Women's Inheritance Rights and Entrepreneurship Gender Gap

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Abstract

The gender gap in entrepreneurship undermines economic growth, which emphasizes the importance of understanding what impedes business formation by women. Utilizing a staggered reform that granted women from specific religious groups inheritance rights equal to men, I examine whether relaxing financial constraints in the presence of discriminatory social norms fosters entrepreneurship among women. Exploiting variation in inheritance rights across gender and religion, I find that the reform significantly increased firm creation by women without worsening the quality of new entrants. Post reform, collateral enables financial inclusion and leads to business formation. Overall, results suggest that improved access to finance can narrow the gender gap in entrepreneurship, even in the presence of discriminatory social norms.

1 Introduction

Entrepreneurship has long been a hallmark of economic growth through its key role in driving innovation and job creation (Schumpeter, 1911; King and Levine, 1993). Despite its benefits, there is a pervasive gender gap in entrepreneurship across countries, that is starker in emerging markets (World Bank, 2012). Reducing this gap can have a significant impact on economic growth, highlighting the importance of understanding the frictions that impede business formation among women.

This study investigates whether financial constraints are behind the gender gap in entrepreneurship. Financing constraints are a critical barrier to entry for aspiring entrepreneurs, especially for women (World Bank, 2012). In many emerging markets, women lack ownership of assets as a result of unequal inheritance rights giving rise to financial constraints by limiting women's ability to put up collateral (Klapper and Parker, 2010; World Bank, 2019). Over the past few decades, more than twenty countries have resorted to legal reforms to end such discrimination by granting women equal inheritance rights to those of men. Standard economic theory predicts that entrepreneurship should respond to easing financial constraints through such reforms (Holtz-Eakin, Joulfaian, and Rosen, 1994a; Kerr and Nanda, 2011). However, it is possible that discriminatory social norms, such as disapproval of women working outside the home, may weaken or even sever this link for women (Field, Jayachandran, and Pande, 2010; Jensen, 2012).[1] In this setting, the social costs of starting a business might outweigh the potential gains, making such inheritance reforms ineffective. Such a tradeoff makes this paper's key question – whether legal reforms granting women equal inheritance rights are sufficient in catalyzing entrepreneurship, even in the presence of discriminatory social norms – an empirical issue worth examining.

I utilize a legal reform in India that granted women from specific religious groups equal inheritance rights, and find that the improved access to finance for women can indeed narrow the gender gap in entrepreneurship. The reform significantly increased firm creation by women without worsening the quality of new entrants. Post reform, women have access to collateral, which enables financial inclusion and leads to business formation. Further, the reform led to an increase in aggregate entrepreneurial activity. Overall, this study underscores the importance of access to

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[1]Field, Jayachandran, and Pande (2010) show that these social norms work against the beneficial effects of business training programs rendering them ineffective. Jensen (2012) argues that social norms prevent programs that aim to improve female labor force participation.

finance in narrowing the gender gap in entrepreneurship.

This study focuses on staggered changes in inheritance rights for women. Five states implemented the reform between the late 1970s and the early 1990s, followed by the remaining 24 states in 2005 pursuant to a federal amendment to the law (see Figure 1). A key feature of the reform is that it affected only women from specific religious groups as most personal laws in India, including inheritance laws, vary by religion. Specifically, women from the Hindu, Sikh, Buddhist, and Jain religious communities (hereafter, treated) were granted equal inheritance rights, while women from other religious groups, i.e., Muslims, Christians, Jews, and others (hereafter, non-treated) were unaffected. This variation in inheritance rights across gender and religion allows comparisons (i) across treated and non-treated women, and (ii) across treated males and females, which effectively rule out concerns about overall trends, gender-specific trends, and religion-specific trends in entrepreneurship.

Comparing the inheritances of women (relative to men) due to parental death before and after the reform, I show that the reform had the intended effect of increasing inheritance among women.[2] While other factors might correlate with the timing of the state-specific reform, the identifying assumption is that the timing of death relative to the timing of the reform at the state-level is exogenous.

For treated women, the reform increased the probability of inheriting land by 12% and the size of the inherited land by 26%. The average value of land inherited is economically significant, as it is almost twice as large as the average annual household income. Additional tests rule out unobserved factors driving the increase in inheritance by showing no change in inheritance patterns among the non-treated households.

In my main tests, I examine whether the reform led to business formation among women. I use census microdata on small and medium-sized enterprises that contain detailed information on the timing of business formation, and on the gender, and religion of the entrepreneur.

Comparing women from treated religious groups to everyone else (i.e., men from treated religious groups and individuals from the non-treated religious groups) within the same state, I find that the number of new women enterprises increases by 16%. This increase is equivalent to a 5%

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[2]Mainly, the reform led to an increase in inheritance, in the form of land. In many developing countries, farmland is among the most critical assets to the rural poor, and it is more often inherited than bought. For example, figures from the World Bank Living Standards Measurement Surveys suggest 65% of landholding households inherit agricultural land in Peru, 70% in Nigeria, 85% in India and 86% in Nepal.

reduction in the gender gap among entrepreneurs. Early reform states drive most of the observed increase in entrepreneurial activity among women, thus corroborating that it takes time to close the gender gap through reforming inheritance laws.

My setting allows me to rule out concerns about unobserved omitted variables differentially affecting individuals from different religious groups, which might drive the estimated increase in female entrepreneurial activity. Results comparing business formation rates across females and males from treated religious groups show that women from treated groups drive the baseline increase in business formation.

Furthermore, I rule out concerns about differential gender-specific trends driving my findings. Comparing business formation rates of women from treated religious groups to women from non-treated religious groups, I show that the reform led to significant more growth in business formation among women from treated groups.

The empirical specification rules out concerns about location and industry-specific effects that may differentially affect business formation. First, state-industry fixed effects control for unobserved time-invariant determinants of state-industry performance (e.g., natural endowments, location, etc.). Second, industry-year fixed effects control for time-varying industry shocks (e.g., technological innovation). Lastly, state-year fixed effects control for trends in the local economic conditions and general policies that affect business formation. Further analysis shows that the increase in female entrepreneurial activity is robust to the inclusion of state-industry-year fixed effects.

Two pieces of evidence suggest that the relaxation of financial constraints drives the estimated increase in business formation. First, after the reform, industries with higher financing needs exhibit a more significant increase in business formation by women relative to men. Second, areas with more developed financial institutions experienced a more substantial increase in female entrepreneurial activity as compared to other areas. To identify regions with improved access to financial institutions, I use the policy-driven nature of a bank branching program that led to a *plausibly* exogenous variation in bank entry into different regions (Burgess and Pande, 2005). These results suggest that the financial inclusion of women is the primary driver for the observed increase in entrepreneurship.

Next, I examine any potential interaction effects between social norms and such financial constraints. In particular, I test and confirm the hypothesis that discriminatory social norms indeed

prevent women from starting businesses. In particular, regions where women face low discrimination, experienced a significant increase in business formation by women relative to men. While, on average, the reform relaxes financial constraints for the marginal women entrepreneur, these findings suggest that discriminatory social norms do indeed work against the beneficial effects of the reform, in some cases.

An alternative interpretation of the baseline results is that women could be listed as owners while males in households operate firms. If that were the case, one would expect to see more businesses being formed in traditionally male-dominated industries. However, when I compare the treatment effect across industries, I find that the documented increase in women enterprises is concentrated in female-dominated industries relative to male-dominated industries. Further, the documented women enterprises employ more women and fewer men. Overall, results suggest, thereby, that the reform induces women to become entrepreneurs.

While the identification strategy can disentangle macroeconomic confounds from the effect of the reform, the data do not allow for welfare analysis. First, the inability to observe counterfactual males from the treated religious groups who are potentially crowded out because of the reallocation of land from males to females, makes assessing welfare changes challenging. Second, the reform has the effect of redistributing assets among some heirs. Hence, the net effect on aggregate activity will crucially depend on whether the effect of the inherited land on the propensity to start a business is non-linear. However, the following two pieces of evidence suggest an overall positive impact of the reform.

First, I estimate the average quality of the marginal women entrepreneur under the assumption that differences in quality will show up as differences in outcomes measured by performance. If the reform relaxes the financial constraints of aspiring women entrepreneurs, then we would expect these post-reform businesses to be of higher quality. Alternatively, the reform could draw in women with lower ability, in which case the post-reform businesses are likely to be of lower quality. Comparing measures of quality (closure rates and performance), I find that firms created by women after the reform are of higher quality (relative to firms created by men) based on observable characteristics.

Second, I evaluate the effect of the reform on the aggregate entrepreneurial activity. On one hand, the resulting loss of collateral for some males might negate the increase in business for-

mation by women leading to a decline in overall entrepreneurial activity. On the other hand, as males from treated religious groups might have access to other sources of financing, the aggregate entrepreneurial activity might increase, driven by the increase in business formation among women. The results comparing overall business formation across the treated and non-treated religious groups suggest that the reform led to an increase in aggregate entrepreneurial activity.

To assess the external validity of the main results, I relate inheritance rights and the gender gap in entrepreneurship, among 102 economies. In countries with equal inheritance rights, we expect a higher *level* of entrepreneurial activity among women than in countries without equality of rights. I measure the gender gap in entrepreneurship as the number of women entrepreneurs per 100 male entrepreneurs. Estimates suggest that countries with equal inheritance laws have a smaller gender gap than do countries with unequal inheritance laws, with the difference of 25 percentage points being statistically significant and economically large. While informative, drawing causal inference in this cross-country setting could be problematic because of potential endogeneity (e.g., countries with equal inheritance laws may discriminate less against women).

This paper contributes to the existing literature that analyzes the impact of wealth on the decision to become an entrepreneur by focusing on the role of financial constraints on the gender gap in entrepreneurship in the presence of discriminatory social norms. Prior literature on financial constraints and entrepreneurship emphasizes the role of wealth and credit in firm creation in developed countries. For example, Evans and Leighton (1990); Holtz-Eakin, Joulfaian, and Rosen (1994b) document a robust positive correlation between wealth and the likelihood to start a business. Schmalz, Sraer, and Thesmar (2017); Adelino, Schoar, and Severino (2015) document a collateral channel in stimulating entrepreneurship. This study shows that, even in the presence of discriminatory social norms, financial inclusion through equal inheritance rights reduces the gender gap in entrepreneurship.

Second, this study contributes to the literature on factors that discourage entrepreneurship among women. Several papers have documented differences in propensity among men and women to pursue an entrepreneurial activity (Fischer, Reuber, and Dyke, 1993; Ayres and Siegelman, 1995; Ardagna and Lusardi, 2008; Gompers and Wang, 2017). Buttner and Rosen (1989); Howell and Nanda (2019) find that women have more difficulty than men obtaining financing from banks or venture capitalists. This study contributes to our understanding of constraints to entrepreneurship

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by highlighting that initial asset inequality through unequal inheritance rights fosters the gender gap in entrepreneurship in emerging markets.

Third, this paper provides evidence that inheritance reforms alter occupational choices, thereby adding to the literature that examines the effect of inheritance laws across different countries. Previous literature finds that the equal inheritance rights reform is associated with an increase in female education (Deininger, Goyal, and Nagarajan, 2013; Harari, 2019), increased autonomy, and labor supply (Heath and Tan, 2019), and greater bargaining power (Roy, 2008). This study shows that inheritance reforms significantly increased firm creation by women without worsening the quality of new entrants.

From a policymaker's perspective, these results underscore that policies aimed at financial inclusion are likely to narrow the gender gap in entrepreneurship even in environments with discriminatory social norms and underdeveloped financial markets. This finding is important as recent evidence from the United States suggests that misallocation of talent in the labor market is a significant hindrance to growth (Hsieh, Hurst, Jones, and Klenow, 2019).

2 Institutional setting and data

2.1 Inheritance laws in India

After independence, the formulated constitution of India allowed personal laws, including inheritance laws, to vary by religion. The Hindu Succession Act of 1956 (HSA 1956), governs the present-day inheritance rights of four religious communities: Hindus, Buddhists, Jains, and Sikhs. The act was a first attempt at establishing a woman's right to inherit property and codify a law of succession that gave equal rights of inheritance to sons and daughters. The act, however, lost by a majority vote in parliament.[3]

To secure equal inheritance rights for sons and daughters belonging to the four treated religious communities, five states amended the act. These states include Kerala in 1976; Andhra Pradesh in 1986; Tamil Nadu in 1989; and Maharashtra and Karnataka in 1994 (see map in Figure 1). In the remaining 24 states, men retained the right by birth to the joint property until 2005. In 2005, an amendment to the Hindu Succession Act, 1956 was enacted as a law by the assent of the President

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[3]See Appendix A.1 for more details on the evolution of female property rights in India.

of India in 2005. Under the amendment called the Hindu Succession (Amendment) Act of 2005, all daughters, hold the right by birth to joint property. In my empirical approach, I exploit the cross-state variation in the timing of the amendments, which increased inheritance rights for women.

Additionally, Table IA1 shows that observable differences in state-level macroeconomic characteristics can not explain the timing of reform consistent with Anderson and Genicot (2015), who argues that no systematic reason exists for the specific years in which these different states enacted their changes before 2005. Further, an examination of decisions in court cases reveal that the judicial system in India upholds the letter and spirit of the regulation.

2.2 Data sources

I use two datasets, (i) a representative survey data on households with information on inheritances, and (ii) the universe of small and medium-sized enterprises with information on the timing of the startup alongside the gender and religion of the entrepreneur.

