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How Many and Which Women Own Land in India? Inter-gender and Intra-gender Gaps

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ABSTRACT *Measuring gender inequality in land ownership is essential for assessing progress in women's economic empowerment, tracing the impact of progressive laws on actual practice, and monitoring SDG 5 on gender equality. To effectively assess inter-gender (male-female) gaps in land ownership, however, requires multiple measures. We also need to know which women are more likely to own land by tracing intra-gender differences. To date, no study on India has provided a full range of measures on inter-gender inequality in land ownership or focused on intra-gender variations. This paper uses unique longitudinal data to measure inter-gender gaps in agricultural land ownership through multiple indicators, and changes over 2009–2014 across nine states. It also analyses intra-gender gaps, and identifies the factors–individual, household and regional–affecting a woman's likelihood of owning land. Despite significant advancement towards equality in inheritance laws, women are found to constitute barely 14% of landowners owning 11% of agricultural land in rural landowning households, averaged across states. Moreover, women are significantly more likely to inherit land as widows than as daughters, highlighting the divergence between the legal strengthening of daughters' rights and the social legitimacy that widows' claims continue to enjoy over daughters' claims.*

KEYWORDS: agricultural land ownership; gender inequality; multiple indicators; inheritance laws; widows vs. daughters; India

1. Introduction

Recent decades have seen a growing global recognition, both in academic research and among policy-makers and practitioners, that women's ownership of immovable property, especially agricultural land, is a significant determinant of their economic and social status, physical security, and theirs and their family's overall well-being.[1] Equal land rights for women is also a key target of Goal 5 on gender equality in the United Nation's Sustainable Development Goals (SDGs).

Yet most countries still lack comprehensive country-wide estimates of the gender inequality in land ownership. For instance, the data base of the Food and Agriculture Organization (FAO), which has been spearheading efforts to collate gender-disaggregated data on land, shows that while many countries collect such data on who *operates* agricultural holdings, only 20 countries report who *owns* the land by gender (http://www.fao.org/gender-landrights-database/en/). Thirteen of these countries are in sub-Saharan Africa, and very few in Asia, India being a stark absence.[2] Also, most studies (either due to data or conceptual lacunae) focus on one or two indicators, especially what percentage of women own land or what percentage of landowners are female. To cover different aspects of inequality, however, we need a wider range of indicators, including details of individual vs. joint ownership, and the proportion, area and quality of land owned.

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Moreover, as countries move towards gender equality in inheritance laws (World Bank, 2016), it becomes imperative to monitor whether the laws have narrowed the gender gap in property ownership, or been stymied by regressive social norms. Although women can acquire land by various means, such as inheritance, gift, purchase, or government transfers, inheritance is usually the most important, especially in South Asia where land (in particular agricultural land) is largely owned privately,[3] and women are more financially constrained than men in their ability to purchase any. Achieving gender equality in landed property thus depends especially on inheritance laws and their effective implementation.

This raises an additional question which is almost never posed, let alone addressed, namely *intra*-gender variation in land ownership. Are some women and men better placed and more likely to own land than others, even in landowning households, namely beyond the issue of class? This question becomes especially relevant since many inheritance laws do not treat all women equally.[4] Indeed inheritance laws are often complex, and capturing their effect empirically requires particular attention to detail.

This is especially so for India where inheritance laws: (a) vary by religion, region and type of property, with land being treated as a special type of property; (b) define shares/rights not just by gender but also by the person's relationship to the deceased (Agarwal, 1994, 1995). Hence, there can be *intra*-gender differences in rights with, say, a widow's rights being different from those of daughters (Agarwal, 1995). Although reforms to promote greater equality in inheritance laws began especially after India's Independence, as with the passing of the Hindu Succession Act (HSA) of 1956 for Hindu women, and other reforms among Christians and Parsis, the most significant move occurred in 2005 with the passing of the Hindu Succession Amendment Act (HSAA 2005). This brought for Hindu women, who constitute 80% of women in India, substantial legal equality in all forms of property, including agricultural land, and gave all daughters (married and unmarried) coparcenary rights by birth in paternal joint family property (Agarwal, 2005). Prior to this, five states had amended the original HSA 1956 (Kerala in 1976, Andhra Pradesh in 1986, Tamil Nadu in 1989, and Maharashtra and Karnataka in 1994), but except in Kerala, which abolished joint family property altogether, the reforms were partial: they applied only to daughters who were unmarried at the time of the amendment and if the property remained unpartitioned.

Even the partial amendments, however, and most notably the 2005 comprehensive amendment, strengthened the rights of daughters while weakening those of widows. Underlying this is the distinction made in Hindu law between separate property and joint family property. Intestate (i.e. without a will), daughters, sons and widows have equal rights in the man's 'separate property' (self-acquired property) and also in his 'notional share' of unpartitioned joint family property.[5] However, under the original HSA 1956, sons had additional independent rights by birth in joint family property. Legal amendments, enabling the inclusion of daughters as coparceners in joint property, reduced the father's notional share in this property, and so indirectly reduced what widows (who are not coparceners) could get from the deceased spouse.

In fact, all the post-Independence reforms have strengthened women's rights as daughters (that is, in parental property) rather than their rights as widows or wives (that is, in the husband's property). We would thus expect an increasing proportion of women to acquire land as daughters, especially as coparceners in joint family property. Has this been the case?

In particular, have post-Independence legal reforms in India which favour daughters overturned long-standing social attitudes and practices favouring widows (Agarwal, 1998), or have those attitudes and practices remained strong despite legal change? Most importantly, if our concern is with women's empowerment through land ownership, we need information on women acquiring land in all capacities, including as both widows and daughters. Indeed, *in which capacity* and *when* women acquire land can affect its welfare benefits. For example, the literature linking women's asset ownership with children's welfare relates particularly to their ownership as mothers of young children.[6] Also, married women owning land are less subject to domestic violence (Agarwal & Panda, 2007). Hence, the earlier in their lifecycle women acquire land (say as unmarried daughters) the more likely is it to enhance their

bargaining power within families. Knowing not just how many but also which women own land in India is thus essential for drawing inferences on the impact of legal change.

Until recently, there has been a virtual absence of all-India state-wise data to measure gender differences in land ownership. More recently, two national level surveys, the Indian Human Development Survey (IHDS-II for 2010–11) and the National Family Health Survey (NFHS-4 for 2015–16) included questions on this count, and provided state-level estimates. Yet, as detailed further below, NFHS-4 is misleadingly unreliable and IHDS-II is restricted in scope.[7]

In this context, longitudinal panel data based on sample surveys of households for several Indian states – from 2010 to 2014 (and for some from 2009 to 2014) – collected by the International Crops Research Institute for the Semi-arid Tropics (ICRISAT), provides a unique opportunity to widen the scope of measurement and research on Indian women's ownership of landed property. This is the first time that these data have been used for tracing the gender gap in land ownership, although they are used widely for standard agricultural analysis.[8] This data-set thus provides us with a new entry point into this debate.

For instance, we can compute several additional indicators of gender inequality in landownership. Existing all-India studies tend to focus on one or two indicators, while globally there is often considerable confusion and non-comparability between studies because they estimate divergent measures (as discussed in Doss, Kovarik, Peterman, Quisumbing, & van den Bold, 2015; Kieran, Sproule, Doss, Quisumbing, & Kim, 2015). However, since different measures reveal different facets of gender inequality, it is important to compute several measures and also assess their consistency, using a single data set. We can do so with the ICRISAT data. In addition, we address a question hitherto unaddressed for India: *which* women are more likely to own land within landowning households, based on their regional, household, and individual characteristics,[9] thus throwing light especially on the question of widows vs. daughters.

In this paper, we thus break new ground on several counts. First, we assess the parameters of rural women's land ownership in a sample of households across nine states, and changes in the same set of households over a five-year period, 2010–2014, for all the surveyed states, and over 2009–2014 for five states. We believe this is the first Indian study of gender inequality in landownership across so many states and over time for the same households.

Second, we compute several measures of gender inequality, including the percentage of land-owning households with women owners; the percentage of landowners who are female; the percentage of women who own land; the proportion of plots owned by women individually or jointly; and gender differences in the average area owned and its quality.

Third, and most importantly, we analyse for 2014 (the latest year of the survey), through logistic regressions, the likelihood of a woman owning land in a landowning household, factoring in her personal characteristics (especially marital status) and also controlling for household features and regional location.

Fourth, and supplementing the regressions, we qualitatively trace whether the women landowners obtained the land from their marital family (as widows or wives), or from their parental family (as daughters). Although this information was not directly collected by ICRISAT, we use the longitudinal data for the same households to reliably track the origins of ownership for a fairly large number of women, and make inferences for many others.

Our analysis thus gives a fair idea of deviations from gender-equal laws in practice, and whether the legal strengthening of a daughter's rights has helped overcome the social factors favouring widows over daughters. Although widows are a vulnerable category, women would be in a stronger social position if they inherited land earlier in life.

