

# Marital Trajectories and Women's Well-being in Senegal

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## Introduction

### In Senegal :

- Marital trajectories are often discontinuous :
  - Divorces are not rare and widowhood is a common predicament (spousal age gaps  $> 10$  years)
  - In 2006/2007, among ever married adult women (PSF data):
    - 18.5% of current widows or remarried after widowhood
    - 13.2% of current divorced or remarried after divorce
- Remarriage is frequent and takes place rather quickly
  - E.g : median duration between widowhood and remarriage is 1 year

**Do these broken marital trajectories affect women's well-being?**

## Literature

- Scarce economic evidence on the impact of marital dissolution in Sub-Saharan Africa :
  - Widowhood :
    - Most results through the study of female headed households.
    - Few papers on the effects of remarriage.
    - Mixed evidence on the impacts of widowhood
    - Appelson 1996 (Uganda) ; Chapoto et al. 2011 (Zambia); Horrell and Krishnan 2007 (Zimbabwe); and van de Walle 2013 (Mali).
  - Divorce : mainly suggestive evidence through (non-economic) social sciences studies
    - A means of emancipation? (escape family pressure + upward social mobility through remarriage)
    - Difficulties in terms of material support?

⇒ Both divorce and widowhood can be associated with negative aftermath

- **Are marital shocks smoothed through remarriage?**

## Contribution

This paper :

- Is the first one (to our knowledge) to directly study the relationship between marriage dissolution and women's well-being in Senegal.
- Uses recent and nationally representative data from a new household survey and DHS data to :
  - Document Senegalese women's marital trajectories
  - Study correlations with current consumption levels and other individual dimensions of welfare.
  - Analyze the effects of selection into widowhood, divorce and remarriage that might be at play.
- Does not claim any one-directional causality between marital status and its trajectories, and welfare.
  - ⇒ Very difficult to assess non-experimentally.

## Preview of Results

We find that :

- Divorce and widowhood are associated with different consequences in terms of welfare.
- Divorce seems to be a way to gain relatively comfortable autonomy, education playing a positive role.
- Widowhood is associated with negative consequences that are not mitigated by remarriage, in particular leviratic marriage.

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## Institutional context : Marriage market

- Senegal : Muslim country (95%), several ethnic groups (Wolof : 41%), patrilocal and patrilineal norms prevail.
- Mainly extended households  $\approx$  8 individuals.
- Marriage features :
  - Average age at marriage for women  $\approx$  18 y.o
  - Spousal age gap :  $>$  10 years
  - Bride price
  - First child : on average 1 year after marriage.
- Marital arrangements :
  - Polygamy : 39% of married women in polygamous union
  - Non co-residence : 1/4 married women do not co-reside with the husband
  - Levirate marriage in case of widowhood

## Institutional context : Divorce

- **Marriage recorded in civil register :**
  - Divorce can be initiated by the wife
  - Judge decides on the custody of the children
  - Husband can be required to provide for the subsistence of his ex-wife.
- **Marriage under customary law:**
  - No available legal recourse for either party.
  - Asymmetric situation between husband and wife :
    - Man : can repudiate his wife (prohibited but applied de facto (Dial 2008))
    - Woman : can ask for separation but final decision up to others.
  - Children custody and child support is at the husband's discretion.



## Institutional context : Widowhood

- **Ex-husband was a civil servant** : monthly pension equal to 1/3 of husband's wage, to share between spouses in case of polygamy.
- **Ex-husband worked in the formal sector**: at the firm's discretion.
- **Family Code** : individual has the choice between two options
  - **General case** : wives must inherit a share equal to that of the children.
  - **Islamic and customary laws** : wives inherit 1/8 of the total bequest, to be shared among co-wives in the case of polygamy. Sons inherit more than daughters. In practice :
    - Wives are often excluded from bequests

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## Data : 2 sources

- **Poverty and Family Structure dataset (PSF)**

- Collected in 2006-2007. Nationally representative sample of  $\approx 1800$  households,  $\approx 15\ 000$  individuals.
- Detailed information on:
  - Marital trajectories (info on the last breakdown)
  - Consumption recorded at the sub-group ("cell") level within a household : measure of consumption almost individualized.

- **Demographic Health Surveys (DHS) - Senegal 2005**

- Used to complement PSF
- Information on some aspects of women's (non-monetary) well-being, decision making and resource constraints
- Sample of women aged 15 to 49.

