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Examining the gender wealth gap

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Examining the gender wealth gap

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Abstract:

Economic research on the determinants of gender differences in economic outcomes particularly in income and consumption is well established. Extending these investigations to other outcomes such as wealth up till now has been limited due to lack of individual-level data. Using the German Socio-Economic Panel (SOEP) we find a significant "raw" gender wealth gap of 50,000 euros for married partners. Decomposition analyses reveal that the gap is largely driven by differences in characteristics between men and women (observables), particularly by individual's own income and labor market experience. This is especially true at the bottom and at the top of the wealth distribution, which we show using semi-parametric decomposition techniques. Differences in the lower half of the distribution are mostly driven by the wealth function, i.e., the way in which women transform their characteristics into wealth.

Keywords: Wealth gap, Wealth inequality, Gender, SOEP
JEL-code: D13**,** D31, D69, I31

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1. Introduction

Differences in economic outcomes and the analysis of its determinants are of utmost importance in various domains. Especially with respect to gender, there is massive (political) interest in whether these differences reflect discrimination or whether they simply arise from differences in relevant characteristics between men and women. A most prominent example of such research in labor-economics is focusing on the gender wage gap (see e.g. Blau and Kahn 2000). However, above and beyond such earnings differences there exist other outcomes, where women may face disadvantages, which should be considered at least as relevant for economic well-being as labor income. Especially the endowment with *wealth* is crucial due to its variety of economically and socially relevant functions: Wealth provides utility to its holders due to the usage of properties (real estate, vehicles), it is positively correlated with social recognition and power, and it creates income flows via returns from investments. Moreover, the liquidization of assets can help to smooth consumption in case of income losses. Finally, wealth is important as a means of old age provision and for intergenerational transmission of social positions. These functions are not only relevant for an individual's position within society, but also within a household or partnership. Not only does the allocation of money (see Allmendinger et al. 2006) but also that of wealth influences the intra-household distribution of power and the intra-household management of resources (Pahl 2001). Phipps and Burton (1995), for example, have found that women's contribution to family's finances affect their decision making authority. Although a growing body of literature emphasizes the importance of looking at intra-household inequality (e.g. Haddad and Kanbur (1990), Sen (1990), Woolley (1993), Pahl (2001), Allmendinger et al. (2006), Deere and Doss (2006)), there is a lack of individual level wealth information to analyze such questions and hence to examine whether there exist a gender wealth gap.

This paper attempts to fill this empirical gap by examining differences in wealth holdings between men and women by making use of unique individual level wealth data from the German Socio-Economic Panel (SOEP) study. Descriptive analyses, in this paper, provide evidence of a significant "raw" gender wealth gap in Germany of approximately 30,000 euros, which widens to about 50,000 euros for men and women living in couple-headed households. Among *married* households in Germany only 15% declare an even split of assets (Sierminska, Frick and Grabka 2008), thus giving support to the notion that assets are not pooled within the household and thus suggesting a strong need for collecting and analyzing wealth at the

individual level. In trying to explain the reasons for the gender wealth gap we apply the semi-parametric decomposition approach devised by DiNardo, Fortin, and Lemieux (1996).

This paper is organized as follows: Section 2 provides background information on wealth accumulation focusing on gender-specific aspects and reviews the relevant literature. Data and decomposition methods are described in Section 3. Section 4 gives the empirical results of the wealth decomposition. Section 5 concludes and points to open research questions.

2. Background information: Wealth accumulation and empirical evidence

2.1. Differences in wealth accumulation

In a simple model of accumulation, assets in period t+1 (A_{t+1}) can be expressed via the equation $A_{t+1} = (1+r)(A_t + Y_t - C_t)$ (1)

where (r) is the gross rate of return on investments, (Y_t) denotes income in period *t* and (C_t) is consumption in period t.

The assets in period t+1 may differ across units for several reasons. First, of all differences in saving $(Y_t - C_t)$ will result in a different accumulation of assets. The amount saved will in turn depend on the level of income, age and risk-aversion. For example, households with the same saving rate will have different outcomes if their saving patterns are based on different levels of income. Younger households are expected to have accumulated less wealth (Modigliani and Brumberg (1954); Friedman (1957)) due to their different position in the life cycle compared to the elderly. The presence of risk aversion will affect precautionary saving levels (Kimball (1990); Zeldes (1989)). Due to uncertainty about future income and in case of liquidity constraints that prevent a household from borrowing, risk-averse households are expected to accumulate additional wealth in order to prevent a future drop in consumption caused by a negative income shock. As a result, households may differ in saving rates depending on their preferences and current consumption needs in the presence of liquidity constraints.

In addition, households differ in their preference for risk, which translates to different rates of return based on their preferred portfolio allocations. Via (r) in equation (1) these

choices translate into different levels of assets in period t+1. Finally, households may enter the period with different stocks of assets (A), possibly due to inheritance resulting in wealth differences in subsequent time periods $(e.g. A_{t+1})$.

2.2. Gender differences in wealth accumulation

Any persistent differences between women and men in the aforementioned factors will lead to gender differences in wealth accumulation. Empirical evidence indicates that potential gender differences may exist in many areas. Below we discuss some of these.

First of all, women and men differ in their attachment to the labor market. According to Warren et al. (2001) any disadvantage in net worth is partially the result of lower female labor force participation The standard pattern is a continuous full-time labor market attachment for male breadwinners, while women tend to have part-time work arrangements (including potential wage penalties; see Bardasi and Gornick, 2008), often with more diversified and perforated work histories due to child bearing and child rearing and more frequent job changes (Berger and Denton, 2004).

Differences in earnings are yet another potential source of the wealth gap. Given a persistent gender gap in earnings, even when holding savings rates constant, women are expected to accumulate lower levels of wealth (Blau and Kahn (1997, 2000), O'Neill (2003)).

Empirical evidence indicates that women and men differ in their risk preference and hence, their returns to savings as women tend to invest more conservatively than men. More conservative investment patterns in the past have lead to lower returns to wealth (Jianakoplos and Bernasek (1998)), but at the same time may have protected women from higher risks associated with the stock-market at times of economic downturns. Brush et al. (2002) also find that a relative lack of social networks reduces women's access to venture capital, thus leaving them out of this particular avenue of wealth creation.

Authors have also extensively pointed out differences in the probability of owning a home between women and men. In most countries, this is the most important component of the household wealth portfolio, additionally providing a flow of services and opportunities to accumulate wealth. One of the factors leading to gender differences in homeownership is discrimination in mortgage lending. Ladd (1998) found evidence of discrimination prior to the 1974 Equal Credit Opportunity Act (ECOA) in explicit bank policies. More recently,

Robinson (2002) found that gender and family structure discrimination depends on race. In the US, white couples face discrimination if the wife works, while African American couples face discrimination if the wife stays at home. These patterns also hold for single female-headed households. White single mothers are at a relative disadvantage, while single African American female-headed households appear to have a higher probability of homeownership in the presence of children. The second barrier to homeownership for women is that women earn less than men on average and higher incomes are associated with an increased ability to save and thus with higher credit scores.

Differences in family structure have also been found to be important in explaining the gender wealth gap. For example, Sedo and Kossoudji (2004) report that married households are significantly more likely to own a home than non-married couple-headed households and other households.[1] They also find that family type is associated with further differences than just gender. Women are more likely than men to live in single-earner households with children (the majority of single parents are women) and are thus less likely to be wealthy. Schmidt and Sevak (2006) find large differences in observed wealth between single households and married couple-headed households throughout the wealth distribution. According to their analyses single women hold significantly less wealth than single men and suggest wealth gaps emerge later in life as they do not exist for younger individuals (25-39 years old) regardless of the family type. Mohanty (2004) examines wealth holdings after divorce using the PSID data for the 1990s and finds that single females hold significantly lower levels of wealth than single males. In this case, child support has a positive effect on women's wealth after a divorce—after controlling for the economic and personal characteristics of the household. Lupton and Smith (2003) and Levine, Mitchell, and Moore (2000) using the HRS analyze the relationship between household type and asset accumulation, and provide evidence for married households holding more than twice the net worth of other types of households.

In addition, differences in marriage patterns among women and men are found to make a difference in wealth accumulation. Since women tend to marry men who are a few years older (Gibson, Le and Scobie (2006)), the latter have had several additional years in which to accumulate wealth. Marriage patterns also exhibit traditional preferences with respect to education among men and women. Skopek et al (2009) provide evidence that

[1] An endogeneity problem may exist here, since married individuals may exhibit characteristics similar to those of individuals who invest in owner-occupied housing

women clearly prefer partners with higher educational level, while for men it is still quite usual to engage with women with lower educational degrees.

