ESSAYS ON THE ECONOMICS OF HIGHER EDUCATION AMONG WOMEN IN INDIA

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SYNOPSIS

Education is universally acknowledged as a vital investment, playing a significant role in reducing poverty, stimulating economic growth, enhancing GDP, creating employment opportunities, and improving overall health. The educational journey comprises several stages: primary (level 1), secondary (levels 2-3), post-secondary non-tertiary (level 4), and tertiary or higher education (levels 5-8). Tertiary education/ higher education includes all formal post-secondary education institutions, such as universities, colleges, technical training institutes, and vocational schools, whether public or private.

According to the World Bank, tertiary education offers the highest economic returns within the educational system, with graduates earning approximately 17% more than those with only primary and secondary education, who earn 10% and 7% respectively. Considering this aspect various studies (Mincer, 1981; Lucas, 1988; Bogetoft et al., 2007; Núñez and Livanos, 2010) emphasize the role of higher education in developing human capital and increasing productivity, thereby enhancing economic efficiency (Fischer, 1993).

India has a long-standing tradition in higher education. The Department of Higher Education, under the Ministry of Education, defines higher education as "the education, which is obtained after completing 12 years of schooling or equivalent and is of the duration of at least nine months (full time) or after completing 10 years of schooling and is of the duration of at least 3 years. The education may be of the nature of General, Vocational, Professional or Technical education". India is a developing country and to achieve our goal and to make India a knowledge superpower higher education has to play a pivotal role.

The growing middle class, now around 200 million strong, has driven increased demand for higher education. According to the AISHE (2021-22) report, total higher education enrolment rose to nearly 4.33 crore in 2021-22 from 4.14 crore in 2020-21, and from 3.42 crore in 2014-15. Despite this growth, higher education remains inaccessible to many, particularly among the poorest and most marginalized groups, including women.

The AISHE (2019-20) report indicates higher male participation at most educational levels, except for M.Phil., Post Graduate, and Certificate levels. Barriers such as poverty, violence, and child marriage hinder young females from accessing higher education and the labour force. Additionally, female graduates face a higher unemployment rate (24.5%) compared to males

(13.1%) (PLFS 2021-21). However, the World Bank groups' twin goals highlight the Gender equality aspect as this is a crucial measure to end extreme poverty and promote shared prosperity.

According to the AISHE report (2019-20), there is a gender-wise participation gap, especially in favour of women in higher education in India. There are various studies which identify that women's enrolment in higher education is hindered by several socio-economic and cultural factors. However, previous studies also emphasize the importance of women's higher education. Khalid (2008) highlights that women are vital to a country's development and the economic survival of their households. Education is the most crucial tool for enhancing women's socio-economic status and is statistically associated with better health, lower fertility rates, higher economic growth, and improved living standards (Khan, 1993; Khalid, 2008).

Jain (2003) argues that it is essential to include girls in diverse fields available in society and recognize the need for necessary investments in their education. This inclusion could transform women's employment prospects, thereby motivating parents and communities to support female education. Unterhalter et al. (2014) suggest that improved female education can contribute to gender equality by fostering a new generation of educated women who can participate in political, social, cultural, economic, and technological spheres. This shift could lead to changes in gender norms, attitudes, and identities in both sexes and alter gender relations in various institutions at all levels. An inclusive approach is needed to improve this situation. In recent decades, women's participation in higher education in India has undergone significant transformations. As higher education becomes increasingly crucial for socio-economic mobility and national development, understanding the economics behind women's engagement in this sector is imperative.