- Divorce and widowhood rates in PSF are in line with those of DHS 2005 and of the 2002 National Census.

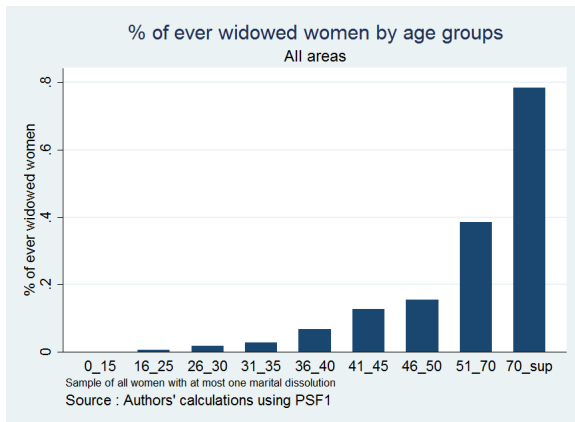
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## Descriptive Statistics (1) : Some figures

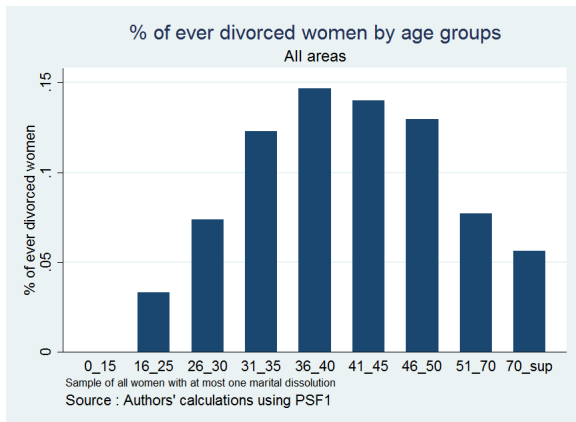
### PSF

- At least 18.5% of ever married adult women experienced widowhood and 13.2% experienced divorce.
  - Higher incidence of divorce in urban areas. ▶ Sample
- 1/4 of ever-divorced and ever-widowed women had more than one breakdown
  - → Upper bounds of widowhood and divorce rates : 21.5% and 17.3%.
- Remarriage :
  - 61% of ever-divorcees and 26% of ever-widowed women are remarried.
  - Remarriage into polygamous unions : 56 % of remarried divorcees and 71% of remarried widows (vs. 25% of 1st marriage women)
- % of widows and divorcees are similar between Senegal and other West African countries (using DHS) ▶ Comparison

## Descriptive Statistics (2) : Widows



## Descriptive Statistics (3) : Divorcees

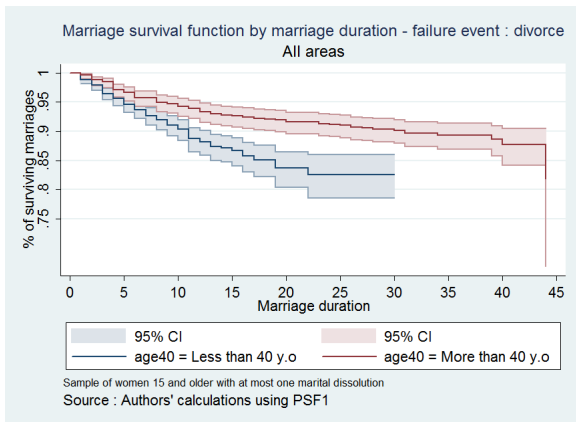


## Descriptive Statistics (3) : Divorcees

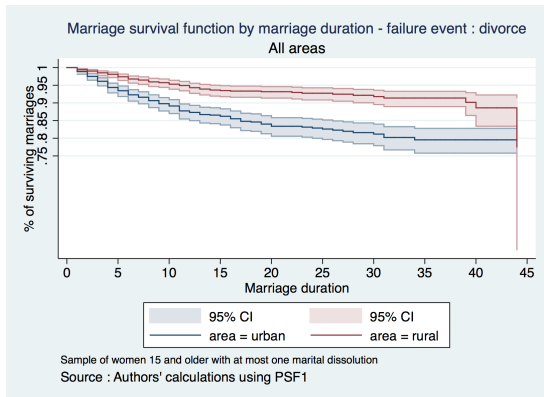




## Descriptive Statistics (3) : Divorcees



## Descriptive Statistics (3) : Divorcees



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## Non-monetary well-being-1