3. Data and Methods

When looking at gender differences in wealth, most studies compare men and women in one-person households only, because surveys typically collect wealth information at the household level only. Other studies focus on individual wealth components, where data such as pension wealth is available at the individual level (see Warren 2006). In many of the studies mentioned above, a major problem is that datasets on household wealth cannot assign asset ownership to one spouse or the other. Consequently, there has been little attempt to decompose wealth differentials by gender and there is not much that can be said about the financial well-being of married women (with respect to wealth holdings) although a growing body of literature emphasizes the importance of looking at intra-household inequality (e.g. Pahl (2001), Allmendinger et al. (2006), Deere and Doss (2006)).

This shortcoming can be overcome with data from the German Socio-Economic Panel (SOEP), which collects wealth information for all adult household members at the individual level.[2] The SOEP is a representative longitudinal survey of individuals living in private households in Germany (Wagner et al. 2007). The survey was started in 1984 in West Germany and was extended to East Germany in 1990. The initial sample included over 12,000 respondents, with everyone aged 17 and over in sample households being interviewed. In the years 1995, 1998, 2000, 2002, and 2006, new sub-samples were drawn which approximately doubled the initial sample size. Due to the high concentration of economic resources (income and wealth) at the top of the distribution welfare analyses on the basis of representative population surveys are often confronted with the lack of information on rich individuals. In order to cope with this problem, the SOEP introduced a high income sample in 2002, over representing the top 3% of the income distribution (included here). The sample analyzed comprises approximately 12,700 households with about 24,000 respondents surveyed in the

[2] One of the rare studies with individual level data is by Bolin and Pålsson (2001). By utilizing wealth data for Sweden and examining the importance of family structure on wealth accumulation, they find that cohabiting and married women are compensated for lost opportunities in the labor market by having larger shares of the family's non-human wealth assigned to them.

year 2002.[3] In that year, a specific section of the individual questionnaire focused on information about wealth. Respondents were asked to provide the market value of seven different wealth and debt components: owner-occupied property (and associated debt); other property (and associated debt); financial assets; private pensions (include life insurance and building savings contracts); business assets; tangible assets (include gold, jewelry, coins or valuable collections); and consumer credits. Separately for all co-shared wealth holdings, each respondent had to state the individual share.

Our dependent variable is wealth or *net worth*, used interchangeably, which consists of wealth bound in these six surveyed components net of any debt (mortgages of any kind) and consumer credits.[4] Minor wealth components not covered in our measure are the value of cars and household durables.

Quality assessment

Conceptually for the sake of this paper one would like to include a measure of "social security wealth" (Gruber and Wise 1999) in order to compensate for different incentive structures with respect to old-age provision. This is especially a relevant phenomenon in Germany with the strong defined benefit pension scheme ("*Gesetzliche Rentenversicherung*"). While this system captures the majority of the population there are important subgroups who can opt out (e.g. self-employed or professionals) or belong to different systems (civil servants who obtain quite generous tax financed pensions without paying any explicit contributions). Thus, wealth accumulation of the latter two groups will most likely be captured in the "standard" measure of net worth.[5] However, since such information is generally not well known by the population, representative surveys like the SOEP typically do not collect data on public pension entitlements.[6] Nevertheless one should note that the restricted functionality of this type of wealth in an augmented measure of net worth may be a matter of concern given

[3] All descriptive results are based on weighted data, effectively controlling for differences in sampling design and differential attrition after wave one.
[4] In order to reduce the impact of outliers and measurement error, net worth is top-coded at the 99th percentile (at 925,000 euros) and bottom-coded at the 1st percentile (at –100,000 euros).
[5] These differences are not only relevant when looking at within country differences but obviously even more important for cross-national comparisons of countries representing different welfare regimes. See Frick and Headey (2009) for a comparison of wealth inequality that includes pension entitlements among the elderly in Australia and Germany.
[6] Arising from this omission there is a massive understatement of the overall measure for wealth: For 2007, the present value of pension entitlements (without deducting future contributions) derived from the statutory pension system, from company pensions and from civil servant pensions amounts to roughly two thirds of net worth as described above (see Frick and Grabka 2009b).

that pension entitlements can neither be sold, nor be used as collateral and finally they are restricted in case of bestowals and bequests.

Another restriction of our measure comes from the application of a lower threshold of 2,500 euros for financial and tangible assets and for consumer credits in the SOEP questionnaire. This was introduced to reduce the burden on respondents by not asking them to state (rather) negligible amounts. As such, the overall measure of total wealth and the share of wealth holders are likely to be somewhat understated and biased against very small wealth holdings.

A serious problem in collecting (representative) wealth data at the micro-level is measurement error from various sources such as rounding, misreporting and very likely underreporting (e.g., financial assets), and particularly because of non-response (see, e.g., Riphahn & Serfling 2005). On the one hand, asking separately all adult household members instead of just one reference member may increase the probability of getting all wealth components of all household members, as well as a better estimate of the true wealth of each individual. On the other hand, however, this also increases the probability of inconsistent information (e.g., two partners providing non-matching information on the very same issue such as a commonly owned home). With respect to missing information due to item non-response in wealth questions, the non-participation of a household reference person results in completely missing data, while the non-participation of one individual results only in partially missing data. Nevertheless, coping with all these measurement problems is a major task. In the case of the SOEP wealth data, inconsistencies have been edited on a case-wise basis, while missing data due to item non-response as well as partial unit non-response (i.e., non-responding individuals in otherwise responding households) have been corrected for by multiple imputation techniques, explicitly considering the potential selectivity of the underlying missing mechanisms.[7]

When imputed and edited total wealth of private households measured by SOEP 2002 is compared to corresponding aggregated information from national balance sheets, the survey does quite well (see Frick, Grabka and Sierminska (2007)). The coverage of property as a percent of national aggregates is as high as 98%, the extent to which liabilities are captured is

[7] See Frick, Grabka, and Marcus (2007) for an extensive description of the editing and imputation routines and Frick, Grabka and Sierminska (2007) for an assessment of the impact of such post-survey data treatment on substantive research results such as wealth composition and inequality.

about 93%. While the coverage of financial assets in population surveys appears to be a general problem, the SOEP proxies about 50% of the corresponding aggregate information (see Frick, Grabka, and Marcus 2007), which is a very good result when compared, for example, to other surveys contained in the Luxembourg Wealth Study (LWS) (see Sierminska, Brandolini and Smeeding (2006) and http://www.lisproject.org/lwstechdoc.htm).

Decomposition Methodology

After providing descriptive information and bivariate analyses on wealth endowments and inequality by gender and marital status (see Section 4 below) we will invest in a gender decomposition.[8]

In order to avoid making an assumption about the functional form of the conditional expected wealth function and thus avoid taking the risk of incorrectly capturing the relationship between the dependent and explanatory variables (as would be the case in the Blinder-Oaxaca decomposition, for example) we make use of the decomposition technique introduced by DiNardo, Fortin, Lemieux (1996) (subsequently referred to as DFL) and used, for example, by Cobb-Clark and Hildebrand (2006) and Gibson, Le, and Stillman (2007). The idea of this method is to use reweighting techniques to identify various counterfactual distributions that allow us to determine the contribution of specific components to the overall gap. The results presented here are obtained by calculating all relevant counterfactuals and then taking the simple average over all possible decompositions. In line with the rationale in formula (1) at a given point in time, we partition the vector of wealth determinants into four groups: (1) labor market experience, (2) education level, (3) intergenerational characteristics, and (4) demographic characteristics.

The first group includes individual indicators of the current labor market status (not in the labor force, years over 65, have high job autonomy), permanent income[9] and lifetime work experience (lifetime experience working full-time, part-time, being unemployed). While the second set of variables focuses on the individual's educational attainments (no or basic, lower vocational, upper vocational, university), the intergenerational component includes information on the education of both parents (father with higher education, mother with

[8] For an introduction to various decomposition methods consult Jenkins and Van Kerm (2009).
[9] Permanent income is the sum of income in the 5-year period 1998-2002, divided by the number of years with available data. Income is the sum of individual level data, consisting of labor income (self-employment and salary), pensions, unemployment benefits, alimony, other private transfers received, maternity benefits and student grants.

higher education, parent with higher education) and inheritances (received a recent inheritance (since 1992), received an inheritance in the past (1949 to 1992)). The final set of variables focuses on demographic characteristics (have a partner, length of marriage, number of marriages, immigrant or German national coming from abroad, lived in East Germany before 1989, have children under the age of five).