In specific terms, Section 2 below briefly discusses existing studies, especially from two perspectives: (a) the lacunae in existing estimates; and (b) the issue of legal change vs. actual practice. Sections 3 and 4 focus on diverse indicators of the *inter*-gender gap in land ownership: the former defines the indicators and why they are important, and the latter empirically estimates them by year and region, using ICRISAT data. Sections 5 and 6 present results from our regressions and qualitative

probing respectively, to address the *intra*-gender question: *which* women (and men) are more likely to own land within landowning rural households? Section 7 offers concluding reflections.

2. Existing estimates and law vs. practice

2.1. Existing estimates

Although, globally, several studies provide country-wide estimates of gender inequalities in land ownership, few relate to India.

On Africa, for instance, Doss et al. (2015) summarise 17 studies across nine countries, but few go beyond one indicator (viz., per cent women who are landowners), or at best two (the second being per cent landowners who are female). Regardless of indicators, the majority of studies report substantial gender inequality. Kieran et al. (2015) do a similar collation for Asia, covering 23 studies for 13 countries (but most are micro-studies for a sub-region within a country). Again few studies go beyond one or two indicators and all show substantial gender gaps in land ownership. For Latin America, Deere and Leon (2003) cover five countries and estimate one indicator.

For India, two recent studies – Lahoti, Suchitra, and Swaminathan (2016) and the Government of India (GoI, 2017) – go beyond single state estimates, but give vastly divergent results. The former uses IHDS-II data and the latter provides estimates from NFHS-4. Each has specific limitations. Lahoti et al. estimate the percentage of women who are landowners and find that only 6.5% women in the ≥18 age group (averaged across states) own agricultural land in landowning rural households, with southern and western India doing better than other regions. Statewise, Andhra Pradesh in south India does best at 12.1% and Odisha in east India the worst at 3.4%.

The IHDS-II data set that Lahoti et al. use, however, has limitations. First, it does not record landholding size by gender. This is essential to assess the magnitude of gender inequality in area owned. Second, in the survey, respondents of landowning households were asked to identify the 'top three' household members owning the household's agricultural land, but with the instruction: 'If more than three, list the top three'. Owners beyond the top three were thus excluded. These are more likely to be women, who typically own less land and whose rights are less recognised socially. Also, if more than three persons jointly own a plot, it is unclear which three would be reported. Again a woman co-owner may get excluded by a male respondent. Third, the survey did not ask if the top three owners owned the land individually or jointly. Information on joint ownership is important for understanding intra-household gender dynamics as well as the implementation of laws which give women coparcenary rights in joint family property. In fact, land can be owned jointly with fathers, siblings, or uncles as unpartitioned coparcenary property, or with spouses if purchased in both names, or received from the government as a joint title (as is now usual in government distributed land). Fourth, although the method of acquisition (e.g. inherited, purchased, etc.) was recorded, the person from whom inherited, say father or spouse, was not.

The GoI (2017) NFHS-4 rural estimates for 2015–16 again cover one indicator (percentage of women owning land in landowning households), and diverge from Lahoti et al. in several major respects. First, they relate to women and men aged 15–49 years owning both agricultural and other rural land, individually or jointly. By their figures, some 28% of women and 49% of men in India own land in landowning rural households. The figures for women are many times greater than Lahoti et al.'s based on IHDS-II, and appear to be unrealistically high.

Second, the GoI/NFHS-4 figures *reverse* the expected regional patterns and show east India with the highest percentages of women owning land relative to south and west India: in fact 51% of women in Bihar (east India) but only 23% in Kerala (south India) are reported to own land, even though it is Kerala which has historically had a substantial matrilineal population. This regional reversal is contrary both to Lahoti et al.'s estimates and to previous evidence of cultural geographies mapped by Agarwal (1994) and others (e.g. Chen cited in Agarwal, 1998). Third, owners aged

≥50 years go uncounted. This age group accounts for 56% of women landowners in Lahoti et al. Including them would have further inflated the NFHS-4 figures. Although NFHS-4 relates to all rural land, even if we aggregate farm and non-farm land owned by rural women for the one state (Karnataka) for which there is information from a different study (Swaminathan, Lahoti, & Suchitra, 2012), we still get a figure of only 13% of adult women in Karnataka owning rural land, compared to 47% in NFHS-4 (GoI, 2017).

In fact, doubts have been cast on the accuracy of NFHS-4 data due to the expansion of the household sample by some 5.5 times relative to NFHS-3 (GoI 2007), which necessitated the recruitment of a large number of new data collectors with limited experience. These factors would have substantially increased the data's non-sampling errors, according to Dr. Pronab Sen (then Chief Statistician and Head of the National Statistical System, GoI: personal communication, 2019). And the errors would have been further compounded for the gendered landownership data, since it was collected for the first time under NFHS-4.

Our estimates using ICRISAT data can thus fill a notable gap in our knowledge of gender differences in land ownership. Now consider the issue of law vs. practice, since much of the India-related literature is not focused on actual ownership but on the impact of legal change.

2.2. Law vs. practice

In recent years, we see a spate of papers by economists focusing on the pre-2005 state-level amendments of the HSA 1956. They treat the amendments as quasi-natural experiments, and use econometric tools to capture the effects of a legal enhancement in daughters' rights variously on girls' education, female suicides, son preference, women's likelihood of inheriting land, and so on. Their findings diverge: a positive effect on girls' education (Deininger, Goyal, & Nagarajan, 2013); no effect on girls' education (Bose & Das, 2017); increase in female suicides (Anderson & Genicot, 2015); rise in son preference (Bhalotra, Brulé, & Roy, 2020); a positive effect on the likelihood of daughters inheriting land (Deininger et al., 2013); and no effect on the likelihood of daughters inheriting land (Roy, 2015).

We do not seek to evaluate these studies, but four features of India's inheritance law reform which are relevant for our paper have been missed in these discussions, and could affect a reading of their results. First, there are likely to be gaps between amending a law and awareness in the general population about the exact nature of the amendment, especially given the limited extent and graded nature of the amendments over time.[10]

Second, as noted earlier, even the unamended HSA 1956 gave daughters (and widows) equal rights with sons in a man's separate property as well as in his notional share of joint family property. To assess the impact of subsequent legal change, we need to know to what extent women come to own property *in line with the change*, namely as direct coparceners. But without data on the source of inheritance, it is difficult to empirically distinguish between land received by daughters from their father's property and their own share in coparcenary property.

Third, enacting a law, whilst an important step forward, cannot be assumed, in itself, to change household or individual behaviour and attitudes. Parental resistance in India's predominantly patrilineal communities to bequeathing women immovable property is well-documented (Agarwal, 1994; Chowdhry, 2017).

Fourth, while the direction of reform in post-Independence India has consistently strengthened the rights of daughters at the cost of the deceased man's widow, social acceptance and practice in India have historically favoured widows over daughters (Agarwal, 1998). Most women move to the husband's home on marriage, and in north India to a distant village; hence, the paternal family sees land given to daughters as passing beyond its control, while widows (and often wives), especially those with sons, are seen as rooted in the marital family and entitled to a share in family land (Agarwal, 1994, 1998). This is reinforced by rural India's very low divorce rate of under 1% (Dommaraju, 2016).

Even historically, under the twelfth century Mitakshara and Dayabhaga legal doctrines which broadly governed Hindu inheritance rights till the early 20th century reforms in India,[11] the daughter

came only after the widow who, in turn, had a claim in the husband's joint family property only in the absence of four generations of males in the male line of descent (Agarwal, 1994). Notably too, one of the earliest laws enhancing Hindu women's property rights – The Hindu Women's Right to Property Act, 1937 – strengthened only the rights of widows. The daughter's rights were not recognised in this Act and remained subject to the old Mitaksara and Dayabhaga rules.

This begs the question posed earlier: has legal reform overturned long-standing social attitudes favouring widows? In particular, if our concern is with women's empowerment through land ownership (as emphasised by several of the noted papers) we need to know in what capacity women obtain land, a question we address for the first time in this paper after examining how many women own land to begin with.

3. Data and definitions

3.1. Data

ICRISAT's longitudinal data covers largely the same set of households each year, for the period 2010–2014 for a sample of 30 villages, initially across 8 states and in 2014 across 9 states: Andhra Pradesh (which in 2014 was split into Andhra Pradesh 'new'[12] and Telangana) and Karnataka in south India; Gujarat, Maharashtra, and Madhya Pradesh in western and central India; and Bihar, Jharkhand and Odisha in eastern India. For five of these states, we also have data for 2009. Between 2009/2010 (as relevant) and 2014, 84–95% of the households (across the states) remained in the sample; hence, attrition was low, with some subtraction and addition of households.

Although it covers only nine states, ICRISAT's is a unique data set which helps us trace agricultural land ownership patterns by gender, and changes therein over a five (or six) year period. It also enables us to identify individually owned and jointly owned plots by gender, gender differences in the amount of land owned and its quality, and the characteristics of the landowners, in ways not covered by previous research. Moreover, since the data relate to the same households over 5 or 6 years, we can trace some profiles of intra-family shifts in plot ownership, and, for many women, when and from whom they received their plots.