2.2.1 Inheritance dataset

I use the 1999 wave of the Rural Economic and Demographic Survey (REDS), which is a nationally representative survey of rural households in 17 major states of India spread across 100 districts.[4] The REDS panel was collected in four waves between 1971 and 2006 and has been used previously to study agricultural productivity in India (Foster and Rosenzweig, 1995); (Foster and Rosenzweig, 1996). The survey contains detailed information on inherited landholdings, parents' landholdings, and individual characteristics on all household members, including all siblings of the household head, married daughters.

2.2.2 Entrepreneurship dataset

To investigate the impact of inheritance reform on women's entrepreneurship, I use the All India Census of Micro, Small and Medium Enterprises (hereafter MSME Census). The census covers the universe of existing businesses that are formally registered with the respective state governments.[5]

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[4]Because HSA 1956 did not apply to Jammu and Kashmir (Agarwal, 1994), I drop the state from my analysis thus leaving me with 16 major states.

[5]The Micro, Small and Medium Enterprises (MSME) sector is a significant contributor to the Indian economy. Official figures from the Ministry of MSME, state that this sector contributes 8% of the National GDP and comprises 50% of India's total manufactured exports, 45% of India's total industrial employment and 95% of all industrial units.

Two factors make this dataset particularly well suited to examine the impact of the inheritance reform on the gender gap in entrepreneurship. First, the dataset contains detailed information on gender, the geography of operations, and the religion of the owner of the enterprise. Second, the data contains current and historical information on the enterprise itself, such as the start date, initial investment in real assets, etc. which is particularly suited to study entry decisions of owners. However, the main drawback of the MSME Census is that it does not collect information on inheritances or the family structure of the entrepreneur.

3 Effect of the reform on inheritance of land

In this section, I verify that the inheritance reform led to a significant increase in females' likelihood to inherit land. I briefly overview the empirical strategy and the main estimating equations. I then present the results of this estimation.

3.1 Empirical strategy

The starting point of the analysis is to document changes in inheritance patterns among females (relative to males) around the reform. To do so, I estimate a linear probability model specified in Equation 1. The unit of observation is an individual, and the sample includes 5,252 siblings in the early reform states with a positive amount of family landholdings and experiencing parental death. [6]

To identify the effect of inheritance reform, I compare the probability of inheritance (and size of the land inherited) by males and females belonging to the same family (siblings) in the reforming states before and after the reform. Thus, the specification tests whether the legal change affected inheritance received by females relative to male siblings. More formally, I estimate the following equation:

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\begin{aligned}
y_{itsh} = \alpha_1 + \beta_1 \text{Female}_i + \beta_2 \text{Death post reform}_h + \beta_3 \text{Death post reform}_h \times \text{Female}_i + \\
\beta_4 X_h \times \text{Death post reform}_h \times \text{Female}_i + \omega_s + \theta_t + \epsilon_{itsh}
\end{aligned}
\tag{1}
$$

where y_{ith} is an indicator variable (or natural logarithm of one plus land inherited in acres) for whether individual i, born in year t, in household h inherited any land. *Female$_i$* and *Death post reform$_h$*

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are indicator variables for whether an individual is a female and for whether the household head died after the state-specific date of the reform, respectively. X_h is a set of individual and parental characteristics that include marital status at the time of the reform, caste, parental landholdings, and parental education. ω_s are sibling-composition fixed effects to which effectively controls for the effect of family structure on inheritance allocations and θ_t are the year of birth fixed effects to control for time-varying factors that may affect inheritance patterns independently from the reform. [7]

The estimations compare inheritances of women in households where the household head's death occurred before the reform to inheritances of women in households where the death occurred after the reform. While other factors might correlate with the timing of the state-specific reform, the identifying assumption is that the timing of death relative to the timing of the reform at the state-level is exogenous. Moreover, I use non-treated siblings in reforming states as a placebo to rule out time-varying unobserved factors that might explain the outcomes.[8]

The coefficient of interest is β_3, which identifies the effect of the law change on the propensity (and magnitude) of females to inherit the land. I also vary the specification to allow for the impact of the reform to be time-varying by interacting *Death post reform$_h$* × *Female$_i$* with indicator variables for the year of death of household head. I present alternative specifications and further robustness in Section 8.

3.2 Results

Table 1 reports regression results examining changes in inheritance among women around the reform. Columns 1 to 4 model the likelihood of inheriting land among siblings, using a linear probability model, while columns 5 to 8 model the size of the inherited land (measured in acres). The estimates from column 1 suggest that the proportion of males in reforming states that inherit land compared to females increases by around 66%, if the death occured before the reform. This lower proportion among women contrasts with the significantly higher proportion (by 12%) in households

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[7]India exhibits a general preference toward sons, and this tendency shown to have a significant impact on resource allocation across children (Jayachandran and Pande, 2017). Hence, a household with male-skewed child composition might allocate resources and transfer assets differently and comparisons that do not hold sibling sex composition fixed might pick-up selection effects rather than reflecting the impact of the reform.

[8]In the REDS dataset, 60% of respondents, became the head of their household after their father died. While the survey does not give the exact time at which they inherited the land, children typically inherit the land upon a father's death. Also, note that, household headship does not necessitate the inheritance of land or a father's death.

where the head died after the reform.

Next, I examine the magnitude of inheritance. Column 5 uses the natural log of one plus the size of land inherited (in acres) as the dependent variable. The results mirror those from column 1 and suggest that females inherit a 26 percent larger plot of land after the reform.[9,10]

Columns 2 (and 6) investigate pre-trends in inheritance by including indicator variables *Death, t* $\in \{-5, -1\}$, *Death, t* $\in \{0, 5\}$, and *Death, t* ≥ 6 for whether the household head died in the six years leading up to the reform, the first five years after the reform, and beyond six years after the reform, respectively. The coefficients in the pre-reform years are small and statistically insignificant thereby ensuring the validity of the parallel trends assumption. Additionally, the point estimate increases over time implying that inheritances increase over time as social norms change.

Columns 3 (and 7) include additional controls for the marital status of the individual at the time of the reform, mother's education in years, father's education in years, father's landholding in acres, and whether an individual belongs to historically disadvantaged groups such as scheduled castes or scheduled tribes. The inclusion of additional controls increases the coefficient estimates.

To rule out secular time trends in inheritances driving the observed inheritance patterns among females, I repeat my baseline tests on a placebo sample of non-treated religious groups unaffected by the reform. Columns 4 (and 8) reports results from this exercise. I find no evidence of changes in the inheritance among women from non-treated religious groups around the reform, either in terms of economic magnitude or statistical significance, indicating that the spurious correlation is not driving changes in inheritance.[11] Overall, Table 1 suggests that the inheritance reform granting equal inheritance rights to women increased the inheritance of land among women.

4   Bridging the entrepreneurship gender gap

The goal of this paper is to investigate whether the inheritance reform offsets social norms and narrows the gender gap in entrepreneurship. Apriori, it is not obvious that such legal reforms benefit

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[9]The REDS dataset contains limited information on the market value or purchase value of the land. Note that, even if the reform led to an unequal distribution (based on value or quality) among the siblings, this limitation would bias against me finding an effect of the reform.

[10]In Appendix Figure IA 1, I show that inheritance is a significant source of asset acquisition among households in rural areas. In my sample, 70% of respondents report no change in inherited landholdings, while 84.4% report changes of less than 2 acres.

[11]Given the limited number of individuals from non-treated religion in the sample, I conduct additional placebo tests using individuals from treated religious groups in the nonreform states and with various cutoffs for the reform date. I discuss these and other alternative specifications in Section 8 and report the results in Table 8.

women. On one hand, theoretical models of poverty traps suggest that initial asset endowments can ease financial constraints and allow women to take advantage of investment opportunities (Banerjee and Newman, 1993; Galor and Zeira, 1993).[12]

On the other hand, legal reform alone may not be effective in stimulating entrepreneurship in the presence of discriminatory social norms (Field, Jayachandran, and Pande, 2010; Benschop, 2002; UN-HABITAT, 2006; Watch, 2003; USAID, 2003). In this section, I show that the inheritance reform, which allowed women from treated religious groups to inherit the land, leads them to start new businesses.

4.1 Empirical strategy

To test whether the reform induced business formation by women, I compare the evolution of business formation by women (relative to men) around the state-specific reform year. In particular, I estimate :

$$y_{ijst} = \alpha + \beta_1 \text{Treated}_i + \beta_2 \text{Post reform}_{st} \times \text{Treated}_i + \delta_{sj} + \omega_{jt} + \theta_{st} + \epsilon_{ijst} \qquad (2)$$

y_{ijst} is an indicator variable for whether a business i is started by a female in a two-digit industry j, state s, in year t. $Postreform_{st}$ is an indicator variable if the year of the startup is greater than (or equal to) the state-specific reform year. $Treated_i$ refers to individuals belonging to the four religious groups - Hindus, Sikhs, Buddhists, and Jains - to which the inheritance reform applied, while other religious groups, serving as the control group, includes Muslims, Christians, Jews, and others, to which the inheritance reform did not apply.[13] δ_{sj} are state-industry fixed-effects controls for unobserved time-invariant determinants of state-industry performance (e.g., natural endowments, location, etc.) while ω_{jt} are industry-year fixed-effects controls for industry-specific time effects (e.g., industry-specific shocks such as technological innovation). θ_{st} are state-year fixed-effects controls for state-specific time effects (e.g., regional macroeconomic shocks).

The regression exploits information on the timing of business formation relative to the reform year.[14] The coefficient of interest (β_2) is identified by the mix of gender, religion, and state-year

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[12]Other evidence from experimental and non-experimental settings shows that asset transfers to women and in general to the rural poor support their entry into the non-agricultural sector (Blattman, Fiala, and Martinez, 2013; Bandiera, Burgess, Das, Gulesci, Rasul, and Sulaiman, 2017).

[13]The inclusion of *Treated* dummy controls for differences in the propensity of becoming entrepreneurs across treated and control groups.

[14]The main focus of the analyses is on the extensive margin, because of data limitations. While the intensive margin

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variation in the inheritance reform. I cluster standard errors at the state-year level in case idiosyn-cratic factors exist that are specific to businesses within each state-year pair (Bertrand, Duflo, and Mullainathan, 2004). This approach assumes that idiosyncratic factors related to new businesses within each state-year are uncorrelated with errors of other state-year pairs.

Given the staggered nature of the reform across states, this empirical approach is attractive be-cause it effectively controls for time-varying macroeconomic conditions that are likely to impact the decision to become an entrepreneur. Additionally, the ability to control for macroeconomic condi-tions within the reforming states because of the reform applied to women from specific religious groups allows me to use other religious groups as a control group, to effectively control for secular time trends in the propensity to become an entrepreneur.

To corroborate that the observed effects are not driven by unobserved contemporaneous changes that might be changing differentially across males and females, I also implement a difference-in-differences strategy, exploiting variation in inheritance rights across religious groups. This strategy compares entrepreneurs of the same gender but different religions, thereby holding some factors that are different between males and females constant.

4.2 Results

Table 2 reports baseline regression results. Columns 1 and 2 present results for all states while columns 3 and 4 present results for the five early states. Column 1 includes the *Treated* dummy and its interaction with the *Post reform* dummy along with industry-year fixed effects that control for industry-specific time effects. Because the reform affected women from specific religious groups, I am able to include state-year fixed effects to control for local macroeconomic conditions. The resulting regressions,then, identify changes in female business formation rates among the treated relative to control groups within the same state. Thus, the unaffected religious groups control for time trends that might be driving the propensity to become an entrepreneur.

The results suggest that, after the reform, the yearly number of new firms by women increased by a significant proportion. Column 2 shows that the point estimates sharpen upon the inclusion of state-industry fixed effects that control for unobserved time-invariant determinants of state-industry

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is interesting, it is unclear whether we expect to see an effect of relaxing financial constraints for entrepreneurs who could already start a business even before the reform. We would expect these entrepreneurs to be differ along multiple dimensions (such as quality, business network, etc.) from the credit constrained marginal women entrepreneur for whom this reform relaxes financial constraints.

performance.

Given that social norms are likely to change slowly and the process of inheriting land takes time, I conjecture that the increase in business formation by women is likely strongest among the early states. Comparing coefficient estimates from columns 1 and 2 to columns 3 and 4, I find evidence consistent with this conjecture as women in early states drive most of the increase in business formation. Thus, the reform takes time for the reform to alter occupational choice among women. Alternative specifications in Section 8 and Internet Appendix Table IA2 show that the increase in entrepreneurship among the treated drives the baseline increase in female business formation. Moreover, the baseline results are robust to the inclusion of high-dimensional fixed-effects.

To put the economic magnitude into perspective, the coefficient estimate in column 2, Table 2 suggests that after the reform, the yearly number of new women enterprises increased by 16%, equivalent to a 5% reduction in the gender gap among entrepreneurs.[15]

4.3 Discussion of the identifying assumptions

The empirical strategy entails two main concerns. The first concern relates to differential trends in business formation rates among men and women. To understand whether this concern drives the results, I examine pre-trends in entrepreneurial activity around the reform. Figure 2a plots the evolution of relative rates of business formation among treated women after controlling for year fixed effects. The coefficients are obtained from estimating a regression where the dependent variable – is an indicator variable for whether a business was started by a women from the treated religious group – on a set of dummy variables for each value of three years relative to the year of the reform. The coefficients on the years leading up to the reform are economically small and not statistically significant. Thus, importantly, no pre-reform trend in business formations rates exists among men and women.