Access to higher education remains a significant challenge for women in India, particularly those from marginalized socio-economic backgrounds. Research by Desai and Kulkarni (2017) highlights the impact of factors such as family income, parental education, and geographic location on women's access to higher education. Additionally, cultural norms and gender stereotypes often deter women from pursuing higher education, particularly in rural areas where traditional gender roles are deeply entrenched (Plan International, 2013; UNESCO, 2015). Various studies have explored the impact of parental education on children's educational outcomes, with mixed conclusions on whether mothers' education has a greater, lesser, or equal impact compared to fathers' education (Farré, Klein, and Vella, 2009). Despite improvements

in enrolment rates, retention and completion rates among women in higher education remain concerning. Family responsibilities, early marriage, and lack of support systems are significant factors contributing to higher participation rates among women (Moorely and Lugg, 2009). Research by Das et al. (2018) underscores the importance of addressing socio-cultural barriers to retention by providing flexible learning options and childcare facilities. The relationship between higher education among women and their labour market outcomes is complex. While education is often viewed as a pathway to economic empowerment, women in India continue to face challenges in accessing quality employment opportunities. Gender wage gaps, occupational segregation, and discriminatory practices persist despite increases in educational attainment among women (Blau and Kahn, 2017). Women remain concentrated in particular segments of the employment system (Stromquist, 2001). Pampel and Tanaka (1986) argue that women have been excluded from early industrial jobs due to physical limitations, gender discrimination, and the domestic responsibilities associated with large families.

The literature on the economics of higher education among women in India highlights the complex interplay of socio-economic, cultural, and policy factors shaping women's educational experiences and outcomes.

In this context, this study has four main research objectives:

1. Identify household-level factors (including state policies) that influence the enrolment decisions of young people in higher education, with a focus on young females.
2. Analyse higher education enrolment across different Indian states and identify factors impacting state-level enrolment rates.
3. Examine the gender gap in technical higher education at the household level and explore factors contributing to reducing this disparity.
4. Investigate the state-level educated unemployment rates and identify factors to mitigate this issue.

These research objectives are discussed in detail in four different chapters of this thesis.

Chapter four titled “The Determining Factors of Females’ Enrolment in Higher Education Institutions in India” delves into the depth of the first research objective (Identify household-level factors (including state policies) that influence the enrolment decisions of young people in higher education, with a focus on young females) of the thesis. Through this chapter, we

have explored the aforementioned research objective comprehensively by addressing the following objectives:

1. Examine the household-related and state-related factors that can play a role in influencing parental decisions regarding enrolling their sons and daughters to higher education institutions. It will also look at whether there exist gender preferences during the enrolment process in higher education
2. Identify the household-related and neighbourhood-related factors that influence a parent's decision to enrol their daughter in higher education.

To achieve the above objectives, household-specific data are collected from the NSSO 75th round survey, while state-specific data are sourced from various reports including NFHS-4, the Ministry of Education's Analysis of Budgeted Expenditure on Education (2016-17 to 2018-19), the All India Survey on Higher Education Report (2017-18), state-wise loan disbursement data by SBI for degree and diploma courses within and outside the country, the Periodic Labour Force Survey (PLFS) Annual Survey Report 2017-18, and the Bureau of Police Research and Development, Government of India. The study focuses on the period 2017-18.

Before conducting the detailed econometric analysis, all independent variables are tested for potential multicollinearity using the VIF test. To account for the impact of ethnicity, two different models are considered, focusing on caste and gender. The study identifies household-level and state-specific factors that significantly influence parents' decisions to enrol their young children in higher education in India. Here, the dependent variable is "Enrol_HE" and it is binary. Therefore, probit regression is best to apply here.

The following probit regression equation is used to address the first research problem:

Model 1

$$\begin{aligned} Y_{ij} = {} & \beta_0 + \beta_1 \text{Female}_{ij} + \beta_3 \text{Hindu}_{ij} \\ & + \beta_2 \text{Muslim}_{ij} + \beta_3 \text{Chiristian}_{ij} + \beta_4 \text{Resedential\_Status}_{ij} \\ & + \beta_5 \text{Consumption\_Expen}_{ij} + \beta_6 \text{HH\_Size}_{ij} + \beta_7 \text{Computer\_owner}_{ij} \\ & + \beta_8 \text{Distance}_{ij} + + \beta_9 \text{No\_Insti}_{j} + \beta_{10} \text{State\_Expen\_HE}_{j} + \beta_{11} \text{Loan\_Amnt}_{j} \\ & + \beta_{12} \text{Year\_Schooling}_{j} + \beta_{13} \text{Working\_Male\_Pop}_{j} + \varepsilon_{ij} \end{aligned}$$

……(1)