It needs mention that over 95% of the sampled landowning households in the ICRISAT data were Hindu and hence subject to the HSAA 2005, which gave daughters legal equality in inheritance with sons. Of the rest, 2.1% were Christians (who also have gender-equal rights in property) and 1.8% were 'others' (all in Jharkhand state). Muslims constituted only 1.1% of the sample households, all located in Karnataka and Maharashtra. Given their low incidence in the sample, and since most other communities have gender-equal inheritance laws, our results relate to the whole sample.[13]

3.2. Defining the indicators

We use seven measures of gender gaps in land ownership, all relating to rural households owning agricultural land, which constitute 81.5% of the sample households (18.5% being landless). Of these seven indicators, only indicators 2 and 3 (below) are found in existing cross-state studies on India, as noted earlier. No landowner was found to be under 15 years of age in our sample.

Indicator 1: Percentage of landowning rural households with landowners of given gender
(Households with at least one female landowner/all landowning rural households) * 100
(Households with at least one male landowner/all landowning rural households) * 100

Indicator 2: Female landowners as a percentage of all landowners in landowning rural households
(Women landowners ≥15 years/all landowners of ≥15 years) * 100

Indicator 3: Women (or men) landowners as a percentage of all women (or men) living in landowning rural households

(Women landowners ≥15/all women ≥15 in landowning rural households) * 100

(Male landowners ≥15/all men ≥15 in landowning rural households) * 100

Indicator 4: Percentage of plots owned individually and jointly by gender in landowning rural households

(Plots owned by women individually/all plots owned by the household) *100

(Plots owned by men individually/all plots owned by the household) * 100

(Plots owned jointly (by gender composition)/all plots owned by the household) * 100

Indicator 5: Percentage of household land owned by gender in landowning rural households

(Area owned by women/total area owned by the household) * 100

Indicator 6: Average area owned by gender in landowning rural households

(Area owned by women/all women landowners in the household)

(Area owned by men/all male landowners in the household)

Indicator 7: Quality of land owned by gender in terms of soil condition and irrigation access.

Using a range of indicators is important since they measure different dimensions of the gender gap. Indicator 1 measures whether a landowning household has any women owners. Given the progressive enhancement of women's legal rights, we would expect most households to have at least one woman owning land, and for this proportion to improve over time. A household with even one female landowner reflects a shift away from the social norm of solely male ownership, and familiarises household members with the idea that women can own (and often manage) land. Similarly, community perceptions can become more open to women owning land, if a large number of households in the community have women landowners.

Indicator 2 gives us the gender gap among landowners. If gender-equal inheritance rights were fully implemented and there were no bias in access to land via markets or governments, we would expect rather little difference in the proportions of women and men owning land. Indicator 3 points to intra-gender gaps in land ownership, since not all women in a landed household need own land. Indicator 4 is especially important given the coparcenary rights in joint family property granted to Hindu women under the HSAA 2005. For instance, if daughters' coparcenary rights are being recognised, we would expect a fair proportion of households to report co-ownership of landed property between siblings and/or with fathers.

Finally, indicators 5, 6 and 7 cover gender inequalities in the amount and quality of land owned. Hence, even if an equal proportion of women and men owned land under indicator 2, there could still be a gender gap if women owned only a small proportion of household land, in small plots, and of poor quality. The next section provides the values of these indicators based on ICRISAT data.

4. Gender gaps by diverse indicators

4.1. Incidence of land ownership (indicators 1-3)

Table 1 covers indicator 1 and gives the percentages of landowning rural households which have at least one woman owning agricultural land over 2009–2014. In 2014, women owned land in only 16% of the households across regions (8% of these households also had male owners, while 84% had no female owners at all). State-wise, the highest percentage of households with female landowners was 44 in Telangana and the lowest was 6 in Odisha. Comparable figures for men in the two states are 82% and 98%. Hence, even 9 years after the enactment of the HSAA 2005, and

Table 1. Indicator 1: Percentage of landowning rural households with landowners of given gender, 2009–2014

	% HHs with at least one woman owning land[a]						% HHs with at least one man owning land[a]
Region/State	2009	2010	2011	2012	2013	2014	2014
South	**21.4 (294)**	**22.1 (290)**	**27.2 (290)**	**26.7 (300)**	**29.0 (293)**	**29.0 (297)**	**88.9 (297)**
Andhra Pradesh	28.6 (171)	28.5 (165)	35.6 (163)	33.7 (169)	38.5 (161)	29.4[b] (68)	91.2[a] (68)
Telangana	–	–	–	–	–	43.9 (98)	81.6 (98)
Karnataka	11.4 (123)	13.6 (125)	16.5 (127)	17. 6 (131)	17.4 (132)	17.6 (131)	93.1 (131)
West & Central	**9.0 (409)**	**10.3 (407)**	**10.5 (411)**	**10.8 (407)**	**9.9 (404)**	**10.5 (408)**	**94.8 (408)**
Maharashtra	8.7 (218)	10.0 (219)	11.3 (221)	12.9 (217)	11.5 (217)	11.8 (221)	93.7 (221)
Gujarat	9.2 (131)	10.7 (131)	8.4 (131)	7.7 (130)	8.4 (131)	8.7 (127)	96.1 (127)
Madhya Pradesh	10.0 (60)	10.5 (57)	11.9 (59)	10.0 (60)	7.1 (56)	10.0 (60)	96.7 (60)
East	**NI**	**9.5 (400)**	**10.8 (397)**	**10.6 (406)**	**12.0 (410)**	**12.0 (409)**	**91.4 (409)**
Bihar	NI	15.6 (128)	18.2 (126)	18.8 (128)	19.8 (131)	18.9 (132)	87.9 (132)
Jharkhand	NI	9.8 (143)	9.7 (144)	9.5 (147)	12.3 (146)	11.2 (143)	88.8 (143)
Odisha	NI	3.1 (129)	4.7 (127)	3.8 (131)	3.8 (133)	6.0 (134)	97.8 (134)
All regions	**14.2 (703)**	**13.1 (1097)**	**15.0 (1098)**	**15.0 (1113)**	**15.7 (1107)**	**16.0[c] (1114)**	**92.0[c] (1114)**

Source: Calculated by the authors from ICRISAT data.
*Note*s: Figures in brackets give total landed households.
NI = No information, since data were not collected for these states in 2009.
[a]Some of these households also have both genders owning land.
[b]Excludes Telangana.
[c]8% of these households have both female and male owners.

over six decades since the enactment of the HSA 1956 which also gave women considerable rights in property (even if unequal to men's), we see few households with women landowners.

Over time (2010–2014), there is a slight upward trend in several states, but the change is small, and some states, such as Maharashtra, Madhya Pradesh and Gujarat remain nearly flat or even show a slight decline. Only Telangana and Andhra Pradesh 'new' stand out in 2014, and undivided Andhra Pradesh in previous years.

Next, we find that female landowners constitute only 14% of all landowners (Table 2, indicator 2), with the south again doing better than the rest of India. In 2014, 23% of all landowners in south India were women, relative to only 10% and 11% in west+central and east India, respectively. State-wise, Telangana again had the highest percentage with 32.4 (followed by Andhra Pradesh 'new'), and

Table 2. Indicator 2: Female landowners as a percentage of all landowners in landowning rural households, 2009–2014

Region/State	2009	2010	2011	2012	2013	2014
South	**18.1 (65/359)**	**18.5 (66/356)**	**21.5 (80/372)**	**21.0 (80/381)**	**20.9 (86/375)**	**23.1 (87/377)**
Andhra Pradesh	23.1 (51/221)	23.3 (49/210)	26.6 (58/218)	25.7 (57/222)	28.9 (63/218)	23.5[a] (20/85)
Telangana	–	–	–	–	–	32.4 (44/136)
Karnataka	10.2 (14/138)	11.6 (17/146)	14.3 (22/154)	14.5 (23/159)	14.6 (23/157)	14.7 (23/156)
West & Central	**8.0 (38/476)**	**9.0 (43/477)**	**9.3 (45/483)**	**10.2 (49/481)**	**9.1 (44/482)**	**9.8 (47/480)**
Maharashtra	7.8 (20/255)	8.9 (23/257)	10.3 (27/263)	12.4 (33/265)	10.7 (29/270)	11.2 (30/268)
Gujarat	7.7 (12/155)	8.9 (14/157)	7.1 (11/154)	6.7 (10/150)	7.3 (11/151)	7.5 (11/146)
Madhya Pradesh	9.1 (6/66)	9.5 (6/63)	10.6 (7/66)	9.1 (6/66)	6.6 (4/61)	9.1 (6/66)
East	**–**	**8.9 (38/426)**	**10.0 (43/428)**	**10.0 (43/429)**	**11.2 (49/436)**	**11.3 (49/433)**
Bihar	–	13.7 (20/146)	16.0 (23/144)	16.9 (24/142)	17.7 (26/147)	16.9 (25/148)
Jharkhand	–	9.7 (14/144)	9.7 (14/144)	9.5 (14/147)	12.3 (18/146)	11.2 (16/143)
Odisha	–	2.9 (4/136)	4.3 (6/140)	3.6 (5/140)	3.5 (5/143)	5.6 (8/142)
All regions	**12.3 (103/835)**	**11.7 (147/1259)**	**13.1 (168/1283)**	**13.3 (172/1291)**	**13.8 (179/1293)**	**14.2 (183/1290)**

Source: Calculated by the authors from ICRISAT data.
Notes: Figures in brackets: numerators are women landowners, denominators are all landowners.
[a]Excludes Telangana.

