

# Land Formalisation as Widowhood Insurance

## Experimental Evidence from Rural Benin

Ioana Botea   Markus Goldstein   Kenneth Hounghbedji  
Florence Kondylis   Michael O'Sullivan   Harris Selod

Based on "Right to stay? Long-run experimental evidence on land formalization and widows' tenure security in Benin", *Journal of Development Economics*, 2026, 179, 103675

# Why are widows vulnerable?

- In many customary systems, women access land through marriage rather than direct ownership.
  - When a husband dies, those rights can become fragile.
  - Widows may face pressure to remarry, surrender land to relatives, or relocate.
  - A cohabiting son can provide informal protection by strengthening inheritance claims.
- ↪ Can land formalisation provide protection when family-based safeguards are absent?

# An unexpected finding

- We originally returned to study the long-run effects of land formalisation on investment and land markets ([Goldstein et al., 2018](#)).
- In 2015, widow-headed households were disappearing disproportionately from control villages.
- Before studying investment outcomes, we first had to understand why widows were more likely to remain in treated villages.

## What are we doing in this paper?

- We describe experiences of widowhood in Benin and study how land-rights formalisation affects widows' ability to remain in their village.
- We study the Rural Landholding Plans program, which formalized customary land rights and created local land committees.
- The program was randomly assigned across eligible villages, allowing causal inference.
- We focus on whether effects differ by the presence of a son in the household.

## The intuition

- Women's property rights are mediated through their male relatives, leaving them at risk of losing land and property they depend on (Lambert et al., 2018; Peterman, 2012).
- Having a son can reduce the likelihood of property loss following widowhood (Lambert and Rossi, 2016)

### Customary protection

Widow + cohabiting son



Stronger informal claim to land  
and housing

### Formal protection

Widow without a cohabiting son



Formal institutions provide  
missing family protection

## The PFR program

- The Rural Landholding Plans (*Plans Fonciers Ruraux*, or PFR) were implemented in Benin from 2006 to 2011.
- The program demarcated plots, mapped customary land rights, and was designed to issue land certificates.
- It also created elected village-level land committees with female representation.
- 300 villages were randomly selected by public lottery from 576 eligible villages.

# Land demarcation activities



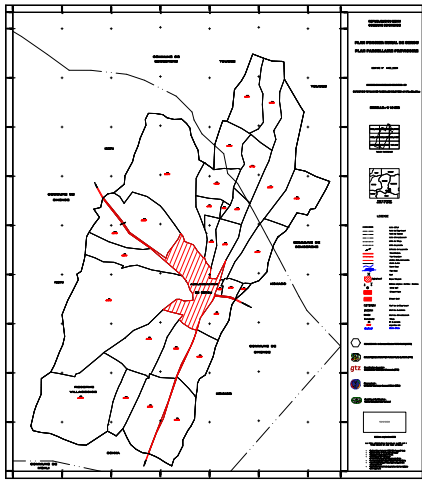
(a)



(b)

**Figure 1:** Land demarcation activities

# Mapping and certifying land rights



**Figure 2:** Village land occupation plan

# Mapping and certifying land rights

**Article 111 de la loi N°2007-03 du 16 octobre 2007:**

"Le certificat foncier rural est un acte de constatation et de confirmation de droits fonciers établis ou acquis selon la coutume ou les pratiques et normes locales. Il constitue un extrait du registre du plan foncier rural prévu à l'article 110 de la loi N°2007-03 du 16 octobre 2007. Il lui est attaché une présomption de droits acquis faisant foi jusqu'à preuve du contraire, établie devant le juge."

"Les droits établis ou acquis selon la coutume, constatés et enregistrés au plan foncier rural permettent à leurs titulaires d'obtenir à leurs frais un certificat foncier rural établi par le maire. Il y est joint un extrait du plan de parcelle conforme au plan foncier rural. Il ne peut être délivré que si la parcelle enregistrée au plan foncier rural est délimitée, soit par des bornes végétales, soit par des bornes en ciment ou par tout autre moyen permettant d'identifier aisément la parcelle ou même par des limites naturelles."