Model 2:

$$Y_{ij} = \beta'_0 + \beta'_1 Female_{ij} + \beta'_2 SC_{ij} + \beta'_3 ST_{ij} + \beta'_4 OBC_{ij} + \beta'_5 Resedential\_Status_{ij} + \beta'_6 Consumption\_Expen_{ij} + \beta'_7 HH\_Size_{ij} + \beta'_8 Computer\_owner_{ij} + \beta'_9 Distance_{ij} + +\beta'_{10} No\_Inssti_j + \beta'_{11} State\_Expen\_HE_j + \beta'_{12} Loan\_Amnt_j + \beta'_{13} Years\_Schooling_j + \beta'_{13} Working\_Male\_Pop_j + \varepsilon'_{ij}$$

……..(2)

Here Y_{ij} =1 if the young from the i^{th} household of j^{th} state is enrolled higher education institute (between the age group 18 to 28)

= 0 if the i^{th} household of that reference age group of the j^{th} state is not enrolled higher education institute.

Similarly, after identifying the factors affecting young individuals' enrolment in higher education regardless of gender, the next step is to focus specifically on the factors influencing young women's enrolment in higher education. In this analysis, the dependent variable is female enrolment in higher education. This variable takes the value "1" if young women aged 18 to 28 are currently enrolled in higher education, and "0" otherwise. Since the dependent variable is binary, the probit regression method will be used for the analysis & also two models are considered to capture the religion and caste effect.

The two models are:

Model 1.1:

$$Y_{ij}^{F} = \alpha_0 + \alpha_1 Hindu_{ij} + \alpha_2 Muslim_{ij} + \alpha_3 Chiristian_{ij} + \alpha_4 Resedential\_Status_{ij} + \alpha_5 Consumption\_Expen_{ij} + \alpha_6 HH\_Size_{ij} + \alpha_7 Computer\_owner_{ij} + \alpha_8 Distance_{ij} + +\alpha_9 No\_Insti_j + \alpha_{10} State\_Expen\_HE_j + \alpha_{11} Loan\_Amnt_j + \alpha_{12} Police\_Density_j + \alpha_{13} Years\_Schooling_j + \alpha_{14} Women\_empowerment_j + \alpha_{13} Working\_Female\_Pop_j + \mu_{ij}$$

……(3)

Model 2.1:

$$Y_{ij}^{F} = \alpha'_0 + \alpha'_1 SC_{ij} + \alpha'_2 ST_{ij} + \alpha'_3 OBC_{ij} + \alpha'_4 Resedential\_Status_{ij} + \alpha'_5 Consumption\_Expen_{ij} + \alpha'_6 HH\_Size_{ij} + \alpha'_7 Computer\_owner_{ij} + \alpha'_8 Distance_{ij} + +\alpha'_9 No\_Insti_{j} + \alpha'_{10} State\_Expen\_HE_{j} + \alpha'_{11} Loan\_Amnt_{j} + \alpha'_{12} Police\_Density_{j} + \alpha'_{13} Years\_Schooling_{j} + \alpha'_{14} Women\_empowerment_{j} + \alpha'_{13} Working\_Female\_Pop_{j} + \mu'_{ij}$$

…….(4)

Here Y_{ij}^{F} =1 if the female young from the i^{th} household of j^{th} state is enrolled in a higher education institute (between the age group 18-28)

= 0 if the i^{th} household of j^{th} state is not enrolled in a higher education institute in that reference age group.

The values of each of the state-specific variables are the same for the sample households for the j^{th} state.

The regression results indicate that various household-related factors, such as household income and location, significantly influence parents' decisions to enrol their children, both sons and daughters, in higher education. For Hindu and Christian families, the likelihood of youth, including girls, participating in higher education is increasing, whereas for Muslim communities, this likelihood is decreasing, particularly for young girls. Greater distances between households and higher education institutions reduce youths' eagerness to enrol in higher education. Police protection enhances the probability of youth, especially young girls, joining in higher education institutions. Women's empowerment and mothers' education are crucial determinants in encouraging young females to pursue higher education. However, students are reluctant to take out large educational loans due to the risk of falling into debt traps if they fail to repay the loans.