This finding has two implications. First, the absence of significant effects before the reform implies that women who enter into self-employment do not anticipate the reform. Second, the fact that entrepreneurial activity increases only after the reform suggests that this relationship is not the result of state lawmakers merely responding to vagaries of economic conditions (an omitted variable) or increases in female entrepreneurship rates (reverse causality). The key is that the effect

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[15]Before the reform, 11% of the entrepreneurs are women, equivalent to a 39% gender gap. After the reform, 12.7% are women, equivalent to a gender gap of 37.3%. Hence, the reduction in the gender gap is approximately 5% (1.7%/37.3%).

of the reform is increasing over time which is consistent with parental deaths and inheritances increasing over time. Additionally, the observed increase in startup activity takes around 3-5 years, suggesting that, before the reform other constraints such as traditional institutions and social norms among others contributed to low female self-employment rates in India.

4.4 Comparing treated women to non-treated women

Another plausible concern is that gender differences, or other policies that affect the business formation rates of women could explain the increase in female entrepreneurial activity. However, the plausibility of these alternative explanations relies on the crucial assumption that the changes affecting business formation precisely mirror the same staggered nature of the reform. Nonetheless, I design several tests to rule out these concerns.

First, I examine pre-trends in entrepreneurial activity *only among women* based on religion. I'm able to do so because the reform did not apply to all religions. Hence, these tests effectively control for time-varying factors that encourage women to become entrepreneurs. Figure 2b plots the evolution of business formation among women, treated relative to control, after controlling for year-of-creation fixed effects. The coefficients are obtained from estimating a regression – where the dependent variable is an indicator variable for whether a business was started by a woman from the treated religion – on a set of dummy variables for each value of three years relative to the year of the reform. The coefficients in the years leading up to the reform are economically small and statistically insignificant.

This finding has three implications. First, from the perspective of identification, any bias in coefficient estimates due to differential trends between female and male firm creation rates is ruled out by these tests. Second, the absence of significant lead effects among treated women implies that the adoption of the reform was plausibly exogenous to female entrepreneurial activity. Third, the fact that business formation increases only after the reform suggests that this relationship is not the result of state lawmakers merely responding to economic conditions (an omitted variable) or driven by the increase in women entrepreneurship rates (reverse causality). Moreover, the observed increase in startup activity takes around 3-5 years, which lines up with the baseline estimates suggesting the reform significantly affected entry rates among women into small and medium-sized enterprises.

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To confirm that the results hold after controlling for other time-varying state and industry factors, I use an empirical specification akin to a standard difference-in-differences, exploiting variation in inheritance rights across religious groups among women. Table 3 reports the results. The dependent variable is the fraction of businesses started by women from treated religious groups (relative to women from non-treated religious groups) in a two-digit industry j, state s, in year t. Columns 1 and 2 present results for all states while columns 3 and 4 present results for the five early states. Column 1 (and 3) includes the *Post reform* dummy and its interaction with the *Treated* dummy.

The coefficient on *Treated* dummy is informative of the pre-reform difference in the average business formation rate between the treated and the placebo. The estimates indicate that a higher proportion of women (around 40 percentage points) from treated religious groups are business owners relative to women from non-treated religious groups. The coefficient on the interaction term is informative of changes in the propensity to engage in entrepreneurial activity among treated women around the reform. The positive coefficient on the interaction term suggests that after the reform, women from treated religious groups are even higher in proportion (around 11 percentage points) compared to women from non-treated religious groups. This effect remains robust even after the inclusion of state-industry fixed effects. In columns 3 and 4, I find evidence that most of the observed increase comes from the early reforming states, thus corroborating that reform takes time to alter occupational choices among women.

Collectively, the above results suggest that granting women equal inheritance rights leads entry into entrepreneurship.

5 Economic mechanism: Access to finance

A sizeable theoretical literature has highlighted different mechanisms through which access to financing enables individuals to alter their production and employment choices (Aghion and Bolton, 1997; Banerjee and Newman, 1993). However, lenders might rationing their access to capital optimal (Stiglitz and Weiss, 1981). Moreover, the underdeveloped financial sector might prevent collateral pledging, thereby inhibiting females from altering their occupational choices (Liberti and Mian, 2010). Therefore, even if the inheritance reform relaxes financial constraints for women, given additional capital market frictions, it is unclear if women can start businesses. Hence, in this section, I present two pieces of evidence, which suggests that the financing mechanism drives the increase in

business formation among women.

5.1   Heterogeneous treatment effects by financing needs

I begin by examining the business formation rates by the financing required to start a business. If collateral in the form of inherited land indeed relaxes financial constraints for women, the increase in entrepreneurial activity is likely highest in industries where startup capital requirements are high. In industries where startup capital requirements are low, the effect will be more moderate as entry costs in such industries is lower. Motivated by this observation, I examine whether the reform increases entrepreneurship in high startup capital industries more than in low capital startup industries.

Figure 3 plots female entrepreneurship rates in high startup capital industries (relative to low startup capital industries). The figure shows the coefficients and 95% confidence intervals from estimating a regression – where the dependent variable is an indicator variable for whether a business was started by a women from the treated religious group – on a set of dummy variables for each value of three years relative to the year of the reform. The blue circles show the impact by financing need based on whether pre-reform original purchase value of physical assets are in the top tercile. All regressions include state-industry fixed effects that control for unobserved time-invariant determinants of state-industry performance (e.g., natural endowments, location, etc.). All coefficients are plotted relative to the business formation rate in k=-1, which is normalized to zero. Evidence from the figure suggests no pre-trends in the evolution of business formation by women among high-startup-capital and low-startup-capital industries. However, a clear and marked increase in entrepreneurship by women in high startup capital industries (relative to low startup capital industries) occurs after the reform.

To confirm that the results hold after controlling for other time-varying state and industry factors, I use an empirical specification that controls for time-varying effects across states and industry. Table 4 reports results from this exercise. Panel A reports heterogeneity based on required startup capital, while panel B uses the financial dependence index from (Rajan and Zingales, 1998). Columns 1 and 2 in both panels present results for all states, while columns 3 and 4 in both panels present results for the five early states. Industries are classified as *High* if their purchase value of plant and machinery in the pre-treatment period is in the top tercile or quartile of the distribution.

In both panels, columns 1 and 3 present results based on the tercile measure, while columns 2 and 4 present results based on the quartile measure. The sample is restricted to business owners from treated religious groups. Additionally, panel B restricts the sample to manufacturing industries, given that the index measure is only available for manufacturing. The financial dependence index is an industry-level measure to approximately capture a firm's intrinsic demand for external finance.

Across both panels, the estimates suggest that the increase in female business formation rates is higher in industries that have higher financing needs. This evidence is consistent with the view that after the reform, women entrepreneurs have collateral to access financing, which allows them to enter into capital-intensive industries.

5.2 Identifying the financing channel: Bank branching expansion

The critical challenge in identifying the impact of access to financing is the non-random nature of credit supply. For example, political considerations can often determine credit allocation and make the banking sector susceptible to elite capture (La Porta, Lopez-de Silanes, and Shleifer, 2002; Sapienza, 2004). Further, credit supply responds to positive investment opportunities which might be correlated to local economic conditions. This uncertainty makes identification of the causal impact of bank lending on entrepreneurial outcomes challenging.

To circumvent this issue, I use an instrumental variables approach which exploits exogenous variation in bank entry into different geographical regions.[16] Burgess and Pande (2005) find that the state-led rural bank branching expansion led to a significant increase in credit availability to rural households and reduction in rural poverty. The policy was instituted by the Indian Central Bank in 1977 and remained in place until 1990.[17] It mandated that a bank must open branches in four eligible unbanked locations if it wanted to obtain a license for opening a bank branch in an already banked location (i.e., with one or more branches).

The research design exploits the policy-driven nature of the program, which required banks to open bank branches in unbanked rural locations. I begin by showing that between 1977 and 1990, rural bank branching expansion was significantly higher in less financially developed states. I exploit the trend reversals and deviations introduced by the bank branching policies. The crucial

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[16]This strategy has most notably used in Burgess and Pande (2005). The empirical strategy used here is similar in spirit to bank deregulation in the U.S. (Jayaratne and Strahan, 1996; Black and Strahan, 2002).

[17]Given the timing of this program, I'm able to exploit this variation among four out of five early states.

identifying assumption is that other state-level economic or political factors do not exhibit the same trend reversal as the policy. Burgess and Pande (2005) show that this assumption holds.

I adopt a linear trend break model that closely resembles the actual trend reversals in bank branching expansion (Burgess and Pande, 2005). Specifically, I estimate the following first stage model (Equation 3) and second stage model (Equation 4):

$$B_{st}^R = \alpha_s + \omega_t + \beta_1(B_{s1961} \times [t - 1961]) + \beta_2(B_{s1961} \times [t - 1977])$$
$$+ \beta_3(B_{s1961} \times [t - 1990]) + \beta_4(B_{s1961} \times P_{1977}) + \beta_5(B_{s1961} \times P_{1990}) + \epsilon_{st} \quad (3)$$

α_s and ω_t represent state and year fixed effects which account for time-invariant differences across states and national level trends which may affect branch expansion. [t-1961], [t-1977], and [t-1990] are linear time trends, which switch on in 1961, 1977, and 1990, respectively. They enter the regression interacted with a measure of a state's initial financial development, B_{s1961}. P_{1977} and P_{1990} are dummy variables which equal one from 1977 and 1990, respectively. I cluster standard errors at the state level in case there are idiosyncratic factors specific to states exist (Bertrand, Duflo, and Mullainathan, 2004). Internet Appendix Table IA8 reports the results of the first-stage regression establishing that rural branch expansion associated with the branch licensing policy increased credit disbursement in rural India.

The second stage regression examining the impact of access to finance through rural bank branching takes the following form:

$$y_{st} = \alpha_s + \omega_t + \phi B_{st}^R + \kappa \text{Post reform}_{st} + \lambda(\text{Post reform}_{st} \times B_{st}^R) + \eta_1(B_{s1961} \times [t - 1961])$$
$$+ \eta_2(B_{s1961} \times [t - 1977]) + \eta_3(B_{s1961} \times [t - 1990]) + \quad (4)$$
$$\eta_4(B_{s1961} \times P_{1977}) + \eta_5(B_{s1961} \times P_{1990}) + \epsilon_{st}$$

The dependent variable y_{st} is the state-level fraction of women entrepreneurs that belong to the treated religious group each year and *Post reform*$_{st}$ is an indicator variable for post reform years. Clustering at the state-level is problematic as too few clusters lead to over-rejection of the null hypothesis (Cameron, Gelbach, and Miller, 2008). Therefore, I resort to other clustering refinements for inference.

Table 5 reports the instrumental variables estimates for the specification laid out in Equation 4.

Columns 1 and 2 adopt clustering at the state level to account for correlations across observations within the states. Columns 3 and 4 adopt cluster-robust standard errors that permit heteroscedasticity, while columns 5 and 6 use cluster bootstrap-t procedures to estimate standard errors. Estimates in column 1 suggest that in the pre-reform period, branch openings in rural unbanked locations are weakly negatively associated with female entrepreneurship. However, the interaction term is positive and statistically significant, suggesting that rural branch openings had a positive effect on female entrepreneurial activity after the inheritance reform (p-value=0.042).

In sum, the two pieces of evidence presented above support financial inclusion as the primary driver for the observed increase in female entrepreneurship rates. [18]

6 Heterogeneous treatment effects by discriminatory social norms

Evidence from the previous sections is consistent with the prediction that entrepreneurship responds to easing financial constraints through equal inheritance reforms (Holtz-Eakin, Joulfaian, and Rosen, 1994a). However, discriminatory social norms, such as disapproval of women working outside the home, may weaken or even sever this link for women (Field, Jayachandran, and Pande, 2010; Jensen, 2012). Further analysis tests and confirms the hypothesis that discriminatory social norms weaken the effect of the reform.

To identify social norms that are discriminatory towards women, I use the number of "missing women." Sen (1992) argues that as many as 100 million women could be missing in India. Gender bias and mistreatment of young girls are the candidate explanations for this phenomenon. Thus, regions with more missing women can proxy for more significant discrimination against women.

Table 6 reports results examining heterogeneity in treatment effects by social norms using this measure. Districts are classified as *Low discrimination* if the number of estimated missing women (Anderson and Ray, 2010), computed as the difference between the actual number of women per 1000 men minus the counterfactual number of women per 1000 men, is in the top tercile and quartile of the distribution. Columns 1 and 3 present results for the tercile measure, while columns 2 and 4 present results for the quartile measure. The sample is restricted to business owners from treated religious groups.

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[18]In Table IA6, I consider an alternative mechanism distinct from the collateral channel. After the reform, higher wealth (or expected wealth) might lead women from treated religious groups to also have higher human capital, thus increasing the probability of starting-up. I do not find evidence consistent with this.

Across the columns, districts where women face low discrimination, experienced a significant increase in business formation by women relative to men. These effects are stronger in early reforming states. These findings suggest that, on average, the reform relaxes financial constraints for the marginal women entrepreneur, discriminatory social norms work against the beneficial effects of the reform, in extreme cases.

7   Aggregate effect of the reform

The identification strategy can disentangle macroeconomic confounds from the effect of the reform, however, the data do not allow for welfare analysis. First, the inability to observe the counterfactual males from the treated religious groups who are potentially crowded out because of the reallocation of land from males to females, makes welfare analysis challenging. Second, the reform has the effect of redistributing assets among some heirs. Hence, the net effect on aggregate activity will crucially depend on whether the effect of the inherited land on the propensity to start a business is non-linear. However, the following two pieces of evidence suggest an overall positive impact of the reform.

