The Socio-Economic Effects of War Widowhood: Evidence from the Second World War *

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Abstract

One of the most devastating consequences of violent conflict is the loss of a spouse, but we know surprisingly little about the economic effects of war widowhood. In this paper, we study the effect of war widowhood on socio-demographic outcomes, labor market trajectories and intergenerational spillovers, using life course and census data from West-Germany after World War II. While widowhood significantly increased employment in the immediate post war period, by 1971 war widows were *less* likely to work and more likely to be out of the labor force than non-widows. War widows therefore shouldered the "double burden" of employment and child-care during their 20s and 30s, but were less likely to participate in the labor market when their children left the maternal household. We discuss the mechanisms and institutional context that contributed to this counterintuitive life-cycle pattern.

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1 Introduction

One of the most devastating consequences of violent conflict is the loss of a spouse, a fate that particularly affects women. Although we lack data on the global number of women widowed as a result of war (henceforth, *war widows*), the widespread nature of widowhood in war zones has been widely documented (Byrne et al., 1995; Buvinic et al., 2013; The Loomba Foundation, 2016). Yet, we know surprisingly little about the economic effects of war widowhood (Brück and Schindler, 2009), despite war widows constituting a large population share in post-conflict societies.[1] While a limited number of paper have studied the impact of spousal death on economic outcomes of the surviving partners (e.g. Hurd and Wise, 1989; Burkhauser et al., 2005; Fadlon and Nielsen, 2021), war widows are likely to face specific challenges. Not only does death occurs in a violent and sudden manner. War widows are also typically much younger than other widows and thus face special difficulties in reconciling employment and childcare.

This paper provides first empirical evidence on...

2 Background

In the 1950s, an estimated 1.0 to 1.2 million war widows lived in West Germany (Niehuss, 2002).[2] They thus accounted for up to 7% of women born in 1927 or earlier (who were 18 or older in 1945). Figure xxx in the Appendix shows that in our data from 1971, the proportion of war widows is highest among women born in 1910-19. As many as 15.8% of women born in 1912 report being war widows in our sample.

The fate of the war-disabled and the survivors of soldiers killed in the war was a pressing social problem in the postwar period. After the surrender of Nazi Germany, the Allied occupying powers initially dismantled the old war disability system to reduce the influence of the German military class and cut the cost of German social services (Diehl, 1985). Despite some expansion of benefits, care for German war victims remained limited until the founding of the Federal Republic in 1949 and varied widely by region. Yet, the welfare of war-disabled soldiers and the families of fallen soldiers ranked high on the social agenda of the new West German government.

[1] As an extreme case, estimates for Afghanistan from the mid-2000s suggest that there were between one and two million war widows living in the country at that time (Canada: Immigration and Refugee Board of Canada, 2007), numbers that are still mentioned in recent reporting on Afghanistan's war widows (Dukehart, 2015; Chandran, 2020).

[2] These estimates are based mainly on the number of women who received war widows' pensions. Because some war widows were not eligible for pension payments, for example, because they had remarried, these estimates likely represent a lower bound.

Already in October 1950, the *Bundesversorgungsgesetz* (BVG) reorganized and improved welfare for the German *Kriegsopfer* (victims of World War II).

The BVG was modelled on the old war disability system of the Weimar Republic (Diehl, 1985). It aimed at the physical and vocational rehabilitation of victims and their families, and paid social assistance to those for whom rehabilitation was not, or only partially, possible. However, the difficult financial situation at the time limited the generosity of the compensation payments. War widows initially received an unconditional basic pension (*Grundrente*) of DM 40 as well as a means-tested compensatory pension (*Ausgleichsrente*) of up to DM 50. The latter was generally not paid to women under age 50[3] who did not have children to care for or was able to work. The maximum pension of 90 DM represented roughly a third of the average gross labor income at the time.[4] Children under age 18 received additional orphan's pensions.

The level of pension payments were successively increased in the 1950s and 1960s, as Germany spectacular growth rates led to higher government revenues. By 1960, the maximum amount of basic and compensatory pensions totaled DM 220, which corresponded to about 43% of average labor income. In addition, the conditions for receiving a compensatory pension were lowered.[5] The maximum amount rose further to 396 DM by 1970. War widows now also received additional compensation if their total income was below a certain fraction of the deceased husband's expected income.[6] The regular survivors' pension (*Witwenrente*) paid under the traditional social security programs also became more generous over time, especially with the pension reform of 1957. Overall, therefore, war widows' compensation rose considerably with Germany's rapid recovery in the 1950s and 1960s.

Three features of the BVG are worth highlighting in our context. First, the compensatory pension was reduced in proportion to earned income above a basic allowance. This reduced the incentive to take up formal employment (Niehuss, 2002). Second, women were not entitled to a compensatory pension until later in life, unless they were unable to work or had to care for children. Third, war widows lost all pension rights related to the deceased husband if they re-married. As compensation, they received a one-time severance payment upon re-marriage.[7] War

[3]The age threshold was later lowered to 45.

[4]The women in our sample, however, could receive only up to 70 DM because they were under age 50 in 1950 (unless they were unable to work).

[5]The age limits was decreased from 50 to 45 years. n addition, younger widows who did not have children to support were now eligible for a compensatory pension if they had lost "only" half (not all) of their earning capacity.

[6]The fraction was 25% and 50% in 1960 and 1970, respectively.

[7]The severance pay was initially set at 1200 DM and later increased to first 36 times and later 50 times the basic monthly pension.

widows were therefore often accused of living in marriage-like cohabitation, so-called *Onkelehen*, in order not to lose their pension entitlements (Schnädelbach, 2007).

