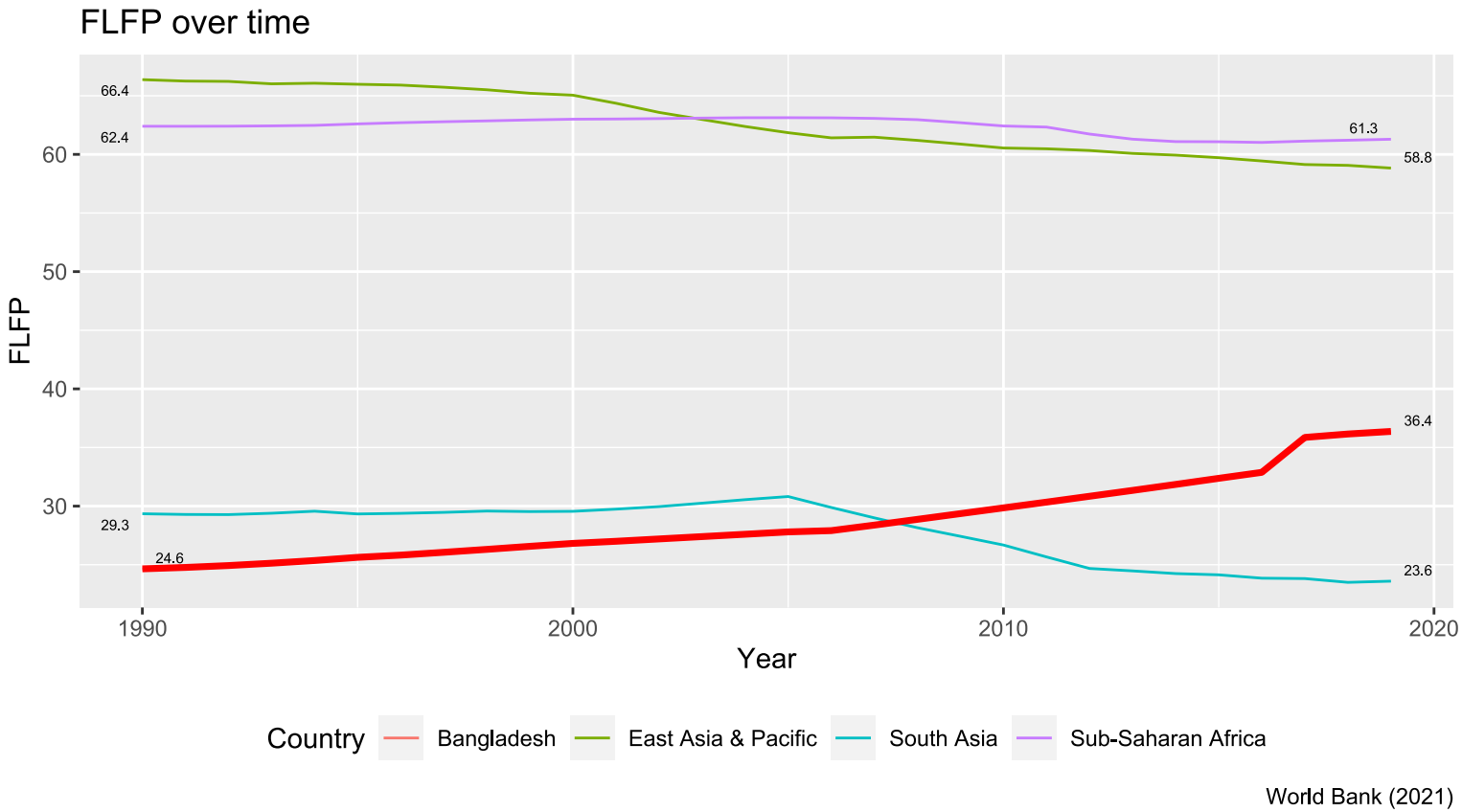
Ready Made Garments, Reproductive Behavior and Human Capital among Bangladeshi Women

SM Shihab Siddiqui

21 October, 2022

Introduction

Against the grain: Bangladeshi FLFP



- **Female labor force participation (FLFP)** among 20-24 year olds stood at about 49% in 2015 (ADB 2016).