Ministère de l'Agriculture, de l'Elevage et de la Pêche

**République du Bénin**  
FRATERNITE JUSTICE TRAVAIL



Département : 

Commune : 

**CERTIFICAT  
FONCIER RURAL**

Extrait du Registre du PLAN FONCIER RURAL du VILLAGE OUERE

ARTICLE 111 DE LA LOI N° 2007-03 DU 16 OCTOBRE 2007  
PORTANT REGIME FONCIER RURAL EN REPUBLIQUE DU BENIN

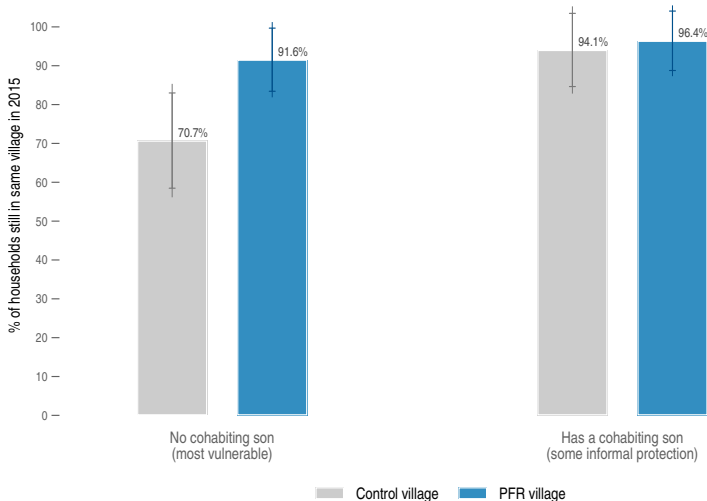
Numéro : 0002

Etabli le: mercredi, 19 janv 2011

Au Profit de 

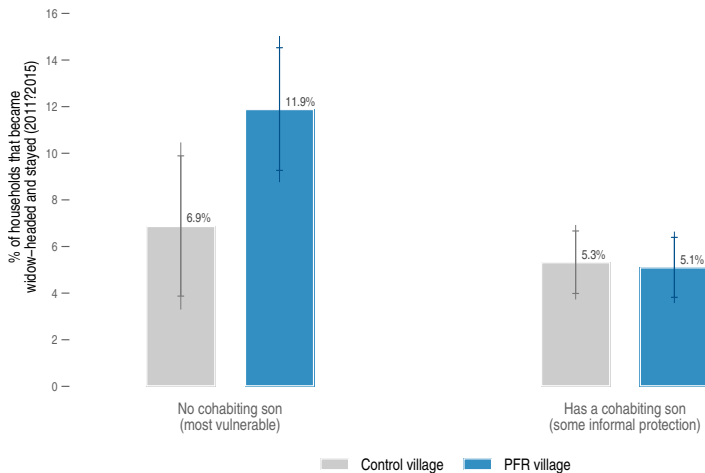
**Figure 3:** Example of a rural land certificate

# Result 1/2: Protecting women who were already widowed



**Figure 4:** Widow-headed households in 2011: probability of remaining in the village by 2015

## Result 2/2: Protecting women not yet widowed



**Figure 5:** Married households in 2011: probability of becoming widow-headed and remaining in the village by 2015

# Contributions

- Land formalisation can strengthen tenure security, stimulate investment, and facilitate land and labor markets (Ali et al., 2014; de Janvry et al., 2015; Goldstein et al., 2018; Goldstein and Udry, 2008; Harari, 2019).
  - ↪ We show that it can also protect women from displacement after widowhood.
- Widows often face heightened economic insecurity and loss of property rights after a husband's death (Lambert and Rossi, 2016; Milazzo and van de Walle, 2017; van de Walle, 2013).
  - ↪ Formal land institutions can substitute for the protection traditionally provided by a cohabiting son.
- Statutory law often coexists uneasily with customary institutions and norms (Aldashev et al., 2012; Pande and Udry, 2006).
  - ↪ Land registration complements inheritance law by reshaping local governance and expectations, not just by issuing certificates.

# Widowhood and customary norms in Benin

- Most of Benin is patrilocal (see [Mama, 2005](#)).
- Under some customary norms, if the husband dies (see [Médénouvo, 2004](#)):
  - his sons inherit his estate and land rights;
  - the widow may be expected to remarry within the deceased husband's family;
  - if she refuses, she may be forced to leave.
- Having a son in the household can therefore make it easier for a widow to remain in her village.

