over		
	$t-1$	$t+1$	Ratio $(t+1/t-1)$	$t-1$	$t+1$	Ratio $(t+1/t-1)$	$t-1$	$t+1$	Ratio $(t+1/t-1)$	$t-1$	$t+1$	Ratio $(t+1/t-1)$
United States[a]												
$e = 0.0$	42021	12711	.30	41570	21744	.52	29176	14998	.51	25973	14111	.54
$e = 0.5$	22565	11664	.52	24823	17923	.72	19372	14523	.75	17578	14798	.84
$e = 1.0$	12499	7865	.63	15192	14908	.98	13164	13596	1.03	12034	14271	1.19
Germany[b]												
$e = 0.0$	54847	41813	.76	57811	41587	.72	49395	36240	.73	41767	31382	.75
$e = 0.5$	30053	26924	.90	35361	32612	.92	32959	32782	.99	28383	29484	1.04
$e = 1.0$	16921	18743	1.11	21985	26593	1.21	22221	30472	1.37	19457	28280	1.45
Great Britain[c]												
$e = 0.0$	19776	17699	.89	20435	16668	.82	18397	10403	.57	15605	9684	.62
$e = 0.5$	11073	11844	1.07	12436	12448	1.00	12189	9122	.75	10714	8726	.81
$e = 1.0$	6362	8362	1.31	7824	10049	1.28	8170	8268	1.01	7428	8128	1.09
Canada[d]												
$e = 0.0$	50648	35228	.70	48768	31198	.64	32796	24258	.74	30245	22240	.74
$e = 0.5$	27344	23498	.86	29313	22930	.78	21727	20674	.95	20760	19990	.96
$e = 1.0$	15285	16758	1.10	18028	18298	1.01	14647	18674	1.27	14378	18787	1.31

Source: Authors' calculations from the Panel Study of Income Dynamics 1976 – 1997, German Socio-Economic Panel 1984 – 2000, British Household Panel Study 1991 – 1999, and Survey of Labour and Income Dynamics 1993 – 1999.

Notes: This is an unbalanced panel. Sample size varies across years. See Appendix Tables 10A and 11A of Burkhauser, Giles, Lillard, and Schwarze (2002).

[a] Constant 1996 United States dollars.

[b] Constant 1996 German marks.

[c] Constant 1996 British pounds.

[d] Constant 1996 Canadian dollars.

Table 3

Median Widow's Replacement Rate in Four Countries by Her Husband's Age at Death (e = 0.5)

Husband's Age At Death	Social Security Replacement Rate				Household Size-Adjusted Replacement Rate			
	United States	Germany	Great Britain	Canada	United States	Germany	Great Britain	Canada
25 – 49	.22	.17	.32	.12	.79	.80	.83	.82
50 – 61	.00	.37	.36	.50	.76	.83	.99	.75
62 – 69	.67	.87	1.04	1.17	.89	.95	.89	.94
70 and older	.94	.92	.90	.88	.93	.96	.95	.96

Source: Authors' calculations from the Panel Study of Income Dynamics 1976 – 1997, German Socio-Economic Panel 1984 – 2000, British Household Panel Study 1991 – 1999, and Survey of Labour and Income Dynamics 1993 – 1999.

Note: This is an unbalanced panel. Sample size varies across years. See Appendix Tables 10A and 11A of Burkhauser, Giles, Lillard, and Schwarze (2002).

economic well-being changes use a program-based approached. That is, for example, they show how much of past labor earnings are replaced by social security benefits. Columns 2 – 5 of Table 3 provide such a comparison across our four countries. In columns 6 – 9 of Table 3 we calculate the ratio of household size-adjusted social security income in $t + 1$ to household size-adjusted social security benefits and husband's labor earnings in $t - 1$. This ratio approximates the replacement rate concept used in the simulations typically done to measure the degree to which social security replaces lost earnings. For both the social security replacement rate and the household size-adjusted income replacement rate we report median rather than mean values to reduce the influence of outliers in the data.

In all four countries, social security benefits provide substantial protection against income loss for the median women following the death of her husband at older ages (columns 2 – 5). The United States provides the highest social security replacement rate in the age 70 and over group, but the differences across countries are small. In the age 62 – 69 group, where the husband's wage earnings are more important in some countries than in others in the year prior to his death, the differences in replacement rates are far greater. Canada and Great Britain have replacement rates that exceed 1.0, while the United States replacement rate is only 0.67.

At younger ages the social security replacement rates are much smaller for the median widow in all four countries. This is in large part because survivors do not automatically receive social security benefits. Ordinarily social security benefits are provided to households in this age group only if there is a surviving child. Canada and Germany are exceptions in the 50 – 61 age group. The

Canadian social security program pays survivor benefits to widows and widowers this age immediately after the death of a covered worker. Benefits are based on the worker's accrued contributions to the Canadian Pension Plan. In Germany widows and widowers under the age of 45 receive 25 percent of their deceased spouse's covered workers pension (or estimated pension). Those aged 45 and above receive 60 percent.

But as discussed above a better measure of the median women's change in economic well-being following the death of her husband is her household size-adjusted post-government replacement rate. As can be seen in columns 6 – 9, these rates are much larger at younger ages and usually larger at older ages in all four countries. Even more importantly, from a cross-national perspective, the range of these values is much smaller across the four countries at all ages.

3. Conclusions

Lack of comparable multi-period data has made it difficult to determine how social security and other sources of income change for women following the death of their husband. Using longitudinal data from CNEF, not only are we able to trace the change in the household income of women prior to and following the death of their husband across four countries – but also the source of that income change.

In all four countries, mean household income, unadjusted for household size falls following the death of their husband. However, the main source of this decline varies widely across the ages at which the husband dies – i.e. his lost labor earnings at younger ages, his lost social security or pension income at older ages. This pattern is the same in each country. Patterns in the source of the offsetting increase of income are less clear cut, with no one source dominating across country or husband's age at death.

Given this wide variation in the main source of offsetting income gains across the husband's age at death and country, it is important to focus on how the widow's entire household income is effected by the death of her husband, rather than on the replacement rate of her husband's lost earnings by social security benefits, in making cross-national comparisons of how the economic well-being of women change following the death of their husband.

Furthermore, we show that because a women's household size systematically falls following the death of her husband, comparisons of her economic well-being must control for this change. Replacement rates vary more across assumptions about household returns to scale than they do across countries, holding returns to scale constant.

Using an (*e*) equal to 0.5, we show that the median women's social security replacement rate is uniformly high when her husband dies at ages 70 and over in all four countries, much more varied when he dies between ages 62 and 69, and much lower when he dies at younger ages in all four countries. But this variation across age and country is reduced substantially, once a broader household size-adjusted income replacement rate measure is used. While the median women in all four countries still experiences a greater decline in her economic well-being, if her husband dies at a younger ages, the difference is much smaller than implied by social security replacement rates, as is the difference across countries. The across country difference in household size-adjusted income is even smaller at older ages. Thus, for the widow the economic loss she experiences is much less and much less varied across age of her husband's death and country than implied by social security replacement rates or household income replacement rates unadjusted by household size.

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