Expansion of the garments industry

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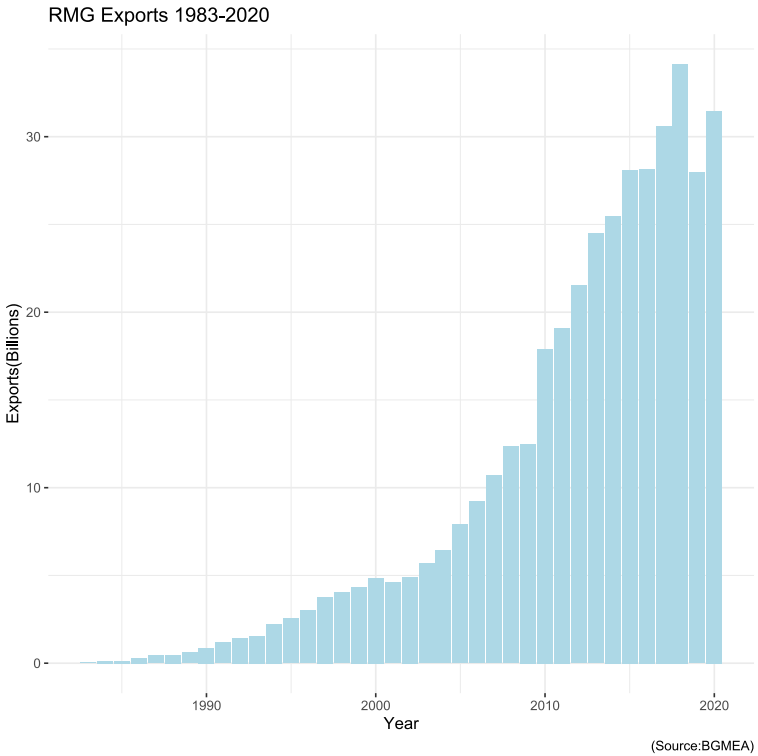

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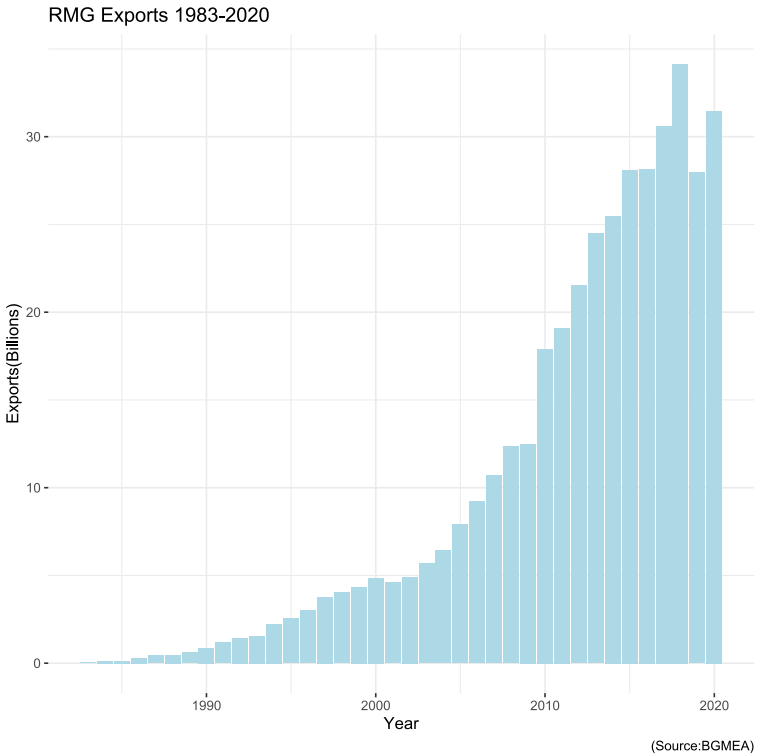