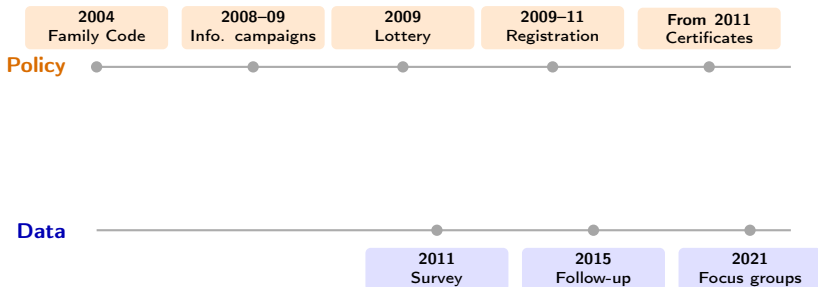
# The Family Code and inheritance in Benin

- In 2004, Benin adopted a new Family Code with important provisions for widows.
- The surviving spouse, male or female, is recognized as an heir.
- Levirate is outlawed.
- In practice, awareness and enforcement remain limited, especially in rural areas.
- In urban Cotonou, [Andretta \(2019\)](#) documents that widows use the law to negotiate inheritance claims.

## Program features relevant for gender equity

- Villages had to demonstrate support for women's and girls' inheritance rights to be eligible.
- The program documented primary and secondary land-use rights.
- Newly created land institutions required women's representation.
- These design features made formal law and women's land claims more visible in the village.

# Program and data timeline



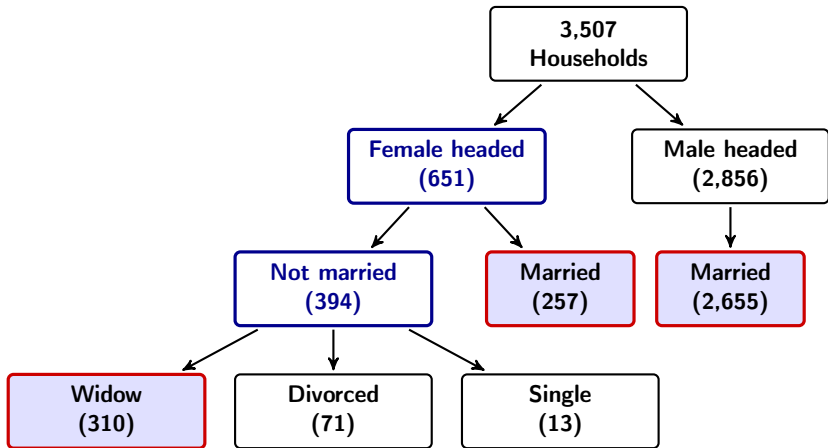
## Research design

- 576 eligible villages volunteered for systematic land registration.
- 300 villages were selected by public lottery.
- The remaining villages served as controls.
- Random assignment allows us to estimate the causal effects of land formalisation.
- We surveyed 3,507 households selected in 193 PFR villages and 98 control villages.

### Estimand

We report intent-to-treat effects; standard errors are clustered at the village level.

## Description of main data set



# Study populations in 2011

---

	<b>Widowed</b> (310 households)	<b>Married</b> (2,912 households)
<b>Demographic characteristics</b>		
Age of household head (years)	60.2	45.4
Schooling of household head (years)	0.1	1.6
Household size	3.8	6.7
Household head has a cohabiting son	46%	78%
<b>Housing conditions</b>		
Household is homeowner	80%	89%
Roof made of cement or tiles	2%	2%
Wall made of cement	15%	16%
<b>Landholdings</b>		
Household is a landholder	83%	96%
Number of landholdings	1.47	1.97

---

# Formalisation as widowhood insurance

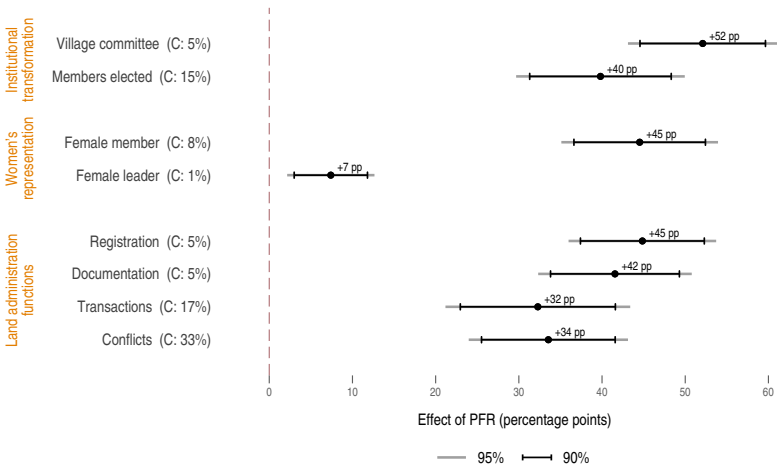
*Dependent variable: Widowed-headed households remaining in the village by 2015*