War widows frequently faced a dilemma in their labor market participation (Niehuss, 2002; Schnädelbach, 2007). Women's employment was still controversial in the early 1950s, and especially the employment of war widows was sometimes considered socially undesirable because they would have neglected the care of their children. On the other hand, gainful employment was often essential for financial reasons due to the initially low compensation payments under the BVG. High unemployment rates, the influx of displaced Germans from Eastern Europe, and the re-integration of returning soldiers made it initially difficult for war widows to find work. As unemployment fell in the 1950s, and reached just 1.3% in 1960, women were more and more sought after on the labor market. As a result, women's share in the market-based labor force, excluding helping family members, increased from 28.6% in 1950 to 32.5% in 1961 (Müller et al., 1983).

Policy makers promoted the employment of war widows in the *SchwerbeschÃ¤digtengesetz* (Severely Disabled Persons Act) of 1953. The law provided that war widows were to be given preference over other applicants in the civil service. In addition, the private and public sectors were able to meet their mandated hiring quotas for the severely disabled by hiring two war widows for every job reserved for the severely disabled.[8] At the same time, additional funds were made available for the retraining of war widows. However, these only benefited those widows who had not already found work as semi-skilled or unskilled workers–and thus often came too late (Niehuss, 2002).

3 Data and Empirical Strategy

3.1 Data

The Microcensus. The main data source for our analysis is the German Microcensus 1971 (Mikrozensus-Zusatzerhebung, 1971). This representative and mandatory survey provides detailed information on changes in the social and occupational structure of the German population between 1939 and 1971, covering one percent of the West German population aged 15 and over with German citizenship (see Tegtmeyer, 1979, for an overview). In total, the survey contains

[8] However, this was only possible if the hiring of war widows did not hamper the integration of disabled people into the labor market.

information on 456,000 individuals.

The survey asked respondents in 1971 about their employment status, occupation, and sectoral affiliation in 1939, 1950, 1960, and 1971. It also recorded whether respondents owned a house in 1939 and 1971, their education level, their main source of income, and their net monthly income in March 1971. The latter is recorded in seven graduated categories and is missing for farmers (but not for dependent farm workers). The survey also contains the place of residence in 1939, which allows us to identify persons displaced from Eastern Europe in the wake of World War II and refugees from the GDR. Information on the spouse is available, through the household identifier, if the spouse lives in the same household (and is part of the target population).

The survey asked all women who were married, divorced, or widowed at the time of the survey whether they are or were a war widow. War widows are all women who were married at the time of the Second World War and whose husbands were killed in the war, died in captivity, or were missing in action. We compare war widows to non-war widows who are married in 1971 or were married in the past (i.e., we exclude the never-married). We focus on women born in 1906-14 who were between 25 and 65 years old during our observation period (1939-1971).

One potential problem with our control group is that we do not observe their marriage status during the Second World War. In particular, we cannot rule out that women in the control group married only after 1945, which could impair their comparability to later war widows. We consider this to be a minor problem as we focus on women who in 1945 were between well above the average age at first marriage of 25.4 years. Our baseline analysis excludes married women whose current marriage was concluded after 1945. A robustness check widowed and divorced women for whom we do not observe the year of (last) marriage. We also confirm that our results hold in a second survey, the German Life History Study, where we observe the full marriage history of women born 1919-21 (see below).

Table 1 contains means and standard deviations of the available pre-war covariates for war widows (Columns (1) and (2)) and non-war widows (Columns (3) and (4)). Column (5) reports t-statistics for testing the null of no differences in covariate means between the two groups. However, given the relatively large sample size of 32,704, even small differences between sample means will be statistically significant. We thus also report normalized differences in Column (6), which scale differences in means by the square root of the sum of the variances. Normalized differences indicate whether average covariate values differ substantially between treatment and control and help assessing overlap in the covariate distribution (Imbens and Wooldridge, 2009).

Table 1 shows that women who did and did not lose their husband during the Second World War are very similar in their pre-war characteristics. All normalized differences in pre-war covariates between the two groups are smaller than 0.10, except for two: age and displacement status. War widows tend to be modestly older than non-war widows, probably because older women married earlier and were thus more likely to lose their husband. They were also somewhat more likely to be displaced than non war-widows, presumably because of the elevated death rates of soldiers from Germany's former eastern territories (Overmans, 1999). However, even these differences are sufficiently small so that pre-war differences in observables can be (robustly) controlled for in standard linear regressions.[9]

German Life History Study. For complementary analysis, we use the GHS (see **?**), a retrospective survey of eight West German birth cohorts born 1919-1971. We draw on the second wave (GHS-2, conducted in 1985-88), which surveyed 1,412 respondents born in 1919-21, of whom 853 are women.

While the sample size is much smaller, the GHS provides two key advantages compared to the 1971 Microcensus. First, the GHS contains detailed retrospective information on respondents over their life-cycle, including their education, employment, family and demographic, and residential history, and their entire occupational history.[10] The GHS recorded time spent in school, vocational training, and further education, and we measure educational attainment by total years of education. It also recorded education and employment outcomes for respondents' parents. In addition, the GHS-2 recorded pension income, distinguishing between different sources, including pensions from own work and war victimsâ€™ pensions.[11]

Second, the GHS-2 provides information on the respondents' spouse and previous spouses, such that we can infer each woman's marriage status during the war and use that information to define a suitable control group. Specifically, we define a woman to be a war widow if her husband died in or before 1945 ($N = 95$), and the control group consists of women from the same birth cohorts who also married in or before 1945, but did not loose their husband during the war ($N = 428$).[12]

[9] Results of linear regressions tend to be sensitive to the specification if normalized differences exceed 0.25 in absolute value (Imbens and Wooldridge, 2009).