Chapter five, "Women's Participation in Higher Education in India: An Analysis Across Major States," addresses the second research objective of the thesis: Analysing higher education enrolment across different Indian states and identifying factors impacting state-level enrolment rates. In this chapter, we have also thoroughly examined the above-mentioned research objective by addressing the following goals:

1. It seeks to make a comparison across states in India of GERof women and GPI in higher education at three levels, namely, under graduation, postgraduation and technical education;

2. Identify the factors that determine the overall levels of women's participationin higher education in terms of GER of females and GPI. This analysis is carried out for 16 major states [1]in India using data from 2011 and 2019.

In this study, absolute enrolment is measured using the Gross Enrolment Ratio (GER) of women aged 18-23 years, while relative enrolment is measured using the Gender Parity Index (GPI) in higher education. The data encompasses 16 major states in India, collected from the All India Survey on Higher Education, published by the Department of Higher Education, Ministry of Education, Government of India; the Census Report (2011); the Handbook of Statistics of Indian States, published by the Reserve Bank of India; the Bureau of Police Research Organization report; the National Crime Records Bureau, Ministry of Home Affairs; the Sample Registration System Statistical Report; and the Office of the Registrar General and Census Commissioner, India, covering the period from 2011 to 2019.

The state-wise comparison using the two indicators, GER for females in higher education and GPI in higher education, reveals that GER values for females are significantly low in postgraduate and technical education courses. However, the states exhibit better performance in GPI at the undergraduate level. Notably, no state achieves gender parity in technical education. To address the second objective of this chapter, a test for multicollinearity among the explanatory variables is conducted. This test indicates a high correlation between the number of colleges and Pupil Teacher Ratio (PTR), and between female teachers and female literacy. Consequently, these variables are considered separately in the econometric models.

Before the analysis, it is hypothesized that the variables "Number of Colleges per Lakh Population" (No_Collg) and "Pupil Teacher Ratio" (PTR) are endogenous (i.e., correlated with the error term) due to omitted variable bias. To test for endogeneity, the variable "Social Expenditure in Higher Education" (Social_Exp) is used as an instrumental variable for each of these two presumed endogenous variables. The Hausman Specification Test is employed

[1] The special category states and the union territories are not considered here as they get special funds for development of themselves from centre.

to examine the endogeneity issue, but the test results indicates that both variables are exogenous. Therefore, the Fixed Effect Panel Regression Method is applied in this study, with the following models considered:

Model-1:

$$\begin{aligned} GER\_F_{it} = {} & \alpha + \beta_1 No\_Collg_{it} + \beta_2 PSDP_{it} + \beta_3 Hostel\_Intake_{it} + \beta_4 Lit\_Male_{it} \\ & + \beta_6 F\_Teacher_{it} + +\beta_7 Crime\_Rate_{it} + \beta_8 MYM\_18_{it} + \beta_9 MYM\_18-20_{it} \\ & + \beta_{10} MYM\_21_{it} + \in_{it} \ldots . (5) \end{aligned}$$

Model-2:

$$\begin{aligned} GER\_F_{it} = {} & \alpha'' + \beta_1'' No\_Collg_{it} + \beta_2'' PSDP_{it} + \beta_3'' Hostel\_Intake_{it} + \beta_4'' Lit\_Male_{it} \\ & + \beta_5'' Lit\_Female_{it} + \beta_7'' Crime\_Rate_{it} + \beta_8'' MYM\_18_{it} + \beta_9'' MYM\_18-20_{it} \\ & + \beta_{10}'' MYM\_21_{it} + \in_{it}'' \ldots\ldots\ldots\ldots\ldots (6) \end{aligned}$$

Model - 3:

$$\begin{aligned} GER\_F_{it} = {} & \delta + \gamma_1 PTR_{it} + \gamma_2 PSDP_{it} + \gamma_3 Hostel\_Intake_{it} + \gamma_5 Lit\_Male_{it} \\ & + \gamma_6 Lit\_Female_{it} + \gamma_7 Crime\_Rate_{it} + \gamma_8 MYM\_18_{it} + \gamma_9 MYM\_18-20_{it} \\ & + \gamma_{10} MYM\_21_{it} + \vartheta_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7) \end{aligned}$$