The specification of the wealth gap as a function of the four groups of variables can be written in the following way:

$$\begin{aligned}&\Delta g^{(M,W)} = g^M(w) - g^W(w) = \\ &= [g^M(w) - g_{CF}{}^1(w)] + [g_{CF}{}^1(w) - g_{CF}{}^2(w)] + [g_{CF}{}^2(w) - g_{CF}{}^3(w)] + \\ &+ [g_{CF}{}^3(w) - g_{CF}{}^4(w)] + [g_{CF}{}^4(w) - g^W(w)]\end{aligned} \tag{3}$$

The first component captures the effect of differences in labor market experience distribution on the gender wealth gap, which is expected to have a strong effect on the ability to accumulate wealth and differ significantly between men and women due to their different labor market attachment.[10] Similar effects are expected for the second component, which captures the effect of differences between men and women with respect to education although the labor market effect of these differences may be reduced due to controlling for income in the first component. In addition differences in education may have an effect on investment strategies, which feed into wealth accumulation. The third effect results from differences in intergenerational characteristics, which may prove to have an independent impact above and beyond the individual characteristics contained in the first and second components. Especially, among the older cohorts of women intergenerational transfers are a main source of wealth. Finally, the fourth effect controls for a variety of demographic differences. We can expect significant differences for immigrants with women being at a relative disadvantage, driven by educational attainment as well as cultural factors (e.g. Kalter & Granato 2007). The number of marriages would have a negative effect on wealth accumulation as people going through divorce suffer economic losses (Andress et al 2006). In addition, men – especially economically successful ones – have a higher probability of re-marriage, becoming susceptible to relatively higher loses (e.g. Peuckert 2008). Having children is expected to have a relatively higher negative effect on wealth accumulation for women as they are more likely to dissave in order to finance children consumption (e.g. Frankel 2005). We control for the effect of living in East Germany before 1989 due to the lower homeownership rates, as well

[10] This effect is also expected to differ across cohorts an issue, which we return to in footnote 16.

as reduced accumulation probabilities resulting from higher unemployment and lower wages (Frick and Grabka 2009a).

The last term refers to the differences between the conditional wealth functions for men and women. (A detailed discussion of the construction of counterfactuals is in Appendix A) This semi-parametric approach allows researchers to avoid making parametric assumptions and examines the *distributional* counterfactual (as compared to the *mean* counterfactual of the Blinder-Oaxaca approach, for example).

4. Empirical Results on the Gender Wealth Gap in Germany

4.1. Descriptive Findings

In the following analyses, we investigate gender differences in wealth holdings for all adult household members (17 years and older), explicitly considering the composition of the person's household. Basic non-wealth characteristics—by gender and marital status—can be found in Table 1. The rationale for explicitly contrasting these non-wealth characteristics by gender is that a possible wealth gap may result from a differential endowment in certain characteristics rather than from gender *per se*. This is also crucial to the decomposition analysis that follows.

The women in the sample are slightly older than men, except those that are married or cohabiting. This reflects the fact that German women still tend to marry on average older men. Men on average have higher individual labor income (particularly divorced and widowed men) and higher education compared to women (by about 7 percentage points). This difference increases to ten percent among married couples. Men are more likely to be employed full-time and be self-employed. Women, on the other hand, are more likely to be employed part-time (13.5% versus 2% for men) or not be employed at all (42.5% versus 25.7% for men). This employment gap is much more pronounced for married than for cohabiting women. These findings indicate that conservative marriage behavior prevails in Germany and confirm the typical pattern of the male-breadwinner model within couples: on average, men are married to younger, less-educated women who work less than full-time. Given the relatively low German inheritance taxes—women are eventually passed on their late husband's wealth accumulation, although among older cohorts of widows and widowers in Table 1 men receive higher inheritances than women. Strikingly, even among the never

married group, women are less likely to be employed full-time (29.4% versus 37.4% for men), and are more likely not employed (13.3% versus 6.6% for men) and in vocational training (36.5 % versus 31.6% for men), although there are no substantial differences in education and average equivalent annual post government income[11].

Table 2 summarizes wealth holdings and their distribution among men and women by marital status. On average, men hold about 30,000 euros more than women. This gap is about 9,000 euros when we look at the median and is present in all household types. Figure 1 presents net worth measures by gender and marital status with 95% confidence bands: we find significant gender wealth gaps for all marital status groups except for the widowed and never-married individuals. Interestingly, among women widows are the wealthiest, perhaps due to the aforementioned inheritance regulations and their longer life expectancy compared to men's. The wealth gap is particularly large for those currently married – about 47,000 euros. This is certainly in contrast to the expected more even split among people traditionally assumed to be "equally sharing."

Comparing the portfolio composition between men and women (see Table 3) we find that among those living together (married or cohabiting), men on average hold more wealth in each of the components. The difference is particularly large for business assets (Edlund and Kopczuk 2009), but can be expected given the higher prevalence of self-employed males (Table 1). The disparities in the value of owner-occupied homes appear to be less pronounced for the married[12] compared to other components of the wealth portfolio. In fact, as has been found in previous work (Sedo and Kossoudji 2004), homeownership seems to exert an equalizing effect on wealth holdings among couples.

Following these descriptive facts about the wealth gap in the overall population, in the following decomposition analyses we concentrate on the sample of married and cohabiting men and women.[13] This allows us to reduce the risk of biasing the gender gap results towards single individuals and especially towards survivors.

[11] This is the income measure typically used in welfare economics analyses – based on the central assumption of pooling and equal sharing it is calculated at the household level (considering all incomes received by all household members) and by adjusting for household size assigns the same needs adjusted amount to all individuals in the sharing unit, i.e. the household.
[12] Although, housing equity of married men is still statistically significantly higher than women's by about 14%.
[13] Thus, we do not compare men and women within the very same partnership or marriage, but rather look at the whole sample of married or cohabiting men and women.

4.2. Decomposing the Wealth Gap

In this section, we first discuss the factors explaining net worth holdings for men and women and then apply the Dinardo, Fortin and Lemieux decomposition method and discuss factors explaining wealth differences.

4.2.1. Net worth for women and men

The results presented above suggest that the *average* wealth difference of about 28,000 euros in households with couples can be explained by the covariates discussed in Section 3, but only to a certain extent. We examine the effect of these covariates by using standard regression analysis for women and men separately (see Table 4).[14] According to these results, once we control for the length of marriage, only full-time labor market experience and permanent income have a statistically significantly different effect for men and women in couple-headed households on the currently accumulated stock of net worth. Including the length of marriage as an explanatory variable (results not shown, but available upon request) reverses the magnitude of the variable indicating having a mother with higher education between men and women. Nevertheless, the effect of having a father with higher education remains significantly different for men and women with the effect on women's accumulated wealth being five times stronger than for men. The remaining covariates show the expected effects: the number of marriages, being an immigrant and having lived in East Germany before 1989 exert a significantly negative effect on net worth. In contrast, being highly educated, having high job autonomy and being over 65, ceteris paribus, increases net worth. Having received an inheritance has a strong statistically significant effect on wealth for both men and women. Finally, it should be noted that—conditional on the choice of covariates—the overall explanatory power of the model is much larger for men than for women: the R-squared of the estimation for men is 29% vs. 18% in the model for women, a result, which among other things may be influenced by wealth redistribution between partners which is not captured by the applied RHS-variables.

[14] We explore various specifications of the wealth function. These gender-specific regression results can be found in Appendix Tables B.2a for men and B.2b. for women, respectively. The results given in Table 4 correspond to those of specification (8).

4.2.2. Decomposition results according to DiNardo-Fortin-Lemieux

By using the DiNardo-Fortin-Lemieux (DFL) approach we avoid making any parametric assumptions about the distribution function and consider comparisons of the whole probability density function. As mentioned previously, we group the explanatory variables into four groups: (1) labor market experience, (2) education level, (3) intergenerational characteristics, and (4) demographic characteristics. These factors correspond closely to the list of potential sources of wealth differences among men and women and are in accord with the list of factors discussed in Section 2 that affect the wealth accumulation formula (1). The decompositions according to DFL are done sequentially according to the four factor groups (Table 5).