[10] We use the Standard International Occupational Scale (Treiman, 1977) to study occupational success, with occupational prestige scores ranging from 18 (unskilled laborers) to 78 (medical professionals, professors).

[11] When analyzing pension incomes, we restrict attention to GHS-2 respondents surveyed in 1987/88 and thus at age 66 or older.

[12] More than 90% of their spouses were born between 1907 and 1921, and were therefore very likely to serve during the war. We therefore exploit whether a husband dies conditional on serving, not whether a husband was

Table 1: Pre-war differences of later war widows and nonwar widows

	War widows (N=5,329)		Non-war widows (N=27,375)		Differences	
	mean	st.d.	mean	st.d.	t-stat	norm.
	(1)	(2)	(3)	(4)	(5)	(6)
Socio-demographic characteristics:						
Birth year	1910.331	2.479	1909.889	2.556	11.349	0.176
House ownership (0/1)	0.488	0.500	0.466	0.499	2.877	0.044
Years of education	8.944	1.580	9.046	1.655	4.039	0.063
Years of schooling	8.356	1.065	8.408	1.148	3.044	0.048
Siblings	4.807	2.731	4.674	2.724	3.182	0.049
Place of residence:						
Eastern Europe (incl. eastern territories)	0.208	0.406	0.155	0.362	9.293	0.137
Soviet occupation zone	0.047	0.212	0.052	0.221	1.319	0.020
Employment and occupational status (%):						
Employed	0.419	0.494	0.388	0.487	4.233	0.065
Market employment	0.331	0.471	0.289	0.453	6.064	0.092
Self employed[1]	0.025	0.157	0.022	0.146	1.421	0.021
Farmer[2]	0.023	0.151	0.012	0.111	5.894	0.081
Civil servant	0.003	0.056	0.003	0.058	0.240	0.004
White collar	0.082	0.274	0.091	0.288	2.119	0.033
Blue collar	0.197	0.398	0.159	0.366	6.651	0.099
Apprentices	0.001	0.031	0.001	0.030	0.135	0.002
Helping family	0.088	0.284	0.099	0.298	2.364	0.037
In education	0.002	0.044	0.003	0.052	1.007	0.016
Unemployed	0.001	0.024	0.001	0.026	0.227	0.004
Out of the labor force	0.578	0.494	0.609	0.488	4.110	0.063
Sector of employment (%):						
Agriculture	0.121	0.326	0.099	0.298	2.364	0.037
Industry	0.143	0.350	0.123	0.329	3.918	0.059
Construction	0.002	0.039	0.003	0.054	1.689	0.028
Trade	0.073	0.261	0.079	0.270	1.427	0.022
Finance	0.013	0.114	0.016	0.127	1.714	0.027
Services	0.066	0.249	0.065	0.247	0.302	0.005
Not employed or unknown	0.581	0.493	0.614	0.487	4.353	0.066

Notes: Sample means and standard deviations of pre-war covariates for war widows and non-war widows. All data refer to 1939 except for education, schooling, and the number of siblings, which are measured in 1971. [1] Self-employed outside agriculture. [2] Farmer with own land. The t-statistic in Column (5) refers to a two-sided mean difference t-test. Normalized differences in Column (6) are calculated as $|\bar{X}_1 - \bar{X}_0|/\sqrt{(S_1)^2 + (S_0)^2}$ where $\bar{X}_1$ and $\bar{X}_0$ are the sample means and $(S_1)^2$ and $(S_0)^2$ the sample variances of war widows and non-war widows, respectively.

As we show in Appendix Table B1, this indicator for war widows in the GHS does not correlate with the women's own pre-war characteristics (birth year, number of siblings and years of schooling), their spouse's characteristics (birth year and schooling), or their parent's characteristics (years of schooling of the father and mother, occupational score of the father). The indicator does correlate with the marriage year, as women who marry before the start of the war are exposed for a longer time to the risk of loosing their spouse than women who married

serving in the first place.

only towards the end of the war (i.e., the marriage year affects the "length of exposure" to the risk of spousal death). We therefore control for marriage year in all regressions in the LVS.[13]

3.2 Empirical Strategy

To examine whether widows and non-widows, who were comparable before the war, fared differently after the war, we run OLS regression models of the following type:

$$y_{it} = \alpha + \boldsymbol{x}_{i,39}\boldsymbol{\beta} + \delta D_i + \epsilon_{it}, \tag{1}$$

where y_{it} is a particular post-war outcome of person i at time t (such as income, home ownership, or employment status, but also marital status and number of children), D_i is a dummy variable indicating whether a woman is a war widow, $\boldsymbol{x}_{i,39}$ is a (row) vector of prewar control variables, and ϵ_{it} is an error term. Our main parameter, δ, measures the "widowhood effect," that is, the average difference in a given outcome between wartime widows and otherwise (as of 1939) comparable women. We report robust standard errors throughout, clustered at the household level. We also compare the least squares estimate to estimates based on inverse probability weighting (IPW).[14]

Identification requires that conditional on $\boldsymbol{x}_{i,39}$, widowhood status D_i is uncorrelated with unobserved pre-war differences that still affect economic outcomes in post-war West Germany. However, this assumption would be violated if women with better (unobserved) labor market skills married high-skilled men who, in turn, were less likely to die in World War II. Non-widows then had better labor market prospects on average, which would explain why we do not find any lasting impact of widowhood on employment. Two pieces of evidence speak against this concern.

