Digital Market Access and Female Labor Market Outcomes

Sabrin Beg, Adrienne Lucas, Attique ur-Rehman [1]

Barriers to female labor force participation impede economic development and growth. In contrast, labor market opportunities for women improve the allocation of labor and talent in the economy, spurring structural transformation and economic growth, providing women enhanced financial independence and access to peers and networks, and improving outcomes for future generations. In this project, we use innovations in the digitization of marketplaces to test an intervention focused on increasing women's entrepreneurship and income. Specifically, we will test the effect of digital marketplace access on women's ability to sell and market their crafts in Punjab province, Pakistan.

Pakistan, the 6th most populous country in the world, has the third worst index of women's well-being (Georgetown Institute of Women Peace and Security 2019). Female income and labor force participation is low. Twenty percent of ever-married women aged 15-40 have experienced intimate partner violence and 23% have suffered an episode of major depression (Jacoby and Mansuri 2010). Providing vulnerable women an opportunity to generate income could improve women's position in their household and society; women's psychological and economic well-being and empowerment (Haushofer et al. 2019, Majlesi 2016); and economic growth through strong positive externalities on siblings (Qureshi 2018), birth outcomes (Currie et al., 2003), and the nutrition (Thomas et al., 1991), education (Haveman and Wolfe, 1995), and test scores (Rosenzweig and Wolpin, 1994; Moore and Schmidt, 2007) of future generations. Women's labor force participation and income has other inter-generational consequences, as sons of working mothers are more likely to have working wives, generating implications for positive cultural change (Fernandez, Fogli and Olivetti, C. 2004).

Intervention. This study will use an RCT to measure the effects on female labor force participation, financial independence, and time use of a government program designed to integrate vulnerable women into digital marketplaces in Punjab, Pakistan. Currently, the Punjab Social Welfare Division (SWD) trains women through District Industrial Homes (DIH) on crafts like dress making, embroidery, knitting, and cooking/baking – skills that they can use in securing employment or selling products independently. Yet, only about one third of women who complete the training course use their skills in the labor market or to set up a business. Many women report that they cannot participate in the formal labor market or interact with buyers because of social norms that limit female mobility and formal employment. What if women could both work and sell their products without having any undesirable interactions? Digital marketplaces have the potential to transform these women's lives.

Our study is a tripartite partnership between the government, a major Pakistani e-commerce company, and researchers. Our e-commerce partner will set up online seller shops for randomly

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selected women who have already completed their DIH training course. These shops are part of a large digital platform that is often used to buy and sell similar craft-work. Online shops will allow women to list products and market them to all visitors to the e-commerce website. These women will additionally receive an orientation on how to use their online shop, e.g., how to upload pictures, manage and deliver orders, and transfer their earnings from the e-commerce account to their bank accounts. In addition, they will receive training and support on digital marketing, e.g., how to name and display the products in photos, how to price products based on market conditions, and how to use social media and search engine tags to enhance the visibility of their products. By digitizing the labor market for basic handcrafts, women will be able to interact with many more buyers than would be possible in a physical shop and in a more culturally sensitive way that will not interrupt other household obligations.

Empirical Strategy. The primary conceptual difficulty in assessing the effect of access to digital marketplaces on outcomes is the typical non-random assignment of that access. By implementing an RCT, identification is a straightforward regression comparison of outcomes between the treatment and control group. We will use an intent to treat design. If women express interest in the online shop and additional online training but do not complete the training, we will additionally use an instrumental variables approach with assignment to treatment as an instrument for completing the additional training.

Our outcomes of interest are (i) digital platform use and digital and non-digitial sales, (ii) future career aspirations for self, (iii) educational and career aspirations for children; (iv) empowerment outcomes as measured by decision-making power, physical mobility and exposure to domestic violence (as used in Field et. al. 2016); (v) social indicators (female mobility/safety), perceptions and values about female roles, time use and psychological well-being and; (vi) effect on husband's labor supply outcomes. In addition to these, we intend to measure how women share resources with male members of their household using a behavioral game.

