Influence of Women Head of Government on the Human Capital of Women in the Philippines, Indonesia, Thailand, and Vietnam

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Abstract

Purpose: This study aims to explore the influence of women heads of government on human capital development and gender inequality, specifically focusing on education and health in the Philippines, Indonesia, Thailand, and Vietnam from 1991 to 2021. Despite the increasing presence of women in leadership roles globally, their impact on human capital indicators remains underexplored.

Methodology: To investigate this, the research employs a comparative approach that includes the Levin-Lin Chu Test, Im-Pesaran-Shin Test, Fixed Effects, Random Effects, and Ordinary Least Squares to analyze data from countries with female leaders and evaluate changes in educational attainment and health outcomes during their tenures.

Findings: The findings reveal that while higher educational attainment among women and increased representation of women in political leadership do not automatically result in greater labor force participation, female life expectancy has a significant and positive effect on female labor force participation (FLFP), indicating that healthier women are more likely to engage in the workforce.

Unique Contribution to Theory, Practice and Policy This research uniquely contributes to understanding the role of female leadership in fostering inclusive growth and emphasizes the importance of gender representation in political leadership for advancing human capital.

Keywords--- Women Heads of Government, Human Capital Development, Gender Inequality, Female Labor Force Participation, Education and Health

I. Introduction

Gender Inequality is a social issue that has continued to be a hindrance to a large percentage of the population in ASEAN countries. There has been significant progress in eliminating gender inequalities, while some African and Asian regions have yet to see such development (Hallward-Driemer et al., 2013). This issue affects both men and women, but there is no denying that women are the ones who are usually affected by this issue. Numerous policies made by the government, institutions, and sectors that may cause gender bias are more likely to side with men than women. Gender bias can cause other issues, specifically more to women than men, such as limited access to education and quality health care, which may also have a negative impact on the job security and opportunities of women (Jayachandran, 2015). Through the years, these hindrances have continuously restricted women from participating in social and political activities, which can be a massive factor for a nation trying to achieve gender equality. It restricts women from fulfilling their goals and not giving them the chance to capitalize on their full potential.

In history, the Philippines has elected one of the world's first women heads of government, only second to Iceland. Numerous women have already been heads of government due to differences in types of governments, such as in monarchies. However, heads of government are only considered to be unifying figures but have no political control or affiliation. This paper will then focus on women heads of government in the region.

As Southeast Asian countries liberalize, Indonesia and Thailand have elected their first woman president and prime ministers in recent decades. However, it was observed that gender equality in the workforce is significantly lower in Asia and the Pacific compared to European and North American countries (Qian, 2016). Southeast Asia is known to be a traditional and patriarchal region that runs a traditional government rather than being progressive or radical. However, it can improve or hinder gender equality in women's political participation (Intentilia, 2020).

Despite possessing significant levels of human capital, participation by women in the labor force is notably lower than that of men. This trend persists even compared to women's labor force participation rates in other Southeast Asian nations (Asian Development Bank, 2013). The selection of Indonesia, Philippines, Thailand, and Vietnam as locations for the study on gender disparity is because all countries had a woman head of government. These countries were selected to analyze gender equality progress in these specific areas. Therefore, the selection of the following countries is based on a comprehensive evaluation and comparison of the women's labor force participation rate in the countries with a woman president and without a woman leader.

The 2023 Global Gender Gap Report by World Economic Forum, wherein the Philippines was ranked 16th, the highest among ASEAN countries, Thailand ranked 74th, Vietnam 72nd, and Indonesia 87th over 146 countries. Although the aforementioned countries have improved their rankings, their growth is slower than in Western countries. The report then highlights the disparities in gender equality across various aspects, such as educational attainment, health, and

employment of women. Furthermore, the United Nations Sustainable Development Goal 5 to achieve gender equality is not on track to be achieved by 2030 in the ASEAN despite regional efforts to improve women's political and economic participation. Even though there are improvements, the pace of advancement in these countries lags behind that of Western nations, indicating the need for continuous improvement to address gender gaps comprehensively.

The human capital theory of Gary Becker (1962) identified factors affecting labor, including education, health, training, mobility, and information on economic opportunities as components of human capital accumulation. This framework will be used in this research to determine the relevance of such factors in the present as well as their significance in women's labor force participation and gender inequality in Southeast Asia with the influence of women heads of government. The study will focus mainly on the education and health factors of human capital, as it is deemed to be the most vital and accessible measurement in human capital accumulation (Sodirjonov, 2020; Ogundari & Awokuse, 2018).

The variables considered for this analysis were limited to women's life expectancy, schooling years of women, the existence of a woman head of government, and the parliament ratio to male and female, which encompasses relevant indicators of women's labor force participation rate and gender inequality. The study covers a 40-year timeframe, with annual observations from 1981 to 2020, allowing for an exploration of economic indicator changes during the tenure of women heads of government compared to the opposite.

This paper aims to explore a substantial positive correlation between women's labor force and gender inequality with critical factors, specifically the education and health of women facilitated by women heads of government in the Philippines, Indonesia, Thailand, and Vietnam. Furthermore, it aims to scrutinize the relationship between women's labor force participation rate, women's life expectancy, and their schooling years, seeking to reveal the potential correlation between women's societal well-being and education levels on women's active participation in the workforce. Thus, the research will delve into the dynamic interplay between women's labor force participation, gender inequality, and the presence of a woman head of government, aiming to discern the role of leadership in fostering gender-inclusive economic growth.