Similarly, for GPI in Higher education we have to consider the following models:

Model - 4:

$$\begin{aligned} GPI_{it} = {} & \zeta + \theta_1 No\_Collg_{it} + \theta_2 PSDP_{it} + \theta_3 Hostel\_Intake_{it} + \theta_4 Lit\_Male_{it} \\ & + \theta_6 F\_Teacher_{it} + \theta_8 Crime\_Rate_{it} + \theta_9 MYM\_18_{it} + \theta_{10} MYM\_18-20_{it} \\ & + \theta_{11} MYM\_21_{it} + \nu_{it} \ldots\ldots\ldots (8) \end{aligned}$$

Model-5:

$$\begin{aligned} GPI_{it} = {} & \zeta'' + \theta_1'' No\_Collg_{it} + \theta_2'' PSDP_{it} + \theta_3'' Hostel\_Intake_{it} + \theta_4'' Lit\_Male_{it} \\ & + \theta_5'' Lit\_female_{it} + \theta_7'' Crime\_Rate_{it} + \theta_8'' MYM\_18_{it} + \theta_9'' MYM\_18 - 20_{it} \\ & + \theta_{10}'' MYM\_21_{it} + \nu_{it}'' \ldots\ldots\ldots\ldots\ldots\ldots\ldots (9) \end{aligned}$$

Model - 6:

$$\begin{aligned}\mathrm{GPI_{it}} = \ & \phi + \omega_1 \mathrm{PTR}_{it} + \omega_2 \mathrm{PSDP}_{it} + \omega_3 \mathrm{Hostel\_Intake_{it}} + \omega_5 \mathrm{Lit\_Male}_{it} + \omega_6 \mathrm{Lit\_Female}_{it} \\ & + \omega_7 \mathrm{Crime\_Rate_{it}} + \omega_8 \mathrm{MYM\_18_{it}} + \omega_9 \mathrm{MYM\_18 - 20_{it}} + \omega_{10} \mathrm{MYEM\_21_{it}} \\ & + \tau_{it} \ldots\ldots\ldots\ldots\ldots\ldots (10)\end{aligned}$$

The regression results indicate that a significant proportion of female teachers, a higher per capita state domestic product (serving as a proxy for per-capita income), and the availability of colleges and girls' hostels are key factors contributing to the Gross Enrollment Ratio (GER) of females and the Gender Parity Index (GPI) in higher education in India.

Observing the poor enrolment of females in technical higher education in Indian states the sixth chapter titled "Enhancement of Enrolment in Technical Courses at Higher Education Level among Indian Women: Few Policy Prescriptions using Fairlie's Decomposition Method" discusses the third objective (Examine the gender gap in technical higher education at the household level and explore factors contributing to reducing this disparity) of the thesis. In this chapter there are two main research objectives:

1. To identify the household-related factors which influence a parent's decision during the time of enrolment of their young child in an Indian technical college for higher studies after completion of 10+2.
2. Next, it is required to quantify the contribution of each household-related factor for explaining gender discrimination during the time of enrolment in technical higher education institutions in India. Fairlie Decomposition technique will be used to understand the relative contribution of different covariates for the gender gap during the time of enrolment in technical and vocational courses at higher education level institutions. Apart from that, relevant state-specific indicators are also considered so that the government can take necessary actions to increase the enrolment of young women in technical and vocational education at higher studies to reduce gender-wise discrimination in India. This will help us to identify possible policy prescriptions which can reduce the gender gap and help more Indian women to enrol in technical and vocational training in higher education.

To examine the objectives outlined, data has been collected from various sources including the NSSO 75th round Household Social Consumption on Education survey, NFHS-4, the Analysis

of Budgeted Expenditure on Education (2016-17 to 2018-19) published by the Ministry of Education, Government of India, state-wise loan disbursed by SBI for pursuing degree and diploma courses both domestically and internationally during a specific year as published by the Ministry of Finance, and policy indicators from the Bureau of Police Research and Development, Government of India. The period considered for this analysis is 2017-18.

