

CROSS-COUNTRY ANALYSIS OF  
FEMALE LABOR FORCE PARTICIPATION RATE

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## **ABSTRACT**

### **CROSS-COUNTRY ANALYSIS OF FEMALE LABOR FORCE PARTICIPATION RATE**

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This study focuses on the female labor force participation rate (LFPR). Cross-country fixed effect analysis of fifty-six countries shows that female LFPR increases with income and education level. Moreover, average schooling years for males is a good fit for female LFPR especially in the low income countries with low education level. Average schooling years for females is a good fit for female LFPR especially in the high income countries with high education level. Higher female tertiary enrollment ratio is significant for higher female LFPR. On the other hand, Turkey has a lower level of female LFPR than the predicted level. Low female education explains the lower female LFPR of Turkey than the countries with similar income level. However, female LFPR has a declining trend in time even if income and education level improves. Institutional background of Turkey indicates the negative impact of urbanization on participation rates. However, under different growth and education scenarios, Turkey can reach higher levels until 2030. Employment policies especially focused on higher education is essential to reach the targets.

Keywords: Labor Force Participation Rate, GDP per capita, Education,

## ÖZ

### KADINLARIN İŞGÜCÜNE KATILIM ORANININ ÜLKE- KESİT ANALİZİ

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Bu çalışma kadınların işgücüne katılım oranına odaklanmıştır. Ülke-kesit regresyon analizi sonuçlarına göre, kadınların işgücüne katılma oranı kişi başı gelir ve eğitim düzeyi ile beraber artmaktadır. Erkeklerin eğitim düzeyindeki artış, özellikle düşük gelir-düşük eğitimli ülkelerde kadınların işgücüne katılım oranlarıyla uyumlu çıkarken, kadınların eğitim düzeyindeki artış özellikle yüksek gelir-yüksek eğitim düzeyindeki ülkelerde uyumlu çıkmaktadır. Kadınların yükseköğretimde okullaşma oranları da işgücüne katılım oranları ile doğrusal orantılıdır. Diğer bir yandan, Türkiye için gerçekleşen değerler model içinde tahmin edilen değerlerden oldukça düşük çıkmaktadır. Türkiye'nin kendi gelir düzeyindeki ülkelere göre daha düşük katılım oranına sahip olması kadınların düşük eğitim seviyesi ile açıklanabilir. Ancak kadınların işgücüne katılımı azalan bir eğilim gösterdiği için, bunun arkasındaki yapısal etkenler de önemlidir. Türkiye'nin yıllardır devam etmekte olan köyden kente göç oranları ile kentlerdeki ortalama eğitim seviyesinin düşük kalması bu durumda etkilird. Yapısal değişimleri de dikkate alarak, Türkiye için çeşitli büyüme ve eğitim senaryoları oluşturulduğunda, 2030 yılında istenen değerlere ulaşılacağı görülüyor. Bunun için, istihdam politikaları özellikle beşeri sermayeyi artıtmaya yönelik eğitim politikalarına önem vermelidir.

Anahtar Kelimeler: Kadınların İşgücüne Katılım Oranı, Kişi başı GSYH, Eğitim

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## LIST OF ABBREVIATIONS

LFPR	Labor Force Participation Rate
HIC	High Income Countries (by World Bank Classification)
UMC	Upper Middle-Income Countries
LMC	Lower Middle-Income Countries
LIC	Low Income Countries ALMP Active Labor Market Policies
MENA	Middle East-North African Countries
EU	European Union
VET	Vocational High School Education and Training
ECD	Early Childhood Development Programme
HLFS	Household Labor Force Survey
ILO	International Labor Organization
TURKSTAT	Turkish Statistical Institute
WDI	World Development Indicators

## CHAPTER 1

### INTRODUCTION

In this study, I focus on female labor force participation. Labor force participation of females as much as the males is important for reducing poverty because females can earn their own incomes. However, female labor force participation rate (LFPR) continues to be lower than the males in the world.

There are two cases where the female labor force participation is high in the world. First one is the developing countries with dominant agricultural sector. Families basically work to provide their subsistence level. They are both consumption and production unit in rural areas. In this case, it is easier for females to combine their economic activity with childcare and other tasks. Thus, participation rate of females is high as unpaid family workers. Second one is the developed countries where education level is high. Economic activity is condensed in urban centers. Females participate as waged and salaried workers with higher earnings and better working conditions especially in services sectors. Home and workplace is separate unlike rural areas, but higher wages attract educated females to work outside. Therefore, female labor force participation is high. In the middle of these two case, I observe industrializing countries with lower female LFPR. Continuing migration of uneducated females to urban centers causes those to drop out of labor force. Such a picture shows the importance of improvements in income and education level on female LFPR with increasing work opportunities.

There are variations among the countries in terms of female participation rates. Developed countries such as Sweden and Switzerland have much higher LFPR than the OECD and EU averages. Developing countries, such as Latin American countries, have lower female LFPR but have increasing trend in time. Middle East and North African (MENA) countries have low female LFPR, in contrast with their high GDP per capita and female tertiary education level.

In order to understand the variations of female LFPR between countries, I collected data of fifty-six countries with different income and education levels. Fifty-six countries have recent

data in 2000-2008 so I selected them for the analysis. Going backward in time, the dataset covers 1970-2010 periods. I also use country group dummies basing on the World Bank classification in order to make comparative analysis.

I use fixed effect analysis in order to observe their direct contribution without the effect of country specific factors. GDP per capita income has a positive effect on the female participation rate. Average year of total schooling for males has positive effect on female LFPR, and especially fits best for low-income levels where female and male education level is also low. Female education has significantly positive impact on female LFPR, and especially fits best for high-income levels where both males and females have higher education. Participation rate also increases with the tertiary enrollment ratio of females, as females with higher education have the highest tendency to participate.

In order to see how the regression fits for countries, I consider Turkey separately. The labor force participation of Turkish females is much lower than the predicted levels. It is even lower among the countries with almost same income level such as Latin American countries. Turkey is one of the MENA countries but female LFPR is also one of the lowest among this region. If it is not income level, low female education can cause lower female participation. On the other hand, female LFPR decreases in time although income and education level improves in Turkey. Therefore, I question whether low education can cause such a declining trend in the participation rates on its own. That is why I consider additionally the institutional setup of Turkish economy.

The share of the rural population used to be high in Turkey. The female LFPR was also high since most of the female population in the rural areas participates as the unpaid family workers. However, with introduction of tractor the rural labor is unemployed. Simultaneously, with acceleration of industrialization the demand for labor increased in cities. Therefore rural-to-urban migrations start in 1950s. The female LFPR started to fall from high levels as the female migrants drop out of the labor force when they arrived to cities. They cannot find jobs easily because of their low skills. However, such a declining trend continues even in 2000s with the removal of agricultural subsidies as a result of stabilization programs. Decline in the agricultural prices force the rural population in subsistence level to move to the cities for finding better jobs. Therefore, even most of the low income countries are enjoying with increase in female LFPR. But decreasing trend continues for Turkey with this new wave of migration.

As the share of female population decrease in rural areas, the speed of migration slows down. Under these conditions, different growth and education scenarios indicates that female LFPR can increase to higher levels. The education policies should basically aim at increasing female school enrollment in higher levels in order to increase female LFPR especially in formal primary sectors.

After the introduction part, second part includes the literature review about theoretical and institutional framework with country specific examples. Third part is about the data collection method and summary statistics. Fourth part releases the comparative statistics by country groups. Fifth part expresses the cross-country regression results and the regression fit for Turkey. Sixth part is on the structural analysis of Turkey. Seventh part focuses on future predictions and policy recommendations for Turkey. Last part summarizes and concludes.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1. THE THEORETICAL BACKGROUND OF FEMALE LABOR FORCE PARTICIPATION

In theory, female labor force participation is handled as a problem of individual's allocation of time between work and leisure. In classic labor supply theory, if leisure time is assumed to be a normal good, then there is positive substitution effect and negative income effect on the hours of labor supplied with the variations in the wage rate. If the real wages increase, the price of leisure increases as well. Therefore with substitution effect, the hours of work is substituted for hours of leisure. On the other hand, the increase in wages means an increase in income that stimulates consumption of various goods, including leisure. Therefore, income effect tends to decrease the hours of work and increase the hours of leisure. This is the theoretical background of "backward-bending" labor supply curve, which assumes that on the average the income effect is larger than the substitution effect (Mincer, 1962, p. 63).

On the other hand, female labor supply differs from the original labor supply function as it considers the demand for hours of work at home<sup>1</sup> in addition to market, because women are choosing between productions at home, production in the market and leisure (Mincer, 1962; Leibowitz, 1975; Goldin, 1994)<sup>2</sup>.

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<sup>1</sup> Cultural division of labor with respect to gender.