This research examines how women heads of government and parliament in ASEAN countries, specifically the Philippines, Indonesia, Thailand, and Vietnam, affect women's labor force participation rate and gender inequality in relation to the human capital theory. It aims to analyze how the presence of women's leadership can influence the factors that affect women's labor force participation, education, and health. One of the functions of the Global Gender Gap Index includes education and health. With this, the researchers aim to identify how these factors can affect women's labor force participation in the ASEAN.

The purpose of this study is to contribute to existing knowledge in women's human capital. Through a methodological analysis of these factors, the research aspires to provide valuable

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insights into the complex landscape of women's labor force, underscoring the critical roles of societal well-being and leadership dynamics in creating an equitable and inclusive workforce.

Literature Review

2.1 *Female Labor Force Participation*

The International Conference of Labour Statisticians (ICLS) in 2013 settled the definition of labor force participation after decades of deliberation. It includes individuals who work for pay and profit in a minimum or certain number of hours as well as unemployed individuals who are actively seeking jobs. However, there is a significant gender gap in labor force participation worldwide, resulting in income losses (Teignier & Cuberes, 2016). Female Labor Force Participation is an important economic indicator that varies among countries and regions, which reflects differences in economic development, social norms, fertility rates, and access to healthcare and education (Verick, 2014). Although challenges in labor force opportunities affect both men and women, women are more likely to face more extensive restrictions and significant obstacles to gaining employment (Adeliyi et al., 2022).

According to Menéndez-Espina et al. (2020), evidence shows that there is a difference between men's and women's work based on the discrimination against women, which continues to increase through the years. This issue results in specific phenomena such as the gender pay gap, occupational segregation, informal employment, and a more significant burden of care work for women. Bustelo et al. (2019) identified several factors that affect gender discrepancies in labor market opportunities, including wage gap, differences in promotions, and occupational choices, which are related to societal issues affected by government policies such as gender discrimination and human capital accumulation. In a study by Tsani et al. (2014), countries with lower FLFP are more likely to have a lower economic growth rate, which suggests that barriers to FLFP, such as policies and social and cultural norms, should be abolished to promote economic growth. In addressing this problem, the Government needs to support the creation of women-led businesses and improve the business environment to stimulate private investments. Similarly, labor market institutions should implement practices that reduce the hindrances to a firm's willingness and ability to hire more women. These practices can solve the weak capacity of public sectors to create more jobs that are enough to address the problem of women's unemployment (Kouam & Asongu, 2022). The government should enhance the policies that benefit and increase female participation in the job sector for a proper and productive economy (Taasim & Daud, 2020).

Schaner and Das (2016) found that female labor force participation (FLFP) in Indonesia is affected by age, education, wealth, and the gender gap in wage employment. Additionally, women with husbands with high educational attainment are more likely to have a higher unemployment rate than women with uneducated husbands. In Malaysia, the involvement of women in the work sector was among the lowest recorded in Southeast Asia, behind Cambodia, Myanmar, Thailand, and Singapore (Kee et al., 2019). With the use of fixed and random effects panel data regression, people

with better knowledge, skills, and level of education have a better chance of landing a job. Education promotes women's empowerment, influencing women to make their own choices, be accepted by their families and society, and have a higher chance of getting a job (Mulugeta et al., 2017).

Nevertheless, even though higher education can significantly increase the chances of employment for women, gender inequality has continued to be a hindrance for women in terms of job opportunities. Women continue to face higher unemployment compared to men. Even though women continue to have higher educational attainment than men, it does not translate into better job opportunities and job quality for women. Over the last two decades, despite women's continuous increase in educational attainment, they are still more likely to be unemployed than men and have less protection, enforcement of rights, and lower income opportunities. This shows the present issue of gender inequality and how it affects women's unemployment and the barriers it poses against women who want to participate in the labor market. The gender-based division in the labor market of different societies is a factor in why, despite having a high education, women still struggle to engage in the labor market (Kring, 2017).

In a study conducted in developing countries and the use of fixed effects panel regression, the decrease in fertility rate, diminishing gender gaps in education, and per-capita growth rate were assumed to increase FLFP. However, results varied as Latin America was the only region to have shown a significant increase in FLFP; the Middle East and North African regions are increasing gradually, while East and South Asia's FLFP has decreased since 1990 (Klasen, 2019). In similar studies, Haseeb et al. (2015) discovered that an increase in the total fertility rate significantly lowers FLFP in the ASEAN. Furthermore, Kumari (2018) identified female education as a vital factor that positively affects FLFP. On the other hand, developed countries like the United States of America are also facing challenges in FLFP as it peaked in 2007, then plateaued, and decreased over the years (Kreuger, 2017).