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

	% of ever-married women 15-49	Age	H'hold head	DHS asset index		Received most of husband's property
				Urban	Rural	
	(1)	(2)	(3)	(4)	(5)	(6)
Married once	75.7	29.7	5.8	1.06	-0.54	--
Remarried widow	4.4	38.8	19.9	0.67***	-0.57	16.0
Widow	1.5	38.5	32.2	1.10	-0.41	30.9
Remarried divorcee	13.1	34.3	8.9	0.93***	-0.43***	--
Divorced	5.4	32.4	14.6	1.35***	-0.30***	--

Note: All characteristics are expressed as percentages of the marital status group except for age (years) and the wealth index. All significance tests are relative to married once women, where \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. 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.

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

## Non-monetary well-being-2

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

	Has no say	Constraints on seeking		Own earnings spent		Beating justified	
	on :	health care:		on household:			
	Own health care	Permission	Cost	None	> half	If argue	Refuses sex
Married once	81.5	6.0	55.0	33.2	16.4	51.6	49.8
Remarried widow	66.7***	4.5**	70.7***	16.8***	34.0***	56.9	58.8***
Widow	32.7***	2.1**	68.1***	33.8	44.3***	40.6	48.1
Remarried divorcee	73.2***	4.8**	58.9***	31.1	20.7***	50.7**	46.9***
Divorced	46.5***	4.9***	59.6***	38.1***	21.4*	38.3***	36.4***

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 married once women, where \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

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

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## Differences in consumption levels (1) : Unconditional means

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

	Married once	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***
Leviratic marriage		12.07			
Non-leviratic marriage		12.36			

Note: 1 dollar = 522.9 CFA francs in 2006. Divorced includes separated women. Significance tests are relative to married once women, where \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Source: Authors' calculations using PSF1.

## Differences in consumption levels (2) : Separate OLS estimations

$$\ln C_i = \alpha_s + \beta_s X_i + \epsilon_{i,s}$$

- $s = \{\text{widow (w), remarried widow (mw), divorcee (d), remarried divorcee (md), first marriage (m)}\}$
- $X$  : age, age squared, and age at first marriage; log household and cell size, share of children in the cell, fostered as a child, attended the French school, attended 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), whether the current (or previous for ever-widowed and ever-divorced women) marriage is (was) polygamous, and lives in an urban or rural area.



## Differences in consumption levels (3) : Predicted consumption based on observables

$$\begin{aligned}\mathbb{E}_j[\ln C_i | S = j, x_i = \bar{x}^k] &- \mathbb{E}_k[\ln C_i | S = k, x_i = \bar{x}^k] \\ &= \alpha_j + \beta_j \bar{x}^k - \ln \bar{C}^k\end{aligned}$$

- Use of each group's own estimated parameters to predict consumption for a fixed reference group's mean covariates.
- $\mathbb{E}_j$  : expectation formed over parameters and error term distributions for marital group  $j$ .
- $\ln \bar{C}^k$  : mean of log consumption for group  $k$ .
- Same covariates as previously listed.

**Table : Regressions of log cell consumption per capita**

	Married once	Remarried widows	Remarried divorcees	Widows	Divorcees
Age	0.010 (0.010)	0.033* (0.021)	0.020 (0.019)	-0.008 (0.015)	-0.007 (0.020)
Age squared	-0.000 (0.000)	-0.0002 (0.0002)	-0.000 (0.000)	0.0001 (0.0001)	-0.00003 (0.0002)
Age at first marriage	0.010** (0.004)	0.002 (0.013)	0.008 (0.014)	-0.002 (0.007)	0.011 (0.009)
French school	0.308*** (0.055)	0.475*** (0.149)	0.442*** (0.128)	0.460*** (0.111)	0.525*** (0.132)
Koranic school	0.006 (0.066)	0.469*** (0.177)	0.222* (0.136)	0.249*** (0.089)	0.071 (0.191)
Has son 18 or older	-0.044 (0.038)	-0.079 (0.112)	0.065 (0.113)	0.070 (0.092)	0.251** (0.126)
Husband informal	0.042 (0.057)	0.187* (0.109)	0.269** (0.121)	-0.079 (0.126)	-0.088 (0.207)
Husband formal/public	0.209*** (0.060)	0.721*** (0.177)	0.355** (0.178)	0.105 (0.138)	0.30 (0.228)
Husband other	-0.071 (0.102)	0.399** (0.192)	0.269 (0.228)	-0.002 (0.143)	0.022 (0.280)
Urban residence	0.582*** (0.074)	0.358** (0.148)	0.223* (0.141)	0.628*** (0.129)	0.362** (0.152)
Constant	12.687*** (0.229)	10.831*** (0.148)	12.579*** (0.535)	12.635*** (0.468)	12.963*** (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 Married once women, and ex-husband for all other groups. Ditto for polygamous marriage. Husband in agriculture is the left out category. +  $p < 0.12$ , \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Controls not shown : fostered, polygamous marriage, cell head, share of kids in cell, belongs to cell head ; ln household size, ln cell size.

