

Women in Egypt;
A “Driving Force” to Economic Growth

Ahmed Abdel Razzak A. Salama , Ph.D.

British University In Egypt

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Abstract:

1) The beauty of economics lies in its reflection on almost everything that is important to our lives. To be able to acquire the skills to build an image of a problem and a possible valid solution to it is the main essence of economics. Thus, as an economist it is possible to base one's research in an area of his or her interest. In this study, one is particularly interested in women in general. In specific, the study admires the potential of women or their untapped potential in many cases. Thus, it was clear that such a potential could be taken in to the perspective of economics. That is, the main concern is to tackle the area of gender and relate it directly to the economy in general. Furthermore, it is of main concern to adequately be able to prove that women's participation in the economy has a direct effect on the economy. The reasoning behind such thinking lies on the ground of the essential or necessary investment in women in a country such as that in education primarily. If women were to be given equal opportunities to expand their well being then this might be healthy for the economy as well.

Egypt, a country exhibits various controversies, is the main discussion in this study. Other countries could also be studied with regards to women's participation. However, in this paper the main concern is Egypt. The word woman in Egypt is of striking resemblance to the symbol of an unemployed house wife. Such a reflection of women shouldn't be relied upon especially when women as individuals are considered economy wise to be human capital. In other words, as long as women were given the proper education, such investment should be put in to use instead of being considered as untapped potential.

First, before initiating such a study, it should be clear that it is not an aim to point out gender inequalities in Egypt; instead it is to properly identify a problem which rests amid many families whose female members drift in to being unemployed and thus are a waste to the economy. With that being said, it is also of main concern to point out that Egypt is not a country that prevents women's advancement. The main issue here lies upon the complexity of education and employment policies, which might be a discouragement

for women. Further more, almost all countries exhibit such an issue of the underemployment of women.

After my topic has been chosen, it was carried out by building a proper model for my theory reflecting women's participation in the economy as in the labor force and education while directing those observations to the gross domestic production of Egypt. The results indicated a significance of both the education and employment of females to the GDP. The theory formulated, thus, was applicable since the model being tested suggested the significance of the variables being used.

II) Introduction:

A) An overview of the topic

"..Investing in women is not only the right thing to do. It is the smartthing to do. I am deeply convinced that, in women, the world has at its disposal, the most significant and yet largely untapped potential for development and peace." Ban Ki Moon, UN Secretary General, 8 March 2008. (Lofstram)

The main purpose of this paper is to study the relationship between gender equality (that is women's participation in specific), policies towards equality (education) and the GDP in Egypt. The study stresses upon the importance of the increase in GDP which might be directed by the enhancement in gender equality in the work force and more opportunities given for women in order to develop themselves. In order to build ones hypothesis, it is essential to first become familiar with the terms, which will be used through out this report.

The term or the essence of gender equality is based upon many aspects. On a personal level, gender equality might be considered to be a subjective matter that is one that is not based on any theoretical and concrete ideas. However, in general, gender equality is based upon many aspects. First, gender equality or the equal opportunities given to both male and female could be reflected in opportunities in the work force, education, and wages. In our case, we will be concerned with the opportunities given in the work force and education. Further more, gender equality is considered to be an area of discussion that is

covered in the social, cultural, political, and economical arena of a country. Social and cultural aspects are going to be discussed in detail later on the report. It is becoming of great importance to realize the importance of gender equality for the sake of development and growth within a country. Gender equality in the labor force or the equal opportunities given to women and men in jobs is essential as it reflects more growth in a country as more human capital is being utilized if women were not discriminated. Gender equality in education is also very important since if one receives the right education, then they would be able to cooperate efficiently in the economy and productivity in general would increase. If women were not given equal opportunities in employment, then such human capital would be gone in to waste.

Human capital is also important to this study since investment in human capital is directly related to productivity and in turn the development of a country (if there were to be an increase in the GDP). Human capital refers to humans as physical assets such as machinery or money for instance; it is the skills acquired by an individual and their contributions to an organization that leads to better productivity or development. In this study, we are concerned with women as human capital and that an injection of such capital in to the economy could be beneficial to development.

Economic indicators are those that forecast or explain what's happening in the economy. Some of the important ones include the gross domestic product, the consumer price index, and the unemployment rate. The gross domestic product is considered to be an immediate indicator. That is, it explains what's happening and it is on moving terms with the economy. The gross domestic product is the total market value of all goods and services produced at a specific time in a country. It should be stressed also that the GDP represents the monetary value of goods and services produced in a country. If women were given more job opportunities, then the GDP could increase in a country. Economic growth should also be highlighted before initiating a hypothesis. Economic growth is considered to be the growth in the real gross domestic product. The real GDP is one that is adjusted for inflation. Gender equality could also have a positive effect on the growth rates since it is

rational to assume that if more individuals were introduced in to the work field then more innovations would be triggered. Thus, over all, more gender equality could lead to more productivity as in an increase in GDP while also an increase in growth rates. In addition to that, women have a higher propensity to save and invest in ways that are productive; such an issue will be discussed in further detail in the literature review. Even more, women carry out activities while not getting paid, thus such activities and skills should be invested in to the economy instead of going in to waste.

After highlighting the basic terminology, which is essential for this study, one should reflect to area of which the study is implemented which is Egypt. Gender equality in Egypt has been a prevailing debate for a long time. Women in Egypt till today are not allowed to take the jobs of judges and are often discriminated in many other jobs just because they are females. The justification here lies on the assumption that those jobs are not made for females. That is, discrimination against women occurs due to cultural and social justifications. In Egypt, women are considered traditionally to be housewives. However, over time women gained strength and rights which made them eligible to work. However, the struggle against inequality still exists as many women are being discriminated. In addition, women are not given enough assistance in education especially those in rural areas where they reluctantly give in to house chores and activities. If women in Egypt were being invested in, the outcome could be outstanding. Efforts made by the Egyptian government should be conducted accordingly.

From the above, one could restate the main aim or the purpose behind this study and that is to adequately study the interrelation between the women's participation in the work force, women's education and GDP (which here is used as an economic indicator). Discussion on inequality will be focused to Egypt. First, an investigation of the current situation or the current condition of women's status in Egypt is introduced, a brief history of women's engagement in society is included, and the various social and cultural obstacles are going to be discussed. Before conducting the model the data collected is going to be analyzed and reflected to the study. Data about the basic variables in the study (GDP, women's work

force, and education) is collected and a model is conducted. The findings from the model are going to be discussed and analyzed. After the results of the model have been made, a conclusion is made according to the findings of the model. The conclusion is going to condense the model while reflecting on the outcome and the various strategies needed to be carried out in accordance to the findings made in the model.

B) Methodology:

Based on the theories and concepts outlined above, an incorporated economic model of GDP should include the effects of women's education levels and participation as in work force. The data compiled for the study was taken from the world development indicator, the central agency for public mobilization and statistics CAPMAS in Cairo and Barro and lee. Data collected is dated back as far as 30 years ago and includes information on the following variables: the gross domestic product, the work force (males and females) in Cairo, education (males and females graduated from universities, participation rates, and unemployment rates) in Egypt. However, not all the data collected was used for the model. The data collected serve the purposes of both discussion and the model itself. In addition Graphs and figures are included to reflect the data.

III) Literature Review

A) Gender inequality: what it is?