We find that across most of the distribution the gap is the result of differences in current income and experience in the labor market and is not related to a great extent to other characteristics such as education. The effect of labor market experience is found to be strong at the median and at the top of the distribution, whereas at the bottom of the wealth distribution education compared to the other determinants plays a somewhat stronger role. For most of the distribution, neither intergenerational nor demographic characteristics add significantly to the explanation of the gender wealth gap.[15] However, a very large part of the gap results from differences in how men and women have accumulated their wealth—conditional on their characteristics—i.e., differences in their wealth function, which is included in the "unexplained" column of Table 5. This effect is particularly strong in the middle of the wealth distribution [see inter quartile range P75-P25], whereas at the top of the wealth distribution [see P90-P50] the driving factors are differences in characteristics, particularly, income and labor market experience. Finally, in the lower half of the wealth distribution [see P50-P10] the large and positive effect of income and labor market experience is dampened by a negative impact of the unexplained part.[16] This negative effect indicates that

[15] As women's labor market experience has changed across cohorts it is plausible that its effect on the wealth gap varies, as well. As a check, we address this issue by performing the DFL decomposition on a sample of younger and older households. The conclusions obtained from the whole sample remain valid in this case although the raw gap is lower for the younger cohorts and understandably, the role of intergenerational factors is also smaller for this group. The effect of education is relatively stronger for the older population (results available from authors).

[16] In an earlier version of this paper we also compare results derived from the non-parametric decomposition approach suggested by Juhn, Murphy and Pierce (1994) – by and large these results coincide with the findings based on the DFL-decomposition particularly at the top of the distribution. The results for the average wealth gap using the Juhn, Murphy and Pierce method confirm those found using the Oaxaca-Blinder method (see***).

women derive “more wealth” from their own characteristics than they would be able to derive if they had the same wealth function as men.

One possible explanation of the specific wealth function of women in the lower half of the distribution rests on the basic assumption of partnerships being sharing and insurance units. Thus, especially women endowed with characteristics which are associated with low levels of individual wealth might “profit” from the relatively better characteristics of their partner.

Another hypothetical argument arises from gender differences in risk preferences and investment strategies which have been found to – on average – yield greater wealth outcomes for men (see Jianakoplos and Bernasek (1998)). However, this may not be true in the lower half of the wealth distribution if men’s investment behavior correlates with an increased probability for complete losses due to lacking diversification.

Finally, the effect might also capture differences in the command over resources – particularly true for the bottom half of the distribution – where women would control the assets in order to protect them for the children.

Last but not least, due to the lack of statutory pension entitlements in the underlying database, we check for the robustness of our results by excluding the self-employed. This group differs considerably with respect to the level and structure of its wealth portfolio by holding above average amounts of business assets as well as given the specific incentive structure to accumulate wealth as a means of old-age provision in contrast to the vast majority of dependent employed persons who are obligatorily involved in the German social security pension system. However, we find our basic results to remain unchanged with magnitudes of the effects becoming smaller (results available from the authors).

5. Conclusions

A main obstacle to the analysis of gender wealth gaps in the empirical literature is the lack of comprehensive wealth information at the individual level (Deere and Doss, 2006). This gap in the literature can be tackled using the 2002 wealth module of the German SOEP, which contains wealth data for about 23,000 individuals. We find clear empirical indications of a significant raw gender wealth gap of about 30,000 euros, which amounts to almost 50,000 euros for partners in married couples.

Using semi-parametric decomposition methods (DiNardo, Fortin, Lemieux) we find a robust picture of the wealth gap being mostly driven by differences in characteristics between men and women. By far the most important factor is the individual's own income and labor market experience particularly for the bottom and top of the wealth distribution. Differences for those in the middle of the distribution appear to be mostly driven by the way in which women transform their characteristics into wealth, i.e., the wealth function.

Our work could be extended in several ways. One important way would be to include estimates on individual pension entitlements of social security wealth given the different incentive structures for different types of workers. Due to the prominence of the male breadwinner model in Germany, the consideration of individual pension entitlements will most likely increase the intra-partnership wealth gap. Given the vast importance of this wealth component in Germany estimating these entitlements would be a prerequisite for the analysis of within couple differentials based on the unitary model of household behavior in the case of wealth holdings. In addition, given the strong variation of social security entitlements across different types of welfare states (see e.g. Frick and Headey 2009) simulating individual pension entitlements would also greatly enhance the opportunities for cross-country comparisons of the gender wealth gap.

There may be little concern of a gender wealth gap within couples as divorce laws in many EU countries ensure an even split of assets.[17] Nevertheless, a difference in wealth holdings among partners will most likely affect (or be a result of) intra-partnership bargaining power thus affecting individual well-being as is the case for income (Pahl 2001). In addition, an existing wealth disadvantage before marriage would be perpetuated when individuals enter into partnerships with existing wealth holdings as these are not subject to a 50-50 split after divorce. It should also be noted that such 50-50 divorce laws are not the standard in all countries and certainly not in the US where common law states are a minority. This is of utmost relevance given the specific functionality of wealth and only emphasizes the importance of analyzing the gender wealth gap, specifically within couples.

[17] The legal regulations in Germany and many other European countries consider *joint* ownership of assets (and debts) only for those wealth components acquired during marriage. Wealth accumulated prior to marriage will remain in the hands of the original owner and will not be affected by a divorce. Inheritances during marriage are also not considered to be accumulated jointly and thus will remain fully in the hands of the successor. However, this is true for the (monetary value) of the original inheritance only and excludes eventual capital gains or added value. Marriage contracts can also be designed to deviate from these standard regulations in divorce law. Thus, in order to examine whether there exists a gender wealth gap it is important to know which partner actually owns a specific asset given that in case of a divorce only the jointly accumulated wealth will be evenly split among the partners.

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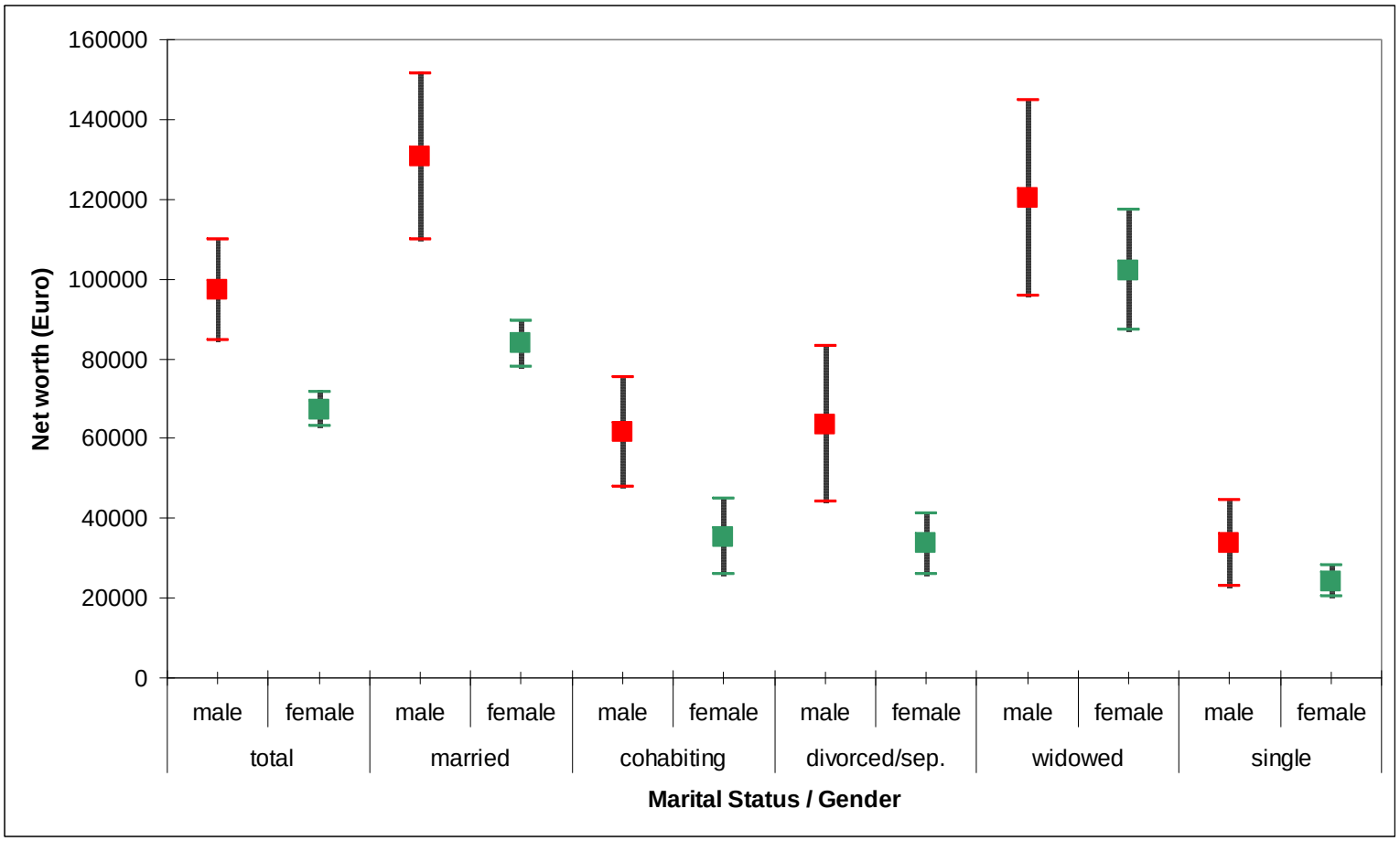
7. Figures and Tables

