MARITAL TRAJECTORIES AND WOMEN'S WELLBEING IN SENEGAL

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Abstract

Divorce and widowhood succeeded by remarriage are common for women in Africa. A key question is how such discontinuous marital trajectories affect women's well-being. Women's marital trajectories in Senegal are described and correlated with measures of voice, resource constraints and consumption welfare. Considerable selection into divorce and widowhood as well as subsequent remarriage is documented. Poorer women are more vulnerable to both dissolutions and remarriage and hence bear more of the costs while being nevertheless afforded a safety net in the form of a male protector. Marital breakdowns and their aftermaths are far from neutral in terms of women's well-being.

JEL Codes J12; I31; J16.

Key words: Widowhood, Divorce, Welfare, Women, Senegal.

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1. Introduction

Marital trajectories in Senegal are often discontinuous. Divorce is frequent and widowhood is a common predicament for women, due in particular to the fact that women marry older men. In 2006/2007, spousal age gaps (male age minus female) averaged 11.2 in urban and 12.9 in rural areas. At the same date, around 18.5% of ever married adult women were currently widows or had remarried after widowhood and 13.2% were currently divorced or remarried following a divorce.[2] Women confronted with divorce or widowhood most often remarry, and may well face one, or more, further marriage dissolutions during their lives. Remarriage appears to take place relatively rapidly: the median duration between widowhood and remarriage among those who remarry is one year. For those who are divorced it is two years.

Given how common these broken trajectories are, it is of interest to ask how they affect women's well-being. Work by economists on marital dissolution in low-income countries is relatively sparse and hardly exists for the African context, particularly with respect to divorce. There has been a bit more attention to widowhood, often indirectly through the study of female headed households (Appleton 1996 (Uganda); Chapoto et al. 2011 (Zambia); Horrell and Krishnan 2007 (Zimbabwe); and van de Walle 2013 (Mali)). Other social sciences provide the core of our knowledge in this domain for Africa. As divorces are sometimes instigated by women, they are likely not to be universally detrimental to women's welfare. In fact, it has been suggested that early divorces may be a means for women both to escape family authority, and to climb the social ladder.[3] Indeed, first and usually early, marriages are often arranged with attending benefits to both families and may be experienced as a constraint from which one can be freed through divorce. Once divorced, given the lower stakes in terms of bride price for divorcees, women have more room for choosing their next partner (Dial 2008; Hertrich 1994; Locoh and Thiriat 1995; Yade 2007).[4] In contrast, widowhood, ensuing from adverse circumstances rather than choice, is universally seen as unfavorable to a woman's situation (Locoh and Thiriat 1995).

Based on conversations with women, numerous anecdotes in the press, and the literature on the consequences of divorce and widowhood in OECD countries (Amato 2000;

[2] The statistics given here are based on PSF1 data (described below).
[3] Recently, more economists are showing an interest in the links between divorce and social mobility (Cherchye et al. 2016).
[4] In our data, average bride price paid for marrying a divorcee is about half that paid for a woman in her first marriage.

Sevak et al. 2003), one may expect to find negative consequences associated with all types of dissolution. These may or may not be tempered by remarriage so that the effects may be lasting. In unstructured, open-ended qualitative interviews conducted by two of the authors in Senegal in 2012, one of the dominant messages was that women who have the option not to remarry seized it eagerly.[5] Such women tend to talk about married life as an ordeal they are happy to be in the position to avoid. Echoed in the interviews were general preferences for non-co-residing husbands and/or mothers in law.

To date, there have been few studies of divorce or widowhood in Senegal. Antoine and Dial (2003) and Dial (2008) focus on a small selected sample of women with complex marital trajectories in Dakar only.[6] Another study using fertility surveys that estimated that 17% of all unions dissolve within the first 5 years is likely to be out of date (Smith *et al.* 1984).[7] The 2015 World Marriage Data reveal that percentages of divorced (or separated) and non-remarried women in the population have been increasing slightly since the mid-1980s for all but those below age 30. Rates were between 2 and 3% for ages 30 to 55 until the most recent period when they seem to have risen more for women over 40 than for younger ones. Current divorcees account for about 7% of women in the 45-55 age range and only 4% of those between ages 30 and 40 according to the 2014 Demographic and Health Survey (DHS) (Table A1). Given that the data do not record divorced and remarried women, this increase could be due to decreasing remarriage rates at older ages, either because age makes non-remarriage more socially acceptable nowadays or because it makes remarriage more difficult. For women aged 40-50 the percentage of non-remarried widows was higher than that for divorcees until the beginning of the 2000s. This has changed in recent years as the percentage of widows has remained fairly stable while that of divorced women has increased. The latest DHS indicates that the percentage of non-remarried widows is higher than that of divorcees only above age 50 when it reaches 12.5% (Table A2).

To our knowledge, this study is the first to directly examine the relationship between marriage dissolution and women's well-being in Senegal. We focus on women because, as a result of large spousal age gaps, and the widespread practice of polygamy, ever-married men rarely, and then only temporarily, find themselves in a non-married state. In fact, although the share of ever-married men who are currently divorced is similar to that for women (2.5% for

[5] Interviews transcribed in Lambert and van de Walle (2012).
[6] Findings in Antoine and Dial (2003) that one third of marriages end in divorce and that for the youngest generation, 25% of divorces occur within 7 years of marriage are likely to be highly specific to their sample.
[7] The survey used was part of the World Fertility Surveys.

men and close to 3% for women), many fewer men than women are currently widowers (1.3% of ever married-men versus 13.6% of ever-married women).

The chapter uses recent nationally representative data from a new household survey and data from DHSs to document Senegalese women's marital trajectories. We describe a simple theoretical framework to help clarify the potential tradeoffs faced by women considering remarriage. This provides a schematic description of the channels through which marital dissolution and remarriage may affect women's wellbeing. We then turn to the data to examine selection into marital statuses, and how different marital trajectories correlate with current consumption levels and other individual dimensions of welfare.

The chapter finds that marital breakdowns and their aftermath are far from neutral in terms of women's well-being. Our empirical findings accord well with the schematic predictions from our theoretical framework and it is challenging to imagine an alternative explanation for the patterns revealed by the data. Poorer women are found to be more vulnerable to both dissolutions and remarriage, and hence to bear more of the costs while being nevertheless afforded a safety net in the form of a male protector following marriage dissolution.

Naturally, the form a woman's marital trajectory takes is the result of myriad influences including her family and individual characteristics, social norms and chance, as well as the legal and economic setting. Selection and endogeneity are rife in women's life courses. While the evidence is compatible with our model expectations, we acknowledge that the chapter does not establish beyond doubt a one-directional causality between marital status (and its trajectories) and welfare.

Using an individualized measure of consumption and the marital status-specific parameters estimated from a consumption model, we simulate counterfactual consumption levels for women with different marital trajectories but otherwise identical characteristics. A subsequent decomposition analysis, which allows us to isolate the consumption impacts of remarriage, points to the persistent vulnerability of widows. In addition, the findings suggest that the safety net provided by remarriage is least effective in ensuring consumption levels for the most vulnerable widows who tend to remarry in leviratic marriages. We suspect such widows were left no choice but to remarry given their need for economic support, and that, as suggested by the data, many were constrained to remain within their late husband's lineage due to the presence of young (male) children. For their part, divorcees suffer from smaller consumption losses relative to women in their first union, and do not fare differently by

whether they remarry or not. Furthermore, individual characteristics that affect the quality of their marriages seem to matter in the same way for their second marriage.

The chapter begins in Section 2 with some background on the legal and institutional context for marriage in Senegal. Section 3 follows with a brief description of our data. Section 4 provides descriptive statistics on marital status and marriage trajectories before we expound on a simple theoretical framework to clarify the links between marital trajectories and women's welfare in Section 5. We examine selection issues in Section 6 and associations between marital status and women's welfare in Section 7. A final section concludes.

2. Marriage dissolution in Senegal

Colonial legislators attempted to minimize social tensions by establishing a variety of coexisting legal statuses with respect to family law, and more generally the civil code (decree of November 10, 1903). The Senegalese people could either comply with the rules of a general statute (similar to French law), or elect to fall under the prescriptions of Islamic, Animist or Christian statutes according to their beliefs (Brossier 2004; Yade 2007).[8] Nonetheless, a modern-day divorce law that gave women the right to secure a divorce was also introduced at the time. This was a major step forward for women who, until then, depended on their husband's agreement to be freed from matrimonial ties (Yade 2007). However, a wife seeking a divorce could be asked by the judge to reimburse what she and her family had received from the husband at marriage.

In 1972, more than 10 years after independence, a new set of family laws was approved. It aimed to unify the various statutes present under colonial rule. Two sources of differentiation remain that are of primary interest for our purposes as they have consequences for divorcees and widows. In addition to providing dispositions for civil marriages, the law allows for Islamic and customary marriages performed in front of witnesses to be registered ex-post in the civil register. Furthermore, the Family Code contains two chapters dedicated to inheritance rights, one for the general case and one specific to the Muslim population, which constitute 95% of Senegal's population.

Marriages recorded in the civil register can be ended by divorce. Divorce is a mandatory step for women who wish to remarry. The judge decides on the custody of children

[8] Note that Islam was already the religion of the majority of the population at the end of the 19th century and that animism is perfectly compatible with both monotheist religions present in the country. The type of Islam practiced in Senegal is in fact tinted by animist traditions.

according to their best interest. In principle, the husband can be required to provide for the subsistence of his ex-wife.

Nevertheless, a majority of religious or customary marriages are never officially registered, and in such cases, customary practices apply in the case of repudiation or divorce, without any available legal recourse for either party.[9] Islamic law is not very favorable to women in general, but as pointed out by Bowen (2017), what matters, and what differs vastly across countries, is its implementation. In Senegal, repudiation is officially prohibited but appears to remain fairly common de facto (Dial 2008). For divorce under customary law, the situation is very asymmetric between husband and wife. A man only needs two adult witnesses to repudiate his wife, while a woman can only ask for a separation with the final decision up to others. In such cases, the choice over child custody rests with the father. He can keep the children (once weaned) if he cares to. Interviews with divorced mothers of young children shows in a striking way the level of apprehension associated with the risk of losing their children at any moment, upon the father's decision.[10] Whether the husband contributes to child support when offspring remain with their mother is entirely at his discretion. In the case of an early divorce (approximately within two years of marriage) initiated by the wife, her family can be asked to reimburse the bride price. Nevertheless, we find no qualitative evidence of this actually taking place. At any rate, our data suggest that the existence of such a threat does not prevent rapid divorces (see Section 4). Riviere (1990) and Locoh and Thiriat (1995) argue that divorce in West Africa is mostly initiated by women.

In the case of widowhood, no official support systems exist other than when the late husband was a public servant (or possibly an employee of one of a few large formal sector firms, such as the electricity provider). The civil service allocates a pension to widows equal to a third of the late husband's wage, to be shared among co-wives if the husband was polygamous. Nor can a widow systematically count on inheriting from her husband. Although the statutory Family Code states that wives must inherit a share equal to that of the children, inheritance practices under Islamic and customary patrilineal laws only allocate one eighth of the total bequest to the widow, to be shared among co-wives in the case of polygamy. In practice, and particularly in the many cases where inheritance is mainly illiquid (a house for example), wives are excluded from a bequest following their husband's death; the inheritance is shared among the husband's children, with sons inheriting more, and more frequently, than

[9] In our data, 20% of marriages are declared as "civil" or "religious and civil". The remaining 80% are declared as "religious" only. This is likely to overestimate the number of unregistered marriages, but is nevertheless indicative of a low level of formalization.

[10] See Lambert and van de Walle (2012).

daughters (Lambert et al. 2014). A widow can remarry outside her late husband's lineage or in a leviratic marriage, in which she marries one of his relatives, most often a brother. This arrangement allows her to stay with the children if the paternal lineage wants to keep them. Widowed women who have the option also frequently go to live with a son. Those who have sufficient means to support themselves, usually because they have independent access to housing, often choose not to remarry, an option aided by having grown sons (Lambert and Rossi 2016).

3. Data

The main data source is the first wave of the survey "Poverty and Family Structure" (PSF, by its French acronym) conducted in Senegal in 2006-2007 and 2011 (De Vreyer et al. 2008).[11] The first wave (PSF1) provides a nationally representative sample of 1,800 households spread over 150 primary sampling units drawn randomly among census districts. About 1,750 records can be exploited. Households have unusually complex structures in Senegal (Bongaarts 2001; van de Walle and Gaye 2006). What we will refer to as a household is often a series of families related in some way and living together in a compound organized under one head and taking their meals together.

In addition to the usual information on individual characteristics, the PSF survey collected detailed information on marital trajectories. Age at first marriage and the number of previous unions are recorded for each individual. The circumstances (divorce or widowhood) of the last dissolution are known, as well as some characteristics of the previous spouse.

A further aspect of the survey that is particularly important for our purposes is that it collected detail on the structure and budgetary arrangements of each household. To best reflect intra-household structure and resource allocation, households were divided into groups or "cells" according to the following rules: the head of household and unaccompanied dependent members, such as his widowed parent or his children whose mothers do not live in the same household, are grouped together. This is in the same spirit as the procedure used for the Senegalese census of 1988 (van de Walle and Gaye 2006). Any unmarried brothers of the head would also be considered part of his cell. Each wife of the head and her children and any other dependents then form separate cells. Other women with children or other dependents, whose

[11] Momar Sylla and Matar Gueye of the Agence Nationale de la Statistique et de la Démographie of Senegal (ANSD), and Philippe De Vreyer (University of Paris-Dauphine and IRD-DIAL), Sylvie Lambert (Paris School of Economics-INRA) and Abla Safir (now with the World Bank) designed the survey. The data collection was conducted by the ANSD.

husbands are not present, are also considered cell heads. The same goes for any other family nucleus such as a married child of the household head with his/her spouse and children, or a sister of the head residing in the household with her children (typically post-divorce or while her husband looks for a job). This disaggregation emerged from field interviews as being the most relevant way to split the household into its component groups.

Consumption expenditures are recorded in several parts: first all common expenditures are collected (housing, electricity bills, food etc.). Food expenditures are compiled based on a detailed account of who shares which meal and how much money is specifically used to prepare the meal. These are the "DQ" or "dépenses quotidiennes" ─ the name the Senegalese give to the amount of money a woman has at her disposal to buy fresh ingredients for the meals of the day. Next, individual consumption is collected at the cell level (e.g. expenditures on clothing, mobile phones, transportation, and food outside the home). Finally, expenditures that are shared between several cells but not the whole household are collected.