First, women in our sample were predominantly married to men whose cohorts were largely or entirely conscripted for the war. This is important because differences in conscription rates, rather than unequal survival rates, are the main explanation for why mortality rates differed between birth cohorts (Overmans, 1999).[15] Importantly, our results also apply to younger women

[13] While we cannot control for the marriage year in the Microcensus, we restricted that sample to women born in 1906-14, who were well above the age of first marriage before the war started.

[14] IPW does not specify a model of the outcome of interest but instead focuses on modelling widowhood, the treatment (see, e.g., Imbens and Wooldridge, 2009, for details). IPW estimates the average treatment effect on the treated by comparing *weighted* outcome means of widows and non-widows. Intuitively, IPW places more weight on observations in the control group that–given their prewar covariates–had a high probability of losing their husbands.

[15] While skilled individuals in the armaments industry were initially spared military service (**?**), more than 80 percent of German military deaths occurred after 1942 (Overmans, 1999), when the increasing deterioration of the German war situation led to a mobilization of all reserves for the Wehrmacht.

born 1919-21, virtually all of whom were married to men born between 1910 and 1925. Their cohorts were fully conscripted during the war, so that selection into military service did not play a role. At the same time, these cohorts were far too young for middle and higher office ranks, which might have promised better survival prospects.[16] Consistent with these arguments, Braun and Stuhler (2023) show for a sample of war survivors that the socio-economic background does neither predict war service nor war injuries.

Second, Table 1 (for our main sample based on the 1971 Microcensus) and Appendix Table B1 (for the GHS auxiliary sample) document little difference between widows and non-widows in their prewar status, as shown in the previous section. The only substantive differences –in age and displacement status in the Microcensus, and in marriage year in the GHS–are consistent with the literature on Germany military casualties and thus do not point to other unobserved differences. Appendix Table xxx also shows that our extensive set of prewar characteristics explains little more than 1% of the variation in widowhood status. For robustness, we nevertheless control not only for birth year indicators and displacement status, but also for all other pre-war characteristics listed in Table 1 in regressions based on the Microcensus. We show that adding these covariates hardly has an effect on our estimates of the widowhood effect (while they generally help in explaining variation in the outcome variables). Given the smaller sample size, we control only for marriage year in regressions based on the GHS, but show ...

4 Results

4.1 Socio-demographic outcomes

We begin with studying the effect of war widowhood on socio-demographic outcomes in 1971, a quarter century after the war's end. The women in our sample were approximately 60 years old at this time. Table 2 reports our results. Column (2) presents OLS estimates of the widowhood effect from a parsimonious OLS model, controlling only for age. Column (3) adds control variables for house ownership in 1939, indicators for expellees from Eastern Europe and refugees from the GDR, the number of siblings, and a full set of education dummies. The full-fledged specification in Column (4) additionally accounts for the sectoral and occupation affiliation in 1939. Finally, Column (5) presents estimates based on IPW using the full set of controls to predict treatment

[16] In contrast to previous wars, however, there was a high casualty rate among officers in WWII (**?**), especially on the Eastern Front. By April 1942, almost a quarter of the officer corps had fallen.

status. In what follows, we generally discuss the point estimates from the IPW model but note that the estimates hardly change across specifications (2) to (5).[17] This lends credibility to the unconfoundness assumption we invoke for identification.

Table 2: The impact of war widowhood on demography, income, and wealth in 1971

	Control mean	OLS			IPW
	(1)	(2)	(3)	(4)	(5)
A. Demographic outcomes:					
Married (0/1)	0.664	-0.488	-0.489	-0.485	-0.486
		(0.007)	(0.007)	(0.007)	(0.007)
Living alone (0/1)	0.246	0.335	0.338	0.335	0.335
		(0.008)	(0.008)	(0.008)	(0.008)
Number of children	2.130	-0.253	-0.287	-0.278	-0.282
		(0.025)	(0.025)	(0.024)	(0.024)
B. Labor market status:					
Market Employment					-0.019
					(0.006)
Out of the labor force					0.051
					(0.006)
C. Income:					
Personal income	241.018	243.295	250.198	248.311	246.919
(unconditional)		(5.768)	(5.459)	(5.435)	(5.423)
Personal income	676.935	118.043	98.186	104.075	105.252
(conditional on market work)		(18.325)	(16.083)	(15.690)	(15.882)
Welfare support as main income	0.297	0.454	0.451	0.448	0.449
		(0.007)	(0.007)	(0.007)	(0.007)
Household income, square-root scale[a]	765.377	-64.782	-50.846	-45.984	-46.630
		(6.881)	(6.587)	(6.515)	(6.485)
D. Wealth:					
House ownership	0.406	-0.096	-0.095	-0.095	-0.095
		(0.008)	(0.007)	(0.007)	(0.007)
Sociodemographic controls		no	yes	yes	yes
Labor market controls		no	no	yes	yes

Notes: Means of the control group and estimates for war widowhood. Each estimate stems from a separate regression. Estimates in Columns (2)-(4) are by OLS, estimates in Column (5) by IPW. Regressions include the following pre-war covariates: (2) full set of age dummies, (2) = (1) plus an indicator for house ownership in 1939, indicators for expellees from Eastern Europe and refugees from GDR, number of siblings, full set of education dummies, (3)/(4) = (2) plus seven categories for the sector of employment in 1939 (agriculture, industry, construction, trade/transport, finance, public and private services, unknown) and seven categories for the occupational or employment status in 1939 (self-employed, farmer, civil servant, white-collar worker, blue-collar worker, helping family member, out of the labor force including apprentices, in education, and unemployed). Robust standard errors clustered at the household level are reported in parentheses. [a] The square-root scale divides total household income by the square root of household size.