Figure 1: Net worth[1] by martial status and gender, Germany 2002



[1]Estimates derived from multiply imputed data together with a 95% confidence interval (mean in 2002 euros).
Source: SOEP 2002; authors' calculations. Weighted.

Table 1: Basic non-wealth characteristics by gender and marital status, Germany 2002

	Male TOTAL	Male married	Male cohabit.	Male single – divorced/ separated	Male single – widowed	Male single – never married	Female TOTAL	Female married	Female cohabit.	Female single – divorced/ separated	Female single – widowed	Female single – never married	TOTAL
Demographics													
Age (in years)	47.1	53.3	39.2	50.2	70.7	30.5	49.4	50.2	36.9	53.2	73.9	32.0	48.3
% Immigrant	11.8	14.3	5.1	12.0	6.5	8.6	11.2	14.1	5.5	10.7	8.7	7.5	11.5
% Foreign citizenship	8.1	9.7	3.1	7.5	0.8	7.2	6.7	9.0	2.8	5.7	2.6	5.2	7.4
Household size	2.60	2.93	2.49	1.24	1.19	2.37	2.47	2.93	2.48	1.77	1.25	2.35	2.53
Number of children < 17	0.47	0.64	0.39	0.07	0.04	0.25	0.47	0.64	0.38	0.44	0.04	0.37	0.47
Income													
Equiv. Annual Post-Govt. Income (mean)	20,788	21,877	20,375	20,531	17,613	18,712	18,915	21,355	19,086	14,182	14,782	17,091	19,790
Relative Post-Govt. income position	105	111	103	104	89	95	96	108	96	72	75	86	100
Individual Annual Labor Income (mean)	22,952	26,139	24,459	25,862	5,272	15,975	10,019	9,827	17,092	12,714	2,249	11,711	16,063
Relative labor income position	143	163	152	161	33	99	62	61	106	79	14	73	100
Education													
low (isced=0.1.2)	17.6	13.1	9.4	15.3	19.1	32.1	26.1	22.0	17.0	24.3	41.1	33.2	22.1
middle (isced=3)	47.9	47.7	53.2	49.3	59.2	44.9	47.9	51.2	47.0	45.3	45.7	40.9	47.9
(higher) vocational (isced=4.5)	13.1	13.7	17.6	11.2	10.5	10.5	11.4	11.2	17.2	12.5	6.7	12.2	12.2
higher eduation (isced=6)	21.4	25.5	19.8	24.2	11.2	12.4	14.6	15.7	18.8	17.9	6.5	13.7	17.8

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	Male TOTAL	Male married	Male cohabit.	Male single – divorced/ separated	Male single – widowed	Male single – never married	Female TOTAL	Female married	Female cohabit.	Female single – divorced/ separated	Female single – widowed	Female single – never married	TOTAL
Labor market status													
FT employed	42.6	44.9	52.7	44.5	5.9	37.4	20.6	17.0	44.6	27.4	3.5	29.4	30.9
PT employed	2.0	1.5	2.4	0.7	1.3	3.5	13.5	19.3	12.7	12.4	3.6	4.6	8.1
self employed	7.3	7.7	10.8	9.4	4.8	4.8	2.7	3.1	2.5	3.7	0.8	2.6	4.9
not employed	25.7	33.0	10.5	22.4	83.8	6.6	42.5	46.0	15.9	35.9	88.0	13.3	34.7
unemployed	6.6	5.1	9.2	13.9	1.9	7.8	5.7	4.8	8.9	12.5	1.6	6.4	6.1
civil servants	5.2	6.0	5.8	7.2	0.9	3.1	2.7	3.1	3.8	2.9	0.6	2.5	3.9
in voc. training	8.3	0.6	5.3	0.8	0.1	31.6	7.5	0.7	7.9	2.0	0.3	36.5	7.9
irregular work	2.4	1.3	3.4	1.1	1.3	5.2	4.8	6.1	3.7	3.4	1.7	4.8	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Regional characteristics													
% in East Germany	19.0	17.9	23.2	23.5	18.7	19.0	18.7	17.7	22.7	19.6	18.6	19.2	18.8
% City (>500.000)	15.1	12.6	20.2	22.6	13.6	17.6	16.4	13.0	19.7	22.6	18.2	20.6	15.8
Inheritance													
% recent inheritance (since 1997)	4.1	4.0	5.2	3.3	7.1	3.9	4.8	4.6	7.3	3.6	5.5	4.6	4.5
Amount inheritance (median, in €)	15,339	15,339	20,452	20,452	25,565	35,790	12,782	12,782	10,226	12,782	15,339	12,782	15,339
% expected inheritance	15.4	12.9	21.3	11.4	3.9	21.9	11.8	12.3	18.1	10.3	2.2	15.3	13.5
n per implicate (unweighted)	12,199	7,423	977	521	252	2,339	12,756	7,461	1,048	800	1,013	1,927	24,955
N in 1.000 (weighted)	31,391	18,353	2,701	2,005	958	7,375	35,777	18,651	3,015	3,213	4,741	6,156	67,168
Gender specific Population Share, %	100.0	58.5	8.6	6.4	3.1	23.5	100.0	52.1	8.4	9.0	13.3	17.2	--
Overall Population Share in %	46.7	27.3	4.0	3.0	1.4	11.0	53.3	27.8	4.5	4.8	7.1	9.2	100.0

Source: SOEP 2002; authors' calculations. Weighted.

Table 2: Net wealth by gender and marital status[1], Germany 2002

	Male						Female					
	Total	**Married**	**Coha-biting**	**Divor-ced**	**Wido-wed**	**Single**	**Total**	**Married**	**Coha-biting**	**Divor-ced**	**Wido-wed**	**Single**
Net wealth (nominal)												
mean, in €	97,378	130,648	61,636	63,570	120,142	33,908	67,373	83,722	35,425	33,761	102,192	24,214
median, in €	19,757	53,994	6,500	5,170	26,707	414	10,045	35,094	4,057	1,040	12,940	0
relative wealth position[2]	*120*	*161*	*76*	*78*	*148*	*42*	*83*	*103*	*44*	*41*	*126*	*30*
% share wealth = 0	21.3	11.9	22.7	23.9	21.5	43.2	27.0	17.9	27.6	39.8	26.5	47.8
% share wealth < 0	6.4	5.4	9.0	17.4	0.2	5.8	4.5	4.3	9.2	7.9	1.1	3.6
Quintile shares												
bottom	-1.6	-1.4	-2.2	-5.8	0.0	-1.7	-2.1	-2.4	-7.0	-2.6	-0.2	-1.8
2	0.5	2.0	0.3	0.0	1.2	0.0	0.3	1.4	0.0	0.0	0.5	0.0
3	4.5	8.5	2.6	2.0	6.9	0.7	3.8	8.8	2.4	1.2	3.8	0.5
4	17.7	19.0	10.6	13.1	23.4	7.3	19.8	23.1	10.6	10.6	22.6	6.3
top	78.9	71.9	88.8	90.8	68.4	93.6	78.3	69.1	93.9	90.8	73.4	95.0
Inequality												
Gini[3]	0.749	0.661	0.843	0.899	0.675	0.894	0.775	0.699	0.948	0.875	0.715	0.911
GE(2)[3]	1.57	1.07	2.79	2.74	1.05	4.35	1.93	1.45	4.15	3.24	1.31	5.12
p90/p50	11.69	5.14	25.02	33.96	11.50	169.65	18.01	5.86	24.64	99.40	19.67	n.d.
p75/p50	5.40	2.68	6.64	9.77	5.67	35.40	8.77	3.19	6.01	22.97	10.17	n.d.
n per implicate (unweighted)	12,199	7,423	977	521	252	2,339	12,756	7,461	1,048	800	1,013	1,927
N in 1.000 (weighted)	31,391	18,353	2,701	2,005	958	7,375	35,777	18,651	3,015	3,213	4,741	6,156
Gender specific Pop. Share, %	100.0	58.5	8.6	6.4	3.1	23.5	100.0	52.1	8.4	9.0	13.3	17.2
Overall Pop. Share, %	46.7	27.3	4.0	3.0	1.4	11.0	53.3	27.8	4.5	4.8	7.1	9.2

Note: [1]Each cell gives the estimate derived from multiply imputed data. [2] Corresponding mean wealth divided by total wealth*100. [3] 1% Topcoding (p99[implicate A]=925.000)
Source: SOEP 2002; authors' calculations.Weighted.