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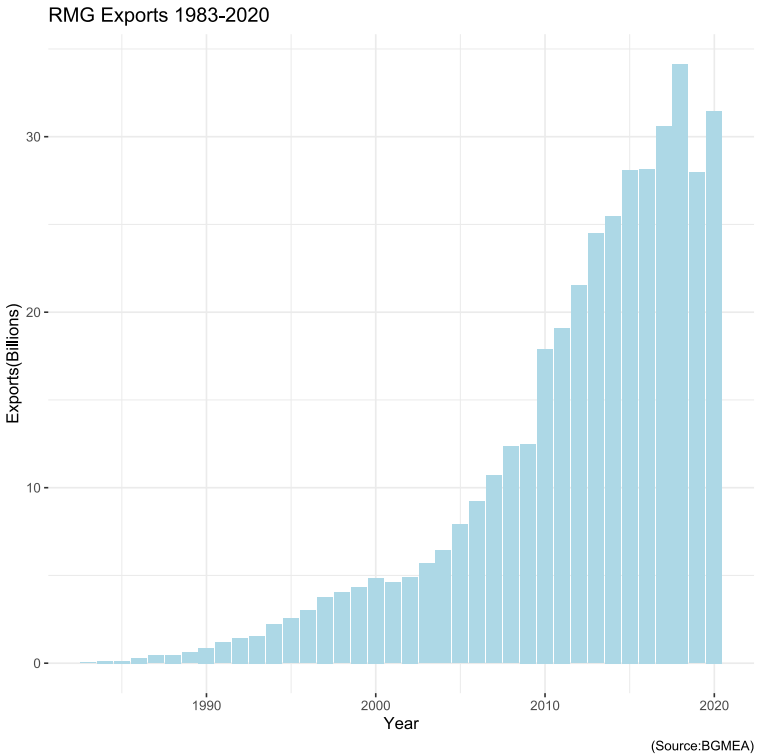

- Accounts for 75-85% of Bangladesh's exports in recent decades.
- Contributed about 5-6% to GDP in 2019.
- **About 60% of workers in export oriented RMG industry are women.**

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    - Women engaged in more spinning and knitting for centuries *(Virginia Postrel, Textiles and the Fabric of Civilization)*
    - Did this "kick" off an overall FLFP transition in lines of Fogli and Veldkamp (2011)?

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    - Maybe less schooling but more human capital accumulation through increased effort?

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- More schooling if returns to schooling in RMG industry is adequate. Less if potential students are better off working.
    - Maybe less schooling but more human capital accumulation through increased effort? **All these are empirical questions!**

Research questions

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2. What is the effect of the RMG industry on reproductive behavior of women (marriage and fertility)?
    - A question about sign and magnitude.
3. What is the effect of the RMG industry on human capital accumulation of Bangladeshi women?
    - A question about sign and magnitude.

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2. Adds to the literature focusing on trade and lives of workers (Autor et al (2013), Li (2018) and Autor et al (2019)).

Preview of the paper

Methods

- Estimates the long run impact of female labor demand shock on FLFP, fertility and human capital accumulation by:
    - Bartik shift-share method to identify labor demand shocks following a methodology similar to **Autor et al (2013).**
    - Specifically, I exploit product specialization in the RMG industry along the knit versus woven line across sub-districts (Bangladesh administrative level-3) for identification.

Preview of the paper

Results

- FLFP, particularly industrial FLFP changes a lot.

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- FLFP, particularly industrial FLFP changes a lot.
- Not much of an impact on reproductive behavior and fertility overall.

-- Results can be rationalized with previous literature under plausible assumptions.

