Digitization to Increase the Effectiveness of Women's Legal Rights

Sabrin Beg, Erica Field, Jeremy Lebow and Kate Vyborny

The gender gap in access to wealth and resources persists in developing countries and could generate a disadvantage for women in other domains. Women suffer from excess mortality, are restricted from attaining the same level of education as men or from participating in market activities, and lack autonomy and public voice, access to credit and profitable investments, or equal bargaining and decision-making power in their households. (World Bank, 2012). Due to intrahousehold inequality, women may lack property rights over land and inheritance, even in households with wealth (Brown, Calvi and Penglase 2020). Access to property rights affects women's own economic and health outcomes (Field 2003; Deininger et al. 2013; Heath and Tan 2020; Anderson 2018) and plausibly those of their children (Armand et al. 2020).

In Pakistan, as in much of the Muslim world, women have a legal right to inherit a fixed share of the assets of their parents and husbands. However, the de facto practice is of *female disinheritance* (Nelson, 2001), whereby women are excluded from ownership of inheritance properties, e.g. agricultural land. Thus, even with laws protecting female property rights, they may not be universally enforced, necessitating an understanding of how to enhance the effectiveness of such laws. In this study, we measure the impact of an intervention by the World Bank and Government of Punjab, which digitized 20 million land records in Punjab[1] and completely changed the processes for inheritance transactions, requiring biometric identification of all the male and female heirs. This intervention was designed with the objective of making the inheritance system more transparent as well as more accessible to women.

Well-designed technologies have the ability to thwart corruption and improve efficiency by removing individual discretion, particularly in bureaucratic procedures. Technology has proven effective in maximizing service delivery, reducing corruption, increasing electoral participation and delivering education. Specifically, biometric verification systems increased the attendance rate of health workers and health outcomes in India (Bossuroy et al., 2018) and was also instrumental in delivering a public workfare payments program (Muralidharan et al., 2016). We will rigorously evaluate the effect of the land digitization reform on female access to inheritance and female empowerment in general. Legal assistance and dispute resolution can improve outcomes for beneficiaries, however, there is limited research on improving access to legal rights through building state capacity and changing bureaucratic processes. Our study will also fill this gap.

Prior to digitization of records, 20 million agricultural land records were maintained manually by 8000 local officers (*patwaris*). The *patwari* authorized all ownership mutations, including changes due to sale or inheritance. The manual system was cumbersome and prone to errors and corruption. Patwari discretion in inheritance procedures resulted in an exclusion of women, particularly those outside the fathers' household due to marriage, from the process of estate division. Women lose their rightful share involuntarily or voluntarily due the risk of being excluded from the family risk pooling networks (Shafqat and Zahir, 2016; Rosensweig and Stark 1989).

The Government of Punjab, in conjunction with the World Bank, computerized all the agricultural land records in Punjab. In addition, Land Service Centers were set up in each sub-

[1] The largest province with a population of 90 million.

district to house these records on servers and service all land transaction using an automated framework. The new system requires biometric verification of all heirs for the inheritance mutation process, ensuring that female heirs are physically present at the time of mutation. All Service Centers are accessible using public transport infrastructure and have designated counters manned by female staff to assist women. The program thus represents an overhaul of an informal system that is replaced with a more centralized, computerized and accessible system. Automated land transactions lower the influence of local officers who initially acted as `middle-men', and could potentially increase women's de facto right to land inheritance by making it harder to exclude female heirs.

We exploit the staggered implementation of service centers across rural Punjab, using a difference-in-differences approach. We compare agricultural landowning households who experience inheritance before and after the reform (based on timing of the household head's death). We control for timing of the household head's death by exploiting the fact that the new system was rolled out into different sub-districts at different times over a 4-year period.

Using preliminary analysis of survey data, we find that pre-treatment only 13% of women whose fathers/husbands die leaving property inherit it and keep it (rather than giving it away to other family members); treated women are 67% (9 percentage points) more likely to do so. However, we also find evidence of unintended consequences for younger women: they marry earlier and without consenting to their choice of spouse, marry lower quality spouses, and are more likely to have children by their early twenties. These results are consistent with responses intended to keep land in the family by either marrying daughters off younger to exclude them from family negotiations, or through consanguineous marriages (common in Pakistan). Additional data will allow us to identify the channels that lead to these effects.

We propose collecting additional administrative and primary data to understand the mechanisms behind the reform's effect on female inheritance and marital outcomes. Administrative data would allow us to identify land owning households who have recently completed a transfer of agricultural land. National ID record data will provide the family tree for these households allowing us to compare the prescribed inheritance shares with how the family land is allocated in practice. This exercise will provide a direct test of the effect of the reform on inheritance shares.