Odisha the lowest with 5.6. The upward trend between 2010 and 2014 is again slight and found mainly in south and east India.

Telangana is an outlier even among southern states. This could be explained by the long history of government and NGO efforts to help women acquire land in undivided Andhra Pradesh. NT Rama Rao, who was the state's Chief Minister thrice during 1983–1995, for example, was reputed to favour policies for empowering women. He introduced a grant-cum-loan scheme in the 1980s for dalit women to buy land in small groups and register it individually. The Deccan Development Society used the scheme to promote women's landownership (Agarwal, 2003). Notably too, barring Kerala, of the four other states that amended the HSA 1956 to enhance women's rights, Andhra Pradesh was the first to do so in 1986, and again NT Rama Rao was proactive in this regard (Menon, 1984). In the 1990s, similarly, the Andhra Pradesh Mahila Samatha Society promoted women's economic empowerment through a group farming project launched by UNDP in 2001, in five districts of Telangana (Agarwal, 2018).

Of course not all women and men in a landowning household are likely to own land, but again the gender gap is very high. Less than 10% of women aged ≥15 years, relative to almost half the men aged ≥15 years,

Table 3. Indicator 3: Women (or men) landowners as a percentage of all women (or men) in landowning rural households, 2014

Region/State	Female landowners as a % of all females aged ≥15	Male landowners as a % of all males aged ≥15
South	**16.9 (87/514)**	**52.4 (290/553)**
Andhra Pradesh new	17.7 (20/113)	55.6 (65/117)
Telangana	29.1 (44/151)	54.4 (92/169)
Karnataka	9.2 (23/250)	49.8 (133/267)
West & Central	**5.8 (47/814)**	**49.5 (433/875)**
Maharashtra	7.4 (30/408)	53.2 (238/447)
Gujarat	3.8 (11/287)	46.6 (135/290)
Madhya Pradesh	5.0 (6/119)	43.5 (60/138)
East	**5.8 (49/848)**	**41.7 (384/921)**
Bihar	8.0 (25/314)	36.3 (123/339)
Jharkhand	6.0 (16/267)	43.0 (127/295)
Odisha	3.0 (8/267)	46.7 (134/287)
All regions	**8.4 (183/2176)**	**47.1 (1107/2349)**

Source: Calculated by the authors from ICRISAT data.

own land in landowning rural households across states, with women's state-wise percentages ranging between 3 and 29 (Table 3, indicator 3). This indicator is also used in other studies, both globally and in India, including by Lahoti et al. The latter's estimates for 2010–11 showed that 6.5% of all women aged ≥18 years owned agricultural land in landowning rural households. Our comparable estimate from ICRISAT data for 2011 for this age group is 8.6%. Our regional pattern is also consistent with Lahoti et al.'s estimates.

4.2. Area and type of land owned (indicators 4-7)

We then examine how much land is held jointly, and compute the proportion of land women own as well as their farm size and land quality, since size and quality directly affect farm productivity and associated benefits.

We use plot-wise data to calculate area owned by gender for 2014. This also reveals the extent of joint ownership (indicator 4). As noted earlier, we would expect a high degree of jointness for coparcenary property across gender lines following the enactment of HSAA 2005. We find, however, that most plots are singly owned (Table 4). For example, 87.5% of the plots across all nine states are owned by individual men, 10.2% by individual women, and only 2.3% jointly by one or both

Table 4. Indicator 4: Plots owned individually or jointly by gender in landowning rural households, 2014

State	Total plots	Plot owners (%)					
		1 woman	1 man	2 women (joint)	≥ 2 men (joint)	Both men and women (joint)	All plots
South							
Andhra Pradesh new	167	13.2	83.2	–	0.6	3.0	100.0
Telangana	198	22.7	70.7	–	2.0	4.6	100.0
Karnataka	232	11.2	86.2	–	1.3	1.3	100.0
West & Central							
Maharashtra	447	6.0	86.1	0.89	4.9	2.0	100.0
Gujarat	253	4.7	87.4	–	4.7	3.2	100.0
Madhya Pradesh	129	7.8	92.2	–	–	–	100.0
East							
Bihar	918	14.2	85.8	–	–	–	100.0
Jharkhand	618	9.7	90.3	–	–	–	100.0
Odisha	465	3.7	96.3	–	–	–	100.0
All regions	**3427**	**10.2**	**87.5**	**0.1**	**1.2**	**1.0**	**100.0**

Source: Calculated by the authors from ICRISAT data.
Notes: Some households have more than one category of plot owner.

genders. Notably, there are no jointly owned plots in the eastern states or in Madhya Pradesh (central India). The low levels of overall jointness could be because rather little land is being held as coparcenary property, and (for women) because the HSAA 2005, whose primary contribution was to recognise the rights of all daughters in joint family property, especially agricultural land, has had little impact on this count. In terms of households too, only 10% of the 1114 landed households contain both individual and joint plot owners.

From the plot-level data, we also calculated the amount of land owned by gender in each household (indicator 5). For co-owned plots, we assumed equal shares. Hence, if a one hectare plot was owned jointly by one woman and two men, each was assumed to own a third, with two-thirds of the plot thus being male-owned and one-third being female-owned. On this basis we arrive at the figures in Table 5 which gives state–level and regional averages in 2014. Aggregated across states, women own only 11% of agricultural land. State-wise, the western, central and eastern states all show women owning less than 13% of the farm land, the figure being only 3.8 for Odhisa. But even in south India, in the best performing state, Telangana, the gap is high, with women owning only 21.5% of the land.

The gap is less, however, in the *average* amount of land owned by female and male landowners (indicator 6): both own under 2.5 hectares across states (Table 5) with the exception of Madhya Pradesh, where the average for women is higher than for men. Here only 6 women in the sample owned land, of whom two were outliers, including one who owned 17 ha. She was the widowed mother-in-law of the household head and the household's sole landowner and family matriarch.

In the limited land that women do own, however, gender differences in land quality are minor (Table 6, indicator 7): about the same percentage of plots (81–82) owned by both genders were reported to be fertile, and about the same percentage of land (51–52) was irrigated, although a slightly larger percentage of women's plots had problem soils (7% vs. 4% for men). These low differences in

Table 5. Indicators 5 and 6: Percentage of household land and average area owned by gender in landowning rural households, 2014

Region/State	Total area (hectares)	Percentage land owned[a]		Average area owned (hectares)	
		Females	Males	Females	Males
South	**632.63**	**17.6**	**82.4**	**1.28**	**1.80**
Andhra Pradesh 'new'	115.30	12.4	87.6	0.71	1.55
Telangana	190.62	21.5	78.5	0.93	1.62
Karnataka	326.71	17.1	82.8	2.43	2.03
West & Central	**966.82**	**8.7**	**91.3**	**1.78**	**2.04**
Maharashtra	549.67	9.0	91.0	1.64	2.10
Gujarat	208.58	4.1	95.9	0.78	1.48
Madhya Pradesh	208.57	12.5	87.5	4.34	3.04
East	**462.94**	**7.0**	**93.0**	**0.66**	**1.12**
Bihar	160.42	9.8	90.2	0.63	1.18
Jharkhand	123.90	7.8	92.2	0.61	0.90
Odisha	178.62	3.8	96.2	0.85	1.28
All regions	**2062.39**	**11.0**	**89.0**	**1.24**	**1.66**

Source: Calculated by the authors from ICRISAT data.
Notes: [a]Area owned by gender as a percentage of total area. For jointly owned plots, the area was divided equally between the owners.

Table 6. Indicator 7: Plot and land quality by gender of owner in landowning rural households, 2014

Plot and land quality	Female owned plots (N = 349)	Male owned plots (N = 2998)
% plots that are fertile	81.1	82.2
% land that is fertile	83.0	83.4
% plots with problem soil	5.2	3.8
% area with problem soil	6.9	4.1
% irrigated plots	59.9	56.8
% irrigated area	51.3	52.5

Source: Calculated by the authors from ICRISAT data.
Note: Includes only individually owned plots.

quality are probably because women typically receive land cultivated previously by men. The difference could be larger in coparcenary land partitioned between sons and daughters, but we lack data to test this.