2.2 *Women's Education on Labor Force Participation and Gender Inequality*

According to Jadon (2018), education plays a pivotal role in empowering women and fostering prosperity, development, and welfare in society. Moreover, access to education equips women with the skills and knowledge necessary for personal and professional growth and contributes significantly to societal advancement and well-being. Individuals with better knowledge, skills, and levels of education stand a greater chance of securing employment. Mulugeta et al. (2017) assert that education plays a pivotal role in empowering women, enabling them to make independent choices, gain acceptance within their families and society, and increase their likelihood of obtaining employment. Moreover, women with higher educational achievements are more likely to secure well-paid positions. Therefore, the employment of educated women who possess experience and have undergone specialized training would significantly enhance both the national economy and family income (Heath & Jayachandran, 2016).

Education stands as a cornerstone of women's empowerment in terms of labor force participation as it empowers them to tackle obstacles, challenge traditional gender roles, and alter the course of their lives (Farswan & Wasan, 2016). According to Hedayat et al. (2013), the recruitment of educated women with specialized training not only benefits the national economy but also contributes to household income. These initiatives aim to facilitate increased female participation in the workforce. However, gender disparities persist within the labor market, particularly in education, labor force engagement, and economic opportunities, placing women at a disadvantage (Edwards, 2017). This disparity is exemplified by the gender earnings gap, wherein individuals with identical educational backgrounds, expertise, and work experience earn different wages based on their gender, regardless of their socio-economic characteristics (Zveglich et al., 2019)

Increased education levels result in higher human capital, which in turn leads to higher wages, attracting more women to join the workforce. Hence, providing higher education and establishing job opportunities for younger groups of women will lead to a rise in the labor force participation rate in the near future (Borah, 2018). This was supported by Aneesh (2015), who stated that improved education and the level of economic strain had a beneficial effect on female employment. Nonetheless, the earnings equation underscores that women receive lower wages in the job market despite having equivalent education and experience levels.

In countries with limited availability of service sector positions, women rely more heavily on higher education to secure employment opportunities (Bussemakers, 2017). To support this, Dicke et al. (2019) stated that in societies with traditional views on gender roles, women who have attained higher levels of education might surpass those with lower educational backgrounds in the competition for job opportunities. In nations with traditional views on gender roles, the influence of women's educational accomplishments is more noticeable (Tahir & Kauser, 2021). Although education is vital for women's workforce readiness, institutional hurdles and low self-confidence in leadership can obstruct their progress, according to Rodriguez-Kiino (2018).

As women's education levels rise, the likelihood of being employed in salaried positions shows a consistent increase. However, women's Labor Force Participation Rate (LFPR) declines as their education level rises for casual wage labor and roles within family farms and businesses. Women tend to move away from physical labor once they reach moderate levels of education (Chatterjee et al., 2018). This was supported by a study conducted by Andrés et al. (2017), wherein a significant decrease in women's LFPR with higher education is observed in agricultural and non-agricultural wage work, surpassing the decline seen in family enterprise employment. Serrano et al. (2019) claimed that the increasing levels of female educational attainment have also contributed to the long-term expansion of women's participation in the labor force, both negatively and positively. Hence, the deceleration in female labor force participation may reflect the reality that in a more favorable economic environment, some women are no longer compelled to enter the labor market and accept precarious, low-quality jobs based on the results of the utilized fixed and random effects panel data regression analysis.

2.3 *Women's Health on Labor Force Participation and Gender Inequality*

Numerous studies consistently indicate that women generally have a longer life expectancy than men, and this difference is shaped by various factors, including cardiovascular disease and socioeconomic status (Ginter & Simko, 2013). Tavares (2017) contributes to this understanding by emphasizing the correlation between women's life expectancy and the age at which they have children, proposing that women who become mothers at an older age tend to experience longer lifespans. As a result, the disparity in life expectancy between genders significantly expanded in numerous OECD countries throughout the 1970s and early 1980s, reaching its zenith of nearly seven years in the mid-1980s. However, this gap has diminished over the past 25 years, indicating more significant increases in life expectancy among men than women. Life expectancy at birth provides an average estimate of how long individuals are expected to live based on specific death rates across different age groups. Despite the precise age-specific death rates for a specific birth cohort, they cannot be predetermined in advance (OECD, 2021).

Although identified as one of the components of human capital, there is still an ongoing discourse on the importance of health in labor force participation. Health is a more vital driver for employment than education, according to a study by Blundell et al. (2021). In a study by McGonagle et al. (2015), health is an important factor in one's work ability and behavior toward labor force participation. In the study, self-rated health was a more important component of work ability than comorbidity-related health issues. Most of them are not detected and diagnosed at an early age and can still be manageable for the individual to work even with comorbidity. In a similar study, health was vital in measuring an individual's productive working years, including their possible health-related leaves and retirement ages (Mortelmans & Vannieuwenhuyze, 2013). Stephens & Toohey (2018) state that health positively correlates with increasing family income and individual earnings. However, their study has also shown that health has no correlation with labor force participation.

Recognizing the significance of health in enhancing workforce vitality is generally accepted. Wherein health exerts two influences on labor participation. Firstly, improved health reduces the likelihood of illness, increasing work availability, particularly in sectors like agriculture and physical labor. Secondly, healthier individuals exhibit higher productivity and efficiency, facilitated by their increased likelihood of attending educational institutions and accessing knowledge and training resources (Alfaizah & Puspitasari, 2022). Furthermore, Böheim et al. (2023) stated that there is a strong correlation between health and labor force engagement in a bidirectional manner, suggesting that improved health is associated with an increased likelihood of participating in the workforce while individuals actively engaged in the labor market tend to report better health outcomes. This was evident in the research conducted by Vecchio et al. (2014), stating that women who are experiencing mental health challenges were linked to a decrease in the likelihood of engaging in the labor force.

