Pre-Analysis Plan:
Understanding the Costs of Hiring Women in Pakistan

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1 Introduction

This document describes our pre-analysis plan to investigate:

1. Effects of economic integration costs on decision to hire women;
2. Correlates of willingness to comply (WTC) with the social norm of strict physical separation of the sexes;
3. Relationship between WTC and female hiring;
4. Whether firm's top managers can be monetarily incentivized to disobey the social norm.

2 Sampling

We randomly sample 600 firms from the membership lists of two trade associations: the Pakistan Hosiery Manufacturers and Exporters Association (PHMA) and the Pakistan Ready-made Garment Manufacturers and Exporters Association (PRGMEA). At each firm, we identify a top manager to interview. We define a top manager as someone who holds i) a managerial position within a company and ii) a decision-making power that can set the company's hiring policy.

3 Conceptual Framework

Cultural values such as *purdah* (curtain) and *izzat* (honor) dictate behaviors of women and men in Pakistan, and seemingly influence employers' decisions. Our fieldwork, conducted in the summer of 2021 and funded by PEDL, and existing studies suggest that seven types of costs can potentially be incurred when hiring women. These are 1) investment in providing safe physical workspace

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(Makino, 2019); 2) cost of providing additional training due to the underlying education gender gap (Minardi et al., 2021) ; 3) cost of additional management burden to mitigate and solve harassment and disputes (fieldwork); 4) cost of providing safe transportation (Field et al., 2020; Cheema et al., 2020); 5) compensating for household and care work (Amir et al., 2018); 6) internal mental cost of breaking away from social norms that promote women and men to be physically segregated (fieldwork); and 7) reputation cost of overstepping such norms (Bernhardt et al., 2018).

There is a meaningful distinction between cost types 1-5 and cost types 6 and 7 as they differ in how they affect firms' behaviors. We consider the first category the "economic" costs of hiring women. All of the economic costs, if incurred, directly enter a firm's profit function and decrease its profit assuming perfect competition, profit maximization, and constant marginal revenue.[1] For example, building a separate women-only bathroom to accommodate female workers requires paying a one-time investment, which increases the firm's average total cost.

Meanwhile, we call the second category "non-economic" costs, which may not affect the firm's profit function as straightforwardly as the economic costs. In addition, however, these non-economic costs possibly affect the firm's top manager, whose norm adherence intentionally or unintentionally may permeate how he manages it. For instance, the top manager may believe that his reputation among his business peers, family members, and friends will be tarnished by deviating from norms and hiring women at his firm. If so, he may conclude that the expected reputation cost is higher than the expected benefit of hiring women at his firm, hence deciding to hire only men.

Furthermore, this distinction is salient because of its implication for future interventions. Following the earlier example, if the firm is constrained by its inability to absorb the cost of building a women-only bathroom, it may be incentivized to hire women if the cost is borne by someone else. However, the firm may still decide not to hire women even after the bathroom subsidy if its top manager adheres to norms for fear of damaging his reputation. To relax the latter constraint requires an entirely different set of interventions.

4 Data Collection Methods

Our data collection aims to document the economic and non-economic costs of hiring women and observe whether relaxing the potential burden of any of these costs can incentivize firms to employ women. To this end, in addition to a more traditional survey questionnaire, we use a) a hypothetical-choice method to understand firms' preference for hiring women if various economic costs are relaxed (Wiswall and Zafar, 2018; Delavande and Zafar, 2019; Parker and Souleles, 2019; Mas and Pallais, 2019); and b) a lab-in-the-field bean sorting game to test if top managers can be incentivized to change their norm compliance. This section presents the survey questionnaire, hypothetical-choice method, and lab-in-the-field experiment designs.

[1] Some types of costs can be more variable while others are fixed. While this distinction is important, this project currently focuses on understanding if these costs affects firms' behaviors at all.

4.1 Survey

The traditional survey portion collects data on firms' production, employees, and other basic characteristics, and top managers' characteristics including age, gender, education, and views on women and female employment.

4.2 Hypothetical Choice Method

We use the hypothetical-choice method to reveal firms' preference to hire women. The basic concept of this method is the following. All respondents are shown a profile of a hypothetical company, A. Throughout this section, they are asked to think of themselves as the top manager of this hypothetical firm. As the top manager of Company A, they are tasked to fill 10 sawing positions. They are, then, shown various scenarios in which some of the five economic costs associated with hiring women are paid for by special lottery, and do not have to be paid for by Company A. Under each of these cost environment, they are asked to report the probability of filling the 10 sawing positions with women as opposed to men.

4.3 Marble Sorting Game

We conduct a marble sorting game with the Becker-Degroot-Marschak (BDM) mechanism (Becker et al., 1964) to elicit top managers' willingness to comply with social norms that idealize strict physical separation of the sexes.