Chart 1 compares gender gaps using indicators 1 to 5 for 2014. The gap is consistently large on all counts, with the figures for women being under 20% by all the indicators. Barely 16% of landowning households have any female landowners and just 8.4% of all women in the ≥15 age group own land. Overall, women constitute only 14% of landowners, owning 10% of the plots and 11% of agricultural area.

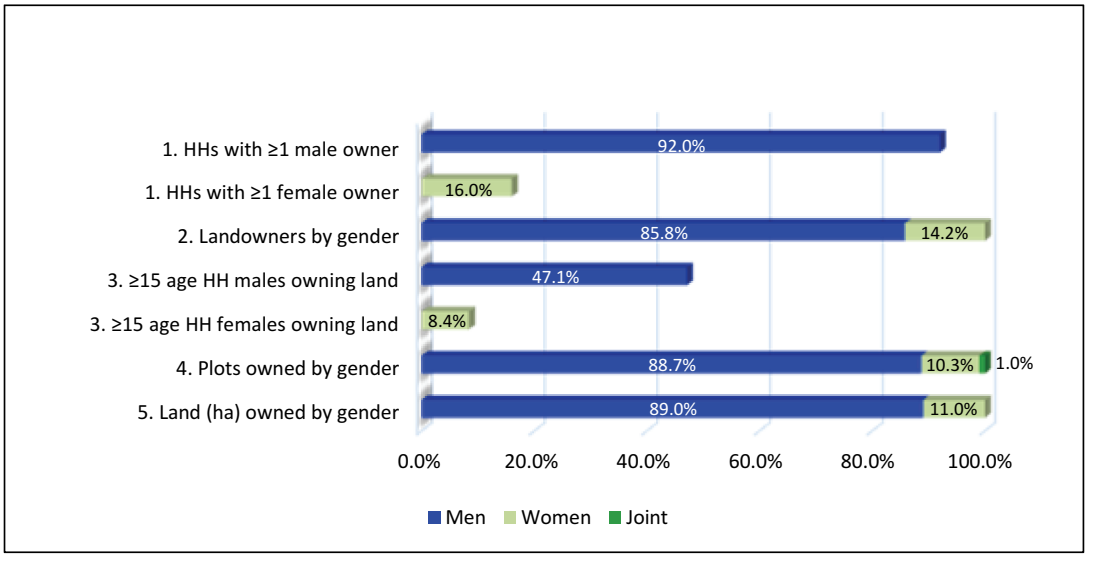

Chart 1. Comparing indicators of gender inequality in land ownership.

Source: Based on figures given in Table 1 to 5.
Notes: Joint plots in this chart are those with both male and female co-owners. The chart relates to indicators 1 to 5 as numbered.

5. Landowner characteristics and likelihood of women owning land

Let us now consider the likelihood of women owning land both vis-à-vis men and vis-à-vis other women (viz. the *intra*-gender gap), after controlling for other factors through regression analysis. For instance, among the few women who do get to own land, which ones are more likely to own some? How far have social norms moved to accommodate the rights of daughters vis- à-vis widows?

Below we briefly compare the characteristics of landowners and non-owners by gender and then discuss our logistic regressions.

5.1. Landowner characteristics

Table 7 gives the personal characteristics of owners and non-owners in 2014. Both male and female owners are on average 51–52 years old and much older than non-owners. Notably too, 57% of female owners and 52% of male owners are aged 50 years or more. For both genders, again, owners have fewer years of schooling than non-owners, although male owners are better schooled than female owners. Caste-wise, for men the proportions across castes are similar between owners and non-owners, but for women a much higher proportion of owners belong to forward castes and a much lower proportion to OBCs, relative to non-owners. The main gender difference, however, lies in marital status: 46% of women owners are widowed relative to only 4% of male owners, almost all of whom are currently married. Moreover, while 89% of the male owners are household heads, only 41% of women owners become household heads, the rest being mostly wives or mothers of the head.

5.2. Regression equations

Our three logistic regressions focus on the inter-gender and intra-gender gaps in land ownership. The first regression covers all household members aged ≥15 years, and assesses the gender gap in the likelihood of owning land (using a gender dummy) after controlling for personal and household characteristics and regions. In the second and third regressions we probe the intra-gender gaps: the

Table 7. Characteristics of landowners and non-owners aged ≥ 15 years by gender, in landowning rural households, 2014

	Females				Males			
	Owners[a]		Non-owners		Owners[a]		Non-owners	
	No. (183)	%	No. (1993)	%	No. (1107)	%	No. (1242)	%
Age (years)								
Average	52.25		37.54		51.08		28.08	
Range	18–85		15–95		19–94		15–94	
Age category (years)								
≥15–<35	8	4.4	1001	50.2	126	11.4	1022	82.3
≥35–<50	71	38.8	510	25.6	409	36.9	152	12.3
≥50–<65	75	41.0	314	15.8	366	33.0	29	2.3
≥65	29	15.8	168	8.4	206	18.6	39	3.1
Education								
Illiterate	108	59.0	728	36.53	297	26.8	79	6.4
Schooling (yrs) mean	2.64	–	5.54	–	5.95	–	9.98	–
Caste								
Forward castes	58	31.7	517	25.9	298	26.9	345	27.8
Other Backward Castes (OBCs)	47	25.7	729	36.6	390	35.2	439	35.4
Others	78	42.6	747	37.5	419	37.8	458	36.9
Marital status								
Married	94	51.4	1517	76.1	1038	93.8	547	44.0
Widowed	84	45.9	115	5.8	46	4.2	21	1.7
Never married, Separated/divorced	5	2.7	361	18.1	23	2.1	674	54.3
Household heads	75	41.0	14	0.7	987	89.2	45	3.6

Source: Calculated by the authors from ICRISAT data.
Note: Data on education were missing in one case each for female and male non-owners.
[a]No landowners were under 15 years of age.

former focuses on female household members of ≥15 years, and the latter on male household members aged ≥15 years.

We compute the following equations:

$$d_{owner} = \beta_0 + \beta_1 d_{gender} + \beta_2 d_{Mah} + \beta_3 d_{AP} + \beta_4 d_{Kar} + \beta_5 d_{widow} + \beta_{6\,age} + \beta_{7\,edu} + \beta_8 d_{FC} + \beta_9 d_{OBC} + \beta_{10\,HH\,persons} + \beta_{11\,HH\,area} + \varepsilon \quad (1)$$

$$d_{owner} = \beta_0 + \beta_1 d_{Mah} + \beta_2 d_{AP} + \beta_3 d_{Kar} + \beta_4 d_{widow} + \beta_{5\,age} + \beta_{6\,edu} + \beta_7 d_{FC} + \beta_8 d_{OBC} + \beta_{9\,HH\,persons} + \beta_{10\,HH\,area} + \varepsilon \quad (2 \text{ and } 3)$$

Where

d_{owner} = dummy for landowners (owner = 1). It relates to all landowners in Equation (1), female landowners in Equation (2) and male landowners in Equation (3)

d_{Mah}, d_{AP}, d_{Kar} = state level dummies for Maharashtra, Andhra Pradesh (including Telangana) and Karnataka, respectively. Reference category: the remaining 5 states, none of which reformed the HSAA before 2005.

d_{widow} = dummy for marital status (widowed = 1)

age = age of member (years)

edu = member's years of education

d_{FC}, d_{OBC} = caste dummies for forward caste and OBCs, respectively. Reference category: SCs, STs, other communities

HH persons = number of persons in the household ≥15 years of age

HH area = total area (in hectares) owned by the household

In all the equations, standard errors have been clustered at the household level. The analysis relates to rural households owning agricultural land.

5.3. Hypotheses

In the first equation, we expect to see a significant gap between women and men in the likelihood of owning land. In Equations (2) and (3), where we expect the effects to vary by gender, more detailed hypotheses are outlined below.

5.3.1. Regional factors. For women we expect the region/state to matter a great deal, since social norms, which vary across India, play a particularly important role. Norms governing marriage are especially diverse (Agarwal, 1994). For example, in the southern states, communities allow marriages within the village and with close kin, such as cross-cousins. This enables land to remain within the overall purview of the parental family, unlike in northern India where marriages within the village and to close kin are forbidden. Also, in the south, social norms allow parents to seek economic help from a married daughter. Hence, endowing her with land is not an economic write-off, while in northern India parents are socially disallowed from seeking such help. The southern states have thus historically been less resistant to women owning land. Maharashtra in west India has a mixed pattern in these respects.

Perhaps not surprisingly then, all the five states which partially amended the HSA 1956 before the comprehensive 2005 amendment covered all of India, are located in south and west India. We test this regional effect with three state dummies for the three states which enacted the pre-2005 amendments for which we have data, versus the rest. For male members, there is no reason to expect regional differences.

5.3.2. Personal characteristics. Second, we can expect the landowner's marital status, age, and education level to matter for both genders. For example, widows are more likely to be landowners than married women, for the reasons already discussed. For males, it could be the opposite since 94% of male landowners are married.