Panel A. of Table 2 shows that widowhood during the war had long-term demographic consequences. By 1971, war widows have a 48.6 percentage points lower probability of being

[17] Appendix Figure xxx shows the estimated propensity of war widowhood for war widows and non-widows, confirming considerable overlap between the two groups.

married (from a baseline probability of 66.4 points, see Column (1)). As the war led to an acute shortage of men, finding a new partner often proved elusive. War widows were also more than twice as likely to live alone. We find little evidence for the widely-hold belief that war widows often lived in marriage-like cohabitations without marrying their partner. Although war widows were twice as likely as nonwidows to live with a nonfamily member in the same household (e.g., a partner), the overall probability was still low, at about 2% (not shown). Not surprisingly, war widows born also had fewer kids. Yet, the difference is not so great, since many of women in our sample had children before the Second World War.

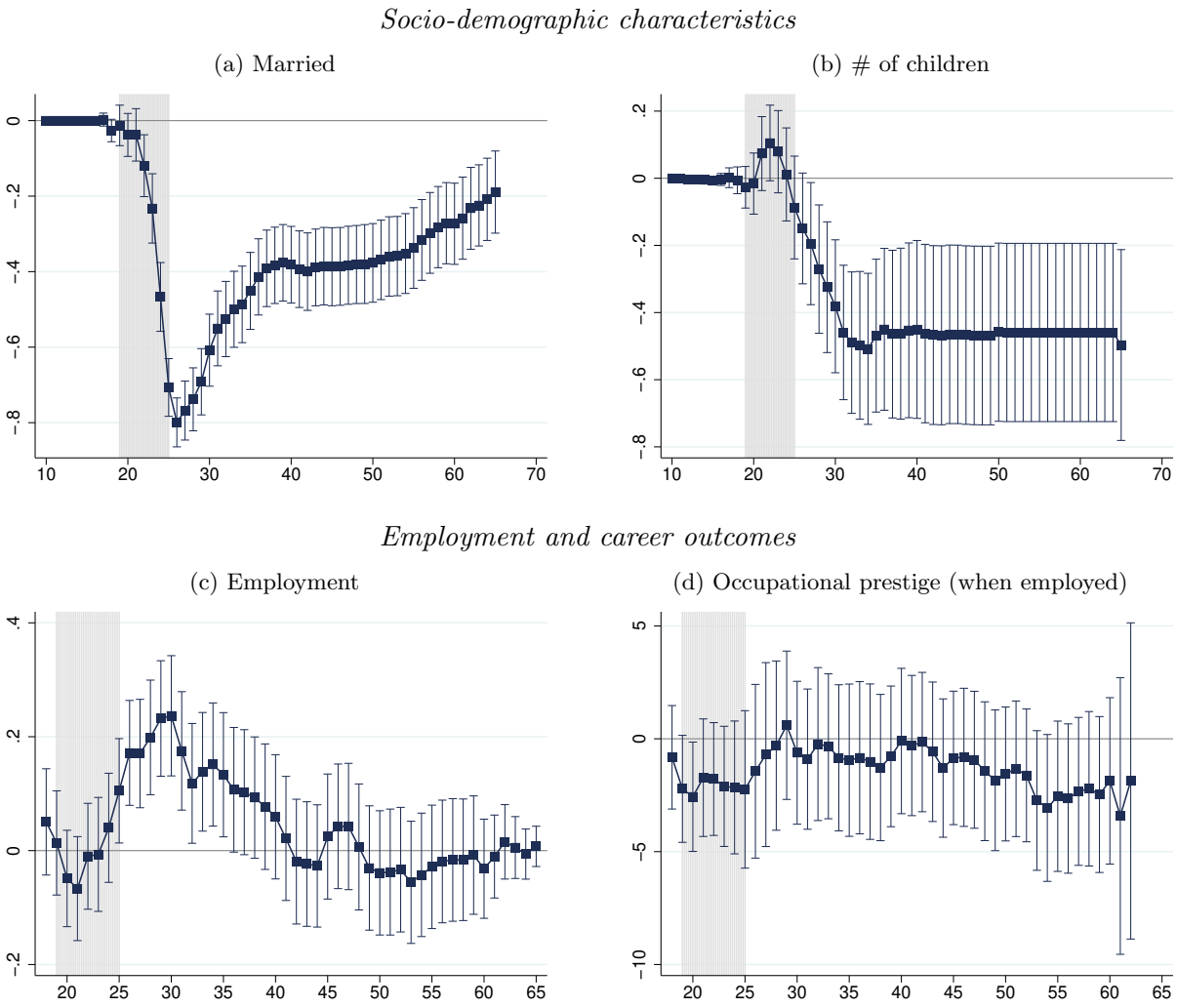
Figure 1 describes the demographic consequences of war widowhood over the lifecycle, based on the LVS. Each panel corresponds to a pooled OLS regression in which we interact a full set of age indicators with an indicator for war widows (and the year of their marriage, to account for the observation that women who married early were more likely to loose their husband during the war). Figures 1a shows that the war widows and the control group married at similar rates until the onset of the war, but the former were 80% less likely to be married by the end of the war. This gap then shrinks as some widows remarry in their late 20s or 30s, but stabilizes at around 40% when they reach their late 30s. The gap starts shrinking again in their late 50s, when widowhood becomes more common also in the control group. Figure 1b illustrates that war widows had a similar number of children until the later years of the war, but much fewer children after the war ended. Note that the cohorts covered by the LVS (born 1919-21) were widowed at a younger age than those covered by the 1971 Microcensus (born around 1910, see Table 1). Consequently, they were more likely to remarry by age 60, but experienced a greater reduction in their number of children.