The future engagement in the labor market will be influenced by changes in population health.

Although life expectancy is forecasted to rise in the upcoming years, the implications for the quantity of healthy years and consequently, the expected working lifespan remain uncertain (Böheim et al., 2023). To further delve into this, Bloom and Luca (2016) stated that the increasing life expectancy and declining birth rates will significantly decrease the proportion of the population in conventional working age groups, yet it will also enable individuals to remain in the workforce and make contributions to society for extended periods. Hence, poor physical or mental health has a detrimental effect on labor force participation rates, underscoring the urgent need to evaluate and analyze the interconnection between health and workforce engagement in order to understand better their complex relationship (Mushtaq et al., 2013)

Implementing targeted policy measures can increase life expectancy while reducing unemployment. Michelacci and Ruffo (2014) suggest adapting unemployment insurance to offer increased support for younger workers, who face higher vulnerability to financial instability, while potentially providing less support for older workers. Such adjustments could contribute to a decrease in unemployment rates and an overall improvement in welfare. Moreover, it is essential to implement comprehensive labor market reforms to accommodate the expanding population of older workers, potentially positively impacting unemployment and life expectancy (Myck, 2015). Over the past two decades, numerous countries have undertaken reforms to their social security systems with the aim of enhancing the prevention and management of health-related work limitations (Böheim & Leoni, 2018).

2.4 *Women Heads of Government and Share of Seats in Parliament on Labor Force Participation and Gender Inequality*

The number of incumbent women heads of government has risen since the 1980s, with even one of the pioneers coming from the Philippines. However, there is still an evident gap between women's involvement in politics compared to men, especially in Asian countries where prejudice and discrimination are rampant, as they believe that men are better political leaders (Joshi & Kingma, 2013). Vijeyarasa (2021) examined the relationship between a country's women presidents and the women's movement. The findings suggest that having women in executive positions may drive economic opportunities and expectations among women. However, the relationship between women presidents and the success of women's movements is not linear, as it is faced with opportunities and limitations. In studies conducted in Europe and Central Asia, more women in parliamentary positions promote economic growth at a regional level (Mirziyoyeva & Salahodjaev, 2023).

In a smaller-scale observation, women leaders and managers in Italian firms have limited the hiring of part-time workers and increased full-time employment (Devicienti et al., 2016). Women CEOs are more likely to use inclusive hiring practices that target women, which results in a higher share of women managers in women-led organizations (Ng & Sears, 2017). Despite the evident increase in women's employment and opportunities, women in leadership positions are still underrepresented, especially in countries that have societal attitudes towards gender,

such as in the Middle East (Jamjoom & Kelly, 2013). On a positive note, it was observed that individuals are shifting away from traditional and patriarchal attitudes towards gender. People in conservative countries have shown a more optimistic attitude toward women's leadership, which can encourage women to pursue leadership roles and employment (Alfawzan, 2017). On the effects of women's leadership in businesses in Asia, the presence of women in corporate leadership is associated with greater corporate efficiency, which can encourage women's participation and employment in the corporate industry (Han & Noland, 2020). Flabbi et al. (2019) found the same results in Italy. Their findings also include decreasing the wage gap under women's leadership in firms and promoting and hiring women in the labor force.

To promote gender equality, India and Malaysia implemented a gender diversity quota, but with evident limitations. Qian (2016) found that companies with more women on their boards did much better than those with fewer or no women through fixed and random effects panel data regression. In the Philippines, despite the evident gender gap, it is considered to be one of the narrowest in the world due to women-led nongovernment organizations that advocated for legal reforms for women's economic opportunities in the labor force (Christopherson et al., 2022). Parveen (2023) also observed the same findings in Saudi Arabia, where law reform and women in executive positions influence women's participation in the economy. With women's leadership as an essential factor in women's participation in the labor force and politics, barriers such as education and training of women significantly affect women's political participation (Ndlovu & Mutale, 2013).

Mirziyoyeva and Salahodjaev (2023) have gathered a large dataset and analyzed through fixed and random effects panel data regression that women's political participation has contributed to achieving the sustainable development goals of various countries, including gender equality, decent work, and economic growth. Pierli et al. (2022) found the same results and elaborated that women's leadership significantly impacts sustainability and income generation. Women in government were also seen to positively impact country-level peace and social stability, which could improve women's mobility and on-site employment (DiRienzo, 2018). When women are empowered enough to take on leadership roles, they are more likely to positively influence issues about inequality and address the needs of other women in their respective organizations (Lyness & Grotto, 2018). According to a policy brief by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) (2019), improvement in women's political participation significantly affects and increases gender equity. Despite the perceived benefits of women's leadership and employment, women are still not likely to be employed in decision-making positions in public and private sectors due to the underrepresentation of women worldwide (Adema et al., 2014). Adams (2016) utilized a panel data regression, specifically the fixed effect in order to support the argument that more research is needed on the influence of women's leadership in the economy as it is a relatively new concept in most conservative and patriarchal countries.