In order to obtain one concrete meaning of gender inequality, one would have to look in to many aspects, which are directly linked to it. Gender inequality is not only reflected upon the unfair treatment and opportunities of which females are susceptible to. However, it is the many cultural and social norms that are embedded within a society that gives rise to social inequality. Thus, it is not a process which takes place; instead it is a quality that is part of the country. It is vital to understand the essence of gender inequality before proceeding with the study since it could allow for more understanding of the gender gaps existing in the report. (Long, 2010)

The main causes of gender inequality could be understood more clearly through theories. Materialist theories utilize cross-cultural data on the status of women and men to explain gender inequality. That is, it is explained on the basis of how women and men are linked to the economic structure of the society. Women are historically house bound and carry out house chores and such activities in the society are undervalued. When women manage to enter the work force, they are given low pay jobs where men occupy the jobs with higher pay. Such discrimination in payment could be justified by the obligations women have at home such as child care responsibilities for instance.(Long, 2010)

For every society, women and men are classified according to their gender roles. Gender roles are considered to be the relationships, rights, and all the other aspects linked to the associations of the male and the female. The approach of explaining gender inequality through the gender role approach manages to identify the different behaviors associated or marked as either feminine or masculine. That is, gender inequality might arise due to the gender role assumptions in the society that some jobs might be too masculine for women. Another approach is the gender structure approach which focuses primarily on the organizations and not individuals as the main thrust behind gender inequality. That is, it is the legal system and many barriers made by various organizations that define gender inequality. This is the case in many countries where the legal system for instance places barriers to the equality between men and women in society. The fight against such barriers is inconceivable and may require years of negotiations and efforts to make real changes in order to change policies. The role of the family and the media are also one of the main reasons behind inequality. The information received by the family is extremely vital since it is absorbed by the individual through out his life time. Thus, if a person is brought up in to a family which considers it normality for women to remain at home without either an education or work, then it would be only normal for that individual to think from that perspective. On the other hand, media also has an effect on the thought of gender inequality since it is the basis of our everyday life.(Long, 2010)

B) Women and Economic growth

When it comes to women and economics, the issue rests upon the investment in women and whether the increase in women's participation in the economy results in positive effects for the economy or is considered to result in negligible outcomes to the economy when it comes to growth. When studying such an issue, one must be aware of the various factors such as the social environment present in the country which might have an effect on the percentage of women in the labor force and whom are actively willing to participate in the economy. Over all, the baseline of this study rests upon the potential of growth as more women are encouraged in to participating in to the economy. Such an encouragement is done through investment in women's education, health care, and other factors which increase the economic well being of women in a country while removing barriers which halt women participation. That is, economic well being is considered to be the increase in the efficiency of women as participators in the economy if the social environment is more favorable and welcomes the increase in the participation of women (in the work force). The study of women here is going to be directly related to the economic growth, if any, which might occur if investment in women should take place and if after that women were "injected" in to the economy.

The initiative of the stand for women's existence in the economy has been referred to as "Womeconomics". "Womeconomics" refers to women as a good investment as they seek better opportunities for the society and are very motivated. The theory of "Womeconomics" continues by referring that this is the age for women to use such services as child care and meal preparation in the formal market which results in an increase in GDP since women were not being paid for their services. Thus, such a theory is a simple reflection the possible positive effect of women participation as it could be a thrust to economic activity thus economic growth. Many people have recently focused their attention to such an intriguing study as countries are being more liberalized as to feminist issues and many renowned organizations are stressing on the strive to inequality where countries experience an obvious behavior of sexism which could have a negative effect on the

welfare of the economy. (Thoma, 2006) Thus such a theory encourages the mind to think of the possibility of economic development, which could be directly affected by women.

If Gender differences were to be eliminated or at least subsided, more women would be able to participate in the economy, thus equality could be an initiative to more women participation and further more economic growth. There is a survey that studies the implication of gender differences in economic behavior for macro economic policy. The study implies that by reducing gender inequality and by improving the position of women in the society this would lead to higher rates of economic growth. The absence of opportunity for women in developing countries like Egypt slows down economic growth. Thus, macroeconomic policy should aim to decrease gender inequality. Many economists have studied the differences in the economic behavior of men and women and how these behaviors have an effect on public policy. For instance, women if they were to be in control of house hold expenditure they would spend more on basic necessities and in the development of their own children than men do. The study stressed on the lack of opportunities for educational, social and economic progress for women, which is often hindered by cultural reasons.(Stotsky, 2006). Such cultural reasons should be stressed upon in Egypt, which are the main barrier to the expansion of the participation of women. Thus, this would eventually lead to fewer job opportunities for women. An important study in economics stresses upon the relationship between economic growth and the inferior status of women within the society while reflecting upon micro and macro economic analysis. The United Nations Millennium Development goal relates economic growth to the equality of women and the opportunities they are offered within the economy. Thus, their goals revolve around the existing gender disparities between women and men. After many studies, evidence from the World Bank claim that an increase in women's education, health care, and employment particularly increase economic development and decrease poverty. Such findings lead to the question of various public policies that relate to women and further more lead to the need for implementation of new policies that promote the well

being of women so that as many studies implicated there would be growth in the economy. (Stotsky, 2006)

Such findings from above include various points. Gender differences in a society reflect upon macroeconomic variables such as consumption and investment, which are major components of development within the country. Women have a higher propensity to save and to invest in ways that are productive. Again, it should be stressed upon that in countries where agriculture for instance is still a vital economic activity, the absence of education, health care, and employment for women disables them from progress while slowing down economic growth. This is directly related to the idea that if there were to be investment in such areas for women there would be a drive to progress. As for consumption, it has been already mentioned that women spend a larger portion on basic necessities and on their children. A study by Schultz (1961) and Becker (1965) has studied how households can have an effect on the development of human capital. That is, humans invest in human wealth the same way they might invest in non-human wealth. The decision made by the members of the household depends on policies and how different household members respond to the economic environment. Evidences show that women have more preference than men do in spending on human capital of their children (biased towards spending on education and healthcare). The World Bank made a study in 2001 and evidence showed that women do spend more on the basic human needs of their children. The preference of women to spend more on basic necessities has implications on the macroeconomic level as well. As women spend on basic human necessities, economic growth would be affected positively and so will stability. Both growth and stability are two of the most important macroeconomic policies. The inequality of men and women when it comes to price elasticity and income elasticity of demand also has an effect on policy. That is, price decrease of education would benefit women while price increase would not benefit them. Thus as the price of education increases this would lead to an overall loss for the society. Thus, the points indicated above reflect upon the need for a change in the scope of policies towards women as they should have more educational and health support so that

they would be able to cooperate in the economy. Even more, many theorists as indicated above have shown that women participation is considered to be a boost to the economy due to their wise decisions when it comes to consumption and investment. As for saving and investment, Seguina and Flora (2003) have shown that women have more preference to save since they are considered to be "home builders". Thus, if women were to save more, then the increase in savings would lead to growth of the economy. Men, on the other hand, turn to saving more for social insurance instead of being consumption oriented. Women tend to have a higher life expectancy, thus they have the need of saving for the sake of the future. The ability of women to save their money and allocate them in an efficient way is beneficial for the economy as it promotes both growth and stability. (Stotsky, 2006)

The presumption of the development in the economic growth within an economy is considered to be on the minds of renowned organizations and many studies have shown the relationship of women to the growth of the economy. An example is of a study that illustrates the theory of women participation through plots of the relationship between gender equality (UN human Development Index) and the level of economic growth (measured by per capita income) for a cross section of countries in the world. The figures show that there is a clear positive relationship between development and gender equality. Further more, the study examines the relationship of gender inequalities in education and health and if these variables have any effect on the economic growth rates of a country through plotting both variables. For example Dollar and Gatti (1999) study the relationship between gender inequalities in education and growth. They found that there was a positive relationship of female education with growth or there was an irrelevant effect. Knowles, Lorgelly, and Owen (2002), find that female education has a positive impact on GDP and that GDP increases by 0.37% if there was 1% increase in female education. (Stotsky, 2006)

An addition to the theory of women participation is the existence of the unpaid sector as women work (house work, nursing, etc) while not getting paid. This is an alarming fact since if women were paid this would ultimately add to the GDP of a country. Cagatay, Elson, and Grown (1995) have stressed upon the importance of policy decisions

of the paid and unpaid economies (especially those of women). Evidence from a time-use study indicates that women have higher total work hours than men and this is a main trend in the least developed countries (Floro, 1995; World Bank, 2001). Thus, it is essential to realize that the unpaid economy is a vital characteristic of the economy. Estimates in the study of (Tzannatos in 1998) showed that if the unpaid sector were to be properly measured it could add up to one-quarter of national output. (Stotsky, 2006)

It should be stressed while studying such a speculation in women participation that there has been progress on a global level as many countries have strived to enhance their economy through the evaluation of many factors including that of gender inequality. A study made on a global level indicates that there has been a striking increase in the proportion of women in the labor force. That is, the share of women with work in total employment increased in the past 10 years by just above 40%. The study showed the gap in male and female participation rates in the years 1993 and 2003 in the Middle East and North Africa. From 1993 to 2003, the female labor force participation rates were 25% whereas in 2003 they were 29%. The labor participation rate of males in 1993 was around 79% whereas in 2003 they were around 77%. Thus, males tend to hold a huge proportion of the labor force participation rate. The study also indicates that the Middle East and North Africa had the largest gap between male and female participation in the labor force in 2003 compared to other countries. For instance in East Asia, male participation was 85.1% whereas female participation was 73.1%. In the Middle East and North Africa, the male participation was 76.8% whereas female participation was only 28.2%. Thus, there is an obvious difference between both regions since the Middle East resembles a huge gender gap in the Labor participation force. (International Labor office, 2004). The previous figures should be set an alarm to policy makers in the areas of the Middle East and North Africa. Egypt (one of the countries in North Africa) should be alerted to such a statistic and obvious measures should take place.