Source: Authors' estimations using PSF1.

**Table : 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 +
<b>Urban:</b> Widow	12.443	12.632	12.681	12.638
Remarried widow	-0.766***	-0.544*	-0.409	-0.532**
Married once	-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**
<b>Rural:</b> Widow	11.816	12.005	12.054	12.011
Remarried widow	-0.497**	-0.275	-0.140	-0.262
Married once	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

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 : 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 +
<i>Urban: Remarried widow</i>	11.774	11.874	12.133	12.302
Widow	0.549**	0.536***	0.405**	0.347+
Married once	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
<i>Rural: Remarried widow</i>	11.416	11.516	11.775	11.944
Widow	0.280	0.266+	0.135	0.077
Married once	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

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 : 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 +
<b>Urban:</b> Married once	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**
<b>Rural:</b> Married once	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 : Estimated log cell consumption per capita differences****Evaluated at mean attributes for reference woman and different age at dissolution groups**

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

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 : Estimated log cell consumption per capita differences**

**Evaluated at mean attributes for reference woman and different age at dissolution groups**

Age at marriage dissolution:	15-25	26-30	31-40	41 +
<b>Urban:</b> Remarried divorcee	12.209	12.323	12.441	12.269
Divorcee	-0.256	-0.116	0.136	-0.012
<b>Rural:</b> Remarried divorcee	11.920	12.034	12.152	11.980
Divorcee	-0.328	-0.188	0.065	0.144
<b>Urban:</b> Divorcee	12.827	12.160	12.330	12.715
Remarried divorcee	0.057	0.084	0.144	-0.451
<b>Rural:</b> 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.

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**Table : Probability of widowhood or divorce and husband's characteristics**

	Widow	Divorcee
Rural area at dissolution	-0.040*** (0.014)	-0.088*** (0.018)
<i>Ref: Husband working in the informal sector</i>		
Husband : agri sector	0.015 (0.016)	0.042** (0.019)
Husband : private formal or public sector	-0.036** (0.017)	-0.092*** (0.019)
Husband : other sector	0.109*** (0.024)	0.093*** (0.032)
Age at first marriage	-0.005*** (0.001)	-0.005*** (0.002)
French school	-0.027+ (0.017)	0.064*** (0.017)
Age	0.010*** (0.000)	0.004*** (0.001)
Mean of dep. var	0.21	0.17
N	2593	2467
Pseudo R2	0.386	0.066

Logit model - Marginal effects shown. Sample of ever-married women. "Husband" refers to the one prior to the widowhood or divorce. Controls not shown here : ethnic group.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , +  $p < 0.12$ .

Source: Authors' estimations using PSF1.

**Table : Probability of remarriage**

	Widows	Divorcees
<i>Ref: dissolution after age 40.</i>		
Dissol. before age 25	0.470*** (0.055)	0.371*** (0.070)
Dissol. bt ages 25 and 39	0.291*** (0.030)	0.261*** (0.072)
Rural area at dissolution	0.082** (0.035)	0.109** (0.054)
No children born from last union	-0.130* (0.078)	0.065 (0.069)
Had a son at time of dissolution	-0.023 (0.036)	-0.104** (0.052)
Number of marital dissolutions	-0.016 (0.034)	-0.019 (0.060)
French school	0.011 (0.047)	-0.121** (0.051)
Polygamous father	0.098*** (0.037)	0.071 (0.049)
Fostered before age 15	0.123** (0.048)	0.098 (0.068)
Mean of dep. var	0.27	0.59
N	488	353
Pseudo R2	0.258	0.146

Logit models - Marginal effects shown. Samples of ever-widowed women (column 1) and ever-divorced women (column 2). Controls not shown here : ethnic group. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , +  $p < 0.12$ .