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Furthermore, a study conducted in Europe and North America has shown that women in cabinet and parliamentary positions are more likely to shut their doors from hiring and appointing women on their team as women leaders are not significantly related to promoting women's inclusivity in politics (O'Brien et al., 2015). However, they opened up potential research in the future for possible changes in the behavior of women heads of government when elected to prime minister or presidential positions in a country.

Mirziyoyeva and Salahodjaev (2023) have compiled a comprehensive dataset on women's political engagement and its role in advancing sustainable development objectives such as gender equality, decent work, and economic progress across diverse nations. Utilizing both fixed and random effects panel data regression methods, the researchers analyzed this dataset to investigate the impact of women's political participation on achieving these goals. These statistical approaches allow for a thorough examination of the relationship between women's leadership in politics and key human capital outcomes, considering country-specific variations. The choice between fixed and random effects models hinges on the correlation between unobserved factors and the variables of interest, providing valuable insights into how female political representation influences critical development metrics concerning women's empowerment and societal advancement.

The study by Serrano et al. (2019) delves into the complex relationship between women's educational attainment and women's participation in the labor force, highlighting both positive and negative effects. As women attain higher levels of education, it can lead to increased opportunities for women to enter the workforce, contributing positively to the expansion of women's labor force participation rates. This is often seen as a step towards gender equality and economic empowerment. By utilizing fixed and random effects panel data regression analyses, the researchers were able to explore the nuanced dynamics at play in the relationship between women's educational attainment, labor force participation, and economic conditions. These analytical techniques allowed for a comprehensive examination of how changes in women's education levels impact their decisions regarding workforce participation, shedding light on the multifaceted nature of women's engagement in the labor market in evolving economic contexts.

With the gathered journal articles, the researchers have hypothesized that women's leadership will empower women to be more involved in the labor force and encourage leadership. On a national level, a woman president can encourage employment stability for women, which could increase the labor force participation rate for women.

Method

3.1 Data

This study will utilize panel data analysis on Southeast Asian countries, specifically the Philippines, Indonesia, Thailand, and Vietnam. The study will span a 40-year period, encompassing annual data points from 1981 to 2020. By examining economic indicators over

the tenures of women presidents and their share of seats in parliament, the research seeks to uncover and contrast its impact on women's human capital, the labor force, and gender inequality in these countries.

3.2 Model

$$WLFP = \beta_0 + \beta_1 WSY + \beta_2 WLE + \beta_3 WHOG + \beta_4 PRMF + e$$

$$GenIneq = \beta_0 - \beta_1 WSY - \beta_2 WLE - \beta_3 WHOG - \beta_4 PRMF + e$$

where WLFP is Women's Labor Force Participation, GenIneq is Gender Inequality, WSY is Women's Schooling Years, WLE is Women's Life Expectancy, WHOG is Woman Head of Government, and PRMF is Parliament Ratio of Male and Female.

3.2.1. Levin-Lin-Chu Test (LLC)

$$\Delta P_{i,t} = \alpha_{i,k} + \beta_i P_{i,t-1} + \sum_{l=1}^{L_i} \sigma_l \Delta P_{i,t-l} + \varepsilon_{i,t}$$

The Levin-Lin-Chu test will be used to evaluate the hypothesis that a shared unit root exists across cross-sectional units that are independent of each other.

3.2.2. Im-Pesaran-Shin Test (IPS)

$$\Delta Y_{it} = a_i + b_i Y_{it-1} + c_i \Delta \square_\square + \square_\square \square_{\square-1} + \square_{\square\square}$$

The LLC test will be complemented by the Im-Pesaran-Shin Test (IPS), as the test accounts for cross-sectional dependence among individual processes, offering a more comprehensive assessment of the data (Ozerkek, 2013).

3.2.3. Fixed and Random Effects Model

The fixed effects model is appropriate when we want to control for unobserved heterogeneity that is constant over time and correlated with the independent variables. The random effects model will be utilized for the unobserved heterogeneity is uncorrelated with the independent variables.

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Results and Discussions

Table 1. *Levin-Lin-Chiu Test*

Variable	T-Stat level	Prob	T-Stat 1st difference	Prob	T-Stat 2nd difference	Prob
Years of Schooling	-2.67142	0.0038	-0.41998	0.3372	-8.3693	0.000
Life Expectancy	-3.32074	0.0004	2.37832	0.9913	0.36183	0.6413
Share of Seats in Parliament	1.01087	0.844	-4.40695	0.000	-6.35972	0.000
Female Head of Government	-0.27119	0.408	-0.27119	0.3931	-4.38782	0.000
Women's LFPR	-0.36334	0.3582	-4.84591	0.000	-7.51828	0.000
Gender Inequality	-0.51384	0.3037	-2.72208	0.0032	-8.34381	0.000

