



저작자표시-비영리-변경금지 2.0 대한민국

이용자는 아래의 조건을 따르는 경우에 한하여 자유롭게

- 이 저작물을 복제, 배포, 전송, 전시, 공연 및 방송할 수 있습니다.

다음과 같은 조건을 따라야 합니다:



저작자표시. 귀하는 원저작자를 표시하여야 합니다.



비영리. 귀하는 이 저작물을 영리 목적으로 이용할 수 없습니다.



변경금지. 귀하는 이 저작물을 개작, 변형 또는 가공할 수 없습니다.

- 귀하는, 이 저작물의 재이용이나 배포의 경우, 이 저작물에 적용된 이용허락조건을 명확하게 나타내어야 합니다.
- 저작권자로부터 별도의 허가를 받으면 이러한 조건들은 적용되지 않습니다.

저작권법에 따른 이용자의 권리는 위의 내용에 의하여 영향을 받지 않습니다.

이것은 [이용허락규약\(Legal Code\)](#)을 이해하기 쉽게 요약한 것입니다.

[Disclaimer](#)

Master's Thesis of International Studies

**Determinants of Low Female Labor
Force Participation in Egypt and Its
Implication on Women Economic
Empowerment and Development**

이집트의 낮은 여성경제활동 참가율의 원인 및
여성경제역량강화에 대한 시사점

August 2023

**Development Cooperation Policy Program
Graduate School of International Studies
Seoul National University
International Cooperation**

Noha Fouad Hassan Mahmoud Hussien

**Determinants of low female labor force
participation in Egypt and its
implication on women economic
empowerment and development**

A thesis presented

By

Noha Fouad Hassan Mahmoud Hussien

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Master of International Studies

**Graduate School of International Studies
Seoul National University
Seoul, Korea**

**Determinants of low female labor force
participation in Egypt and its
implication on women economic
empowerment and development**

Prof. ChongSup, KIM

**Submitting a master's thesis of
International Cooperation
August 2023**

**Graduate School of International Studies
Seoul National University
International Cooperation**

Noha Fouad Hassan Mahmoud Hussien

**Confirming the master's thesis written by
Noha Fouad Hassan Mahmoud Hussien
August 2023**

Chair Prof. Ji Yeon, SONG (Seal)
Vice Chair Prof. JeeHwan, PARK (Seal)
Examiner Prof. ChongSup, KIM (Seal)

Abstract

Determinants of low female labor force participation in Egypt and its implication on women economic empowerment and development

Noha Fouad Hassan Mahmoud Hussien

International Area Studies

Graduate School of International Studies

Seoul National University

The aim of this paper is to study the determinants of low participation of females in the labor market in Egypt. The paper will carry out empirical analysis using panel regression using cross-country panel data to study the main factors triggering low FLFP. To analyze why the investment in female education in the past few decades did not yield the expected outcomes of increasing women participation in the labor market. Given the fact that unemployment rate among educated females is high. Thus, the research questions are; What are the determinants of low FLFP in Egypt? Does increasing investment in female education is enough to increase FLFP? What are the causes of high unemployment rates among educated women in Egypt? Does the disproportionate social burden of childcare increase female tendency to exit the labor force? While, research hypotheses are; Hypothesis (1): Investing in female education is enough to increase FLFP and reduce unemployment rates among women in Egypt. Hypothesis (2): Early marriage and childbearing decreases FLFP in Egypt. Furthermore, the study aims to further explain this paradox through

analyzing other factors that were not included in the regression model such as gender norms. As gender norms are from the main determinants of low FLFP in the MENA and have strong influence on females. The results of the paper show that fertility rate has a higher impact on FLFP than the Education does. Hence, the paper argues that the unequal childcare responsibilities and the domestic chores contribute to the tendency of females to exit the labor market. Due to the traditional gender roles in the Egyptian society and as shown in the time-use survey women are fully responsible for childcare. Accordingly, supporting quality childcare services by the government could have a positive impact on encouraging women to join the labor market and increase the FLFP. Moreover, the “male bread-winner model” which is strongly embedded in the society contributes to the low FLFP.

Keyword: FLFP- Education- Unemployment- Fertility rate- Labor market- Social norms- Gender roles- Women economic empowerment- Economic development.

Student Number: 2021- 28460

Table of Content

Abstract	1
List of Tables.....	5
List of Figures	6
List of Acronyms.....	8
Chapter 1. Introduction	9
1.1. Study Background.....	9
1.2. Purpose of Research.....	10
1.3. Research gap	10
1.4. Research Methodology.....	11
Chapter 2. Literature review.....	13
2.1. Definition of labor force	13
2.2. Theories of labor supply.....	14
2.3. Factors determining FLFP.....	15
2.3.1. Demand side factors (Macro-level).....	18
2.3.2. Supply side factors (Micro-level).....	21
2.3.3. Non-economic factors (Community level).....	23
Chapter 3. Labor market Analysis	24
3.1. Labor Force in the global context.....	24
3.2. Current situation analysis of Labor Force in Egypt.....	26
3.3. Efforts by the Egyptian government to empower women	29
3.4. Impact of covid-19 on FLFP	32
3.5. Women and Gig economy	34
Chapter 4. Data Analysis	37

4.1. Demographic characteristics of FLFP in Egypt	3 7
4.2. Research Methodology	4 7
4.3. Panel Regression results and analysis	5 0
Panel Regression model (1).....	5 0
Panel Regression model (2).....	5 3
Panel Regression (3)	5 6
4.4. Findings.....	5 8
Chapter 5. Conclusion.....	6 1
5.1. Discussion	6 1
5.2. Research limitation.....	6 5
5.3. Policy recommendations	6 5
5.4. Conclusion.....	6 8
Bibliography.....	6 9
Appendix.....	7 4

List of Tables

Table	Page
Table (1): Regression model dependent and independent variables	48
Table (2): Stata results for regression model (1)	50
Table (3): Stata results for regression model (2)	53
Table (4): Stata results for regression model (3)	56
Table (5): Panel regression summary	58
Table (6): Panel regression model (1) using Stata	74
Table (7): Panel regression model (2) using Stata	75
Table (8): Panel regression model (3) using Stata	76
Table (9): FLFP estimated and actual values of Egypt and Rwanda (1995-2020)	77

List of Figures

Figure	Page
Figure (1): Factors affecting FLFP	15
Figure (2): Determinants of female labor force participation	17
Figure (3): World labor force rates by region and gender between (15-64) in 2018	24
Figure (4): Percentage of labor force in North African countries by gender between (15-64) in 2018	25
Figure (5): Distribution of labor force by gender, residence and employment, Egypt 2016 (in millions)	26
Figure (6): Percentage of employment by gender, residence and sector, Egypt 2016	27
Figure (7): Percentage of labor force by age and gender, Egypt 2016	28
Figure (8): Percentage of labor force by educational attainment and gender, Egypt (2016)	29
Figure (9): The Egyptian National Strategy for women empowerment 2030	30
Figure (10): Objectives of women economic empowerment in the national strategy	31

Figure (11): Percentage of FLFP in Egypt (1995-2000)	38
Figure (12): Total fertility rate per 100 in Egypt (1995-2020)	39
Figure (13): Percentage of Female enrollment in secondary school in Egypt (1995-2019)	40
Figure (14): The GDP per Capita in Egypt in US\$ (1995-2020)	41
Figure (15): The Percentage of female unemployment as a percentage of FLF in Egypt (1995-2020)	43
Figure (16): Percentage of women between (15-64) by marital status and labor market status in (1998, 2006 and 2012)	44
Figure (17): Percentage of women between (15-64) employed by sector and marital status in (1988, 2006 and 2012)	45
Figure (18): Comparison between the FLFP estimated and actual value in Egypt and Rwanda using the regression model (1) estimated equation	51
Figure (19): Comparison between the FLFP estimated and actual value in Egypt and Rwanda using the regression model (2) estimated equation.	54

List of Acronyms

ELMPS	Egypt Labor Market Panel Survey
FDI	Foreign Direct Investment
FLF	Female Labor Force
FLFP	Female Labor Force participation
FLFPR	Female Labor Force Participation Rate
GDP	Gross Domestic Product
ICT	Information and Communication Technology
ILO	International Labor Organization
IMF	International Monetary Fund
ITU	International Telecommunication Union
LFPR	Labor Force Participation Rate
MENA	Middle East and North Africa
OECD	Organization for Economic Co-operation and Development
TFR	Total Fertility Rate
WB	World Bank
WDI	World Development Indicator

Chapter 1. Introduction

1.1. Study Background

Economic empowerment of women affects the economic development of a nation. According to Duflo (2012), Women's empowerment and economic growth are interdependent. Additionally, there is a significant link between women participation in the labor market and economic development. Verick (2014), Mujahid (2009) and Fatima and Sultan (2009) emphasize on key role of FLFP in promoting economic growth, poverty reduction and the development. According to research, the key factor driving development over the past 2 decades has been the rise in female employment in the developed countries. “Women have made a greater contribution to the growth of the global GDP than technology or emerging powers like China and India” (The Economist, April 2006). Worldwide, countries are losing almost \$160 trillion in wealth as a result of the disparity between women's and men's lifetime wages (WB 2018)^①. Nonetheless, data reveals that the MENA region has the highest gender disparity in female labor force participation, followed by South Asia and Central America (WB report 2012).

According to ILO, “Women are less likely than men to participate in the labor market and are more likely to be unemployed in most of the world”^②. The global participation rate women in labor force in 2018 was 48.5%, which is still 26.5%

^①<https://www.worldbank.org/en/news/press-release/2018/05/30/globally-countries-lose-160-trillion-in-wealth-due-to-earnings-gaps-between-women-and-men>

^②<https://www.worldbank.org/en/news/press-release/2018/05/30/globally-countries-lose-160-trillion-in-wealth-due-to-earnings-gaps-between-women-and-men>

lower than the rate for men as per ILO data.^③ Kapsos, Siberman and Bourmpula (2014) highlight that FLFP is a fundamental indicator for women empowerment. Increasing the FLFP promote economic and social development in addition to enhancing women empowerment and gender equality besides promoting efficiency and Equity (Hoseny, 2016). However, countries work hardly to improve the FLFPR for various reasons beside economic growth and efficiency the FLFP accelerate poverty reduction and has a spilling over effect in improving children health and education (WB 2012).

1.2. Purpose of Research

Despite several efforts made to promote gender parity in labor market the average FLFPR remains low across the world. Nonetheless, high female unemployment rates and high proportion of informal employment among women increase income disparities and raise the risk of women falling into poverty. Moreover, increasing female participation in the labor market is key for accelerating growth and reducing poverty worldwide. According to research, FLFP is a crucial tool for a country's socioeconomic development as it fosters efficiency and equity.^④

1.3. Research gap

This paper argues that in Egypt, the investment in female education did not result in the rise of women's economic participation as it was anticipated. The total labor force in Egypt is estimated to be 29 million among which 7 million only are females. Which account for 24% of the total female labor force participation in Egypt. Yet research indicates that they are more educated and younger. In addition,

^③https://www.ilo.org/global/research/global-reports/weso/trends-for-women2018/WCMS_619577/lang--en/index.htm

^④<https://www.econstor.eu/bitstream/10419/130586/1/856920835.pdf>

women's unemployment rates are higher despite their higher level of education (WB 2018).

1.4. Research Methodology

The study aims to conduct an empirical analysis by conducting panel regression using fixed effect to analyze the determinants of low FLFP and answer research questions. The study will rely on data from the "World Bank World Development Indicators (WDI)". It will use data for developed and developing countries to construct the model. The data used are for 199 countries from (1995-2020). Furthermore, this study aims to explain the difference between the estimated value of the FLFP from the model and the actual values of the Egyptian case. After comparing the actual and the estimated values the study will explain the difference between the two values through analyzing other factors that were not included in the model such as the traditional gender norms and how gender roles play key role in determining FLFP in the Egypt. Since, gender norms are one of the key factors influencing FLFP in the MENA region.

I. Research questions:

1. What are the determinants of low FLFP in Egypt?
2. Does increasing investment in female education is enough to increase FLFP?
3. What are the causes of high unemployment rates among educated women in Egypt?
4. Does the disproportionate social burden of childcare and family responsibilities increase female tendency to exit the labor force?

II. Hypothesis:

- **Hypothesis (1):** Investing in female education is enough to increase FLFP and reduce unemployment rates among women in Egypt.
- **Hypothesis (2):** Early marriage and childbearing decreases FLFP in Egypt.

III. Variables:

	Variable
Dependent Variable (Y)	FLFP
Independent Variables (Xs)	Income level
	Education
	Fertility rate
	Investment
	Internet
	Urban Population
	Fuel access in rural areas

Chapter 2. Literature review

2.1. Definition of labor force

According to ILO definition, the labor force is “the summation of the employed and unemployed persons in the labor market”. While the labor force participation rate (LFPR) is defined as the “the number of people in the labor force as a percentage of the working age population”. Hence, the LFPR measures “the proportion of proportion of a country’s working-age population that engages actively in the labor market, either by working or looking for work”^⑤. Accordingly, it shows the scale of the labor supply compared to the working-age population that is able to work on producing commodities and providing services.

Thus, the female labor force participation refers to the percentage of females in the working age population whom are economically active. However, some studies differentiate between the market definition of FLFP and the extended definition of FLFP as the extended definition include the unpaid work carried by women. Assad and Krafft (2013) explained that “extended FLFP includes women available to produce commodities, whether for their own use, for sale in marketplaces, or for use in barter systems to exchange with other things”. This is crucial for Egyptian women because many of them work with animals and prepare dairy products for their families' sustenance.

^⑤ <https://ilostat.ilo.org/resources/concepts-and-definitions/description-labour-force-statistics/>

2.2. Theories of labor supply

According to Mincer (1962), the work-leisure choice theory assume that labor suppliers (Households) are logical and aim to maximize their utility. The theory emphasizes that households determine how much time they will spend working and how much time they will spend relaxing based on the rate of return the market is prepared to provide (assuming that leisure time is a normal good). Psacharopoulos and Tzannatos (1989) argues the "substitution effect" as the higher the wage rate, the greater the opportunity cost and the less desirable leisure time will be hence households will increase the time they devote for work. However, human capital theory asserts a correlation between wage rates and education levels, hence the higher the education levels the higher the probability of being employed and having a higher wage (Schultz, 1961). The human capital theory places a strong emphasis on the value of education as a prerequisite for participating in the labor market. Theoretically, investing in education increases people's productivity and increases their chances of being employment and earning higher remuneration. Blundell and MaCurdy (1999) state in their labor supply model that an increase in return from work will increase the opportunity cost of leisure time, hence increase the supply of labor. However, assuming that leisure time is a "normal good" in the same model will result in increase in its demand as the income increases hence reduces the supply of labor in the market.

Killingsworth and Heckman (1986) highlighted that the decision of women to engage in the labor market depend on the "reservation wage" which they explained as "the opportunity cost related to the time women spend at home". The

engagement of women in the workforce depends on the wage it will obtain from her job and the opportunity cost of spending the time at home “reservation wage”.

(Klasen and Pieters, 2013) in analyzing the low rates of FLFP in urban India found that despite the increase in educational level and the decrease in fertility rate. Stating that the increase in educational level created a stigma in the society that educated women work in low-skilled jobs. Hence, many women withdrew from the labor market as a result of lack of demand for educated women as a result of slow growth.

2.3. Factors determining FLFP

There are multiple factors affecting FLFP in the labor market. The factors influencing the FLFP could be categorized into three levels the supply side factors, demand side factors and non-economic factors as shown in the following figure (1). However, these three levels are subcategorized into further factors as it is shown in figure (2) for the structure of determinants of FLFP as per reviewing the literature on the causes that influence the decision of women to join the work force. Which however differ from the reasons behind their employment status after they enter the market (Nazier and Ramadan 2016).