RMG industry in Bangladesh

Knit versus Woven prodcuts

Knit

- Single yarn looped repeatedly.
- HS code 61.
- Product examples: Most sweaters, cotton T-shirts.

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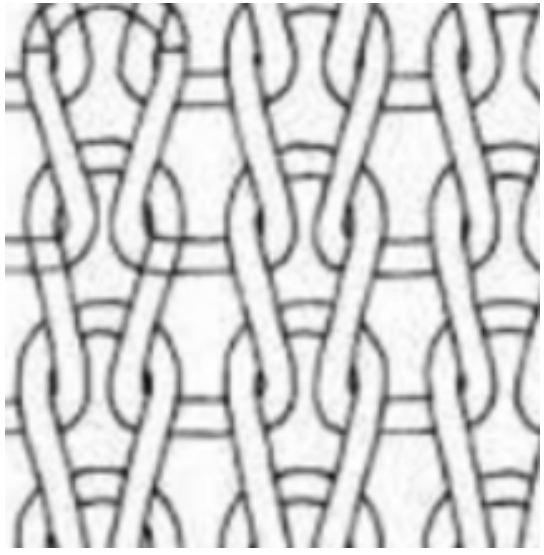
Knit



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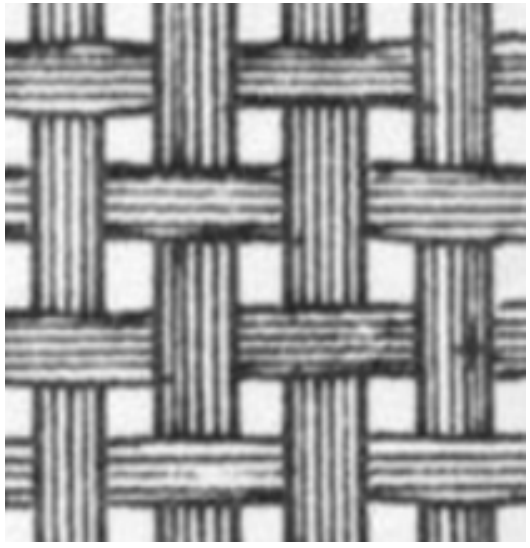
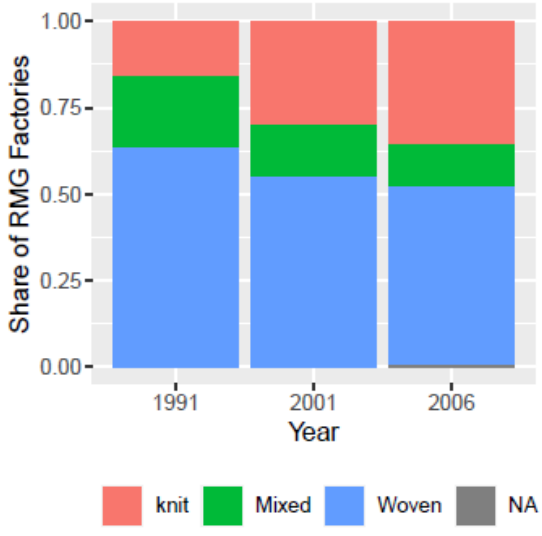
Woven

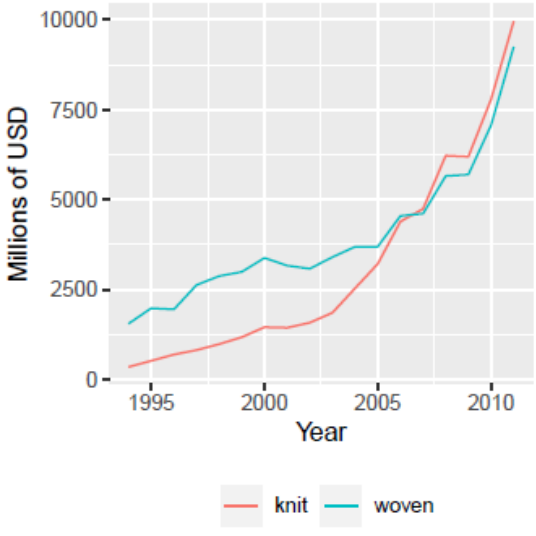


- Multiple yarn criss-crossed over and under each other.
- HS code 62.
- Product examples: Shirts, jackets, pants.