Before conducting an in-depth econometric analysis, all independent covariates are tested for the existence of possible multicollinearity using the Variance Inflation Factor (VIF) test. This step is necessary to ensure the robustness of the regression model.

Initially, household-level factors and state-specific factors that significantly influence parents' decisions on enrolling their children in technology institutes in India after completing their 10+2 education are identified. Given that the dependent variable, "Enrollment in the technical institute at higher education level," is binary, the probit regression method is deemed the most appropriate for the analysis. The probit model allows for the estimation of binary outcomes and is suitable for understanding the likelihood of enrolment in technical institutes based on the identified covariates. Through this methodological approach, the study aims to provide a comprehensive understanding of the factors influencing enrolment decisions and the extent of gender discrimination in technical education in India. The following probit regression equation is considered to address the first research problem.

Model 1:

$$\begin{aligned} Y_{ij} = \alpha_0 &+ \alpha_1 \text{Female}_{ij} + \alpha_2 \text{Hindu}_{ij} + \alpha_3 \text{Resedential\_Status}_{ij} + \alpha_4 \text{HH\_Size}_{ij} \\ &+ \alpha_5 \text{Consumption\_Expen}_{ij} + \alpha_6 \text{Institutional\_Distance}_{ij} \\ &+ \alpha_7 \text{Internet\_Access}_{ij} + \alpha_8 \text{No\_Tech\_Inssti}_{j} + \alpha_9 \text{Police\_density}_{j} \\ &+ \alpha_{10} \text{State\_Expen\_technical}_{j} + \alpha_{11} \text{Years\_Schooling}_{j} \\ &+ \alpha_{12} \text{Women\_empowerment}_{j} + \alpha_{13} \text{No\_loan\_sanctioned}_{j} \\ &+ \alpha_{14} \text{Amount\_loan\_sanctioned}_{j} + \varepsilon_{ij} \end{aligned}$$

…… (11)

Here Y_{ij} =1 if the young from the i^{th} household of j^{th} state is enrolled in a technology institute at a higher education level

= 0 if the i^{th} household of j^{th} is not enrolled in a technology institute at a higher education level but at any non-technical degree course.

Subsequently, the study aims to quantify the contribution of each identified factor to the observed gender discrimination in enrolment in these technology institutes. To achieve this, the Fairlie decomposition technique is employed. This method helps in identifying and quantifying the contributions of differences in measurable characteristics to group differences in the outcome variable.

The results from the probit regression indicate that in India, the probability of enrolling in technical and vocational courses at higher education levels is higher among males than females. Additionally, among Hindus, the likelihood of enrolling in technical higher education is greater compared to individuals from other religious groups. Urban households also exhibit a higher probability of enrolling their youth in technical courses at the higher education level.

Furthermore, state policy variables reveal that women's financial empowerment and their education levels contribute to increasing youth enrolment in higher education. Given the high costs associated with technical higher education, increased state expenditure on technical courses and higher amounts of educational loans sanctioned also enhance the likelihood of youth enrolment in higher education.

Using the Fairlie decomposition approach, it is found that better family income, internet availability, and proximity to home are key household-level factors that can help reduce the gender gap in enrolment. Moreover, state-specific policy factors such as increased state expenditure on technical and vocational courses, higher police density, and a greater number and amount of sanctioned educational loans can also contribute to reducing the gender gap. The Fairlie decomposition results further indicate that the size of sanctioned loans, both in terms of amount and number, plays a crucial role in diminishing the gender gap at the time of enrolment.

Finally, Chapter 7, “Analysing the Unemployment Rate Among Women Graduates in India: A Dynamic Panel Approach,” addresses the fourth objective of this thesis: investigating state-level educated unemployment rates and identifying factors to mitigate this issue. This chapter elaborates on the following detailed objectives:

(i) To do a state-wise comparison of the unemployment rate of women in India who have completed graduation and above

(ii) To determine the factors responsible for the unemployment rate of graduated women in India.

(iii) To prescribe a few possible policies (ies) which can reduce the unemployment rate among at least graduated women in India.