	Panel A: Widowed in 2011		Panel B: Married in 2011	
	(1)	(2)	(1)	(2)
Lives in a PFR village ( $\beta$ )	0.109*	0.208**	0.010	0.050**
	(0.06)	(0.09)	(0.01)	(0.02)
× <i>Has a cohabiting son</i> ( $\lambda$ )		-0.185*		-0.052**
		(0.10)		(0.03)
Has a cohabiting son ( $\psi$ )		0.233**		-0.016
		(0.09)		(0.02)
$\beta + \lambda$		0.024		-0.002
		(0.07)		(0.01)
Number of households	310	310	2,912	2,912
Likelihood to remain for the reference group	0.805	0.707	0.053	0.069

## Main result in words

- Among widow-headed households in 2011, those in PFR villages were 11 percentage points more likely to remain in their village.
- The effect was concentrated among widows without a son in the household.
- Among married women in 2011 who later became widowed, the program also increased the probability of remaining in the village.
- Formal institutions substituted for informal protection normally provided by family networks.
- How?

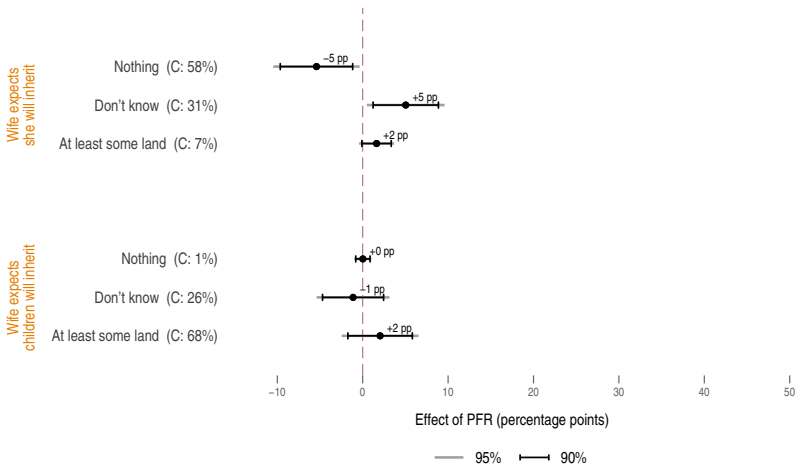
# Land registration transformed local land governance



Source: Bolea et al. (2026), authors' calculations.

**Figure 6:** Effects of land registration activities on local land management.

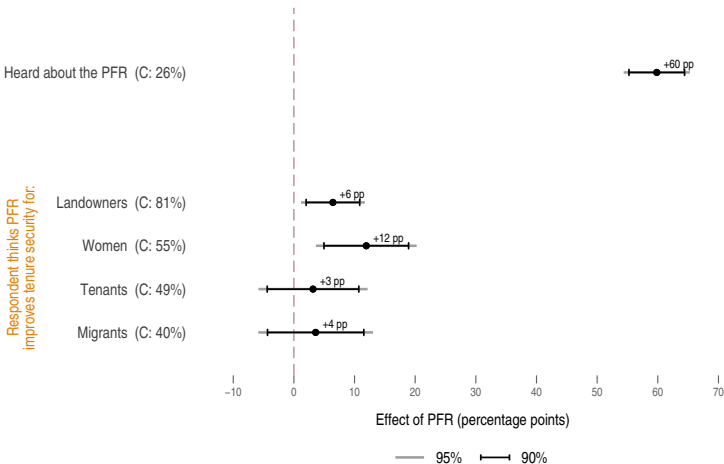
# Registration reduced perceived tenure insecurity for women



Source: Botea et al. (2016), authors' calculations.

**Figure 7:** Treatment effect on married women's land bequest expectations in the event of widowhood.

# Men think formalisation improves women's tenure security



Source: Bolea et al. (2026), authors' calculations.

**Figure 8:** Treatment effects among male respondents.

## Main lessons

- Land formalisation increased widows' likelihood of remaining in their communities.
- Effects were concentrated among widows without a son in the household.
- Formal institutions substituted for informal protection normally provided by family networks.
- The results appear to operate through changes in local institutions and social norms, not simply through the issuance of certificates.

↪ Land formalisation can function as widowhood insurance.