Knit versus Woven Specialization



Data Source: BGMEA Directory 2000–01 & 2009–110



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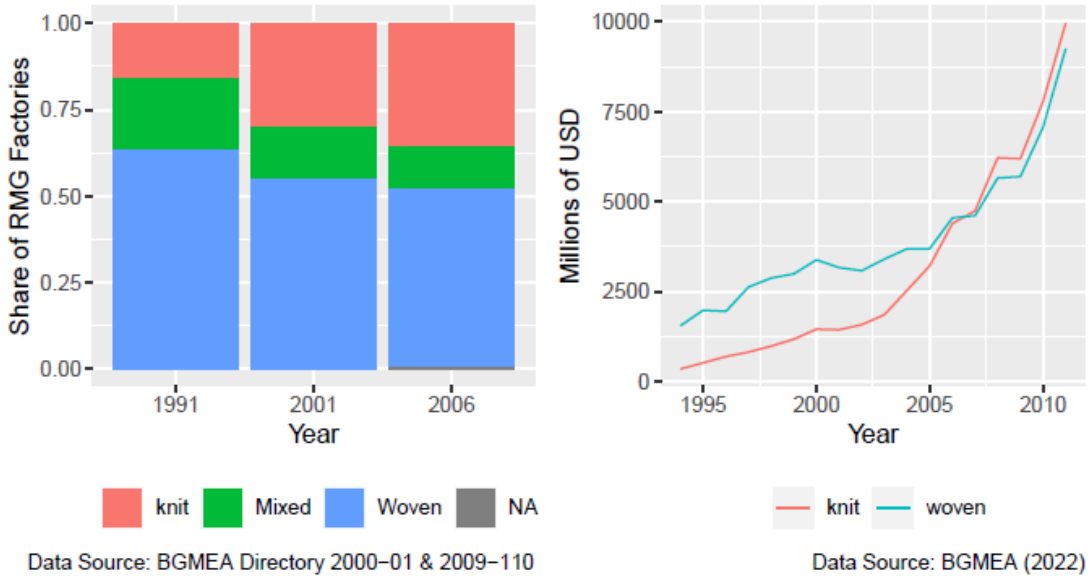