Figure(1): Factors affecting FLFP

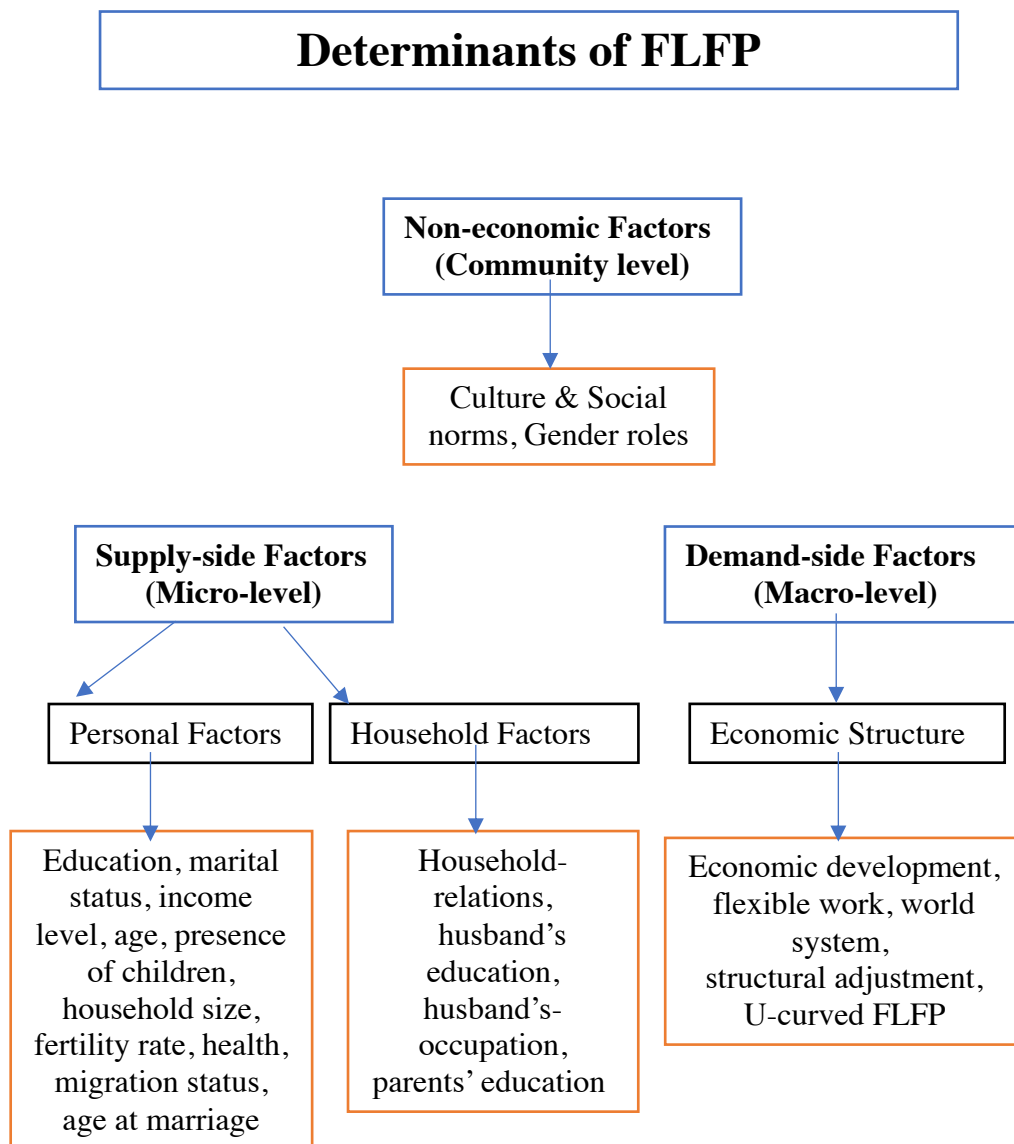


There is division within literature whether supply factors or demand factors have a higher impact in triggering the low FLFP in the MENA region. Spierings, Smits, and Verloo (2010) found that factors vary between the macro level and micro level based on a comparative analysis on 6 Arab countries. On the micro level care duties and traditionalism determine FLFP while on the macro level economic development of a country and the social norms play a significant role in determining the FLFP.

Nevertheless, one of the problematic issues in the labor market is that we have details on the number of graduates every year, their field of studies and specialty, in addition to having information about their characteristics as marital status, age and educational level. However, on the demand side information about job availability and job creation is vague and left to private investors to determine.

While Assad, Hendy, Lassassi and Yassin (2020) support the idea that the downsizing in the public sector due to structural adjustment which was responsible for the creation of a huge job opportunities was not met by an increase of opportunities in the private sector to offset this reduction. Besides literature highlight the fact that discrimination in hiring and male preference due to childcare referred to in literature as “motherhood penalty” may be one of the triggers for low FLFP.

Figure (2): Determinants of female labor force participation



Source: developed by author based on reviewing literature

Figure (2) shows the determinants of FLFP. FLFP is influenced by both demand side, supply side factors and non-economic factors. On the demand side we consider the macrolevel factors and the structure of the economy taking into

consideration the U-shaped hypothesis of the FLFP and different structural adjustment of economy. In addition to the supply of jobs in the labor market, the discrimination in the labor market and the economic development status of the country. Besides the flexibility of jobs and employment security. However, on the supply side factors we consider microlevel factors such as the characteristics of females focusing on their educational level, fertility rate, marital status, time use, family responsibilities, age at marriage and number of children. Nonetheless, the supply side factors are further subcategorized to personal factors which indicates the characteristics while the household factors are more concerned with household relations, the education of parents and the occupation and education of husband. On the other hand, the community level factors focus on the culture and social norms in the society and the gender roles and how they influence the FLFP in some communities with conservative behavior.

2.3.1. Demand side factors (Macro-level)

The FLFP is stagnated in the MENA region to around 20% while in Egypt is around 23% on average. Asaad, Hendy, Lassassi and Yassin (2020) addressed the “MENA paradox” which refers to the low FLFP in the MENA region despite closing the gender gap in educational attainment. Although Egypt and among other MENA countries have achieved gender parity and closed the gender gap in education attainments the paradox exists. They argue that the issue of low FLFP in the region is due to structural factors rather than supply side factors. The low FLFP in the MENA region due to change in the structure of the demand in the labor market. They argue that the downsizing in the public sector was not matched with an increase in the opportunities in the private sector which has led to an increase in

unemployment among females. Because women are more attracted to the public sector.

Literature emphasizes on the U-shaped relationship between the developmental status of a country and FLFP (Schultz, 1961 and Sinha, 1967). Goldin (1994) and Mammen and Paxson (2000) highlighted that in developing countries FLFP was found to be higher among women who were illiterate and lower among those with a middle- or low-educational level (primary or secondary education). While FLFP likely to be high among university graduates (which is more likely to be in developed countries). While women with very low educational level or are illiterate tend to work out of poverty and to cover their subsistence needs for survival and their income tend to be very low. Women with low levels of education, particularly those who are married, typically stay at home to take care of household duties or work in the informal sector. "While both are not considered in the labor force definition and are not taken into account when calculating the FLFP. Hoseny (2016) argues that both the domestic work done by women and their participation in the inform sector are excluded from the calculation of FLFP as per the definition of it and hence they are not counted and contribute to the low FLFP in developing countries including Egypt as per her study.

Gündüz-Hoşgör and Smits (2008) based on their study on turkey they emphasize on the U-shaped hypothesis of FLFP which explains that as a country develop and industrialize this will be followed by a drop in the FLFP and then a rise again after the county economy stabilize. Chapman (2015) emphasized on the U-shaped hypothesis of the FLFP using data of 20 countries. she confirmed that the level of

the FLFP vary according to the transitional phase the economy is going through. Another study by (Başlevent and Onaran 2004) studied the impact of export-oriented trade on women employment. They found that export-oriented development does not have a robust impact on FLFP. Hence, according to literature FLFP tend to vary with economic growth, in poor countries there is a high FLFP which afterwards fall with economic progress then tend to increase again. Literature emphasizes this U-shaped relation between economic development and FLFPR and justify that as a country develop “Industrialize” the agriculture sector which is the main employer for women starts shrinking and results in a decline in women employment. Afterwards various services sectors start expanding and starts reabsorbing women in the labor market (Hosney, 2016; Fatima and Sultana 2009; Psacharopoulos and Tzannatos 1989 and Sackey, 2005).

Harrison (2005) addressed the impact of globalization, international trade and flow of cash in increasing the demand of unskilled labor. He assumed that poor countries have a comparative advantage in the cheap labor “unskilled labor”. Accordingly, the demand on females will increase in the countries which have comparative advantage in the production of goods that depend on unskilled labor goods. However, it depends on the sector if international trade was focused on sectors with high concentration of females as the “apparel industry” this will increase the demand on women. Meanwhile, if it focuses on sectors where males are mostly concentrated as construction, hence the demand on men will increase instead. The growth of flexible jobs in the labor market let to the “Feminization” of many sectors that were previously held be men, hence it increased the FLFP (Standing, 1999).

2.3.2. Supply side factors (Micro-level)

Meanwhile, other scholars argue the supply side factors are affecting the FLFP such as age at marriage, fertility rate and educational level. Hendy (2015) explored the factors affecting FLFP based on the market panel survey of the Egyptian labor market. The paper highlights the supply factors of FLFP varying between marriage, family responsibilities, educational level, fertility rate and time use. While the demand side as the article highlights vary between downsizing in the public sectors and discrimination in the work place. The article concluded that low FLFP is due to the low involvement of married women in labor market.

Literature emphasizes on the positive relationship between education and FLFP. Higher education level increases the probability of getting better jobs with better salaries and it increases their incentives to join the labor. Hence, education considered as one of the core determinates of FLFP in both developed and developing countries. Psacharopoulos and Tzannatos (1989) considered education as the “ideal policy” to increase FLFP in different countries. While other researchers argue that one of the reasons behind educating women was to increase their participation in labor market.

In a study done on Egypt stated that despite the increase in education of females their employment decreased in the urban areas (Khadim and Akram, 2013). While a study done on Pakistan highlighted that FLFP tend to decrease with the increase of education level. Despite the fact that education is one of the core elements determining FLFP yet it failed to explain why there is a high rate of unemployment

among educated females. Moreover, (Karaoglan and Okten, 2012) linked the employment status of the husband as a determinant for FLFP in the labor market. Another study by Nam (1991) found that education and economic status of the families are from the main determinates of FLFP. As women from wealthy families are less likely to work compared to three folds for women with poor background. Nazier and Ramadan (2016) found in their study that “woman’s age, level of education and employment status of the mother” are among the main determinants of FLFP in Egypt.

Fertility rate is one of the core determinants of FLFP since the lower the fertility rates the higher the chance of women to join the workforce (Lam and Duryea, 1999). Gronau (1973) studied the impact of number of children and how women evaluate their time. There is an inverse relationship between the fertility rate and the FLFP (Bagozzi and Van Loo, 1982). In a study on done on twenty-eight OECD countries they found that the rate of FLFP and total fertility rate have inverse relationship (Mishra and Smyth, 2010).

In a study done on Ghana the paper found a positive relation between the increase of female participation and the decline of fertility rate (Sackey, 2005). FLFP not only depend on her wages but on the income of the household as a whole. Hence women participate less in markets when low-income countries become wealthier. However, overtime their educational level increase accompanied by lower fertility rate and later marriages which will result on the long run on their rejoining to labor market. the decline in fertility rate gives women more time to participate in the market (World bank report, 2012).

World Bank (2004) argues that despite the decrease in the fertility rate and increase in educational level in the MENA region, it was not met by an adequate increase in FLFP. Hence, we can conclude that there are other factors triggering the stagnation of the FLFP in the MENA region.

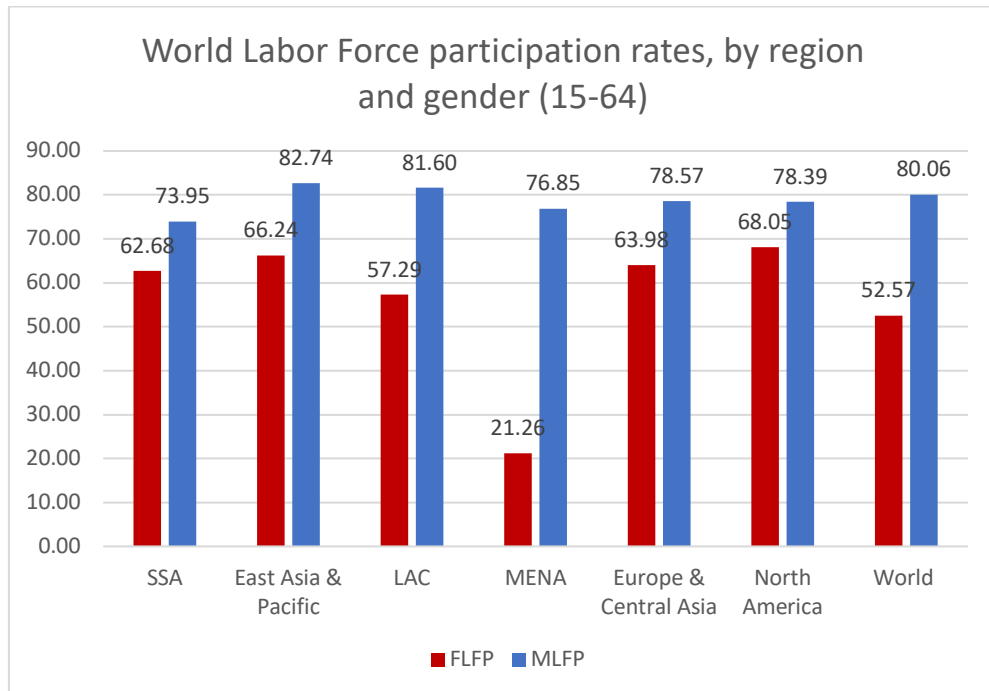
2.3.3. Non-economic factors (Community level)

Literature argues traditional gender roles and domestic chores burden as major factors affecting the female participation in the labor market. Traditional societies are from the determinants behind low FLFP (Clark, Ramsey, and Adler 1991; Inglehart and Norris 2003). Spierings (2014) and Moghadam (2004) explained the low female employment in some societies due to patriarchal gender norms. While another study explained this phenomenon as a result of customs and traditions they explained that family and childcare are priority for women in the MENA region including Egypt (Miles, 2002 and Verme, Barry, and Guennouni, 2016). ILO (2018) discussed the gender inequality in unpaid care work and paid market work. The report argues that unless the unpaid work is redistributed between men and women the gender inequalities in the labor market won't be eliminated due to the double burden women endure. Contreras and Plaza (2010) examined the culture factors that affect the female participation in the labor market.