The reason why economists stress on the degree of women participation is due to the fact that women have the potential for increasing the well being of the economy. The

hope that such a potential would benefit the economy is the main reason why economists have highlighted the participation of women in the economy. In an article titled "Investing in Women to advance Economic Growth" by the Centre of development and population activities published in 2009, congress woman Yvette D. Clarke stated that "there is still a wealth of untapped potential in women". The "untapped potential" indicated is one of the reasons why such a study is considered and is being translated in to economic studies. The World Bank indicates that through investing in women a country engages in "smart economies". For example, a study made in Africa showed that through investing in women's education, agriculture yields could increase by more than 20 percent. In the article it is indicated that women today own one percent of the world's wealth, 10 per cent of global income and engage in 14 per cent of positions in the private and public sector. ExxonMobil invested in women and announced that they did not invest because they were acting as humanitarians; instead they were just engaging in what they call "smart business". ExxonMobil foundation' Lorie Jackson indicated that investing in women is essential for the development of the world. (Centre of development and population activities, 2009). Such declarations by renowned organizations and companies reflect upon the need for the change in government policies towards women since it is a global phenomenon that women are being injected in to the economy for the sake of growth.

C) Women in Egypt; Education and Employment

In Egypt, women started working towards equality as they saw the need to enhance the position of women legally, politically, socially, and economically. Now a days, women are either focusing on the service terms and those who are mainly concerned with raising awareness. Through out the years, feminist movements have had to put up with various governments and Islamic movements. The fight for equality in Egypt is a continuous process till today. Thus a study of the past is essential to include as one investigates the current situation. The efforts made towards female education were successful throughout the years. In 1873, the first girl's primary school was made, yet girls were not allowed to

for examinations until 17 years later. Nabawiya Musa was an example of a pioneer who struggled for women's rights as she managed to gain many education rights for women that exist till today. President Nasser favored the concept of progress in education and in 1961 under his presidency, Al Azhar University allowed women to enroll as college students. Cairo University was opened to everyone, however women were not allowed to study there. In 1929, Ahmed Lutfi as-Sayyid who was a progressive preacher managed to break this barrier and allowed a group of women to enter the university. In time, women were allowed in to universities in large numbers and such numbers exacerbated along with the 1952 revolution. The Egyptian constitution stresses the right for education for both males and females. However, the various social and economic setbacks for female education manage to place a barrier on the possibility of getting education for women and accordingly parents are reluctant to invest in their girls' education. Moreover, girls are taught different topics than boys. For instance, girls are taught home economics and boys are taught agricultural economics. The population increase, which was accompanied by migration from urban to rural areas, was the reason behind the increase in education attainment. The increase in demand for education was not met with the required number of schools since infrastructure in Egypt did not progress accordingly and there were shortages in the number of schools available. (Wassef, Guenena)

As for work and employment of women, the idea of females going to work in Egypt was threatening in a way that if women were to generate income they wouldn't be dependent on males anymore. Thus, men felt threatened and were not willing to let women take over the job market. During the 1920s, women were working as cheap labor in factories that produce cigarettes, textiles, and pharmaceuticals. Ultimately, they were replaced by machinery. In 1973 a labor law was passed which allowed for better working conditions for women such as better working hours, maternity leave, and access to day care centers. The result of such a law was that employers were reluctant to hire women due to higher pays and benefits that they required under the law. In addition to that, women were still working under harsh conditions and were still complaining. In 1935, the government

reacted by employing Naimah Al-Ayyubi as an investigator of work of women in Egypt. From the author's point of view, the difficulties that women face in the work arena are mainly due to social norms and economic barriers that make it hard for women to acquire jobs and become leaders in the business world. Over all, the author identifies and investigates the role of education and employment of women in enhancing the economic performance of a country and relates that to the progress of female education and employment in Egypt. (Wassef, Guenena).

When reflecting such a study to Egypt, one should look back at the trend of women participation in order to be able to have a clear image about the current situation. In his book "Women in Egyptian Public Life", Earl Sullivan indicates that by 1976 only 1.7% of the female labor force in Egypt had executive, administrative, or managerial positions. There was a trend of resistance to hiring females since their male counterparts felt uncomfortable being lead by women. Thus, women always had to try to prove themselves in order to gain respect and credibility. In Egypt, many women took major roles of enterpeunship in multinational companies such as General Motors, Alco, and Nestle. All of these businesses were profitable (a medium sized firm made sales of over 30 million Egyptian pounds in 1982 in its fiscal year). When women were studied they were reported to take more "calculated" risks and that they enjoy competition. In Egypt, the role of Education of females plays a major role in closing the gender gap when it comes to labor participation. Women's in Egypt's political and economic elite tend to be well educated (that is more educated than their male counterparts). Men can reach whatever position through acquiring techniques whereas when it comes to women education is the only means to acquiring a job. A recent study of women in labor force indicated that all growth in female employment in Egypt since 1960 was the result of one variable which is education. (Sullivan, 1987) The stress on education refers to investing in women's education to increase employment. Thus, investment is a means for employment which in turn stimulates the economy.

In Egypt, particularly, there is a severe problem when it comes to women and participation in the economy. Relative to other countries, Egypt is considered to be the lowest when it comes to women's participation. An article in the Ahram News paper published in 2007 studies women in business in Egypt. Carmen Niethammer indicates that women's entrepreneurship is a vital component for economic growth in Egypt. An increase in women's income leads to higher spending on the development of the family which in turn is an essential key for the development of the country as whole. In Egypt, the women's rate of economic participation is 33% that is considered to be the lowest globally. She indicates that providing entrepreneurship opportunities for women this could have a positive impact as their income increases. Many women reported that they faced many obstacles when they were setting up their business. That is, they didn't receive any financing and many other resources that were more available for men than for women. A number of government "bodies" have shifted their focus on women's economic progress (the ministry of investment for instance). She concludes by indicating that through the encouragement of women entrepreneurs can add many benefits to the Egyptian economy especially to the countries overall economic development. (Niethammaer, 2007).

D) Brief of similar theories and an overview of findings:

Gender inequality in economics is a wide area of research and has been studied from various perspectives. Before introducing my hypothesis, an overview of various theories and models related to gender inequality could be introduced in order to emphasize the importance of the study.

The study of economic development in this study is going to be reflected as an increase in GDP. Further more, it should be stressed that development is also reflected upon the higher status that women are going to attain if they were to be treated equally. The evolution of the growth theory has taken many roots, in our case however; we are concerned with that of knowledge as a function of productivity. In the shadow of any growth theory, growth is perceived as the increase in capital accumulation. That is, capital