Table 2. *Im, Pesaran and Shin Test*

Variable	W-Stat level	Prob	T-Stat 1st difference	Prob	T-Stat 2nd difference	Prob
Years of Schooling	0.06052	0.5241	-2.84455	0.0022	-9.23834	0.000
Female Head of Government	-1.10671	0.1342	-2.19848	0.014	-9.52252	0.000
Life Expectancy	-2.53097	0.0057	-2.90742	0.0018	-7.72733	0.000
Share of Seats in Parliament	1.2903	0.9015	-4.96192	0.000	-9.53409	0.000
Women's LFPR	-0.26910	0.3939	-6.25748	0.000	-11.9353	0.000
Gender Inequality	1.14564	0.8740	-4.48790	0.000	-9.19103	0.000

This section of the study indicates the findings of data analysis conducted using the statistical program E-views in line with the methods of studies. Based on the panel unit root test represented by Tables 1 and 2, all independent and dependent variables have no unit root and are stationary at the 2nd difference except for Life Expectancy, which already had it at level using the Levin-Lin-Chiu Test. The negative T-stat and p-value below the alpha of 0.05 provide strong evidence against the existence of a unit root among cross-sections as assumed by the LLC. On the Im-Pesaran-Shin Test, all variables have a negative W-stat and a p-value less than alpha, which has further reinforced the claim that all independent and dependent variables have no unit root and are stationary even with the assessment of the variable's individual processes.

Tables 1 and 2 demonstrate that health issues can significantly affect women's ability to participate in the workforce, underscoring the importance of health policies and support systems in enhancing women's labor market outcomes. Consequently, the relationship between health

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and labor force participation emerges as a critical factor (Blundell et al., 2021), (Hedayat et al., 2013), and (Mushtaq et al., 2013).

Table 3. *Fixed Effects Model for Expected Years of Schooling, Female Head of Government, Share of Seats in Parliament, and Life Expectancy to Female LFPR*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	183.9552	19.66455	9.354664	0.0000
Expected Years of Schooling	1.556757	0.403340	3.859662	0.0002
Female Head of Government	1.081475	0.708563	1.526295	0.1299
Share of Seats	0.223750	0.050880	4.397629	0.0000
Life Expectancy	-1.993211	0.330133	-6.037603	0.0000
R-squared	0.945105	Mean dependent var		58.57319
Adjusted R-squared	0.941547	S.D. dependent var		10.00280
S.E of regression	2.418388	Sum squared resid		631.6491
Durbin-Watson stat	0.514537	J-statistic		12.90633
Instrument rank	9			

As shown in Table 3, the independent variables, Expected Years of Schooling and Share of Seats in the Parliament, are significant and have a positive impact on Female LFPR, which aligns with the study of Mulugeta et al. (2017), while Life expectancy is significant but has a negative impact on Female LFPR which opposes the study of McGonagle et al. (2015). Therefore, we reject the null hypothesis. The independent variable Female Head of Government, is insignificant ($p > 0.05$) and has no statistically significant effect on Female LFPR. Therefore, the null hypothesis was accepted.

Table 4. *Random Effects Model for Expected Years of Schooling, Female Head of Government, Share of Seats in Parliament, and Life Expectancy to Female LFPR*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-14.01504	11.15222	-1.256704	0.2115
Expected Years of Schooling	-1.901717	0.244915	-7.764805	0.0000
Female Head of Government	-2.983396	0.438516	-6.803397	0.0000
Share of Seats	-0.020178	0.044964	-0.448765	0.6545
Life Expectancy	1.352615	0.198154	6.826094	0.0000

			S.D.	Rho
Cross-section random			12.26224	0.9754
Idiosyncratic random			1.947566	0.0246

Weighted Statistics

R-squared	-0.100071	Mean dependent var		1.726766
Adjusted R-squared	-0.139713	S.D. dependent var		2.214221
S.E of regression	2.363843	Sum squared resid		620.2408
Durbin-Watson stat	0.559769	J-statistic		13.78089

Unweighted Statistics

R-squared	0.542527	Mean dependent var		58.57319
Sum squared resid	5263.886	Durbin-Watson stat		0.065957

As shown in Table 4, the independent variables, expected years of schooling and female head of government, are significant and have a negative impact on female LFPR contrary to the studies of (Heath & Jayachandran, 2016) (Farswan & Wasan, 2016) and (Chatterjee et al., 2018), while life expectancy is significant but has a positive impact on female LFPR. Therefore, we reject the null hypothesis in line with the studies of Mulugeta et al. (2017) and Borah (2018). The constant and the independent variable, the share of seats in the parliament, is insignificant ($p > 0.05$) and has no statistically significant effect on female LFPR, which aligns with the study

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of O'Brien et al. (2015). Therefore, the null hypothesis was accepted.

Table 5. *Hausman Test of First Differences for Expected Years of Schooling, Female Head of Government, Share of Seats in Parliament, and Life Expectancy to Female FLPR*

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

The Hausman Test was used to determine which model was suitable for the study (Tavares, 2017). Since the p-value of 1.0000 is greater than the alpha, we accept the null hypothesis that presumes the use of the random effects model as the appropriate model for the study.