Chapter 3. Labor market Analysis

3.1. Labor Force in the global context

Figure (3): Percentage of labor force rates by region and gender between (15-64) in 2018

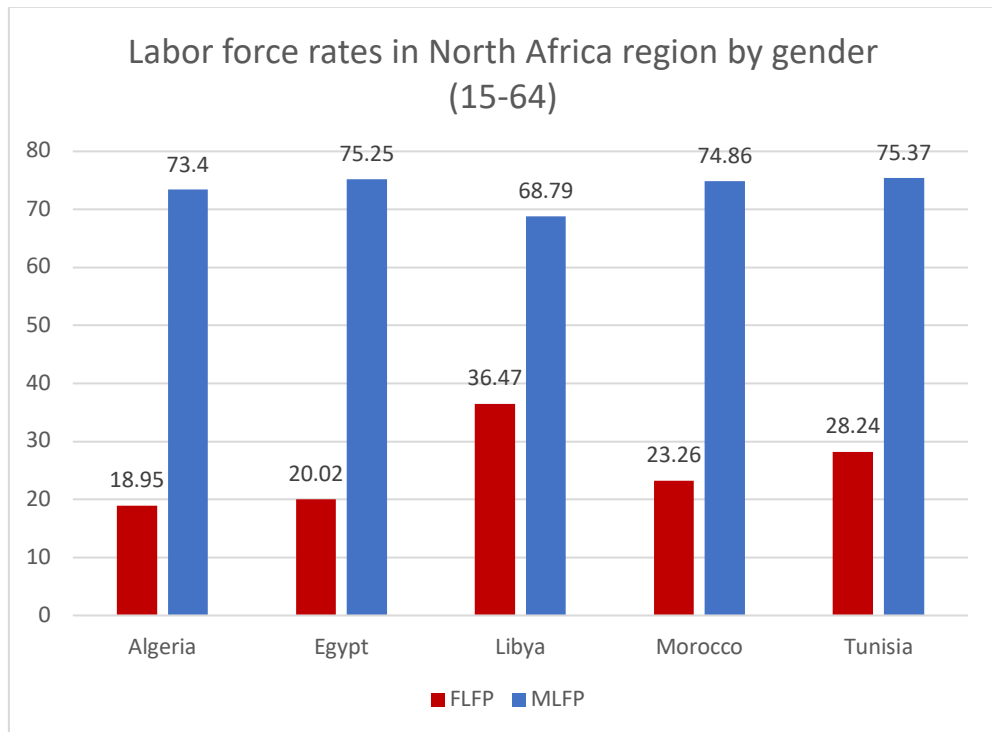


Source: developed by author based on WDI data, SSA stands for sub-Saharan African countries, LAC stands for Latin American and Caribana countries

According to data, as shown in figure (3) the world average of the FLFP is 52% compared to 80% for males. North America has the highest FLFP which accounts for 68% on average followed by East Asia and Pacific countries which account for 66.24% on average. While the percentage of FLFP in Europe and central Asia is around 63.98% on average. However, the MEAN region shows the lowest FLFP in the world which is 21% on average in 2018. Meanwhile, the following data on the FLFP across different regions in the world confirm on the U-shaped hypothesis of

the FLFP as mentioned in the literature. Where the FLFP vary with the income level and the economic status of the country.

Figure (4): Percentage of labor force in North African countries by gender between (15-64) in 2018



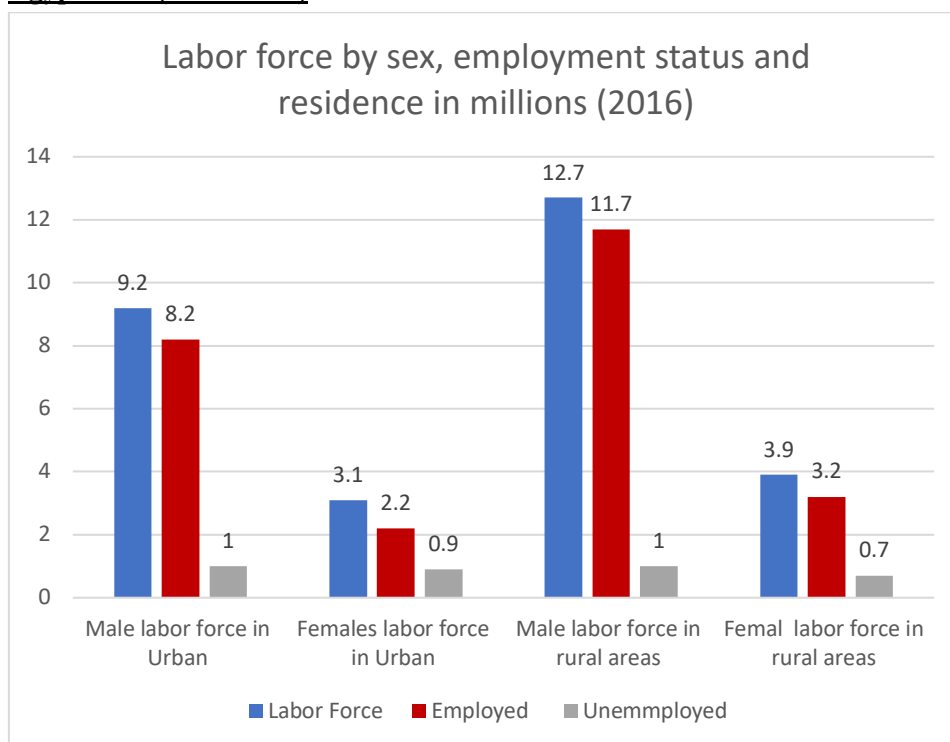
Source: developed by author based on WDI data

Figure (4) shows the FLFP in North African countries. As mentioned in figure (3) the lowest FLFP in the world is in the MENA region. However, across the North African countries Egypt still have the second lowest FLFP after Algeria in 2018. In Egypt the FLFP in 2018 was around 20% while the recent data on FLFP in 2020 shows that the FLFP dropped to 18.7% as a result of the Covid-19 repercussion on women discussed in section (2.7). However, Libya has the highest FLFP in the region which account for 36.47% followed by Tunisia which account for 28.2% in 2018.

3.2. Current situation analysis of Labor Force in Egypt

In Egypt there are many factors affecting the FLFP in the labor market such as educational attainment, level of income, marital status and place of residence. According to estimates, the labor force was around 28.9 million among which 24% are females, according to the world bank data. However, labor force in Egypt increased from 26.2 million in 2010 to 28.4 million in 2016. This growth translates into an average yearly growth rate of 1.68%. The female work force increased by over 1 million over the past six years due to the greater average yearly growth among females (2.49% for females Vs. 1.43% for males)⁶.

Figure (5): Distribution of labor force by gender, residence and employment, Egypt 2016 (in millions)

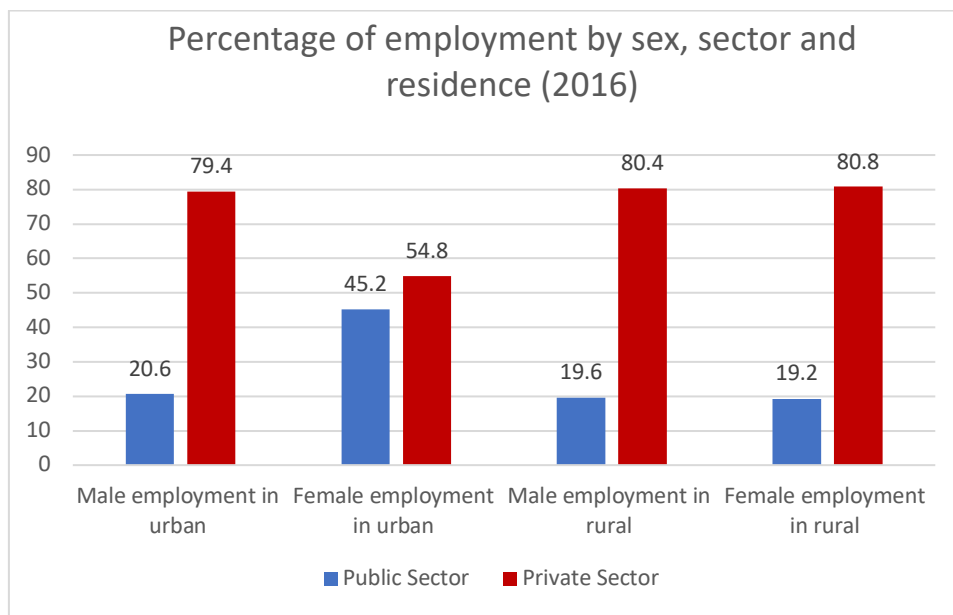


Source: developed by author based on data from WB women economic empowerment study (2018)

⁶ <https://www.worldbank.org/en/country/egypt/publication/egypt-women-economic-empowerment-study>

As shown in figure (5) the total labor force in Egypt in 2016 was 28.9 million among which 7 million are women which account for 24.2% of the total labor force. However, data shows that 5.4 million of FLFP are employed while 1.6 million are unemployed. However, 25.3 million of the 28.9 million in the labor force are employed. which showed that 12% of the labor force either works in the informal sector or are unemployed. Besides the unemployment in the FLF is more in the urban areas compared to rural areas.

Figure (6): Percentage of employment by gender, residence and sector, Egypt 2016

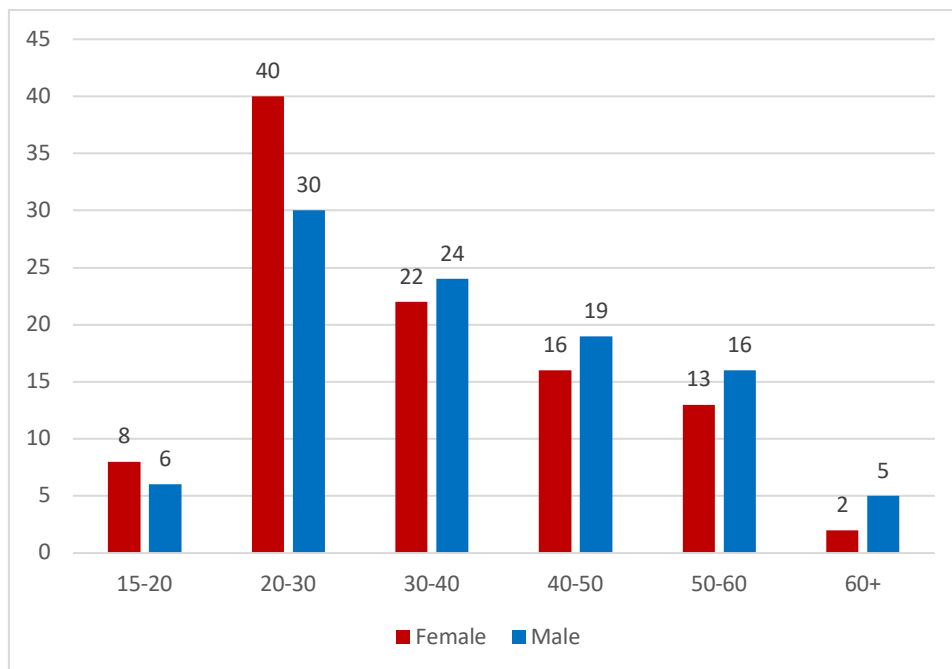


Source: developed by author based on data from WB women economic empowerment study (2018)

As shown in figure (6) despite the fact that women are more attracted to the public sector due to its maternity leave and childcare benefits. However, in both urban and rural areas, the proportion of women employed in the private sector is larger than that in the public sector. As it is shown in the figure 3.2 million women are

working in rural areas among which 80% are working in the private sector compared to 2.2 million in urban areas among which 54.8% work in private sector. Meaning that more women are employed in rural areas than in urban and they are concentrated in private sector.

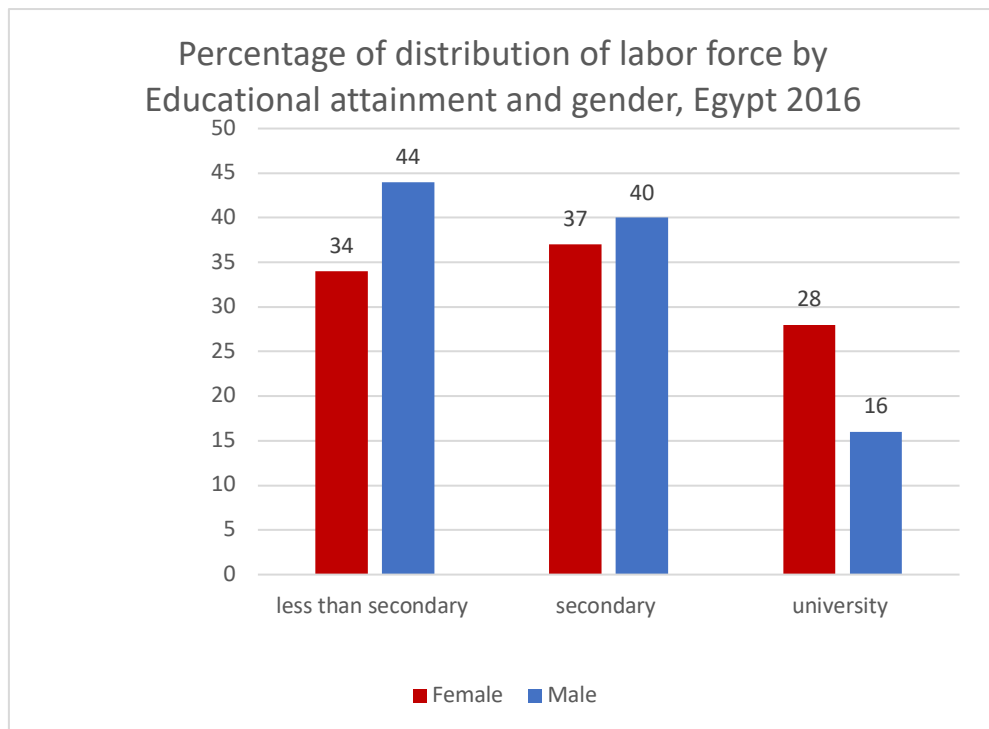
Figure (7): Percentage of labor force by age and gender, Egypt 2016



Source: developed by author based on women economic empowerment study, WB (2018)

As shown in figure (7) the FLF in Egypt tends to be younger in terms of age. Data shows that 70% of FLF is below 40 years compared to 60% male labor force in the same age group. While looking at the age group (20-30) still the 40% of the FLF fall in this age group compared to 30% for males.

Figure (8): Percentage of labor force by educational attainment and gender, Egypt (2016)



Source: developed by author based on women economic empowerment study, WB (2018)

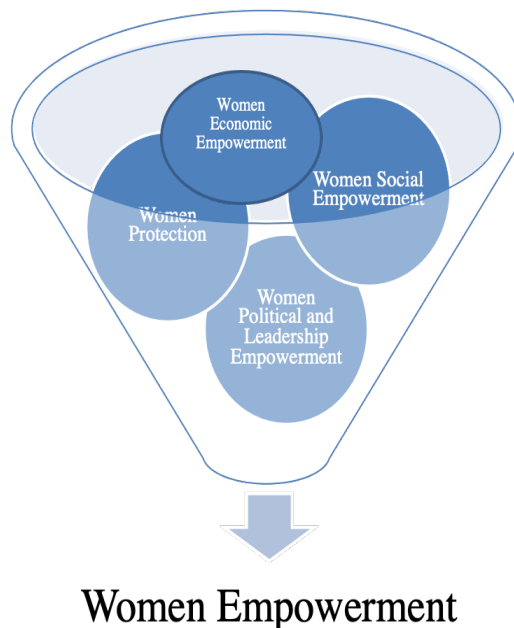
As shown in figure (8) data on the female and male labor force reveals that girls more educated compared to males in the labor force. Data demonstrate that 28% of women in the labor market have university degree while only 16% of males in labor force have university degree. According to data analysis from figure (7) and figure (8), females within the “labor force” are more likely to be younger and to have higher levels of education than men.

3.3. Efforts by the Egyptian government to empower women

The Government of Egypt has brought together tremendous efforts to empower women and enhance gender equality. Particularly, after 2014 which mark the

beginning the of the stability in the economic, social and political affairs in Egypt after the 25th of January revolution in 2011. The Government drafted a new constitution in 2014. “Article (11) in the 2014 Egyptian constitution states that the state shall protect women against all forms of violence and ensure enabling women to strike a balance between family duties and work requirements”. In addition, the government have adopted several strategies to enhance women empowerment. In 2016, the Egyptian government adopted the Egypt national development strategy “vision 2030” which anchor on SDGs. In 2015, the government adopted the “national strategy to combat violence against women”. In 2017, “the national strategy for women empowerment”. And in 2018, it adopted the national strategy for childhood and motherhood and its action plan.