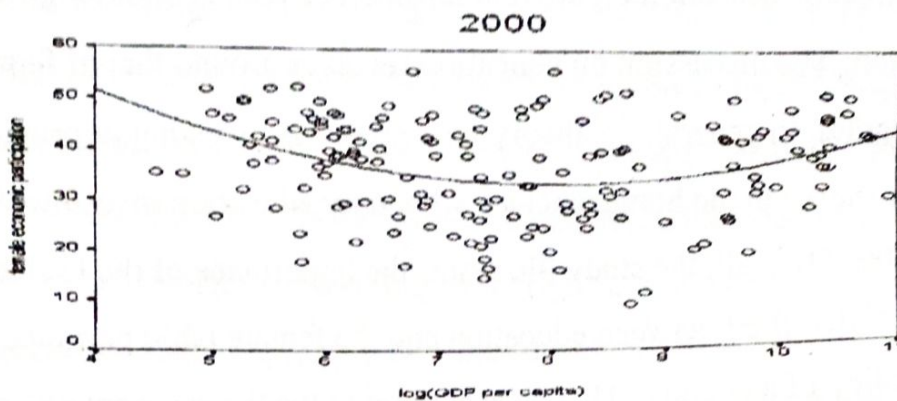
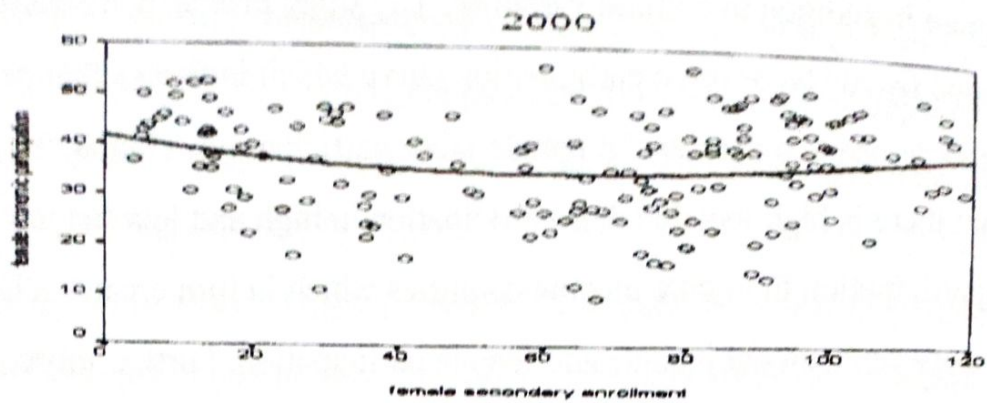
accumulation is the difference between production and consumption, where as production is a function of knowledge, labor and aggregate capital. Knowledge as opposed to capital does not experience diminishing rates of return. That is, it does not have a decreasing productivity. (Saam,2002)

Four of the main goals of the UN in its Millennium Development goals are directed towards women in order to end poverty. A number of theories have been established relating to the GDP level within a country and gender inequality. The simplest of all theories relates growth to the argument that women have a much higher propensity to save. In addition to that, if there were to be gender equality, then there would be fair investment of human capital and in return there would be development. Other studies reflect upon the female participation as a function of development. That is, as a country begins to develop, gender inequality exists. Later on, once it becomes developed as women participate more in the economy, gender inequality decreases. From another side, another theory indicates that regardless of the development of a country, gender inequality might change even if the country is developing. Studies have been made to test both hypothesis and the result was in favor of the first approach where the female participation was a function of development. In a study made by Knowles et al (2002) he managed to build a model of which women's education levels were separated from those of men. The result was that women's education levels had a positive effect on the GDP and education gaps between males and females had a negative effect on GDP levels.(Lofstram).

Example of a model which resembles the model used in this report is: $FEP_{(45-59)} = \alpha + \beta_1 \ln(\text{GDP per capita}) + \beta_2 \ln(\text{GDP per capita})^2 + \beta_3 \text{GER}_{(t-30)} + \beta_4 \text{GER}_{(t-30)}^2 + \varepsilon$. Here the model refers to the female participation as a function of GDP per capita and the gross enrollment rate of females in to secondary school. This is similar to the model being used in this report in a way that it assimilates the same concepts. However, the main difference is that in this study, the model would be studying female participation in the labor force as a function of GDP that is the GDP here is the independent variable rather than the dependent. This similar model studies the relationship between female education, growth, and the labor

market structure in addition to cultural variables. The study primarily discusses the theory of the U shaped female labor force participation curve which indicates that periods of economic growth lead to a decrease in female labor participation. That is, the study illustrates that there is high female labor participation in high and low income countries and low female participation in middle income countries which in turn creates a U shaped relationship between national income and female participation. Further more, the theory highlights the effect of education on the relationship between economic growth and female labor participation. The discussion on education revolves around that of female primary and secondary education. In general, the theory illustrates that investing in primary education only results in benefits in the home whereas secondary education investments lead to higher participation rates. Over all, the study illustrates the importance of the U shape curve and the relationships identified between education and the female labor participation to the development policy of a country. That is, according to the theory, a country going through a period of economic growth could be experiencing a decrease in its labor force while investing in women's education (primary education) could aggravate such a reduction in the labor force. The results of the study state that female labor participation declines as a country's economy grows, however the results indicate that the decline is not as big as it is predicted to be. In addition to that, results indicate that female schooling could increase female economic participation. All of these results depend heavily on the development path of the country being studied. The following graphs were the results of the model being tested. (Arnold, 2005).

Figure 1, Female economic participation and secondary school enrollment and economic wealth (2000).



Source (Arnold,2005)

A number of other theoretical works has been done about gender inequality and evidence has shown that as gender inequality increases so does the economic performance. The main argument of various literature works is that as gender inequality reduces human capital this might be impairing economic growth. An example of a literature which examined the topic of gender inequality managed to study the affect of female education on fertility, the increase of human capital, and the increase in economic growth. Other arguments made by this study include that of educating females which could reduce fertility and in turn stimulates economic growth and that of international competitiveness. The study stressed upon the relation between female education and employment. That is, since most jobs require that the employee should be educated, female education is important to guarantee that they find jobs. On the other hand, if there is a gender gap in the work force, then women will be reluctant to receive education, thus demand for female education will be reduced accordingly and inequality in employment will persist. The author of this paper

refers back to other studies that have investigated the reduction in economic performance due to gender gaps. King and Hill (1993), Dollar and Gatti (1999), Forbes(2000), Appiah and McMahon (2002) and Klasen (2002) all examine the effect of gender inequality on economic performance and discover that gender gaps in education have a negative effect on economic growth. As for inequality in employment, Klasen (1999) and Segunio (2000) found that increases in female employment led to economic growth. In his strategy, the author uses cross-country and panel growth regressions that have an effect on economic growth on the long run (population growth, labor force growth, investment rate, openness, and other dummy variables). The equations, which estimated, are the following:

$$g = \alpha + \beta_1 INV + \beta_2 POPGRO + \beta_3 LFG + \beta_4 ED60 + \beta_5 GED + \beta_6 RED60 + \beta_7 RGED + \beta_8 X + \epsilon \quad (1)$$

$$INV = \alpha + \beta_9 POPGRO + \beta_{10} LFG + \beta_{11} ED60 + \beta_{12} GED + \beta_{13} RED60 + \beta_{14} RGED + \beta_{15} X + \epsilon \quad (2)$$

$$POPGRO = \alpha + \beta_{16} OPEN + \beta_{17} ED60 + \beta_{18} GED + \beta_{19} RED60 + \beta_{20} RGED + \beta_{21} X + \epsilon \quad (3)$$

$$LFG = \alpha + \beta_{22} OPEN + \beta_{23} ED60 + \beta_{24} GED + \beta_{25} RED60 + \beta_{26} RGED + \beta_{27} X + \epsilon \quad (4)$$

$$g = \alpha + \beta_{28} OPEN + \beta_{29} ED + \beta_{30} GED + \beta_{31} RED60 + \beta_{32} RGED + \beta_{33} X + \epsilon \quad (5)$$

$$g = \alpha + \beta_{34} INV + \beta_{35} POPGRO + \beta_{36} LFG + \beta_{37} AED60 + \beta_{38} GAED + \beta_{39} RED60 + \beta_{40} RGED + \beta_{41} X + \epsilon \quad (6)$$

$$g = \alpha + \beta_{42} AED + \beta_{43} GAED + \beta_{44} RED60 + \beta_{45} RGED + \beta_{46} X + \epsilon \quad (\text{Klasen, Lamanna, 2003})$$

The results from the study indicated that gender gaps in education and employment are directly related to economic growth as they manage to reduce it. (Klasen, Lamanna, 2003)

E) Objectives and main aim of the study / methodology:

As previously noted the study revolves around women participation and the leading factors which could enhance such women's involvement in the economy. Once women are equipped with the needed factors (education, health, etc) they would be able to participate in the economy while possibly having a positive effect on the growth of the economy. Thus, the measurements here are going to be those of women's participation in the labor force (women in the economy willing to work), education, and measurements of economic growth due to changes in the participation and education of women. The main aim of the

study is to test the importance of decreasing the existing inequality in Egypt which might halt the participation of women in the economy while women could be a factor which could presumably lead to growth within the economy. If women do indeed lead to an increase in economic growth, then injecting them in to the economy and making changes to policies which enhances their status in society could possibly be an effective change made within a country. An economic model using the adequate econometric techniques is used to study this theory.