Source: Authors' estimations using PSF1.

**Table: Probability of levirate remarriage- Sample: Remarried widows**

	All areas
<i>Ref: dissolution after age 40.</i>	
Dissol. before age 25	-0.098 (0.105)
Dissol. btw ages 25 & 39	-0.113 (0.087)
Rural area pre dissol.	0.233*** (0.075)
Had a son at time of widowhood	0.249*** (0.080)
Number of marital dissolutions	-0.128* (0.072)
Polygamous last marriage	-0.115 (0.077)
French school	-0.274** (0.124)
Fostered before age 15	0.054 (0.094)
Mean of dep. var	0.43
N	140
Pseudo R2	0.189

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. Controls not shown here : ethnic group

## What are the characteristics of a "good" marriage'?

- Correlations observed in the DHS data between marital characteristics and women's autonomy ( ▶ [Table](#) ) suggest that a good marriage is :
  - A monogamous one
  - Without cohabitation with the in-laws and/or the husband
- In addition we can expect the following variables to correlate positively with marriage quality :
  - Civil marriage
  - Husband working in the formal sector
  - Possibility of living with one's children from the previous union

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

	Co-resides with husband	Polygamy	Husband works in formal sector
Rural area before current marriage	-0.001 (0.022)	0.096*** (0.024)	-0.136*** (0.022)
French school	-0.061*** (0.023)	-0.148*** (0.026)	0.187*** (0.022)
Polygamous father	0.004 (0.019)	0.088*** (0.022)	-0.006 (0.022)
Fostered before age 15	-0.022 (0.026)	-0.023 (0.031)	0.061** (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

Logit model - Marginal effects shown. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , †  $p < 0.12$ . Controls not shown : ethnic group. Source: Authors' estimations using PSF1.

**Type of Marriage- Sample: Women in their first marriage**

	Has a civil contract	Lives with in-laws
Rural area before current marriage	-0.181*** (0.018)	0.052** (0.023)
French school	0.143*** (0.017)	-0.016 (0.025)
Polygamous father	0.008 (0.017)	-0.012 (0.021)
Fostered before age 15	-0.003 (0.023)	-0.027 (0.030)
Mean of dep. Var	0.20	0.28
N	1941	1941
Pseudo R2	0.147	0.016

Logit model - Marginal effects shown. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , +  $p < 0.12$ . Controls not shown here : ethnic group.

Source: Authors' estimations using PSF1.

**Table: Type of remarriage by union and husband's characteristics.**

	Co-resides with husband	Co-resides with husband	Polygamy	Polygamy
	Widows	Divorcees	Widows	Divorcees
<i>Ref: dissolution after age 40.</i>				
Dissol. before age 25	0.379*** (0.090)	0.252** (0.107)	-0.261*** (0.101)	-0.145 (0.163)
Dissol. btw ages 25 & 39	0.283*** (0.081)	0.113 (0.106)	-0.134 (0.099)	-0.055 (0.158)
Rural area pre dissol.	0.009 (0.077)	0.014 (0.071)	0.128* (0.074)	0.016 (0.076)
No children born last union	0.309** (0.138)	0.032 (0.080)	0.156 (0.214)	0.070 (0.085)
Had a son at dissolution	-0.208*** (0.072)	-0.024 (0.079)	-0.031 (0.086)	0.034 (0.082)
Number of marital dissolutions	0.128 (0.093)	-0.048 (0.059)	0.021 (0.085)	0.003 (0.072)
French school	-0.192+ (0.117)	-0.079 (0.071)	-0.097 (0.088)	-0.153** (0.075)
Polygamous father	-0.151* (0.079)	-0.116* (0.064)	-0.058 (0.077)	0.144** (0.064)
Fostered before age 15	-0.129 (0.087)	-0.093 (0.075)	-0.014 (0.083)	-0.186** (0.085)
Mean of dep. var	0.51	0.73	0.74	0.48
N	133	207	132	207
Pseudo R2	0.265	0.084	0.106	0.087

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. Controls not shown : ethnic group