<sup>2</sup> The income effect is important for the total amount of female work as the division of work between home and market depends on wages, productivity, prices and the availability of substitutes for women's labor at home (Leibowitz, 1975, p. 172). On the other hand, the income effect of the rise in wage rate need not to exceed the substitution effect as in the case of "backward-bending" labor supply curve because, there are two substitution effects which are quite different from each other. Substitution between wage work and leisure has no effect on the substitution between home production and wage work. (Mincer, 1962, p. 70)

## **2.2. THE INSTITUTIONAL BACKGROUND OF FEMALE LABOR FORCE PARTICIPATION IN THE WORLD**

The cross-country analysis of the women's labor force participation shows that as GDP per capita increases, female participation rate has a U-shaped curve for 25-54 females. As the income level rises, the participation rate falls from very high levels to some low levels, then begin to rise again. The beginning of the upper left comprise of North Africa and South Asia. Then in the downward portion South East Asia, Middle, East, West and South Africa take place. South and Central America are at the bottom and into the rising portion of the U-shape. Finally the rank of the countries in the rising portion is as in the following: southern Europe, East Asia, Western Europe, and northern Europe and at the top is the North America (Goldin, 1994, p. 5). The sectoral shift of female employment shows a similar development. As the real incomes rise, the share of agriculture falls, the share of industry rises up to a peak (about 3300 USD in 1970 price level) then begin to decline, and the share of services rises (Fuchs, 1980, p. 20). Therefore the upper left of the U-curve consists of agricultural countries with high female labor supply. The middle part is the industrializing countries, and the upper-right is the industrialized countries with large services sector.

The female labor force participation is in its highest level in economies where rural population engaged in agricultural production, (Goldin, 1994, p. 1) Labor force participation is necessary in order to provide the survival of the family. Also it is easier in the agricultural sector because production for market and for own consumption is not different from each other. The rural production requires manpower and time but does not require high skills since they are learnt tacitly. So instead of continuing education, males and females begin to work in the farm at early ages instead of going to school. As a result, education level is low among rural population. It is even lower for females since their time is more limited as they should also continue to do the domestic works as well as helping males for production in the farm. But since domestic works are not so distinct from farm works, they do not have to choose one on other and female participation is high, as unpaid family workers.

With the expansion of the market or introduction of a new technology, the locus of production shifts from the family farm and business to the factory and other places of wage labor (Goldin, 1994, p. 5). Increased GDP per capita is also an indicator of structural transformation of an economy out of agricultural sector, in favor of the industrial and services sector (Goldin, 1994, p. 11). At low levels of development, industrial production becomes important in urban centers. Rural population begins to migrate to cities. The total

female labor force in agriculture has fallen or remained constant in all regions Mehra & Gammage, 1999, p. 538). However, agriculture still preserves its importance for women as males move out of the sector faster than the females In 1990, 62% of total female labor force is engaged in agriculture in developing countries. On the other side, male immigrants are employed in industrial sector with wages higher than subsistence level.

The rise in the family income with the higher wages of males causes income effect<sup>3</sup> to dominate among family members. However, wage elasticity of men's labor supply is low, may even be negative as they have no alternative than leisure (Killingsworth & Heckman, 1986, p. 136). They either work or earn no income. Therefore, income effect works through women in the family because they have more alternatives in the use of their time. In contrast with females in rural areas, urban females have to share their time between home production and production for the market. So, wage elasticity is higher for women. They should be offered wages above their reservation wages for choosing production for the market to home.

However, the labor markets in urban centers are segmented as primary and secondary segments. The primary segment requires higher skills, offers higher wages and develops working habits. The jobs in this segment are mainly male dominated. In contrast, secondary segment is mainly composed of low-skilled jobs with lower wages and higher turnover within the segment (Reich et al, 1973). This segment is considered with female labor. There is no mobility between the secondary and primary segments because of skill barrier. Therefore, the low-skilled female migrants can only work in the secondary sector if they are employed<sup>4</sup>. They are actually preferred in the secondary market because of their lower costs than males. Females in developing and transition economies are concentrated in mostly informal<sup>5</sup> sectors with semi-skilled, low wage assembly line production such as textiles, garment, shoes and electronics industries (Mehra & Gammage, 1999). They work for even

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<sup>3</sup> The leisure times of family members are said to be substitutes or complements. But the income effects are the same. If the family income increases, then the leisure increases, if leisure is a normal good (Killingsworth & Heckman, 1986).

<sup>4</sup> Manufacturing sector represents the "feminization" of the flexible labor by women in order to reduce the costs to maintain the global competitiveness (Standing, 1999). Female labor force participation is encouraged as with the increase in demand for cheap labor (Baslevant & Onaran, 2004, p.1376; Wood, 1994).

<sup>5</sup> In order to increase the international competition under trade liberalization, the cost reducing developments increases and even the labor rights are perceived as costs of production. As a result of such changes in the labor demand, the concept of regular, full-time wage labor has been giving its way to "informalization" of employment through more outworking, contract labor, casual labor, part-time labor, home-work and other forms of labor unprotected by labor regulations (Standing, 1999, pp. 585-587)

lower wages than males. Therefore “feminization” implies increase in the share of female employment in manufacturing, but does not mean improvements in their work condition.

As these jobs are unattractive for females, there is little incentive to stay, especially after marriage. So, low skilled females substitute away from the market production as they can only be employed with low status. In addition, even for the employed females in these sectors, skill biased technological shifts<sup>6</sup> are a threat of unemployment, so they are discouraged and drop out of market, when they come to cities.

As a result, they provide more time to nonmarket activity than males if they substitute away from market work, because females are better at producing at home (Killingsworth & Heckman, 1986, p. 138). Moreover, increase in family income increases the demand for female labor especially within the family. Also social stigma against the manual work of women in the market keeps low-skilled women at home production<sup>7</sup> (Goldin, 1994, p. 9). Therefore, the economies in the early phase of development with lower education level have decreasing female LFPR as rural females arrive to the cities.

For higher level of economic development, increases in income fuels schooling. With the rise in income, the education level increases first among male population. Educated male adult population leads families to endow their girls with higher level of education (Goldin, 1994, p. 11). Especially with the development of high school education, the character of the women’s schooling changes and become more useful in the labor market because productivity of female labor increases in the market<sup>8</sup>.

Since the higher educated women can be employed in primary sectors and have higher incomes, they will demand more leisure as a result of income effect. This time, however,

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<sup>6</sup> It is an important barrier for increasing female labor participation in industrial sector. Together with increase in capital-intensive and sophisticated production, the demand for female labor seem to be declining in some middle-income and developed countries because with the mechanization of production, low-skilled female labor is replaced with male labor who has specialized skills in use of these capital.

<sup>7</sup> Moreover, the lower the family income and the lower the women’s wage, the greater the stigma is binding the female labor supply (Goldin, 1994, p. 9). Antecol (2000, 2003) focuses on the effects of cultural factors such as family structure and division of labor by sex on female participation rate.

<sup>8</sup> Education decreases the time allocated for production of one unit of commodity both at home and in the market. However, the increasing productivity in the market is higher than the productivity at the home (Leibowitz, 1975, p. 173-178).

substitution effect dominates because the increase in productivity increases the opportunity cost of time, so demand for leisure tends to fall (Leibowitz, 1975; Smith and Ward, 1985). In addition, higher-educated women tend to spend more time with their children. But the cost of the time they spent at home or outside the market is higher for them because they are offered higher wages than the low-educated women. As a result, the higher opportunity cost leads them to increase their labor force participation with smaller family size<sup>9</sup> (Leibowitz, 1975, s. 195). Higher educated women tend to work as regular paid workers so the presence of children is negatively associated with the women's employment conditions (Petit & Hook, 2002, p. 25).

As the share of services sector increases for more developed economies females can be employed increasingly in services sector. Especially white-collar services sectors increasingly provide new job opportunities with better working conditions for women having a high school diploma and more. These conditions eliminate the social stigma against female labor and even educated married women can also obtain positions in white-collar sector<sup>10</sup> (Goldin, 1994, p. 6).

As an additional effect, the rising participation of educated females stimulates the demand for services. As women have to decrease their work at home, they have a tendency to increase their expenditures for restaurants, dry cleaning and domestic servants etc. (Fuchs, 1980). These are reflected as increasing job opportunities in services sectors for the low skilled females. Therefore, female labor force participation rate begins to rise in the higher level of development accompanying to the increasing share of services sector (Smith & Ward, 1985; Goldin, 1994).

To sum up, there are differences in the transformation of developing and developed countries. The former experienced rapid industrialization accompanied with an increasing share of manufacturing in total output, whereas the later experienced significant shifts from industry to services sector. As a consequence, the shift away from agriculture decreases female LFPR. Female employment may increase in low skilled sectors with low wages.

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<sup>9</sup> Bloom et. Al (2009) implemented the effect of fertility in to the time allocation problem of females.

<sup>10</sup> On the other side, depending on the country's world system position and region, Occupational sex differentiation can be an important mechanism through which women are denied in high status jobs. Even if females employment in clerical, whole-sale and service work increases, managerial positions are dominated by males. This has a discouraging effect on females' education and training (Meyer, 2003).

However in addition to income effect, skill biased technological shifts in production away from female labor causes lower female LFPR in industrializing countries. By the way in developed countries, the demand for high-skilled female labor increases in services sector, with increasing job opportunities in white-collar sector. Therefore, the overall increase in women's activity rate accompanying to the improvements in income level can be attributed primarily to the growing share of service sector<sup>11</sup> in the world (Mehra and Gammage, 1999; Ghiara, 1999).