A measure of per capita consumption can then be constructed at the cell level allowing us to identify unequal consumption levels within households. Subgroups also emerge that take some or all of their meals separately (in 17% of households), thus widening the possibility for differences in nutritional intake among household members. The data allow us to construct a relatively individualized measure of consumption that we use to assess women's individual economic welfare.

The analysis presented in this chapter is mainly based on the sample of ever married adult women (15 years of age and older), without age limit, from the 2006 PSF1 database. This sample is presented by marital status in Table 1.

A second source of data is the DHSs of 2005 and 2010 which we draw on for comparison purposes and to complement the analysis using PSF. Specifically, the DHSs assemble information on aspects of women's well-being, decision making and resource constraints that are not represented in PSF.

4. Marital status in Senegal

Given the complexity of marital trajectories, computing divorce and widowhood rates from cross-sectional data is complicated, even when surveys contain recall of past marital history data. As noted in the Introduction, PSF1 identifies 18.5% of ever married women aged 15 and older as ever-widowed. As can be seen in Table 1, the rates are similar in urban and rural areas. Regarding divorces, the overall average of 13.2% hides a higher incidence in urban

(16.7%) than in rural areas (10%). However, these numbers are a lower bound on the share of women who experience either widowhood or divorce. Nearly 7% of ever-married women have had more than one dissolution. We have no information on how the union that preceded the last dissolution ended. If we assume that all women with more than one rupture and whose last breakup occurred because of a divorce had previously been widowed, this would give us an upper bound of 21.5% of ever-married women who have experienced widowhood at least once. Conversely, if we assume that the previous dissolution of those identified as having been widowed was a divorce, the estimated upper bound to the proportion of women having suffered a divorce would be 17.3%.

By comparison, the 2010 DHS for Senegal identifies 9.2% of all women aged 15 and older as widows (9.0% in urban and 9.3% in rural), and 1.1% for those in the 15-49 age group. However, because of Senegal's high remarriage rates, these DHS statistics vastly underestimate the incidence of widowhood within a typical woman's lifespan. Looking instead at the 2005 DHS which collected more detailed information on marital history (albeit only for the 15-49 age group), 3.6 and 4.6% of women are ever-widowed in urban and rural areas respectively, reflecting rates of 2.1 and 3.8% remarried widows among women aged 15-49. There are far more ever-divorced women. The 2005 DHS identifies 13.1% of all women aged 15-49 as married but previously divorced, while it finds that 5.4% are currently divorced.[12] These numbers are in line with the PSF1 estimates, although PSF1 counts relatively more widows (6.7% of widows or remarried widows in the 15-49 age group) and fewer divorcees whether remarried or not (14.1% in total in that age group).

A notable fact is that most women who divorce eventually remarry, although fewer widows do so. Indeed, according to PSF1, 59% of divorcees and 26% of widowed women remarry. A majority remarry polygamous husbands (47% and 72% respectively compared to 36% of first married women). Half of the remarried widows are remarried within a leviratic union, among them 83% in a polygamous union.

Using the latest DHSs for a number of countries for which details on marital histories were collected, Senegal's characteristically high remarriage rate following divorce appears to be shared with other West-African countries (Table 2). In countries in the southern and eastern parts of the subcontinent, divorce rates are higher, but a much larger share of divorcees remain unmarried. Finally, countries in Central Africa have by far the highest divorce rates, with up to one-third of women having been divorced at some point in their lives in Gabon, and about half

[12] Note that separated women are included in the same category as divorced.

of them remarried. Table 2 shows that patterns of widowhood rates and remarriage are more equal across the continent; indeed, about 6% of all women aged 15-49 have been widowed and in most countries, nearly half are remarried. There are a few outliers, in particular those most affected by the HIV/AIDS epidemic (such as Lesotho, Swaziland and Zimbabwe) where the widowhood rate is considerably higher and the share of remarried widows lower.

There is naturally a strong positive age gradient in the likelihood of being widowed. The top panels of Figures 1 and 2 display the gradient by age and by marriage duration in PSF1, respectively. In Figure 1, we graph the proportion of all women of a given age (with no more than a single marital dissolution) who are ever-widowed. As expected, the share of widowed women steadily rises and at an increasing rate to reach close to 40% of women aged 50-70 and almost 80% of those aged 70 and older. In Figure 2, the y-axis gives the widowhood rate for a given marriage duration, among marriages that survived for at least that period of time.

The bottom panels of these figures show the equivalent computations for divorce rates. Here, the age patterns show a peak around the age of 40. However, divorce rates by marriage duration make it clear that those most at risk are recent marriages, since the rate of divorce is highest in the first five years of marriage.[13] This is driven by divorce in urban areas, where the divorce rate among recent marriages is more than twice as high as in rural areas, reaching an average of 1.4% per annum during the first five years (against 0.6% in rural areas). One-quarter of divorces happen within the first three years of marriage, while the median duration of marriages that ended with a divorce is 7.5 years. Divorces happen more rapidly for the younger generation, as the first quartile of the distribution of marriage duration is only two years for women under 40 against six years for women older than 40 (the corresponding medians are 5 and 14 years).These findings correspond well to the idea that some young women divorce to escape arranged marriages, while others, who may have impetuously engaged in a love marriage, tend to divorce quickly when disappointed with their husband, for example if he tries to limit their autonomy and prevent them from working or finishing their studies, as suggested by qualitative interviews.

After 10 years of marriage, a high 8% of unions have ended in divorce (Figure 3). Decomposing the sample into two cohorts (those aged below and above 40), as done in the first panel of Figure 4, reveals that the incidence of divorce has increased over time. In the second panel, it can be seen that this trend is even steeper in Dakar. In contrast, the rate of widowhood

[13] These results echo findings from the sparse literature (Antoine and Dial 2003; Locoh and Thiriat 1995; Smith et al. 1984).

does not appear to have changed over time. The corresponding graphs (not shown) for two cohorts, whether split around the age of 40 or 60, are indistinguishable.

Finally, to give a sense of overall marriage instability, it is informative to look at union survival rates by women's ages. Among ever-married women, more than one-quarter have been through one marriage dissolution by age 45 (Figure 5).[14]

Ever-widowed and ever-divorced women tend to differ primarily in two dimensions: ever-divorced women are more often urban dwellers and they are three times more likely to have ever been to a French school. This is perhaps not surprising as these characteristics permit a greater autonomy and are likely to facilitate divorce. In addition, for demographic reasons and because divorcees remarry more often than widows, widows are older, have more living children and are more often heads of their households (Table 3).

5. Marital trajectories and women's welfare

In this section, we sketch a simple model of the tradeoffs faced by women upon marriage dissolution. Widowhood can be seen as a negative shock. In contrast, divorce, since it can be initiated either by the husband or the woman herself, may be anticipated, and hence, a positive or negative development for a woman.[15] Hence, we examine each situation in turn.

To represent the various dimensions of wellbeing described by women when discussing marriage, we describe women's utility as a function of three factors: the consumption level she commands (C), her autonomy (A) and the degree of social pressure to be married that she is subject to (SP).[16] Autonomy (or bargaining power) is simply given by a woman's position in the household: for example, a household head is more autonomous than the spouse of the head, who in turn may enjoy greater autonomy than the head's daughter-in-law. Wives of higher rank in a polygamous marriage may also be in a relatively weak position. Autonomy allows self-determination and therefore brings utility per se. The utility benefits of independence and of not having to take care of a husband were clearly expressed in most of the interviews we

[14] This number is comparable to the French case (29% of highly educated and 23% of less educated women have experienced one marital dissolution before age 45, 1999 data) (Lefèvre and Filhon 2005).
[15] We interviewed both women who themselves chose divorce, and others claiming to have been surprised when their husband repudiated them. The latter were generally badly off (Lambert and van de Walle 2012).
[16] Note that this utility function ignores other dimensions of welfare often associated with widowhood and divorce, including bereavement, emotional loss, and changes in social status and identity.

conducted, as was the preference for a monogamous rather than a polygamous union. On the other hand, one's position in the household also affects bargaining power and therefore, the share of household resources one can benefit from. Thus, the level of consumption accruing to a woman depends on both the household's average level of consumption and the woman's bargaining power, as represented by her relationship with the household head. Finally, social pressure to remarry is mainly driven by two factors: age, and for widows, the gender of the progeny. Indeed, social norms make it largely unacceptable for a woman of childbearing age to remain unmarried. Young divorcees suffer from ill-repute and this social pressure imposes a utility cost on women that can be extremely high (as reflected in testimonials by interviewed remarried widows and divorcees of the difficulties of resisting family insistence on remarriage). Living with an adult son may alleviate some of this pressure. On the other hand, having a young son can render a leviratic union unavoidable for a widow if the paternal lineage insists on keeping the child.

Utility can thus be expressed as[17]:

$$U(C(C_h, A), A, SP(x)), \qquad (1)$$

where C_h is household consumption and x is a vector of individual characteristics (such as the age and gender of children) that aggravate social pressure. C_h itself is classically a function of household characteristics that are not detailed here. A will belong to [-1; 1], with the value 1 corresponding to a situation of greater autonomy, and -1 corresponding to a highly subordinate position. For illustrative purposes (and simplicity of exposition), let us assume in what follows that A can take only three values: -1, 0 and 1, describing a subsample of the possible situations. Examples of cases where A takes each specific value could be 1 for an un-remarried head of household; 0 for a woman in a monogamous first marriage and -1 for a higher ranked wife in a polygamous leviratic second union (a likely fate for many remarried widows).[18] SP varies between 0 and 1, taking the value 0 when the marital status of a woman doesn't give rise to any social disapproval and 1 when the risk of disrepute is at its maximum (young divorcee).

U_m is the utility level of a once-married woman.[19] This can be written as $U_m = U(C(C_{hm}, 0), 0, 0)$, where C_{hm} is the consumption level of the household of a woman in her first marriage.

[17] For generality, we allow A to enter on its own, but this does not change anything.

[18] Clearly, these are only examples and for each woman, the exact level of A will depend not only on the general characteristics of the marriage (monogamous or not, leviratic or not…) but also on the husband's characteristics and the quality of the match. Hence, a wife in a monogamous first union may well end up with a much lower level of A if she lives with her in-laws while a higher ranked wife in a polygamous union may be given considerable freedom, the more so if she is no longer of child-bearing age.

[19] In this chapter once-married refers to a currently married woman who has only ever been married a single time.

When she becomes a widow, her utility changes to $U_{wy} = U(C(C_{hw}, 1), 1, 1)$ if she's young and to $U_{wo} = U(C(C_{hw}, 1), 1, 0)$ if she's old enough to avoid social pressure. C_{hw} is the consumption level in the household after the death of the husband. The gain in autonomy results in a positive boost in utility. On the consumption side, it is likely that $C_{hw} < C_{hm}$ since an income earner has passed away. For women with no education, no son to provide support, no pension, and living in rural areas, this drop may be very severe. Nevertheless, the increased access to household resources due to A=1 may in some cases be such that $C(C_{hw}, 1) > C(C_{hm}, 0)$, so that being a widow doesn't necessarily entail a loss in individual consumption.

A widow then considers whether to remarry or not. Upon remarriage, her utility will reach $U_{wr} = U(C(C_{hwr}, -1), -1, 0)$. C_{hwr} is the consumption level of the household into which she can remarry. It may be relatively low, as a widow is not in a good position to choose a desirable match. Further, her position in this new marriage (in many cases as a higher ranked wife in a polygamous union) may provide her with very low bargaining power.

When a young widow chooses to remarry, it must be that $U_{wy} < U_{wr}$, and this can occur even though $C(C_{hw}, 1) > C(C_{hwr}, -1)$. This implies that this widow remarries despite a loss in consumption and a loss of autonomy, only because social pressure is unbearable.

We can therefore expect to see two types of widows remarrying: those for whom the social pressure is simply too costly (young ones), and those for whom the drop in consumption associated with the first husband's death is overly large. The consumption consequences of remarriage could be very different for the two widow-types. Those who remarry because of social pressure could well experience a considerable consumption cost, particularly if constrained to remarry in a given lineage and therefore deprived of the possibility of a more advantageous match. On the other hand, even if their situation worsens relative to their first marriage, impoverished widows may limit the consumption shock through remarriage.

When considering the trajectories of divorcees, the main difference is that remarriage possibilities may be anticipated, especially when the wife initiates the divorce. Upon divorce, a divorcee's utility level is given by $U_{dy} = U(C(C_{hd}, 1), 1, 1)$ if she is young and $U_{do} = U(C(C_{hd}, 1), 1, 0)$ if she is old. After remarriage, in a way similar to what was described above for widows, utility reaches $U_{dr} = U(C(C_{hdr}, 0), 0, 0)$. Here, autonomy is set at 0 (rather than -1) to take into account the fact that divorcees seem to have better remarriage prospects than widows, as, on average, they have more control on the timing of their search for a new partner.

It is likely that a woman would not initiate divorce if all these utility levels (figuring all the possible outcomes) were far below the utility level enjoyed in the first marriage. Hence, women who chose to divorce foresee either a sufficient income on their own and a bearable

level of social pressure, or relatively good remarriage options. We can expect the most educated and urban women to more often remain on their own, and those without such assets to more often remarry. Marriage may be a good way to compensate for a lack of individual income generating capacity. Given self-selection, it is a priori unclear whether divorcees will on average be better off when remarried or not.

Repudiated wives, on the other hand, may suffer greater consumption losses and huge social pressure. They are likely to remarry but remarriage may not fully compensate in terms living standards in this case.

6. Determinants of current marital status

Following on the simple theoretical framework outlined in the previous section, we now turn to the data to investigate potential selection not only into widowhood and divorce but also into remarriage, an issue not previously identified in the literature. We've argued that there is a strong presumption of differential selection into marital status. We try to dig deeper into the determinants of being in one status or another. Trajectories are decomposed into several successive steps. We first discuss the individual level correlates of widowhood and divorce, followed by those associated with remarriage, and finally those that correlate with various aspects of marriage quality.