7.1   Quality of the marginal women entrepreneur

First, I estimate the average quality of the marginal women entrepreneur under the assumption that differences in quality will show up as differences in outcomes measured by performance. If the primary effect of the reform was to draw in women with lower ability, then the startups created after the reform should be less likely to create jobs and more likely to perform poorly. Alternatively, if the reform drew in women with higher ability, then the startups should be as likely as before to create jobs and perform as well. I use two proxies for firm quality, namely, closure rates and performance. Table 7 reports the results of examining closure rates while Table IA7 reports results examining performance.

Columns 1 and 2 present results for all states, while columns 3 and 4 present results for the five early states. Column 1 (and 3) includes the *Female* dummy and its interaction with *Female* dummy along with high-dimensional fixed effects similar to our main empirical strategy as in Equation 2. The dependent variable is an indicator variable for business closure, which takes the value one if the business is closed anytime during its operation between inception until the time of the survey.

Note that the entrepreneurship dataset contains information on all surviving businesses, and hence the closure rates capture the operational performance of the business.

The coefficient on *Female* dummy is informative of the pre-reform average closure rates for female businesses. The estimates from column 1 (column 2) suggest that before the reform, on average, businesses of women from treated religious groups experience 1% (0.7%) higher operational closure than males from the treated religious groups. The interaction term is informative on how the closure rates differ among new enterprises started by women after the reform relative to other enterprises. The negative coefficient on the interaction term suggests that new female businesses exhibit a lower probability of closure in comparison to other enterprises. The better performance of female enterprises relative to male enterprises is statistically significant, as confirmed by the joint test. Columns 3 and 4 show that the effect also exists among enterprises in the early reforming states. Results on performance in Table IA7 mirror the results on closure rates.

Overall, these results suggest that the main effect of the reform was to draw in females with higher ability, and these new businesses by women perform better in comparison to male businesses. Although these results are encouraging, in the absence of data on owner characteristics, I am unable to rule out differences in risk aversion driving the lower performance.

7.2 Aggregate entrepreneurial activity

Second, I evaluate the effect of the reform on the aggregate entrepreneurial activity. Apriori, the effects of the reform on the aggregate entrepreneurial activity are not apparent. On one hand, the reform led to reallocation from males to females resulting in lower inheritance for some males. Thus, a loss in inheritance may negatively affect business formation by males leading to an overall decline in entrepreneurial activity. On the other hand, the reform might not affect overall entrepreneurial activity as treated males may have access to other sources of finance.

To examine whether the reform's effect on overall entrepreneurial activity, Table 8 compares business formation rates across the treated and non-treated religious groups. Post reform, the business formation rates are higher among the treated religious groups. These results show that the reform led to an increase in overall business formation among the treated. Thus, on average, any reallocation from males to females caused by the reform did not dampen the overall entrepreneurial activity.

Note that while the identification strategy is quite attractive in disentangling macroeconomic confounds from the effect of the reform, the data do not allow for welfare analysis. First, the inability to observe the counterfactual males from treated religious groups who are potentially crowded out because of the loss in collateral due to the reform makes welfare analyses challenging. Second, the net effect on aggregate business formation will crucially depend on what is the marginal effect of inherited land on the propensity to start a business. Moreover, the lack of data combining inheritances to the occupational choices of the population prevents me from drawing welfare conclusions. However, the results from the analysis of business formation rates indicate that around the reform, the aggregate entrepreneurial activity did not decrease.

8 Alternative specifications and external validity

8.1 Alternative interpretation

Results so far are consistent with inheritance reforms relaxing collateral constraints for the marginal women entrepreneur. In the absence of data, however, on the household structure of the enterprise owner and the distinction between the owner and the operator of the businesses, women could act as a proxy for males within their households. This concern stems from the findings that business decisions are made in the context of available opportunities and constraints within their household and not merely their enterprise (Bernhardt, Field, Pande, and Rigol, 2017). To mitigate these concerns, I examine whether female and male entrepreneurs enter similar industries.

I begin by plotting female entrepreneurship rates in each industry. Figure 4 plots the coefficients and 95% confidence intervals from estimating a regression – where the dependent variable is an indicator variable for whether a business was started by a female – on dummy variables for each two-digit industry classification. The circles and triangles display the coefficient estimates on industry dummies from estimating separate regressions for pre-reform and post-reform periods, respectively. All coefficients are plotted relative to agriculture. The sample is restricted to business owners from treated religious groups. As evident from the figure, female entrepreneurship rates are higher in industries that previously had a higher share of female entrepreneurs.

More formally, I compare entrepreneurship rates across industries based on the most representative gender of an industry. To do so, I designate an industry as *female-dominated industry* if the

share of female entrepreneurs within an industry in the pre-treatment period is in the top tercile or quartile of the distribution. Table 9 presents results from this exercise. Second, female enterprises (relative to male enterprises) employ more women and fewer men (see Table IA5). Taken together, these two pieces of evidence mitigate concerns regarding female occupational choices determined by males within the context of their household.[19]

8.2 Alternative specifications

Table 10 reports key results for a number of alternative specifications of the main analysis. Panel A reports tests examining the effect of the reform on inheritance among women. The dependent variable is the natural logarithm of one plus total inherited land (measured in acres). Column 1 of Table 10 reports results from Table 1 for ease of comparison.

First, I examine whether the key findings of this paper are robust to the exclusion of Kerala which passed a slightly different amendment in the form of the Kerala Joint Hindu Family System (Abolition) Act. Column 2 shows that the results are robust to the exclusion of Kerala. Next, I address concerns that idiosyncratic factors are correlated within a village instead of the household because communities at the village-level impose and defend social norms. Column 3 shows that even though the standard errors are larger compared to the baseline, the point estimates are statistically significant at the 1% level. In addition, households in non-reform states might serve as a better control group to capture macroeconomic unobservables. Thus, column 4 includes households from non-reforming states and finds attenuation in the point estimates. Further, in column 5, I also show robustness to measurement by using the share of land inherited as the dependent variable, yielding a point estimate of 3.7 basis points (p-value=0.009).

Furthermore, to rule out concerns relating to omitted factors that might affect females and males differentially and, thereby, the outcomes of interest, I conduct additional tests by limiting the sample to women and comparing across and within the states. Column 6 finds a consistent effect of the inheritance reform among women from treated religious groups across early reforming and late reforming states, while column 7 finds no effect among women from non-treated religious groups.

Lastly, in columns 8 through 11, I check for inheritance patterns among women from treated

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[19]These results also mitigate the possibility that inheritance of the enterprise itself drives the observed increase in female business formation. If females inherited businesses from male household heads instead of starting new businesses, then one would expect female entrepreneurship rates to be larger in male-dominated industries than in female-dominated industries.

religious groups in late reforming states with different cutoffs for the reform date. Across the various specifications, I find no evidence of changes in the inheritance among women around the reform in late states, either in terms of economic magnitude or statistical significance, indicating that the spurious correlation is not driving changes in inheritance.

In panels B, C, and D, I examine alternative specifications for female entrepreneurial activity around the reform. These panels present results from estimations, which include high-dimensional fixed- effects. Mainly, they compare female business formation rates among the treated within the same state, industry and year, thus effectively controlling for industry conditions within each state and year, that might affect the propensity to become an entrepreneur. Additional results in Internet Appendix Table IA2, suggest that the increase in entrepreneurship among the treated drives the baseline increase in female business formation.

Overall, the results from the alternative specifications are consistent with the baseline results, documenting a reduction in the gender gap in entrepreneurship.

8.3   External validity

To assess the external validity of my main results, I analyze the correlation between the gender gap in entrepreneurship and inheritance rights (see Figure 5). I show that my findings that inheritance rights reduces the gender gap in entrepreneurship is not specific to India but is common across both advanced and developing economies. I construct a cross-country dataset of 102 countries with different inheritance rights. I classify countries into two types namely: "Equal Inheritance Laws" and "Unequal Inheritance Laws" based on whether these countries have laws treating sons and daughters equally on the matters of property rights. I measure the gender gap in entrepreneurship as the number of women entrepreneurs per 100 male entrepreneurs. For the sake of completeness of data sources, all measurements, and classifications are as of the end of 2014.

I find that countries with equal inheritance laws have a smaller gender gap than do countries with unequal inheritance laws with the difference of 11 percentage points being statistically significant (p-value=0.001) (see Figure 6). While these results are informative, drawing causal inference is problematic because of omitted variable bias. Overcoming this challenge requires analysis of microdata and reform within a country which is one of the contributions of this study.

Thus, the positive correlation indicates that unequal inheritance rights and hence access to fi-

nance might contribute to the gender gap in entrepreneurship.

9 Conclusion

The gender gap in employment, education, and many other domains has declined considerably over the last century, but a significant gender gap in entrepreneurship remains. This gap in business formation directly translates to a difference in business leadership which is detrimental to growth. Hence, identifying and implementing effective policies to increase women's economic activity could have a significant impact on economic growth. This paper investigates one such source of gender inequality namely discriminatory inheritance rights which prevents women from owning assets.

In this paper, I examine the effects of statutory law reform, granting women from specific religious groups inheritance rights equal to men's, on the growth of female entrepreneurship in India. Using micro data on business registration and exploiting variation in inheritance rights across religious groups and gender, I show that these reforms lead to an increase in business formation by women relative to men, especially in the formal sector and in rural areas. Moreover, the evidence is consistent with a financing mechanism driving this effect, wherein after the reform, the marginal female entrepreneur has collateral to access financing. An instrumental variables strategy, which exploits exogenous variation in bank entry into different geographical regions, corroborates that financial inclusion is the primary driver for the observed increase in women entrepreneurship rates. Overall, these findings highlight that legal recognition of women's inheritance rights is beneficial in narrowing the entrepreneurship gender gap in the face of persistent deep-rooted social norms.

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FIGURE 1: EARLY STATES ADOPTING THE INHERITANCE REFORM
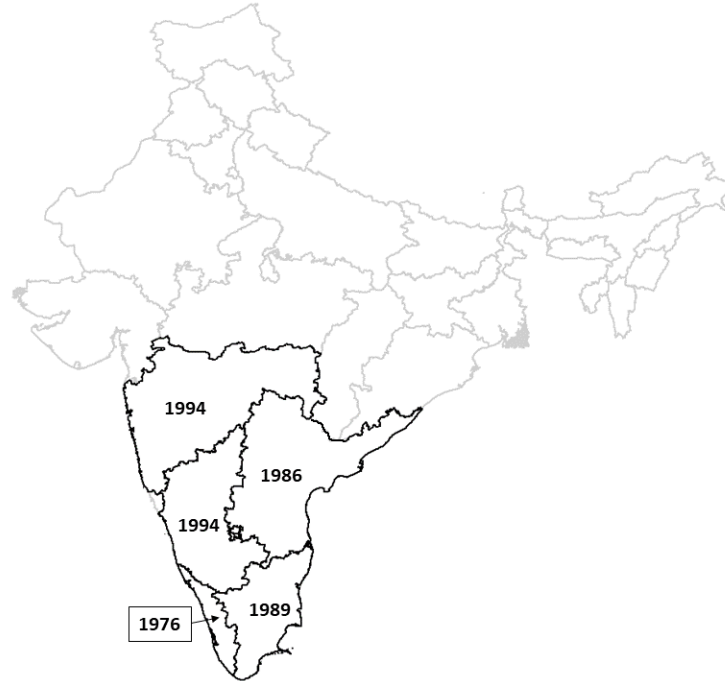
Notes: This figure provides information on timing among the five early states that implemented equal inheritance rights for men and women. The year of adoptions is as follows: Kerala in 1976; Andhra Pradesh in 1986; Tamil Nadu in 1989; Maharashtra and Karnataka in 1994. The remaining states (indicated in gray) adopted equal inheritance in 2005.

FIGURE 2: BUSINESS FORMATION RATES AROUND THE REFORM

(a) Women relative to men
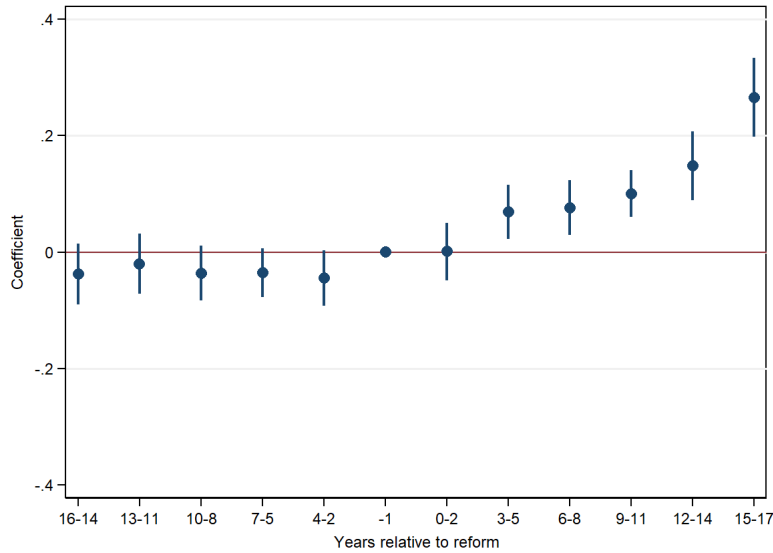
(b) Treated women relative to non-treated women
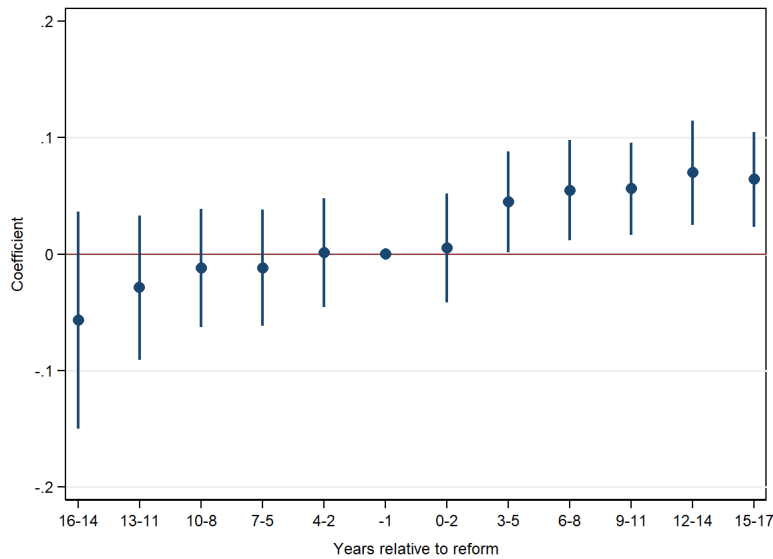
Notes: The two figures plot evolution of business formation rates around the reform. Panels (a) and (b) plot the regression coefficients and 95% confidence intervals from estimating a regression – where the dependent variable is an indicator variable for whether a business was started by a treated women – on a dummy variable for each year relative to the year of the reform. For brevity, I combine three years into one bin. Panel (a) plots business formation rates for treated women relative to untreated entrepreneurs while panel (b) plots business formation rates for treated women relative to untreated women. All regressions include year-of-creation fixed effects. All coefficients are plotted relative to the business formation rate in k=-1, which is normalized to zero. Data Source: All India Micro Small & Medium Enterprise Census.