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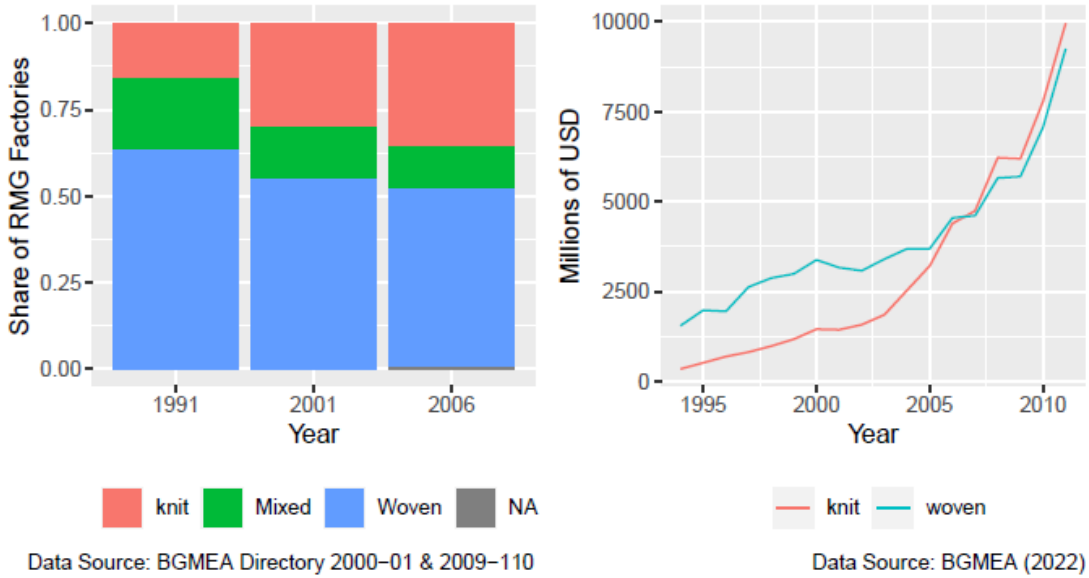
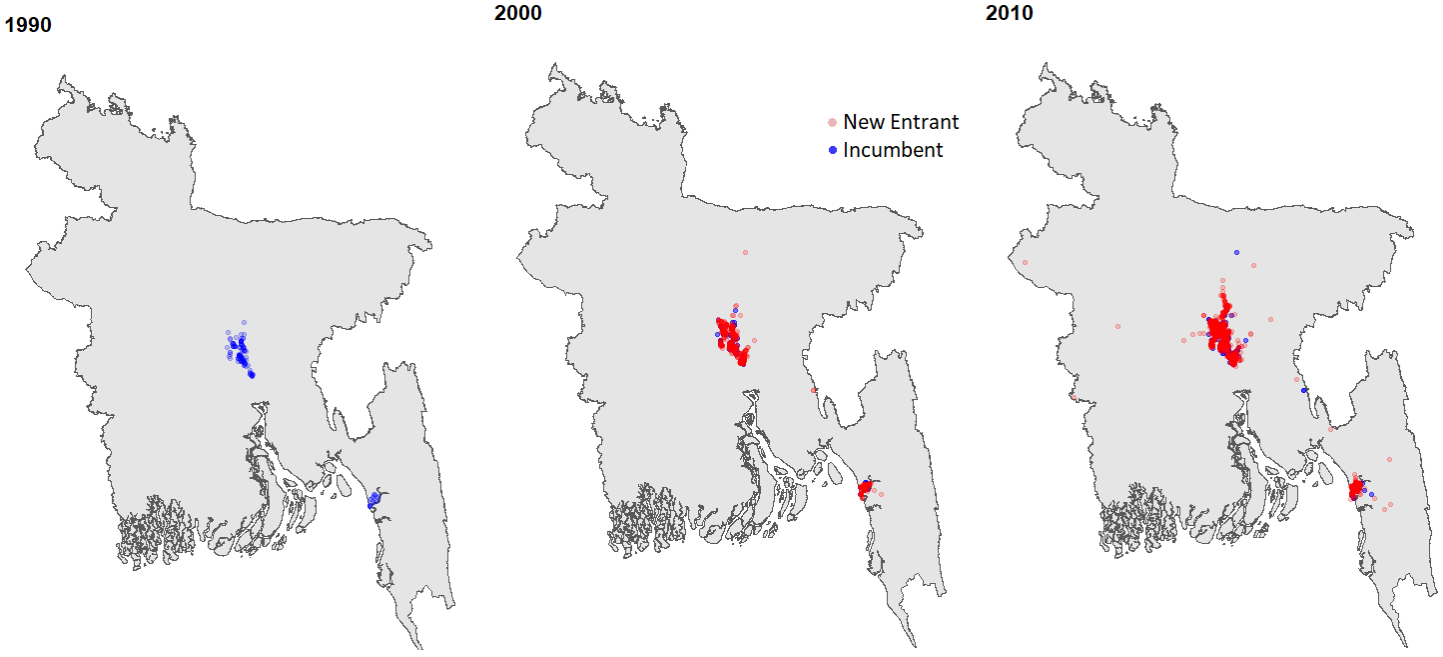


- Producing woven is more energy and capital intensive, and commands about 10% higher per unit price (Sytsma, 2022).
- Woven factories are larger, and employs more women.