6.1 Selection into widowhood and divorce

Tables 4 and 5 show how the probabilities of widowhood and divorce, and of remarriage, are correlated with women's individual characteristics. Older women understandably have a higher probability of widowhood (Table 4). Age is also significantly associated with divorce, although in a less pronounced way. Characteristics typically associated with higher standards of living are negatively correlated with becoming a widow; this is true for both the socioeconomic category of the deceased husband (men employed in the formal or public sector are more likely to survive) and for the wife's own level of education. This strongly suggests that widows are selected among relatively poorer women as has been found elsewhere.[20] In Senegal, this may reflect the negative correlation between income and life expectancy which has been well-documented worldwide (see, for example, Feinstein

[20] For example, on the basis of longitudinal data on health and retirement for the U.S., it has been shown that, allowing for the fact that poorer men are more likely than other men to die young, widows, and particularly young ones, are more likely to come from poorer households (Hurd and Wise 1989, Sevak et al. 2003).

1993), or the lower quality of the sanitary environment and access to health care of poor households. Furthermore, we also observe a greater spousal age gap in poorer households, mechanically increasing the probability of widowhood for poorer women. Nevertheless, there is also a surprising negative correlation between rural residence at the time of dissolution and widowhood.

With respect to selection into divorce, the story is somewhat different. This is expected as, unlike with widowhood, divorce results from the choice of at least one spouse. A husband's positive characteristics are associated with a lower probability of divorce, while a wife's positive characteristics (education) are positively correlated with divorce. Furthermore, urban areas see more divorces. This suggests that women who have the means (social as well as economic) to exercise their independence are more likely to be divorced, probably often at their own initiative. That said, women appear to be less willing to divorce men with desirable economic situations.

6.2 Selection into remarriage

Table 5 presents the correlates of remarriage following a dissolution, while Table A3 presents the rural urban decomposition of those estimates. Age at dissolution is the strongest correlate of remarriage for both divorcees and widows. Indeed, if the dissolution happens before the age of 25, the probability of remarriage is 1.8 times higher for widows and increases by more than 60% for divorcees, relative to the situation in which the dissolution happens after age 40. Women with more traditional backgrounds are more likely to remarry (in particular after widowhood): this holds for rural dwellers, daughters of polygamous men, and women who were fostered in childhood. There may be different reasons for the latter two correlations, from a larger kin network to a better acceptance of polygamy. Irrespective of the age at dissolution, a polygamous husband awaits three-quarters of women who remarry following widowhood, and half of those who do so after divorce. Conversely, educated women, who are more likely to be divorced, are also more likely not to remarry following divorce (this is driven by urban divorcees). Finally, having a son from the previous union is correlated with lower remarriage for divorcees (a result driven by rural women).[21] Various channels may explain this correlation. On the one hand, for divorcees, having a grown-up son has a positive impact on consumption level (see table 15), suggesting the possibility of material support that makes remarriage less necessary. On the other hand, it may be more difficult to retain custody of a

[21] See Table A3.

son after remarriage. Finally, women who do not yet have a son, may feel the urge to remarry to maximize their chances of ever bearing one. Conversely, widows without children from the late husband are less likely to remarry, probably because levirate marriage is less of an option for them. As shown in Table 6, levirate unions are prevalent mainly in rural areas. Among widows who remarry, having a son from the previous union is strongly associated with remarrying into the deceased husband's family (levirate). Here again, women's education is associated with a somewhat lower probability of this traditional practice.

6.3 Remarriage quality

Correlations observed in the DHS data between marital characteristics and women's autonomy (see Table A5) suggest that a "good" marriage is a monogamous one, without cohabitation with the in-laws and/or the husband. We therefore investigate the correlates of such "good" quality remarriage for remarried women in Tables 7 and 8, respectively for widows and divorcees, recalling that widows are more likely to remarry as higher ranked wives in polygamous unions. In addition, a civil marriage (for the protection it provides), a husband working in the formal sector, and the possibility of living with one's children from the previous union seem to be other desirable characteristics. Correlations with the latter characteristics are presented in Tables 9 and 10.

A late dissolution is associated with a lower probability of cohabitation, in particular, when the woman has passed child-bearing age, and especially so for ex-widows (Tables 7 and 8). At the same time, it is related to a higher likelihood of remarriage in a polygamous union. Widows with children from a previous union are less likely to cohabit and even less so for those with a son at the time of dissolution.

Divorcees who have been to a French school and who were fostered before age 15 (two correlated characteristics) appear better able to avoid polygamy; yet having been brought up with a polygamous father increases the likelihood of marrying into a polygamous union, maybe because it facilitates acceptance of this type of marriage.

Having been to a French school, having been fostered in childhood and having had a monogamous father all correlate with marrying a husband with a formal sector job, and more so for widows than for divorcees. Finally, living in a rural area at the time of dissolution is unfavorable as it reduces access to husbands with formal jobs and increases the likelihood of polygamy.

Living in a rural area is associated with other negative outcomes (Tables 9 and 10): divorcees in rural areas are less likely to have a civil contract for their marriages (this is true

for widows as well); they are more likely to live with their in-laws, and are more at risk of not living with children from their previous union. Having a son from the previous union is positively correlated with the probability of living with children from the previous union after remarriage.

Interestingly, when we compare these results with the correlates of marriage quality in these various dimensions for women in their first marriage, it appears that a woman's education is associated with protection against polygamy and a higher probability of a civil marriage in the same way for them and for divorcees when they remarry. Conversely, it does not go hand-in-hand with such a protective role for widows upon remarriage (see Table A4 for women in their first marriage).

Finally, we examine whether a new marriage is associated with social mobility through the relative characteristics of ex- and current husbands. Concentrating on women whose first marriage was with a man working in the informal sector, we look at the correlates of a second husband working in the formal sector. Table 11 shows that the chances of marrying 'upwards' are higher for women whose ruptures occurred relatively late (after age 40) and who have some formal education. There are insufficient observations for women first married to men with formal sector jobs to explore the correlates of downward mobility.

7. Differences in welfare levels

To investigate associations between marital status and women's welfare, we first turn to some non-monetary individual welfare indicators as well as measures of decision making power and resource constraints available from the 2005 DHS. We then examine individualized measures of consumption using PSF1.

7.1 Measures of well-being, decision-making, and constraints

The focus of Tables 12 and 13 is all ever-married women aged 15-49. Table 12 begins with some descriptive statistics on key characteristics that arguably reflect aspects of a woman's living standards and well-being. It can be noted that close to one-quarter of this group have had a union dissolution.

Controlling for age (as women married only once are on average younger - column 2), there doesn't seem to be any difference in body mass index (BMI) correlated with marital status (column 5).

Differences appear in nearly every other dimension. Urban remarried widows live in significantly more asset-poor households than do once-married and widowed women, while urban divorcees are members of significantly richer households. In rural areas, ever-divorced women reside in less asset-poor households.

Current widows are about twice as likely as their remarried counterparts to have inherited most of their deceased husband's property suggesting a degree of autonomy and one reason for why they have not remarried. Finally, the last two columns of Table 12 show the percentages of women who were born in rural areas but now live in urban areas, and vice versa. The first could reflect an escape from more stringent social norms, as suggested by the higher shares of widows and ever-divorced women who have followed this path. Alternatively, such women may have married into an urban family and simply remained there when the union ended. Likewise, being urban-born and ending up in rural areas may be interpreted as a worsening of life conditions, and we see that current divorcees and widows are significantly less likely to have made this move. But, here too, an alternative story is selection into a rural marriage prior to the husband's loss.

Taken together, the statistics presented in Table 12 are consistent with a situation in which women who remarry are mostly those who cannot afford to remain husbandless, and despite remarriage, appear to be living in poorer households.

Women are asked various questions whose answers can be interpreted as indicative, or related to, their levels of voice within the household and the constraints they face. A number of suggestive patterns emerge when we examine how these vary with marital status (Table 13). Widows are the least likely to report having no say over decisions that affect them and their households, undoubtedly reflecting the fact that they are more often household heads. Women in their first union are the most likely ones to have no say in decision-making, with remarried divorcees not far behind. Divorcees and ex-widows fall somewhere in-between, exchanging rankings depending on the activity.

In seeking health care for oneself, getting permission is a constraint faced by at most 5-6% of Senegalese women, and appears not to be strongly associated with marital status. A much larger share of women point to a cost constraint, with the health care of remarried and current widows being the most liquidity constrained, at 71% and 68% respectively, and once-married women the least constrained at 55%.

Incomes are not typically pooled across the members of a Senegalese household. Women contribute their labor to the household enterprise and its overall care, but their own earnings are in general for their own and their dependent's non-food needs. Women are asked

what share of their earnings is spent on the household. The data suggest that on average around one-third of women contribute none of their own earnings to household needs. The one exception among marital statuses is for remarried widows, of which only a low 17% surrender none of their earnings. Indeed, they are more likely to give up more than half of their personal earnings than other women (34% versus 16% for married and 21% for ever-divorced women). The one exception is widows, who, since they more often head their households, are expected to do so. These statistics are consistent with the idea elaborated in Section 5 that widowed women without resources or a place to live often remarry poor men who can provide a degree of social insurance, but not much more than food and shelter.

Adult female DHS respondents were asked about whether a husband is justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses sex, or burns the food. The responses follow the same patterns across women (only two are shown). Widows and divorcees are least likely, and remarried widows most likely to agree that a husband is justified in beating his wife. Here again, remarried widows stand out as in a particularly weak position.

Among women, a larger share of remarried widows never watch television (43%) followed by women in their first marriage (32%) and remarried divorcees (27%). Current widows and divorcees are most likely to watch TV and access information and entertainment on a frequent basis. Such statistics could reflect economic constraints although alternative explanations are also possible (such as a lower burden in terms of household chores).

The above are simple correlations for which one should of course be cautious about making causal interpretations. Note, however, that the associations between the descriptive statistics and potential indications of decision making power and constraints faced are consistent with our simple theoretical framework and many of the relationships that emerge from PSF in what follows for women by marital status.

7.2 Differences in consumption levels

7.2.1 A consumption model

Using the PSF survey, we can document women's average consumption levels by marital status for each of the five groups considered (widow (*W*), remarried widow (*MW*), divorcee (*D*), remarried divorcee (*MD*), first marriage (*M*)). Simple descriptive statistics show that unconditionally, current divorcees and widows have the highest average cell per capita consumptions and, along with ex-divorcees, reside in higher per capita consumption

households (Table 14).[22] Remarried widows fare the worst on average, and particularly when they are in a levirate marriage with log average cell consumption of only 12.06 as opposed to 12.22 for all remarried widows. Widows remarried outside the lineage of their late husband enjoy a level of consumption more than 30% higher than those in levirate unions. This may reflect the fact that remarried widows are different from other women in a few dimensions. As we saw in Section 6, they indeed cumulate a double negative selection: selection into widowhood, which suggests they were from relatively poorer backgrounds to begin, and selection into remarriage, with rural dwellers among them remarrying more often. Negative selection is even stronger for those remarrying one of their late husband's kin. Such disadvantage could also be due to remarriage itself, if entering into a second union after widowhood confines women to weak bargaining positions within their new households.

To isolate the consumption implications of marital status itself from those of selection on the basis of observable characteristics, we conduct a decomposition analysis.

Table 15 presents regressions for women by marital status group of the log of cell consumption per person for the *i*th woman against a vector of attributes x_i. This set of regressions can be written as:

$$\ln C_i = \sum_{\forall j} (\alpha_j + \beta_j x_i + \varepsilon_{ij}) S_{ij} \qquad (j = M, W, MW, D, MD) \tag{2}$$

Here, all parameters are marital status-specific, ε_{ij} is an error term, and $S_{ij} = 1$ if woman *i* is a member of group j and $S_{ij} = 0$ otherwise. Noting that $\sum_{\forall j} S_{ij} = 1$, we can re-write (1) such that the parameters for marital-status groups are evaluated as deviations from mean points for a given reference marital-status group *k*:

$$\ln C_i = \alpha_k + \beta_k x_i + \varepsilon_{ik} + \sum_{\forall j \neq k} [\alpha_j - \alpha_k + (\beta_j - \beta_k) x_i + \varepsilon_{ij} - \varepsilon_{ik}] S_{ij} \tag{3}$$

Estimating the model in this way also facilitates testing for the equality of the parameters. A special case is when only the intercepts differ, in which case the model is equivalent to running a regression with dummy variables for marital status.

We then use each group's own estimated parameters to predict consumption for a fixed reference group's mean covariates. For example, using the mean attributes of remarried widows ($\bar{x}^{MW}$) allows us to determine how much worse-off remarried widows are on average purely because they are remarried widows; this entails estimating for marital-status group *j*:

[22] Descriptive statistics on the five groups are given in Tables A6-A8.

$$E_j[\ln C_i \mid MW_i = 0, x_i = \bar{x}^{MW}] - E_j[\ln C_i \mid MW_i = 1, x_i = \bar{x}^{MW}] \quad (4)$$

$$= \alpha_j + \beta_j \bar{x}^{MW} - \ln \bar{C}^{MW} \quad (5)$$

(Here $E_j[.]$ denotes the expectation formed over the parameters and error term distribution for group *j*, while $\ln \bar{C}^{MW}$ denotes the mean of log consumption for *j=MW*.)

7.2.2 Correlates of consumption

The regressions control for individual and household characteristics that tend to be important in the Senegalese context and are common across all three groups of women. These include age, age squared, and age at first marriage; log household and cell size; the share of children in the cell; and a series of dummy variables for whether the woman was fostered as a child, attended a French or a Koranic school, has a son aged 18 or older, belongs to the household head's cell, is head of her own cell, (current or ex) husband's occupation (informal or formal sector or other, with agriculture the left out option), whether the current (or previous, for ever-widowed and ever-divorced women) marriage is (was) polygamous, and whether the woman lives in an urban or rural area.[23]

There are some notable differences in the models across marital-status groups. A higher age at marriage is associated with significantly higher consumption for once-married women, but not for women in other groups. Larger household size is associated with significantly lower consumption for all except remarried widows. However, not all the differences in coefficients are statistically significant. Taking once-married women as the reference, one can only reject the null that the coefficient on age at first marriage is different for widows, and the same is true for the coefficients on log household size but with respect to remarried widows. A higher cell size, and cell share of children are associated with lower consumption for all groups, although the first is only significantly associated with consumption for married and divorced women. But again, tests of the differences in coefficients relative to once-married women show that they are statistically indistinguishable from each other.

There are high returns associated with education. Having attended a French school has a substantial and highly significant (and statistically indistinguishable) return for all women.