**Table: Type of remarriage by union and husband's characteristics.**

	Husband works in the formal sector	Husband works in the formal sector
	Widows	Divorcees
<i>Ref: dissolution after age 40.</i>		
Dissol. before age 25	0.035 (0.101)	-0.227 <sup>+</sup> (0.141)
Dissol. btw ages 25 & 39	-0.017 (0.091)	-0.145 (0.140)
Rural area before dissol.	-0.097 (0.075)	-0.180 <sup>***</sup> (0.070)
No children born last union	-0.294 <sup>+</sup> (0.179)	-0.138 (0.089)
Had a son at time of dissolution	-0.000 (0.080)	-0.090 (0.078)
Number of marital dissolutions	0.029 (0.078)	-0.038 (0.075)
French school	0.400 <sup>***</sup> (0.083)	0.133 <sup>**</sup> (0.068)
Polygamous father	-0.146 <sup>+</sup> (0.077)	0.011 (0.066)
Fostered before age 15	0.152 <sup>+</sup> (0.095)	0.069 (0.083)
Mean of dep. var	0.33	0.34
N	123	198
Pseudo R2	0.223	0.105

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. Controls not shown here : ethnic group.



**Table: Type of remarriage by other union characteristics**

	Has a civil contract	Has a civil contract	Lives with in-laws	Lives with in-laws	Lives with children from previous union	Lives with children from previous union
	Widows	Divorcees	Widows	Divorcees	Widows	Divorcees
Dissol. Before age 40	0.077 (0.066)	0.025 (0.102)	0.019 (0.044)	0.156 (0.115)	-0.114 (0.083)	0.215* (0.111)
Lived in rural area pre dissol.	-0.179*** (0.056)	-0.197*** (0.060)	0.051 (0.044)	0.138*** (0.053)	-0.034 (0.073)	-0.282*** (0.065)
No children born last union	0.005 (0.093)	-0.072 (0.066)	0.027 (0.065)	0.103** (0.044)	.	.
Had a son at dissolution	-0.080+ (0.051)	-0.105* (0.062)	0.003 (0.035)	-0.045 (0.069)	0.347*** (0.051)	0.203*** (0.077)
Number of marital dissolutions	-0.029 (0.065)	-0.094 (0.089)	0.074*** (0.028)	-0.063 (0.062)	-0.042 (0.064)	0.057 (0.074)
French school	0.077 (0.060)	0.119** (0.052)	0.047 (0.051)	0.021 (0.053)	0.113 (0.105)	-0.125 (0.081)
Mean of dep. var	0.11	0.18	0.063	0.13	0.65	0.55
N	142	227	142	227	134	177
Pseudo R2	0.221	0.171	0.124	0.129	0.204	0.119

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.

## Remarriage quality - Social mobility

**Table: Probability of upward mobility upon remarriage-  
Sample: Remarried widows and remarried divorcees**

	Prob(upward mobility)
Married widow	0.024 (0.055)
Rural area before dissol.	-0.140*** (0.051)
Dissol. before age 40	-0.115* (0.064)
Ever been to French school	0.208*** (0.058)
Number of marital dissolutions	-0.020 (0.049)
Mean of dep. var	0.28
N	286
Pseudo- R2	0.087

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

Source: Authors' estimations using PSF1.

## Conclusion (1)

- Divorce and widowhood are associated with different consequences in terms of welfare.
- **Divorce seems to be a mean to gain relatively comfortable autonomy:**
  - Current divorcees are the richest group in our sample
  - Specific role of education :
    - Divorcees are likely to be educated women
    - Education is negatively correlated with remarriage
    - Among remarried divorcees, it is correlate with better quality unions.

## Conclusion (2)

- **Widowhood is associated with negative consequences that are not mitigated by remarriage:**
  - Double negative selection :
    - Poorer women are more likely to experience widowhood
    - The most vulnerable widows are those who have to remarry
  - Non-remarried widows fare relatively well.
  - But potential reverse causality :
    - Differences in observed characteristics between widows and remarried widows do not suffice to explain the consumption gap.
  - Role of levirate marriages?

**Table : PSF1 sample of ever married adult women.**

<b>Marital Status</b>		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

Note: Adults are defined as 15 and older.

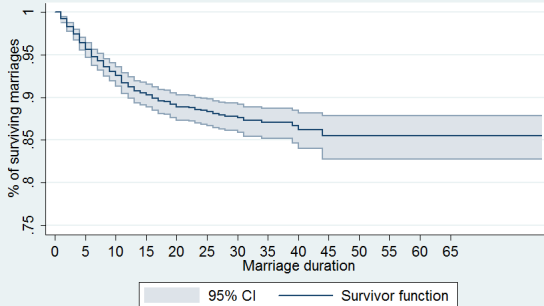
Source: Authors' calculations using PSF1.