Location of RMG factories



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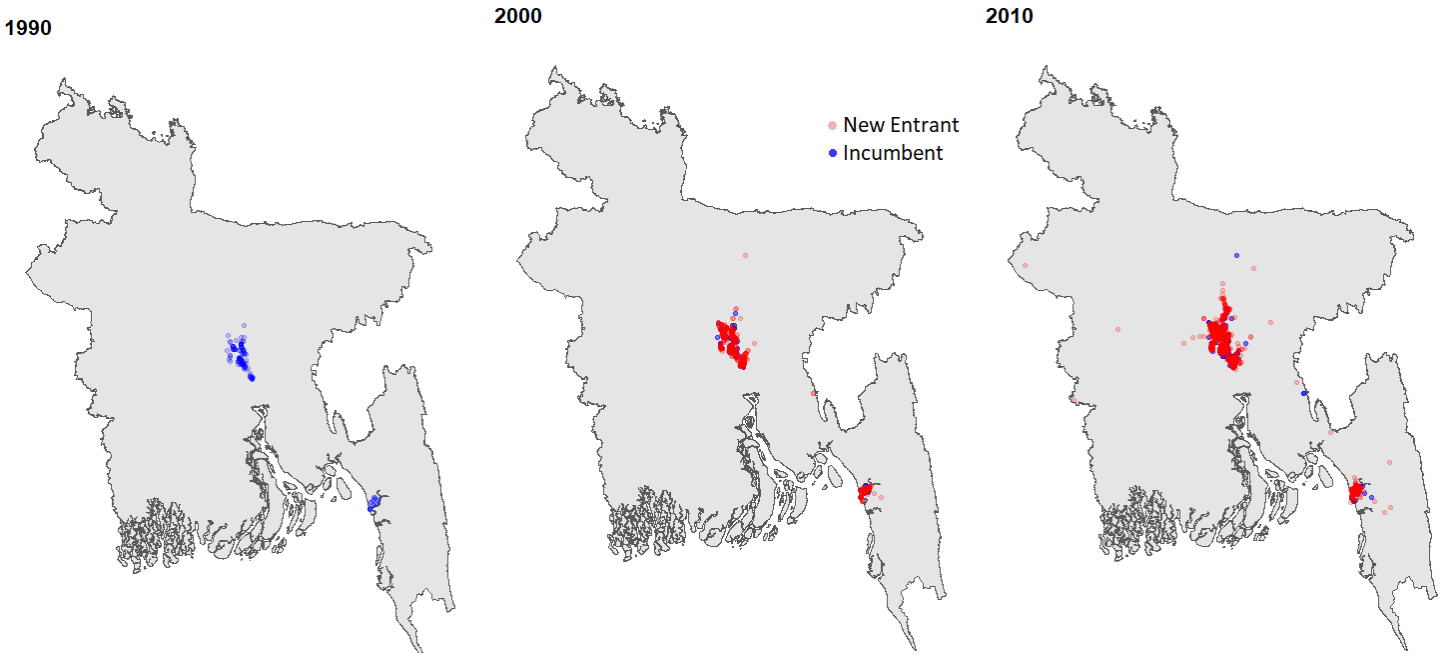

- RMG factory location choice is mostly dependent on infrastructure quality (kagy, 2014).

Identification strategy and data

Overview of the identification strategy

- Sub-districts with and without factories are likely to have different infrastructure quality, which maybe correlated with outcome variables. So, **I restrict the analysis only to sub-districts that had a factory by 2006.**

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- Different sub-districts have different intensity of knit versus woven specialization **within** the RMG industry.

    - Adopting Goldsmith-Pinkham et al (2020), the key assumption is that these differences in specialization do not change outcomes through confounders.