IV) Project Report

A) Egypt: Gender statistics

The reality of Gender in Egypt is considered to be one of the interesting topics that could be studied in Egypt. For years, women in Egypt have taken up many roles that depend heavily on their status in society as in if they are originally rich or on the other hand those women that live in rural areas. From a personal level, one could observe the complexity of the gender role in Egyptian society. As already mentioned in the literature review, Egypt is considered to have the lowest female participation rate relative to other countries. Thus, it is essential to recognize the severity of gender inequality in Egypt and take action in order to mark new ideas and policies in to the society so that the economy could develop.

In this part of the report, a discussion around various highlighted statistics related to gender will be discussed and analyzed.

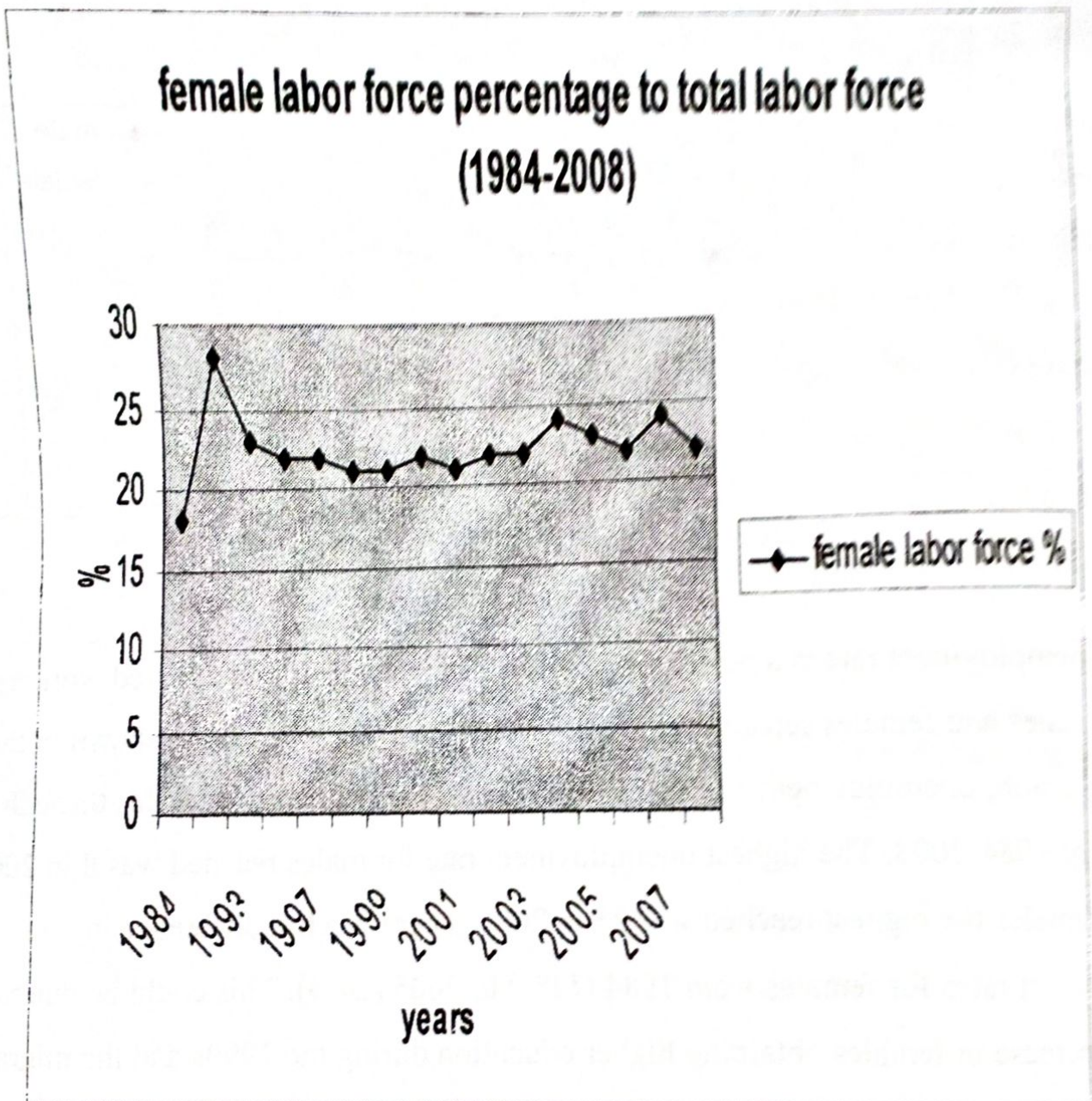
Figure 1: Unemployment rate in Egypt, by gender



Source: Calculated by author from data

Unemployment rate is a percentage, which is calculated as unemployed workers (in this case males and females separately) divided by the total labor force. As shown in the following graph, unemployment rate in Egypt is higher for females than males throughout the years of 1984-2008. The highest unemployment rate for males reached was 8 in 2003 while in females the highest reached was 25 in 2005. There is a big difference in unemployment rates for females from 1984 (11%) to 2005 (24%). This could be due to the massive increase in females obtaining higher education during the 1990s and the migration from rural to urban areas as mentioned already in the literature review. As more females are educated and seek careers, the cultural and social norms that persist are barriers to obtaining adequate jobs.

Figure 2: Female labor force percentage to total labor force (1984-2008)

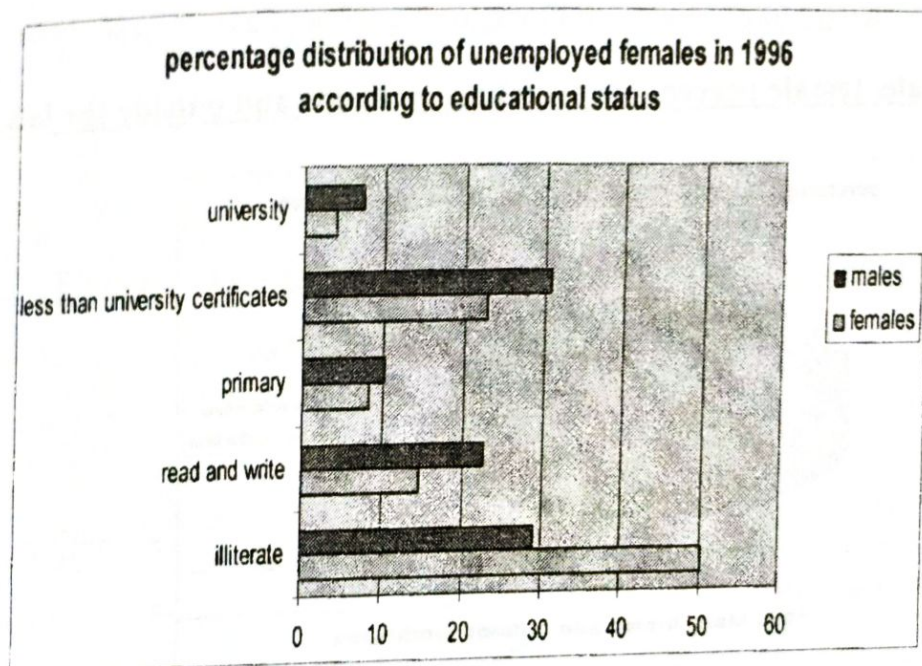


Source: Calculated by author from data

The previous graph illustrates female labor force percentage to total labor force. There was a sudden increase from 1984 (18%) to 1990 (28%), then female labor force

managed to decrease to 23% in 1993 and experienced almost the same percentages till 2008 (in the 20s). The sudden increase in 1984 could be due to women given more rights as individuals to join the labor force, more women allowed to receive higher education, and migration from rural to urban areas.