We expect age to be positively related to the likelihood of a person owning land but education may well have a contrary effect, since the more educated tend to prefer non-farm occupations and to even dislike farming (Agarwal & Agrawal, 2017).

5.3.3. Household characteristics. Third, we include three household-level variables which can affect women and men equally. (a) Caste, which has three categories: forward castes, other backward castes, and lower castes/other communities. The effect of caste/community could go either way, depending on its gendered social norms and reliance on farming. (b) Land owned by the household: the larger the area owned the more likely is an eligible member to own some. (c) The number of persons aged ≥15 in the household. We expect this to reduce the likelihood of a person owning land. In addition, for women, in lieu of the number of persons aged ≥15, we also tested to see if the presence of a son in the household reduced a woman's chances of owning land, using a dummy variable (son aged ≥15 present = 1). The potential direction of these effects are also indicated in Table A1 which compares households with women landowners and those with none: on average, the former own slightly more land and have fewer family members aged ≥15.

5.4. Regression results

The regression results presented in Table 8 have some striking features (see Table A2 for descriptive statistics). Equation (1) seeks to assess the importance of gender in land ownership after controlling

Table 8. Factors affecting land ownership by gender in landowning rural households, 2014 (logistic regressions)

Dependent variable	Land owners (Dummy: landowner = 1)					
Population (≥ 15 years)	All household members		Female members		Male members	
Equation no.	1		2		3	
No. of observations	4523		2175		2348	
Pseudo R^2	0.4685		0.2481		0.5091	
Explanatory variables	**Coef.**	**M.E.**	**Coef.**	**M.E.**	**Coef.**	**M.E.**
Gender of owner (Male = 1)	3.95***	0.48***	—	—	—	—
	(0.000)	(0.000)				
Dummy: Maharashtra = 1	0.03	0.00	0.02	0.00	0.04	0.01
	(0.772)	(0.774)	(0.933)	(0.934)	(0.816)	(0.816)
Dummy: Andhra Pradesh	0.58***	0.08***	1.51***	0.12***	−0.11	−0.03
(including Telangana) = 1	(0.000)	(0.000)	(0.000)	(0.000)	(0.598)	(0.597)
Dummy: Karnataka = 1	0.13	0.02	0.29	0.01	0.05	0.01
	(0.301)	(0.319)	(0.351)	(0.400)	(0.776)	(0.776)
Dummy: If member is widowed = 1	0.31	0.04	2.15***	0.22***	−3.26***	−0.47***
	(0.258)	(0.300)	(0.000)	(0.000)	(0.000)	(0.000)
Age of member	0.09***	0.01***	0.01**	0.00**	0.15***	0.04***
	(0.000)	(0.000)	(0.027)	(0.039)	(0.000)	(0.000)
Education: number of years	−0.05***	−0.01***	−0.05*	−0.00*	−0.04***	−0.01***
	(0.000)	(0.000)	(0.058)	(0.058)	(0.005)	(0.005)
Dummy: Forward castes = 1	−0.08	−0.01	0.57***	0.03**	−0.38**	−0.09**
	(0.467)	(0.459)	(0.008)	(0.024)	(0.013)	(0.012)
Dummy: OBCs = 1	−0.11	−0.01	0.18	0.01	−0.27*	−0.07*
	(0.259)	(0.253)	(0.463)	(0.476)	(0.054)	(0.053)
Total household land (hectares)	0.14***	0.02***	0.11***	0.00***	0.17***	0.04***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of household members	−0.39***	−0.04***	−0.18**	−0.01***	−0.51***	−0.13***
≥15 years of age	(0.000)	(0.000)	(0.011)	(0.006)	(0.000)	(0.000)
Constant	−5.74	—	−3.33	—	−3.04	—
	(0.000)		(0.000)		(0.000)	

Source: Calculated by the authors from ICRISAT data.
Notes: Standard errors are clustered at the household level.
M.E = Marginal Effect. Numbers in parenthesis are *p*-values. Significance: *10%; **5%; ***1 %.
Andhra Pradesh 'new' and Telangana are aggregated under Andhra Pradesh (AP).
Differences between included dummies:
Equations (1) and (2): Regions: Differences between AP and Maharashtra and AP and Karnataka are significant at 1% and 5%cent respectively, but Maharashtra and Karnataka are not significantly different.
Equation (3): None of the state dummies show significant differences from each other.
All equations: Caste: the FCs and OBCs are not significantly different from one another.

for other factors. Not unexpectedly, the probability of men owning land is 48 percentage points greater than that of women owning land.

Equations (2) and (3), respectively, examine the intra-gender effects, namely the characteristics of the women and men who are more likely to own land in landowning rural households. First, we find that region matters. Women in Andhra Pradesh (including Telangana) are 12 percentage points more likely to own land compared to women in other states. However, neither Karnataka nor Maharashtra do better than other states or vis-à-vis each other, although both states identically reformed the HSA 1956 to include unmarried daughters as coparceners in joint family property in 1994. If indeed the

pre-2005 legal reform had increased women's likelihood of owning land, the marginal effects of Karnataka and Maharashtra would also have been significant, distinguishing them from the non-reformed states. For Karnataka, Swaminathan et al.'s (2012) detailed study also found that only 9% of women in landowning rural households owned agricultural land.

Second, in terms of individual characteristics, widowhood is the most important factor affecting a woman's chances of owning land. The probability of widows owing land is 22 percentage points greater than for other women (married, single, or separated). This observation is reinforced when we probe (further below) in what capacity women received land. Moreover, older women are found more likely to be landowners, but more educated women are less likely. Age appears to trump education – older women tend to be less schooled.

Third, in terms of household characteristics, interestingly, the likelihood of a woman owning land is higher among the forward castes relative to both OBCs and other castes: probably forward caste men are more involved in non-farm work. Women are also more likely to own land in better endowed households but are negatively affected by the number of household members aged ≥15 years. Substituting all ≥15 year olds by a dummy variable representing the presence of a ≥15 son gave an insignificant result.

Equation (3) for males provides an interesting contrast to females on several counts. To begin with, none of the state variables are significant, reinforcing the argument that cultural geographies that affect women's landownership have rather little effect on men who are as likely to be landowners in south India as elsewhere in the country. Also the marital status and caste results for men are opposite to those for women. Few male landowners, as noted, were widowers.

On other counts, however, the results for men and women are similar. Older men (like older women) are more likely to own land, but better-schooled men (like women) are less likely. Also, as with women, men are more likely to own land in households that own more land, but 13 percentage points less likely to be landowners in households with more members aged ≥15 years.

The education factor plays out similarly for both genders, and the explanation appears to lie in educated people disliking farming more than the uneducated, as found by Agarwal and Agrawal (2017) in their all-India study of over 50,000 farmers. The authors attribute this to the aspirations of the educated to white collar jobs. Hence, it is likely that families pass their limited land to those who are most involved in and committed to farming. In farms with small holdings this would also limit fragmentation.

6. Sources of land owned by women

Given the noted significance of widowhood in determining women's likelihood of being a landowner in the regressions, we probed this further by qualitatively examining the relationships through which women landowners had acquired their land.

Although the ICRISAT data do not provide direct information on this, some creative reconstruction was possible by tracing backwards from 2014, since we have information on who owned which plots in each year since 2009/2010. Using this method, we could ascertain for a fair number of the 183 women landowners in 2014, at what point they became owners. We can reliably say that 37.5% received the land from husbands, mostly as widows but in some cases as wives, with living husbands transferring some plots to them or purchasing land jointly with them. As an example, where in the previous year the landowner was male and in the current year he was found to have died with his widow listed as the owner of his plots, we could assume that she had received the land as a widow. For another 15.7% cases we could infer that the women had received the land through their marital families (e.g. as the widowed mother of the household head, or co-owners with sons, or co-owner with the mother-in-law). Together, this covered 53.2% of our female landowners. In some cases where the woman had acquired the land before 2009/10 (the earliest years of our data) no inference was possible. Barely 16 women (9%) had received

land as a gift (from whom was not given), or through family partition, or (in 3 cases) via inheritance as daughters or sisters.

Hence, the most common relationship under which women become landowners is as widows. After the man's death, his plots pass to his widow, and in many cases so does the headship (41% of women landowners, as noted, are also household heads). We had observed earlier that 46% of our female landowners in 2014 were widows. Lahoti et al. (2016, p. 18), using IHDS-II data, found an even higher figure, namely that 56% of female landowners were widows. It is telling that women continue to be more likely to receive land as widows than as daughters, despite the substantial advancement of their legal rights as daughters. Notably, in most of the households with women landowners, there were daughters and/or sons who, under the HSAA 2005, have a claim in their father's separate property and also directly in joint family property. Yet only in some cases did the son also own land, and almost none of the daughters owned any.[14]

Although, in overall terms, women's rights as both widows and daughters are precarious and strongly circumscribed by social norms and prejudices, widows' rights have always enjoyed greater social legitimacy than daughters' rights, as noted earlier. In the 1980s, for instance, studies especially in northwest India found that officials who registered inheritance shares tended to pressure daughters to sign away their rights in favour of their brothers, whilst persuading widows to keep their shares (Agarwal, 1998). Surveys in the 1990s also showed that widows' claims were often registered, albeit usually jointly with their sons; this was not the case with daughters' claims (Nandwana & Nandwana, 1998). Table A3, based on Chen's study (cited in Agarwal, 1998) of widows, also strikingly brings out this difference. Only 13% of the widows with landowning fathers inherited land as daughters, while 51% of those with landowning husbands inherited land as widows. Even in Kerala, the claims of widows, in aggregate, were better recognised than those of daughters.