4.2 Labor market outcomes

Panel B. of Table 2 shows that war widows were *less* likely to be employed in 1971, having a 1.9 percentage points lower probability to work in the market and a 5.1 pp. higher probability to be out of the labor force than non-widows. This is surprising, as most war widows remained unmarried, and unmarried women had considerably higher participation rates at the time. Moreover, previous work shows that on an aggregate level, the absence of men during or after war tends to increase female labor supply.

To better understand these patterns, Table 3 reports the effect of war widowhood on employment, occupation, and sectoral affiliation in 1950, 1960 and 1971, using retrospective information

Figure 1: Life-cycle effects of war widowhood (LVS)



Notes: Estimated effect of war widowhood over the life cycle. Estimates are from a pooled OLS regression, interacting the regressor of interest and birth year (indicators) with a full set of age indicators. The sample consists of XXX. Point estimates are marked by a dot. The vertical bands indicate the 95% confidence interval of each estimate. The shaded area indicates the duration of WWII.

from the Microcensus. We focus on IPW estimates from our full-fledged model with the full set of controls. In addition, Figure 1 provides auxiliary evidence from the LVS, which has a smaller sample size but more detailed information on labor market outcomes over the entire lifecycle.

Table 3 shows that war widowhood significantly increased market work in 1950, shortly after the war. This initial effect is substantial: war widows were 13.8 percentage points more likely to work in the market in 1950 than non-widows with similar pre-war characteristics. However, this difference halved to 5.8 percentage points by 1960, and by 1971 war widows were less likely to work in the market, less likely to work as a family help, and more likely to be out of the labor force than non-widows. Thus, while war widows did take up employment as a result of their husband's death, this initial gain had no lasting positive effect on their labor force participation, quite to the contrary.

Figure 1b confirms these patterns in the LVS, showing a large increase in employment among war widows in the years after the war (relative to non-widows), but similar or lower employment rates by the time the widows reached their mid-40s and up to retirement. Their entries in retirement were very similar, with most women retiring around age 60 and less than 10% of all women remaining employed at age 62. The LVS also contains detailed information on the occupational trajectories of each women, allowing us to compute occupational prestige scores. Figure 1d shows that despite their higher employment rates at early age, war widows reached a similar average occupational status than non-widows.

The negative long-term effect of widowhood on labor force participation is reinforced by the fact that, in all years, war widows are only half as likely as nonwidows to work as contributing family members (Panel A of Table 3). Most of the helping family members supported their husband on the family farm. After their husband's death, many war widows had to give up the family enterprise though some continued as farmers (see below). Combined with the negative effects on market employment, war widows were 5.1 percentage points more likely to be inactive in 1971. This finding is all the more surprising, as war widows remained in their great majority unmarried–and unmarried women had considerably higher participation rates at the time.

Panel B. of Table 3 shows that conditional on market work, war widows were less likely to work as blue-collar workers. The differences between widows and non-widows were small in 1950 but increased over time. By 1971, war widows were 5.0 percentage points less likely to be blue-collar workers (relative to a control mean of 51.7%). Instead, war widows were overrepresented in white-collar occupations, probably in part because firms were allowed to hire them for jobs

Table 3: The impact of war widowhood on labour market outcomes in 1950, 1960, 1971

	1950		1960		1971	
	Control mean	IPW	Control Mean	IPW	Control mean	IPW
	(1)	(2)	(3)	(4)	(5)	(6)
A. Labor market status:						
Market employment	0.205	0.138	0.238	0.058	0.162	-0.019
		(0.007)		(0.007)		(0.006)
Helping family	0.089	-0.045	0.084	-0.044	0.061	-0.031
		(0.003)		(0.003)		(0.003)
Unemployed	0.004	0.000	0.000	0.000	0.001	-0.001
		(0.001)		(0.001)		(0.000)
Out of the labor force	0.703	-0.093	0.677	-0.003	0.776	0.051
		(0.007)		(0.007)		(0.006)
B. Occupational status (conditional on market work):						
Self employed	0.135	-0.023	0.128	-0.013	0.132	-0.012
		(0.007)		(0.008)		(0.012)
Farmer	0.055	0.017	0.045	0.017	0.039	0.014
		(0.006)		(0.006)		(0.008)
Civil servant	0.009	0.003	0.010	0.010	0.010	0.017
		(0.003)		(0.003)		(0.005)
White collar	0.249	0.012	0.265	0.022	0.302	0.031
		(0.010)		(0.011)		(0.016)
Blue collar	0.552	-0.013	0.551	-0.036	0.517	-0.050
		(0.011)		(0.011)		(0.016)
C. Sector of employment (conditional on market work):						
Primary	0.127	0.026	0.077	0.020	0.052	0.010
		(0.008)		(0.007)		(0.008)
Secondary	0.394	-0.013	0.391	-0.023	0.340	-0.028
		(0.012)		(0.013)		(0.018)
Tertiary	0.474	-0.011	0.531	0.004	0.605	0.016
		(0.012)		(0.013)		(0.019)

Notes: Means of the control group and IPW estimates for war widowhood. Each estimate stems from a separate regression. Regression include as controls a full set of age dummies, an indicator for house ownership in 1939, indicators for expellees from Eastern Europe and refugees from GDR, the number of siblings, a full set of education dummies, indicators for the sector of employment in 1939 (agriculture, industry, construction, trade/transport, finance, public and private services, unknown) and the occupational or employment status in 1939 (self-employed, farmer, civil servant, white-collar worker, blue-collar worker, helping family member, out of the labor force including apprentices, in education, and unemployed). Robust standard errors are reported in parentheses.

reserved by law for the severely disabled. They were also more than two and a half times as likely to be employed as civil servants as comparable nonwar widows (albeit from a low baseline of only 1.0%). This is likely the result of policies that favored war widows over other applicants for civil service employment. War widows were also overrepresented among farmers, as some of them continued the family farm. These differences in occupational affiliation are reflected in the

sector of work (Panel C. of Table 3), as war widows were slightly over-represented in the primary and tertiary sector.