Figure 3: Percentage distribution of unemployed females in 1996 according to educational status

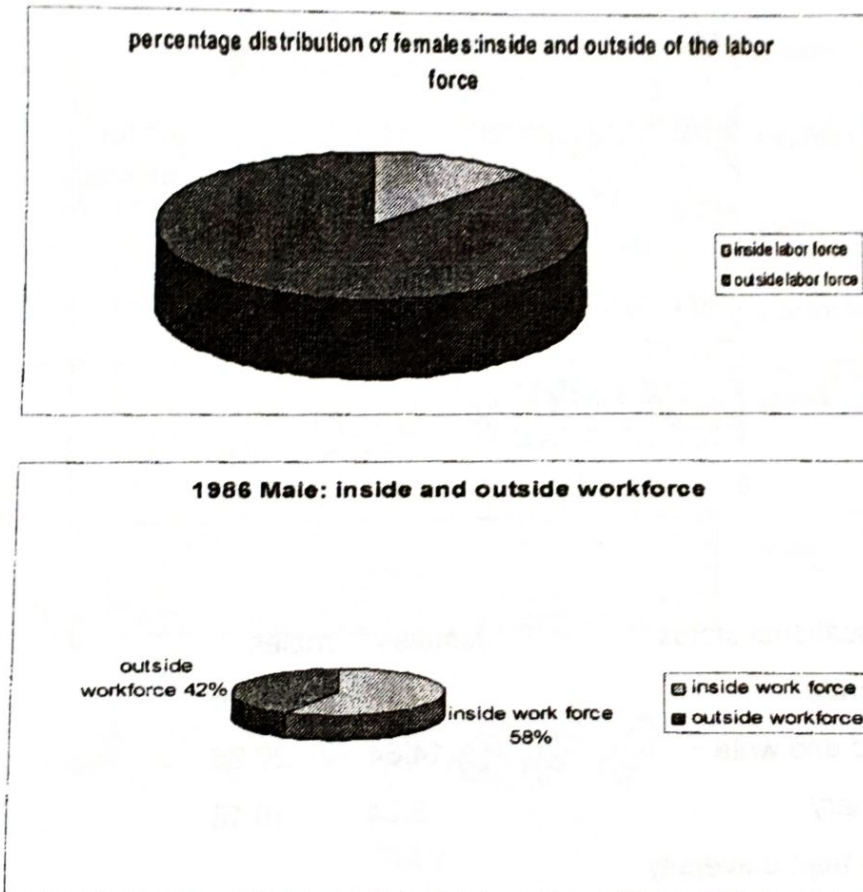


educational status	females	males
illiterate	50.18	29
read and write	14.64	22.66
primary	8.34	10.16
less than university certificates	22.92	30.75
university	3.89	7.4

Source: Calculated by author from data

The percentage distribution of unemployed males (1996) in universities was higher than females by double. The highest difference in unemployment percentages is that of illiterate females and males, females being 50.18% and males 29%. Illiterate males could still find jobs that don't require education since they are more physically oriented than females. Illiterate males could work in jobs such as car fixing for instance, a job that is not applicable for females.

Figure 4: Male/ female percentage distribution: inside and outside the labor force



Source: Calculated by author from data

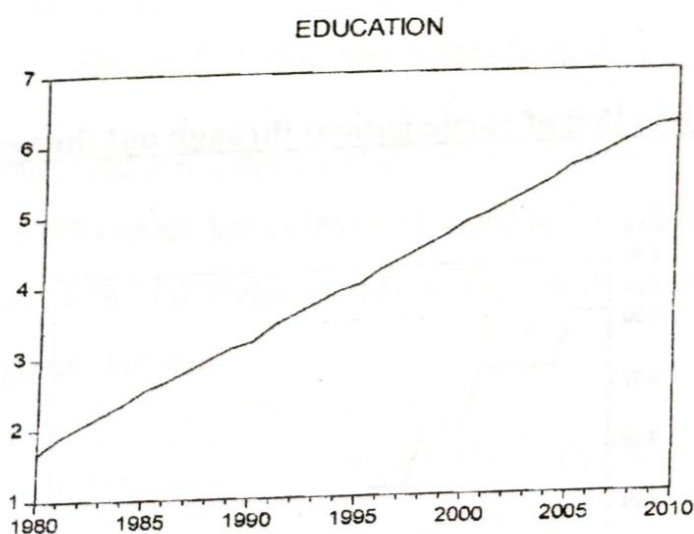
In 1986, the percentage distribution of males inside the work force is higher than that of females while percentage of females outside the labor force is higher than that of males. As seen on the diagrams above, more males are engaging in the labor force than

females. That is, a high number of females compared to males choose to not work while a smaller percentage is inside the labor force. Such findings could be due to female discrimination in work which could have persisted, and lower education received by women during this time before the revolution.

B): Summary statistics:

The model was tested using the Eviews program. Before running any tests, the data was entered in to the program and transformed in to log if necessary. The following graphs explain the trend taken by each variable throughout the years (1980-2010).

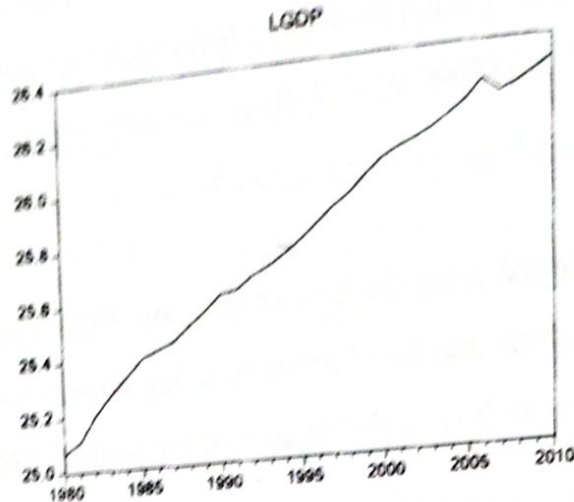
**Figure 5: Average years of schooling for females in Egypt
ages 15 and above (1980-2010)**



Source: calculated by author from data

From the figure above, one can observe that education (average years of schooling of females) has increased throughout the years since it has an upward trend.

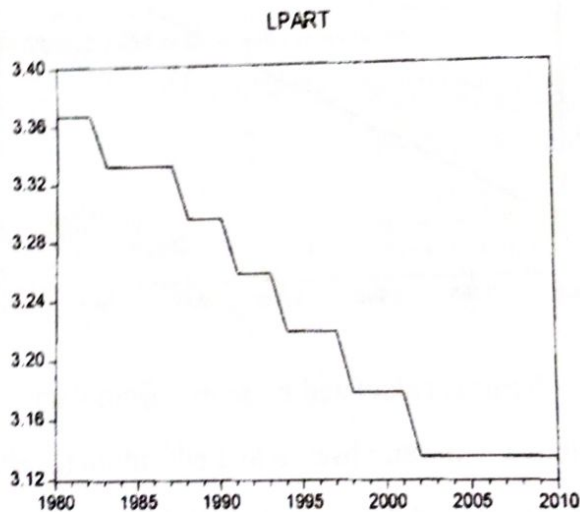
Figure 6: LGDP (log constant GDP) over the years (1980-2010)



Source: Calculated by author from data

GDP here has been transformed in to log (constant GDP) in order to make it easier to interpret. GDP has increased throughout the years and an obvious drop in 2007/2008 could be seen on the graph was due to the financial crisis which took place at that time.

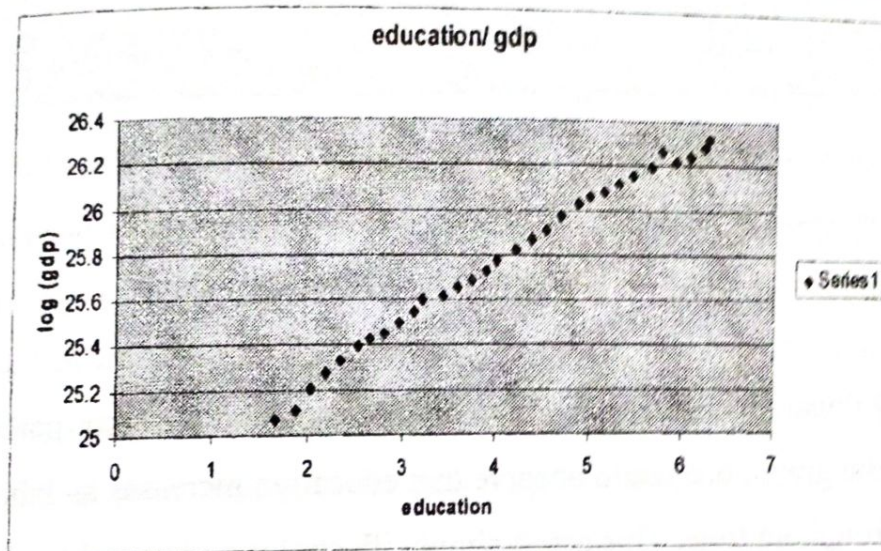
Figure 7: L Participation (log of participation) through out the years (1980-2010)



Source: Calculated by author from data

Participation was transformed in to log (participation) to be easily interpreted. Participation here is measured as a rate (labor participation rate of females), thus it is adapting a stairway like shape as seen in the graph. Thus, it can be observed from the graph that female participation rate has decreased throughout the years while remaining to be constant from 2002 till today.