That was the 1990s. However, even recent micro-studies indicate the same. For example, a 2004 study of 23 villages in Gujarat found that out of 4749 registered landowners, only 11.8% were women; and of the 403 women owners for whom there was information on the source of land, 47.9% had received it as widows, and another 41.4% were given land by living spouses to gain tax or registration benefits. The only cases of daughters inheriting (4.5%) were in families with no sons (Velayudhan, 2009, p. 77).

Our results for 2014 and across several states show that the pattern has not changed noticeably, despite inheritance law reform. This also implies that most Indian women lack landed assets at a time in their life cycle when ownership could especially enhance their intra-family bargaining power, namely as daughters.

7. Concluding reflections

Using ICRISAT's unique longitudinal data for the same set of households over 2009–2014, this paper provides the first estimates of the inter-gender gap in land ownership in India, based on such a wide range of indicators across nine major states, and changes over time for eight states. It also examines what factors – individual, household and regional – impinge on a women's chances of owning land. In so doing, it addresses the little-studied question: *which* women are likely to own land in India, highlighting intra-gender differences.

We find that despite significant advances in inheritance law towards gender equality, all the indicators point to persistent and substantial inequalities, although there are regional variations, with a larger proportion of women owning land in south India than elsewhere. This regional pattern has remained largely unchanged over the six year period – 2009 to 2014. The better performance of Andhra Pradesh 'new' and Telangana points to the potential for government action, but it also points to its limits, since even here substantial inequality remains, with only 24% and 32% respectively of the landowners being women in 2014.

Also, strikingly, most of the landowning women acquired their land through their marital families, especially as widows, and not through their paternal families, despite being given equal rights with brothers in the father's separate property under the HSA 1956 and the family's joint family property under the HSAA 2005. Overall, only 2.3% of plots were owned jointly, and none were so owned in the eastern and central states. If indeed coparcenary rights had been recognised by families after the 2005 amendment of the HSA, we would have expected many more cases of joint ownership by women across states.

Our regression analysis further points to the importance of widowhood, regional location and age, in enhancing the likelihood of women owning land, widowhood being the most important. Widows, and older women in general, have an advantage, and this advantage is greater if they are located in households owning more land and are also based in Telangana or Andhra Pradesh 'new'.

Looking ahead, much more needs to be done both in data gathering and policy implementation. Although the ICRISAT data have many advantages, especially in tracing the same households over time and for multiple indicators, we still need a data set that is representative nationally and at the state-level. If gathered through the next round of the NFHS, great care will be needed in designing and implementing the section relating to gendered land ownership, including training data collectors to ensure accuracy. Other ways by which such data could be generated is by introducing gender-disaggregation in the Agricultural Census and the National Sample Surveys, neither of which at present gather land ownership data by gender, and by introducing a gender column when digitising land records.

In terms of policy, women's property position as daughters clearly needs improving in order for India to move towards gender equality in landownership, as also targeted in SDG 5. This remains a significant challenge in the face of rigid social norms and longstanding practice.

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Notes

1. See, e.g. Agarwal (1994), Agarwal and Panda (2007), Allendorf (2007), Deere and de Leon (2003), Deere and Doss (2006), Meinzen-Dick, Doss, Quisumbing, and Theis (2017), FAO (2011), Menon, van der Meulen Rodgers, and Nguyen (2014), Mishra and Sam (2016), Quisumbing and Maluccio (2003), and Sraboni, Malapit, Quisumbing, and Ahmed (2014), among others.
2. India's agricultural census collects gender-disaggregated data only on operational holdings and not on ownership (GoI, 2019). Often people confuse the two, citing figures on operational holdings as if they were ownership holdings (e.g. Saxena, 2012; Sircar, 2016).
3. In the 1990s, 85.6% of arable land in India was privately owned (Agarwal, 1994).
4. In India, the UK and several European countries, widows are (or historically have been) privileged over children in a man's intestate inheritance (Agarwal, 1994; Ruggeri, Kunda, & Winker, 2019).
5. A 'notional' share rests on the assumption of a 'notional' participation, that is, as if partition had taken place just before his death.
6. See e.g. Allendorf (2007), Kumar (1978), Menon et al. (2014), Quisumbing and Maluccio (2003) Sraboni et al. (2014), Thomas (1990, 1994), and Meinzen-Dick, Quisumbing, Doss, and Theis (2017).
7. A third, older survey – the Rural Economic and Demographic Survey 2006 – provided state-wise data on land inherited by gender, but it did not cover joint property, or whether the land came from the father's separate property or coparcenary property.
8. Mullen (2016), in his review of ICRISAT village studies, lists dozens of papers by development economists based on ICRISAT data, most published in international peer-reviewed journals.

9. Kieran, Sproule, Quisumbing, and Doss (2017) examine some of these aspects for four Asian countries but not India.
10. Studies on legal awareness are rare, and need great care in execution. For instance, a Landesa/UN Women study (2012) for assessing awareness of the HSAA 2005 in Andhra Pradesh (AP) and Bihar, did not probe the respondent's awareness of specific elements of legal change, making it difficult to infer which law the respondent was aware of: HSA 1956, its amended 1986 version in AP, or the HSAA 2005. The paper also had factual errors.
11. Dayabhaga prevailed in Bengal and Assam (east India) and Mitakshara in the rest of India. The two systems had much in common but differed in some details (Agarwal, 1995).
12. We use the suffix 'new' in 2014 to distinguish it from undivided Andhra Pradesh.
13. In our regression analysis, the results did not change when we excluded Muslims.
14. We also traced all cases over 2010–2014 where plots cultivated by the family had declined from one year to the next and the reasons for the change, to ascertain if a daughter had left with a plot. We found this to be highly unlikely. Out of 1472 plots which had moved out of the households over 5 years, only 6% were given out due to family division, and almost all went to males, the rest being leased out, sold, mortgaged, etc.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The data underlying our research findings are taken from the Village Dynamics in South Asia data base, openly available from the website of the International Centre for Research on Semi-Arid Tropics (ICRISAT), India. See: http://vdsa.icrisat.ac.in/

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References

Agarwal, B. (1994). *A field of one's own: Gender and land rights in South Asia*. Cambridge: Cambridge University Press.
Agarwal, B. (1995). Women's legal rights in agricultural land. *Economic and Political Weekly*, March, 25, 39–56.
Agarwal, B. (1998). Widows versus daughters or widows as daughters? Property, land, and economic security in rural India. *Modern Asian Studies*, *32*(1), 1–48.
Agarwal, B. (2003). Gender and land rights revisited: Exploring new prospects via the state, family and market. *Journal of Agrarian Change, 3* (1&2), 184–224.
Agarwal, B. (2005, September 25). Landmark step to gender equality. *The Hindu*. Retrieved from http://www.binaagarwal.com/popular%20writings/Landmark%20Step%20to%20Gender%20Equality%20TheHindu_25sep05.pdf
Agarwal, B. (2018). Can group farms outperform individual family farms? Empirical insights from India. *World Development*, *108*, 57–73.
Agarwal, B., & Agrawal, A. (2017). Do farmers really like farming? Indian farmers in transition. *Oxford Development Studies*, *45*(4), 460–478.
Agarwal, B., & Panda, P. (2007). Toward freedom from domestic violence: The neglected obvious. *Journal of Human Development*, *8*(3), 359–388.
Allendorf, K. (2007). Do women's land rights promote empowerment and child health in Nepal? *World Development*, *35*(11), 1975–1988.
Anderson, S., & Genicot, G. (2015). Suicide and property rights in India. *Journal of Development Economics*, *114*, 64–78.
Bhalotra, S. R. B., Brulé, R., & Roy, S. (2020). Women's inheritance rights reform and the preference for sons in India. *Journal of Development Economics*, *146*, 1–15.
Bose, N., & Das, S. (2017). Women's inheritance rights, household allocation, and gender bias. *American Economic Review*, *107*(5), 150–153.
Chowdhry, P. (ed.). (2017). *Women's land rights: Gender discrimination in ownership* (Land Reforms in India series). New Delhi: Sage Publications.
Deere, C. D., & Doss, C. R. (2006). The gender asset gap: What do we know and why does it matter? *Feminist Economics*, *12* (1–2), 1–50.
Deere, C. D., & Leon, M. (2003). The gender asset gap: Land in Latin America. *World Development*, *31*(6), 925–947.