To measure empowerment and perceptions, we will use existing validated instruments and behavioral games developed and implemented by economists and psychologists. We will adapt the questions compiled by Glennester, Walsh, and Diaz-Martin (2017) to construct an instrument for measuring women's ability to make choices, protecting the subjects' identity and responses and limiting reporting bias. We will include a time use survey to gauge women's decision-making power and status within their households. We will use vignettes and adapt the instruments used by Diva, Jain, and Jayachandran (2015) to measure values and perceptions about female roles.

Sample Selection and Randomization. The study will occur in 10 districts. Women will be recruited from graduates from the DIH training courses. Based on piloting, interest in this training is high and exceeds the training capacity of our government and e-commerce partners. We will use this excess demand to randomly select women to participate as the initial study

cohort, stratifying on district and baseline demographic characteristics. We anticipate an overall sample of 1076 individuals with 538 individuals assigned to each of the treatment and control groups. This sample size would allow us to detect an effect size of about 0.25 standard deviations (SD) with 80% power.

Data Collection. Prior to receiving any training or access to their online shops, we will conduct a short baseline survey to collect demographic information. Our follow-up survey will occur after women have completed the training and had time to sell their products.

Use of NBER Money. We have secured funding from the International Growth Center (IGC) for some aspects of data collection. We are requesting additional funds from the NBER for PI travel, a field RA, and additional survey expenses.

Conclusions. Women are marginalized in many contexts because of household based responsibilities and social norms against women participating in the formal labor or goods market. This study will test a novel way of integrating women into a digitized craft marketplace, effectively allowing them to virtually sell their labor. As this program is in partnership with both the government and a prominent e-commerce company, it has the potential to be scaled to reach many vulnerable women, improving their lives and those of their families.

Proposed Budget

Total Budget Requested: $15,000

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

- Field RA support: $2500
- Survey Costs: $7500

Sabrin Beg

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Fields of Concentration:

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

Employment:

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

Affiliations/Visiting Positions:

Trustee, American Institute of Pakistan Studies
2021-present
Research Fellow, Mahbub Ul Haq Centre,
2021-present
Lahore University of Management Sciences
Visiting Research Scholar, Princeton University School of Public and International Affairs, Princeton NJ. Fall 2020
Research Fellow, Center for Economic Research in Pakistan (CERP)
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
Invited Researcher, Agricultural Technology Adoption Initiative (ATAI) 2021-present
Invited Researcher, Abdul Latif Jameel Poverty Action Lab (J-PAL) 2019-present

Education:

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

Publications and Accepted Papers:

[1.] Facilitating Real-Time Cost Collection and Evaluating Cost-Effectiveness in a Multi-Armed Study with Government Partners in Ghana (with Shahana Hijri, Bethany Park, Edward Tsinigo, Adrienne Lucas and Anne Fitzpatrick), forthcoming, *Journal of Development Effectiveness*

[2.] Engaging Teachers with Technology Increased Achievement, Bypassing Teachers Did Not (with Adrienne M. Lucas, Waqas Halim, and Umar Saif), forthcoming *American Economic Journal: Economic Policy*.

[3.] Digitization and Development: Property Rights and Land and Labor Markets, forthcoming *Journal of the European Economic Association.*

[4.] Health Knowledge and Non-Pharmaceutical Interventions During the COVID-19 Pandemic in Africa (with Anne Fitzpatrick, Laura Derksen, Anne Karing, Jason Kerwin, Adrienne Lucas, Natalia Reynoso and Munir Squires), forthcoming *Journal of Economic Behavior and Organization.*

[5.] Gender Bias in Performance Assessments: Evidence from Teachers (with Anne Fitzpatrick and Adrienne Lucas). In *American Economic Association, Papers and Proceedings*, *111,* 190-95, May 2021.