## Caveats

- Villages volunteered and had to support women's and girls' inheritance rights to be eligible.
- By 2015, only 19% of expected certificates had been delivered.
- We do not find evidence that gains extended to broader empowerment outcomes such as agricultural revenues or personal autonomy.
- Holding on to a home is not the same as controlling economic life, but it is often a prerequisite [▶ Results for Women's agency](#)

## Main results with male-headed households

<i>Dependent variable: Widower-headed households remaining in the village by 2015</i>				
	Panel A: Widower in 2011		Panel B: Married in 2011	
	(1)	(2)	(1)	(2)
Lives in a PFR village ( $\beta$ )	-0.0000 (0.151)	0.2000 (0.195)	0.0001 (0.004)	0.0001 (0.008)
× <i>Has a cohabiting son</i> ( $\lambda$ )		-0.1661 (0.268)		0.0000 (0.009)
<i>Has a cohabiting son</i> ( $\psi$ )		0.3525 (0.279)		-0.0028 (0.007)
$\beta + \lambda$		0.0339 (0.184)		0.0001 (0.004)
Number of households	49	49	2,912	2,912
Likelihood to remain for the reference group	0.824	0.625	0.008	0.009

[← Back to results for widows](#)

## Women and household land decisions

	Obs.	Control Mean	ITT	FWER $p$ -value
Wife is involved in household's land decisions <sup>†</sup>	2,831	0.345 (0.03)	0.059** (0.03)	0.001
Wife receives share of HH's ag. revenue <sup>†</sup>	2,831	0.212 (0.02)	0.039 (0.03)	0.035
Political involvement index	2,831	2.437 (0.04)	0.041 (0.03)	0.125
Women's autonomy index	2,831	0.798 (0.07)	0.008 (0.06)	0.850

[◀ Back to Main lessons](#)

## References

- Aldashev, G., I. Chaara, J.-P. Platteau, and Z. Wahhaj (2012). Using the law to change the custom. *Journal of Development Economics* 97(2), 182–200.
- Ali, D. A., K. Deininger, and M. Goldstein (2014). Environmental and Gender Impacts of Land Tenure Regularization in Africa: Pilot Evidence from Rwanda. *Journal of Development Economics* 110(C), 262–275.
- Andreetta, S. (2019). Affaires d'héritage à Cotonou: comment la loi a changé les familles. *Cahiers d'études africaines* 234(2), 377–404.
- de Janvry, A., K. Emerick, M. Gonzalez-Navarro, and E. Sadoulet (2015). Delinking Land Rights from Land Use: Certification and Migration in Mexico. *American Economic Review* 105(10), 3125–49.

## References (cont.)

- Goldstein, M., K. Hounghbedji, F. Kondylis, M. O'Sullivan, and H. Selod (2018). Formalization without certification? Experimental evidence on property rights and investment. *Journal of Development Economics* 132, 57–74.
- Goldstein, M. and C. Udry (2008). The profits of power: Land rights and agricultural investment in Ghana. *Journal of Political Economy* 116(6), 981–1022.
- Harari, M. (2019). Women's Inheritance Rights and Bargaining Power: Evidence from Kenya. *Economic Development and Cultural Change* 68(1), 189–238.
- Lambert, S. and P. Rossi (2016). Sons as widowhood insurance: Evidence from Senegal. *Journal of Development Economics* 120(C), 113–127.

## References (cont.)

- Lambert, S., D. van de Walle, and P. Villar (2018). Marital trajectories, women's autonomy, and women's well-being in senegal. In *Towards Gender Equity in Development*. Oxford: Oxford University Press.
- Mama, M. S. (2005). *Les femmes chefs de ménage au Bénin: une analyse exploratoire de la composition des ménages à partir des données individuelles d'un recensement*, Volume 485. Presses universitaires de Louvain.
- Médénouvo, F. (2004). *Coutumier du Dahomey*. Présence Béninoise.
- Milazzo, A. and D. van de Walle (2017). Women Left Behind? Poverty and Headship in Africa. *Demography* 54(3), 1119–1145.

## References (cont.)

- Pande, R. and C. Udry (2006). Institutions and development: A view from below. In *Advances in Economics and Econometrics: Theory and Applications, Ninth World Congress, Vol II*. Cambridge University Press.
- Peterman, A. (2012). Widowhood and Asset Inheritance in Sub-Saharan Africa: Empirical Evidence from 15 Countries. *Development Policy Review* 30(5), 543–571.
- van de Walle, D. (2013). Lasting Welfare Effects of Widowhood in Mali. *World Development* 51(C), 1–19.