### **2.3. COUNTRY SPECIFIC EXAMPLES**

Female LFPR has risen in European countries to high levels. Lisbon Agenda is focused on higher labor force participation and it can be sustained by decreasing the gap between male and female LFPR. Policy frameworks achieve at increasing competitiveness, and increasing new and better work opportunities. Therefore, women can increasingly enter into the labor force and the gap between female and male participation rates decreases (Caruana,2006). Implementation of active labor market policies, such as training programs, monitoring and sanctions, job search assistance and adult education have positive effects on female LFPR especially in economies with low female participation. The average education level is not low among the non-participating women in many European economies with low female LFPR. If conditions are satisfied, potential for their productive participation is high. But participation is low because their reservation wage is high in order to be employed. Wage elasticity is higher among females so they should be offered higher wages. They have a greater distance to labor market than the males since they have more alternatives. Therefore, active labor market policies work especially for women, because these policies make them realize about the opportunities in the market (Bergamann and van der Berg, 2008). There are still variations among the countries. In 2005, the average participation rate in EU is around 65%. Nordic countries such as Denmark and Finland have higher rates than 70%, Sweden and Switzerland have even higher than 80%. The gap between female and male LFPR is less than even 5%. High share of part time employment and flexibility of labor force is an important determinant of higher female labor force participation among these countries. On

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<sup>11</sup> The share of services in total female employment has risen for almost all regions in the World; from 28% to 36% for Sub-Saharan Africa, 33% to 41% for East & Southeast Asia, 43% to 48% for Latin America, 47% to 56% for newly independent states and 40% to 48% for the OECD countries in 1970-1990 (Mehra & Gammage, 1999, p. 538).

the other hand, the gap increases in Italy (26.4%), Greece (26.1%), Spain (24.9%), Cyprus (18.9%) and Malta (42%) because female LFPR is lower. Policies on many European countries show that higher flexibility of working time, improvements in educational attainment and skill development of labor force, modernization of social protection systems are important for higher participation rates among European countries (Caruana, 2006).

In the earlier times of twentieth century, there are few adult and married women in the labor force in the US because the income elasticity of female labor supply is large whereas the substitution effect is small. The income elasticity decreases with new jobs with better conditions for females with high school attendance. Especially in 1960s, female participation increases with the expansion of part-time works. However, work was not considered as a “career” and the skills of these females are not sufficient to continue life cycle labor force participation. However, after 1960s the female labor incentives have changed in the US. Especially with innovations in contraceptive pills, females can plan their careers before planning their families. So they increased their investments in schooling, choose career-oriented departments in tertiary level, and continued graduate studies with increased numbers. In 1980s and 1990s, wage elasticity is no higher for US women. They are considered more seriously by the employers. Until 1960s female LFPR increases with secondary education, however now it increases with tertiary level education (Goldin, 2006).

LFPR is also increasing among Latin American countries. It is 66% for Brazil and 48% for Mexico in 2005. It was 39% and 37% in 1990 whereas female LFPR is 69% for the US. Improvements in infrastructure and use of consumer durables are also important for higher participation of females. About 80% of females are running washing machine in US, but it was only 24 % and 36% for women in Brazil and Mexico in 1990. Access to running water and electricity is increasing among the lowest income quintiles since 1990s in Latin America. Price of washing machines, dish machines has declined so with the basic services, the use of these home appliances increases. Therefore, females spend less time for domestic works. The increase in female LFPR also coincides with this period for Brazil, Mexico and Argentina (Cubas, 2010). Among the Latin American countries, Chile has one of the lowest female LFPR (43%) even it has experienced an uninterrupted growth until 1998 with an annual rate of 7%. Only Mexico and Costa Rica have lower female LFPR. When considered culturally, Chilean women’s responsibility is to look after their children while men are specializing in work outside the home. In Chile, nationwide public day care service is provided for poor and vulnerable children since 1970. Therefore, female LFPR is expected to increase. Substitution effect dominates for non-working mothers. Mothers working full

time face an income effect and can reduce the amount of work hours. However, there is not much variation after these policies (Medrano, 2009). Female participation increases significantly with improvements in education level in Chili. Female LFPR is 15% for women with no education whereas it is 59% for women with higher education. (Mizala, 1999). So public day care services are important to improve the educational attainment of children even they do not have a significant effect on female LFPR. Children having pre-primary education can evolve mental and psychological abilities easily and they can attend higher education easily. This is especially important for the average education level of next generations.

Other developing countries have increasing female LFPR but much lower than the high and upper-middle income countries. India is one of the fastest growing economies in the world. However, female LFPR start to increase in 1999, after a long period of stagnancy in 1983-1999. Such a rapid growth can only create attractive opportunities for highly educated females. However, urban labor market for women with poor education is not improving. Their previous high participation in recent times is just because of necessities, and do not have effect on economic growth. When the education level is considered, labor force participation of poorly educated females rises as a result of necessities. (Klasen and Pieters, 2012).

Female LFPR of Pakistan is very low, but it is slightly increasing from 15.9 % in 2003 to 18.9% in 2005 The reason behind such a low participation is the very low level of education in rural areas. Female LFPR is high in rural areas because family income is low. But when these rural females come to cities, their participation is low. Basic level of education of rural females is not sufficient to enter in the urban labor market. Participation in urban areas increases with higher education in India (Faridi et al. 2009).

Women's LFPR is lowest among the Middle Eastern-North African (MENA) countries (Spierings and Smits, 2007; Robinson, 2005). This trend is consistent, even the region experienced high economic growth, lower female illiteracy, faster urbanization, and lower fertility. It is changing with increasing number of females entering to the labor force. With changes in demographic composition, labor force includes more youths with higher education level and it has positive impact on female LFPR. However it is still lower than many other regions in the world. Female tertiary enrollment ratio is almost 40% for Saudi Arabia and Jordan in addition to their high GDP per capita, but participation rate is 17% and 15%, respectively. Therefore, low female LFPR cannot be attributed to low level of GDP per capita, high illiteracy and fertility, and low levels of urbanization. Especially traditional and

religious beliefs encourage conservative roles for females in MENA, such as carrying out domestic works and raising children, rather than working in the market. Moreover, the religion is has a discouraging effect on females by restricting many activity, even they are perceived as right in developed countries (Robinson, 2005). For example, Egypt and Indonesia have similarity in terms of the share of Muslim population, GDP per capita, declining fertility and female illiteracy. On the other hand, Indonesia has rapid urbanization whereas urban population remains stagnant for Egypt for years. However, female LFPR is higher for Indonesia rather than Egypt. It can be attributed to Egypt's strict implementation of religious law (Shari'ah) in personal status<sup>12</sup> so female rights are restricted in many issues. In contrast, Indonesia has interpreted Islamic laws less strictly because of its diversity of cultural influences throughout its history.

But there are also additional factors that reinforce the religious constraints. Since MENA is oil exporting region, their fast growth is due to the oil-booms without increase in productivity and labor market efficiency. In addition, decline in wages as a result of decline in oil-boom makes men to work in several jobs and exclude women in the labor force. MENA has also the highest unemployment averages (15%) but the labor force is growing rapidly. Therefore, demand for women in the labor force cannot be increased without creating job opportunities in these countries. Religious, social and structural factors cause low female LFPR even if education and income level is increasing to higher levels.

Turkey has one of the lowest female participation among OECD countries (27.7% LFPR in 2005), and what is specific is its declining trend despite having improvements in income and education level. It is important to mention that Turkey has similar social and economic development levels especially with Latin American countries but even Mexico has higher performance (54% in 2005), although it has the lowest participation among the Latin American countries. In addition to Turkey, only MENA have such a low female participation in contrast with their high GDP per capita and female tertiary education level. Muslim population also dominates in Turkey but religious law is not considered legally but Turkish female LFPR is even lower among MENA. Therefore, structural composition of Turkey plays the major role in this case. I will handle it separately in the chapter on Turkey.

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<sup>12</sup> Rest of the legal system is based on French Civil Law, however religious law dominates where the two conflicts (Robinson, 2005)

Recent studies on Turkey also considers the lower and decreasing level of participation rates in female labor in comparison to the world averages<sup>13</sup> (Başlevent&Onaran, 2004; Dayıođlu&Başlevent, 2006; Tunalı&Başlevent, 2002; Ercan, 2007). Such a situation brings into mind that whether labor market in Turkey functions well in the sense that it allocates the women according to their productive potential. Studies show that the wage labor attracts the best workers. Also, if female labor from other groups with lower productivity chose to be wage labor then productivity of wage labor declines. Therefore, these results indicate the allocative role of the labor market functions appropriately (Tunalı & Baslevent, 2002, p. 24).

So, what causes the declining participation rate for female labor force in an efficiently working labor market in spite of the increase in education level and decrease in fertility in Turkey? This question will be analyzed in detail in chapter five that is related with Turkish female labor market.

To sum up, there are variations among the countries even with similar economic and demographic characteristics in terms of female LFPR. Institutional, structural, cultural or demographic factors can have different effects. The impact of these factors should be analyzed carefully in order to reach higher levels of female participation.

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<sup>13</sup> Female LFPR has declined from 34.3% to 24.9% between 1988-2006 (Dayıođlu&Kırdar, 2010, p.2)

## CHAPTER 3

### METHODOLOGY AND DATA

#### 3.1. RATIONALE FOR THE RESEARCH METHOD

A number of factors determine labor force participation of females. The rationale of the study is based on the quantitative research methods. Econometrics is the most appropriate method to analyze the relationship among several variables. The cross-country OLS estimation is used in this manner. Dependent variable is the female labor force participation rate. Dependent variable is grouped into five age groups. Independent variables are a set of education and income variables. I try to answer the following questions by using fixed effect analysis: what are the effects of education level and per capita GDP on female labor force participation among several countries? Does the Turkish female labor market works in accordance with the world conjuncture?

#### 3.2. METHODOLOGY OF DATA COLLECTION AND SUMMARY STATISTICS

##### 3.2.1. *The female labor force participation rates*

I collect female labor force participation rates from LABORSTA, the database of International Labor Organization (ILO). ILO defines the labor force as “*economically active population*” that comprises all persons of either sex who furnish the supply of labour for the production of goods and services that is defined by the 1993 version of the System of National Accounts, during a specified time-reference period ([www.laborsta.org](http://www.laborsta.org)).