[23] Other variables— potentially relevant to living standards but not shared across the groups— were tested. For all currently married women, whether the husband co-resides and number of co-wives; for previously married women, the number of past dissolutions and ex-cowives; for remarried women, the duration of widowhood/ divorce prior to remarriage. Only the number of dissolutions is ever statistically significant and this for widows (with 1.3 the average number of dissolutions) at the 5% level (β_W =-0.13, t = 2.10), and for divorcees (1.4), β_D =-0.15, t = 1.7). As other coefficients also change when these covariates are included, predicted effects on consumption (see below) are altered only slightly. We restrict the model to the same covariates across groups.

Koranic education is correlated with higher cell consumption for widows and women who have remarried. Indeed, controlling for age and other covariates, the effects of Koranic schooling on consumption are about the same as having attended a French school for ex-widows and half as much for ex-divorcees and widows. However, relative to once-married women, the difference is significant for ever-widowed women only. Having a son older than 18 appears to be a significant asset for divorcees.

The largest boost to the consumption of remarried women is having had a formal public or private sector employee as their (now deceased) husband. For ex-widows this effect (β =0.721, t-stat=4.07) far outweighs that of any other covariate. It likely captures the effect of receiving a pension and being able to keep it for one-self, as a source of personal income. For both groups, having had a husband in the informal and 'other' sectors is also associated with higher consumption, although tests reveal these not to be statistically different from that estimated for other women. Urban location significantly boosts consumption for all groups. The high coefficient for once-married women is only statistically different from that estimated for ex-divorcees.

7.2.3 Differences in predicted consumption by marital status

The results in estimating Equation (5) are given in panel 1 of Table 16, where consumption is evaluated for the mean attributes of *MW,* and for 10-year age ranges with the first cutoff at age 40, and urban and rural areas separately. This gives a first insight into the question of how much worse- or better-off remarried-widows would be if their marital status changed. The table's second and third panels do the same for widows and once-married women, respectively using the mean attributes of widows and of once-married women in the various age groups.

Consumption differences are substantial when evaluated for the mean characteristics of ex-widows. In both urban and rural areas, and for most ages, ex-widows tend to have the lowest average per capita consumption. The differences are largest and most significant at young ages and dissipate as women age due to a positive age effect on consumption for remarried widows. Rural widows are an exception, with insignificant differences at all ages. Urban remarried widows would have been better off in any other marital status and, in particular, had they remained husbandless. There are two potential explanations for such a result. On the one hand, it could be that remarried widows differ in some unobserved characteristics (potential support from kin network or personal savings, for example) such that

they are relatively poor and cannot support themselves without a husband. This would be consistent with the fact that the results are in large part explained by the very low constant term in the consumption equation for ex-widows relative to any other groups. On the other hand, it could also be, as posited earlier, that remarriage itself is not really a favorable outcome. Widows who remarry may be constrained to do so for social reasons (especially in the case of levirate marriages) and may end-up marrying into relatively poor households or with a weak position within the household due to their marital trajectory.

Panel 2 shows consumption differences when characteristics are fixed at the mean for W but parameters are allowed to vary by marital status. In urban areas, widows would be worse-off as MW or MD throughout the age distribution. W also fare better than MW in rural areas, although the difference is statistically significantly different from zero only for the youngest group. Widows in rural areas do not seem to fare substantially worse than other marital-status groups. Differences favour these other groups but hardly ever significantly so. In total, widows who didn't remarry seem to have chosen the best option given their characteristics.

Finally, panel 3 fixes characteristics at the mean for M women. In urban areas, once-married women would be worse-off with their own characteristics but the parameters of the other groups. This is particularly true for MW and MD, for whom the predicted changes in consumption are statistically significant. Rural M women would generally have lower consumption levels in any other status and significantly so as MW under 40. Generally speaking, women in their first marriage seem to benefit from this unbroken marital trajectory.

The same exercise can be done using divorcees as the reference group. Results (not shown) indicate that divorcees would not have fared very differently had they stayed in their first union. Conversely, once-married women fare better than if they had ever been divorced, hinting at the positive selection of women into divorce.

Comparing widows and remarried widows for a given age at dissolution suggests that, in urban areas and given their characteristics, widows fare better as widows than they would do as remarried widows whatever their age at widowhood (Table 17A1). Here again it is also the case that remarried widows would fare better if not remarried, irrespective of age at dissolution. In rural areas, the difference in the predicted consumption of these women according to whether they remarried or not is never significantly different from zero. The same results are found if we examine duration since widowhood (Table 17B1). After a divorce, whatever the age at divorce or the duration since divorce, women have the same consumption level given their characteristics whether they remarried or not (Tables 17A2 and 17B2).

7.2.4 Discussion

Differences reflect both the consequences of a given marital trajectory and the selection processes that push or pull women into those pathways. One interpretation of these findings consistent with what we know is as follows. Women who become widows and remarry often do so out of necessity, encompassing the two non-mutually exclusive burdens underlined in the conceptual framework: a lack of resources and strong social pressure. Such women would appear to consist on the one hand, of a group of poorer women with little fallback position in the event of their husband's death, and on the other, of women who, due to social pressure, are compelled to remarry, often within their late husband's lineage. Their vulnerability is not captured by commonly considered observables such as education, age, place of residence, and the type of job held by the deceased husband, as otherwise we would expect to find them better-off when remarried rather than not (contrary to results presented in panel 1 of Table 16). Clearly the unobserved characteristics along which they differ from those who do not remarry explains part of the consumption gap. Comparing them with once-married women (less likely to be selected than widows), it appears that for them there is a large economic loss associated with widowhood at all ages. Remarriage does not, however, compensate them fully for such loss. Widows, on the other hand, do not seem to incur an economic cost from their marital status, pointing to a potential positive selection for those who do not (choose to) remarry.

8. Conclusions

Marital upheaval is frequent in Senegal. Using data from the 2006 Poverty and Family Structure household survey, we estimate that anywhere between 18.5 and 21.5 percent of ever-married Senegalese women have experienced widowhood, while somewhere between 13.2 to 17.3 percent have experienced a divorce. Many go on to remarry, and 7 percent of ever-married women have more than one union rupture. For women, discontinuous marital trajectories are associated with different consequences according to whether they ensue from divorce or widowhood.

In general, we find that poorer women, as identified by lower education and the deceased husband's inferior sectors of employment, are more likely to become widows than better off women. When it comes to divorce, it is urban and more educated women who exhibit a higher probability. Poorer women among both the widowed and divorced are more likely to remarry often joining a polygamous union, and for widows, a leviratic one.

Confirming descriptions for sub-Saharan African countries by sociologists, and in accordance with the fact that divorce may be chosen, our analysis suggests that divorce is a means for some women to escape family authority and gain a relatively comfortable autonomy; while widowhood is correlated with more negative consequences in terms of welfare. In fact, current divorcees enjoy a higher level of consumption than any of the other groups of women we consider. This may be related to formal education which clearly plays an important role for divorcees. First and foremost, divorcees are more likely to be educated women. Upon divorce, higher education is correlated with a lower likelihood of remarriage, probably because these women have the economic and social possibilities to enjoy autonomy while maintaining an adequate standard of living. For those who do remarry, education is associated with better quality unions in various dimensions: more civil marriage contracts, husbands with formal sector jobs, and a lower likelihood of a polygamous husband.

Although education is associated with a lower probability of widowhood, more education is not related to increased social mobility for widows (although when they remarry it is less likely to be in a leviratic marriage and more likely to be with a man holding a formal sector job). This may be linked to the fact that widows observed in the sample are on average older and therefore less educated than the average divorcee, as well as to differences in ages at dissolution. Although education opens marriage market options for relatively young women, it may not do so for women who are beyond child-bearing age. Over all, widowhood appears to be accompanied by negative consequences that are not mitigated by remarriage. This ensues from a double negative selection: first, poorer women are more likely to experience widowhood. Second, it seems that the most vulnerable among widows are those who are compelled to remarry (rural ones) and, for the uneducated ones and those who have a son with the deceased husband, to enter a leviratic marriage. Leviratic marriages are associated with the lowest consumption levels. There are two competing interpretations for this finding. Leviratic marriage may be the only option for very poor widows, and happens mainly in very poor lineages. Alternatively, such marriages may act like a poverty trap for those women who cannot afford to refuse it, either because of a lack of independent means or because it is the only way to remain with their children. Those who can afford not to remarry do so, maintain a level of consumption comparable to that of women in their first marriage, and thereby gain autonomy. However, differences in observed characteristics between widows and remarried widows do not suffice to explain the consumption gap. Thus, a worry remains that the causality runs the other way around, with remarried widows becoming vulnerable because of remarriage: as social pressure to remarry pushes them to enter a union with a status that may

well be worse than that of other married women. Inquiry into the direction of causality is beyond the scope of this paper but is clearly of importance. If social pressure makes remarriage unavoidable for some women, even at a cost in living standards, the implementation of social transfers to widows together with changes in child custody practices aimed at establishing the preeminence of the rights of parents over those of the paternal lineage, could contribute to alleviate this plight

The correlations and analysis presented in this chapter underscore the relevance of marital status to women's welfare and suggest lower levels of well-being and autonomy for women and particularly widows, who have remarried following a dissolution.

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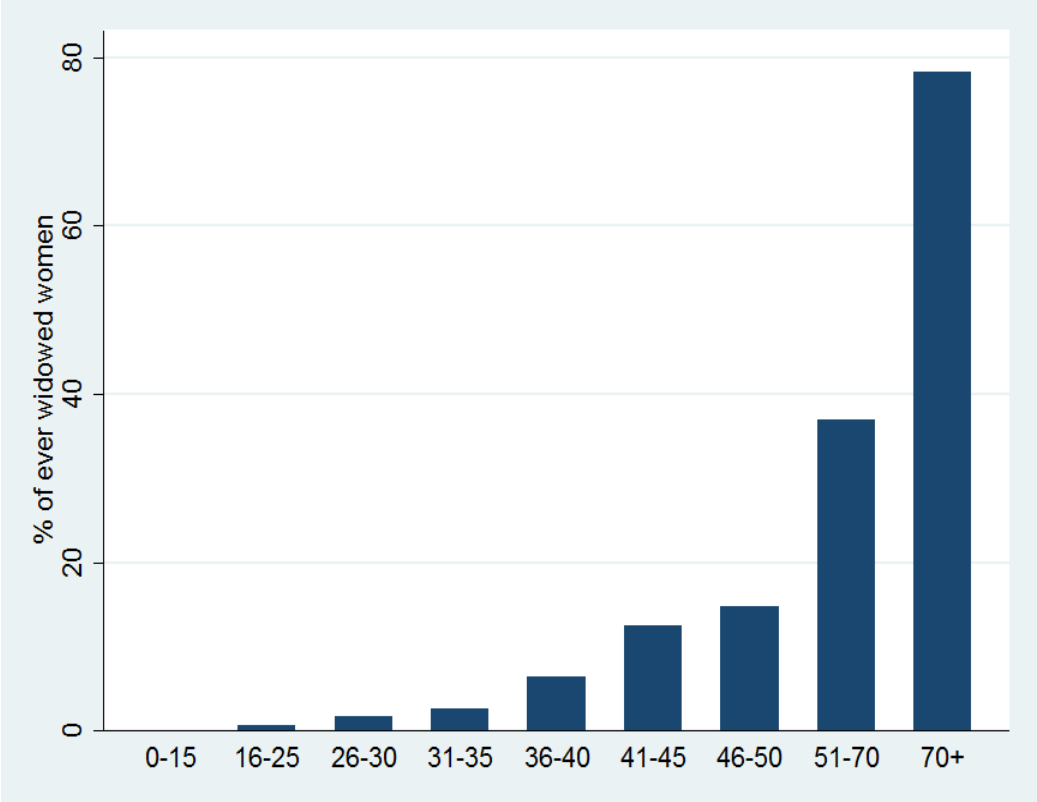
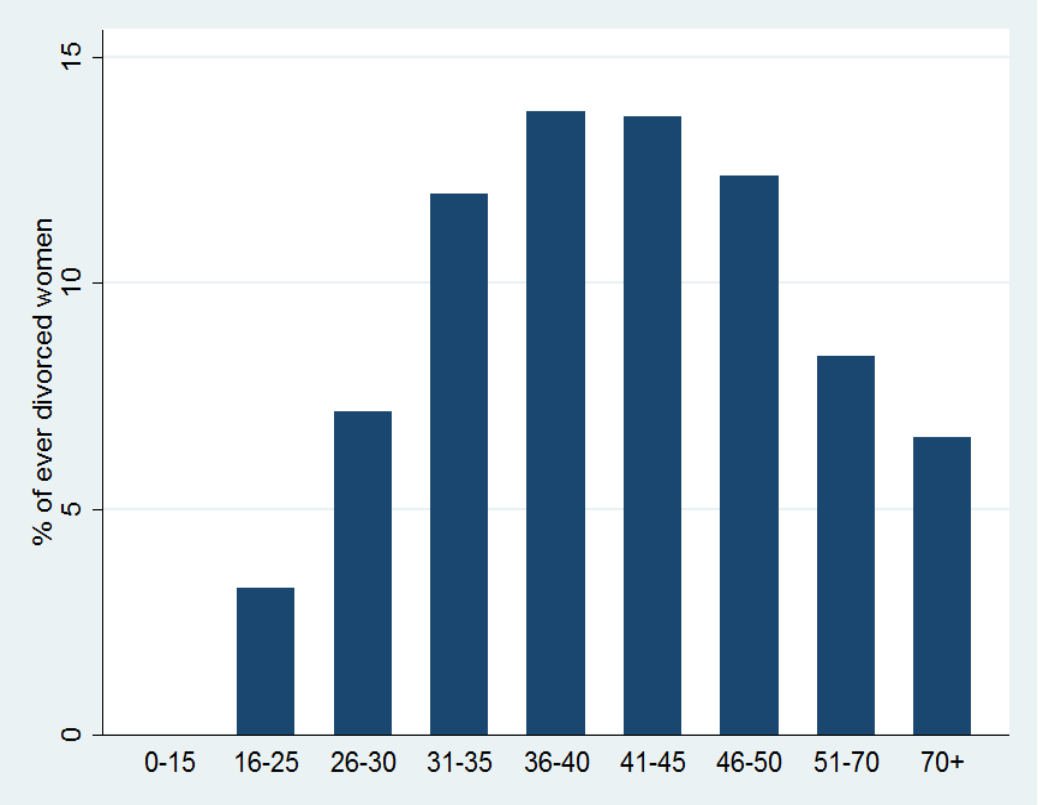
Figure 1: Percentage of ever-widowed and ever-divorced women by age groups, all areas