FIGURE 3: BUSINESS FORMATION BY FINANCING NEEDS
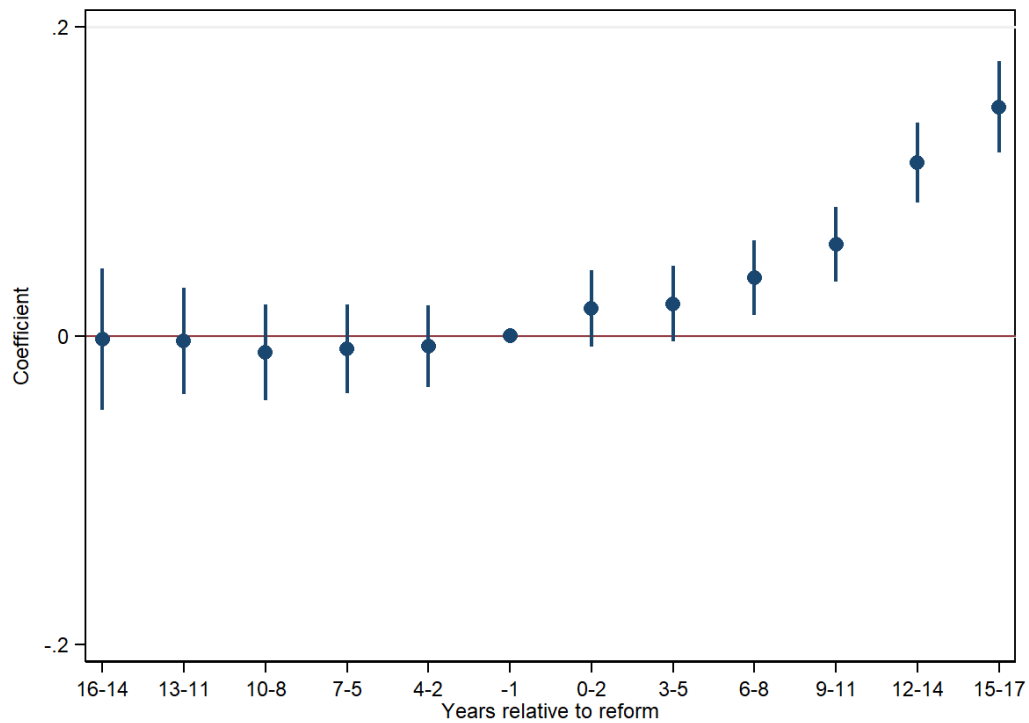
Notes: This figure plots female entrepreneurship rates in high startup capital industries (relative to low startup capital industries) around the reform. The figure shows the coefficients and 95% confidence intervals from estimating a regression – where the dependent variable is an indicator variable for whether a business was started by a women – on a set of dummy variables for each year relative to the year of the reform interacted with high startup capital industry. High startup capital industry is an industry where the pre-treatment original purchase value of plant and machinery is in the top tercile. The regression includes state-industry fixed effects. The coefficients are plotted relative to the business formation rate in k=-1, which is normalized to zero. For brevity, I combine three years into one bin. Data Source: All India Micro Small & Medium Enterprise Census.

FIGURE 4: BUSINESS FORMATION BY INDUSTRY
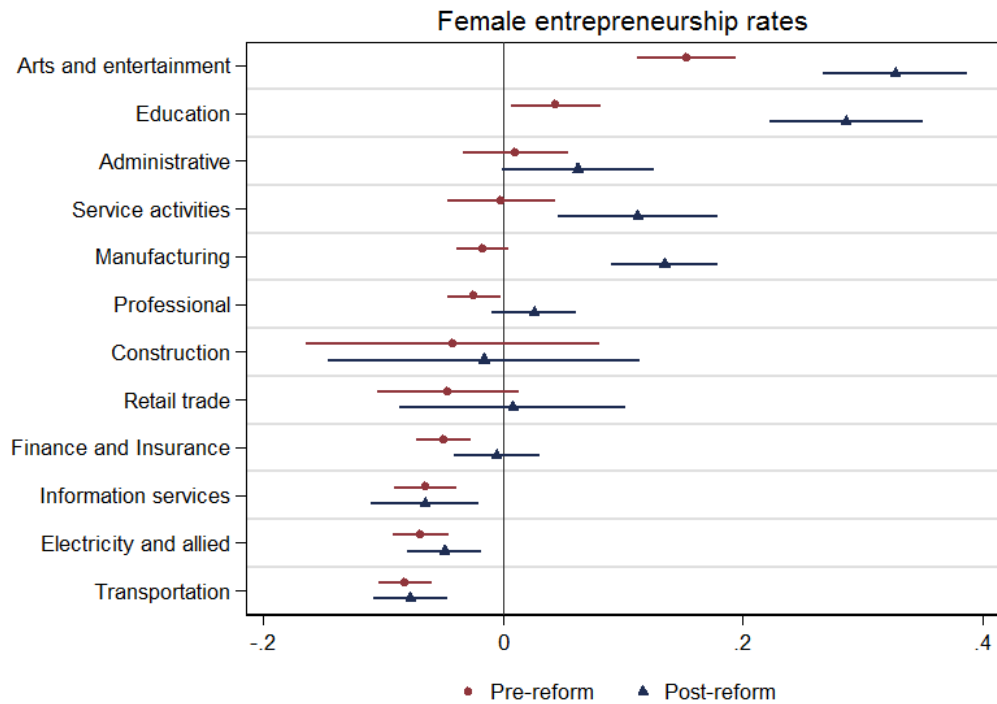
Notes: This figure plots female entrepreneurship rates by industry around the reform. The figure shows the coefficients and 95% confidence intervals from estimating a regression of the dependent variable – an indicator variable for whether a business was started by a women – on a set of dummy variables for each industry. The circles and triangles display the effects from estimating separate regressions for pre-reform and post-reform periods, respectively. All coefficients are plotted relative to the industry category Agriculture. The sample is restricted to business owners from treated religious groups. Data Source: All India Micro Small & Medium Enterprise Census.

FIGURE 5: WOMEN'S INHERITANCE RIGHTS REFORMS AROUND THE WORLD, 1960-2017

Legend:
- No inheritance law
- Introduced Inheritance law
- Had Inheritance Law
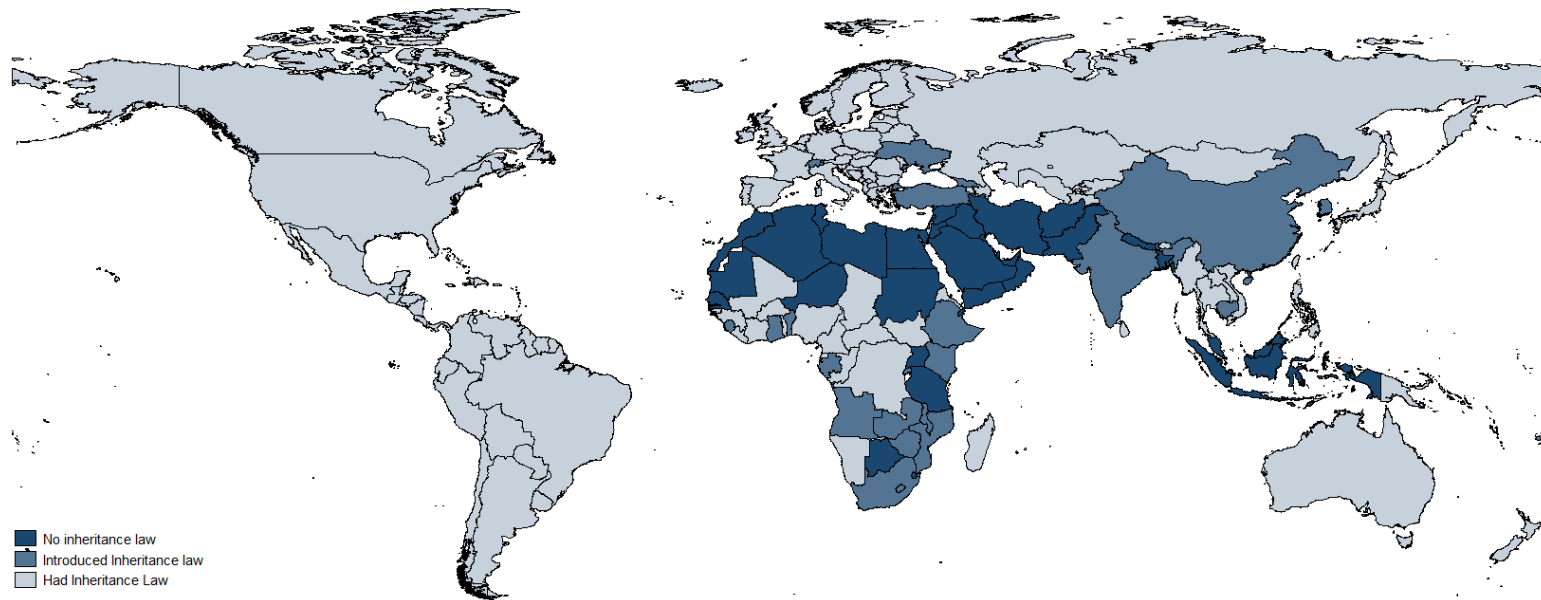
Notes: This figure presents a map of the countries that adopted equal inheritance rights between 1960 and 2017. Equal inheritance rights refer to equal legal property rights to both sons and daughters. The low intensity shaded countries have equal inheritance rights since before 1960 while the highest intensity shaded countries do not have equal inheritance rights as of 2017. The intermediate intensity shaded regions introduced reforms between 1960 and 2017. Source: Author's calculation using various reports from the World Bank.

FIGURE 6: INHERITANCE LAWS AND ENTREPRENEURSHIP GENDER GAP

Female entrepreneurs per 100 male entrepreneurs
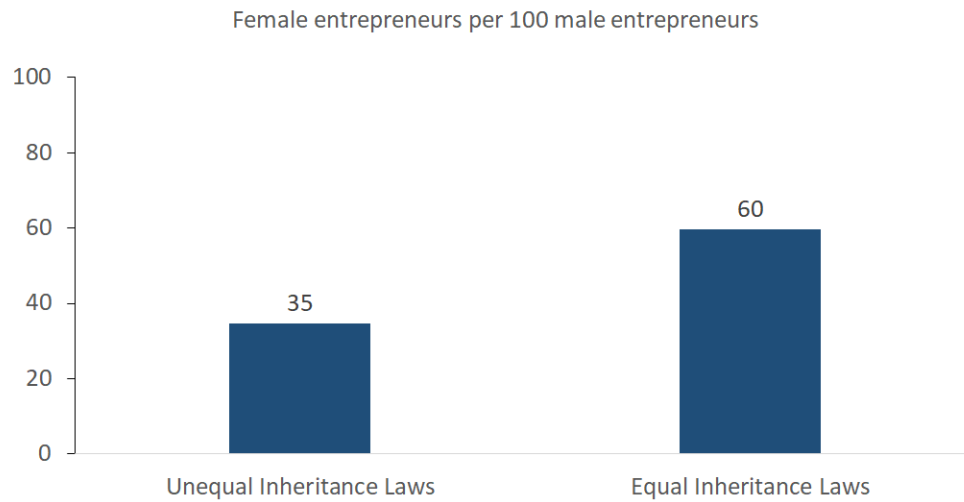
Notes: This figure compares the gender gap in entrepreneurship between countries that have unequal inheritance laws to countries that have equal inheritance laws. The classification of countries is based on whether these countries have laws that treat sons and daughters as equal on the matter of legal property rights. The gender gap in entrepreneurship is measured as the number of women entrepreneurs per 100 male entrepreneurs. For the sake of completeness of data sources, all measurements, and classifications are done by the end of 2014. The difference in gender gap between countries in these two inheritance regimes is statistically significant at the 1% level. Source: Author's calculation using various reports from the World Bank, OECD, and ILO.