Table 6. *Random Effects Model for Expected Years of Schooling, Female Head of Government, Share of Seats in Parliament, and Life Expectancy to Gender Inequality*

Dependent Variable: Gender_Inequality
Method: Panel EGLS (Period random effects)
Sample: 1991 2021

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	1.080384	0.094323	11.45409	0.0000
Expected Years of Schooling	-0.002983	0.001651	-1.807284	0.0733
Female Head of Government	–0.001238	0.004059	-0.305026	0.7609
Life Expectancy	-0.006910	0.001533	-4.506374	0.0000
Share of Seats	-0.005467	0.000347	-15.73745	0.0000
			S.D.	Rho
Cross-section fixed (dummy variables				
Period random			0.000000	0.0000
Idiosyncratic random			0.013753	1.0000

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Weighted Statistics

R-squared	0.954338	Mean dependent var	0.435911
Adjusted R-squared	0.951583	S.D. dependent var	0.073279
S.E of regression	0.016124	Sum squared resid	0.030159
F-statistic	346.3439	Durbin-Watson	0.166352
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.954338	Mean dependent var	0.435911
Sum squared resid	0.030159	Durbin-Watson stat	0.166352

As shown in Table 6, the independent variables share of seats in parliament and life expectancy are significant and have a negative impact on Gender Inequality, which is also the result of the study of Tahir and Kauser (2021). Therefore, we reject the null hypothesis. The independent variables, expected years of schooling and female head of government, are statistically insignificant ($p > 0.05$) and have a slightly negative effect on Gender Inequality, which opposed the study of Heath and Jayachandran (2016). Therefore, we accept the null hypothesis.

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Table 7. *Fixed Effects Model for Expected Years of Schooling, Female Head of Government, Share of Seats in Parliament, and Life Expectancy to Gender Inequality*

Period random effects test equation:
Dependent Variable: Gender Inequality

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	1.510673	0.127448	11.85	0.0000
Expected Years of Schooling	-0.002983	0.001651	-1.807284	0.0733
Female Head of Government	–0.001238	0.004059	-0.305026	0.7609
Life Expectancy	-0.006910	0.001533	-4.506374	0.0000
Share of Seats	-0.005467	0.000347	-15.73745	0.0000

R-squared	0.975371	Mean dependent var	0.435911	
Adjusted R-squared	0.964775	S.D. dependent var	0.073279	
S.E of regression	0.013753	Akaike info criterion	-5.488127	
Sum squared resid	0.016267	Schwarz criterion	-4.623847	
Log likelihood	378.2639	Hannan-Quinn criter.	-5.137036	
F-statistic	92.04950	Durbin-Watson stat	0.341454	
Prob(F-statistic)	0.000000			

As shown in Table 7, the independent variables, expected years of schooling, life expectancy, and share of seats in parliament, are statistically significant and have a slightly negative effect on gender inequality, which is aligned with the studies of Jadon (2018), McGonagle et al. (2015), and Mirziyoyeva and Salahodjaev (2023). Therefore, we reject the null hypothesis. The independent variable female head of government, is statistically insignificant ($p > 0.05$) and has a slightly positive effect on Gender Inequality, which is contrary to the hypothesis we formulated during the early stages of our topic. Therefore, we accept the null hypothesis.

Table 8. *Hausman Test of First Differences for Expected Years of Schooling, Female Head of Government, Share of Seats in Parliament, and Life Expectancy to Gender Inequality*

Correlated Random Effects - Hausman Test

Test period random effects

Test Summary	Chi-sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	47.660176	4	0.0000

The Hausman Test was used to determine which model was suitable for the study (Tavares, 2017). Since the p-value of 0.0000, we reject the null hypothesis that presumes the use of the random effects model and utilize the hypothesis from the fixed effects model for the study.

Table 9. *OLS Linear Results on Female Labor Force Participation Rate, Expected Years of Schooling of Female, Life Expectancy at Birth of Female, Female Head of Government, and Share of Seats in Parliament by Female*

	coefficient	std.error	t-ratio	p-value
Const	−67.7597	6.56813	−10.32	3.26e-018 ***
Expected Years of Schooling of Female	−3.23515	0.236881	−13.66	4.01e-026 ***
Life Expectancy at Birth of Female	2.23843	0.104237	21.47	9.47e-043 ***
Female Head of Government	−4.43516	1.13969	−3.892	0.0002***
Share of Seats in Parliament by Female	−0.0156349	0.0515775	−0.3031	0.7623

Mean dependent var	58.39355	Schwarz criterion	727.5282	P-value(F)	2.14e-44
Sum squared resid	2111.600	rho	0.875249	Akaike criterion	713.4268
R-squared	0.827223	S.D.dependent var	9.968042	Hannah Quinn	719.1551
F (4, 119)	142.4369	S.E. of regression	4.212427	Durbin Watson	0.297377
Log-likelihood	−351.7134	Adjusted R-squared	0.821415		

Based on the conducted Ordinary Least Squares (OLS) method, the reported coefficient of the y0 intercept, which is -67.7597, implies that there is a -67.7597 Female Labor Force Participation Rate when there are no Expected Years of Schooling for females, Life Expectancy at Birth for females, Female Head of Government, and Share of Seats in Parliament held by females. Specifically, for each additional year of Expected Years of Schooling for females, the Female Labor Force Participation Rate decreases by 3.24%. In contrast, a 1% increase in Life Expectancy at Birth for females corresponds to an increase of 2.24% in the Female Labor Force Participation Rate. Furthermore, each unit increase in the presence of a Female Head of Government is associated with a decrease of 4.44% in the Female Labor Force Participation Rate, while for every 1 ratio increase in the Share of Seats in Parliament occupied by females, there is a decrease of 0.016% in the Female Labor Force Participation Rate.