To examine the objectives, data have been collected from several sources. Specifically, data were sourced from the "Employment and Unemployment Survey" published by the Ministry of Labour and Employment, Government of India, covering the years 2013-14 to 2019-20. Additional data were obtained from the All India Survey on Higher Education (2011-2017) published by the Ministry of Human Resource Development (MHRD), which is currently named the Department of Higher Education of the Government of India. Further state-specific data were gathered from the Handbook of Statistics of Indian States (2014-2020) published by the Reserve Bank of India, the Report on Data on Police Organizations published by the Bureau of Police Research and Development (2014-2020), and records from the Office of the Registrar General and Census Commissioner, India (2014-2020).

For this research, twenty major states of India are considered to address our objectives, as this selection helps to minimize heterogeneity among the states. The timeline under consideration spans from 2013-2014 to 2019-2020.

A state-wise comparison of the percentage of females completing graduation and above against their unemployment rates reveals that, in most states, the unemployment rate fluctuated during the specified period.

To identify the factors influencing these outcomes, an initial Variance Inflation Factor (VIF) test is conducted, followed by the application of a dynamic panel regression technique. This dynamic relationship is represented as follows:

Model 1:

$$\begin{aligned} \mathrm{GFU}_{it} = {} & \alpha_0 + \alpha_1 \mathrm{l.GFU}_{i(t-1)} + \alpha_2 \mathrm{GER\_F}_{it-3} + \alpha_3 \mathrm{PSDP}_{it} + \alpha_4 \mathrm{FEMALE\_AEM\_\_(18-20)}_{it} \\ & + \alpha_5 \mathrm{FEMALE\_AEM\_\_21}_{it} + \alpha_6 \mathrm{EME}_{it} \\ & + \alpha_7 \mathrm{Police\_Density}_{it} + \alpha_8 \mathrm{GCF\_IN}_{it-1} + \alpha_9 \mathrm{GSV\_S}_{it-1} + \epsilon_{it} \end{aligned} \quad \ldots\ldots\ldots\ldots (11)$$

Model 2:

$$GFU_{it} = \theta_0 + \theta_1 l.GFU_{i(t-1)} + \theta_2 FG_{it} + \theta_3 PSDP_{it} + \theta_4 FEMALE\_AEM\_\_(18-20)_{it} + \theta_5 FEMALE\_AEM\_\_21_{it} + \theta_6 EME_{it} + \theta_7 Police\_Density_{it} + \theta_8 GCF\_IN_{it-1} + \theta_9 GSV\_S_{it-1} + \vartheta_{it} \quad \ldots\ldots\ldots (12)$$

Model 3:

$$GFU_{it} = \gamma_0 + \gamma_1 l.GFU_{i(t-1)} + \gamma_2 GER\_T\_F_{it-3} + \gamma_3 FEMALE\_AEM\_\_(18-20)_{it} + \gamma_4 FEMALE\_AEM\_\_21_{it} + \gamma_5 EME_{it} + \gamma_6 PSDP_{it} + \gamma_7 Police\_Density_{it} + \gamma_8 GCF\_IN_{it-1} + \gamma_9 GSV\_S_{it-1} + \varepsilon_{it} \quad \ldots\ldots\ldots (13)$$

Where i and t are the number of states and periods respectively where i = 1…20 and t = 2014-2020.

Using the Blundell and Bond Dynamic Panel Regression technique, it has been observed that certain factors contribute significantly to the state-wise higher unemployment rate among graduated women in India. Notably, a higher gross enrolment ratio among women in higher education and a greater percentage of females marrying between the ages of 18 and 20 years are associated with increased unemployment rates among this demographic.

However, the study suggests that expanding the service sector to create more employment opportunities for women with technical and professional degrees, coupled with promoting an effective marriage age of 21 years and above, can mitigate the unemployment issue among graduated women in India. These findings can provide valuable insights for policymakers aiming to reduce unemployment among educated women in the country.

This thesis explores the intricate dynamics influencing women's decisions regarding higher education enrolment and subsequent employment in India, examining both significant progress made and persistent challenges. Through extensive literature review and secondary data analysis, the research underscores several key findings.