As a next step we will sample a subset of households, over-sampling households with younger (not yet married) females at the time of inheritance transfer. We will administer a survey to both males and females in the natal households of these females. This survey will collect information on inheritance, access to property rights documents, and decision-making about marriage. In cases where females are disinherited, we can collect data on alternate channels of wealth transfer. For females who go on to marry after inheriting land, we will collect additional information on marriage timing, spousal characteristics, dowry or other transfers, fertility and females' autonomy in household decision-making.

We also intend to collect qualitative data from local revenue officers (*patwaris*). Due to their unique positioning, *patwaris* have local knowledge about adherence to reform, ways to evade the formalized procedures, and other possible spillover effects of the program.

Through this proposal, we request funding to support travel to Pakistan and for field RA support to collect the required data from administrative sources. The RA will also help plan the field survey.

Budget

Total Budget Requested: $10,000

- Travel for two trips: $5000
  - Airfare (2000*2)
  - Lodging (1000)

- Field RA support: $5000

Sabrin Beg
Website: www.sabrinbeg.com Email: Sabrin.beg@gmail.com
Economics, University of Delaware. 418 Purnell Hall. Newark, DE 19716

Fields of Concentration:

Development, Political Economy, Economics of Education, Agriculture and Resource Economics, Applied Microeconomics

Employment:

Assistant Professor, University of Delaware, Newark DE	2015-present

Affiliations/Visiting Positions:

Visiting Research Scholar, Princeton University School of Public and International Affairs, Princeton NJ.	Fall 2020
Research Fellow, Center for Economic Research in Pakistan	2019-present
Visiting Research Scholar, The Wharton School, University of Pennsylvania, Philadelphia PA.	Spring 2018
Research Network Member, Innovations for Poverty Action (IPA)	2018 – present
Non-resident research Fellow, Information Technology University, Lahore Pakistan.	2016 – 2018

Education:

Ph.D., Economics, Yale University (Committee: Mark Rosenzweig, Chris Udry, Nancy Qian, Dan Keniston)	2015
M.Phil., Economics, Yale University	2011
M.A., Economics, Yale University	2011
B.A., Economics and Mathematics, *Magna cum Laude*, Wellesley College	2007

Publications:

Beg, Sabrin. (2019). Favoritism and flooding: Political alignment and allocation of irrigation water. *World Development*, *114*, 175-195.

"`Rule-of-Thumb' Instructions to Improve Fertilizer Management? Experimental Evidence from Bangladesh" (with Mahnaz Islam) accepted at *Economic Development and Cultural Change.*

"Gender Bias in Performance Assessments: Evidence from Teachers" (with Anne Fitzpatrick and Adrienne Lucas) accepted at *American Economic Association, Papers and Proceedings*

Working Papers:

"Digitization and Development: Property Rights and Land and Labor Markets"
(*R&R Journal of the European Economic Association*)

"Engaging Teachers with Technology Increased Achievement, Bypassing Teachers Did Not" with Adrienne M. Lucas, Waqas Halim, and Umar Saif (*R&R American Economic Journal: Economic Policy*)

"Tenancy and Clientelism" (*R&R Journal of Economic Behavior and Organization*)

"Improving Fertilizer Management can lead to Medium Term Increase in Complimentary Inputs" with Mahnaz Islam

"Soil Testing as a Solution to Imbalanced Fertilizer Use? A Field Experiment in Bangladesh" with Mahnaz Islam and Wahed Rahman

"Successful Interventions at Scale: The Importance of Managers" with Anne Fitzpatrick Adrienne Lucas

Works in Progress:

"Identity-Verified Land Records and Female Access to Land and Inheritance**"** (with Erica Field, Jeremy Lebow and Kate Vyborny)

"From Remedial to Grade Level: Secondary School Readiness Program in Odisha, India" (with Anne Fitzpatrick, Jason Kerwin, Adrienne Lucas and Wahed Rahman)

Fellowships, Honors and Research Awards:

"Targeted Teaching in Secondary School and Educational Progression During a Pandemic," 2020 – 2021
Abdul Latif Jameel Poverty Action Lab (J-PAL), **$39,893**
(with Anne Fitzpatrick, Jason Kerwin, Adrienne Lucas and Wahed Rahman)

J-PAL's Teaching at the Right Level Africa (TaRL Africa) Project," 2019 –2021
sub-award from Abdul Latif Jameel Poverty Action Lab (J-PAL),
sub-award amount **$250,000** (with Anne Fitzpatrick and Adrienne Lucas)