Panel C. of Table 2 summarizes the income situation of war widows. Overall, the personal net income of war widows was about twice that of nonwidows. Although we cannot distinguish between income levels from different sources, the higher income is likely to be largely–or even entirely–due to higher support by the state. In fact, war widows were 2.5 times more likely than nonwidows to report welfare support (*Unterstützung*) as their main income source (relative to a baseline probability of 29.7%).[18] If we focus only on women in market work, war widows have only about DM 105 more than nonwidows (relative to a baseline of 677 DM). This is considerably less than the unconditional basic pension of DM 198 paid to war widows at the time. Panel C. also shows that household income, measured at the square root equivalence scale, is about 6% lower for war widows than for non-widows.[19]

Finally, Panel D. reports the effect of war widowhood on the probability of house ownership in 1971 as a proxy for wealth. We find that war widowhood reduced house ownership rates by 9.5 percentage points, a decline of 23.4% relative to baseline. Overall, therefore, we conclude that...

In sum, we find that despite an initial rise in employment, war widows ended up with lower household income, lower wealth and lower employment than non-widows. The life-cycle pattern of employment appears particularly concerning: war widows shouldered the "double burden" of employment and child-care during their 20s and 30s, when most of them had small children but few had a partner to rely on. However, they became economically less active in their 40s and 50s, when their children left the maternal household. We interpret these patterns in Section X, arguing that they have important policy implications.

4.3 Effect heterogeneity

The key result of the previous subsection is that war widowhood only increased the probability of market-oriented employment only right after the war. However, in the longer run, war widowhood even slightly decreased market employment, a result that runs counter to the hypothesis that war widows increased their labor supply as they experienced a negative income shock (Boehnke

[18]The MZU distinguishes between employment, pension, wealth; welfare support; unemployment benefits; parental or spousal support; and soldiers as main income sources.

[19]The square root equivalence scale divides total household income by the square root of household size (see Dudel et al., 2020, for a recent comparison of different equivalence scales). Recall that we do not observe younger household membeers born 1956 or later in our data.

and Gay, 2022). Before we take a closer look at the likely mechanism, we first document that the result holds across various socio-demographic subgroups.

Table 4 presents estimates of the effect of widowhood on market employment in 1950, 1960, and 1971 separately for the subgroups indicated on the left. In the first row, we replicate our baseline results for ease of comparison. We first distinguish between women who owned a house in 1939 and women who did not. Those who did not own a house have slightly higher employment rates in all three years, presumably because their financial needs were greater. However, the additional effect of widowhood is comparable for both groups. If anything, the negative effect of widowhood on market employment in 1971 is larger, -2.8 percentage points, for those without a house.

Next, the table shows, unsurprisingly, that women without children have a much higher employment rate in middle age. For example, the control mean in 1950 is twice as high for those without children as for those with children (35.9 versus 18.3 percentage points). But again, the pattern of the widowhood effect over time–large and positive in 1950 and then declining–is similar for both groups. As we can see, however, the negative long-term effect is visible only for women with children. For them, war widowhood decreased market employment in 1971 by 2.4 percentage points.

Finally, Table 4 also estimates the effect of widowhood by occupational status in 1939, distinguishing between women who were in market employment, who worked as helping family member, or who were out of the labor force before the war. Here, larger differences among the three groups appear in 1950 and 1960, but not in 1971. In 1950, the widowhood effect is largest for those who worked as helping family members before the war. Among this group, wartime widowhood increased the probability of market work in 1950 by 26.1 percentage points–or by 300% compared with the 8.8% probability in the control group. The increase is also substantial among women who did not work before the war and more modest among those who were already in market employment in 1939. The widowhood effect declines for all three groups between 1950 and 1960. Remarkably, the widowhood effect disappeared already by 1960 or those in market employment in 1939. It is also for this group that we observe the greatest negative effect in 1971, at 3.6 percentage points.

Table 4: Heterogeneity in the impact of war widowhood on market employment in 1950, 1960, 1971