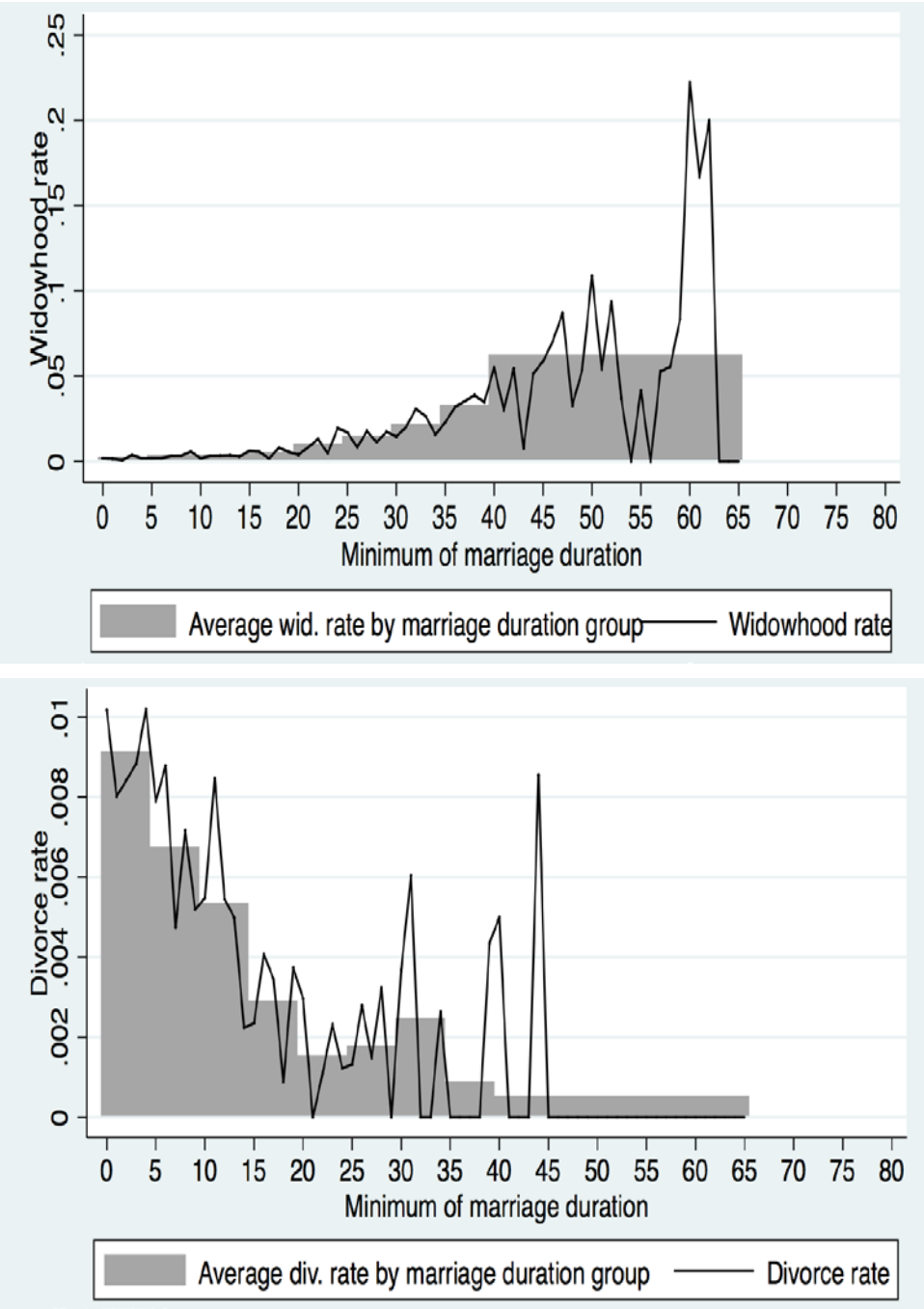




Note: Sample of all women with at most one marital dissolution.

Source: authors' calculations using PSF1.

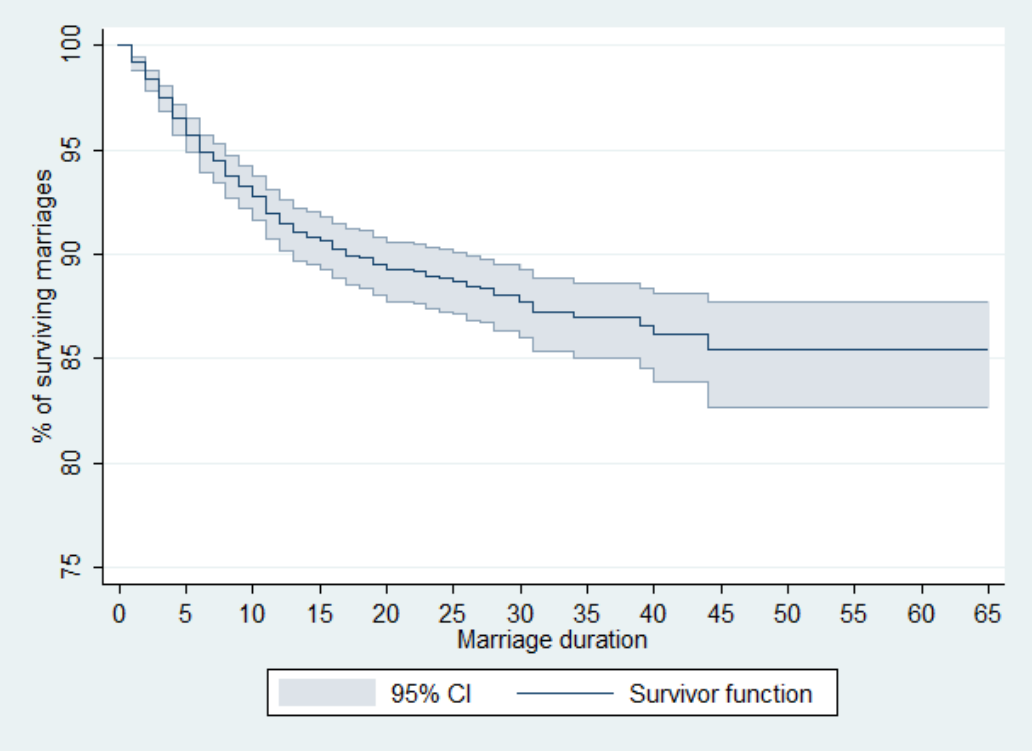
Figure 2: Widowhood and divorce rates by marriage duration, all areas



Note: upper panel = widowhood rate for a given marriage duration, among marriages that survived for at least that period of time. Lower panel = divorce rate for a given marriage duration, among marriages that survived for at least that period of time. Sample of women 15 and older with at most one marital dissolution.

Source: authors' calculations using the PSF1.

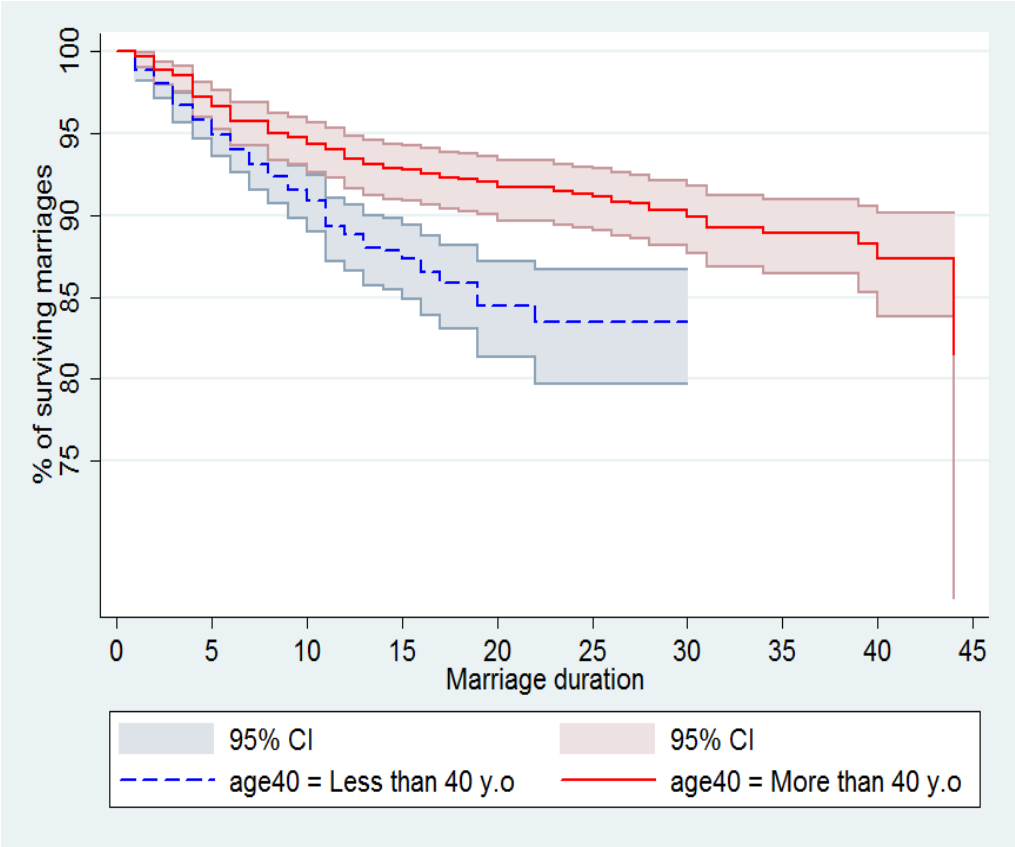
Figure 3: Share of marriages ending in divorce by marriage duration, all areas

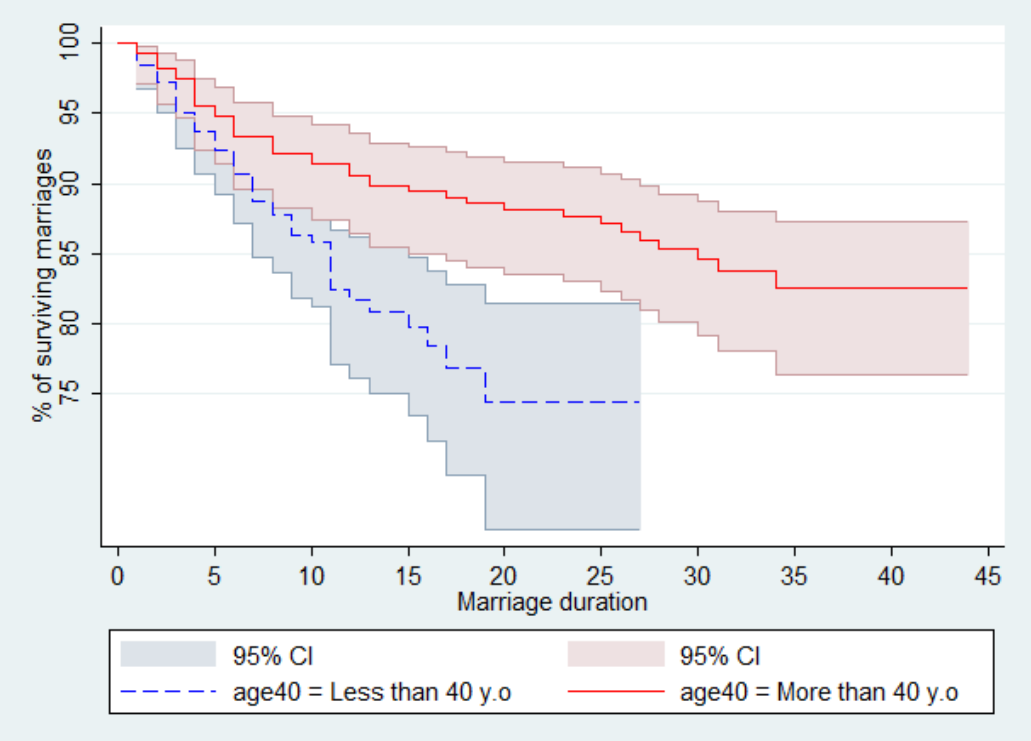


Note: sample of women 15 and older with at most one marital dissolution.

Source: authors' calculations using PSF1.

Figure 4: Heterogeneity in the incidence of divorce over time and space; upper panel, all areas; lower panel, Dakar

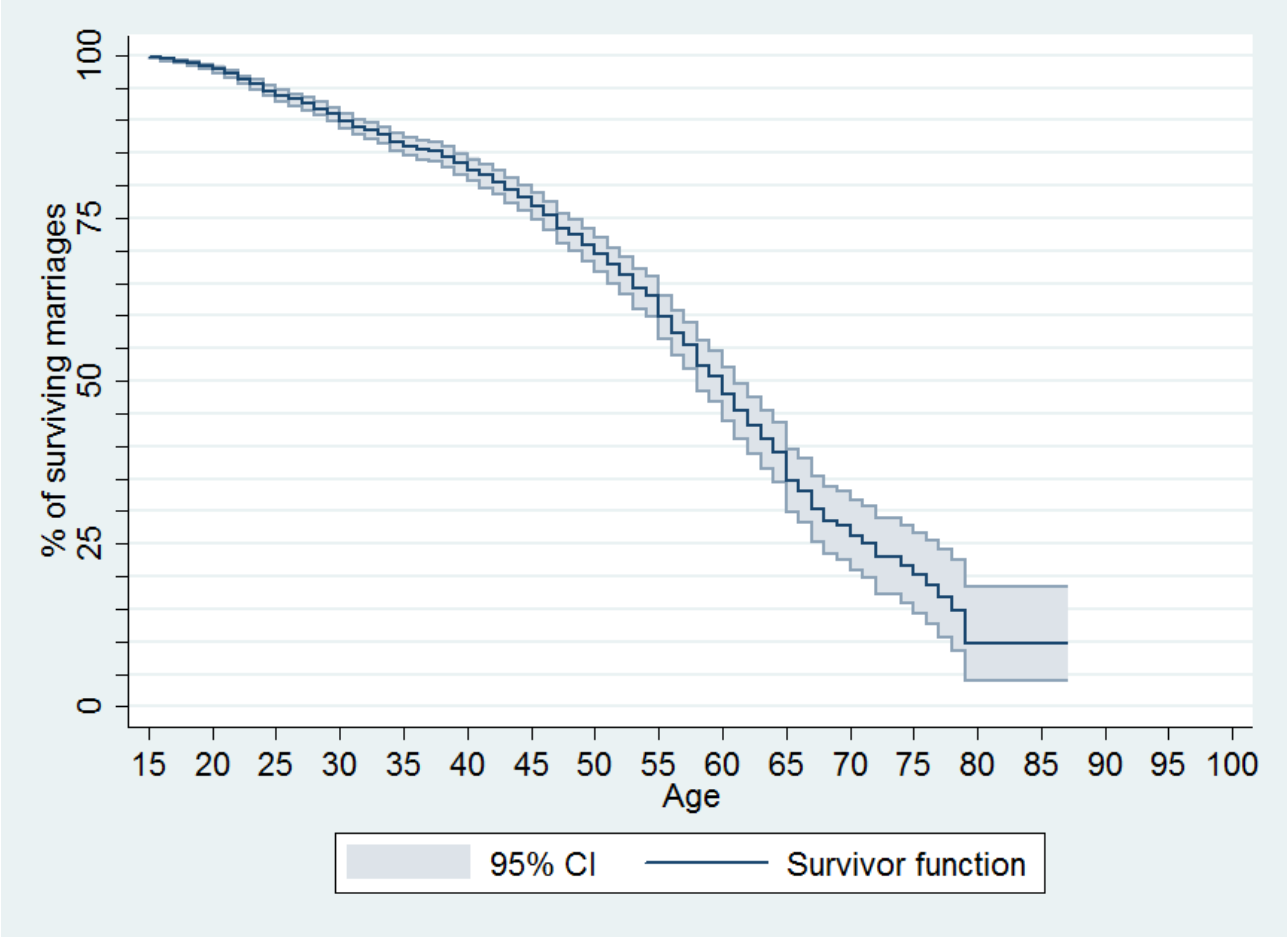




Note: sample of women 15 and older with at most one marital dissolution.