Analysis of household-level data reveals that young women from Hindu and Christian backgrounds demonstrate higher probabilities of enrolling in higher education compared to

their Muslim counterparts. Conversely, young women from backward castes (SC, ST, OBC) exhibit lower enrolment probabilities. Urban residence significantly increases the likelihood of higher education enrolment among young women, whereas greater distance from educational institutions reduces enrolment probabilities. Household consumption expenditure, a proxy for income, positively correlates with higher education enrolment among young females. Additionally, access to a computer enhances enrolment chances.

State-level policies also play a crucial role in supporting women's higher education enrolment. Enhanced police protection increases parental confidence in their daughters' safety, thereby encouraging enrolment. Maternal education, particularly completion of 12 or more years of schooling, coupled with decision-making power within the household, correlates positively with enrolment rates.

The study documents that increased state spending on higher education, including scholarships and improved infrastructure, further boosts enrolment rates. However, excessive loan amounts can deter enrolment due to financial burdens on economically disadvantaged households.

At the state level, there is an overall increase in Gross Enrolment Ratio (GER) for females aged 18-23 across 16 major states in India, encompassing undergraduate and postgraduate education. While some states are achieving gender parity, others are progressing towards it. Disparities emerge in postgraduate and technical education, with states showing lower GER and Gender Parity Index (GPI).

Panel data regression analysis indicates that a significant share of female teachers, higher per capita state domestic product (a proxy for income), and the availability of colleges and girls' hostels contribute significantly to GER and GPI in higher education. Despite improvements, enrolment of females in technical courses remains low, highlighting a persistent gender gap.

Using Fairlie Decomposition, the study identifies larger family sizes exacerbating gender gaps in technical education enrolment, while higher household income mitigates them. Additionally, disparities are smaller among Hindus compared to other religious groups, emphasizing the role of state-level policies in reducing gender gaps through increased budget allocations, scholarships, and the establishment of technical institutions.

Finally, the thesis examines the nexus between higher education and employment for young women across 20 Indian states. State-wise comparisons reveal fluctuating unemployment rates among female graduates, with slow progress in increasing the percentage of female graduates over time. Dynamic panel regression analysis suggests higher unemployment rates among female graduates linked to higher GER in general courses and early marriage. Policy recommendations include expanding the service sector to create more employment opportunities for women with technical and professional degrees and promoting a later marriage age to alleviate female graduate unemployment.

This study offers valuable insights for policymakers seeking to address unemployment challenges among educated women in India and also suggests a few policies which help to improve women's enrolment in higher education in India and also lead to enhancement of the employment situation.

1. Increasing the number of higher education institutions across various regions, particularly prioritizing underdeveloped areas, is crucial for diminishing the distance between households and the nearest higher education institution. This strategic endeavour not only aims to narrow the gender disparity in higher education enrolment but also fosters improved educational accessibility for all young individuals.
2. It is imperative for the government to give precedence to augmenting the hiring of female teachers, particularly in districts predominantly rural, as a pivotal measure to narrow the gender disparity in higher education institution involvement.
3. By implementing a national family planning policy, such as a policy restricting to family size by imposing a maximum two-child policy, the government can incentivize households to allocate higher per-child expenditure on their young children’s education.
4. The ripple effects of educating a girl extend far beyond her own life; as a mother, she is more inclined to prioritize her young child's education and advocate for their education, given that educated parents typically exhibit greater involvement in their child's educational journey.
5. The government can initiate awareness campaigns that emphasize the importance of parental education. Parents with educational backgrounds grasp the importance of schooling and play an active role in supporting and mentoring their children, resulting in improved educational standards. Through the promotion of such campaigns, the

government can cultivate a favourable influence on children's academic achievements and overall educational progress.

6. The government also arranges awareness drives regarding the adverse effects of early marriage practices, aiming to enlighten individuals and underscore the significance of female higher education.
7. The government should also raise awareness about the importance of female employment. When a woman in a household earns an income, she is more likely to invest in family welfare, thereby enhancing the health and education of the next generation.
8. To improve the female employment situation government needs to invest more in the service sector and organize awareness campaigns on the importance of females' technical education.

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