Table 3: Relative gender wealth gap (men/women) based on average wealth holdings by marital status, Germany 2002

Wealth Component	TOTAL	Married	Cohabiting	Single – divorced/ separated	Single – widowed	Single – never married
Housing	**1.09**	**1.14**	1.17	1.39	1.22	1.03
Other Property	**1.46**	**1.54**	2.75	1.73	0.57	1.34
Financial assets	**1.36**	**1.54**	0.96	**2.19**	1.34	1.22
Insurance/ Private pensions	**2.01**	**1.84**	**1.95**	**2.58**	2.53	**1.98**
Business assets	**5.52**	**5.10**	**8.78**	10.00	1.10	7.52
Tangible assets	1.39	1.43	2.04	1.38	0.85	1.35
Debt	1.35	1.23	1.43	1.86	0.45	1.43
Total	**1.45**	**1.56**	**1.74**	**1.88**	1.18	1.40

Shaded cells indicate significant deviation (p<=0,05). Note: Calculations are based on multiply imputed data
Source: SOEP 2002.Weighted.

Table 4: Comparison of chosen OLS regressions of net worth for women and men

	Women			Men		
Variables	coeff.	sig.	std.err.	coeff.	sig.	std.err.
Length of marriage	242		130	132		158
Number of marriages	-8116	*	3290	-17711	**	4067
Immigrant	-44615	**	3831	-38257	**	4766
Have a partner	-29457	**	5037	-10600		6321
Lived in East Germany before 1989	-49818	**	3397	-41759	**	4225
Have kids under 5 years old	-5428		4334	-3158		5348
Being over 65 years old	915		473	664		471
Lower vocational education	23769	**	3248	15002	**	4699
Upper vocational education	36593	**	4647	36436	**	5908
University degree	50401	**	4957	39855	**	5902
Have high job autonomy	19969	**	5294	18685	**	4663
Permanent income	34410	**	8462	200881	**	19285
Years working full-time	1430	**	174	2673	**	211
Years working part-time	82006	**	13423	50224	*	20482
Years unemployed	2333	**	230	1974	*	820
Not in the labor force	-275		756	369		995
Labor market experience missing	1443	**	189	2468	**	379
Father with higher education	33002	**	5943	6725		7272
Mother with higher education	-7842		14967	3764		20243
Parent with higher education	-3929		19461	-3280		25015
Recent inheritance (after 1992)	51231	**	4431	58125	**	5807
"Old" inheritance (1949 till 1992)	49182	**	5194	66878	**	5680
Permanent income squared	-9223	**	1894	-46318	**	3621
Permanent income cube	569	**	106	2630	**	177
Constant	21114	**	7859	-30432		24063
Observations	7803			7803		
Adjusted R-squared	0.18			0.27		

Note:* denotes statistical significance at the 1% level; ** at the 5% level; shaded rows indicate the gender-specific coefficients are significantly different at the 5% level.
Source: SOEP 2002.

Table 5: Wealth decomposition results across the wealth distribution (DiNardo, Fortin, Lemieux).

	Wealth gap	Income and Labor market experience	Education Level	Inter-generational Factors	Demographic Characteristics	Un-explained
10th	0	0	0	0	0	0
se	0	6229	5673	578	601	12501
25th	3950	3946	904	154	-54	-1000
se	934	1060	706	46	978	1129
%	100	100	23	4	-1	-25
50th	18250	34002	3721	560	-533	-19500
se	2558	39329	5268	4536	5331	51502
%	100	186	20	3	-3	-107
75th	32500	1629	-11660	-4951	-17339	64821
se	3663	64119	7279	1400	1977	65798
%	100	5	-36	-15	-53	199
90th	67959	85226	7862	1950	140	-27220
se	7682	62465	26109	888	9598	70097
%	100	125	12	3	0	-40
P50-P10	18250	34002	3721	560	-533	-19500
se	2558	37901	6575	4468	5304	49666
%	100	186	20	3	-3	-107
P75-P25	28550	-2317	-12564	-5105	-17285	65821
Se	3268	63646	7429	1418	2292	65249
%	100	-8	-44	-18	-61	231
P90-P50	49709	51225	4141	1390	673	-7720
se	6264	54551	25231	4599	10490	69153
%	100	103	8	3	1	-16

Note: values in parentheses give the share of the wealth gap attributable to the various factors.
Source: SOEP 2002.

8. Appendix

Appendix A: *The decomposition methods*

All decomposition analyses in this paper were performed using Stata© (version 9.2). The procedure used for the DFL decomposition is "DECOMPOSE2.DO" generously provided by Vincent Hildebrand.

The DiNardo-Fortin-Lemieux (DFL) decomposition

In their decomposition, DiNardo, Fortin, and Lemieux use a semiparametric decomposition approach and avoid making parametric assumptions about the conditional mean function. Instead they use reweighting techniques and consider comparisons of probability density functions such as in the case of differences in wealth between men and women:

$\Delta g^{(M,W)} = g^M(w) - g^W(w)$, where $g^j(.)$ is the marginal distribution of wealth w for group j; for an observation with characteristics x and it can be expressed via $g(w) = \int f(w \mid x)h(x)dx$. The conditional distribution $f(. \mid .)$ can be thought of as being analogous to an estimated regression line and the marginal density of x, $h(.)$ to the vector of characteristics.

Next, we can specify each density separately by gender:

$g^j(w) = g(w \mid j = i) = \int f^j(w \mid x)h(x \mid j = i)dx$, where $j = M, F(men, women)$.

With this we can specify various counterfactual densities. For example, What would be the wealth distribution of women if they had the characteristics of men

$$g^W_{CF}(w) = g(w \mid j = F) = \int f^W(w \mid x)h(x \mid j = M)dx = \int f^W(w \mid x)h(x \mid j = F)\Psi(x)dx$$

The innovation here is the reweighting function $\Psi(.)$, which is defined in the following way:

$\Psi^{(M,W)}(x) = \dfrac{h(x \mid j = F)}{h(x \mid j = M)}$ since $h(x \mid j = i) = \dfrac{P(j = i \mid x)}{P(j = i)}$ then using Bayes' Rule:

$\Psi^{(M,W)}(x) = \dfrac{P(j = F \mid x)P(j = M)}{P(j = M \mid x)P(j = F)}$, where unlike $h(x \mid j = i)$ each of the components can easily be estimated (e.g., survey-weighted logits) and $P(j = i \mid x)$ is the probability that a randomly selected individual with characteristics x belongs to group i if individuals from both groups are pooled in a common population and $P(j = i)$ is the probability that a randomly selected individual belongs to group j in a pooled population. $g^j(w)$ can be estimated using Kernel density estimators.

In this case the decomposition would be the following:

$$\Delta g^{(M,W)} = g^M(w) - g^W(w) = (g^M - g^F_{CF}) + (g^F_{CF} - g^F)$$

The second component would express differences due to characteristics and the first would capture the unobservables.

Another question we could ask is:

1. What would the wealth distribution of men be if they had the characteristics of women

$$g_{CF}^{M}(w) = g(w \mid j = M) = \int f^{M}(w \mid x)h(x \mid j = F)dx = \int f^{M}(w \mid x)h(x \mid j = M)\Psi^{-1}(x)dx$$

The decomposition would then be the following:

$\Delta g^{(M,W)} = g^{M}(w) - g^{W}(w) = (g^{M} - g_{CF}^{M}) + (g_{CF}^{M} - g^{F})$ with the first component capturing the differences due to characteristics and the second due to unobservables.