"Learning Beyond School: Another Chance for Out of School Adolescent Girls," 2019 – 2021
Abdul Latif Jameel Poverty Action Lab (J-PAL), **$199,071**
(with Adrienne Lucas)

"The Persistent Impacts of Targeted Instruction at Scale," 2019 – 2020
Abdul Latif Jameel Poverty Action Lab (J-PAL), **$118,398**
(with Anne Fitzpatrick and Adrienne Lucas)

General University Research grant, University of Delaware, **$12,441** 2019 – 2021

"Implementation Support and Documentation of Teaching at the Right Level) (TaRL) in Primary Schools," UNICEF, **$130,000** 2019 – 2020
(with Anne Fitzpatrick and Adrienne Lucas)

"Public Private Partnerships to Increase Schooling Effectiveness," 2019 – 2020
Abdul Latif Jameel Poverty Action Lab (J-PAL), **$10,000**
(with Adrienne Lucas, Naveed Iftekhar and Syed Hasan)

"Secondary School Readiness Program (SSRP) Scale-up (Odisha)," 2018 – 2019
Abdul Latif Jameel Poverty Action Lab (J-PAL), **$50,000**
(with Anne Fitzpatrick, Paul Glewwe, Jason Kerwin, Adrienne Lucas and Wahed Rahman)

"Secondary School Readiness Program (SSRP) Scale-up (Odisha)," 2018 – 2019
Kusuma Trust UK, £250,000, approximately **$322,410**
(with Anne Fitzpatrick, Paul Glewwe, Jason Kerwin, Adrienne Lucas and Wahed Rahman)

Improving Post-Primary Education Delivery through Technology and Pedagogy," 2016 – 2019
Abdul Latif Jameel Poverty Action Lab (J-PAL),
$49,677 (with Adrienne Lucas)

"Maximizing the Effectiveness of School Inputs through Teacher 2015 – 2016
and Principal Training,"
Abdul Latif Jameel Poverty Action Lab (J-PAL), **$10,000** (with Adrienne Lucas)

"Fertilizer Management in Bangladesh", 2015 – 2016
University of Delaware International and Global Studies GLOBEX Award, **$7,500**

Georg W. Leitner Program in International and Comparative Political Economy 2014
Award, **$5,000**

Sasakawa Research Award, "Land Tenures, Political Clientelism and Public Goods" 2014

Ryoichi Sasakawa Young Leaders Fellowship 2012

Yale University Fellowship 2009 – 2015

Teaching and Work Experience:

University of Delaware, Graduate Economic Development Spring 2019-20
University of Delaware, Economics of Developing Countries Fall 2015 – Spring 2020
Yale University, Teaching Fellow Introductory Microeconomics Fall 2013
Yale University, Research Assistant to David Atkin 2010 – 2015

Professional services:

Refereeing: *Journal of Development Economics, Economic Journal, American Journal of Agricultural Economics. Journal of Public Economics, Journal of Economic Behavior and Organization, Economic Development and Cultural Change, Economic Letters, Journal of Human Resources*

Referee Awards: Agricultural and Applied Economics Association 2020 AJAE Outstanding Reviewer Award

Scientific Committee: Association for Mentoring and Inclusion in Economics Workshop in Applied Microeconomics

Seminar and Conference Presentations (including invited):

2021

Applied Social Science Association Annual Meetings, CEPR Structural Transformation and Economic Growth (STEG) Annual Conference.

2020

International Food and Research Policy Institute (IFPRI), Online Agricultural and Resource Economics Seminars, National Bureau of Economic Research (NBER) Summer Institute (*attendee*), State Bank of Pakistan Seminar Series

2019

University of Delaware, Midwest International Economic Development Conference, RISE Program Annual Conference, National Bureau of Economic Research (NBER) Summer Institute (*attendee*), NEUDC (Northwestern University)

2018

Pacific Conference on Development Economics, The Wharton School, University of Houston, Midwest International Economic Development Conference, Barcelona Summer Forum, National Bureau of Economic Research (NBER) Summer Institute (*attendee*), National Bureau of Economic Research (NBER) Development Economics Fall meeting (*attendee*)

2017

Harvard Business School, University of Delaware Research Seminar, National Bureau of Economic Research (NBER) Summer Institute (*attendee*)

2016

Southern Economic Association Annual Conference, International Atlantic Economic Conference, World Bank

2015

University of Delaware, Florida International University, Texas A&M Bush School of Government

2014

NEUDC (Boston University), EconCon (Princeton University), ECSAS (University of Zurich)