Figure (9): The Egyptian National Strategy for women empowerment 2030:

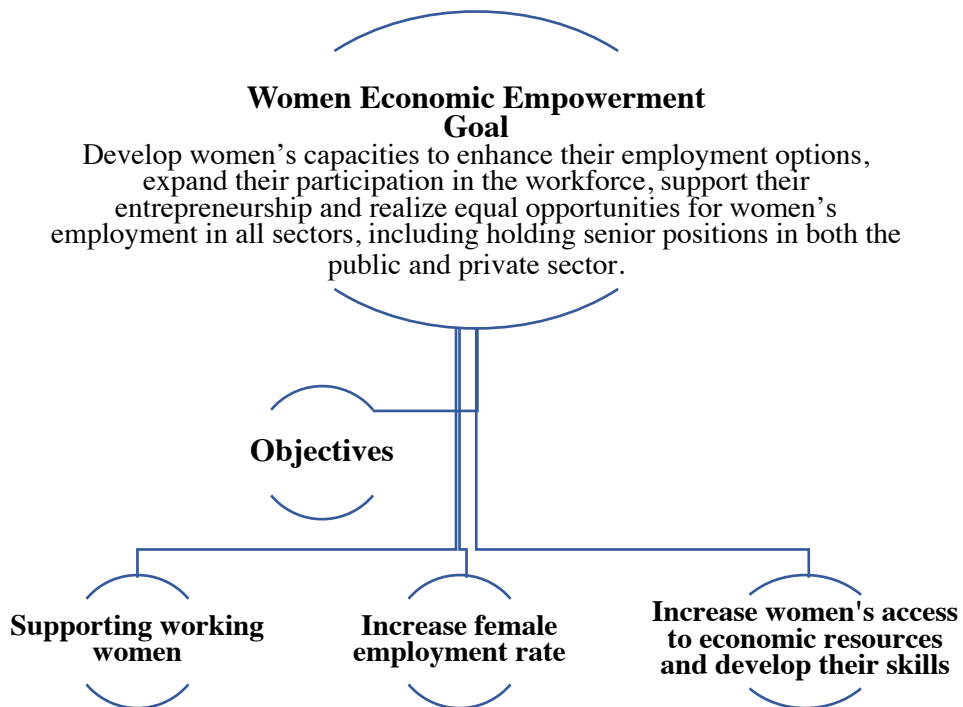


Source: developed by the author based on “the national strategy for women empowerment”

The national strategy for women empowerment drafted its 4 pillars based on the

sustainable development goals. The four pillars are “women political empowerment and leadership promotion, women economic empowerment, women social empowerment and finally women protection”. In regards to the economic empowerment dimension, the national strategy seeks to support the most vulnerable women by addressing the variables that affect women's economic empowerment. In order to provide this support, policies must be implemented effectively, legislative reforms must be made with the goal of removing structural barriers to women's economic participation, traditions of discrimination against women must be addressed, social protection must be provided, and infrastructure must be expanded and improved.

Figure (10): Objectives of women economic empowerment in the national strategy



Source: developed by the author based on the national strategy for women empowerment

The national strategy aims to increase rate of women employment as a mean for women empowerment on the national level through 4 dimensions. First, boosting the “labor-intensive” investments which mostly hire women. Second, support the projects and businesses owned by women. Third, eradicate “discrimination against women in job opportunities”. Forth, “introduce new fields of work for women.

3.4. Impact of covid-19 on FLFP

The outbreak of covid-19 pandemic caused tremendous health, economic and social consequences worldwide particularly women. women make up roughly 70% of the medical workforce, women are primarily responsible for leading the health response since they are more susceptible to infection. Women are also shouldering a the “lion’s share” of the workload at home as a result of school and daycare closures, as well as persistent gender inequities in unpaid labor. Hence the chance is very high that the pandemic has cost a lot of women their job. Women for 70% of the service sector which was mostly hit by the pandemic. “An estimated 47 million more women and girls are anticipated to fall into extreme poverty as a result of COVID-19, widening the gender poverty gap”.^⑦ “Based on data from 16 countries, women have provided 29% more childcare per week than men have during the pandemic”.⁷

In Egypt, the employment of women dropped 2020 as a result of the covid-19. From the factors that lead to the drop-in women employment is the unequal

^⑦ https://www.unwomen.org/en/hq-complex-page/covid-19-rebuilding-for-resilience?gclid=CjwKCAjw5P2aBhAIEiwAAAdY7dCdITZO8uAf8r_8pCEbKmnKXmFaf-NI-WmAB8BZoo7eeyP7wAMB_XxoCNyYQAvD_BwE

childcare responsibilities. During the pandemic many school and kinder gardens and nurseries closed temporary as a precautionary measure in controlling the spread of the pandemic. Nurseries and schools were closed temporary by the government starting from March 2020 till July 2020. However, after the reopening the nurseries were asked to operate at 50% only as a precautionary measure. As a result, many nurseries had to close as they could not afford to cover their costs at a capacity of 50%. Data shows that by December 2020 only 27% of the nurseries were able to reopen and continue working at the 50% capacity level.^⑧

The childcare services are key in supporting the engagement of married women in the workforce. In Egypt the “early childhood care and education services” could be categories into two types the kindergarten and the nurseries. The former provide service for children aged between (4-6) while the later include children from (0-4). However, private nurseries in Egypt are expensive relatively to the minimum wages. Hence, it is not affordable to a lot of families which make the opportunity cost of women joining the workforce relatively high. One of the caused for women to drop their work in the private companies after marriage is to take care of their children.

According to a survey done on Egyptian women with children between the age (1-5) in Cairo. The results show that 66% of the women in the study revealed that their mothers are the primary care giver of their children. While 14% stated that their mother-in-law are the ones responsible for taking care of their children and only 4% mentioned that their husbands participate in taking care of the children.⁸

^⑧ Assessing the labor market impact of COVID-19 on women with young children in Egypt, (2020)

The interviewed women in the survey indicated that “they spent on average 10 hours/day on childcare and 4 hours/day on domestic work”. The pandemic has increased the burden on women in terms of childcare with the closure of schools and nurseries and school temporary. As women in Egypt were the fully responsible for taking care of their children and supporting them in studying and doing their school work. The survey highlighted that “43% of the interviewed women are responsible for teaching their children and 25% relied on official educational written material”. Moreover, the study asked men and women “In the case of the shortage in the availability of jobs in the market, men should have the priority of employment over women?”. The results, shows that 91% of men agree and 88% of women agree.

3.5. Women and Gig economy

On the structural level, there has been a lot of changes in the structure of available jobs on both the global level and the national level. The is a transformation in the structure of the economy due to advanced technology and artificial intelligence. For instance, the gig economy which refers to the “digital platforms that hire freelance and short-term jobs or gig”^⑨ the digital platforms in the gig economy are divided into two categories “location-based platforms and cloud-based platforms”. From the examples of the location-based type are the food delivery service and the ride hailing service. Gig economy in Egypt is one of the fast-growing economies. However, women are not benefiting from this expansion due to gender stereotypes

^⑨ <https://fair.work/en/fw/publications/fairwork-egypt-ratings-2021-towards-decent-work-in-a-highly-informal-economy/>

in the labor market. For instance, gender stereotypes consider some jobs as not suitable for women as the ride hailing.

After 2011 revolution which result in a huge economic crisis and instability. Which was followed by the floatation of the Egyptian pound in 2016 after a long time of fixing its rate by the central bank of Egypt. Which has contributed to the increase in demand of the gig workers. According to data, 60% of all jobs in Egypt belong to the informal sector, which contributes 50% of Egypt's GDP. In regards to the digital platforms in Egypt ride-hailing compose 90% of it. Which has spread widely since 2014 which the launch of different application to provide this service. Women are facing resistance by the society to participate in such jobs whether it is in the delivery service sector or in the ride-hailing sector. This confirms on the gender stereotypes in some sectors are it is seen by the society as unsuitable for women and it is highly dominate by men.

The booming in the digital economy opens the door for women inclusion in ICT sector. Hence to empower them and enable them to compete in the labor market with their male counter-parts. The digital economy could be considered as an opportunity to close the gender gap. By giving women more chances to participate in the labor market by overcoming restrictions such time poverty due to the double-burden of childcare and household duties. Hence, birding the “gender digital divide” which refers to “the gap between women and men in access to, use of, ability to influence and benefit from ICT”¹⁰.

¹⁰<https://documents1.worldbank.org/curated/en/816281518818814423/pdf/2019-WDR-Report.pdf>

The gender digital gap, make women less able to take advantage of the digital transformation in the economy. The ITU states that there is a 12.5% gender disparity in internet usage worldwide. However, according to the recent data in 2017 the gender digital gap in the less developed countries was 32.9 with 32.9 percent. In Asia, there is a 17.1% gender gap in internet usage, compared to a 25.3% gap in Arab nations. In Egypt, percentage of females using the internet between the (15-24) years has increased from 32.4% in 2012 to 61.7% in 2019. While the percentage of females of using the internet under 15 years old has increased from 37.2% in 2012 to 52.2% in 2019^⑪. While the percentage of females among the graduates of faculties in ICT sectors on average is 44% between 2005 and 2016. However, the percentage decreased from 45% to 40.6% in the period from 2014 to 2016. On the other hand, the percentage of females whom work in professions in ICT sector is only 14.3%. While the pattern tends to be decreasing overtime as the percentage has been decreasing from 27.9% to 23% to 20.2% to 14.3% in the period between (2011-2019).

Hence, we can draw a conclusion that there is a significant inequality in Egypt's digital platforms. According to the fair-work report, which analyses the platform economy in Egypt, men dominate the delivery service, transportation and maintenance sectors. Because the society views certain positions as either unsafe or inappropriate for women, hence women are deprived from such opportunities.^⑫ Due to the Egyptian Society's protective approach in gender equality, this may prevent women from taking advantage of potential chances.

⑪ <https://en.enow.gov.eg/Report/12.pdf>

⑫ <https://fair.work/en/fw/publications/fairwork-egypt-ratings-2021-towards-decent-work-in-a-highly-informal-economy>

Chapter 4. Data Analysis

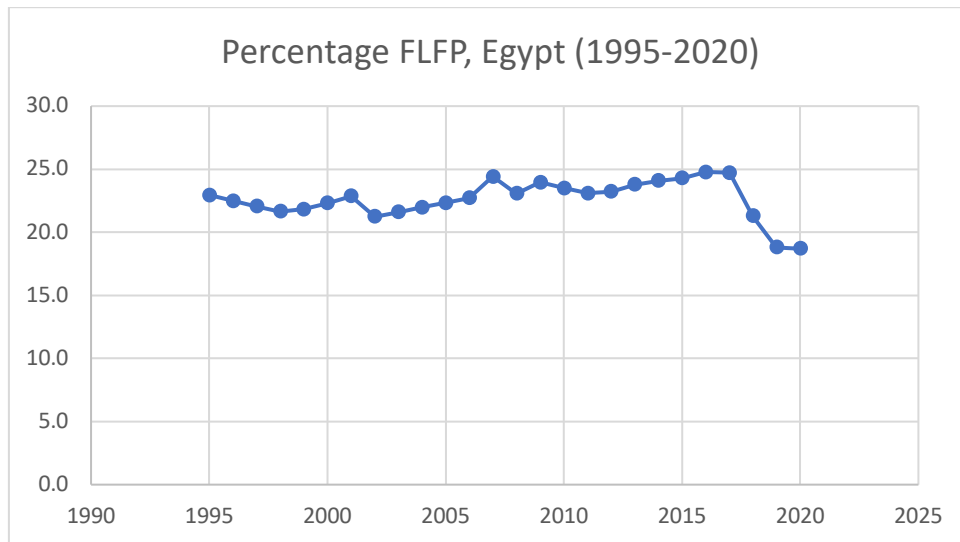
4.1. Demographic characteristics of FLFP in Egypt

According to the ELMPS (2012), there are different factors that influence women's decisions to join the workforce than those that influence their job status. "Age, education, and mother's employment status" are the main factors that affect woman's engagement in the labor force in Egypt. However, when a woman enters the workforce, various factors impact whether or not she is employed hence reproductive behavior may affect female employment. Findings indicate that while the overall number of children is a major predictor of employment, it has no meaningful impact on the likelihood that women will enter the workforce. However, the chances are low for women with multiple children to be employed¹³.

Findings from the Egypt Time-Use Survey 2015 show that "women are totally responsible for domestic responsibilities and for taking care of children even if they are employed". This "double burden" may prevent women from seeking employment or disrupt their career. According to the 2017 Egyptian population census, "there are almost 15.4 million children under the age of six." This ratio reflects the disproportionate economic and social cost of childcare on parents because it equates to "almost one child under the age of six per household". Besides the survey shows that women are more attracted to the public jobs because it provides better maternity leave and childcare benefits that enable them to attain a balance between their work and family responsibilities.

¹³ <https://erf.org.eg/publications/egypt-labor-market-panel-survey-introducing-2012-round/>

Figure (11): Percentage of FLFP in Egypt (1995-2000)



Source: developed by author based WDI data

Women form half of the Egyptian population where almost 50% of the population are females¹⁴. Yet their participation in the workforce is around 24% on average which is relatively low compared to males. Despite the low participation of women in the workforce, the proportion of female unemployment rose from 23.7% in 2006 to 27.6% in 2012, according to ELMPS (Assaad and Krafft 2013). Besides compared to a global average of 50% between the (1990s-2000s), the percentage of Egyptian women who were in the labor force in the 2000s ranged between 20% to 25%.¹⁵

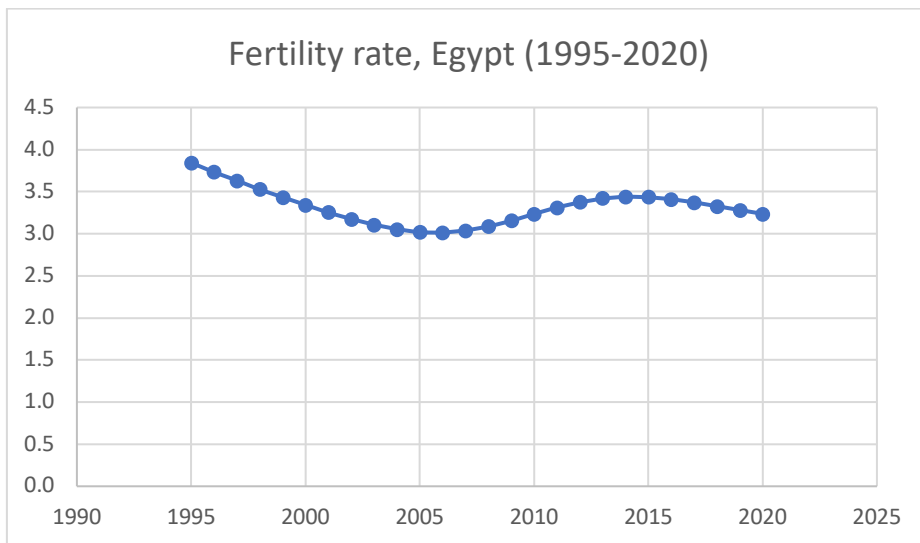
The growth of FLFP in Egypt is almost stagnated as we can see in figure (11) the percentage of women in the labor force accounted for 24.7% in 1995 and decreased to reach 22.3% in 2000. While it started increasing again to reach 24.4% in 2007 however it was stagnated since then with the same range till 2018. However, the

¹⁴ <https://data.worldbank.org/indicator/SP.POP.TOTL.FE.ZS?locations=EG>

¹⁵ <https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS>

economic and political instability Egypt had faced since 2011 due to the 25th of January revolution contributed to job losses and increasing unemployment rates. In addition to those negative impacts resulted from the Covid-19 pandemic on the labor market and loss of jobs ought to be taken into consideration. Research shows that service sector was hit the most by the pandemic where women are mostly concentrated¹⁶.