The model's R-squared value is 0.8272, indicating that approximately 82.72% of the variance in Female Labor Force Participation Rate can be explained by the independent variables included in the analysis.

The results presented in Table 9 indicate that higher life expectancy, typically a consequence of effective healthcare policies, significantly enhances women's ability to participate in the workforce. This improvement in overall well-being aligns with the findings of Borah (2017). Additionally, it shows that women's health significantly influences their labor market outcomes, with factors such as unemployment duration impacting men's and women's health differently, complicating their workforce participation (Acevedo et al., 2019), and (Mushtaq et al., 2013).

Table 10. *OLS Linear Results on Gender Inequality, Expected Years of Schooling of Female, Life Expectancy at Birth of Female, Female Head of Government, and Share of Seats in Parliament by Female*

	coefficient	std.error	t-ratio	p-value
Const	1.49696	0.0325536	45.98	1.27e-077***
Expected Years of Schooling of Female	0.000177195	0.00117405	0.1509	0.8803
Life Expectancy at Birth of Female	−0.0134616	0.000516628	−26.06	5.31e-051***
Female Head of Government	−0.00431721	0.00564865	−0.7643	0.4462
Share of Seats in Parliament by Female	−0.00356814	0.000255633	−13.96	8.07e-027 ***

Mean dependent var		Schwarz criterion		P-value(F)	
	0.435911		−588.6316		1.01e-64
Sum squared resid		Rho		Akaike criterion	
	0.051871		0.979669		−602.7330
R-squared		S.D.dependent var		Hannah Quinn	
	0.921464		0.073279		−597.0047
F (4, 119)		S.E. of regression		Durbin Watson	
	349.0576		0.020878		0.172118
Log-likelihood		Adjusted R-squared			
	306.3665		0.918824			

According to the analysis conducted using the Ordinary Least Squares (OLS) method, the y0 intercept coefficient of 1.49696 indicates a Gender Inequality score of 1.49696 in the absence of factors such as Expected Years of Schooling for females, Life Expectancy at Birth for females, the presence of a Female Head of Government, and the Share of Seats in Parliament held by females. Specifically, each additional year of Expected Years of Schooling for females results in an increase in Gender Inequality by 0.000177195 percent. In contrast, a 1% increase in Life Expectancy at Birth for females leads to a decrease of 0.0134616 percent in Gender Inequality. Furthermore, each unit increase in the presence of a Female Head of Government is correlated with a reduction of 0.00431721 percent in Gender Inequality, while every 1 ratio increase in the Share of Seats in Parliament occupied by females corresponds to a decrease of -0.00356814 percent in Gender Inequality.

The R-squared value for the model is 0.9215, suggesting that about 92.15% of the variance in gender inequality can be accounted for by the independent variables included in this analysis. Table 10 illustrates that traditional gender role beliefs continue to impede women's career advancement, especially in the STEM fields, where deeply rooted cultural attitudes often limit leadership opportunities for women (Dicke et al., 2019). To effectively address these biases, a multifaceted approach is necessary (Haseeb et al., 2015).

Conclusion

From the results gathered, expected years of schooling and having a female head of government have a negative effect on FLFP which suggests that higher educational attainment for women and political leadership by women do not necessarily result in higher participation in the labor force. However, female life expectancy significantly and positively impacted FLFP, suggesting that healthier women are more likely to participate in the workforce. However, women's share of seats in parliament is statistically insignificant, indicating that female representation in

politics does not necessarily encourage or improve FLFP in these countries. In terms of its effect on gender inequality, expected years of schooling, life expectancy, and the share of seats in parliament were all significant and had a negative impact, which suggests that improvements in women's education, health, and political representation greatly reduce gender inequality. However, the presence of a female head of government does not necessarily result in lower gender inequality in these countries.

Recommendations

With the gathered results and findings, the authors propose a call to action to explore further the multifaceted factors that may affect women's empowerment in terms of their LFPR and gender inequality. These factors, such as cultural norms, religion, discrimination, employment policies, and political policies, can either encourage or discourage women from entering the labor force, especially when women's discrimination is rampant in Asia (Joshi & Kingma, 2013). This comprehensive investigation is crucial for shaping the future of gender equality in these countries. The authors would also recommend policy considerations on women's empowerment in the labor force and gender inequality. It is given that women's health and education improvements can minimize gender inequality. However, such improvements in education and healthcare will not be realized if women's opportunities in the labor force continue to be limited. With the trends and changes in the demand for the labor force, women should be given vocational training and policies on women's social welfare to improve participation and retention in the labor force. Furthermore, the government should encourage women's political representation beyond national governance and parliamentary seats since they should also encourage women's leadership in business and other male-dominated sectors. Finally, the government of each country must address the elimination of deep-seated gender norms and stereotypes in order to achieve gender equality and women empowerment in the labor force through the implementation of anti-discrimination policies, wage equality, and enhanced maternity welfare benefits.

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