TABLE 1: EFFECT OF INHERITANCE REFORM ON WOMEN'S INHERITANCE OF LAND

This table presents results from regressions to test the effect of inheritance reform. Columns 1 to 4 models the likelihood of inheriting land among siblings, using linear probability model while columns 5 to 8 models the magnitude of the inheritance (measured in acres). The sample consists of siblings with parents owning positive landholdings in the early reform states. *Female* is an indicator variable for female. *Death post reform* is an indicator variable for whether the father of the individual died after the reform. *Death, $t \in \{-5, -1\}$* is an indicator variable for whether the death of the father occurred in the six years leading up to the reform. *Death, $t \in \{0, 5\}$* is an indicator variable for whether the father died in the first five years after the reform and *Death, $t \geq 6$* is an indicator variable for whether the father died in the sixth year after the reform and beyond. Additional controls include whether the individual married at the time of the reform, mother's education in years, father's education in years, father's landholding in acres, and whether an individual belongs to scheduled castes or scheduled tribes. All pair wise interactions are included but not shown for brevity. All regressions include sibling-composition fixed effects and gender-specific year-of-birth fixed effects. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered by household. Standard errors are reported in parentheses. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: Rural Economic and Demographic Survey.

	$\mathbb{1}_{inheritance}$				Land inherited (acres)			
	Baseline	Pre-trends	Addl. controls	Placebo	Baseline	Pre-trends	Addl. controls	Placebo
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	-0.663***	-0.699***	-0.665***	-0.546***	-0.950***	-0.966***	-0.976***	-0.312***
	(0.019)	(0.063)	(0.019)	(0.120)	(0.036)	(0.105)	(0.036)	(0.109)
Female x Death post reform	0.117***		0.166***	-0.194	0.258***		0.397***	0.048
	(0.034)		(0.057)	(0.134)	(0.053)		(0.073)	(0.120)
Female x Death, $t \in \{-6, -1\}$		0.036				0.015		
		(0.061)				(0.100)		
Female x Death, $t \in \{0, 5\}$		0.127**				0.143		
		(0.051)				(0.087)		
Female x Death, $t \geq 6$		0.172**				0.513***		
		(0.080)				(0.117)		
Fixed effects:								
Sibling-composition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.475	0.482	0.476	0.665	0.469	0.471	0.469	0.787
Observations	5252	5252	5252	307	5252	5252	5252	307

TABLE 2: FEMALE ENTREPRENEURSHIP AROUND THE REFORM

This table presents results from regressions to test whether women from treated religious groups start a business after the inheritance reform in their state. I classify business owners from treated religious groups as *Treated* while business owners from non-treated religious groups serve as my control group. *Treated* refers to individuals from the four religious groups, i.e., Hindus, Sikhs, Buddhists, and Jains while the *non-treated* consists of individuals from the other religious groups, i.e., Muslims, Christians, Jews, and others. Columns 1 and 2 present results for all states while columns 3 and 4 present results for the five early states. The dependent variable is an indicator variable for whether a woman starts a business in a two-digit industry i, state s, in year t. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. Standard errors are corrected for heteroscedasticity and autocorrelation and clustered by state and year. Standard errors are reported in parentheses. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	All states		Early states	
	(1)	(2)	(3)	(4)
Treated	0.017***	0.012***	0.016***	0.015***
	(0.004)	(0.004)	(0.004)	(0.004)
Post reform × Treated	0.012**	0.017***	0.015**	0.013**
	(0.005)	(0.005)	(0.006)	(0.007)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	No	Yes	No	Yes
Adjusted-R^2	0.13	0.16	0.14	0.15
Observations	1,120,491	1,120,491	489,332	489,332

TABLE 3: FEMALE ENTREPRENEURSHIP AROUND THE REFORM, TREATED VS. UNTREATED WOMEN

This table reports results from regressions examining business formation among women from treated religions (relative to women from non-treated religions) around the inheritance reform. The dependent variable is the fraction of businesses started by women from treated religious groups (relative to women from non-treated religions) in a two-digit industry i, state s, in year t. Columns 1 and 2 presents the results for all states while columns 3 and 4 presents the results for the five early states. *Treated* refers to individuals from the four religious groups, i.e., Hindus, Sikhs, Buddhists, and Jains while the *non-treated* consists of individuals from the other religious groups, i.e., Muslims, Christians, Jews, and others. *Post reform* is an indicator variable if the year of the startup is greater than (or equal to) the state-specific reform year. *Female* is an indicator variable for females. All regressions are estimated using ordinary least squares (OLS). Standard errors are clustered at the state-year level, and are robust to heteroscedasticity. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	All states		Early states	
	(1)	(2)	(3)	(4)
Treated	0.396***	0.392***	0.362***	0.352***
	(0.007)	(0.007)	(0.016)	(0.018)
Post reform x Treated	0.097***	0.110***	0.108***	0.127***
	(0.018)	(0.020)	(0.026)	(0.031)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	No	Yes	No	Yes
Adjusted-R^2	0.39	0.39	0.36	0.36
Observations	42,124	42,124	15,456	15,456

TABLE 4: HETEROGENEOUS TREATMENT EFFECTS BY FINANCING NEEDS

This table presents results from regressions examining heterogeneity in the business formation based on financing needs around the inheritance reform in their state. Panel A reports heterogeneity based on required startup capital while panel B uses the index of financial dependence from (Rajan and Zingales, 1998). Columns 1 and 2 in both panels present results for all states while columns 3 and 4 in both panels present results for the five early states. The dependent variable is an indicator variable for whether a women starts a business in a two-digit industry i, state s, in year t. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. Industries are classified as *High* if their purchase value of plant and machinery in the pre-treatment period is in the top tercile and quartile of the distribution, and interacted with the *Post reform* dummy. In both panels, columns 1 and 3 present results based on the tercile measure while columns 2 and 4 present results based on the quartile measure. The sample is restricted to business owners from treated religious groups. Additionally, panel B restricts the sample to manufacturing industries given the financial dependence measure is only available for manufacturing. The coefficients are estimated using ordinary least squares (OLS). Standard errors are corrected for heteroscedasticity and autocorrelation and clustered by state and year. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

| | Panel A: Startup capital | | | |
| | All states | | Early states | |
	(1)	(2)	(3)	(4)
Post reform × High	0.032*	0.044**	0.020**	0.041***
	(0.017)	(0.017)	(0.009)	(0.014)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	Yes	Yes	Yes	Yes
Adjusted-R^2	0.17	0.17	0.13	0.13
Observations	991,653	991,653	374,522	374,522

| | Panel B: Finance dependence | | | |
| | All states | | Early states | |
	(1)	(2)	(3)	(4)
Post reform × High	0.013**	0.014**	0.016*	0.015*
	(0.007)	(0.006)	(0.009)	(0.009)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	Yes	Yes	Yes	Yes
Adjusted-R^2	0.12	0.12	0.10	0.10
Observations	629,267	629,267	246,590	246,590

TABLE 5: FEMALE ENTREPRENEURSHIP AND ACCESS TO FINANCE

This table presents results from instrumental variable regressions examining whether access to finance complements the inheritance reform and subsequently drives increase in female entrepreneurship. Columns 1 and 2 adopt clustering at the state-level to account for correlations across observations within the states. Columns 3 and 4 adopt cluster-robust standard errors that permit heteroscedasticity while columns 5 and 6 use cluster bootstrap-t procedures to estimate standard errors. The dependent variable is the ratio of state-level female businesses to total male businesses each year. Explanatory variables reported are bank branches in 1961 per 100,000 persons interacted with (row-wise) (a) Post reform (b) a time trend, (c) a post-1976 time trend, and (d) a post-1989 time trend. Other controls include state population density, log state income per capita, and log rural locations per capita, all measured in 1961. They enter the regression in the same way as branches per capita in 1961. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. Standard errors are reported in parentheses. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively.

Standard errors	Cluster		Robust		Bootstrap	
	(1)	(2)	(3)	(4)	(5)	(6)
Cumulative bank branches opened	-0.009	-0.004	-0.009	-0.004	-0.009	-0.004
in rural, unbanked locations	(0.011)	(0.005)	(0.008)	(0.008)	(0.010)	(0.010)
Post reform x Cumulative bank branches	0.042**	0.013*	0.042***	0.013**	0.042**	0.013
in rural areas	(0.018)	(0.008)	(0.014)	(0.007)	(0.018)	(0.010)
Number of bank branches per capita	0.000	-0.001	0.000	-0.001	0.000	-0.001
in 1961 × (1961-2000) trend	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Post-1976 × (1977-2000) trend	0.018	0.021**	0.018	0.021	0.018	0.021
	(0.030)	(0.010)	(0.019)	(0.017)	(0.021)	(0.023)
Post-1989 × (1977-2000) trend	-0.011	0.037***	-0.011	0.037***	-0.011	0.037***
	(0.015)	(0.007)	(0.016)	(0.010)	(0.017)	(0.011)
Fixed effects:						
State	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
Adjusted-R^2	0.31	0.44	0.31	0.44	0.31	0.44
Observations	556	556	556	556	556	556

TABLE 6: HETEROGENEOUS TREATMENT EFFECTS BY DISCRIMINATORY SOCIAL NORMS

This table presents results from regressions examining heterogeneity in business formation based on regional differences in discriminatory social norms. Columns 1 and 2 present results for all states, while columns 3 and 4 present results for the five early states. The dependent variable is an indicator variable for whether a woman starts a business in a two-digit industry i, state s, in year t. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. Districts are classified as *Low discrimination* if the number of estimated missing women (Anderson and Ray, 2010), computed as the difference between the actual number of women per 1000 men minus the counterfactual number of women per 1000 men, is in the top tercile and quartile of the distribution. Columns 1 and 3 present results for the tercile measure, while columns 2 and 4 present results for the quartile measure. The sample is restricted to business owners from treated religious groups. The coefficients are estimated using ordinary least squares (OLS). Standard errors are corrected for heteroscedasticity and autocorrelation and clustered by state and year. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	All states		Early states	
	(1)	(2)	(3)	(4)
Low discrimination	0.005**	0.005***	0.000	-0.003
	(0.002)	(0.002)	(0.004)	(0.005)
Post reform × Low discrimination	0.028***	0.016**	0.039***	0.028***
	(0.009)	(0.006)	(0.009)	(0.008)
Fixed effects:				
Industry × Year	Yes	Yes	Yes	Yes
State × Year	Yes	Yes	Yes	Yes
State × Industry	Yes	Yes	Yes	Yes
Adjusted-R^2	0.17	0.17	0.16	0.16
Observations	968,823	968,823	429,904	429,904

TABLE 7: CLOSURE RATES AMONG MARGINAL ENTREPRENEURS

This table presents results from regressions which compare operational closure rates (a measure of ex-post performance) between new female and male businesses created around the inheritance reform. Columns 1 and 2 present results for all states while columns 3 and 4 present results for the five early states. The dependent variable is an indicator variable which takes the value of 1 if the business was closed for any operational reasons. *Female* is an indicator variable for whether the individual is female. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. The sample is restricted to business owners from treated religious groups. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered by household. Standard errors are reported in parentheses. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	All states		Early states	
	(1)	(2)	(3)	(4)
Female	0.009***	0.007***	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.003)
Post reform x Female	-0.015***	-0.010***	-0.008**	-0.008**
	(0.004)	(0.003)	(0.003)	(0.004)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	No	Yes	No	Yes
p-val: $\beta_{\text{Female}} + \beta_{\text{Post} \times \text{Female}} = 0$	0.00	0.09	0.03	0.04
Adjusted-R^2	0.56	0.57	0.04	0.05
Observations	991,653	991,653	374,522	374,522

TABLE 8: AGGREGATE ENTREPRENEURIAL ACITIVITY

This table presents results from regressions examining overall business formation around the inheritance reform. In both columns, the dependent variable is the total businesses per 100,000 started by treated (non-treated) religious groups in industry i, state s, and year t. Column 1 presents the results for all states while column 2 presents the results for the five early states. *Treated* refers to individuals from the four religious groups, i.e., Hindus, Sikhs, Buddhists, and Jains while the *non-treated* consists of individuals from other religious groups, i.e., Muslims, Christians, Jews, and others. *Post reform* is an indicator variable if the year of the startup is greater than (or equal to) the state-specific reform year. All regressions include state-year, industry-year, and state-industry fixed effects and are estimated using ordinary least squares (OLS). Standard errors are clustered at the state-year level, and are robust to heteroscedasticity. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively.Data Source: All India Micro Small & Medium Enterprise Census.