I separate labor force into five groups: 15-19, 20-24, 25-44, 45-54 and 55-64 age groups. I consider the younger ages (15-24) are in order to observe especially the effect of education on their participation rate. 15-19 age group participants include primary school graduates and 20-24 age group participants include the secondary school graduates. The prime age group in this study is female population in 25-44 as it covers the highest portion of the labor force

because of the width of the age range and it also includes the females with tertiary education whose tendency to participate in the labor force is higher than others after they just graduated. I expect 45-54 age groups to have similar behavior with the prime age but this group covers the middle-age females who complete education years before the prime age, so any increase in education level of young females (20-24 age group) effect the education level for this group with at least twenty year lag. As a result, there can be differences due to the differentiation in the education level in accordance with the 25-44 age group, which includes the recent graduates of higher education. 55-64 age group is the oldest part of working age population. Their participation changes with retirement policies. However, I want to see the participation behavior for different education and income levels.

I calculated the participation rates for each age group by taking the ratio of economically active population over total population of the relevant age group. Fifty-six countries have regular recent data in 2000-2008 so I selected them for the analysis. Going backward in time, the dataset covers 1970-2008 periods.

The female LFPR in the world is increasing except young age group (15-19). Especially prime age group shows a significant increase followed by 45-54 age group. On the other hand, in 2005 there are three countries with very low female LFPR in 20-44 age group: Bangladesh, Egypt, Pakistan and Turkey. Female LFPR is even below 30% (Table 3.2).

**TABLE 3.1. Summary Statistics of Female Labor Force Participation Rate (Year=1970, 1990, 2005)**

Variable	Year	Obs	Mean	Std. Dev.	Min	Max
r1519	1970	25	36,3	14,79014	9,5	77,2
	1990	40	34,0075	16,22732	8,5	69,4
	2005	53	23,15283	16,89372	2,8	65,5
r2024	1970	25	51,496	15,2344	24,1	79
	1990	41	61,17561	16,56894	10,4	83,2
	2005	53	56,00566	13,97282	20,7	79,2
r2544	1970	25	42,16355	18,28706	15,37457	79,27657
	1990	37	61,86877	16,9941	12,88101	91,32266
	2005	50	70,65818	14,35125	23,14198	86,24054
r4554	1970	25	40,53367	19,614	14,66176	77,88971
	1990	37	56,04197	19,66213	12,45693	91,32948
	2005	50	67,9145	16,20342	24,03122	89,30988
r5564	1970	25	29,12962	14,80245	12,62924	59,6063
	1990	36	31,09102	15,08091	3,819695	66,28175
	2005	48	39,98666	14,48956	16,98363	69,02357

**TABLE 3.2. Female LFPR by Country (Year=2005)**

<b>Country</b>	lfpr1519	lfpr2024	lfpr2544	lfpr4554	lfpr5564
Argentina	19.8	53.6	68.7	66.6	47.6
Australia	60.4	77.1	72.9	75.4	44.1
Austria	36.2	71.8	81.2	77.1	23.5
<b>Bangladesh</b>	<b>13.7</b>	<b>29.0</b>	<b>34.5</b>	<b>32.0</b>	<b>25.5</b>
Belgium	7.3	56.2	82.0	67.2	24.6
Brazil	42.5	67.1	72.8	64.0	41.8
Bulgaria	7.8	44.0	77.0	77.4	27.8
Canada	54.9	76.1	81.8	79.8	49.4
Chile	9.2	40.6	53.6	49.0	31.7
Costa Rica	21.4	54.4			
Cyprus	7.5	68.5	79.7	69.4	32.8
Czech Republic	7.5	48.4	77.9	89.3	33.1
Denmark	65.5	74.8	84.7	84.1	54.6
<b>Egypt</b>	<b>11.2</b>	<b>34.4</b>			
Estonia	7.4	52.7	79.9	89.0	56.0
Finland	33.1	66.7	82.9	88.9	56.7
France	11.5	55.3	80.9	80.3	37.4
Georgia	14.3	35.6	67.8	73.9	66.9
Germany	26.8	66.3	78.1	80.6	43.2
Greece	8.6	49.1	73.8	56.4	26.9
Haiti	18.7	48.3	76.1	80.4	67.8
Honduras	17.3	37.7	46.9	41.5	
Hong Kong, China	13.2	72.6	75.1	56.3	27.5
Hungary	4.1	42.1	71.1	74.2	27.7
Indonesia	34.0	54.3	54.0	61.0	
Israel			70.9	70.4	45.7
Italy	9.6	45.7	66.7	56.4	21.5
Japan	16.5	69.8	67.6	71.2	50.8
Korea, Republic of	10.3	62.6	60.1	61.1	46.5
Latvia	10.5	52.9	81.3	83.5	48.3
Lithuania	2.8	39.6	86.2	84.9	44.5
Mauritius	16.6	53.5	56.4	43.8	22.9
Mexico	24.0	44.2	51.1	46.7	30.7
Netherlands	57.2	79.2	80.4	72.5	36.0
New Zealand	53.8	66.1	74.3	80.4	62.3
Norway	47.4	68.9	83.0	83.3	62.8
<b>Pakistan</b>	<b>16.9</b>	<b>20.7</b>	<b>23.1</b>	<b>24.8</b>	<b>21.6</b>
Peru	28.5	63.3	69.3	57.1	33.7
Philippines			57.0	64.0	55.3
Poland	5.5	48.9	80.4	70.4	23.5
Portugal	14.8	58.2	84.8	74.9	46.1

<b>Table 3.2. Continued</b>					
Puerto Rico	14.7	45.9	59.3	48.6	24.1
Romania	11.5	42.4	73.4	65.2	33.5
Singapore					
Slovakia	7.5	55.3	80.1	86.0	18.2
Spain	23.4	61.7	73.4	58.1	29.6
Sri Lanka	13.2	44.4			
Sweden	33.5	64.1	85.3	86.1	69.0
Switzerland	51.5	78.0	80.9	82.1	57.7
Thailand	26.6	64.0			
Trinidad and Tobago	21.5	69.4	71.9	63.6	37.5
<b>Turkey</b>	<b>18.0</b>	<b>32.0</b>	<b>30.0</b>	<b>24.0</b>	<b>17.0</b>
Ukraine	14.8	55.8	79.6	77.1	31.4
United Kingdom	56.4	69.2			
United States	44.2	70.1	74.9	76.0	57.0
Uruguay	22.0	65.7	78.1	69.6	45.5

### *3.2.2. Education Indicators*

There are three kinds of education data that I collected from World Bank's Education Statistics database covering the period 1970-2010. The first one is Barro-Lee: average years of total schooling for different age groups for females (fayts) and males(mayts). Female and total population averages exist in the database. However in order to obtain male average year of total schooling , I double the population average and then subtract female average. Also, I calculate the average schooling year of 25-44 age group by taking the average of 25-29,30-34,35-39 and 40-44 age groups. The second education variable is the school enrollment ratio of female population that is collected from WDI. There are three education levels; which are primary, secondary and tertiary school enrollment ratio for gross female population. The third education variable is the female labor force by education level:namely the primary, secondary and tertiary education.

**TABLE 3.3. Average Year of Total Schooling for Females (Year=1970,1990,2005)**

Variable	Year	Obs	Mean	Std. Dev.	Min	Max
fayts1519	1970	54	6.697433	2.565222	1.1197	11.7371
	1990	54	8.185517	2.098292	3.1437	12.5578
	2005	54	8.870748	1.869482	3.592	13.0226
fayts2024	1970	54	7.494074	3.0441	0.5746	12.9884
	1990	54	9.746596	2.594336	2.4919	13.1203
	2005	54	10.93012	2.11967	3.4268	14.4403
fayts2544	1970	54	5.985469	2.837921	0.422125	11.686
	1990	54	8.79081	2.956183	1.363725	13.19328
	2005	54	10.42326	2.68654	3.2672	13.65277
fayts4554	1970	54	4.779202	2.761868	0.20535	10.8052
	1990	54	6.938794	2.984468	0.55875	12.65155
	2005	54	9.156454	3.031765	1.9833	13.5002
fayts5564	1970	54	4.20593	2.665922	0.133	9.73245
	1990	54	5.668501	2.890926	0.3558	11.71165
	2005	54	7.966793	3.157593	1.28335	13.17065

**TABLE 3.4. Average Year of Total Schooling for Males (Year=1970,1990,2005)**

Variable	Year	Obs	Mean	Std. Dev.	Min	Max
mayts1519	1970	54	6.909607	2.363093	1.8713	11.8395
	1990	54	8.037361	1.876933	3.0273	12.212
	2005	54	8.618533	1.647177	4.3333	12.5344
mayts2024	1970	54	8.046263	2.764595	2.3066	13.2714
	1990	54	9.99583	2.047284	4.3851	13.8145
	2005	54	10.76918	1.436671	6.9814	14.0303
mayts2544	1970	54	6.960234	2.693104	1.312125	11.90175
	1990	54	9.277929	2.469813	3.981775	13.33317
	2005	54	10.45852	2.023323	5.017475	13.292
mayts4554	1970	54	5.85898	2.623714	0.9936	10.81575
	1990	54	7.950572	2.656982	2.9082	12.52995
	2005	54	9.645257	2.497746	4.1246	13.42
mayts5564	1970	54	5.224233	2.473159	0.886	9.81725
	1990	54	6.727647	2.603665	1.85705	11.85155
	2005	54	8.887639	2.674024	2.87445	13.31525

Table 3.3 and 3.4 indicate an increase in average year of total schooling of female and male population. 15-19 age group covers the population in secondary school level, so the increase in the average schooling year above eight years means that people choose to continue secondary education as time pasts. 20-24 age group includes secondary level graduates and tertiary level participants. The average schooling years become closer to secondary completion level in time<sup>14</sup>. This indicates that following the high school graduation, people can continue tertiary level education. The education level increases among 25-44, 45-54 and 55-64 age groups within years following the improvements in 20-24 age group. Since 20-24 age group in 2005 is in 25-44 age group in 2010, the increase in the education level of 20-24 will be reflected in the prime age group with a 5 year lag.