Figure (12): Total fertility rate per 100 in Egypt (1995-2020)



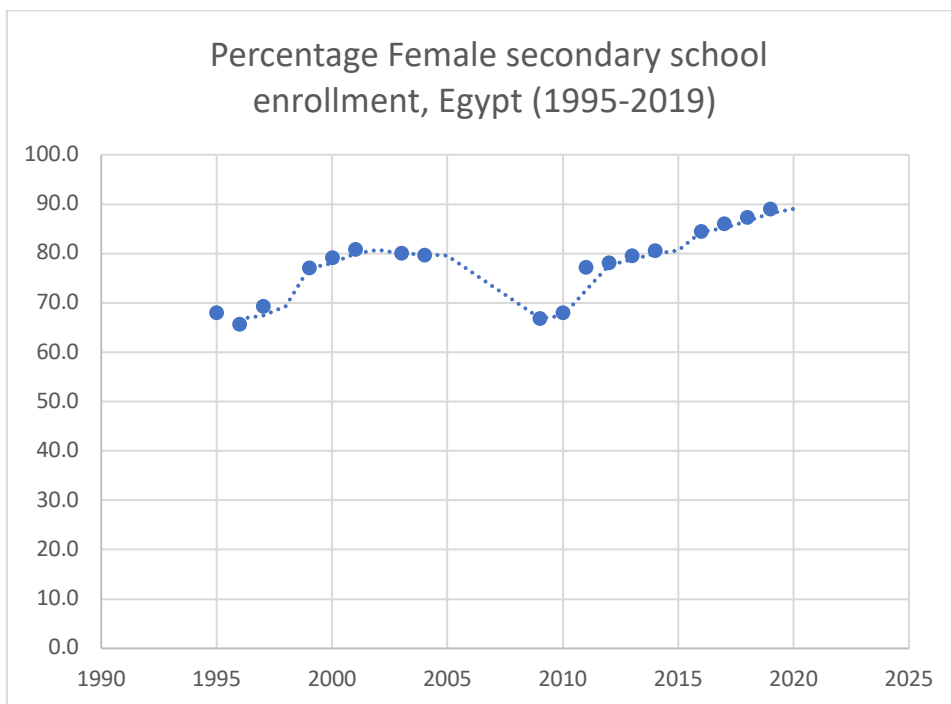
Source: developed by author based WDI data

The total fertility rate (TFR) is considered an important factor that influence the female labor supply. It is shown in figure (12) the fertility rate “which is the average number of children per women over her life time” tend to decrease overtime in Egypt. In 1995 the TFR was 3.8 births per woman and it kept decreasing till 2007 as it reached 3 births per woman. However, the TFR started

¹⁶ <https://www.oecd.org/coronavirus/policy-responses/women-at-the-core-of-the-fight-against-covid-19-crisis-553a8269/>

increasing again in the period between (2008-2017) where it reached 3.4 births per women in 2017. Meanwhile, it started decreasing again starting from 2018 on going until it reached 3.2 children per woman in 2020. Nonetheless, the age of marriage is an important determinant affecting the supply of women in the market (Krafft, Asaad and Keo, 2019).

Figure (13): Percentage of Female enrollment in secondary school in Egypt (1995-2019)

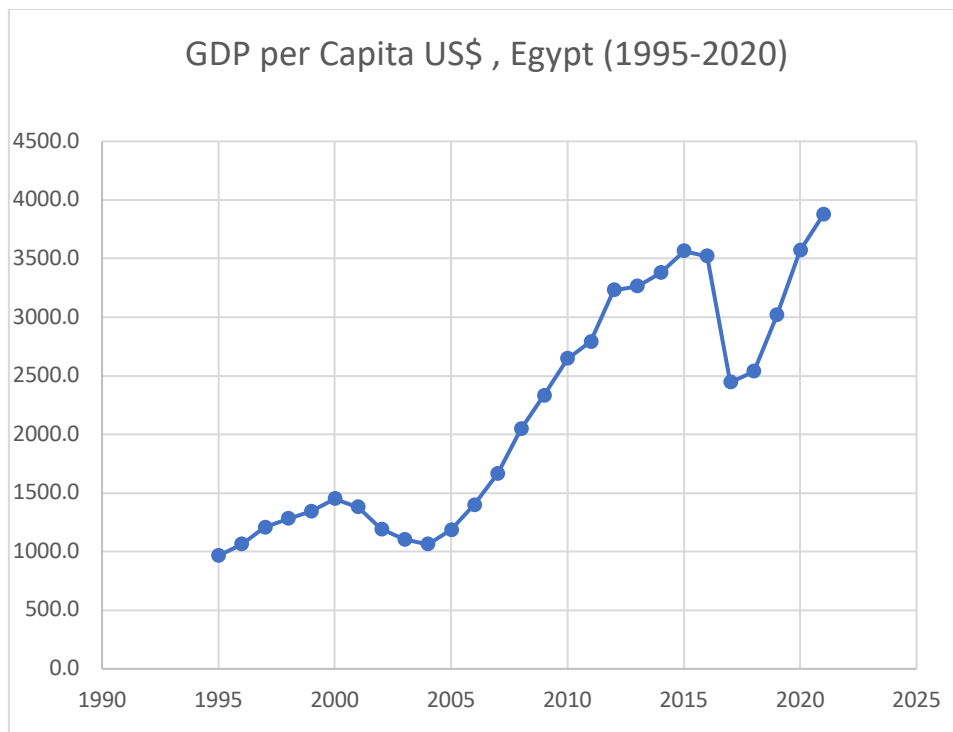


Source: developed by author based on data from WDI

Female education witnessed a significant increase in the past two decades as shown in figure (13) the percentage of female enrollment in schools increased from 70% in 1995 to 90% in 2019. While the net ratio of secondary school enrollment for

females according to the most recent data by world bank is 83% in 2015.¹⁷ Meanwhile, as it is shown in figure (11) the participation of females in labor market is growing very slow compared to their education. Despite the common anticipation that women's educational attainment will have a significant role in determining FLFP, in Egypt FLFP has significantly decreased despite the rising level of education (Assaad and Kraft, 2013). Moreover, the high educational attainment accompanied with low FLFP is refers to in research as the “MENA Paradox”. Despite their education they are still facing obstacles in accessing the labor market.

Figure (14): The GDP per Capita in Egypt in US\$ (1995-2020)



Source: developed by author based on data from WDI

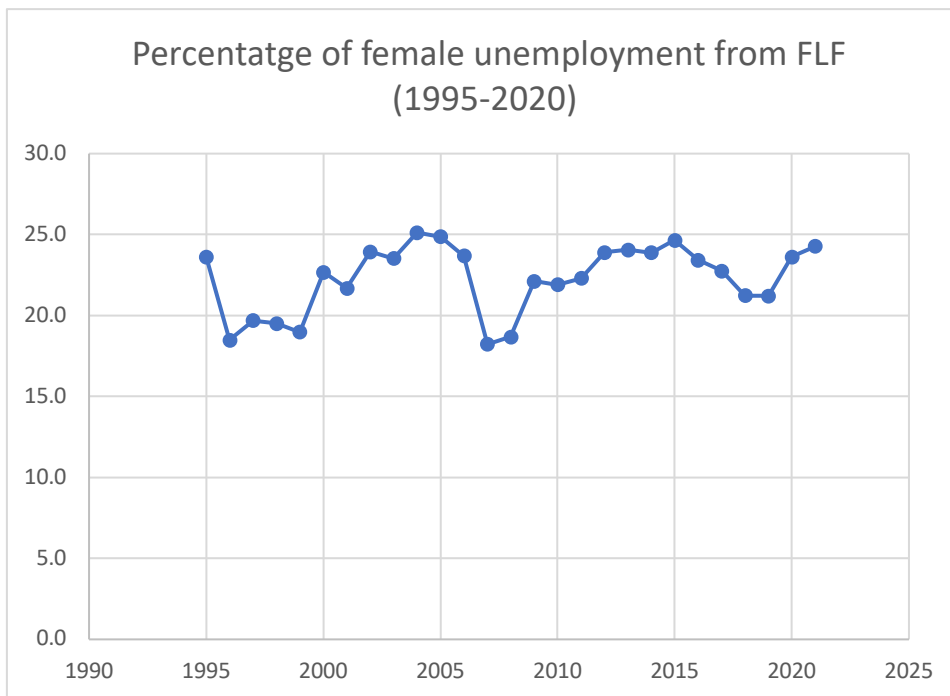
¹⁷ <https://data.worldbank.org/indicator/SE.SEC.NENR.FE?locations=EG>

In the past two decades the GDP per capita in Egypt has witnessed continuous increase overtime. The average growth rate of the GDP per capita between (1995-2020) was 6%. In 1995, the GDP per capita was around 1000 US\$ it kept increasing till 2000 reaching 1450 US\$. However, it witnessed a slight decrease between (2001-2004) reaching 1062 US\$. Afterwards, the GDP per capita started increasing again from (2004-2015) till it reached 3500 US\$ in 2015. Meanwhile it decreased again between (2016-2018) to reach the lowest point (2444 US\$) in 2017. Afterwards the GDP per capita started rising again to reach 3569 US\$ in 2020.

However, the Egyptian economy experienced rough time since 2011 due to the political instability accompanied by the 25th of January revolution and the effect lasted for a couple of years. The average growth rate of the GDP in Egypt was 4.5% between (1995-2020). In 2010, the GDP growth rate was 5.1 % while in 2011 it decreased to 1.8%. The repercussion of the revolution lasted for a while as the rise in the growth rate was slow hitting 2.2% in 2013 and it didn't reach 5.6% again until 2019.⁽¹⁸⁾ During this period Egypt suffered from a decrease in the tourism is key component in its national income and source for foreign currency. Beside the decline in FDI due to instability. Nonetheless, this resulted in a slow growth in job opportunities and employment in the Egyptian market for both males and females.

⁽¹⁸⁾ <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=EG>

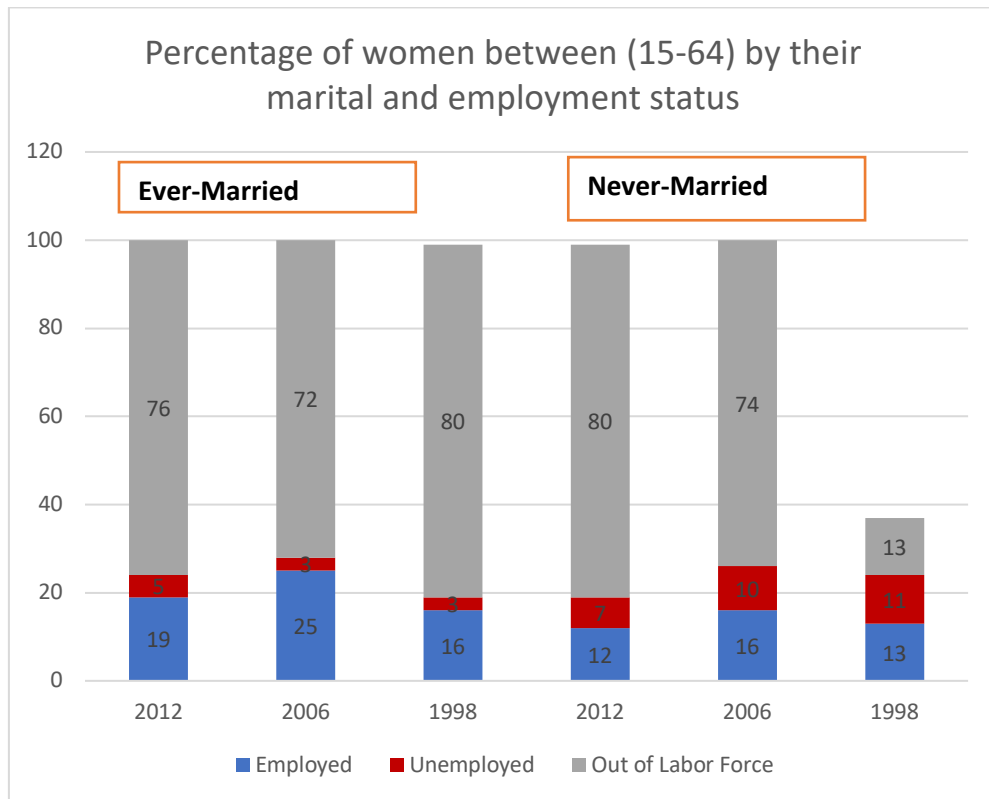
Figure (15): The Percentage of female unemployment as a percentage of FLF in Egypt (1995-2020)



Source: developed by author based on WDI data

The unemployment rates among female labor force experienced many fluctuations in the years between (1995-2020). As we can see from figure (15) the average of unemployment rate among women is 22.3% with the lowest value of 18.2% in 2007 and the highest value of 25.1% in 2004. Though, after the implementing the structural adjustment program by IMF and world bank in the 1990s. The jobs offered by the public-sector started shrinking which used to absorb the female labor force in Egypt. (Assad, Hendy, Lassassi and Yassin, 2020 and Constant, Edochie, Glick and Martini 2020) links the downsizing in the public-sector to FLFP in Egypt. They argue that the downsizing in the public-sector was not offset by an increase in the private-sector to absorb the female graduates in the labor market. The growth of the formal private-sector in Egypt is so slow compared to the informal sector.

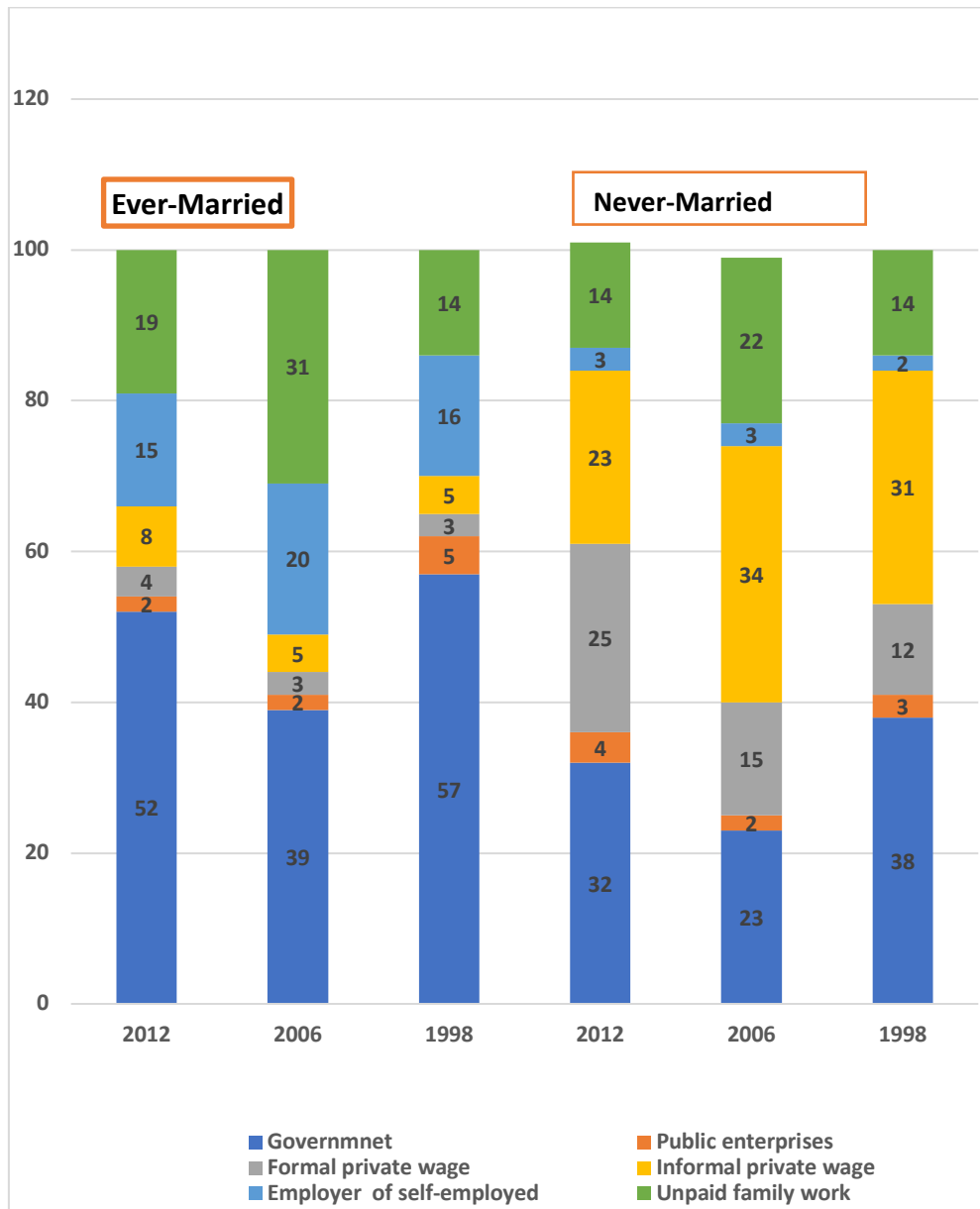
Figure (16): Percentage of women between (15-64) by marital status and labor market status in (1998, 2006 and 2012)



Source: “Untapping Low Female Labor Force Participation in Egypt Henny, 2015”.