Dependent variable	Total businesses per 100,000	
	All states	Early states
	(1)	(2)
Treated	0.072***	0.035***
	(0.006)	(0.004)
Post × Treated	0.030***	0.075***
	(0.011)	(0.012)
Fixed effects:		
Industry × Year	Yes	Yes
State × Year	Yes	Yes
State × Industry	Yes	Yes
Adjusted-R^2	0.35	0.31
Observations	37,316	16,690

TABLE 9: FEMALE ENTREPRENEURSHIP BY INDUSTRY TYPE

This table presents results from regressions examining female entrepreneurship by industry. Columns 1 and 2 present results for all states while columns 3 and 4 present results for the five early states. The dependent variable is an indicator variable for whether a female starts a business in a two-digit industry i, state s, in year t. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. *Female-dominated industry* is a dummy variable that takes a value of 1 if the share of female entrepreneurs within an industry in the pre-treatment period is in the top tercile or quartile of the distribution, and zero otherwise. Columns 1 and 3 present results based on the tercile measure while columns 2 and 4 present results based on the quartile measure. The sample is restricted to business owners from treated religious groups. The coefficients are estimated using ordinary least squares (OLS). Standard errors are corrected for heteroscedasticity and autocorrelation and clustered by state and year. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	All states		Early states	
	(1)	(2)	(3)	(4)
Post reform × Female-dominated industry	0.064***	0.080***	0.014*	0.024**
	(0.011)	(0.013)	(0.007)	(0.009)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	Yes	Yes	Yes	Yes
Adjusted-R^2	0.17	0.17	0.13	0.13
Observations	991,653	991,653	374,522	374,522

TABLE 10: ALTERNATIVE SPECIFICATIONS

This table presents alternative specifications of the main analyses. Panel A of the table reports robustness checks on actual land inheritance among females. All columns (except column 5) models the inheritance of land among siblings, using a linear probability model.*Death post- reform* is an indicator variable for whether the father of the individual died after the reform, *Female* is an indicator variable for whether the individual is Female and *Reform states* is an indicator variable. The sample consists of siblings in the five reform states. All regressions include gender-specific year-of-birth fixed effects and sibling-composition fixed effects. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered by household. Panels B, C and D includes state-industry-year fixed effects and The coefficients are estimated using ordinary least squares (OLS). Panel B presents the results from regression examining whether women start a business after the inheritance reform. Panel C reports results of a heterogeneous treatment intensity. I classify business owners from treated religious groups as *Treated* while business owners from non-treated religious groups serve as my control group. The dependent variable is the defined as the ratio of total new businesses created by women from treated religious groups to the total new businesses created by all women in a two-digit industry i, state s, in year t. The sample is restricted to only women. Panel D restricts the baseline estimation to entrepreneurs from treated religious groups. The dependent variable is the defined as the ratio of business share of women from treated religious groups to the business share by men from treated religious groups in a two-digit industry i, state s, in year t. *Treated* refers to individuals from the four religious groups, i.e., Hindus, Sikhs, Buddhists, and Jains while the *non-treated* consists of individuals from the other religious groups, i.e., Muslims, Christians, Jews, and others. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. Standard errors are reported in parentheses. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively.

	Panel A: Alternative specifications										
	Baseline	Exclude	Village	Non-reform	Dep. var.:	Treated	Placebo	Treated women in non-reform states			
	Ln(inheritance)	Kerala	clustering	states	Empirical share	women	women	1976	1986	1989	1994
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Female	-0.950***	-1.004***	-0.950***	-0.905***	-0.230***	-	-	-	-	-	-
	(0.036)	(0.037)	(0.065)	(0.019)	(0.010)						
Female x Death post reform	0.258***	0.150**	0.258***	0.205***	0.037***	-	-	-	-	-	-
	(0.053)	(0.062)	(0.081)	(0.046)	(0.014)						
Death post reform	-0.251***	-0.144**	-0.251***	-0.253***	-0.019*	-	-	0.014	0.019	0.006	-0.021
	(0.051)	(0.057)	(0.076)	(0.042)	(0.011)			(0.033)	(0.025)	(0.026)	(0.029)
Death post reform x Reform states	-	-	-	-	-	0.043***	0.002	-	-	-	-
						(0.016)	(0.057)				
Fixed effects:											
Sibling-composition	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth-year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.351	0.394	0.351	0.287	0.249	0.027	0.071	0.031	0.031	0.031	0.031
Observations	5,252	4,517	5,252	16,913	5,252	2,064	755	4,417	4,417	4,417	4,417

	Panel B: Baseline	
	All states	Early states
	(1)	(2)
Treated	0.012***	0.017***
	(0.004)	(0.004)
Post reform × Treated	0.017***	0.012*
	(0.006)	(0.007)
Fixed effects:		
State x Industry x Year	Yes	Yes
Adjusted-R^2	0.17	0.16
Observations	1,117,207	488,175

	Panel C: Treated women relative to untreated women	
	All states	Early states
	(1)	(2)
Treated	0.392***	0.352***
	(0.007)	(0.017)
Post reform x Treated	0.110***	0.152***
	(0.020)	(0.027)
Fixed effects:		
State x Industry x Year	Yes	Yes
Adjusted-R^2	0.23	0.22
Observations	42,124	16,716

	Panel D: Baseline, treated only	
	All states	Early states
	(1)	(2)
Female	-0.788***	-0.768***
	(0.006)	(0.011)
Post reform x Female	0.091***	0.082***
	(0.012)	(0.016)
Fixed effects:		
State x Industry x Year	Yes	Yes
Adjusted-R^2	0.57	0.54
Observations	42,124	16,716

INTERNET APPENDIX

Women's Inheritance Rights and Entrepreneurship Gender Gap

FIGURE IA 1: CHANGES IN LANDHOLDINGS AND INHERITANCE BY WOMEN

(a) Change in Landholdings
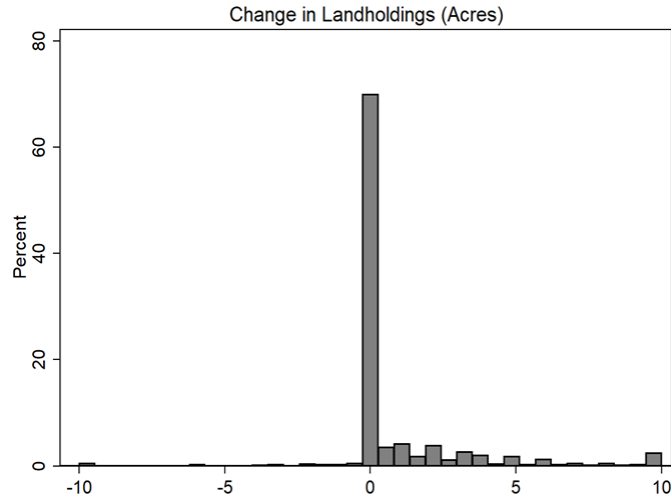
(b) Land Inherited by women - Treated vs. Others
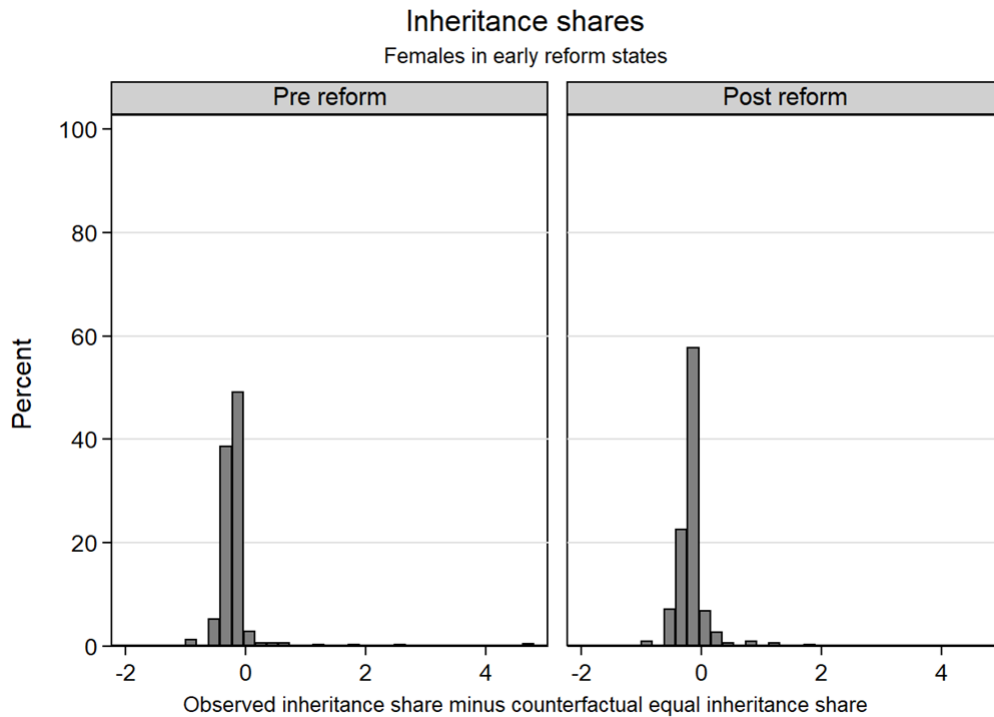
Notes: These figures plot changes in landholdings and inherited landholdings by women around the reform. Panel (a) plots the change in landholdings (measured in acres) while panel (b) plot the change in inheritance share among womens around the reform. Inheritance share is computed as observed inheritance share minus the counterfactual equal inheritance share under the reform. Data Source: Rural Economic and Demographic Survey

TABLE IA1: SURVIVAL ANALYSIS OF ADOPTION OF INHERITANCE REFORM

A Cox proportional hazards model is fitted to the time taken to adopt the inheritance reform in a state prior to 2005. Explanatory variables include the following: *Growth rate in women entrepreneurship* is the annual growth rate in number of women businesses within a state using data obtained from the MSME Census. *Fraction legislators from* Congress, Janata, Hindu, Hard Left, and Regional refer to the number of seats held in state legislatures by parties in these political groupings. *Cumulative land reform* is the total number of land reform acts passed by an Indian state. *Health and education spending* is the fraction of total state spending on health and education. *GSP growth rate* is the real annual growth rate in gross state product (GSP). *Aggregate headcount ratio* is defined as the percentage of rural and urban households with per capita monthly expenditures below the poverty line. *Log (real agricultural wage)* is log real male daily agricultural wage, and *Log (factory wage)* is log real remuneration per worker in registered manufacturing plants. *Cumulative bank branches opened* is the annual cumulative bank branches opened in each year. *Priority sector lending share* is the share of bank lending going to priority sectors while *Rural credit share* is the percentage of total bank credit accounted for by rural branches. *Real per capita total bank credit* is the total bank credit per capita disbursed within a state.

	(1)	(2)	(3)	(4)
Growth rate in	-0.020	-0.028	-0.052	-0.022
women entrepreneurship	(0.020)	(0.027)	(0.044)	(0.023)
Fraction legislators from:				
Congress parties		-9.424		
		(8.662)		
Hard Left parties		-9.179		
		(9.542)		
Janata parties		-7.812		
		(8.443)		
Hindu parties		-13.762		
		(15.213)		
Regional parties		-3.547		
		(7.929)		
Cumulative land reform acts			0.128	
			(0.273)	
Health and education spending share			15.373	
			(19.211)	
GSP growth rate			-0.188	
			(0.131)	
Aggregate headcount ratio			0.000	
			(0.106)	
Log(real agricultural wage)			-3.016	
			(2.929)	
Log(factory wage)			-8.189	
			(5.148)	
Cumulative bank branches opened				0.000
				(0.000)
Priority sector lending share				0.074
				(0.096)
Rural credit share				-0.018
				(0.136)
Real per capita total bank credit				0.006
				(0.005)
Observations	476	476	405	385

TABLE IA2: FEMALE ENTREPRENEURSHIP AROUND THE REFORM, TREATED ONLY

This table reports results from regressions examining business formation among women from treated religions (relative to men from treated religions) around the inheritance reform. The dependent variable is the fraction of businesses started by women from treated religious groups in a two-digit industry i, state s, in year t. Column 1 presents the results for all states while column 3 presents the results for the five early states. *Treated* refers to individuals from the four religious communities, i.e., Hindus, Sikhs, Buddhists, and Jains. *Post reform* is an indicator variable if the year of the startup is greater than (or equal to) the state-specific reform year. *Female* is an indicator variable for females. All regressions include are estimated using ordinary least squares (OLS). Standard errors are clustered at the state-year level, and are robust to heteroscedasticity. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively.Data Source: All India Micro Small & Medium Enterprise Census.

	All states	Early states
	(1)	(2)
Female	-0.785***	-0.769***
	(0.006)	(0.011)
Post reform x Female	0.097***	0.088***
	(0.013)	(0.018)
Fixed effects:		
Industry × Year	Yes	Yes
State × Year	Yes	Yes
State × Industry	Yes	Yes
Adjusted-R^2	0.74	0.70
Observations	42,124	16,716

TABLE IA3: FEMALE ENTREPRENEURSHIP AROUND THE REFORM, ADDITIONAL TESTS

This table reports additional results from regressions examining business formation among women around the inheritance reform. Panel A restricts the sample to formal businesses in rural areas while panel B restricts the sample to unregistered businesses. The dependent variable is an indicator for a female business in a two-digit industry i, state s, in year t. In both panels, column 1 presents the results for all states while column 2 presents the results for the five early states. *Treated* refers to individuals belonging to the four religious communities, i.e., Hindus, Sikhs, Buddhists, and Jains while the non-treated consists of individuals from other religious groups, i.e., Muslims, Christians, Jews, and others. *Post reform* is an indicator variable if the year of the startup is greater than (or equal to) the state-specific reform year. All regressions include state-year, industry-year, and state-industry fixed effects and are estimated using ordinary least squares (OLS). Standard errors are clustered at the state-year level, and are robust to heteroscedasticity. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	Panel A: Rural areas	
Dependent variable	$\mathbb{1}$Female business	
	All states	Early states
	(1)	(2)
Treated	0.008**	0.011
	(0.004)	(0.008)
Post reform × Treated	0.021***	0.020**
	(0.006)	(0.010)
Fixed effects:		
Industry × Year	Yes	Yes
State × Year	Yes	Yes
State × Industry	Yes	Yes
Adjusted-R^2	0.20	0.19
Observations	483,772	213,476

	Panel B: Unregistered businesses	
Dependent variable	$\mathbb{1}$Female business	
	All states	Early states
	(1)	(2)
Treated	0.019***	0.038***
	(0.007)	(0.014)
Post reform × Treated	0.031***	0.031*
	(0.010)	(0.017)
Fixed effects:		
Industry × Year	Yes	Yes
State × Year	Yes	Yes
State × Industry	Yes	Yes
Adjusted-R^2	0.15	0.15
Observations	98,504	22,968

TABLE IA4: FEMALE ENTREPRENEURSHIP AROUND THE REFORM, STATE LEVEL

This table reports results from state-level regressions examining business formation among women around the inheritance reform. The dependent variable is the number of businesses started by women from treated religious groups per 100,000 of the population each year. *Treated* refers to individuals belonging to the four religious communities, i.e., Hindus, Sikhs, Buddhists, and Jains while the non-treated consists of individuals from other religious groups, i.e., Muslims, Christians, Jews, and others. *Post reform* is an indicator variable if the year of the startup is greater than (or equal to) the state-specific reform year. All regressions include state and year fixed effects and are estimated using ordinary least squares (OLS). Standard errors are clustered at the state-level, and are robust to heteroscedasticity. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively.Data Source: All India Micro Small & Medium Enterprise Census.