In our case, we partition the vector of characteristics into four groups $x = \{l, e, i, d\}$ and we reweight the wealth distribution of men (Barsky et al 2002):

1. Labor market experience (l) (self-employed, not in the labor force, being over 65 years of age, lifetime experience working full-time, lifetime experience working part-time, lifetime experience being unemployed, missing information on lifetime labor market experience, have high job autonomy, permanent income)
2. Educational level (e) (no or basic, lower vocational, upper vocational, university)
3. Intergenerational characteristics (i) (father with higher education, mother with higher education, parent with higher education, received a recent inheritance (since 1992), received an inheritance in the past (1949 to 1992))
4. Demographic characteristics (d) (have a partner, length of marriage, number of marriages, immigrant or German national coming from abroad, lived in East Germany before 1989, have children under the age of five)

Our decomposition can then be written in the following way

$$g^{j}(w) = g(w \mid j) = \int_{l}\int_{e}\int_{i}\int_{d} f^{j}(w,l,e,i,d \mid j = i)dldedidd =$$

$$= \int_{l}\int_{e}\int_{i}\int_{d} f^{j}(w \mid l,e,i,d,j = i)f_{x}(l,e,i,d \mid g = i)dldedidd =$$

$$= \int_{l}\int_{e}\int_{i}\int_{d} f^{j}(w \mid l,e,i,d,j = i)h_{l|eid}(l \mid e,i,d,j = i)h_{e|id}(e \mid i,d,j)h_{i|d}(i \mid d,j)h_{d}(d \mid j)dldedid$$

Next, we follow the methodology of Cobb-Clark and Hildebrand (2006) and Gibson et al (2007) and create several counterfactuals:

1. What would the wealth distribution of males be if they had women's labor market experience

$$g^1_{CF} =$$
$$= \int_l \int_e \int_i \int_d f^M(w|l,e,i,d,j=M) h_{l|eid}(l|e,i,d,j=F) h_{e|id}(e|i,d,j=M) h_{i|d}(i|d,j=M) h_d(d|j=M) dl de di d$$

2. What would the wealth distribution of males be if they had women's labor market experience, and education

$$g^2_{CF} =$$
$$= \int_l \int_e \int_i \int_d f^M(w|l,e,i,d,j=M) h_{l|eid}(l|e,i,d,j=F) h_{e|id}(e|i,d,j=F) h_{i|d}(i|d,j=M) h_d(d|j=M) dl de di d$$

3. What would the wealth distribution of males be if they had women's labor market experience, education, and intergenerational characteristics

$$g^3_{CF} =$$
$$= \int_l \int_e \int_i \int_d f^M(w|l,e,i,d,j=M) h_{l|eid}(l|e,i,d,j=F) h_{e|id}(e|i,d,j=F) h_{i|d}(i|d,j=F) h_d(d|j=M) dl de di d$$

4. What would the wealth distribution of males be if they had women's labor market experience, education, intergenerational, and demographic characteristics

$$g^4_{CF} =$$
$$= \int_l \int_e \int_i \int_d f^M(w|l,e,i,d,j=M) h_{l|eid}(l|e,i,d,j=F) h_{e|id}(e|i,d,j=F) h_{i|d}(i|d,j=F) h_d(d|j=F) dl de di d$$

With these we obtain our decomposition and we the appropriate reweighting techniques can estimate:

$$\Delta g^{(M,W)} = g^M(w) - g^W(w) =$$
$$= [g^M(w) - g_{CF}{}^1(w)] + [g_{CF}{}^1(w) - g_{CF}{}^2(w)] + [g_{CF}{}^2(w) - g_{CF}{}^3(w)] +$$
$$+ [g_{CF}{}^3(w) - g_{CF}{}^4(w)] + [g_{CF}{}^4(w) - g^W(w)]$$

Since the ordering of these factor decompositions matters, we use all possible orderings and the presented results are averages across all orderings.

Appendix Table B.1: Variable definitions

Variables	
lmarriage	Length of marriage
nrmarriages	Number of marriages
migback	Immigrant
partner	Have a partner
loc89east	Lived in East Germany before 1989
kids04	Have kids under 5 years old
_Iedu_2	Lower vocational education
_Iedu_3	Upper vocational education
_Iedu_4	University degree
over65	Years over 65
autonom	Have high job autonomy
Perminc*	Permanent income
expft02	Years working full-time
exppt02	Years working part-time
expue02	Years unemployed
notlabor	Not in the labor force
expmiss	Labor market experience missing
hiedu_f	Father with higher education
hiedu_m	Mother with higher education
hiedu_p	Parent with higher education
inheri1	Recent inheritance (after 1992)
inheri2	"Old" inheritance (1949 till 1992)

Note: * **Permanent income** is the sum of income in the 5-year period 1998-2002, divided by the number of years with available data. **Income** is the sum of individual level data, consisting of labor income (self-employment and salary), pensions, unemployment benefits, alimony, other private transfers received, maternity benefits and student grants.

Appendix Table B.2a: OLS regressions of net worth for men.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
lmarriage	1179.37	1361.23	123.39	125.52	63.57	130.31	135.1	131.63
	(130.15)**	(132.37)**	(163.53)	(161.38)	(163.51)	(160.11)	(157.74)	(157.80)
nrmarriages		3473.67	-17710.4	-17586.38	-14400.45	-17655.15	-17430.38	-17710.83
		(3891.37)	(4215.07)**	(4159.08)**	(4209.56)**	(4128.72)**	(4066.82)**	(4067.25)**
migback	-68324.5	-51741.5	-44266.6	-36745.25	-41889.8	-46481.29	-38574.23	-38257.07
	(4943.90)**	(4903.50)**	(4907.51)**	(4872.40)**	(4925.41)**	(4809.10)**	(4765.20)**	(4765.81)**
partner	-27173.7	-8241.14	-12079.9	-12693.95	-20751.19	-10644.83	-11206.73	-10600.33
	(5914.27)**	(6593.09)	(6540.52)	(6462.07)*	(6525.59)**	(6410.45)	(6322.40)	(6321.21)
loc89east	-81562.2	-57449	-52618.6	-49582.42	-65194.88	-46686.09	-43187.44	-41758.72
	(4269.64)**	(4341.99)**	(4329.69)**	(4290.85)**	(4211.62)**	(4301.91)**	(4255.55)**	(4225.46)**
kids04	-27857.7	-28780.9	-4742.87	-6028.88	-5921.41	-1734.75	-3176.98	-3158.3
	(5421.13)**	(5322.93)**	(5538.25)	(5467.71)	(5541.71)	(5424.93)	(5346.17)	(5348.41)
over65	144.01	1552.51	44.92	248.09	-673.47	359.45	589.23	664.3
	(470.59)	(469.17)**	(486.55)	(480.96)	(483.25)	(477.98)	(471.67)	(471.07)
_Iedu_2	18814.46	12725.81	19039.44	16973.13	17626.81	17272.27	14996.91	15002.04
	(4977.28)**	(4873.71)**	(4866.60)**	(4804.73)**	(4869.55)**	(4765.83)**	(4697.22)**	(4699.20)**
_Iedu_3	42090.5	34302.14	45000.28	39213.45	40031.95	42565.28	36903.68	36436.1
	(6233.45)**	(6099.52)**	(6100.77)**	(6041.37)**	(6122.87)**	(5977.66)**	(5908.88)**	(5908.92)**
_Iedu_4	68295.77	47476.84	60861.58	52226.93	61863.17	48150.37	40145.02	39854.65
	(6016.62)**	(5971.40)**	(5999.50)**	(5998.50)**	(6042.75)**	(5917.75)**	(5900.51)**	(5902.05)**
autonom	59211.07	27685.92	33932.91	35139.34	50487.69	17992.15	19047.11	18684.8
	(4599.06)**	(4774.27)**	(4741.80)**	(4683.67)**	(4625.87)**	(4730.58)**	(4663.19)**	(4663.29)**
perminc		58213.75	58665.44	57705.88	21630.21	503796.7	575168.4	200881
		(2939.99)**	(3115.87)**	(3080.49)**	(1863.39)**	(139394.70)**	(137525.20)**	(19285.88)**
zeroinc		564944.3	567262.9	551733.7		982839.3	1168524	
		(37337.42)**	(38027.75)**	(37801.62)**		(431061.50)*	(425113.80)**	
expft02			2911.73	2705.58	2690.23	2892.37	2643.43	2672.84
			(217.16)**	(215.75)**	(218.67)**	(212.85)**	(211.16)**	(210.98)**
expmiss			67989.16	75942.2	102466.1	44419.84	50474.27	50224
			(21154.82)**	(20899.92)**	(21102.57)**	(20754.99)*	(20473.55)*	(20481.97)*
exppt02			2604.42	2152.9	1045.08	2352.84	1901.47	1974.2
			(848.55)**	(838.37)*	(846.22)	(831.56)**	(820.14)*	(820.06)*
expue02			1493.02	1692.9	-1254.84	-13.5	71.55	369.49
			(1025.86)	(1012.65)	(1005.74)	(1015.22)	(1000.58)	(995.12)
notlabor			2647.52	2618.76	2002.12	2447.93	2392.21	2468.02
			(392.20)**	(387.06)**	(389.95)**	(385.39)**	(379.71)**	(378.87)**
hiedu_f				15472.44	28384.14		6084.02	6725.46
				(7423.29)*	(7470.15)**		(7273.00)	(7272.32)
hiedu_m				1314.63	741.41		3525.15	3764.24
				(20702.19)	(20982.36)		(20234.58)	(20242.92)
hiedu_p				6187.48	-5564		-3516.33	-3280.07
				(25577.56)	(25910.91)		(25004.54)	(25014.93)
inheri1				54819.06	56873.11		58446.4	58125.23
				(5936.16)**	(6014.81)**		(5806.15)**	(5807.42)**
inheri2				64082.74	63213.26		67249.93	66877.95
				(5806.58)**	(5884.86)**		(5678.91)**	(5679.69)**
inc2						-77287.59	-85772.65	-46317.75
						(14995.86)**	(14803.11)**	(3620.75)**
inc3						3674.2	3996.8	2629.66
						(534.42)**	(527.85)**	(176.85)**
Constant	66559.88	-524794	-599975	-593793.6	-221312.4	-1002938	-1193379	-30432.09
	(5541.93)**	(30471.44)**	(33712.90)**	(33295.98)**	(21674.91)**	(429784.10)*	(423768.10)**	-24062.54
Observations	7803	7803	7803	7803	7803	7803	7803	7803
Adjusted R-	0.15	0.19	0.21	0.23	0.21	0.24	0.27	0.27