Source: authors' calculations using PSF1.

Figure 5: Union survival rates by age, all areas



Note: sample of women 15 and older with at most one marital dissolution.

Source: authors' calculations using PSF1.

Table 1: PSF1 sample of ever married adult women.

Marital status		Rural	Urban	TOTAL
First marriage	N	1,168	985	2,153
	%	71.35	64.89	68.24
Remarried widow	N	95	60	155
	%	5.80	3.95	4.91
Remarried divorcee	N	115	132	247
	%	7.03	8.70	7.83
Widow	N	210	220	430
	%	12.83	14.49	13.63
Divorcee	N	49	121	170
	%	2.99	7.97	5.39
TOTAL		**1,637**	**1,518**	**3,155**
Remarried widows in:				
a leviratic marriage	N	51	20	71
a non-leviratic marriage	N	36	34	70
Unknow type of union	N	8	6	14

Note: Adults are defined as 15 and older. For 14 remarried widows, we have no information on whether the current husband is a relative of the deceased husband.
Source: Authors' calculations using PSF1.

Table 2: Divorce and widowhood rates in Sub-Saharan Africa (percentage of ever-married women aged 15-49).

	Once married	Ever-widowed		Ever-divorced	
		Widow	Remarried widow	Divorcee	Remarried divorcee
Burkina Faso	80	3	3	3	11
Niger	76	2	3	3	17
Senegal	76	2	4	5	13
Mali	81	2	4	2	11
Sierra Leone	73	3	7	4	13
Nigeria	83	3	2	3	9
Cote D'Ivoire	77	4	2	10	8
DRC	71	3	3	10	14
Congo	63	3	2	17	16
Gabon	63	2	2	14	19
Lesotho	79	12	1	8	1
Swaziland	77	11	1	6	4
Mozambique	80	5	0	15	0
Namibia	73	6	2	10	9
Zimbabwe	69	11	2	11	8
Malawi	66	4	3	12	15
Uganda	65	6	3	12	14
Zambia	68	6	4	11	12

Note: Samples of ever-married women,
Source: Authors' based on DHS surveys between 2005 and 2011 depending on the country; and for Senegal, DHS 2005.

Table 3: Differences in socio-economic characteristics between ever-widowed and ever-divorced women

	Ever-widowed	Ever-divorced
Rural area	0.52	0.39***
Age	58.68	40.21***
Age at first marriage	18.26	18.76
Ever been to a French school	0.13	0.37***
Total number of children (alive)	4.54	3.42***
Log of total household consumption per capita (CFA francs per year)	12.38	12.49*
Log of total cell consumption per capita (CFA francs per year)	12.38	12.42
Household size	10.73	10.09
Household head	0.32	0.17***
Cell head (incl. household head)	0.61	0.82***
N	585	417

Note: All characteristics are expressed as shares of the marital status group except for age, number of children, consumption aggregates and household size. Divorced includes separated women. All significance tests are relative to ever-widowed women, where *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' calculations using PSF1.

Table 4: Probability of widowhood or divorce and women's characteristics: All areas

	Prob(widow)	Prob(divorce)
Rural area	-0.040***	-0.088***
	(0.014)	(0.018)
Ref: Husband working in the informal sector		
Husband: agricultural sector	0.015	0.042**
	(0.016)	(0.019)
Husband: private formal or public sector	-0.036**	-0.092***
	(0.017)	(0.019)
Husband: other sector	0.109***	0.093***
	(0.024)	(0.032)
Age at first marriage	-0.005***	-0.005***
	(0.001)	(0.002)
Ever been to a French school	-0.027+	0.064***
	(0.017)	(0.017)
Current age	0.010***	0.004***
	(0.000)	(0.001)
Ref: Wolof/Lebou		
Serere	0.021	0.014
	(0.019)	(0.023)
Poular	0.010	-0.007
	(0.015)	(0.018)
Other ethnicity	0.058***	0.012
	(0.016)	(0.020)
Mean of dep. Var	0.21	0.17
N	2593	2467
Pseudo R2	0.386	0.066

Note: Logit model, marginal effects shown. Sample of ever-married women. "Husband' refers to the one prior to the widowhood or divorce. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.
Source: Authors' estimations using PSF1.

Table 5: Probability of remarriage: All areas

	Probability of remarriage for widows	Probability of remarriage for divorcees
Ref: dissolution after age 40.		
Dissolution before age 25	0.470***	0.371***
	(0.055)	(0.070)
Dissolution between ages 25-39	0.291***	0.261***
	(0.030)	(0.072)
Last dissolution; rural resident	0.082**	0.109**
	(0.035)	(0.054)
No children born from last union	-0.130*	0.065
	(0.078)	(0.069)
Had a son at time of dissolution	-0.023	-0.104**
	(0.036)	(0.052)
Number of marital dissolutions	-0.016	-0.019
	(0.034)	(0.060)
Ever been to a French school	0.011	-0.121**
	(0.047)	(0.051)
Polygamous father	0.098***	0.071
	(0.037)	(0.049)
Fostered before age 15	0.123**	0.098
	(0.048)	(0.068)
Ref: Wolof/Lebou		
Serere	0.048	0.011
	(0.054)	(0.070)
Poular	0.019	-0.054
	(0.043)	(0.059)
Other ethnicity	-0.043	-0.113
	(0.045)	(0.076)
Mean of dep. var	0.27	0.59
N	488	353
Pseudo R2	0.258	0.146

Note: Logit models, marginal effects shown. Samples of ever-widowed women (column 1) and ever-divorced women (column 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.
Source: Authors' estimations using PSF1.

Table 6: Probability of levirate remarriage for remarried widows

	All areas	Urban areas	Rural areas
Ref: dissolution after age 40.			
Dissolution before age 25	-0.098	-0.117	-0.107
	(0.105)	(0.148)	(0.135)
Dissolution between ages 25-39	-0.113	-0.149	-0.043
	(0.087)	(0.126)	(0.113)
Last dissolution; rural resident	0.233***		
	(0.075)		
Had a son at widowhood			
	0.249***	0.276**	0.246**
	(0.080)	(0.131)	(0.107)
Number of marital dissolutions	-0.128*	-0.270*	-0.112
	(0.072)	(0.158)	(0.091)
Polygamous last marriage	-0.115	0.094	-0.207**
	(0.077)	(0.152)	(0.097)
Ever been to a French school	-0.274**	-0.216*	-0.316*
	(0.124)	(0.128)	(0.186)
Fostered before age 15	0.054	0.017	0.023
	(0.094)	(0.137)	(0.134)
Ref: Wolof/Lebou			
Serere	0.059	-0.025	0.112
	(0.107)	(0.126)	(0.175)
Poular	-0.009	-0.122	0.001
	(0.102)	(0.172)	(0.131)
Other ethnicity	-0.192**	-0.223	-0.168
	(0.092)	(0.206)	(0.120)
Mean of dep. Var	0.49	0.31	0.60
N	140	52	88
Pseudo R2	0.189	0.275	0.140

Note: Logit model, marginal effects shown. Sample of remarried widows *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, $^{+}$ $p < 0.12$.

Source: Authors' estimations using PSF1.

Table 7: Type of remarriage for widows by union and husband's characteristics.

	Co-resides with husband	Polygamy	Husband works in the formal sector
Ref: dissolution after age 40.			
Dissolution before age 25	0.379***	-0.261***	0.035
	(0.090)	(0.101)	(0.101)
Dissolution between ages 25-39	0.283***	-0.134	-0.017
	(0.081)	(0.099)	(0.091)
Last dissolution; rural resident	0.009	0.128*	-0.097
	(0.077)	(0.074)	(0.075)
No children born in last union	0.309**	0.156	-0.294+
	(0.138)	(0.214)	(0.179)
Had a son at widowhood	-0.208***	-0.031	-0.000
	(0.072)	(0.086)	(0.080)
Number of marital dissolutions	0.128	0.021	0.029
	(0.093)	(0.085)	(0.078)
Ever been to a French school	-0.192+	-0.097	0.400***
	(0.117)	(0.088)	(0.083)
Polygamous father	-0.151*	-0.058	-0.146*
	(0.079)	(0.077)	(0.077)
Fostered before age 15	-0.129	-0.014	0.152+
	(0.087)	(0.083)	(0.095)
Ref: Wolof/Lebou.			
Serere	-0.399***	0.015	0.249**
	(0.127)	(0.124)	(0.118)
Poular	-0.155	-0.065	-0.015
	(0.100)	(0.107)	(0.104)
Other ethnicity	-0.161*	-0.139	0.019
	(0.098)	(0.092)	(0.103)
Mean of dep. var	0.51	0.74	0.33
N	133	132	123
Pseudo R2	0.265	0.106	0.223

Note: Logit model, marginal effects shown. Sample of ever-widowed women. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.
Source: Authors' estimations using PSF1.

Table 8: Type of remarriage for divorcees by union and husband's characteristics.

	Co-resides with husband	Polygamy	Husband works in the formal sector
Ref: dissolution after age 40.			
Dissolution before age 25	0.252**	-0.145	-0.227+
	(0.107)	(0.163)	(0.141)
Dissolution between ages 25-39	0.113	-0.055	-0.145
	(0.106)	(0.158)	(0.140)
Last dissolution; rural resident	0.014	0.016	-0.180***
	(0.071)	(0.076)	(0.070)
No children born last union	0.032	0.070	-0.138
	(0.080)	(0.085)	(0.089)
Had a son at time of divorce	-0.024	0.034	-0.090
	(0.079)	(0.082)	(0.078)
Number of marital dissolutions	-0.048	0.003	-0.038
	(0.059)	(0.072)	(0.075)
Ever been to a French school	-0.079	-0.153**	0.133**
	(0.071)	(0.075)	(0.068)
Polygamous father	-0.116*	0.144**	0.011
	(0.064)	(0.064)	(0.066)
Fostered before age 15	-0.093	-0.186**	0.069
	(0.075)	(0.085)	(0.083)
Ref: Wolof/Lebou.			
Serere	-0.129	-0.189*	-0.038
	(0.086)	(0.099)	(0.089)
Poular	-0.088	-0.167**	0.002
	(0.077)	(0.082)	(0.082)
Other ethnicity	-0.048	-0.102	-0.003
	(0.091)	(0.098)	(0.102)
Mean of dep. Var	0.73	0.48	0.34
N	207	207	198
Pseudo R2	0.084	0.087	0.105

Note: Logit model, marginal effects shown. Sample of ever-divorced women. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.
Source: Authors' estimations using PSF1.

Table 9: Type of remarriage for widows by other union characteristics

	Has a civil contract	Lives with in-laws	Lives with children from previous union
Dissolution before age 40	0.077	0.019	-0.114
	(0.066)	(0.044)	(0.083)
Last dissolution: rural resident	-0.179***	0.051	-0.034
	(0.056)	(0.044)	(0.073)
No children born in last union	0.005	0.027	.
	(0.093)	(0.065)	.
Had a son at widowhood	-0.080+	0.003	0.347***
	(0.051)	(0.035)	(0.051)
Number of marital dissolutions	-0.029	0.074***	-0.042
	(0.065)	(0.028)	(0.064)
Ever been to a French school	0.077	0.047	0.113
	(0.060)	(0.051)	(0.105)
Mean of dep. var	0.11	0.063	0.65
N	142	142	134
Pseudo R2	0.221	0.124	0.204

Note: Logit model, marginal effects shown. Sample of ever widowed women. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.
Source: Authors' estimations using PSF1.

Table 10: Type of remarriage for divorcees by other union characteristics

	Has a civil contract	Lives with in-laws	Lives with children from previous union
Dissolution before age 40	0.025	0.156	0.215*
	(0.102)	(0.115)	(0.111)
Last dissolution: rural resident	-0.197***	0.138***	-0.282***
	(0.060)	(0.053)	(0.065)
No children born in last union	-0.072	0.103**	.
	(0.066)	(0.044)	.
Had a son at time of divorce	-0.105*	-0.045	0.203***
	(0.062)	(0.069)	(0.077)
Number of marital dissolutions	-0.094	-0.063	0.057
	(0.089)	(0.062)	(0.074)
Ever been to a French school	0.119**	0.021	-0.125
	(0.052)	(0.053)	(0.081)
Mean of dep. Var	0.18	0.13	0.55
N	227	227	177
Pseudo R2	0.171	0.129	0.119

Note: Logit model, marginal effects shown. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, $^{+}$ $p < 0.12$.
Source: Authors' estimations using PSF1.