Regression Model

$$\Delta Y_{s,t} = \beta\, \Delta\text{Export Exposure}_{s,t} + \delta_t + Z_{s,t-1}\beta_z + X_{s,t-1}\beta_x + \epsilon_{s,t}$$

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- $X_{s,t-1}$ are start of the period comparable outcomes for males other than in the cases of regressions corresponding to marriage and fertility rates.

Export exposure

One candidate measure of export exposure per potential worker (Population 15-64) is:

$$\sum_{i=0}^{9} \alpha_{s,t-i}^{K} * \frac{\text{Export}_{BD,t-i}^{K}}{L_{s,t-i}} + \sum_{i=1}^{9} \alpha_{s,t-i}^{W} * \frac{\text{Export}_{BD,t-i}^{W}}{L_{s,t-i}}$$

$$\alpha_{s,t-i}^{K} = \frac{Machines_{s,t-i}^{K}}{Machines_{BD,t-i}^{K}}, \alpha_{s,t-i}^{W} = \frac{Machines_{s,t-i}^{W}}{Machines_{BD,t-i}^{W}}$$

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- Apportions total knit (woven) exports originating in Bangladesh to a sub-districts based on what share of national knit (woven) production is in the sub-district.
    - Export exposure in sub-district s in at time period t depends on the intensity of knit (woven) specialization and is scaled by total exports and population.

Export exposure

- But clearly the previous measure can be endogenous since over decades, infrastructure changes and that in itself could change both the shares and change the outcomes differentially. So, I fix share to the values at the start of decade. Thus export exposure per potential worker is as follows:

$$\Delta \text{ Export Exposure}_{s,t} = \alpha^{K}_{s,t-1} * \frac{\Delta \text{ Export}^{K}_{BD,t}}{L_{t-1}} + \alpha^{W}_{s,t-1} * \frac{\Delta \text{ Export}^{W}_{BD,t}}{L_{t-1}}$$

Identifying Assumptions

Adopting from Goldsmith-Pinkham et al (2020), the key assumption is that the differences in knit versus woven specialization do not *change* outcomes through confounders. That is:

- **Identifying assumption 1:** Extent of knit versus woven specialization in a sub-district is uncorrelated with the errors conditional on controls in the first difference equations.

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- **Identifying assumption 2:** FLFP responds similarly to woven and knit shocks.
- **Example of a violation:** Woven employs more women, so areas with more woven factories has increased presence of fertility control programs because there are more women.

Data Sources

- **Outcome data** is obtained by aggregating individual-level data from the Bangladesh Census 1991 (10% sub-sample), 2001 (10% sub-sample) and 2011 (5% sub-sample).

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- **Factory data** are primarily from multiple BGMEA datasets from members directory (2001, 2010), BGMEA (2015) and scraping of BGMEA websie in 2013.

Results

FLFP

Overall

Influence on overall (left) and industrial (right) FLFP

Age	coeff	std_error	Age	coeff	std_error
15-64	0.004	6e-04	15-64	0.007	8e-04
15-29	0.005	8e-04	15-29	0.006	6e-04
15-20	0.006	9e-04	15-20	0.007	7e-04

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- At mean export exposure for a sub-district over two decades:

Reproductive behavior

Influence on marriage rates (left) and fertility (right)

Age	coeff	std_error
15-20	-4e-04	5e-04
21-30	1e-04	4e-04

Age	coeff	std_error
15-20	0.0001	0.0004
21-30	0.0000	0.0015
15-20	0.0036	0.0023

- Signs as I expected, but not statistically significant.

Human capital accumulation

Influence on schooling rates of women

Age	coeff	std_error
05-09	0.0009	0.0008
10-13	-0.0002	0.0008
14-19	-0.0013	0.0011

- Signs as I expected, but not statistically significant.

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Thank you. Suggestions and comments are very appreciated!