Figure (16) shows a comparison between ever-married women and never married women employment status. In 2012, among the ever-married women 19% are employed and 5% are employed while 80% are outside the labor force. Among the never-married women for the same year 12% are employed while 7% are unemployed and 80% are outside the labor force. Hence, majority of ever-married and never-married women are outside the labor force.

Figure (17) Percentage of women between (15-64) employed by sector and marital status in (1988, 2006 and 2012)



Source: “Untapping Low Female Labor Force Participation in Egypt, HENDY, 2015”.

As shown in figure (17) in 2012 among the employed ever-married women in the age group (15-64) 52% work in the government compared to 8% in the informal private sector, 4% in the formal private sector and 15% self-employed. On the other hand, data on employed women but never-married for the same year shows

that 32% work in the government sector compared to 23% in the informal sector, 25% in the formal private sector and 3% self-employed. We can conclude from the percentages that married women tend to seek employment in the governmental sector followed by the self-employed sector. Which was confirmed by the literature as women in the governmental sector enjoy more benefits from maternity leave and shorter working hours hence enable them to balance attain the work-life balance.

4.2. Research Methodology

This paper aims to run panel regression using data from the world development indicators using fixed effect method. The collected panel data set are for 199 countries from (1995-2020). The following panel regression model is based on the regression estimated by (Ivanova, 2019). The model will use the FLFP as the dependent variables and will use 8 different independent variables as shown in table (1) to test their significance level and their impact on the FLFP. However, the study will run three panel regressions with fixed effect to analyze the impact of the different variables on the FLFP. The first panel regression will include 5 independent variables which are the logGDP per capita, $(\text{logGDP per capita})^2$, fertility rate, urban population and the female tertiary education. While in the second regression the internet access and the female secondary education will be added as independent variables in addition to the previous 5 independent variables used in the first regression model. Meanwhile, in the third panel regression the FDI and the access to fuel in rural areas will be added as independent variables in addition to the previous variables except for female secondary education which will be eliminated this time.

I. Research questions:

1. What are the determinants of low FLFP in Egypt?
2. Does increasing investment in female education is enough to increase FLFP?
3. What are the causes of high rate of unemployment among educated women in Egypt?

4. Does the disproportionate social burden of childcare and family responsibilities increase female tendency to exit the labor force?

II. Hypothesis:

- **Hypothesis (1):** Investing in female education is enough to increase FLFP and reduce unemployment rates among women in Egypt.
- **Hypothesis (2):** Early marriage and childbearing decreases FLFP in Egypt.

III. Regression Model:

- **General Regression Model:**

$$FLFP = \alpha + \beta_1 \text{ Income level} + \beta_2 \text{ Education} + \beta_3 \text{ Fertility rate}$$

- **Extended Regression Model to be used in the study:**

$$FLFP = \alpha + \beta_1 \log GDP \text{ per capita} + \beta_2 \log(GDP \text{ per capita})^2 + \beta_3 \text{ Education} + \beta_4 \text{ Fertility rate} + \beta_5 \text{ Infrastructure} + \beta_6 \text{ Internet Access} + \beta_7 \text{ Urban Population} + \beta_8 \text{ FDI}$$

IV. Variables:

Table (1): Regression model dependent and independent variables:

	Variable	Indicator
Dependent Variable (Y)	FLFP	Female Labor force participation rate percentage of female population between (15-64)
Independent variables (Xs)	Income level	1) GDP per capita (current US\$)"
	Investment	2) Foreign direct investment percentage of GDP (net inflows)

	Fertility rate	3) Total Fertility rate (births per woman)
	Internet Access	4) Individuals using the Internet as a percentage of population
	Infrastructure	5) Percentage of rural population have access to clean fuels and technologies for cooking
	Educational level	6) Percentage of Female secondary School enrollment (gross)
		7) Percentage of female tertiary School enrollment (gross)
	Urban Population	8) Percentage of Urban population of total population)

Source: WDI

The GDP per capita will be used as a proxy for the income level of the country, the fertility rate will be used as an estimate to the number of births per woman to be able to measure the impact of childbearing on the FLFP. While the female secondary enrollment rate and tertiary enrollment rate will be used as an indicator for educational level. While the access to fuel and technologies for cooking in the rural areas will be used as a proxy for level of infrastructure in rural areas.

4.3. Panel Regression results and analysis

Panel Regression model (1)

The following equation is the estimated equation from running the first panel regression model using fixed effect.

$$\text{FLFP} = 118.7 - 17.63\text{Logdppc} + 1.121\text{Logppc}^2 - 1.276\text{Fert} + 0.0898\text{Urbanpop} + 0.0583\text{enrolTgf}$$

Table (2): Stata results for regression model (1)

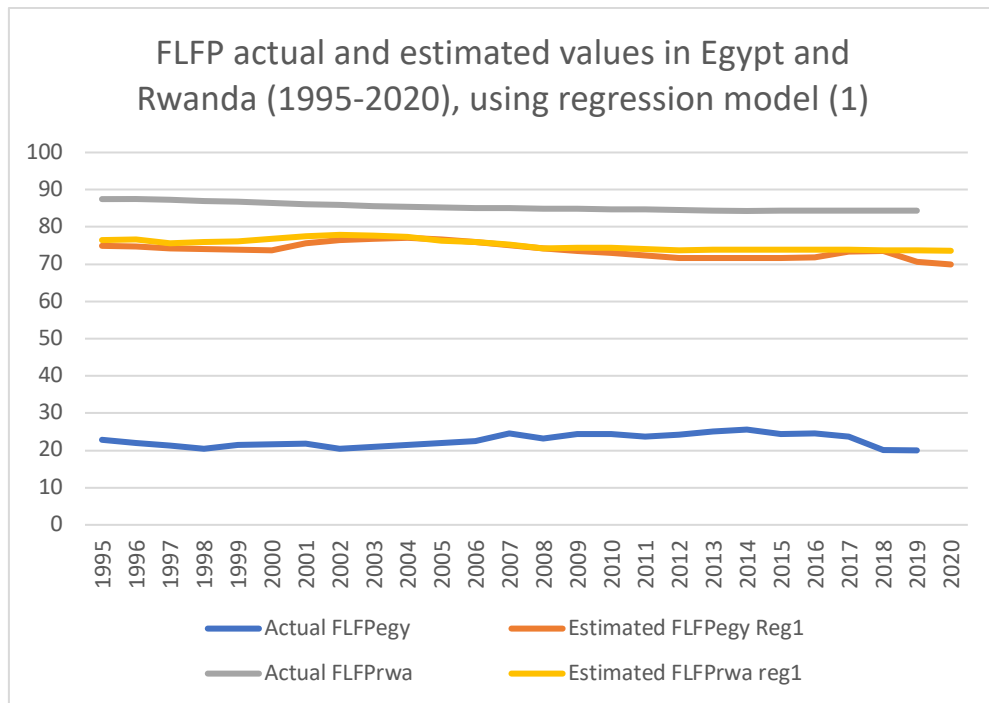
VARIABLES	(1) flfp
lgdppc	-17.63*** (0.734)
lgdppc2	1.121*** (0.0463)
fert	-1.276*** (0.189)
urbanpop	0.0898*** (0.0246)
enroltgf	0.0583*** (0.00541)
Constant	118.7*** (3.295)
Observations	2,797
Number of code	174
R-squared	0.357
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Source: developed by the author using Stata [full result of Stata in the Appendix table (6)]

The first panel regression model will test the impact of income level (logGDP per capita and logGDP per capita²), Fertility rate (total births per women), the educational level (using the female school enrollment in tertiary education) and the

percentage of the urban population of the total population on the FLFP. As shown in table (2) for regression results the R-Squared is 35% and all the independent variables are significant at significance level 1% (P-value 0.01). Among the significant variables the Fertility rate and the Lgdpc² (which reflects the income level of the country) have the highest impact of the FLFP, (-1.276) and (1.121) respectively. The tertiary education variable is significant, however, its impact on FLFP is limited (0.0583). Besides the value of the R-squared is only 35%, which verify that the included independent variables (Xs) in the model can explain only 35% of the variation in the dependent variables (FLFP). Hence emphasize on the fact that 65% of the variation in the FLFP is explained by variables outside the model.

Figure (18): Comparison between the FLFP estimated and actual value in Egypt and Rwanda using the regression model (1) estimated equation



Source: developed by author based on panel regression results

However, to check the accuracy of the model, actual data for Egypt and Rwanda will be used to substitute in the estimated equation of the first regression. Using Egypt actual values form (1995-2020) for the logGDP per Capita, (logGDP per capita)², Fertility rate, Urban population and female enrollment in tertiary education and substituting in the equation above. As shown in figure (18) the results of the estimated FLFP for Egypt is equal 73.8% on average compared to the actual value of 22.7% on average. As the graph shows there is a huge gap between the estimated values and the actual value in the Egyptian case.

While substituting in the same equation using Rwanda's data from (1995-2020) to test the accuracy of the equation. The Estimated value of FLFP for Rwanda was (75.3%) on average compared to actual value of FLFP 85.4% on average. As shown in figure (18) the estimated and the actual values in the case of Rwanda were close to one another. Nonetheless, when comparing the actual values and the estimated values in the Egyptian case there is a huge gap between the two values which remains as an unexplained "Paradox". Given the current values for educational level, fertility rate and income level the FLFP ought to be around (73.8%) on average. However, the actual value of the FLFP in Egypt is (22.7%) on average.

Panel Regression model (2)

The following equation is the estimated equation from running the second panel regression model using fixed effect.

$$FLFP = 111 - 13.54\log dppc + 0.79\log dppc^2 - 0.789fert + 0.0543Internet + 0.0296enrolTgf$$

Table (3): Stata results for regression model (2)

VARIABLES	(1) flfp
lgdppc	-13.54*** (0.963)
lgdppc2	0.791*** (0.0625)
fert	-0.789*** (0.249)
internet	0.0543*** (0.00519)
urbanpop	0.00979 (0.0311)
enrollsgf	0.00154 (0.00825)
enroltgf	0.0296*** (0.00623)
Constant	111.0*** (4.041)
Observations	2,269
Number of code	171
R-squared	0.400
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

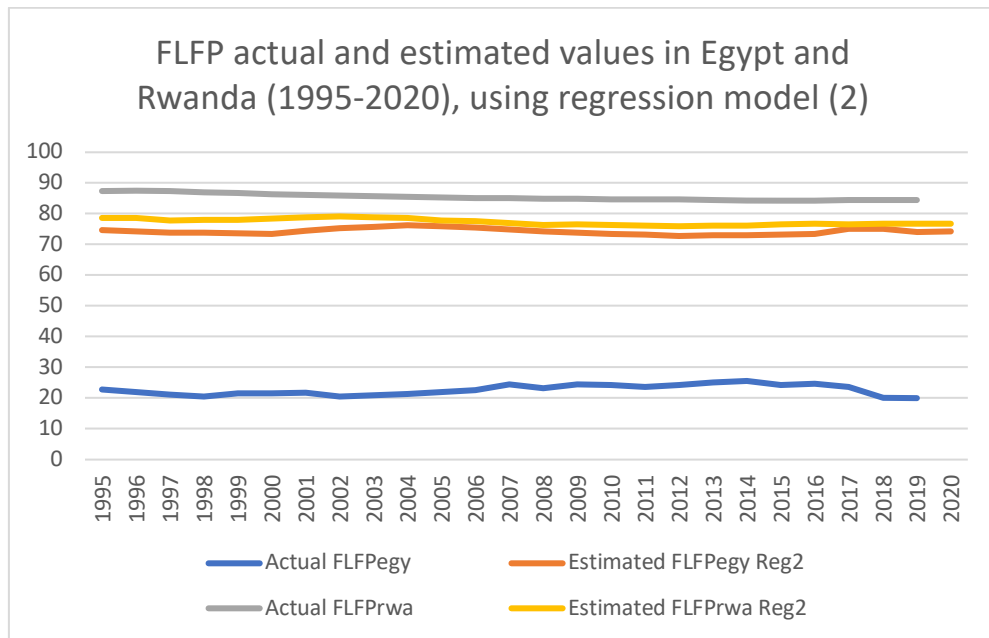
Source: developed by the author using Stata [full result of Stata in the Appendix table (7)]

In the second regression model two more independent variables were added to the model, the percentage of population using the internet and female school enrollment in secondary education. In addition to the income level (logGDP per capita and logGDP per capita²), Fertility rate (total births per women), the

educational level (using the female school enrollment in tertiary education) and the percentage of the urban population.

However, as shown in tables (3) both variables for urban population and female secondary school enrollment are insignificant. While among the significant variables the fertility rate and the Logdpc^2 still have the highest impact on the FLFP, (-0.789) and (+0.791) respectively. The tertiary education variable is significant, however, its impact on FLFP is limited (0.0296). In addition, the value of the R-squared is only 40%, which verify that the included independent variables (Xs) in the model can explain only 40% of the variation in the dependent variables (FLFP). Hence emphasize on the fact that 60% of the variation in the FLFP is explained by variables outside the model.

Figure (19): Comparison between the FLFP estimated and actual value in Egypt and Rwanda using the regression model (2) estimated equation



Source: developed by author based on panel regression results

Applying the same method as previously mentioned to test the accuracy of the model actual data for Egypt and Rwanda were used to substitute in the estimated equation of panel regression model (2). Using Egypt actual values for the logGDP per capita, $(\log\text{GDP per capita})^2$, fertility rate, internet access and female enrollment in tertiary education and substituting in the estimated equation of regression model (2). The estimated FLFP in Egypt was (76.30%) on average. While the actual value of FLFP in Egypt is 22.7% on average.

While substituting with Rwanda's actual values for for the logGDP per capita, $(\log\text{GDP per capita})^2$, fertility rate, internet access and female enrollment in tertiary education in the estimated equation of regression model (2) to test the accuracy of the equation. The Estimated value of FLFP in Rwanda was (76.62%) on average and the actual value of FLFP is (84.41%) on average. The difference between the estimated value and the actual value in Rwanda's case was narrow. However, as it is shown in figure (19) the gap between the estimated value for the FLFP in the Egyptian case and the actual value is still huge.

Panel Regression (3)

The following equation is the estimated equation from running the third panel regression model using fixed effect.

$$\text{FLFP} = 105.5 - 13.97 \text{ Logdppc} + 10.922 \text{ Logppc}^2 - 1.126 \text{ Fert} + 0.0816 \text{ Urbanpop} + 0.0710 \text{ enrolTgf} - 0.0172 \text{ FDI} - 0.0531 \text{ Fuelrural}$$

Table (4): Stata results for regression model (3)

VARIABLES	(1) flfp
lgdppc	-13.97*** (0.900)
lgdppc2	0.922*** (0.0558)
fert	-1.126*** (0.246)
urbanpop	0.0816*** (0.0292)
enroltgf	0.0710*** (0.00717)
fdi	-0.0172*** (0.00303)
internet	1.40e-05 (2.84e-05)
fuelrural	-0.0531*** (0.0112)
Constant	105.5*** (4.112)
Observations	2,265
Number of code	169
R-squared	0.304
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Source: developed by the author using Stata [full result of Stata in the Appendix table (8)]

In the third panel regression, two new variables were added to the model which are the FDI and the access to clean fuels and technologies for cooking in rural areas in

addition to the previous independent variables (logGDP per Capita, (logGDP per capita)², Fertility rate, Urban population, female enrollment in tertiary education and internet access). In the third regression the female secondary school enrollment variables was eliminated since it was insignificant in the second regression.