Deninger, K., Goyal, A., & Nagarajan, H. (2013). Women's inheritance rights and intergenerational transmission of resources in India. *The Journal of Human Resources*, *48*(1), 114–141.
Dommaraju, P. (2016). Divorce and separation in India. *Population and Development Review*, *42*(2), 195–223.
Doss, C., Kovarik, C., Peterman, A., Quisumbing, A., & van den Bold, M. (2015). Gender inequalities in ownership and control of land in Africa: Myth and reality. *Agricultural Economics*, *46*(3), 403–434.
FAO. (2011). *The state of food and agriculture*. Rome: Author.
GoI. (2007). *National Family Health Survey (NFHS-3), 2005-06*. Mumbai: International Institute for Population Sciences, Ministry of Health and Family Welfare, Government of India.
GoI. (2017). *National Family Health Survey (NFHS-4), 2015-16*. Mumbai: International Institute for Population Sciences, Ministry of Health and Family Welfare, Government of India.
GoI. (2019). *All India report on number and area of operational holdings*. Agriculture Census 2015–16. Delhi: Agriculture Census Division, Department of Agriculture, Co-operation & Farmers Welfare, Government of India.
Kieran, C., Sproule, K., Doss, C., Quisumbing, A., & Kim, S. M. (2015). Examining gender inequalities in land rights indicators in Asia. *Agricultural Economics*, *46*(S1), 119–138.
Kieran, C., Sproule, K., Quisumbing, A., & Doss, C. (2017). Gender gaps in landownership across and within households in four Asian Countries. *Land Economics*, *93*(2), 342–370.
Kumar, S. K. (1978). Role of the household economy in child nutrition at low incomes: A case study in Kerala. Occasional Paper No. 95. Department of Agricultural Economics, Cornell University, Ithaca.
Lahoti, R., Suchitra, J. Y., & Swaminathan, H. (2016). Not in her name: Women's property ownership in India. *Economic and Political Weekly*, *51*(5), 17–19.
Meinzen-Dick, R. M., Quisumbing, A., Doss, C., & Theis, S. (2017). Women's land rights as a pathway to poverty reduction: Framework and review of available evidence. *Agricultural Systems*. doi:10.1016/j.agsy.2017.10.009
Menon, A. K. (1984). Andhra Pradesh Chief Minister N.T. Rama Rao seeks to give women equal share in paternal property. *India Today*, August 15.
Menon, N., van der Meulen Rodgers, Y., & Nguyen, H. (2014). Women's land rights and children's human capital in Vietnam. *World Development*, *54*, 18–31.
Mishra, K., & Sam, A. G. (2016). Does women's land ownership promote their empowerment? Empirical evidence from Nepal. *World Development*, *78*, 360–371.
Mullen, J. D. (2016). *Impact of assessment of ICRISAT village level studies: 1975–2013*. Patancharu: ICRISAT.
Nandwana, R., & Nandwana, S. (1998). Land rights of widows in Rajasthan. In M. Chen (Ed.), *Widows in India*(pp. 228–40). New Delhi: Sage, 228–40.
Quisumbing, A. R., & Maluccio, J. A. (2003). Resources at marriage and intrahousehold allocation: Evidence from Bangladesh, Ethiopia, Indonesia, and South Africa. *Oxford Bulletin of Economics and Statistics*, *65*(3), 283–328.
Roy, S. (2015). Empowering women? Inheritance rights, female education and dowry payments in India. *Journal of Development Resources*, *114*, 231–251.
Ruggeri, L., Kunda, I., & Winker, S. (eds.). (2019). *Family property and succession in EU member states: National reports on the collective data*. Rijeka, Croatia: University of Rijeka, Faculty of Law.
Saxena, N. C. (2012). *Women, land and agriculture in rural India*. New Delhi: UN Women.
Sircar, A. (2016). Women's right to agricultural land removing legal barriers for achieving gender equality, Oxfam India Policy Brief, Delhi.
Sraboni, E., Malapit, H., Quisumbing, A. R., & Ahmed, A. (2014). Women's empowerment in agriculture: What role for food security in Bangladesh? *World Development*, *61*, 11–52.
Swaminathan, H., Lahoti, R., & Suchitra, J. Y. (2012). Gender asset and wealth gaps: Evidence from Karnataka. *Economic and Political Weekly*, *47*(35), 59–67.
Thomas, D. (1990). Intra-household resource allocation: An inferential approach. *The Journal of Human Resources*, *25*(4), 635–663.
Thomas, D. (1994). Like father, like son; Like mother, like daughter: Parental resources and child height. *The Journal of Human Resources*, *29*(4), 950–988.
Velayudhan, M. (2009). Women's land rights in South Asia: Struggles and diverse contexts. *Economic and Political Weekly*, *44* (44), 74–79.
World Bank. (2016). *Women, business and the law*. Washington DC: Author.

Appendix

Table A1. Characteristics of landowning rural households with and without female owners (mean values)

Characteristics	Households with female landowners (N = 178)	Households without female landowners (N=936)
Total land owned by household (ha)	2.57	1.72
Caste of household		
• % Forward caste	0.31	0.25
• % OBC	0.26	0.36
• % Scheduled caste and others	0.43	0.39
No. of household members aged ≥15 years	3.97	4.08
No. of sons in household aged ≥15 years	0.93	0.95

Table A2. Descriptive statistics for regression variables

Variable	N	Mean	CV	Min	Max
Household-level variables, all regressions					
Total land owned in the household (ha)	1114	1.85	1.33	0.008	26.71
Number of persons of ≥15 years in the household	1114	4.06	0.46	1	17
Number of sons ≥15 years of age in the household	1114	0.95	0.98	0	5
Variables, regression 1					
Dummy: household members (owner = 1)	4525	0.28	1.58	0	1
Dummy: gender of members (male = 1)	4525	0.52	0.96	0	1
Dummy: Maharashtra = 1	4525	0.19	2.07	0	1
Dummy: Andhra Pradesh new and Telangana = 1	4525	0.12	2.69	0	1
Dummy: Karnataka = 1	4525	0.11	2.78	0	1
Dummy: marital status, widowed = 1	4525	0.06	4.00	0	1
Age of member (years)	4525	38.85	0.44	15	95
Years of education of member	4523	6.74	0.78	0	23
Dummy: forward caste = 1	4525	0.27	1.65	0	1
Dummy: OBC = 1	4525	0.35	1.35	0	1
Variables, regression 2					
Dummy: female household members (owner = 1)	2176	0.08	3.30	0	1
Dummy: Maharashtra = 1	2176	0.19	2.08	0	1
Dummy: Andhra Pradesh new and Telangana = 1	2176	0.12	2.69	0	1
Dummy: Karnataka = 1	2176	0.11	2.78	0	1
Dummy: marital status, widowed = 1	2176	0.09	3.15	0	1
Age of member (years)	2176	38.78	0.43	15	95
Years of education of member	2175	5.30	0.95	0	20
Dummy: forward caste = 1	2176	0.26	1.67	0	1
Dummy: OBC = 1	2176	0.36	1.34	0	1
Variables, regression 3					
Dummy: male household member (owner = 1)	2349	0.47	1.06	0	1
Dummy: Maharashtra = 1	2349	0.19	2.06	0	1
Dummy: Andhra Pradesh new and Telangana = 1	2349	0.12	2.69	0	1
Dummy: marital status, widowed = 1	2349	0.03	5.84	0	1
Dummy: Karnataka = 1	2349	0.11	2.79	0	1
Age of member (years)	2349	38.92	0.44	15	94
Years of education of member	2348	8.08	0.63	0	23
Dummy: forward caste = 1	2349	0.27	1.63	0	1
Dummy: OBC = 1	2349	0.35	1.35	0	1

Table A3. Rural widows who inherited land, India 1991[a]

Region/state	Landowning fathers[a]	Women inherited as daughters		Landowning husbands	Women inherited as widows	
		No	**%**		**No**	**%**
North India	**229**	**18**	**7.9**	**193**	**98**	**50.8**
Bihar	70	2	2.8	57	16	28.1
Rajasthan	42	2	4.8	39	27	69.2
Uttar Pradesh (hills)	50	1	2.0	45	23	51.1
West Bengal	67	13	19.4	52	32	61.5
South India	**241**	**43**	**17.8**	**87**	**45**	**51.7**
Andhra Pradesh	77	12	15.6	37	18	48.6
Kerala	65	28	43.1	15	10	66.7
Tamil Nadu	99	3	3.0	35	17	48.6
All regions	**470**	**61**	**13.0**	**280**	**143**	**51.1**

Source: Martha Chen, Harvard University, findings cited in Agarwal (1998, p. 22).
Notes: [a]Sample includes only Hindu widows, except in Kerala where it also includes some matrilineal Muslims and matrilineal Hindu mothers.