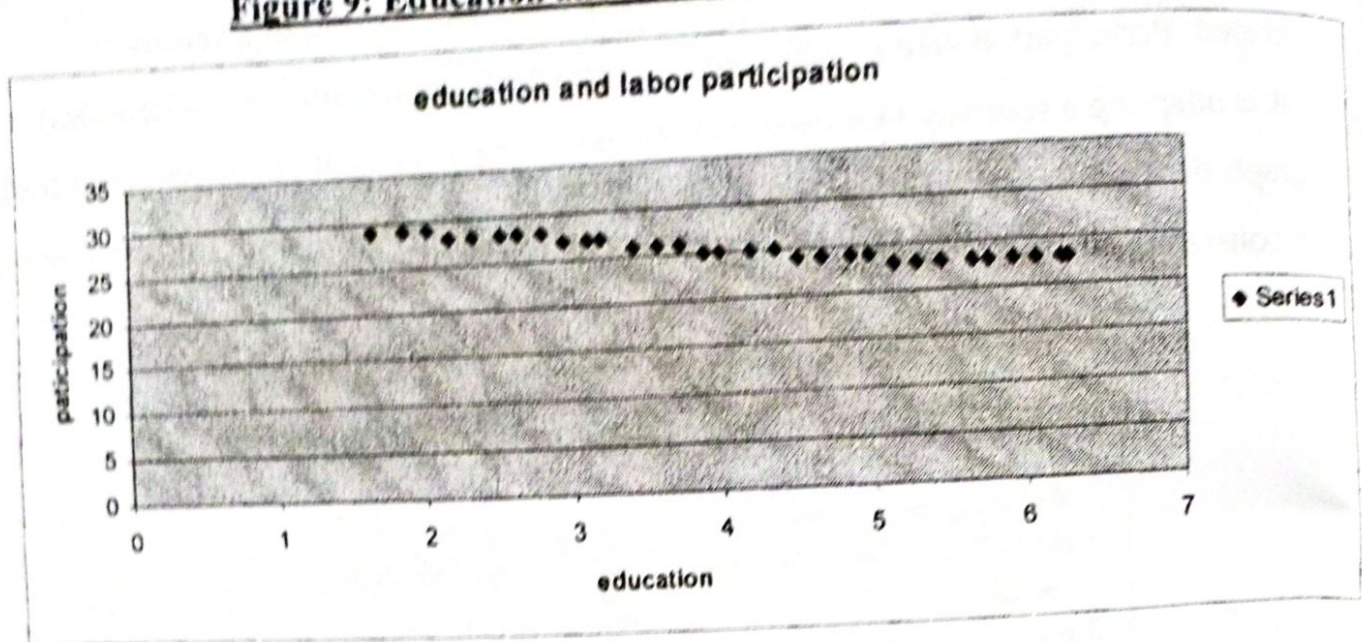
Figure 8 : Education and log constant GDP (1980-2010)



Source: Calculated by author from data

Figure 8 illustrates a scatter diagram of education (as average years of schooling of females) in relation to GDP (which has been transformed to log GDP). The graph illustrates that education increases while LGDP also increases. Thus, both variables are experiencing an upward trend throughout the years.

Figure 9: Education and labor participation (1980-2010)



Source: Calculated by author from data

Figure 9 illustrates a scatter diagram of education and the labor participation rates of females. From the graph, one could observe that education increases as labor participation rates decline throughout time. This graph simply illustrates both variables in relation to each other and is not in any way reflective to the hypotheses tested in this report. However, it is essential to be aware of the relation existent between the independent variables in the model.

C) Empirical strategy:

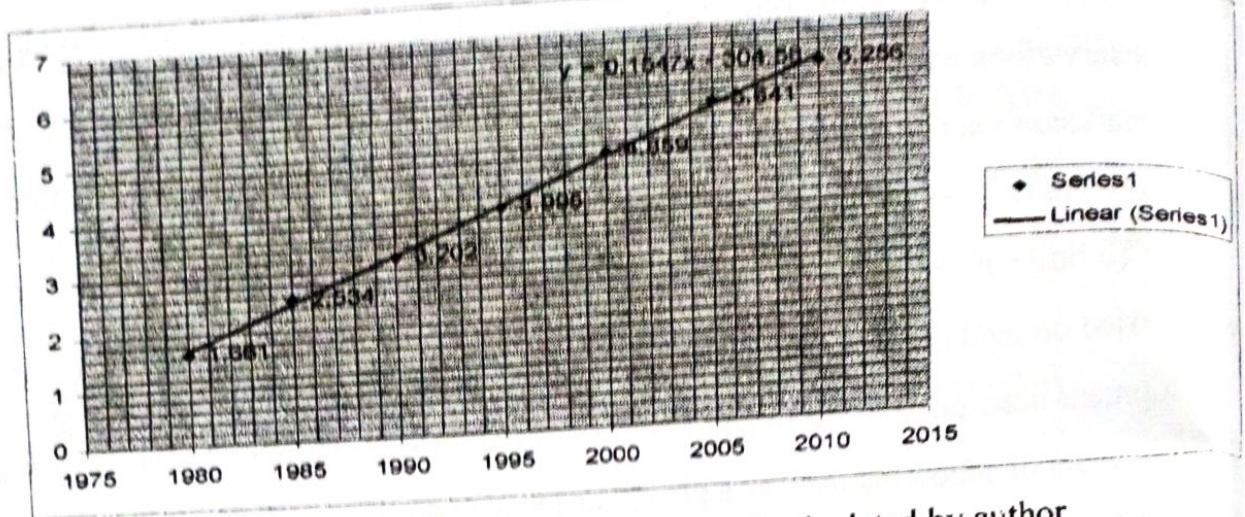
The first step in formulating my research was the introduction of my theory, then my variables, and finally coming up with an accurate well defined model which reflects my theory. My theory as already indicated in my introduction revolves around the effect that women's education and participation have on GDP. The theory assumes that education has a positive effect on GDP and so does participation. That is, GDP could increase if there was an increase in education and an increase in participation. At first, data was gathered from CAPMAS, however due to limited observations found there; other resources have been used for the model (Barro and lee, WDI, 2010). The data from CAPMAS includes the

following female university graduates which could have been used as an alternative for education in the model. However, such data were only available from 1990 to 2008 and more observations were needed to carry out the model. The data compiled from CAPMAS is summarized in appendix 1 (table 1). One could observe from the data that female university graduates have increased throughout the years.

To build an accurate model more observations were needed, thus further research was carried out and data was collected from the following resources; the world development indicator and Barro and Lee. The variables were identified as the following; average years of schooling used as a proxy for female education, GDP (constant LCU), and labor participation rate of females. The final model used is the following $GDP = \alpha + B1$ (average years of schooling for females) + $B2$ (female labor participation rate) to test whether education of women and labor participation has a positive effect on GDP or not.

Due to limited resources available, the average years of schooling available were found every five years from 1980 to 2010, thus those five years was used to formulate a trend line and an equation was estimated to deduce the other observations for the missing years. Table 2 in the appendix illustrates the data gathered on average years of schooling of females from 1980 to 2010 for every five years (Barro and Lee, 2010). A trend line was estimated according to the data gathered from the following graph. The following equation which is illustrated by the trend line was used to deduce the average years of schooling for females for other years $y = 0.1547x - 304.58$. Calculations were made and the results are given in the appendix, table 3.

Figure 10: Average years of Schooling trend line



Source, Data gathered from (Barro and lee) and calculated by author

Finally, table 4 in the appendix illustrates all the data that was used to initiate the model and test it. GDP at constant LCU and the labor participation rate of females were collected from the world development indicator. The table illustrates the data used in the model and the variables, which were used as proxies for my theory. As already mentioned the proxy used for education is the average years of schooling for females, and for female participation in the economy is the labor participation rate of females.