Dependent variable	female businesses per 100,000	
	(1)	(2)
Post reform	1.175**	1.028**
	(0.520)	(0.455)
Fixed effects:		
State	Yes	Yes
Year	Yes	Yes
Controls	No	Yes
Adjusted-R^2	0.40	0.44
Observations	799	584

TABLE IA5: FEMALE ENTREPRENEURSHIP BY INDUSTRY TYPE, ADDITIONAL TESTS

This table presents results ruling out concerns related to proxy entrepreneurship. Panel A reports tests examining business formation by females using female employment share to classify industries while panel B examines the nature of employment within these firms. In both panels, columns 1 and 2 present results for all states while columns 3 and 4 present results for the five early states. The dependent variable in panel A is an indicator variable for whether a Female starts a business in a two-digit industry i, state s, in year t while the dependent variable in panel B is the natural logarithm of one plus the total employment (by gender) in each firm. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. *Female-dominated industry* is a dummy variable that takes a value of 1 if in the year before the reform the share of Female employment within an industry is the above the median share, and zero otherwise. Additionally, each industry is ranked based on the pre-reform median share. In panel A, columns 1 and 3 present results based on the median measure while columns 2 and 4 present results based on the rank measure. The sample is restricted to business owners from treated religious groups. All regressions include State-Industry-Year fixed effects. The coefficients are estimated using ordinary least squares (OLS). Standard errors are corrected for heteroscedasticity and autocorrelation and clustered by state and year. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	Employment by gender			
	All states		Early states	
	(1) Female	(2) Male	(3) Female	(4) Male
Female	0.300***	-0.278***	0.249***	-0.300***
	(0.017)	(0.017)	(0.017)	(0.026)
Post reform x Female	0.079***	-0.234***	0.133***	-0.220***
	(0.021)	(0.028)	(0.023)	(0.035)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	Yes	Yes	Yes	Yes
p-val: $\beta_{\text{Female}} + \beta_{\text{Post} \times \text{Female}} = 0$	0.00	0.00	0.00	0.00
Adjusted-R^2	0.38	0.39	0.25	0.43
Observations	982,194	982,194	369,923	369,923

TABLE IA6: HETEROGENEOUS TREATMENT EFFECTS BY HUMAN CAPITAL NEEDS

This table presents results ruling out concerns related to proxy entrepreneurship. Columns 1 and 2 present results for all states while columns 3 and 4 present results for the five early reforming states. The dependent variable is an indicator variable for whether a female starts a business in a two-digit industry i, state s, in year t. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. Industries are classified as *High* if their human capital index ((Ciccone and Papaioannou, 2008)) in the pre-treatment period is in the top tercile and quartile of the distribution, and interacted with the *Post reform* dummy. Columns 1 and 3 present results based on the tercile measure while columns 2 and 4 present results based on the quartile measure. The sample is restricted to business owners from treated religious groups. Additionally, the sample is restricted to manufacturing industries given the index measure is only available for manufacturing. The coefficients are estimated using ordinary least squares (OLS). Standard errors are corrected for heteroscedasticity and autocorrelation and clustered by state and year. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

	All states		Early states	
	(1)	(2)	(3)	(4)
Post reform × High	-0.004	-0.001	-0.005	-0.000
	(0.003)	(0.003)	(0.003)	(0.003)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	Yes	Yes	Yes	Yes
Adjusted-R^2	0.12	0.12	0.10	0.10
Observations	626,359	626,359	245,690	245,690

TABLE IA7: PERFORMANCE OF THE MARGINAL ENTREPRENEUR, ALTERNATE MEASURES

This table presents results from regressions which compares alternative measures of ex-post performance between new female and male businesses created around the inheritance reform. Columns 1 and 2 in both panels present results for all states while Columns 3 and 4 in both panels present results for the five early states. The dependent variable in panel A is an indicator variable which takes the value of 1 if the business experienced a decline in networth between 2008 and 2009 and zero otherwise while the dependent variable in panel B is an indicator variable which takes the value of 1 if the business experienced a decline in gross output over the same period. *Female* is an indicator variable for whether the individual is a female. *Post reform* is an indicator variable equal to 1 from the reform year and onwards. The sample is restricted to Hindu business owners only. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered by household. Standard errors are reported in parentheses. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively. Data Source: All India Micro Small & Medium Enterprise Census.

| | Panel A: Decline in net worth | | | |
| | All states | | Early states | |
	(1)	(2)	(3)	(4)
Female	0.001	0.001	0.001	0.002
	(0.001)	(0.001)	(0.002)	(0.002)
Post reform x Female	-0.006***	-0.006***	-0.007**	-0.007***
	(0.002)	(0.002)	(0.003)	(0.003)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	No	Yes	No	Yes
p-val: $\beta_{\text{Female}} + \beta_{\text{Post}\times\text{Female}} = 0$	0.00	0.00	0.00	0.00
Adjusted-R^2	0.04	0.05	0.05	0.05
Observations	991,653	991,653	374,522	374,522

| | Panel B: Decline in gross output | | | |
| | All states | | Early states | |
	(1)	(2)	(3)	(4)
Female	0.009***	0.007**	0.010***	0.009***
	(0.003)	(0.003)	(0.003)	(0.002)
Post reform x Female	-0.010***	-0.007**	-0.008**	-0.006**
	(0.004)	(0.003)	(0.003)	(0.003)
Fixed effects:				
Industry x Year	Yes	Yes	Yes	Yes
State x Year	Yes	Yes	Yes	Yes
State x Industry	No	Yes	No	Yes
p-val: $\beta_{\text{Female}} + \beta_{\text{Post}\times\text{Female}} = 0$	0.54	0.96	0.09	0.08
Adjusted-R^2	0.08	0.10	0.02	0.03
Observations	991,653	991,653	374,522	374,522

TABLE IA8: BANKING AS A FUNCTION OF INITIAL FINANCIAL DEVELOPMENT

This table presents results from first-stage regressions to test whether a state's initial financial development affects rural branch expansion and constitutes a valid instrument for branch openings in rural unbanked locations. *Rural bank credit (saving) share* is the percentage of total bank credit (saving) accounted for by rural branches. *Priority credit share* is share of bank lending going to priority sectors. Cooperative credit share is primary agricultural cooperative credit as a percentage of total cooperative and bank lending. Explanatory variables reported are bank branches in 1961 per 100,000 persons interacted with (row-wise) (a) a time trend, (b) a post-1976 time trend, and (c) a post-1989 time trend. Other controls include state population density, log state income per capita, and log rural locations per capita, all measured in 1961. They enter the regression in the same way as branches per capita in 1961. F-test 1 and F-test 2 are the joint significance test for coefficients in the first two rows and first three rows, respectively. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered by state. Standard errors are reported in parentheses. *,**, and *** indicate significance at the 10%,5% and 1% levels (two-sided) respectively.

	Rural unbanked (1)	Rural credit share (2)	Rural savings share (3)	Rural banked (4)	Priority sector (5)	Cooperative sector (6)
Number of bank branches per capita in 1961*(1961-2000) trend	0.075** (0.028)	0.178 (0.209)	-0.027 (0.235)	0.141*** (0.012)	-0.081 (0.626)	0.415 (0.337)
Number of bank branches per capita in 1961*(1977-2000) trend	-0.246*** (0.030)	-1.095** (0.434)	-0.820*** (0.252)	-0.072*** (0.020)	0.085 (0.865)	0.018 (0.416)
Number of bank branches per capita in 1961*(1990-2000) trend	0.168*** (0.042)	0.873*** (0.263)	0.434* (0.229)	0.100** (0.041)	-0.180 (0.333)	-0.181 (1.013)
Post-1976 dummy*(1977-2000) trend	0.340 (0.251)	-0.302 (1.495)	-0.167 (0.777)	0.530** (0.187)	-3.369 (2.402)	-3.798 (2.237)
Post-1989 dummy*(1990-2000) trend	-0.238 (0.152)	1.947 (1.490)	0.443 (0.533)	-0.404*** (0.103)	-0.048 (1.858)	-3.318 (2.803)
Fixed effects:						
Year	Yes	Yes	Yes	Yes	Yes	Yes
State	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
F-test 1	16.87	12.80	25.67	8.97	0.00	5.48
F-test 2	0.49	0.10	9.00	27.22	1.79	0.06
Adjusted-R^2	0.963	0.879	0.870	0.981	0.863	0.806
Observations	636	512	512	636	512	494

Appendix A.1 Inheritance reforms in India

Under traditional Hindu law, women had almost no rights to property ownership. Inheritance laws mirrored traditional law and were governed by two main schools of Hindu law, *Mitakshara*, and *Dayabhaga*. The Mitakshara school prevailed in most of India, whereas the Dayabhaga school held in Bengal and Assam. The Mitakshara school was further sub-divided into four schools namely: *Dravida (Madras)* School in South India, *Maharashtra (Bombay)* School, *Banares* School in Orissa and Bihar, and *Mithila* School in Uttar Pradesh. These sub-schools differed with regard to their succession laws; the Madras and Bombay sub-schools, in particular, were somewhat more progressive in recognizing the rights of women (Halder and Jaishankar, 2008). None of the traditional schools, however, gave equal inheritance rights to men and women; the 1956 Hindu Succession Act (HSA 1956), an effort to codify and reform Hindu personal law following Indian Independence, was an improvement over all of them. The act attempted to unify different traditional schools of law that varied not only from region to region but sometimes by caste within regions. Inherent differences across the schools made passage of the act a huge challenge and subject to much debate at the time (Kishwar, 1994). As such, the Succession Act was by far the most controversial part of the reform to Hindu personal law.

The most important distinction between the two main schools of law related to their classifications of property. The Mitakshara system made a distinction between "joint family property" and "separate property."

Joint family property consists of ancestral property, i.e., property inherited from the father, paternal grandfather, or paternal great-grandfather, while *Separate* property comprises property that is self- acquired if acquired without detriment to the ancestral estate, and any property inherited from persons other than the father, paternal grandfather, or paternal great-grandfather (Agarwal, 1994). Crucially, separate property could be bequeathed at will, while rights to joint family property was limited to male members of the dynasty.[20] The distinction was crucial as it created significant inequity in inheritance among siblings, especially constraining women's ability to inherit the land to rarely, if ever.[21]

The original provisions on succession by women, framed by the B. N. Rau committee and piloted by B. R. Ambedkar in 1947, incorporated the concept of daughters as coparceners in the joint family property. These proposals met with significant opposition from those who were not in favor of daughters inheriting property from their families at the cost of their brothers. Consistent with the regional differences in the traditional schools of law, the northern states dismissed the more progressive ideas of the southern states, and by a majority vote, the proposed clauses allowing equal inheritance rights to women were removed from the act, and the traditional laws remained intact on this issue.

According to HSA 1956, upon the intestate death of the Hindu male household head, daughters of the head were equal inheritors along with sons of their father's separate property and his "notional" portion of joint family property. Daughters did not have the direct inheritance rights of the sons to joint property. Sons had the direct right by birth to the share of joint family property in

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[20]more than 65% of people die every year without making any wills, and this proportion is higher in rural areas. Recent newspaper articles have put this number higher, at 80%. The low prevalence of wills in India suggests that the HSA 1956 is the primary determinant of inheritance patterns within households.

[21]In her exhaustive study of gender and land rights in India, Agarwal (1994) concludes that women seldom inherit land. In particular, she states: "Ethnographic information, although it is extremely fragmentary, consistently indicates that women in traditionally patrilineal communities of South Asia rarely realize the rights that contemporary laws have promised them. Custom still dominates practice. Hence the vast majority of women do not inherit landed property as daughters, most don't do so even as widows and few women inherit in other capacities. To the extent women inherit is usually under very restricted conditions."

addition to the share of the fatherâĂŹs own property.[22] Further, in rural India, the most common form of family property is land.[23] Thus, under HSA 1956, women continued to suffer significant discrimination concerning inheritance and ultimately asset ownership.

The five states that subsequently introduced amendments to the Hindu Succession Act of 1956 were those whose traditional schools of law (the Madras and Bombay sub-schools) had previously agreed to the inclusion of womenâĂŹs inheritance rights at the time of passage of the original act, in provisions that parliament overruled at the time. These later state-level amendments included precisely the original provisions framed by the committee in 1947 but removed from the act of 1956. Given the historical evolution of the amendment, no precise reasons for the specific years in which these different states enacted their amendments (Kerala in 1976; Andhra Pradesh in 1986; Tamil Nadu in 1989; Maharashtra and Karnataka in 1994) are apparent.

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[22]Besides, sons could also demand the partition of joint family property at will while daughters could not. For example, if the joint family property is pertaining to a dwelling house, sons could demand a partition, but daughters were only allowed the right of residence while being excluded from the right to ownership or possession.

[23]In my dataset, I find that ancestral property constitutes around 80% of total household property in India, suggesting that the salience of the inheritance rights reform was indeed quite high in India.