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

	Married once	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	6	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, DHS surveys between 2005 and 2011 depending on the country. For Senegal, DHS 2005.

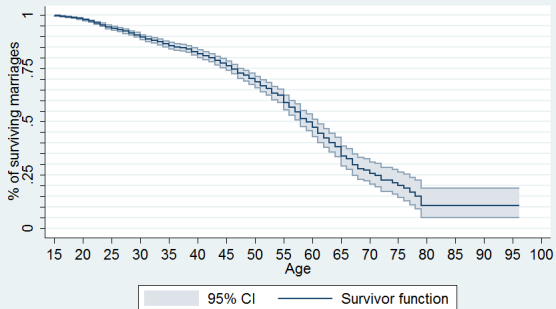
Marriage survival function by marriage duration - failure event : divorce  
All areas



Sample of women 15 and older with at most one marital dissolution

Source : Authors' calculations using PSF1

Marriage survival function by age - Failure event : all types of dissolution  
All areas



Sample of women 15 and older with at most one marital dissolution

Source : Authors' calculations using PSF1



**Table: Probability of remarriage**

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

Logit models - Marginal effects shown.

Col 1 and 3: Sample of ever widowed women; Col 2 and 4: Sample of ever divorced women

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ,  $\dagger p < 0.12$ .

Source: Authors' estimations using PSF1.

**Table: 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	
	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**
	(-2.47)	(-0.36)	(-1.31)	(-0.68)	(-1.21)	(1.84)	(-2.09)	(3.93)	(3.22)
Co-resident									
husband	-0.081***	-0.061***	-0.116***	0.025***	0.075***	-0.078***	-0.013	-0.013	-0.011
	(-11.34)	(-11.42)	(-16.21)	(5.01)	(6.89)	(-4.35)	(-0.87)	(-1.14)	(-1.00)
Polygamous									
husband	-0.001	0.008	0.014	0.007	-0.039***	0.020	-0.036**	0.034**	0.032**
	(-0.17)	(1.43)	(1.95)	(1.35)	(-3.64)	(1.16)	(-2.63)	(3.16)	(2.92)
Age	0.006***	0.004***	0.007***	-0.001***	0.006***	-0.009***	0.005***	0.0003	0.002*
	(13.99)	(14.85)	(17.63)	(-5.01)	(9.57)	(-9.24)	(6.43)	(0.53)	(2.53)
Urban	0.053***	0.031***	0.011	-0.027***	-0.177***	-0.003	-0.010	-0.143***	-0.154***
	(7.50)	(5.92)	(1.52)	(-5.69)	(-16.86)	(-0.15)	(-0.75)	(-13.41)	(-14.38)
Constant	-0.011	-0.046***	-0.023	0.086***	0.428***	0.688***	0.029	0.576***	0.527***
	(-0.85)	(-4.94)	(-1.84)	(9.97)	(22.67)	(19.49)	(1.00)	(30.05)	(27.42)
Observations	9412	9412	9405	9527	9530	3257	3257	9526	9528

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: Individual characteristics of ever married women, by current marital status.**

	Married once	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
Ever been to a French school	0.30	0.17***	0.32	0.12***	0.45***
Total number of children (alive)	3.46	4.74***	3.91**	4.47***	2.71***
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***
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***
Household head	0.05	0.25***	0.11***	0.34***	0.26***
Cell head	0.76	0.85**	0.89***	0.52***	0.72

Note: All characteristics are expressed as percentages of the marital status group except for ages (years), number of children, 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 married once women, where \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Authors' calculations using PSF1.

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

	Married once	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***
% of woman's cell expenditures financed by her husband	0.48	0.25***	0.38***

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 married once women, where \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Source: Authors' calculations using PSF1.