	1950		1960		1971	
	Control mean	IPW	Control Mean	IPW	Control mean	IPW
	(1)	(2)	(3)	(4)	(5)	(6)
Baseline	0.205	0.138	0.238	0.058	0.162	-0.019
		(0.007)		(0.007)		(0.006)
Owned a house in 1939	0.180	0.134	0.204	0.055	0.144	-0.010
		(0.010)		(0.010)		(0.008)
Owned no house in 1939	0.227	0.142	0.268	0.039	0.178	-0.028
		(0.010)		(0.10)		(0.008)
With kids	0.183	0.133	0.222	0.041	0.157	-0.024
		(0.008)		(0.007)		(0.006)
Without kids	0.359	0.159	0.350	0.080	0.198	0.009
		(0.020)		(0.021)		(0.018)
Schooling:						
High (>10 years)	0.275	0.284	0.338	0.189	0.282	0.113
		(0.037)		(0.036)		(0.036)
Low (≤10 years)	0.202	0.132	0.233	0.043	0.156	-0.025
		(0.007)		(0.007)		(0.006)
Education:						
High (>10 years)	0.283	0.219	0.336	0.137	0.244	0.048
		(0.019)		(0.019)		(0.018)
Low (≤10 years)	0.188	0.122	0.217	0.029	0.144	-0.033
		(0.008)		(0.008)		(0.006)
Occupational status 1939:						
Market employment	0.461	0.104	0.446	-0.000	0.253	-0.036
		(0.014)		(0.014)		(0.012)
Helping family	0.088	0.261	0.142	0.125	0.136	-0.008
		(0.025)		(0.025)		(0.019)
Out of the labor force	0.104	0.137	0.156	0.061	0.123	-0.012
		(0.009)		(0.009)		(0.007)

Notes: Means of the control group and IPW estimates for war widowhood. Each estimate stems from a separate regression for the subgroup indicated on the left. Regression include as controls a full set of age dummies, an indicator for house ownership in 1939, indicators for expellees from Eastern Europe and refugees from GDR, the number of siblings, a full set of education dummies, indicators for the sector of employment in 1939 (agriculture, industry, construction, trade/transport, finance, public and private services, unknown) and the occupational or employment status in 1939 (self-employed, farmer, civil servant, white-collar worker, blue-collar worker, helping family member, out of the labor force including apprentices, in education, and unemployed). Robust standard errors are reported in parentheses.

5 Mechanisms

6 Conclusion

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Online Appendix

A Pension benefits and World War II

Statutory pensions in Germany depend on the labor income earned over the life course.[20] The longer people work and the more they earn, the higher their pensions. The German pension system thus "insures" living standards achieved during work life and extends prosperity into retirement.

Since the pension reform of 1957, the system has been organized as a pay-as-you-go-scheme. Current contributions (from employees and employers) thus pay for current pension obligations. The 1957 reform also made pensions dynamic by linking them to the evolution of wages. Pension entitlements arise if individuals have paid contributions for at least five years. Before 1992, the retirement age was 65 for men and 60 for women.[21] Early retirement was possible under certain conditions for the disabled and long-term unemployed.

Importantly, the pension system smoothes out gaps in the employment biography caused by compulsory state measures such as military service, war captivity, expulsion and resettlement. These "substitute periods" (*Ersatzzeiten*) are fully taken into account when calculating the pension. In addition, "periods of absence" (*Ausfallzeiten*)[22] are taken into account in the pension calculation. Periods of absence are periods during which employment is interrupted for personal reasons, including unemployment, incapacity for work, pregnancy and further education.

The pension system also covers the financial loss caused by the death of a spouse. The survivors' pension (*Witwenrente*) is meant to replace the maintenance previously provided by the deceased. Until 1986, women received survivors pension unconditionally and regardless of her own employment biography. Widowers, on the other hand, were only entitled to survivors' pension if the family's maintenance had been predominantly provided by the deceased wife. The differential treatment ended only in 1986.

War victims receive additional pension benefits. The war victim's pension (*Kriegsopferrente*) is paid to persons who have suffered severe health damages as a result of military or military-like service in connection with the war (e.g. damages due to direct warfare, captivity or internment abroad). The basic income support (*Grundrente*), which is paid as part of the war victim's pension, is not means-tested. Instead, its amount depends only on the severity of the health damage caused by the war. Severely disabled persons who can no longer work receive an additional means-tested compensatory pension (*Ausgleichsrente*). If injured persons die as a result of an injury, their widows receive survivors' benefits.

B Additional tables and figures

[20] We describe the provisions of the pension system as they were relevant for the birth cohort 1919-21 (see **?**, for further details, especially on the gendered impact of the pension system on this generation's life courses). **?** provides a comprehensive history of the German pension system.

[21] The pension reform of 1992 abolished gender differences in the retirement age, which was gradually raised to 65 for women.

[22] The pension reform of 1992 changed the term to *Anrechnungszeiten*.

Table B1: Exogeneity

	mean	Dependent variable: War widow (0/1)			
	(std. dev.)	(1)	(2)	(3)	(4)
Birth year	1920.06	0.008	-0.006	0.012	0.018
	(0.81)	(0.021)	(0.021)	(0.021)	(0.024)
# siblings	2.80	-0.006	-0.010*	-0.007	-0.002
	(2.49)	(0.007)	(0.006)	(0.006)	(0.007)
Years of schooling	8.64	-0.011	-0.018	-0.018	-0.019
	(1.26)	(0.013)	(0.014)	(0.014)	(0.016)
Spouse's birth year	9.27		-0.004	-0.001	0.000
	(1.93)		(0.003)	(0.004)	(0.004)
Spouse's schooling (years)	1914.58		0.004	0.007	0.008
	(4.07)		(0.011)	(0.010)	(0.012)
Marriage year	1941.55			-0.032***	-0.038***
	(1.94)			(0.008)	(0.010)
Father's schooling (years)	8.62				-0.013
	(1.95)				(0.009)
Mother's schooling	8.24				-0.014
	(0.94)				(0.013)
Father's occupational score	40.82				0.002
	(11.05)				(0.002)
R2		0.002	0.013	0.043	0.056
N	523	521	411	411	340

Notes: The table reports coefficient estimates from the indicated war-related shock on a set of pre-war individual, spousal and parental characteristics for women born 1919-21. Robust standard errors in parentheses.