Table 11: Probability of upward mobility upon remarriage

	Prob(upward mobility)	Prob(upward mobility)
Married widow	0.012	0.024
	(0.053)	(0.055)
Last dissolution: rural resident	-0.199***	-0.140***
	(0.047)	(0.051)
Dissolution before age 40		-0.115*
		(0.064)
Ever been to a French school		0.208***
		(0.058)
Number of marital dissolutions		-0.020
		(0.049)
Mean of dep. var	0.28	0.28
N	289	286
Pseudo- R2	0.045	0.087

Note: Logit model, marginal effects shown. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.
Sample: Remarried widows and remarried divorcees
Source: Authors' estimations using PSF1.

Table 12: Descriptive statistics on ever-married women by current marital status, Senegal 2005 DHS

	% of ever-married women 15-49	Age	H'hold head	BMI	% Under-weight (at mean age)	DHS asset index		Received most of husband's property	Born rural, lives urban	Born urban, lives rural
						Urban	Rural			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Once-married	75.7	29.7	5.8	22.75	11.6	1.06	-0.54	--	8.3	4.8
Remarried widow	4.4	38.8	19.9	24.35***	8.50	0.67***	-0.57	16.0	6.1	5.6
Widow	1.5	38.5	32.2	25.35***	12.0	1.10	-0.41	30.9	14.1***	2.2*
Remarried divorcee	13.1	34.3	8.9	24.99***	10.3	0.93***	-0.43***	--	13.1***	6.0
Divorced	5.4	32.4	14.6	23.20*	10.3	1.35***	-0.30***	--	12.7***	3.1**

Note: All characteristics are expressed as percentages of the marital status group except for age (years), BMI and the wealth index. All significance tests are relative to married once women, where *** p<0.01, ** p<0.05, * p<0.1. Underweight is defined as having BMI less than 18.5. Column (6) presents mean underweight conditional on age and aged squared and evaluated at mean age for the sample as a whole. Differences relative to once-married women are no longer statistically significant. Pregnant women are omitted from the BMI and underweight means. Divorced includes separated women. The Wealth index is generated by DHS using principal components analysis on assets; housing construction materials; and type of water access and sanitation facilities. The index places households on a continuous scale of relative wealth and refers to the household to which the woman belongs.
Sample: ever-married women, aged 15-49

Source: Authors' calculations using Senegal's 2005 DHS.

Table 13: Measures of women's decision-making and access to resources by marital status, Senegal 2005 DHS (%)

	Has no say on:			Constraints on seeking health care:		Own earnings spent on household:		Beating justified		Never watches TV
	Own health care	Large hh purchases	Visits to family	Permission	Cost	None	> half	If argue	Refuses sex	
Once-married	81.5	83.8	66.8	6.0	55.0	33.2	16.4	51.6	49.8	32.3
Remarried widow	66.7***	67.9***	50.3***	4.5**	70.7***	16.8***	34.0***	56.9	58.8***	43.1***
Widow	32.7***	44.4***	31.3***	2.1**	68.1***	33.8	44.3***	40.6	48.1	21.0**
Remarried divorcee	73.2***	76.7***	62.4***	4.8**	58.9***	31.1	20.7***	50.7**	46.9***	26.7***
Divorced	46.5***	70.3***	50.9***	4.9***	59.6***	38.1***	21.4*	38.3***	36.4***	15.5***

Note: The table shows the % of women in each marital status answering positively to each question. "Has no say" is defined as answering that each decision is taken by either the husband/partner alone or by someone else. Divorced includes separated women. Significance tests are relative to once-married women, where *** p<0.01, ** p<0.05, * p<0.1.
Sample: ever-married women, aged 15-49

Source: Authors' calculations using Senegal's 2005 DHS.

Table 14: Cell consumption levels, by current marital status.

	Once married	Remarried widows	Remarried divorcees	Widows	Divorcees
Log of total cell consumption per capita (CFA francs per year)	12.31	12.22	12.33	12.43**	12.55***
In a leviratic union (N=71)		12.06**			
In a non-leviratic union (N=70)		12.36			
N	2153	155	247	430	170

Note: 1 dollar = 522.9 CFA francs in 2006. Divorced includes separated women. All significance tests are relative to once-married women, where *** p<0.01, ** p<0.05, * p<0.1. For 14 remarried widows, we have no information on whether the current husband is a relative of the deceased husband. Their mean log consumption is 12.26.

Source: Authors' calculations using PSF1.

Table 15: Regressions of log cell consumption per capita

	Once married	Remarried widows	Remarried divorcees	Widows	Divorcees
Age	0.010	0.033^{+}	0.020	-0.008	-0.007
	(0.010)	(0.021)	(0.019)	(0.015)	(0.020)
Age squared	-0.000	-0.0002	-0.000	0.0001	-0.00003
	(0.000)	(0.0002)	(0.000)	(0.0001)	(0.0002)
Age at first marriage	0.010**	0.002	0.008	-0.002	0.011
	(0.004)	(0.013)	(0.014)	(0.007)	(0.009)
ln household size	-0.315***	-0.035	-0.331***	-0.213**	-0.233**
	(0.059)	(0.147)	(0.094)	(0.087)	(0.111)
ln cell size	-0.193***	-0.096	-0.084	-0.049	-0.337**
	(0.053)	(0.136)	(0.172)	(0.085)	(0.138)
Share of kids in cell	-0.442***	-0.658***	-0.749**	-0.461**	-0.757***
	(0.101)	(0.223)	(0.353)	(0.187)	(0.302)
Belongs to head's cell	0.088	0.020	-0.126	-0.010	0.194
	(0.085)	(0.170)	(0.165)	(0.10)	(0.153)
Cell head	-0.002	0.180	0.014	0.031	0.101
	(0.052)	(0.135)	(0.209)	(0.102)	(0.151)
French school	0.308***	0.475***	0.442***	0.460***	0.525***
	(0.055)	(0.149)	(0.128)	(0.111)	(0.132)
Koranic school	0.006	0.469***	0.222^{+}	0.249***	0.071
	(0.066)	(0.177)	(0.136)	(0.089)	(0.191)
Fostered before age 15	0.030	0.176	-0.043	-0.045	-0.153
	(0.053)	(0.145)	(0.117)	(0.125)	(0.134)
Has son 18 or older	-0.044	-0.079	0.065	0.070	0.251**
	(0.038)	(0.112)	(0.113)	(0.092)	(0.126)
Husband informal	0.042	0.187*	0.269**	-0.079	-0.088
	(0.057)	(0.109)	(0.121)	(0.126)	(0.207)
Husband formal/public	0.209***	0.721***	0.355**	0.105	0.30
	(0.060)	(0.177)	(0.178)	(0.138)	(0.228)
Husband other	-0.071	0.399**	0.269	-0.002	0.022
	(0.102)	(0.192)	(0.228)	(0.143)	(0.280)
Polygamous marriage	-0.026	-0.090	-0.013	-0.123	0.110
	(0.049)	(0.146)	(0.140)	(0.082)	(0.115)
Urban residence	0.582***	0.358**	0.223^{+}	0.628***	0.362**
	(0.074)	(0.148)	(0.141)	(0.129)	(0.152)
Constant	12.687***	10.831***	12.579***	12.635***	12.963***
	(0.229)	(0.148)	(0.535)	(0.468)	(0.474)
R-squared	0.37	0.46	0.35	0.28	0.48
Observations	2,082	146	241	394	160

Note: Robust standard errors are given in parentheses, clustered at the sampling unit level. "Husband" is the current one for once-married women, and ex-husband for all other groups. Ditto for polygamous marriage. Husband in agriculture is the left out category. $^{+}$ $p < 0.12$, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$
Source: Authors' estimations using PSF1.

Table 16: Estimated log cell consumption per capita differences, evaluated at mean attributes for reference woman at different ages

	Age groups:	15-40	41-50	51-60	61 +
Panel 1	***Urban:*** Remarried widow	11.774	11.874	12.133	12.302
	Widow	0.549**	0.536***	0.405**	0.347+
	Once married	0.783***	0.578***	0.429***	0.343
	Divorcee	0.527*	0.492**	0.349	0.338
	Remarried divorcee	0.405+	0.315	0.105	-0.364
	Rural: Remarried widow	11.416	11.516	11.775	11.944
	Widow	0.280	0.266+	0.135	0.077
	Once married	0.559***	0.354***	0.205+	0.119
	Divorcee	0.524***	0.489**	0.345+	0.334
	Remarried divorcee	0.541***	0.450**	0.240	-0.229
Panel 2	***Urban***: Widow	12.443	12.632	12.681	12.638
	Remarried widow	-0.766***	-0.544*	-0.409	-0.532**
	Once married	-0.029	0.091	0.011	-0.077
	Divorcee	-0.163	-0.027	-0.117	-0.246
	Remarried divorcee	-0.283	-0.388	-0.523*	-0.820**
	Rural: Widow	11.816	12.005	12.054	12.011
	Remarried widow	-0.497**	-0.275	-0.140	-0.262
	Once married	0.017	0.137	0.057	-0.031
	Divorcee	0.103	0.239	0.149	0.020
	Remarried divorcee	0.122	0.016	-0.118	-0.415
Panel 3	***Urban:*** Once married	12.451	12.430	12.478	12.556
	Widow	−0.098	0.062	0.011	0.080
	Remarried widow	-0.806***	-0.489***	-0.376***	-0.259
	Divorcee	-0.361+	-0.250	-0.095	-0.087
	Remarried divorcee	-0.400**	-0.273	-0.311*	-0.474**
	Rural: Once married	11.869	11.848	11.896	11.974
	Widow	−0.144	0.017	−0.035	0.035
	Remarried widow	-0.582***	-0.265+	-0.152	-0.035
	Divorcee	-0.140	-0.030	0.125	0.133
	Remarried divorcee	-0.041	0.086	0.048	-0.115

Note: Women 15 and older. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, $^{+}$ $p < 0.12$. Significance tests refer to differences relative to the reference marital status estimated consumption. Consumptions are predicted using own parameters and mean attributes of the reference marital status group for the indicated age range.
Source: Authors' estimations using PSF1.

Table 17: Estimated log cell consumption per capita differences

Table 17A1: Evaluated at mean attributes for reference woman and different age at dissolution groups

Age at marriage dissolution:	15-30	31-40	41-50	51 +
Urban: Remarried widow	11.921	11.991	12.073	12.235
Widow	0.498**	0.516***	0.489**	0.478**
Rural: Remarried widow	11.599	11.668	11.751	11.913
Widow	0.148	0.166	0.139	0.128
Urban: Widow	12.639	12.690	12.719	12.664
Remarried widow	−0.656***	−0.542**	−0.481*	−0.608**
Rural: Widow	11.966	12.017	12.046	11.991
Remarried widow	−0.305	−0.191	−0.131	−0.258

Table 17A2: Evaluated at mean attributes for reference woman and different age at dissolution groups

Age at marriage dissolution:	15-25	26-30	31-40	41 +
Urban: Remarried divorcee	12.209	12.323	12.441	12.269
Divorcee	−0.256	−0.116	0.136	−0.012
Rural: Remarried divorcee	11.920	12.034	12.152	11.980
Divorcee	−0.328	−0.188	0.065	0.144
Urban: Divorcee	12.827	12.160	12.330	12.715
Remarried divorcee	0.057	0.084	0.144	−0.451
Rural: Divorcee	12.466	11.799	11.969	12.353
Remarried divorcee	0.129	0.156	0.216	−0.380

Note: Women 15 and older. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$, $^{+}p < 0.12$. Significance tests refer to differences relative to the reference marital status estimated consumption. Consumptions are predicted using own parameters and mean attributes of the reference marital status at the given age group.
Source: Authors' estimations using PSF1.

Table 17B1: evaluated at mean attributes for reference woman and different durations since dissolution

Time since widowhood:	< 7 years	8-16	17-25	26 +
Urban: Remarried widow	11.943	11.905	11.984	12.221
Widow	0.553***	0.531***	0.518**	0.414*
Rural: Remarried widow	11.568	11.530	11.609	11.847
Widow	0.277^{+}	0.254	0.241	0.138
Urban: Widow	12.504	12.759	12.709	12.956
Remarried widow	−0.439**	−0.459*	−0.549**	−0.662*
Rural: Widow	11.853	12.108	12.058	12.305
Remarried widow	−0.163	−0.182	−0.273	−0.386

Table 17B2: evaluated at mean attributes for reference woman and different durations since dissolution

Time since divorce:	< 5 years	6-10	11 +
Urban: Remarried divorcee	12.212	12.260	12.254
Divorcee	0.212	−0.071	−0.333
Rural: Remarried divorcee	11.955	12.004	12.026
Divorcee	0.109	−0.174	−0.436*
Urban: Divorcee	12.675	12.644	12.705
Remarried divorcee	0.185	−0.451	−0.326
Rural: Divorcee	12.316	12.284	12.346
Remarried divorcee	0.289	−0.347	−0.222

Note: Women 15 and older. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$, $^{+}p < 0.12$. Significance tests refer to differences relative to the reference marital status estimated consumption. Consumptions are predicted using own parameters and mean attributes of the reference marital status subgroup.
Source: Authors' estimations using PSF1.

Table A1: Senegal: % of currently separated or divorced women, by age group

	Age group														
Year	[15-19]	[20-24]	[25-29]	[30-34]	[35-39]	[40-44]	[45-49]	[50-54]	[55-59]	[60-64]	[65-69]	[70+]	[70-74]	[75+]	*Sources*
1960-1961	1.0	2.5	4.6	3.2	4.3	3.4	6.0	4.5	5.3	3.8	4.1	2.6	2.5	1.3	ED
1970-1971		1.0	3.1	3.6	3.4	3.1	3.2	4.1	4.5	5.0	3.9	3.0	2.7	3.3	ED
1978		1.9	4.7	3.8	2.8	4.0	2.8	2.7							WFS
1986		0.6	2.0	2.8	2.0	2.7	2.4	1.7							DHS
1988	0.1	0.9	1.6	2.0	2.2	2.1	2.1	2.1	2.4	2.5	2.5	2.7	3.3		Census
1992-1993		0.4	1.8	2.4	2.1	2.4	2.0	1.8							DHS
1997		0.4	1.6	2.9	3.2	3.3	2.6	1.6							DHS
1999		0.7	2.3	4.7	4.7	5.6	5.7	4.4							DHS
2000		0.4	1.2	1.8	2.1	2.3	2.2	1.4	1.5	0.9	0.6	1.0	0.4	0.5	MICS
2002	0.1	0.5	1.5	2.4	3.1	3.1	2.8	2.4	1.8	1.6	1.1	1.0	0.9	0.7	Census
2005		0.6	1.7	2.3	3.1	3.1	3.7	3.3							DHS
2010-2011	0.0	0.7	1.3	3.0	3.8	3.7	4.2	3.6	4.4	6.0	3.5	3.6	2.2	2.9	DHS-MICS
2012-2013		0.9	2.8	4.9	5.2	5.3	6.4	6.2	3.0	4.0	1.2	2.0	3.1	0.4	DHS
2012-2014		0.7	2.7	4.4	4.8	6.7	6.8	6.6	4.2	2.9	3.0	2.1	2.7	0.3	DHS
2014		0.5	2.6	4.0	4.4	8.0	7.2	7.0	5.4	1.9	4.9	2.2	2.3	0.1	DHS

Note: ED : Enquête Démographique ; WFS : World Fertility Survey ; DHS : Demographic and Health Surveys; MICS: Multiple Indicator Cluster Surveys
Source: United Nations. Department of Economic and Social Affairs. Population Division (2015). World Marriage Data
2015 (POP/DB/Marr/Rev2015).