The highest increase in school enrollment ratio is observed in tertiary level, following the improvements in secondary level. Primary level education has increased. Minimum 70% of the females have primary level of education (Table 3.5).

**TABLE 3.5. Female School Enrollment Ratio**

**(Year=1970, 1990, 2005)**

Variable	Year	Obs	Mean	Std. Dev.	Min	Max
female school enrollment ratio, primary (fse1)	1970	40	98,17471	20,90857	23,36005	123,1801
	1990	50	98,66336	15,83255	32,23841	129,0152
	2005	53	102,4326	8,261524	71,54593	132,4461
female school enrollment ratio, secondary (fse2)	1970	37	52,8752	28,47554	6,62607	105,9947
	1990	44	79,46215	26,71009	11,74947	123,1772
	2005	52	94,87856	19,10083	25,48585	145,0886
female school enrollment ratio, tertiary (fse3)	1970	40	8,725782	7,203812	0,24151	38,59374
	1990	39	26,60265	19,6647	1,26571	98,79987
	2005	50	56,5617	27,66942	4,26751	100,6671

### 3.2.3. GDP per capita

The GDP per capita is from the Global Economic Prospects of World Bank database: Mean of GDP per capita (real 2005 USD) increase more than twice for the fifty-six countries. However, what is important to note is that there is a huge gap between the minimum and maximum values. Moreover, the gap increased in time.

<sup>14</sup> The secondary education level is assumed to be between 8-12 years of schooling. So Table 1 shows that the average years of schooling has almost reached to 12 years.

**TABLE 3.6. GDP per capita (Real 2005 USD)**

Year	Obs	Mean	Std. Dev.	Min	Max
1970	54	8367.821	8315.192	285.2876	35987.72
1990	54	13473.21	12754.68	278.0344	45935.18
2005	54	19251.02	17145.85	473.7296	65999.5

### 3.2.4. Other Explanatory Variables

There are other variables that will help to understand the change in female LFPR without using in regression. The shifts in population and production can be an explanation for the changing labor force participation trends for females. Sectoral data of female employers (agriculture, industry and services) are obtained from Gender Statistics database of World Bank. The urban-female population ratio, the share of employment by payment, and finally fertility rates are obtained from World Development Indicator (WDI) database of World Bank (WB).

**TABLE 3.7. Share of Population by Living Areas**

(Year=1980,1990, 2000, 2010)

Variable	Year	Obs	Mean	Std. Dev.	Min	Max
rural	1980	55	40,03	20,93	4,6	89,1
urban		56	60,68	21,42	10,9	100
rural	1990	55	36,15	20,41	0,5	91,5
urban		56	64,49	20,79	8,5	100
rural	2000	54	34,31	19,95	2,9	89,2
urban		56	66,91	20,61	10,8	100
rural	2010	54	31,84	19,38	1,2	86,1
urban		56	69,29	19,94	13,9	100

The share of the population living in the urban centers increases as rural population declines (Table 3.7). However, there are countries still having high rural population in 2010. As with the decrease in the share of rural population, the share of agriculture in female employment also declines. On the other hand the share of services increases while the share of industry declines in urban centers (Table 3.8).

**TABLE 3.8. Sectoral Share of Female Employment****(Year=1980, 1990, 2000, 2010)**

Variable	Year	Obs	Mean	Std. Dev.	Min	Max
Agriculture	1980	35	17,80	19,53	0,4	74,1
Industry		35	21,23	9,55	7,8	56,2
Services		35	60,47	19,43	18,1	83,9
Agriculture	1990	46	17,07	22,65	0,1	84,9
Industry		47	19,39	8,47	8,8	50
Services		47	63,41	21,91	2,1	85,4
Agriculture	2000	52	14,11	19,84	0,2	76,9
Industry		53	15,54	6,68	4,1	43,1
Services		53	70,25	19,32	12,1	89,3
Agriculture	2010	51	9,68	15,11	0,2	75
Industry		51	13,71	5,47	4,3	26,9
Services		51	75,90	17,12	12,9	95,5

The change in sectoral employment also reflected in the earning types of females. Since the females are unpaid family workers in agriculture, the share of self-employed (mainly includes unpaid family workers) females decreases. On the other side, most employees in services and industry are wage and salaried workers, their share increases especially with booming services sector.

Finally, the fertility rate in the world is decreasing in years. This is important for increasing the available time for the economic activity especially in the urban sectors.

**TABLE 3.9. Share of Female Employment by Payment (Year=1980,1990,2000,2010)**

Variable	Year	Obs	Mean	Std. Dev.	Min	Max
wage and salaried workers	1980	14	78.13	18.77	39.2	96.1
self-employed workers		14	21.81	18.75	3.9	60.8
wage and salaried workers	1990	35	74.63	20.84	21.2	96.7
self-employed workers		37	27.88	23.74	2.9	91.8
wage and salaried workers	2000	54	75.96	20.68	8.3	95.1
self-employed workers		54	23.52	19.79	4.6	84.3
wage and salaried workers	2010	36	81.36	15.42	31.7	95.8
self-employed workers		36	18.48	15.31	4.4	68.3

**TABLE 3.10. Fertility**

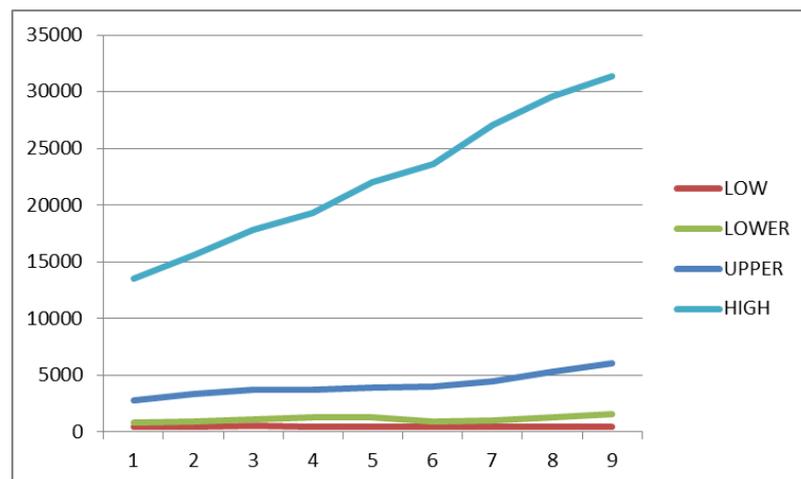
Year	Obs	Mean	Std. Dev.	Min	Max
1980	56	2.81	1.41	1.44	6.535
1990	56	2.40	1.07	1.26	6.024
2000	55	1.96	0.82	1.035	4.474
2010	56	1.86	0.57	1.042	3.504

## CHAPTER 4

### COMPARATIVE STATISTICS

The dataset includes dummy variables, according to the classification of World Bank with respect to the real GDP/capita levels of the countries. They are separated as high-income (HIC), upper-middle income (UMC), lower-middle income (LMC) and low-income (LIC) countries. Such a classification makes it easier to compare the data by four income levels<sup>15</sup>. Analysis of variables according to income classification makes it possible to see the differences among each group. Such a comparison also gives a clue about the possible relationships among the variables.

The difference among the GDP per capita for the countries in different income groups attracts attention (Figure 4.1). There is a huge gap between real GDP per capita level of high income and other country groups in 1970. Especially, the GDP per capita level of high income countries is much higher even than the upper middle income countries. Moreover, the increase in the GDP per capita is highest among the high income countries, so the gap increasingly becomes larger.



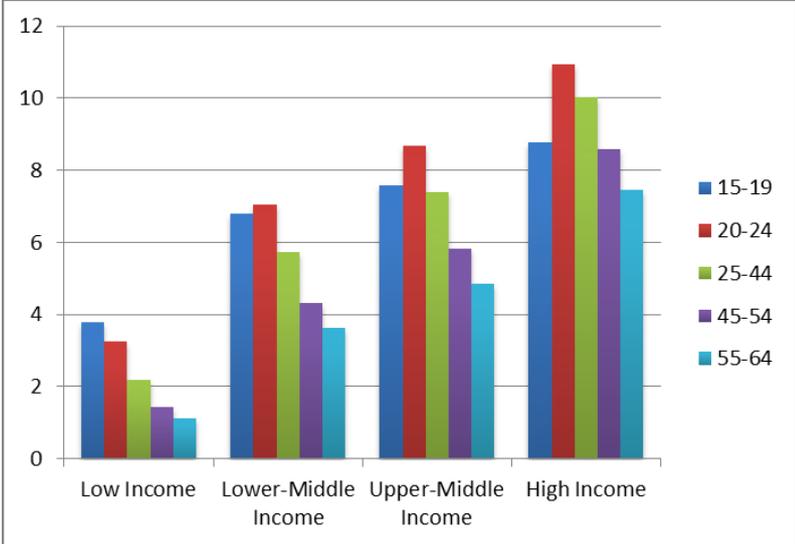
**Figure 4.1. GDP per capita (constant international 2005\$)**

\*Data is from <http://data.worldbank.org/data-catalog/world-development-indicators>

<sup>15</sup> Summary statistics by income levels are in Appendix A.