In this game, a top manager is asked to sort marbles for a short period of time for a monetary prize. The prize is determined by the quantity he sorts in the given time multiplied by a fixed rate. He is also offered a helper who can help him sort more marbles, thus increasing his prize earnings. Randomly chosen, 90 % of the sample is offered a female helper. If the female helper joins him to play the game, the quantity sorted by her times a different fixed rate will be given to him. In sum, his prize earnings, if he plays with the female helper, is the sum of the contributions by him and the female helper. He is then asked to report the lowest rate at which he is willing to play this game with the female helper through the BDM mechanism. This is the rate that may be used to convert the female helper's contribution into a monetary prize. However, whether the top manager plays with the female helper and the rate used to convert her sorted quantity to a monetary prize is determined by a randomly drawn rate. This rate is drawn after the top manager reveals his lowest willing rate. If the randomly drawn rate is greater than or equal to his willing rate, he plays the game with the female helper and uses the randomly drawn rate for her. If it is less than his willing rate, he plays alone. This random drawing is the key aspect of the BDM mechanism; it induces truth-telling because the top manager has no control over if he gets to play the game with the female helper.

The rest is offered a male helper, which produces a comparison group that enables us to learn about the roles of potential attributes, other than the helper's gender, that may affect the norm compliance price point.

5 Outcomes of Interest

We have three primary outcomes: 1) firms' decision to hire women, 2) firms' experience in hiring women, 3) top managers' willingness to comply with social norms for themselves, and their willingness to comply with social norms for their workers.

The first outcome, *firms' decision to hire women*, comes from the hypothetical choice method. It is the reported probability for hiring women to fill the 10 sawing positions at the hypothetical Company A.

The second outcome, *firms' experience in hiring women*, comes from the survey. We construct the following variables to capture this outcome:

1. If a firm has hired women in the past at all by occupation types
2. Share of current female employees by occupation types

The third outcome, *willingness to comply with social norms*, comes from the marble sorting game. This is the lowest willing rate for the helper reported by each top manager. The greater the lowest willing rate is, the more willing he is to comply with the social norm of physical segregation of the sexes.

The fourth outcome, top managers' willingness to comply with social norms for their workers, comes from hypothetical questions after the marble sorting game. We ask top managers to report willingness to comply with social norms for their workers under different scenarios which vary by a) the level of visibility of workers' behaviors while working with the male and female helpers, and b) who requires the workers to work with the helpers (top manager or research team). This measure is meant to understand if top managers have different standard and concern for social norm compliance for their workers who come from very different socio-economic backgrounds.

6 Estimation and testing

We have listed the four analytical goals of this paper in the introduction. The first three requires statistical estimation, while the fourth one will be achieved through our observation of the marble sorting game outcomes. We explain our estimation strategies for the first three goals in this section.

6.1 Effects of economic integration costs on decision to hire women

Using the hypothetical choice method data, we estimate the following with OLS:

$$y_{ij} = \sum_{k=1}^{K=5} \gamma_{1k} A_{ijk} + \zeta_i + \lambda_{ij}$$

where y_{ij} is the probability of hiring women for ten sawing positions reported by the top manager i in the jth scenario; A_{ijk} is the binary variable indicating if i faces the kth economic cost (of the total five); and ζ_i is the top manager fixed effects.

6.2 Correlates of willingness to comply with the social norm of strict physical separation of the sexes

We estimate the following with OLS on the female offer sample:

$$WTC_i = X_i'\beta_1 + Z_i'\beta_2 + \eta_i$$

where WTC_i is the lowest rate for the helper at which top manager is willing to work with the female helper in the marble sorting game; X_i' is the firm characteristics such as years in operation, revenues, workforce size, if exports, access to finance, and types of production; Z_i' is the top manager characteristics including sex, age, education level, experience in the business, if his wife has out-of-the-home employment.

6.3 Correlation between the willingness to comply and female hiring

We estimate the following with OLS on the female offer sample:

$$y_i = \delta_1 WTC_i + X_i'\delta_2 + Z_i'\delta_3 + \mu_i$$

where y_i is female hiring of the top manager i's firm; WTC_i is the lowest rate for the helper at which top manager is willing to work with the female helper in the marble sorting game; X_i' is the firm characteristics such as years in operation, revenues, workforce size, if exports, access to finance, and types of production; Z_i' is the top manager characteristics including sex, age, education level, experience in the business, if his wife has out-of-the-home employment.

7 Additional Analysis

We plan to conduct the following additional analyses:

1. Estimate the heterogeneous effects of economic integration costs by including various firm and top manager characteristics and their integration with the cost variables
2. Exploring the correlated of WTC on the whole sample and include the helper gender variable, and its interaction with various firm and top manager characteristics variables
3. Estimating the correlation between WTC and female hiring on the whole sample and include the helper gender variable, and its interaction with the WTC variable

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