The results in table (4) shows the internet access variables insignificant. While the result of access to fuel in rural areas variable and FDI are misleading since they have negative coefficients. It was expected to have a positive value based on the literature since the investment in infrastructure as access to fuel, access to clean water, electricity and transportation are expected to have positive impact on increasing the FLFP. Investing in infrastructure is expected to have a positive impact since it will decrease women time-poverty and reduce triple burden endured by women particularly in less developed countries specially the rural and remote areas.

However, the FDI result is negative as well which could be considered as misleading. But regarding the effect of FDI on FLFP the literature was divided for example some researchers argue that the field of the FDI matters. For instance, if the FDI is concentrated in construction field this will create jobs in male dominated sectors. Hence it will increase the demand on the male labor force and decrease the demand on female labor force. Taking into consideration that in some societies including Egypt gender roles play key part in defining which jobs are suitable for women and which are suitable for men. In our example here for instance in Egypt women are not allowed to work as construction workers as this job is considered inappropriate for women.

On the other hand, FDI concentrated in sectors as apparel will on the contrary increase the demand on the female labor more than the male labor. However, in the Egyptian case there is a stigmatization for educated women to work in factories. After spending many years in school and college women would rather stay at home than working in low-skilled jobs as factories.

Among the significant variables the Fertility rate and the Logdpc^2 still have the highest impact of the FLFP, (-1.126) and (+0.922) respectively. The tertiary education variable is significant, however, its impact on FLFP is limited (0.0710). In addition, the value of the R-squared is only 30%, which verify that the included independent variables (Xs) in the model can explain only 30% of the variation in the dependent variables (FLFP). Hence emphasize on the fact that 70% of the variation in the FLFP is explained by variables outside the model.

In the third panel regression model the estimated value for the FLFP was not calculated since two of the variables have misleading coefficients which might affect the estimated results.

4.4. Findings

Table (5): Panel regression summary

<p>Panel Regression (1):</p>	<p>$\text{FLFP} = 118.7 - 17.63\text{Logdppc} + 1.121\text{Logppc}^2 - 1.276\text{Fert} + 0.0898\text{Urbanpop} + 0.0583\text{enrolTgf}$</p> <p>All variables are significant</p>
-------------------------------------	--

Panel Regression (2):	$FLFP = 111 - 13.54 \log dppc + 0.79 \log ppc^2 - 0.789 fert + 0.0543 Internet + 0.0296 enrolTgf$ <p>All variables are significant except the urban population & secondary education variables are insignificant.</p>
Panel Regression (3):	$FLFP = 105.5 - 13.97 \text{Log}dppc + 10.922 \text{Log}ppc^2 - 1.126 Fert + 0.0816 Urbanpop + 0.0710 enrolTgf - 0.0172 FDI - 0.0531 Fuelrural$ <p>All variables are significant except the <u>internet access</u> variable is insignificant & <u>the fuelrural</u> coefficient is misleading, it turns to have a negative value while the expected was a positive effect as it would reduce the time poverty of women in rural areas. Besides the FDI also has a negative coefficient which could be considered misleading.</p>

Based on the analysis of the three-regression models as shown in table (5) the two variables with the highest effect are the total fertility rate and $\log GDPpc^2$. For instance, in regression (1) the models prove that as the TFR increases by 1 unit (if the number of children increased by 1 child) the FLFP will decrease by (1.276%).

While in regression (2) if the TFR increases by 1 unit the FLFP will decrease by (0.789%). Nonetheless, in regression (3) the increase in the TFR by 1 unit will result in the decrease in the FLFP by (1.126%). Hence, hypothesis (2) early marriage and child bearing decreases FLFP in Egypt is statistically significant. In addition, recovering the results of Egypt time-use survey and how women in Egypt are fully responsible for childbearing. Beside the TFR and the age of marriage from section (2.4) Egypt time-use surveys confirmed that traditional gender roles are persistent in Egypt as women are fully responsible for childcare and domestic chores. Hence, the increase in fertility rate (the number of children) causes a double burden on women since the full care responsibility fall on their shoulders.

However, other researchers proved that the number of children may not affect the decision of women to join the labor force, meanwhile it affects their employment status. Due to the “gender discrimination” in the hiring process. Since the employers preferer to hire males instead of females to avoid the “maternity leave” required by women at some point in their life known as “motherhood penalty”. However, in both cases the burden of childcare is affecting women whether her decision to join the labor force or from the employer side according to gender preference.

On the other hand, testing hypothesis (1) investing in female education is enough to increase FLFP and reduce unemployment rate among women in Egypt. Despite that the education variable (female enrollment in tertiary education) is significant in the three models yet their effect was very limited. As shown in table (5) in regression (1) as the percentage of female enrollment in tertiary education increases by 1% the FLFP will increase by 0.0583%. While in regression (2) as the percentage of female school enrollment in tertiary education increases by 1% the FLFP will increase by 0.0296%. In regression (3) as the percentage of female school enrollment in tertiary education increases by 1% the FLFP will increase by 0.0710%. The impact of the education on increasing the FLFP is small compared to the fertility rate. Hence, we can reject hypothesis (1) as the effected is limited.

Chapter 5. Conclusion

5.1. Discussion

This paper was aiming to answer four research questions; what are the determinants of low FLFP in Egypt; Does increasing investment in female education is enough to increase FLFP; what are the causes of high rate of unemployment among educated women in Egypt; Does the unequal burden of childcare and family responsibilities increase female tendency to exist the labor market?

Why the FLFP estimated value is higher than the actual value. There is a huge gap between the two values. There are 5 main reasons to explain the low FLFP in the Egyptian context “the high opportunity cost of women’s time, demand on labor in job market, and gender and culture norms, the male bread-winner model and the stigmatization of low-skilled jobs among educated class.

Despite the fact that human capital theory asserts a correlation between education and employment and it emphasizes on education as a prerequisite for participation in the labor market. However, this theory failed to hold in the Egyptian case and the MENA region. Since there is a high level of education among women, however the FLFP is still very low compared to the global average. The high level of education of women and the low demand in the job market is accompanied by “stigmatization”. There is a stigmatization for educated women to work in low skilled jobs as factories for instance. After spending many years in school and college educated women in Egypt would rather stay at home than working in low-

skilled jobs. The low demand on the educated women lead to high unemployment among educated women and even lead to their withdrawal for the labor market.

Besides the down-sizing of the public sector after the structural adjustment led to a decrease in the demand on women. Since the public sector was the biggest employer of women in Egypt and women were mostly attracted to the public sector due to the benefits as longer maternity leave and less working hours compared to the private sector. This down-sizing in the public sector was not offset by the private sector. Resulting in high rate of unemployment among females and withdrawing from the labor market. In addition to that there is a lack of information on the demand side which represent the demand on jobs in the labor market.

As discussed in the literature review and by data analysis of regression carried here in the paper there is a paradox in the MENA region as education failed to explain why women participate at a low rate in the labor market.

The participation of women in the labor market specially the married women is related to the “reservation wage” the opportunity cost of their time. Family and child-care are a priority for women in the Egyptian society. Motherhood is part of the identity of the Egyptian women. Women in Egypt are raised with the mindset that their primary goal in the future is to become a wife and a mother while her job and career is a secondary matter. Motherhood is a big deal for Egyptian women and they are not whiling to give up their motherhood role for the sake of their career path. They will always trade-off their career needs for their children needs.

If women had to choose between their children and their career, they tend to choose the benefit of their children which is a voluntary act based on their mindset. However, some factors might be contributing to this matter. As it was shown on the results of Egypt time-use survey women in Egypt are fully responsible for childbearing and domestic chores. Hence, it creates a double burden on women resulting in time poverty.

To emphasize on how child-bearing responsibilities affect the FLFP consider the repercussion of the Covid-19 and the precautionary measures taken by the government to mitigate the virus. When the kindergartens and nurseries were temporary closed it led to a drop in the employment among married women in Egypt. Childcare services are key to support the participation of married women in Egypt. Since the quality childcare services in Egypt are relatively expensive to the minimum wages hence it is not affordable be many families. Which make the opportunity cost of women joining the labor market relatively high.

Moreover, in a survey done in Egypt as discussed in section (2.7) the results show that 91% of men and 88% of women agree that “in case of shortage in jobs availability in the market, men should have priority over women in employment”. Such case is prevalent in the Egyptian society since males are still considered the “bread-winners” and they are the ones responsible for covering the expenses of their families and children. “Male breadwinner model” is embedded in the MENA region.

Furthermore, we ought to take into our consideration the quality of education not only education. Since the job market requires sort of skills that might not be covered by traditional educational system. Which could be referred to a “mismatch between education and job market”. Education ought to be market driven and practical to give graduates the opportunity to compete in the labor market. Also considering formal vocational education and training is crucial.

We ought to focus on both the supply side factors and the demand side factors. Well-educated women in a stagnated economy that does not have the ability to create job opportunities (whether in the private sector or the public sector) will definitely lead to a high unemployment rate. The structure of the economy is key factor for determining the FLFP. For instance, If the FDI is mostly concentrated in sectors as “overseas call centers” due to a relative cheap cost of labor in Egypt. While the universities are graduating thousands of engineers each year because the public universities are almost free in Egypt. This will create “stigmatization of low skilled jobs” as the university graduates will be reluctant to work as call center agents or other low-skilled jobs. which creates a gap between the job market and university graduates.

There are different factors affecting the decision of women to join the labor market and their employment status in the labor market. Law enforcement is key component in increasing the FLFP in Egypt. Since research has proven that factors that determine the FLFP are different from the factors that affect their employment status due to discrimination against women in the hiring process.

5.2. Research limitation

The education variables used are for the enrollment rate in tertiary and secondary education. However, it does not reflect the quality of education. Hence, aside from high rates of education there might be a “mismatch” between the job market and educational system. The results in the regression model (3) shows misleading coefficients in for the Fuel access in rural areas and the FDI variables. Moreover, due to missing values in the WDI data some values were omitted by the STATA while running the regression and might affect the results.

5.3. Policy recommendations

Recommended policies and interventions to be implemented by the government to increase the participation of women in the labor market.

- The government need to put in place anti-discrimination policies to ensure non-discrimination by the private sector against women during the hiring and selection process.
- Encourage industries and investment that rely on women as their labor supply rather than industries dominated by males.
- “Sexploitation” is one of the barriers to women employment and can discourage women from joining the labor force. Although, Egypt has ratified law “no. 141/2021” in 2021 to amend some articles in the penal code “no. 58/1937” to increase the penalty on sexual harassment. However, the government need to assure law enforcement to ensure women

protection within the workplace to encourage women to participate more in the labor market.

- The government ought to ensure “decent work environment” for women to enable them to balance between their private and public life through ensuring that women are enjoying their rights in maternity leaves and are working appropriate working hours.
- Adopting paternity-leave policies rather than maternity-leave only could assist in reducing the male preference in the hiring process by employers. Hence, it will give equal opportunities to both men and women to be selected based on their competencies rather than their gender. In addition, it will not affect promotion and career path. Many countries worldwide are considering the paternity-leave, one of the outstanding examples in this matter is Sweden. In Sweden the childcare-leave is 480 days paid leave among these days each of the parents is entitled to 240 days. While, in Egypt the maternity leave is 4 months and it is only given to mothers.
- Besides, a large portion of working women are concentrated in the informal sector, hence the government ought to adopt policies that protect the rights of women within the informal sector and the rights of domestic workers.
- The covid-19 pandemic despite all its negative impact on the economic level. Yet it has given us the possibility of the work from home and proven that is possible and efficient. Applying policies that ensure working from home and flexible hours might contribute to increasing the FLFP as it will help women balance between their life and work. Recently, Jordan has passed a bylaw regarding the flexible working hours policy which was

agreed upon in 2017 by the government. The government of Jordan highlighted that the aim of this policy is to increase the participation of women in the labor market as it will assist them to achieve the work-life balance.

- Supporting digital literacy for women is crucial for increasing the FLFP due to the change in structural of many jobs and the advancement in technology and ensure their access to ICT.
- In addition to encouraging the financial literacy to women and supporting their financial inclusion. Such efforts will encourage women to open up their own business and participate in investment.
- The TFR in Egypt is 3.5 and the percentage of women of the married women who use contraceptive methods is 59%. Raising the awareness about using safe contraceptive methods to regulate the number of births per woman. In addition to increasing the access of married women to affordable contraceptives.
- In addition, enhancing the access and quality of affordable child-care services is believed to have a positive impact on the FLFP.
- Moreover, policies to reduce the burden of domestic shores on women will have a positive impact on their participation in the labor market. As within the most developed countries women are still doing the biggest portion of housework. For instance, Sweden has adopted a “tax-reduction policy” which aims to subsidize the domestic services as cleaning, ironing and

laundry. In order to reduce the burden on women and enable them to devote more time to their work.¹⁹

5.4. Conclusion

Increasing FLFP is key for women empowerment and is crucial for increasing their agency and bargaining power within the household in addition to increasing the economic efficiency of a country. FLFP in Egypt is very low compared to the global average. There are multiple factors that contribute to the “MENA Paradox” between female education and their participation in the labor market. The low FLFP are driven by demand side factors and community level factors rather than the supply side factors. However, the literature is mostly focused on the supply side factors as the determinates of FLFP such as education and fertility rate. Meanwhile, the demand side factors play a key role in as a determinant as well. In a “male breadwinner” society such as Egypt with a stagnation in job creation by the private sector priority will always be given to men over women despite the educational level of women. Investing in education alone without taking into consideration other structural and gender factors would be insufficient. Moreover, developing practical solutions to lessen the childcare burden on the mothers would have a positive impact on the FLFP. Besides raising the awareness about the traditional gender norms is a key as well.

¹⁹ <https://www.bbc.com/worklife/article/20200303-how-sweden-is-fixing-the-housework-gender-gap>

6. Bibliography

Assaad, R., and C. Kraff. "The Structure and evolution of employment in Egypt: 1998–2012 (No. 805; Issue 805)." (2013).

Assaad, Ragui, and Caroline Krafft. "The evolution of labor supply and unemployment in the Egyptian economy: 1988-2012." *The Egyptian labor market in an era of revolution* (2015): 1-26.

Assaad, Ragui, Rana Hendy, Moundir Lassassi, and Shaimaa Yassin. "Explaining the MENA paradox: Rising educational attainment, yet stagnant female labor force participation." *Demographic Research* 43 (2020): 817.

Bagozzi, Richard P., and M. Frances Van Loo. "Fertility, labor force participation, and tastes: An economic psychology perspective." *Journal of Economic Psychology* 2, no. 4 (1982): 247-285.

Başlevent, Cem, and Özlem Onaran. "The effect of export-oriented growth on female labor market outcomes in Turkey." *World Development* 32, no. 8 (2004): 1375-1393.

Beaton, Ms Kimberly, Mr Roberto Garcia-Saltos, and Mr Lorenzo U.

Figliuoli. *Paving the Way to Sustained Growth and Prosperity in Central America, Panama, and the Dominican Republic*. International Monetary Fund, 2019.

Becker, Gary S. *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago press, 2009.

Blundell, Richard, and Thomas MaCurdy. "Labor supply: A review of alternative approaches." *Handbook of labor economics* 3 (1999): 1559-1695.

Blundell, Richard, and Thomas MaCurdy. "Labor supply: A review of alternative approaches." *Handbook of labor economics* 3 (1999): 1559-1695.

Central Agency for Public Mobilization and Statistics (CAPMAS) Time-Use Survey, 2015

Chapman, Kelsey A. "Economic development and female labor force participation in the Middle East and North Africa: A test of the U-shape hypothesis." *Gettysburg Economic Review* 8, no. 1 (2015): 3.