Figure 4.2 shows the females' average year of total schooling for all age and income groups. The highest average is observed for 15-19 age groups for LIC but it is even less than five years. On the other hand, the 20-24 age group has the highest average as it includes the females with secondary level education. Most importantly, the education level increases in the direction of higher income levels. High-income countries have the highest level of education in all age groups.

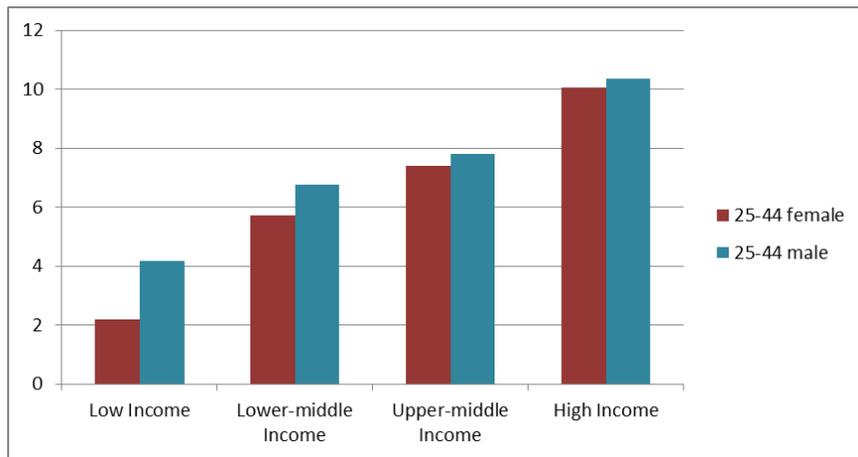
The gap between male and female education level is also important to explain the reasons behind improvements in female education (Figure 4.3). The male education level is higher than female education level in general. However, the gap becomes closer as income level increases.



**Figure 4.2. Female Average Year of Total Schooling (Income Level and Age Group)**

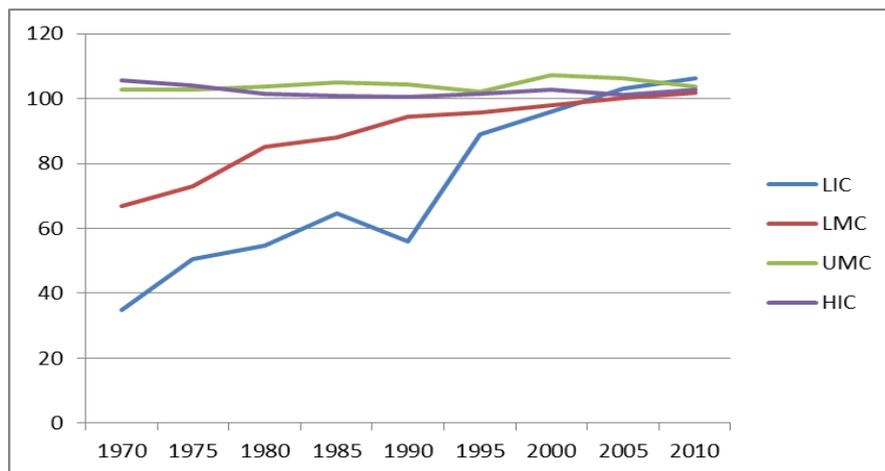
\*Data is obtained from <http://data.worldbank.org/data-catalog/education-statistics>

There are differences in female school enrollment ratio of income groups. Figure 4.4 shows the primary level enrollment ratio of females. The gap between country groups is disappearing even lower income countries have much lower rates in 1970s.



**Figure 4.3 Gender Gap in Education Level (in year)**

\*Data is obtained from <http://data.worldbank.org/data-catalog/education-statistics>

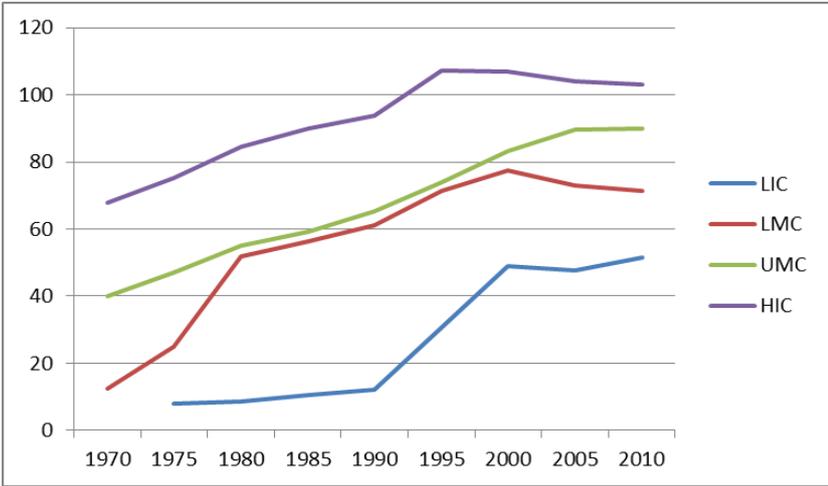


**Figure 4.4. Primary Level Enrollment Ratio of Females (by Income Levels)**

\*Data is obtained from <http://data.worldbank.org/data-catalog/education-statistics>

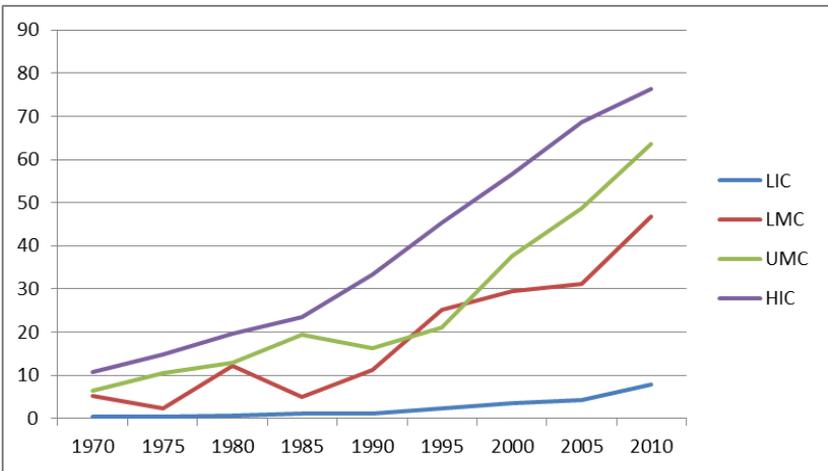
On the other hand, there is a considerable gap between income groups in terms of secondary level enrollment ratio (Figure 4.5). The reason is simple. Although primary enrollment ratio for each country group is almost same in 2010, lower income countries follow from behind. Therefore, higher income group can increase secondary enrollment while the lower income group can just increase primary enrollment.

The difference in the secondary level enrollment of females causes a higher difference in tertiary enrollment (Figure 4.6). High income countries have the highest enrollment ratio followed by middle income countries. However, tertiary enrollment continues to be very low among low income countries.



**Figure 4.5. Secondary Level Enrollment Ratio of Females (by Income Levels)**

\*Data is obtained from <http://data.worldbank.org/data-catalog/education-statistics>

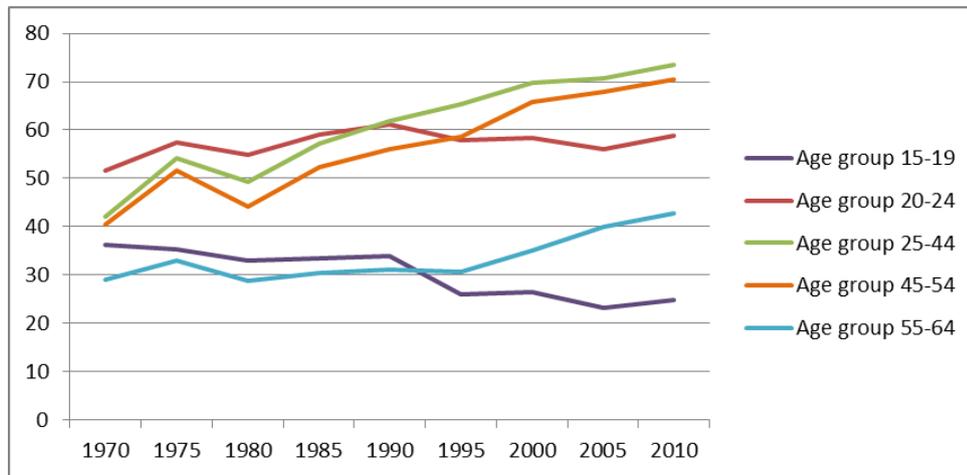


**Figure 4.6. Tertiary Level Enrollment Ratio of Females (by Income Levels)**

\*Data is obtained from <http://data.worldbank.org/data-catalog/world-development-indicators>

Fertility rates are also decreasing from low income to high income countries (Figure 1A, Appendix A). Therefore, lowest fertility is among the high income countries with higher education level. It is important in the sense of higher female LFPR because, more educated females have higher tendency to participate in the labor force with smaller family size.