The model used is a time series model; a time series model manages to measure data points at several points in time. In this model, time series is used to measure variables of education, GDP, and female labor participation throughout the years of 1980 to 2010. Labor force participation rate of females refers to the proportion of female population ages 15 and above whom are economically active, that is, whom supply labor for the production of goods and services at a point in time. GDP at constant LCU refers to the summation of gross value by all local producers in addition to taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation and is in constant local currency. Finally, average years of schooling for females are the average years females spend in education given every year. The variables being used were first tested for unit root tests before testing the model. (WDI,2010). Tests for co integration and vector error tests were carried out afterwards.

D) Results:

After interpreting the trend taken by each variable over the years by observing the graphs, the model was tested for various tests. The first step taken was testing the variables using the unit root test also known as the augmented Dickey Fuller unit root test. The purpose of the unit root test is to distinguish whether variables are stationary or not. After that, one could either carry out testing through a simple OLS regression model if not then the model will be tested for co integration and estimated for the vector error correction test or (VAR).

Unit root test/ Co integration test:

After testing GDP for unit root, the results were as follows, the null hypothesis is rejected at 1st difference, intercept, where LGDP here is stationary at I(1). The p value obtained here is 0.0007 that indicates that the null hypothesis is rejected at 5% significance level. (Appendix, Table 5). The null hypothesis that participation is not stationary was rejected at level 0: I(0). Thus, participation is stationary at I(0). The p value here is 0.0083, indicates that the null hypothesis is rejected at 5% significance level. (Appendix, Table 6). The null hypothesis that education is not stationary was rejected at level 0: I(0). Thus, education is stationary at I(0). (Appendix, Table 6). The P value obtained here is 0.0172 reflects that the null hypothesis is rejected at 5% significance level. Since the GDP results were stationary only at I(1), then it is required to carry out a co integration test and VAR instead of a simple regression. The co integration test was used to test for any long run relationships between the variables. After testing for co integration for all the series together and the results were, at hypothesis none, the null hypothesis is rejected with a p value of 0.0096 at 5% significance level. Thus, co integration between the variables does exist. (Appendix, Table 7).

Vector error correction test:

From the results of the VAR test, one could deduce the equation of the model and its significance.

The equation is the following: $GDP = -46.77 + 6.28 (\text{participation}) + 0.17/0.637 (\text{education}) + \mu$. Thus, the interpretation of the equation is that GDP increases by 6.28% for every 1% increase in participation of women in the labor force, and 0.17% for every 1% increase in the average years of schooling for females (ages 15 and above). The t statistic for the participation variable is 4.32, thus it is bigger than 2 and is significant at 5% significance level. The t statistic for the education variable is 1.77 and is significant at 10% significance level, since it is bigger than 1.69. Both of the independent variables are significant which reflects the significance of the theory of the model that education and participation do have an effect on the GDP. (Appendix, Table 8)

The error correction of the GDP is 11.6% which illustrates that GDP approaches its long term value by 11.6% which is explained by the variables of participation and education. (Appendix, Table 8)

Granger causality test:

Pairwise Granger Causality Tests

Date: 05/09/10 Time: 11:39

Sample: 1980 2010

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LPART does not Granger Cause LGDP	29	4.91222	0.0163
LGDP does not Granger Cause LPART		1.68908	0.2059
EDUCATION does not Granger Cause LGDP	29	7.69434	0.0026
LGDP does not Granger Cause EDUCATION		0.82563	0.4500
EDUCATION does not Granger Cause LPART	29	2.09159	0.1454
LPART does not Granger Cause EDUCATION		3.72176	0.0391

The following test has been used to test the variables and their causality. First, the null hypothesis states that participation does not Granger cause GDP. At 5% significance level, the null hypothesis is rejected (p value of 0.0163), thus participation does Granger cause GDP which reflects the model theory. The null hypothesis that the GDP does not Granger Cause participation is not rejected at 5 % significance level (p value of 0.2059). That is, GDP does not Granger cause participation. Further more, the results indicate that GDP does not Granger Cause education as well at 5% significance level (p value of 0.4500) while education does Granger Cause GDP at 5% significance level (p value of 0.0026) . The model formulated here reflects GDP as the dependent variable and other variables as the independent so the following result are adequate for the model. Finally, the null hypothesis that education does not Granger Cause participation is not rejected at 5% significance level, while the null hypothesis that participation does not Granger Cause education is rejected. This could be due to limited variables in the model and the more proxies needed to be used to explain GDP.

E) Caveats/limitations of the model used:

The model being used was tested according to the appropriate econometric techniques and was simplified as much as possible to properly investigate the analysis regarding female education and employment. More over, the variables that were used were the most appropriate for the model and the theory that was formulated. However, other variables which are affected by female education and employment such as investment rates, child mortality, and health aspects should be considered by other literatures since they may have an effect on the economic growth as well. Also, further tests need to be carried out to assess the sensitivity and uncertainty of the findings. Finally, given the estimates being made for female education and the problematic nature of the data, further analyses of female education should be made to consolidate the assumption that female employment enhances economic performance.

V) Conclusion and policy recommendations:

The results presented imply that female education and employment could be reflected upon the issue of economic performance in addition to being an equality issue. That is, as female education increases, other things being equal, the development of a nation progresses accordingly. Even more, as the percentage of female participation increases, other things being equal, so does the economic growth or the GDP. Thus, the study of economic performance is further extended to the issue of equality as female education and employment could induce a further increase to the GDP. The increase in GDP as females become more educated or as more females are employed is also indirectly related to other variables that are induced by equality in education and employment such as that of investment, consumption and international competitiveness. The model being tested in this paper, however, reflects upon education and employment of females as the main benchmark. Other theoretical and empirical studies have managed to study the indirect effects of female education and employment to the increase in the GDP. The results of the model suggest that the education variable (average years of schooling of females ages 15 and above) does not induce a considerable increase (only 0.17%) in the constant GDP relative to the effect that female labor participation rates. An increase of 1% of the employment variable (female participation rates) results in 6.28% increase in the GDP. Thus from such an observation, one could conclude that female employment, other things being equal, could have a significant impact on economic performance and the development of a country. In addition to that, if female employment increases, other variables induce further increase in the GDP such as that of investment and consumption. Even though, female education relative to female employment in this model might not have a significant effect on the GDP, it should still be stressed as a main indicator of female employment and should be promoted. It could be due to limitations in the data acquired about female education that could have led to such a small effect that female education has on GDP.

This study is mainly perceived as an argument against gender inequality especially in the education and employment sectors. It should be noted by authorities that such inequalities in education and employment that are due to social and cultural norms could have a direct effect on GDP. Thus, such gender inequalities are not only a social issue, instead they are also considered to be an economic one. In Egypt, as indicated by the results, female education and employment could result in increases in GDP. Keeping this in mind, policy makers should investigate the conditions of female education and employment and reduce inequalities in each sector. The efforts made by organizations in Egypt are evident and many funds have been assorted to enhance the education and employment conditions of females as already mentioned in the literature review. Recent efforts made by organizations include the following. The Gender and Developments Donors subgroup (GAD) in Egypt recognizes the impact of gender equality to the development of a country and has made many efforts to overcome inequality such as giving endowments to projects that enhance equality. The United States agency for international development, in an effort to help women's status and lives, has managed to fund a school based program in Egypt that aimed to increase the number of enrollment in schools. In addition, it managed to offer women loans at low interest rates so that they would encourage the female leaders to take the lead as entrepreneurs. (Leila, 2007)

However, the issue of gender inequality in Egypt is a massive argument that can not be resolved only by conferences and meeting made by organizations to ensure that the issue has been discussed. That is, the process of the fight against gender inequality should include many other efforts which are induced by higher authorities. Such efforts could include the following: enhancement of conditions of public schools and classes for females, funds directed towards the enrollment of girls in secondary schools in particular, and scholarships for females in to universities. In addition to that, there should be a number of incentives so that girls could be encouraged to seek higher education such as that of English courses in Universities funded by the government, internships in various companies provided by the university, and the provision of various activities that could enhance the

skills of females as entrepreneurs. As a result female students will be encouraged to carry out their study and lead their lives in to the business arena boldly. In addition to gaining knowledge from education, female students manage to shape their personality as they become more responsive to their needs and the society's needs. Further more, the promotion of female employment could be induced by corporate flexibility in hiring females especially in managerial positions. This has to be done in both the public and private sector. Government authorities should investigate the conditions of female employment in the public sector and hire a number of people to supervise the employment process. In the private sector, companies should promote equality in hiring by monitoring the human resources department and setting rules for an unbiased hiring system.

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