Clark, Roger, Thomas W. Ramsbey, and Emily Stier Adler. "Culture, gender, and labor force participation: A cross-national study." *Gender and Society* (1991): 47-66.

Constant, Louay, Ifeanyi Edochie, Peter Glick, Jeffrey Martini, and Chandra Garber. *Barriers to employment that women face in Egypt: Policy challenges and considerations*. California, United States: RAND, 2020.

Contreras, Dante, and Gonzalo Plaza. "Cultural factors in women's labor force participation in Chile." *Feminist Economics* 16, no. 2 (2010): 27-46.

Duflo, Esther. "Women empowerment and economic development." *Journal of Economic literature* 50, no. 4 (2012): 1051-79.

Elson, Diane, and Ruth Pearson. "'Nimble fingers make cheap workers': An analysis of women's employment in third world export manufacturing." *Feminist review* 7, no. 1 (1981): 87-107.

Fadlalmawla, Noha, Hala ElBehairy, Caroline Krafft, Bruno Crepon, and Stefano Caria. "Assessing the labor market impact of COVID-19 on women with young children in Egypt."

Fahmy, Hana Emad ElDin. "A socio-ecological assessment of unemployment interventions in Cairo, Egypt." (2012).

Fatima, A., & Sultana, H. Tracing out the U-shape relationship between female labor force participation rate and economic development for Pakistan. *International Journal of Social Economics*, 36 (1/2), 182-189.

Fernandez Kelly, M. Patricia. "Broadening the scope: Gender and international economic development." In *Sociological Forum*, vol. 4, no. 4, pp. 611-635. Kluwer Academic Publishers-Plenum Publishers, 1989.

Goldin, Claudia. "The U-shaped female labor force function in economic development and economic history." (1994).

Gronau, Reuben. "The effect of children on the housewife's value of time." *Journal of Political Economy* 81, no. 2, Part 2 (1973): S168-S199.

Gündüz-Hoşgör, Ayşe, and Jeroen Smits. "Variation in labor market participation of married women in Turkey." In *Women's Studies International Forum*, vol. 31, no. 2, pp. 104-117. Pergamon, 2008.

Harrison, Ann. "Globalization and Poverty: An NBER Study." (2005).

Hendy, R. "Untapping Low Female Labor Force Participation in Egypt: Ending The Marriage Mismatch." In *Economic Research Forum, Policy Brief No.*, vol. 5. 2015.

Hendy, Rana. "Women's participation in the Egyptian labor market: 1998-2012." *The Egyptian labor market in an era of revolution* (2015): 147-161.

Hosney, Sara Hassan. *Factors influencing female labor force participation in Egypt and Germany: A comparative study*. No. 826. SOEPpapers on Multidisciplinary Panel Data Research, 2016.

Inglehart, Ronald and Pippa Norris. *Rising tide: Gender equality and cultural change around the world*. Cambridge University Press, 2003.

Joekes, Susan. "Working for lipstick? Male and female labour in the clothing industry in Morocco." *Women, Work and Ideology in the Third World* (1985): 183-213.

Kapsos, S., Silberman, A., & Bourmpoula, E. (2014). Why is female labour force participation declining so sharply in India.

Karaoglan, Deniz, and Cagla Okten. "Labor force participation of married women in Turkey: Is there an added or a discouraged worker effect?." (2012).

Khadim, Zunaira, and Waqar Akram. "Female labor force participation in formal sector: An empirical evidence from PSLM (2007-08)." *Middle-East Journal of Scientific Research* 14, no. 11 (2013): 1480-1488.

Killingsworth, Mark R., and James J. Heckman. "Female labor supply: A survey." *Handbook of labor economics* 1 (1986): 103-204.

Klasen, Stephan, and Janneke Pieters. "What explains the stagnation of female labor force participation in urban India?." *The World Bank Economic Review* 29, no. 3 (2015): 449-478.

Krafft, Caroline, Ragui Assaad, and Caitlyn Keo. "The Evolution of Labor Supply in Egypt from 1988-2018: A Gendered Analysis." *Economic Research Forum (ERF)*, 2019.

Lam, David, and Suzanne Duryea. "Effects of schooling on fertility, labor supply, and investments in children, with evidence from Brazil." *Journal of human resources* (1999): 160-192.

Mammen, Kristin, and Christina Paxson. "Women's work and economic development." *Journal of economic perspectives* 14, no. 4 (2000): 141-164.

Miles, Rebecca. "Employment and unemployment in Jordan: The importance of the gender system." *World development* 30, no. 3 (2002): 413-427.

Mincer, Jacob. "Labor force participation of married women: A study of labor supply." In *Aspects of labor economics*, pp. 63-105. Princeton University Press, 1962.

Mishra, Vinod, and Russell Smyth. "Female labor force participation and total fertility rates in the OECD: New evidence from panel cointegration and Granger causality testing." *Journal of Economics and Business* 62, no. 1 (2010): 48-64.

Moghadam, Valentine M. "Patriarchy in transition: Women and the changing family in the Middle East." *Journal of comparative family studies* 35, no. 2 (2004): 137-162.

Mujahid, N. (2014). Determinants of Female Labor Force Participation: A Micro Analysis of Pakistan. *International Journal of Economics and Empirical Research*, 2 (5).

Nam, Sunghee. "Determinants of female labor force participation: A study of Seoul, South Korea, 1970–1980." In *Sociological Forum*, vol. 6, no. 4, pp. 641-659. Kluwer Academic Publishers-Plenum Publishers, 1991.

Nazier, Hanan, and Racha Ramadan. "Women's participation in labor market in Egypt: Constraints and opportunities." In *Middle East Development Journal, Forthcoming, Economic Research Forum, Working Paper*, vol. 999. 2016.

Psacharopoulos, George, and Zafiris Tzannatos. "Female labor force participation: An international perspective." *The World Bank Research Observer* 4, no. 2 (1989): 187-201.

Sackey, Harry A. "Female labour force participation in Ghana: The effects of education." (2005).

Schultz, Theodore W. "Investment in human capital." *The American economic review* 51, no. 1 (1961): 1-17.

Sinha, Jania N. *Dynamics of female participation in economic activity in a developing economy* 1965.

Spierings, Niels, Jeroen Smits, and Mieke Verloo. "Micro-and macrolevel determinants of women's employment in six Arab countries." *Journal of Marriage and Family* 72, no. 5 (2010): 1391-1407.

Spierings, Niels. "The influence of patriarchal norms, institutions, and household composition on women's employment in twenty-eight Muslim-majority countries." *Feminist Economics* 20, no. 4 (2014): 87-112.

Standing, Guy. "Global feminization through flexible labor: A theme revisited." *World development* 27, no. 3 (1999): 583-602.

The economist, "Forget China, India and the Internet: Economic Growth is driven by women" (special report: The Importance of Sex), April 2006 (16).

Tsani, Stella, Leonidas Paroussos, Costas Fragiadakis, Ioannis Charalambidis, and Pantelis Capros. "Female Labour Force Participation and Economic Development in Southern Mediterranean Countries: What Scenarios for 2030?." (2012).

Verick, Sher. "Female labor force participation in developing countries." *IZA World of Labor* (2014).

Verme, Paolo, Abdoul Gadir Barry, and Jamal Guennoui. "Female labor participation in the Arab world: Evidence from panel data in Morocco." *Labour* 30, no. 3 (2016): 258-284.

World Bank (2012). *World Development Report: Gender Equality and Development*.

World Bank (2019). *Egypt: Women Economic Empowerment Study*.

World Bank. *Gender and development in the Middle East and North Africa: Women in the public sphere*. The World Bank, 2004.

Websites:

https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_619119/lang--en/index.htm

<https://www.worldbank.org/en/country/egypt/publication/egypt-women-economic-empowerment-study>

<https://www.capmas.gov.eg/HomePage.aspx>

<https://ilostat.ilo.org/topics/informality/>

<https://fair.work/en/fw/publications/fairwork-egypt-ratings-2021-towards-decent-work-in-a-highly-informal-economy/>

<https://documents1.worldbank.org/curated/en/816281518818814423/pdf/2019-WDR-Report.pdf>

<https://en.enow.gov.eg/Report/12.pdf>

<http://ncw.gov.eg/wp-content/uploads/2018/02/final-version-national-strategy-for-the-empowerment-of-egyptian-women-2030.pdf>

<https://www.bbc.com/worklife/article/20200303-how-sweden-is-fixing-the-housework-gender-gap>

<https://sweden.se/life/society/work-life-balance>

<https://www.sis.gov.eg/Newvr/Dustor-en001.pdf>

<https://dhsprogram.com/pubs/pdf/SR223/SR223.pdf>

Table (7): Panel regression model (2) using Stata

```

. xtreg flfp lgdppc lgdppc2 fert internet urbanpop enrollsgf enroltgf, fe

```

Fixed-effects (within) regression

Number of obs = 2269

Group variable: code

Number of groups = 171

R-sq: within = 0.4000

between = 0.1471

overall = 0.1986

Obs per group: min = 1

avg = 13.3

max = 25

F(7,2091) = 199.13

Prob > F = 0.0000

corr(u_i, Xb) = 0.2485

flfp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lgdppc	-13.54363	.9625645	-14.07	0.000	-15.43132	-11.65595
lgdppc2	.7914358	.0625455	12.65	0.000	.6687779	.9140936
fert	-.7894116	.2485111	-3.18	0.002	-1.276766	-.3020567
internet	.0543026	.0051932	10.46	0.000	.0441182	.0644871
urbanpop	.0097879	.031122	0.31	0.753	-.0512454	.0708212
enrollsgf	.0015413	.0082474	0.19	0.852	-.0146326	.0177153
enroltgf	.0295741	.006226	4.75	0.000	.0173643	.0417839
_cons	110.9591	4.041031	27.46	0.000	103.0342	118.8839

sigma_u	16.172312	
sigma_e	2.483502	
rho	.97696108	(fraction of variance due to u_i)

F test that all u_i=0: F(170, 2091) = 415.94 Prob > F = 0.0000

.

Source: developed by the author using Stata

Table (8): Panel regression model (3) using Stata

```
. xtreg flfp lgdppc lgdppc2 fert urbanpop enroltgf fdi internet fuelrural , fe
```

```
Fixed-effects (within) regression      Number of obs   =    2265
Group variable: code                  Number of groups =    169

R-sq:  within = 0.3044                 Obs per group:  min =     1
      between = 0.0924                   avg   =    13.4
      overall  = 0.1038                   max   =    20

                                          F(8,2088)      =   114.21
corr(u_i, Xb) = -0.0070                 Prob > F       =    0.0000
```

flfp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lgdppc	-13.97409	.900467	-15.52	0.000	-15.73999	-12.20818
lgdppc2	.9218387	.0557602	16.53	0.000	.8124874	1.03119
fert	-1.126229	.2461963	-4.57	0.000	-1.609044	-.6434129
urbanpop	.0815711	.0291597	2.80	0.005	.024386	.1387561
enroltgf	.0710141	.0071733	9.90	0.000	.0569465	.0850817
fdi	-.0172368	.0030349	-5.68	0.000	-.0231885	-.0112851
internet	.000014	.0000284	0.49	0.622	-.0000417	.0000697
fuelrural	-.0531155	.0111522	-4.76	0.000	-.0749861	-.0312449
_cons	105.4888	4.112209	25.65	0.000	97.42436	113.5533
sigma_u	16.36494					
sigma_e	2.3119889					
rho	.9804314	(fraction of variance due to u_i)				

```
F test that all u_i=0:      F(168, 2088) =   463.74      Prob > F = 0.0000
```

Source: developed by the author using Stata

Table (9): FLFP estimated and actual values of Egypt and Rwanda (1995-2020)

year	Actual FLFPegy	Estimated FLFPegy Reg1	Estimated FLFPegy Reg2	Actual FLFPrwa	Estimated FLFPrwa reg1	Estimated FLFPrwa Reg2
1995	22.85	75.01	74.59	87.46	76.52	78.72
1996	22.03	74.68	74.31	87.5	76.62	78.66
1997	21.24	74.21	73.91	87.29	75.66	77.79
1998	20.46	74.07	73.78	87.02	75.91	77.91
1999	21.54	73.98	73.68	86.71	76.08	77.96
2000	21.6	73.75	73.49	86.37	76.79	78.45
2001	21.79	75.63	74.53	86.1	77.53	78.94
2002	20.5	76.49	75.29	85.85	77.88	79.13
2003	20.95	76.83	75.65	85.63	77.68	78.93
2004	21.45	77.08	76.26	85.43	77.35	78.65
2005	21.99	76.71	75.96	85.25	76.35	77.87
2006	22.58	75.99	75.42	85.13	75.98	77.51
2007	24.49	75.05	74.82	85.03	75.22	76.99
2008	23.21	74.24	74.23	84.94	74.30	76.36
2009	24.43	73.57	73.81	84.85	74.41	76.51
2010	24.3	72.98	73.42	84.75	74.35	76.44
2011	23.73	72.38	73.26	84.67	74.08	76.13
2012	24.19	71.71	72.76	84.57	73.80	75.94
2013	25.13	71.74	72.92	84.44	73.94	76.07
2014	25.59	71.61	73.05	84.29	73.89	76.10
2015	24.36	71.68	73.23	84.33	73.89	76.49
2016	24.62	71.76	73.48	84.35	73.97	76.66
2017	23.63	73.46	75.03	84.38	73.86	76.65
2018	20.02	73.59	75.16	84.41	73.80	76.77
2019	20	70.58	73.97	84.4	73.64	76.69
2020		69.93	74.22		73.61	76.76
Average	22.67	73.80	74.24	85.406	75.27	77.35

국문 초록

본고는 이집트를 대상으로 낮은 여성의 경제활동 참여를 검토한다. 이집트에서 낮은 FLFP 를 유발하는 주요 요인을 검토하기 위해 크로스컨트리 패널 데이터를 사용한 패널 회귀 분석을 수행할 것이다. 지난 수십 년간 여성 교육에 대한 투자가 여성의 노동시장 참여 증가라는 기대 결과를 도출하지 못한 원인을 분석하려고 한다. 교육받은 여성의 실업률이 높다는 사실을 고려한다면, 본 연구는 이집트에서 낮은 FLFP 의 결정요인은 무엇인가? 여성 교육에 대한 투자를 늘리는 것이 FLFP 를 증가시키기에 충분한가? 교육받은 이집트 여성들이 높은 실업률의 원인은 무엇인가? 육아에 대한 불균형적인 사회적 부담이 여성의 노동력 이탈 경향을 증가시키는가?와 같은 문제에 대한 답을 찾으려고 한다. 본고는 2 가지 가설이 있다. 하나는 여성 교육에 투자하는 것은 이집트 여성의 FLFP 를 증가시키고 실업률을 감소시키기에 충분하다. 또 하나는 이집트에서 조기 결혼과 출산은 FLFP 를 감소시킨다. 또한 본 연구는 젠더 규범 등 회귀 분석에 포함되지 않았던 다른 요인들을 분석하여 이러한 역설에 대해 더욱 설명하고자 한다. 젠더 규범이 MENA 에서 FLFP 가 낮은 주요 결정인자에서 비롯되고 여성에게 강한 영향을 미치기 때문이다. 본고의 결과를 보면 출산율이 교육부에 비해 FLFP 에 더 높은 영향을 미친다는 것으로 나타났다. 이에 따라 본고는 불평등한 육아책임과 가사노동 등과 같은 성역할이 여성의 노동시장 이탈 경향에 기여한다고 주장했다.

이집트 사회의 성역할 때문에, 그리고 시간 사용 조사(time-use survey)에서 보여지듯이 여성들이 육아를 전적으로 책임지고 있다. 이에 따라 정부의 양질의 보육서비스 지원은 여성의 노동시장 참여를 유도하고 FLFP 를 높이는 데 긍정적인 영향을 미칠 수 있다. 게다가, 사회에 강하게 내재된 "남성 생계형 모델(male bread-winner model)"은 낮은 FLFP 에 기여한다.