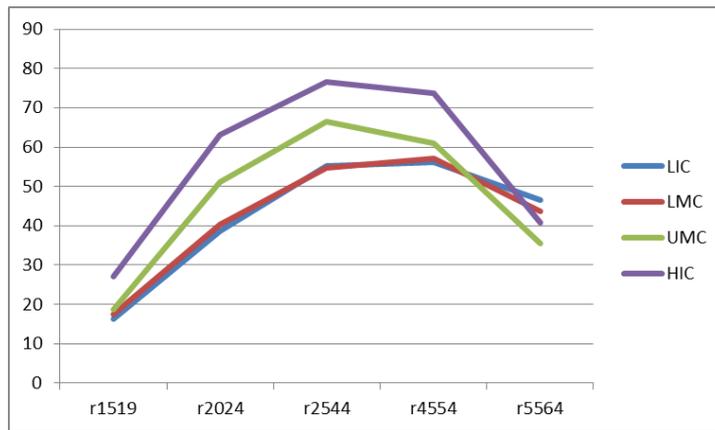
The worldwide labor force participation of women is increasing in time (Figure 2A, Appendix A). However, labor force participation of different age groups give more information about the changes in female LFPR. Figure 4.7 shows that there is a decrease in the participation rate for 15-19 age group. It is an expected outcome as the years of education increase for that group and the females choose to continue to secondary education instead of increasing their labor supply. On the other hand, there is an upward trend for 20-64 ages with different slopes. 20-24 age group includes both females who complete secondary level education and females who continue tertiary level education. Therefore, female LFPR increases for 20-24 age group especially with the positive impact of secondary education. On the other hand, tertiary education keeps them away from labor force until they graduate. The positive effect of tertiary enrollment of 20-24 age group can only be reflected in 25-44 participation rates. 25-44 age group has the highest participation rate followed by 45-54 age group. Participation of 55-64 females increases after 1995. The rise in the retirement age as a result of improvements in the worldwide life expectancy can be an explanation (Figure 3A, in Appendix A).



**Figure 4.7. Trends in Female LFPR by Age Group**

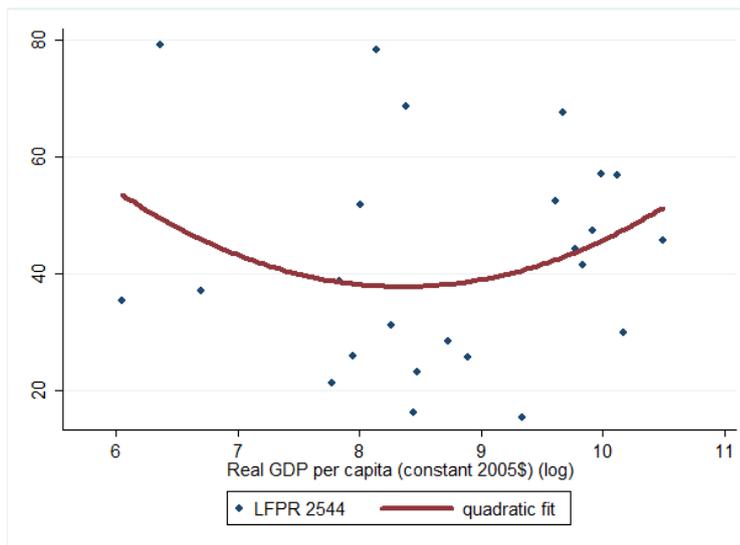
\*Data source <http://laborsta.ilo.org/>

Figure 4.8 shows female LFPR by age groups for different income levels. Female LFPR has an inverse U-shape for age groups. Female LFPR increases until prime age and begin to decline after prime age. Moreover, highest participation of females into the labor force is observed among high income countries, which is followed by upper middle income, then the lower income countries (LIC and LMC).



**Figure 4.8. Female LFPR by Age for Different Income Levels (Year=2005)**

\*Data source <http://laborsta.ilo.org/>



**Figure 4.9. Female LFPR and GDP per capita (log) (Year=1970)**

\*Data source <http://laborsta.ilo.org/>

Figure 4.9 shows relationship between female LFPR and GDP per capita (log)<sup>16</sup> in 1970. In 1970 the U-shape relationship between income level and female LFPR is visible.

The change in the relationship reflects the differences between rural and urban population share that changes with income level. The rural and urban population composition by income level (Table 4.1) shows that the share of rural population is high whereas urban population is low in lower income countries. Moving to the higher income countries shows that the

<sup>16</sup> I graph the natural log of GDP, rather than the actual GDP in order to reflect GDP growth rate directly from the slope of the graph.

situation is just the inverse. The share of rural population is smaller whereas urban population is larger. On the other hand the rural population is decreasing while urban population is decreasing. However, the share of population living in rural areas is still large for low and lower middle income countries.

**TABLE 4.1. Rural and Urban Population Share by Income Level**  
(Year=1970, 1990, 2005)

Variable	Year	LOW INCOME	LOWER MIDDLE INCOME	UPPER MIDDLE INCOME	HIGH INCOME
Rural	1970	86.3	66.525	46.32143	36.39355
Rural	1990	75.85	58.3875	34.70714	28.50645
Rural	2005	65.8	53.725	31.09286	26.36667
Urban	1970	13.7	33.475	53.67857	64.74375
Urban	1990	24.15	41.6125	65.29286	72.38437
Urban	2005	34.2	46.275	68.90714	75.28125

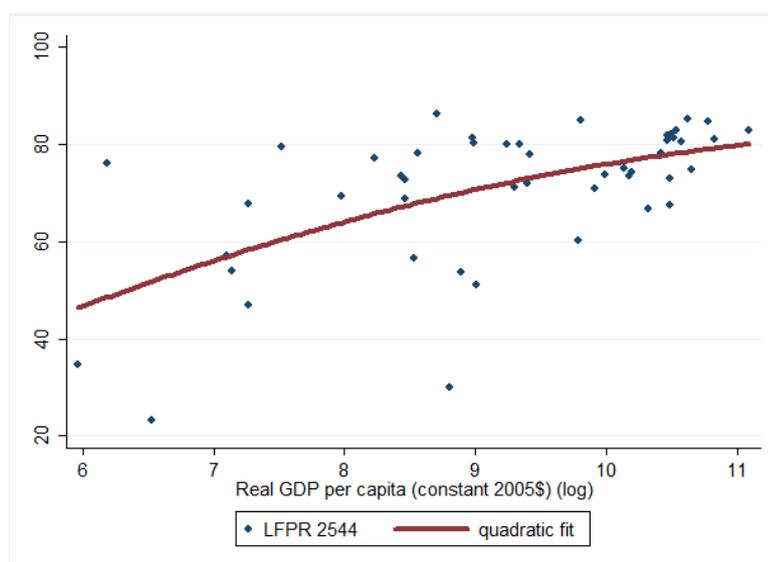
Similar to the changes in rural-urban population composition, the sectoral composition of female employment changes for different income levels (Table 4.2). The share of agriculture is the largest among low income countries. On the other hand the share of agriculture is smallest in high income countries. In contrast, the share of services sector is the smallest in low income whereas it is largest in high income countries. The changes in sectoral employment also indicate that the share of industry is rising in low income countries, whereas it is decreasing for high income countries. This shows the development pattern of different income levels. Agricultural economies first industrialize. Simultaneously, the industrialized high income countries shift to good producing to service providing activities. Therefore, the sectoral employment follows the same pattern.

So in 2005, the services sector employment is high in high income countries. Female LFPR is also high in high income countries in accordance with the services sector. This can be related with the increasing female LFPR with income in 2005. As most of the countries in the dataset are high income countries. Figure 4.10 shows the positive relationship between female LFPR and income level.

**TABLE 4.2. Sectoral Share of Female Employment by Income Level**

(Year=1970, 1990, 2005)

YEAR	VARIABLE	LOW INCOME	LOWER MIDDLE INCOME	UPPER MIDDLE INCOME	HIGH INCOME
1990	Agriculture	67.25	43.52	21.92	7.38
	Industry	9.05	14.44	21.80	20.05
	Services	19.95	41.86	57.65	72.31
2005	Agriculture	68.10	40.96	14.44	3.63
	Industry	12.50	14.74	19.69	13.81
	Services	19.40	42.51	65.66	82.22



**Figure 4.10. Female LFPR and GDP per capita (log) (Year=2005)**

\*Data source <http://laborsta.ilo.org/>

## CHAPTER 5

### CROSS-COUNTRY ANALYSIS

#### 5.1. THE OLS MODEL

The regression equation that is formed by using the defined variables and that will be analyzed by using the panel data set is expressed as in the following;

$$lfpr\ age_{i,t} = \alpha_0 + \alpha_1 * mayts\ age_{i,t} + \alpha_2 * gdp_{i,t} + \alpha_3 * gdpsq_{i,t} + u_{i,t}$$

$$lfpr(age)_{i,t} = \beta_0 + \beta_1 * fayts\ age_{i,t} + \beta_2 * gdp_{i,t} + \alpha_3 * gdpsq_{i,t} + v_{i,t}$$

$$lfpr(age)_{i,t} = \gamma_0 + \gamma_1 * fse3\ age_{i,t} + \gamma_2 * gdp_{i,t} + \gamma_3 * gdpsq_{i,t} + w_{i,t}$$