Table A2: Senegal: % of current widows, by age group

Year	Age group														Sources
	[10-14]	[15-19]	[20-24]	[25-29]	[30-34]	[35-39]	[40-44]	[45-49]	[50-54]	[55-59]	[60-64]	[65-69]	[70+]	[70-74]	[75+]	
1960-1961		0.2	1.0	1.6	1.6	3.2	8.1	12.6	24.5	36.6	54.9	63.2		76.2	83.7	ED
1970-1971	0.1	0.1	0.5	0.9	1.7	2.7	5.0	10.4	18.5	28.6	40.2	49.1		63.0	75.9	ED
1978		0.3	0.5	0.9	1.4	2.4	2.0	1.9								WFS
1986		0.3	0.4	1.2	0.8	1.0	4.3	4.1								DHS
1988	0.0	0.3	0.5	0.9	1.7	3.8	7.2	13.5	19.7	32.0	40.5	54.0	64.1			Census
1992-1993		0.0	0.8	0.7	0.9	2.4	1.9	3.5								DHS
1997		0.4	0.2	0.6	0.7	1.9	2.1	3.6								DHS
1999		0.1	0.5	0.8	1.0	1.6	2.9	6.0								DHS
2000		0.4	0.9	0.9	1.5	2.7	6.1	7.5	16.5	24.0	39.1	50.2		65.9	80.4	MICS
2002	0.2	0.3	0.5	0.8	1.2	1.7	3.2	5.1	10.1	14.6	24.7	29.6		42.0	51.5	Census
2005		0.1	0.1	1.2	1.0	1.8	3.8	4.3								DHS
2010-2011	0.0	0.1	0.2	0.8	1.1	2.3	3.3	5.3	14.0	20.3	38.2	44.6		64.7	80.4	DHS-MICS
2012-2013		0.1	0.1	0.8	1.2	1.9	1.8	7.0	12.6	24.3	35.3	53.0		60.2	77.2	DHS
2012-2014		0.1	0.2	0.7	1.0	2.5	1.7	6.5	12.5	23.0	37.2	53.5		58.2	79.1	DHS
2014		0.0	0.4	0.5	0.9	3.1	1.7	6.0	12.5	21.8	39.2	54.2		56.0	81.2	DHS

Note: ED : Enquête Démographique ; WFS : World Fertility Survey ; DHS : Demographic and Health Surveys; MICS: Multiple Indicator Cluster Surveys
Source : United Nations. Department of Economic and Social Affairs. Population Division (2015). World Marriage Data 2015 (POP/DB/Marr/Rev2015).

Table A3: Probability of remarriage

	Probability of remarriage widows - Urban	Probability of remarriage divorcees - Urban	Probability of remarriage widows - Rural	Probability of remarriage divorcees - Rural
Ref: dissolution after age 40.				
Dissol. before age 25	0.476***	0.386***	0.488***	0.313***
	(0.070)	(0.109)	(0.080)	(0.074)
Dissol. btw age 25-39	0.308***	0.249**	0.267***	0.256***
	(0.036)	(0.106)	(0.048)	(0.081)
No children born in last union	-0.156	0.046	-0.133	0.045
	(0.104)	(0.101)	(0.103)	(0.083)
Had a son at time of dissolution	0.043	0.001	-0.057	-0.200***
	(0.049)	(0.073)	(0.051)	(0.058)
Number of marital dissolutions	-0.043	0.048	0.018	-0.126**
	(0.043)	(0.071)	(0.046)	(0.049)
Ever been to a French school	-0.012	-0.185***	0.051	0.051
	(0.057)	(0.063)	(0.080)	(0.082)
Polygamous father	0.101**	0.058	0.089	0.082
	(0.046)	(0.068)	(0.058)	(0.070)
Fostered before age 15	0.037	0.120	0.253***	0.091
	(0.064)	(0.083)	(0.072)	(0.096)
Ref: Wolof/Lebou				
Serere	0.033	-0.039	0.042	0.131
	(0.055)	(0.097)	(0.088)	(0.090)
Poular	0.003	-0.154*	0.032	0.088
	(0.060)	(0.086)	(0.065)	(0.081)
Other ethnicity	-0.083	-0.057	-0.026	-0.061
	(0.064)	(0.105)	(0.065)	(0.087)
Mean of dep. var	0.22	0.50	0.32	0.70
N	227	203	261	150
Pseudo R2	0.323	0.092	0.227	0.314

Note: Logit models, marginal effects shown. Col 1 and 3: Sample of ever-widowed women; Col 2 and 4: Sample of ever-divorced women. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.
Source: Authors' estimations using PSF1.

Table A4: Marriage quality – women in their first marriage.

	Co-resides with husband	Polygamy	Husband works in formal sector
Rural area before current marriage	-0.001	0.096***	-0.136***
	(0.022)	(0.024)	(0.022)
Ever been to French school	-0.061***	-0.148***	0.187***
	(0.023)	(0.026)	(0.022)
Polygamous father	0.004	0.088***	-0.006
	(0.019)	(0.022)	(0.022)
Fostered before age 15	-0.022	-0.023	0.061**
	(0.026)	(0.031)	(0.029)
Serere	-0.031	-0.059*	0.065*
	(0.029)	(0.035)	(0.034)
Poular	0.051**	-0.100***	-0.039
	(0.024)	(0.026)	(0.026)
Other ethnicity	-0.006	-0.079***	0.075**
	(0.027)	(0.030)	(0.029)
Mean of dep. var	0.77	0.36	0.34
N	1,941	1,936	1,826
Pseudo R2	0.010	0.048	0.085

Note: Logit model. Marginal effects shown. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.

Type of Marriage- Sample: Women in their first marriage

	Has a civil contract	Lives with in-laws
Rural area before current marriage	-0.181***	0.052**
	(0.018)	(0.023)
Ever been to French school	0.143***	-0.016
	(0.017)	(0.025)
Polygamous father	0.008	-0.012
	(0.017)	(0.021)
Fostered before age 15	-0.003	-0.027
	(0.023)	(0.030)
Serere	0.037	-0.064*
	(0.027)	(0.034)
Poular	-0.014	0.026
	(0.021)	(0.024)
Other ethnicity	0.024	-0.130***
	(0.023)	(0.032)
Mean of dep. Var	0.20	0.28
N	1941	1941
Pseudo R2	0.147	0.016

Note: Logit model. Marginal effects shown. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, + $p < 0.12$.

Source: Authors' estimations using PSF1.

Table A5: Regressions of measures of women's decision making and access to resources by marital status with controls, Senegal 2005 DHS (%)

	Has final say on:			Constraints on seeking health care:		Own earnings spent on household:		Beating justified		Never watches TV
	Own health care	Large hh purchases	Visits to family	Permission	Cost	None	> half	If argue	Refuses sex	
Co-resident mother-in-law	-0.021*	-0.002	-0.011	-0.004	-0.016	0.042	-0.038*	0.051***	0.042**	-0.013
	(-2.47)	(-0.36)	(-1.31)	(-0.68)	(-1.21)	(1.84)	(-2.09)	(3.93)	(3.22)	(-1.11)
Co-resident husband	-0.081***	-0.061***	-0.116***	0.025***	0.075***	-0.078***	-0.013	-0.013	-0.011	0.075***
	(-11.34)	(-11.42)	(-16.21)	(5.01)	(6.89)	(-4.35)	(-0.87)	(-1.14)	(-1.00)	(7.70)
Polygamous husband	-0.001	0.008	0.014	0.007	-0.039***	0.020	-0.036**	0.034**	0.032**	-0.009
	(-0.17)	(1.43)	(1.95)	(1.35)	(-3.64)	(1.16)	(-2.63)	(3.16)	(2.92)	(-0.91)
Age	0.006***	0.004***	0.007***	-0.001***	0.006***	-0.009***	0.005***	0.0003	0.002*	0.001*
	(13.99)	(14.85)	(17.63)	(-5.01)	(9.57)	(-9.24)	(6.43)	(0.53)	(2.53)	(2.55)
Urban	0.053***	0.031***	0.011	-0.027***	-0.177***	-0.003	-0.010	-0.143***	-0.154***	-0.388***
	(7.50)	(5.92)	(1.52)	(-5.69)	(-16.86)	(-0.15)	(-0.75)	(-13.41)	(-14.38)	(-40.99)
Constant	-0.011	-0.046***	-0.023	0.086***	0.428***	0.688***	0.029	0.576***	0.527***	0.399***
	(-0.85)	(-4.94)	(-1.84)	(9.97)	(22.67)	(19.49)	(1.00)	(30.05)	(27.42)	(23.53)
Observations	9412	9412	9405	9527	9530	3257	3257	9526	9528	9524

Note: The sample consists of all ever-married women (once-married, remarried widows and remarried divorcees). Divorced includes separated women. Whether a mother in law co-resides is badly measured as it must be estimated from the DHS. For all women aged 15 to 49 whose husbands are heads, we can see from the roster whether his mother is present. To these we add women whose father in law is household head based on an assumption that his wife (and the husband's mother) too is present. *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' calculations using Senegal's 2005 DHS.

Table A6: Individual characteristics of ever-married women, by current marital status.

	Once-married	Remarried widows	Remarried divorcees	Widows	Divorcees
Lives in a rural area	0.54	0.61*	0.47**	0.49**	0.29***
Age	34.87	49.02***	40.15***	62.16***	40.29***
Muslim	0.96	0.95	0.98	0.95	0.92**
Wolof/Lebou	0.42	0.38	0.40	0.36**	0.41
Serere	0.12	0.14	0.14	0.13	0.11
Poular	0.29	0.26	0.29	0.29	0.26
Other ethnic group	0.17	0.23*	0.17	0.23***	0.23**
Age at first marriage	19.09	17.79***	18.27**	18.43**	19.50
Fostered before age 15	0.14	0.20**	0.19*	0.09**	0.15
Polygamous father	0.59	0.68**	0.63	0.59	0.53
Ever been to a French school	0.30	0.17***	0.32	0.12***	0.45***
Ever been to a Koranic school	0.16	0.21	0.15	0.19	0.12
Total number of children (alive)	3.46	4.74***	3.91**	4.47***	2.71***
Has a son 18 or older	0.49	0.65***	0.45	0.77***	0.52
Log of total household consumption per capita (CFA francs per year)	12.37	12.24	12.40	12.42	12.60***
Log of total cell consumption per capita (CFA francs per year)	12.31	12.22	12.33	12.43**	12.55***
In a leviratic union		12.06			
In a non-leviratic union		12.36			
Household size	11.72	10.88	9.98***	10.67***	10.24**
Number of adults living in household	6.74	6.25	5.91***	6.61	6.54
Cell size	4.23	3.70***	3.86***	4.07	3.71***
Share of kids in cell	0.44	0.28***	0.42	0.19***	0.31***
Household head	0.05	0.25***	0.11***	0.34***	0.26***
Cell head	0.76	0.85**	0.89***	0.52***	0.72
Belongs to head's cell	0.08	0.36***	0.14***	0.75***	0.48***
N	2153	155	247	430	170

Note: All characteristics are expressed as percentages of the marital status group except for ages (years), number of children, consumption aggregates, household and cell sizes and number of adults living in the household. 1 dollar = 522.9 CFA francs in 2006. Divorced includes separated women. All significance tests are relative to once-married women, where *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' calculations using PSF1.

Table A7: Marriage characteristics of currently married women, by current marital status.

	Once married	Remarried widows	Remarried divorcees
Polygamous marriage	0.36	0.72***	0.47***
Is the first rank spouse	0.53	0.15***	0.19***
Co-resident husband	0.78	0.54***	0.73
Number of children from current union	3.51	1.53***	2.75***
Civil marriage	0.20	0.12**	0.18
In-laws living in household	0.28	0.07***	0.13***
Husband works in the agricultural sector	0.27	0.31	0.19**
Husband works in the informal (non-agri.) sector	0.37	0.33	0.45**
Husband works in the formal sector	0.32	0.32	0.34
% of woman's cell expenditures financed by her husband	0.48	0.25***	0.38***
N	2153	155	247

Note: All characteristics are expressed as shares of the marital status group except for the number of children and the husband's contributions to expenditures (shares). Divorced includes separated women. All significance tests are relative to once-married women, where *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' calculations using PSF1.

Table A8: Previous union characteristics, by current marital status.

	Remarried widows	Remarried divorcees	Widows	Divorcees
Age at last dissolution	34.1	24.8	50.39***	32.53***
Number of dissolutions	1.19	1.23	1.32**	1.42***
Rural area at time of dissolution	0.63	0.51	0.5**	0.3***
Polygamous previous union	0.49	0.37	0.53	0.33
First rank spouse in previous union	0.31	0.16	0.47**	0.2
Number of children from previous union	4.1	1.6	4.58	2.02**
Had no children from previous union	0.06	0.22	0.1	0.16
Had a son at time of dissolution	0.53	0.24	0.69***	0.47***
At least one child from previous union is living in the household	0.65	0.56	0.74**	0.78***
Ex-husband works in the agricultural sector	0.39	0.37	0.35	0.21
Ex-husband works in the informal (non-agri.) sector	0.36	0.40	0.23***	0.45***
Ex-husband works in the formal sector	0.15	0.15	0.21*	0.27***
N	155	247	430	170

Note: All characteristics are expressed as shares of the marital status group except for ages, the number of dissolutions and the number of children. Divorced includes separated women. Significance tests are relative to remarried widows for non-remarried widows and to remarried divorcees for non-remarried divorcees, where *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' calculations using PSF1