**Table: 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
At least one child from previous union is living in the household	0.65	0.56	0.74**	0.78***

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

**Table : Regressions of log cell consumption per capita**

	Married once	Remarried widows	Remarried divorcees	Widows	Divorcees
Age	0.010 (0.010)	0.033 <sup>*</sup> (0.021)	0.020 (0.019)	-0.008 (0.015)	-0.007 (0.020)
Age squared	-0.000 (0.000)	-0.0002 (0.0002)	-0.000 (0.000)	0.0001 (0.0001)	-0.00003 (0.0002)
Age at first marriage	0.010 <sup>**</sup> (0.004)	0.002 (0.013)	0.008 (0.014)	-0.002 (0.007)	0.011 (0.009)
In household size	-0.315 <sup>***</sup> (0.059)	-0.035 (0.147)	-0.331 <sup>***</sup> (0.094)	-0.213 <sup>***</sup> (0.087)	-0.233 <sup>**</sup> (0.111)
In cell size	-0.193 <sup>***</sup> (0.053)	-0.096 (0.136)	-0.084 (0.172)	-0.049 (0.085)	-0.337 <sup>**</sup> (0.138)
Share of kids in cell	-0.442 <sup>***</sup> (0.101)	-0.658 <sup>***</sup> (0.223)	-0.749 <sup>**</sup> (0.353)	-0.461 <sup>**</sup> (0.187)	-0.757 <sup>***</sup> (0.302)
Belongs to head's cell	0.088 (0.085)	0.020 (0.170)	-0.126 (0.165)	-0.010 (0.10)	0.194 (0.153)
Cell head	-0.002 (0.052)	0.180 (0.135)	0.014 (0.209)	0.031 (0.102)	0.101 (0.151)
French school	0.308 <sup>***</sup> (0.055)	0.475 <sup>***</sup> (0.149)	0.442 <sup>***</sup> (0.128)	0.460 <sup>***</sup> (0.111)	0.525 <sup>***</sup> (0.132)
Koranic school	0.006 (0.066)	0.469 <sup>***</sup> (0.177)	0.222 <sup>†</sup> (0.136)	0.249 <sup>***</sup> (0.089)	0.071 (0.191)
Fostered	0.030 (0.053)	0.176 (0.145)	-0.043 (0.117)	-0.045 (0.125)	-0.153 (0.134)
Has son 18 or older	-0.044 (0.038)	-0.079 (0.112)	0.065 (0.113)	0.070 (0.092)	0.251 <sup>**</sup> (0.126)
Husband informal	0.042 (0.057)	0.187 <sup>*</sup> (0.109)	0.269 <sup>**</sup> (0.121)	-0.079 (0.126)	-0.088 (0.207)
Husband formal/public	0.209 <sup>***</sup> (0.060)	0.721 <sup>***</sup> (0.177)	0.355 <sup>**</sup> (0.178)	0.105 (0.138)	0.30 (0.228)
Husband other	-0.071 (0.102)	0.399 <sup>**</sup> (0.192)	0.269 (0.228)	-0.002 (0.143)	0.022 (0.280)
Polygamous marriage	-0.026 (0.049)	-0.090 (0.146)	-0.013 (0.140)	-0.123 (0.082)	0.110 (0.115)
Urban residence	0.582 <sup>***</sup> (0.074)	0.358 <sup>**</sup> (0.148)	0.223 <sup>†</sup> (0.141)	0.628 <sup>***</sup> (0.129)	0.362 <sup>**</sup> (0.152)
Constant	12.687 <sup>***</sup> (0.229)	10.831 <sup>***</sup> (0.148)	12.579 <sup>***</sup> (0.535)	12.635 <sup>***</sup> (0.468)	12.963 <sup>***</sup> (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 Married once women, and ex-husband for all other groups. Ditto for polygamous marriage. Husband in agriculture is the left out category. <sup>†</sup>  $p < 0.12$ , <sup>\*</sup>  $p < 0.1$ , <sup>\*\*</sup>  $p < 0.05$ , <sup>\*\*\*</sup>  $p < 0.01$

Source: Authors' estimations using PSF1.

**Table: Estimated log cell consumption per capita differences**

**Evaluated at mean attributes for reference woman and different durations since dissolution**

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

Note: Women 15 and older. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , <sup>+</sup>  $p < 0.12$ . 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: Estimated log cell consumption per capita differences**

**Evaluated at mean attributes for reference woman and different durations since dissolution**

Time since divorce:	< 5 years	6-10	11 +
<b>Urban:</b> Remarried divorcee	12.212	12.260	12.254
Divorcee	0.212	-0.071	-0.333
<b>Rural:</b> Remarried divorcee	11.955	12.004	12.026
Divorcee	0.109	-0.174	-0.436*
<b>Urban:</b> Divorcee	12.675	12.644	12.705
Remarried divorcee	0.185	-0.451	-0.326
<b>Rural:</b> 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.