Note:* significant at 5% level; ** significant at 1% level. Standard errors in parentheses
Source: SOEP 2002.

Appendix Table B.2b: OLS regressions of net worth for women.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
lmarriage	1024.25	1036.74	261.14	241.67	239.62	249.22	230.35	241.53
	(99.55)**	(103.83)**	(131.93)*	-129.83	-129.94	-131.54	-129.48	-129.53
nrmarriages		3983.69	-6766.83	-7177.72	-6440.38	-7763.13	-8109.06	-8115.71
		(3113.63)	(3346.90)*	(3293.87)*	(3290.76)	(3339.72)*	(3287.66)*	(3289.92)*
migback	-57630.47	-57942.24	-50496.54	-45171.9	-45824.98	-49307.4	-44040.14	-44615.19
	(3845.73)**	(3864.34)**	(3877.40)**	(3838.96)**	(3838.23)**	(3868.93)**	(3831.67)**	(3830.64)**
partner	-29081.36	-26273.55	-27692.74	-29562.35	-27646.02	-27268.57	-29109.73	-29456.88
	(4498.28)**	(5111.33)**	(5124.95)**	(5047.19)**	(5025.48)**	(5110.16)**	(5034.16)**	(5036.61)**
loc89east	-62168.82	-60859	-54471.22	-52617.09	-52865.19	-50771.9	-49123.29	-49818.45
	(3206.53)**	(3255.32)**	(3426.17)**	(3375.03)**	(3377.21)**	(3451.87)**	(3401.09)**	(3397.38)**
kids04	-21457	-18701.7	-3956.72	-8022.65	-10160.25	-1588.83	-5759.57	-5428.38
	(4141.32)**	(4212.53)**	(4383.72)	(4320.97)	(4286.81)*	(4393.42)	(4332.11)	(4334.02)
over65	1090.32	1425.17	455.46	664.99	434.36	687.65	878.86	915.26
	(454.15)*	(461.28)**	(478.88)	(471.64)	(468.00)	(479.52)	(472.36)	(472.57)
_Iedu_2	23850.11	23699.66	27556.39	23571.45	24107.54	28213.92	24247.19	23768.68
	(3276.58)**	(3291.28)**	(3298.19)**	(3254.76)**	(3254.35)**	(3291.05)**	(3248.68)**	(3247.92)**
_Iedu_3	35586.91	35476.23	44632.35	37853.77	39204.02	43641.04	37037.49	36592.68
	(4604.64)**	(4654.36)**	(4707.50)**	(4652.54)**	(4642.48)**	(4700.14)**	(4646.07)**	(4647.46)**
_Iedu_4	57505.34	56955.07	66003.97	53605.51	55100.38	63017.82	51154.58	50401.36
	(4761.87)**	(4811.33)**	(4877.01)**	(4939.89)**	(4927.91)**	(4898.14)**	(4958.27)**	(4956.81)**
autonom	26091.63	24733.64	27264.37	27489.93	31112.86	17450.15	18248.53	19968.92
	(5128.05)**	(5282.35)**	(5245.84)**	(5162.55)**	(5075.63)**	(5399.47)**	(5314.20)**	(5294.09)**
perminc		3861.35	3625.2	3797.16	-1531.19	210850.6	202634.9	34409.89
		(1405.23)**	(1522.20)*	(1498.78)*	(477.80)**	(50514.14)**	(49813.47)**	(8462.08)**
zeroinc		51212.75	50227.54	50079.31		459353.3	445005.6	
		(13073.22)**	(13560.58)**	(13352.82)**		(131687.60)**	(129859.00)**	
expft02			1510.98	1427.63	1510.17	1532.98	1447.12	1430.37
			(176.86)**	(174.68)**	(173.43)**	(176.43)**	(174.29)**	(174.35)**
expmiss			74982.17	82049.11	85234.28	74771.73	81709.42	82005.66
			(13661.36)**	(13454.62)**	(13439.06)**	(13616.15)**	(13413.66)**	(13422.65)**
exppt02			2418.59	2127.19	2096.76	2668.05	2362.66	2332.56
			(230.58)**	(228.02)**	(228.07)**	(232.42)**	(229.88)**	(229.87)**
expue02			-620.86	-785.1	-1148.46	-106.51	-304.07	-274.87
			(765.35)	(753.24)	(747.61)	(767.90)	(755.92)	(756.39)
notlabor			1570.48	1421.61	1337.41	1578.53	1429.12	1442.85
			(191.20)**	(188.86)**	(187.67)**	(190.72)**	(188.43)**	(188.52)**
hiedu_f				33751.01	34548.15		32281.84	33001.5
				(5956.53)**	(5957.73)**		(5943.02)**	(5943.41)**
hiedu_m				-6411.22	-6603.15		-5485.04	-7842.25
				(15001.76)	(15014.26)		(14972.85)	(14967.36)
hiedu_p				-4887.54	-6417.6		-6619.89	-3928.87
				(19504.51)	(19516.61)		(19463.17)	(19460.74)
inheri1				51744.07	51517.35		51223.24	51231.05
				(4440.93)**	(4444.25)**		(4428.08)**	(4431.13)**
inheri2				49314.67	49279.3		49478.4	49181.85
				(5206.37)**	(5210.74)**		(5191.22)**	(5194.08)**
inc2						-31253.17	-29889.49	-9223.15
						(6409.68)**	(6320.67)**	(1893.70)**
inc3						1462.81	1396	568.73
						(267.35)**	(263.63)**	(106.00)**
Constant	52764.24	10131.79	-27474.47	-28165.55	20145.55	-437019.8	-423413.5	21114.25
	(3855.02)**	(13527.82)	(15324.07)	(15091.77)	(7869.94)*	(131786.90)**	(129957.10)**	(7858.71)**
Observations	7803	7803	7803	7803	7803	7803	7803	7803
Adjusted R-squared	0.12	0.13	0.15	0.17	0.17	0.15	0.18	0.18

Note: * significant at 5% level; ** significant at 1% level. Standard errors in parentheses.
Source: SOEP 2002