

Problem Set 1

ECON 833: Computational Methods for Economists

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1 A brief summary of reserach interest

My research interests are broadly in development economics, with a special interest in labor, health, and public economics. What excites me mostly of this area of research is the tremendous opportunity to address relevant problems for policy analysis within a disciplined structure.

My research interest in these areas stems from my experience working on several substantial research projects. The stepping stone was my Master's thesis on "Urban food insecurity in Bangladesh" wherein I attempted to assess the food security status of the urban poor households and identify the factors affecting their food security. After having my Master's in Economics, I have enthusiastically engaged myself in some collaborative research works. The outcome of these research works has been published in different journals. Recently, one of my research papers [Hasan et al. \(2019\)](#) has been published in Land Use Policy. In this paper employing 45-year panel data for the five major wheat growing regions of Bangladesh, we investigate trends in key climatic variables and their effects on wheat yield. Results revealed rising trends in average seasonal temperature and number of seasonal dry days and downward trends in planting and flowering stage rainfall. The rise in average temperature and number of dry days adversely affected wheat yield while greater planting and flowering stage rainfall has improved yield. Another paper [Jakaria, Bakshi and Hasan \(2021\)](#) has been published in Review of Development Economics. In this paper we attempt to uncover the causal relation between maternal employment and child health. We employ instrumental variable (IV) approach to tackle the endogeneity of maternal employment. The findings of the study suggest that maternal employment significantly reduces child's height-for-age (HAZ) Z-score.

Currently, I am interested in working on financial inclusion and subjective wellbeing. Most of the previous studies in associating financial inclusion and well-being has focused on financial outcome i.e household income, saving, investment [Dupas and Robinson \(2013\)](#) consumption expenditure, health expenditure [Brune et al. \(2016\)](#) but financial inclusion has potentials to affect mental well-being i.e happiness, life satisfaction etc through different dynamics and channels i.e increasing income and savings, increasing entrepreneurship, better education and health, enhanced social capital, women's agency and empowerment, insurance against shocks. I am interested in exploring whether there is any casual impacts of financial inclusion on mental wellbeing of adult people in the developing countries.

In the empirical research on applied microeconomics, the central area of inquiry is to uncover a casual relation through finding consistent and unbiased estimates. In this regard, empirical economists are now using different approach like natural experiments, quasi- experimental design and field experiments. As a young research enthusiast, I am keen to use and employ these sophisticated empirical strategies in my future research.

2 Equations

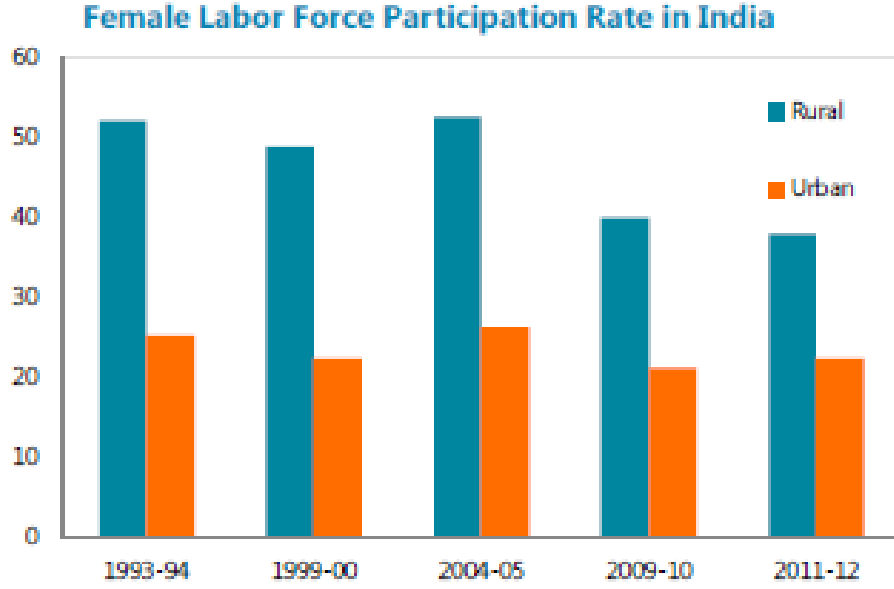
Equation(1) represents a OLS regression function, and equation (2) shows a logistic regression function.

$$\hat{Y}_i = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \hat{\beta}_1 x_2 + \hat{\beta}_1 x_3 + \hat{\beta}_1 x_4 + \hat{\epsilon}_i \quad (1)$$

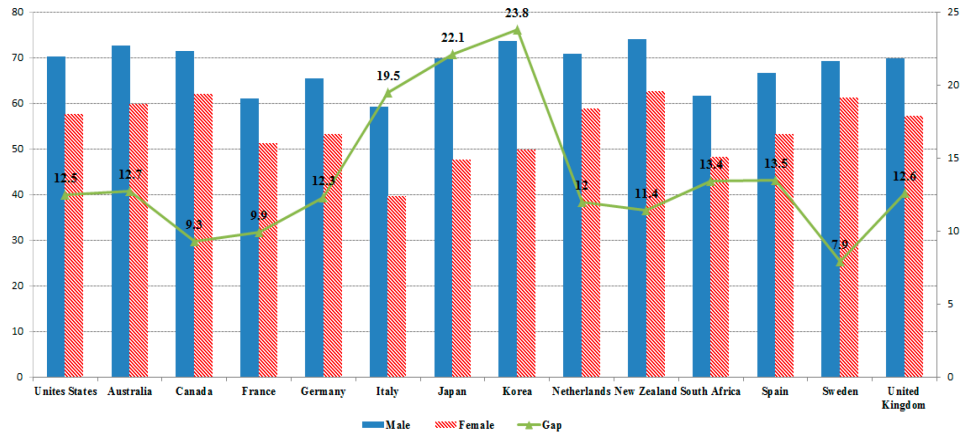
$$Pr(Y_i = 1|X_i) = \frac{\exp(\beta_0 + \beta_1 X_i + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5)}{1 + \exp(\beta_0 + \beta_1 X_i + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5)} \quad (2)$$

3 Figures

The following figure shows gender gaps in labor market. Panel(a) shows gender gaps in labor market in India and panel(b) shows gender gaps in labor market in the world.



(a) India



(b) World

FIGURE 1: Female labor force participation

References

- Brune, Lasse, Xavier Giné, Jessica Goldberg, and Dean Yang.** 2016. “Facilitating savings for agriculture: Field experimental evidence from Malawi.” *Economic Development and Cultural Change*, 64(2): 187–220.
- Dupas, Pascaline, and Jonathan Robinson.** 2013. “Savings constraints and microenterprise development: Evidence from a field experiment in Kenya.” *American Economic Journal: Applied Economics*, 5(1): 163–92.
- Hasan, M Mehedi, Mohammad Alauddin, Md Abdur Rashid Sarker, Mohammad Jakaria, and Mahiuddin Alamgir.** 2019. “Climate sensitivity of wheat yield in Bangladesh: Implications for the United Nations sustainable development goals 2 and 6.” *Land Use Policy*, 87: 104023.
- Jakaria, Mohammad, Rejaul Karim Bakshi, and M Mehedi Hasan.** 2021. “Is maternal employment detrimental to children’s nutritional status? Evidence from Bangladesh.” *Review of Development Economics*.