[6.] `Rule-of-Thumb' Instructions to Improve Fertilizer Management? Experimental Evidence from Bangladesh (with Mahnaz Islam). *Economic Development and Cultural Change, 70 (1),* October 2021. (Accepted December 2019)

[7.] Tenancy and clientelism. *Journal of Economic Behavior & Organization*, *186*, 201-226. 2021

[8.] Favoritism and flooding: Political alignment and allocation of irrigation water. *World Development*, *114*, 175-195. 2019 (Accepted September 2018)

Working Papers:

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

"Complementarity Between Public Sector Worker and Management Training" with Anne Fitzpatrick Adrienne Lucas

"Information and Behavior: Evidence from Fertilizer Quantity Recommendations in Bangladesh" with Mahnaz Islam and Wahed Rahman

Works in Progress:

"Marriage Market Effects of Strengthening Female Inheritance Rights in Pakistan" with Erica Field, Jeremy Lebow and Kate Vyborny (Preliminary draft completed)

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

"Learning Beyond School: Another Chance for Out of School Adolescent Girls in Pakistan" with Anne Fitzpatrick and Adrienne M. Lucas (Data collection completed)

"The Curse of Good Soil? Land Fertility, Roads and Rural Poverty in Africa." with Leonard Wantchekon, Mesay Gebresilasse and Piero Stanig (Data analysis under-way)

Awards and Honors:

Lerner College Outstanding Junior Faculty Scholar 2021, University of Delaware

Agricultural and Applied Economics Association 2020 AJAE Outstanding Reviewer Award

Fellowships, Grants and Research Awards:

"Digital Skill to Improve Female Labor Market Outcomes" 2022
International Growth Center £19,970, approximately **$24,000**
(with Adrienne Lucas and Attique ur Rehman)

"Improving teacher classroom practices through 2022
Continuous Professional Development"
Abdul Latif Jameel Poverty Action Lab (J-PAL) **$75,000**
(with Anne Fitzpatrick and Adrienne Lucas)

"Digitization and Governance: Increasing the Effectiveness of 2022
Women's Legal Rights"
International Growth Center £19,935, approximately **$27,000**
(with Erica Field, Jeremy Lebow and Kate Vyborny)

NBER Small Grants in Economics of Digitization, **$15,000** 2021
(with Erica Field, Jeremy Lebow and Kate Vyborny)

"Targeted Teaching in Secondary School and Educational Progression 2020 – 2021
During a Pandemic,"
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)

"Strengthening Teacher Accountability to Reach All Students," 2016 – 2019
The World Bank Strategic Impact Evaluation Fund (SIEF), **$477,596**
(with Adrienne Lucas and Anne Fitzpatrick)
[I was added to this grant in year 2, replacing another Co-PI]

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 and Principal Training," 2015 – 2016
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 Award, **$5,000** 2014

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 2019–2022
University of Delaware, Economics of Developing Countries 2015–2022
Yale University, Teaching Fellow Introductory Microeconomics Fall 2013
Yale University, Research Assistant to David Atkin 2010 – 2015

Professional services:

Refereeing: *American Economic Journal: Applied Economics, Quarterly Journal of Economics, 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, Economics of Education Review, Ecological Economics*

Grant Reviews: Standing Panel on Impact Assessment at CGIAR, Women's Economic Empowerment and Digital Finance initiative of the BRAC Institute of Governance and Development (BIGD)

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

Seminar and Conference Presentations (including invited):

2022 (including scheduled)
University of Maryland Baltimore, Wellesley College, Lahore University of Management Sciences

2021
University of Virginia, University of Delaware, Applied Social Science Association Annual Meetings, CEPR Structural Transformation and Economic Growth (STEG) Annual Conference, UNICEF evidence sharing webinar, NBER Summer Institute (*attendee*), RISE Programme Annual Conference, South to South Exchange on School Leadership webinar, NBER Development Economics Fall Meetings (*presenter*), Inter-American Development Bank, NEUDC

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, Transform Schools webinar.

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)

Doctoral Students (and initial placements):

Student	**Year**	**Job Market Placement**
Kawin Thamtanajit	2017	Instructor, Economics, University of Colorado Denver
Aida Odobasic	2017	Assistant Professor, Economics, Otterbein University
Di Wang	2020	TD Bank
Hellen Seshie-Nasser	2021	Lecturer, Economics, John Hopkins University
Sheila Afrakoma	2021	Consultant, World Bank
Kwaku Addae-Ankrah	2021	Teaching Assistant Professor, Economics, University of North Carolina at Chapel Hill