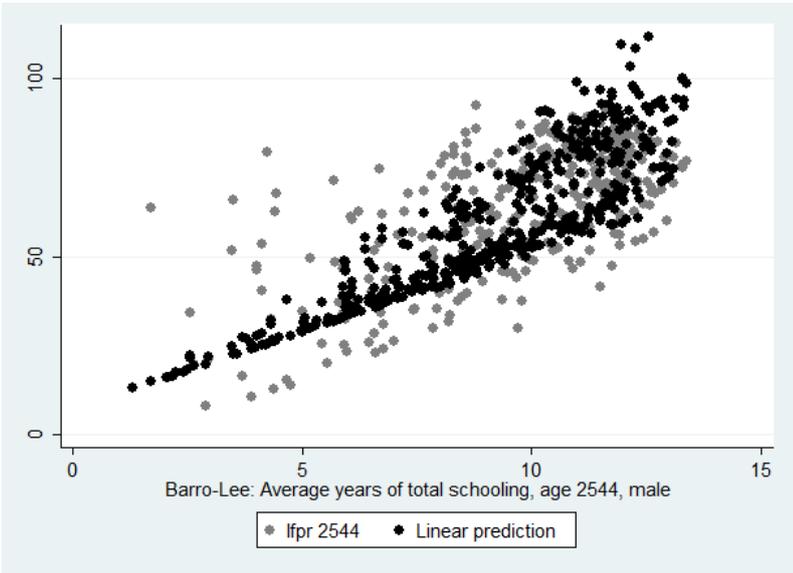
In this equation  $lfpr(age)_{i,t}$  is the female labor force participation rate of each age group,  $fayts(age)_{i,t}$  is the average year of total schooling for females at each age group,  $mayts(age)_{i,t}$  is the average year of total schooling for male age groups and  $fse3_{i,t}$  is the tertiary school enrollment ratio for females.  $gdp_{i,t}$  is the real GDP per capita level with constant 2005\$ for  $i^{th}$  country  $t^{th}$  year.  $u_{i,t}$ ,  $v_{i,t}$  and  $w_{i,t}$  are the within error term. I also use  $gdpsq_{i,t}$  which is the square of  $gdp_{i,t}$  divided by 100 in order to capture any curvature. Fixed effect is used in order to see the pure impact of education and GDP per capita, without the country specific effects<sup>17</sup>. I expect strong positive impact of education variables on female LFPR. On the other hand, I expect a curvilinear relationship between female LFPR and GDP per capita. Therefore I expect to find a weak positive correlation between them in my linear model.

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<sup>17</sup> Hausman test also approves the use of fixed effect.

**5.2. THE REGRESSION RESULTS**

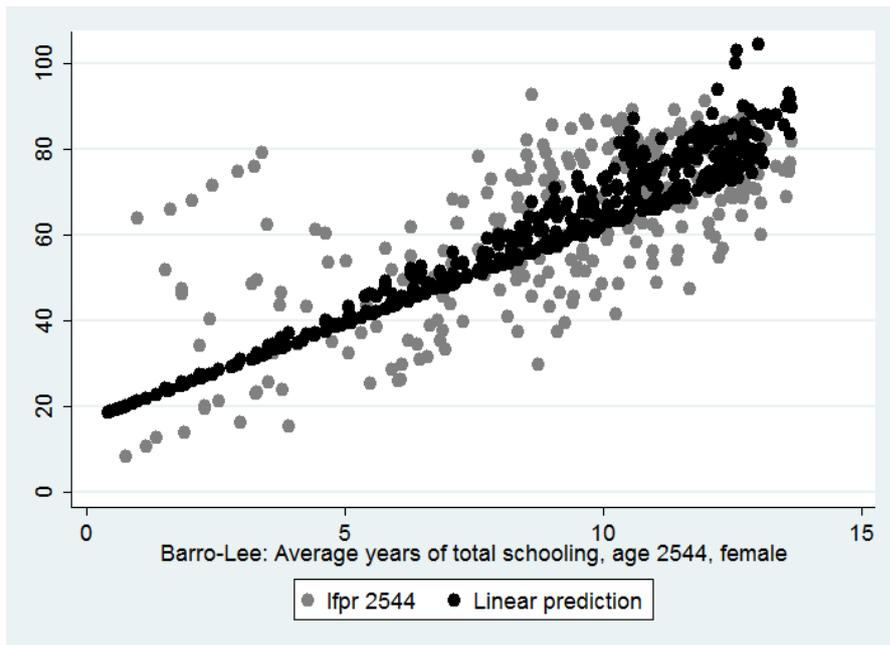
The increase in the male education level has a positive impact on female LFPR. The regression fits especially for countries with lower education levels (Figure 5.1). LFPR can be assumed to be a male decision for these countries because there is a social stigma against female’s participation in the labor force among these less educated men. Education level is lower for lower income countries. Therefore as male education increases especially in lower income levels, educated men begin to allow women to participate in the labor market.



**Figure 5.1. Male Schooling Years and Female LFPR**

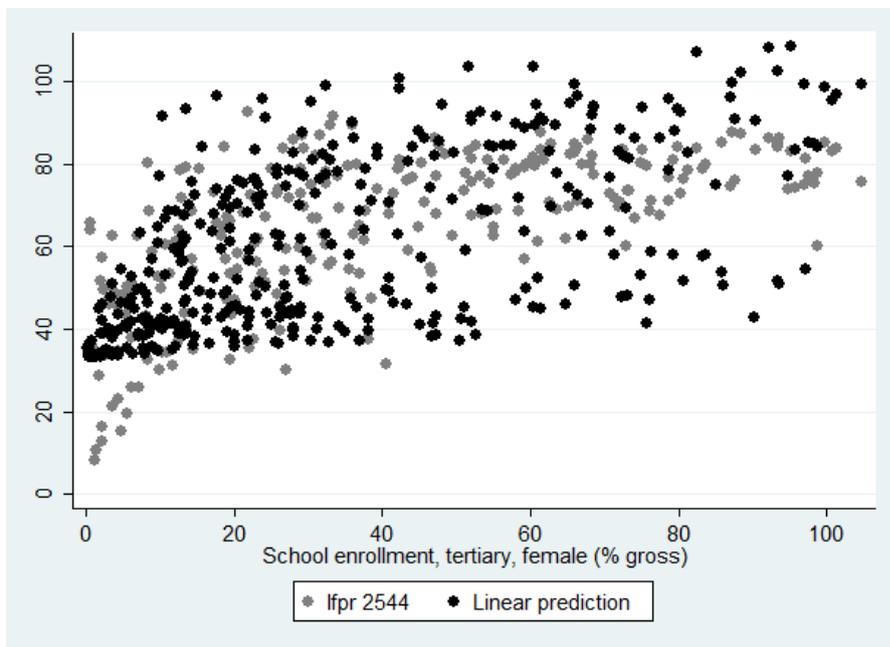
\*Obtained from regression analysis of cross-country data

Figure 5.2 shows a positive relationship between female education and female LFPR. Moreover predicted values are good fit also for the countries with higher education levels. Education level is higher for higher income countries both for males and females. Therefore social stigma against women’s workforce is eliminated and women can choose their participation independently. High female education is sufficient to explain high female LFPR among higher-income countries.



**Figure 521. Female Schooling Years and Female LFPR**

\*Obtained from regression analysis of cross-country data

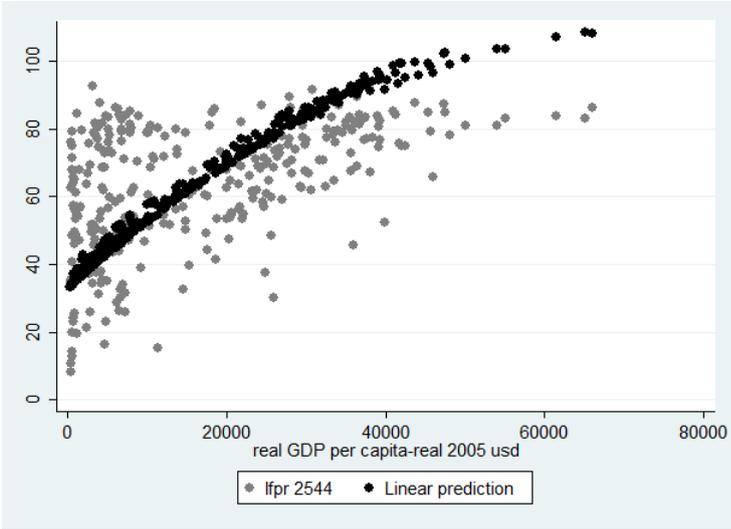


**Figure 5.3. Female Tertiary Enrollment and Female LFPR**

\*Obtained from regression analysis of cross-country data

25-44 age group includes the females with tertiary level degree. Figure 5.3 show that female tertiary level school enrollment ratio has positive relationship with female LFPR for prime age. As the share of females with tertiary level education increases, their participation in the labor force increases.

Figure 5.4 shows that female LFPR has a positive relationship with GDP per capita level. Increase in GDP per capita is a sign of increasing economic activity and employment opportunities. As jobs available in the economy increases, the supply of labor increases. Therefore higher GDP per capita attracts more females into the labor force.



**Figure 5.4. GDP per Capita level and Female LFPR**

\*Obtained from regression analysis of cross-country data

The regression analysis for younger age (15-19) females reveals that labor force participation has an inverse relationship with income and education level<sup>18</sup>. 15-19 females are still in secondary school age. Increase in the average schooling year indicates that females continue to secondary school so their LFPR decrease as they choose school instead of working. Increase in tertiary enrollment ratio indicates that females choose to participate after college degree. Moreover, increasing education level of parents means that families are willing to send their girls to school. As a result, female LFPR decreases among 15-19 females as with

<sup>18</sup> The regression results and graphs for all age groups are given in Appendix B

the education level. Higher GDP per capita also decreases female LFPR because higher income level offers increasing employment with higher wages for educated females. Therefore, female labor force participation declines to improve their education.

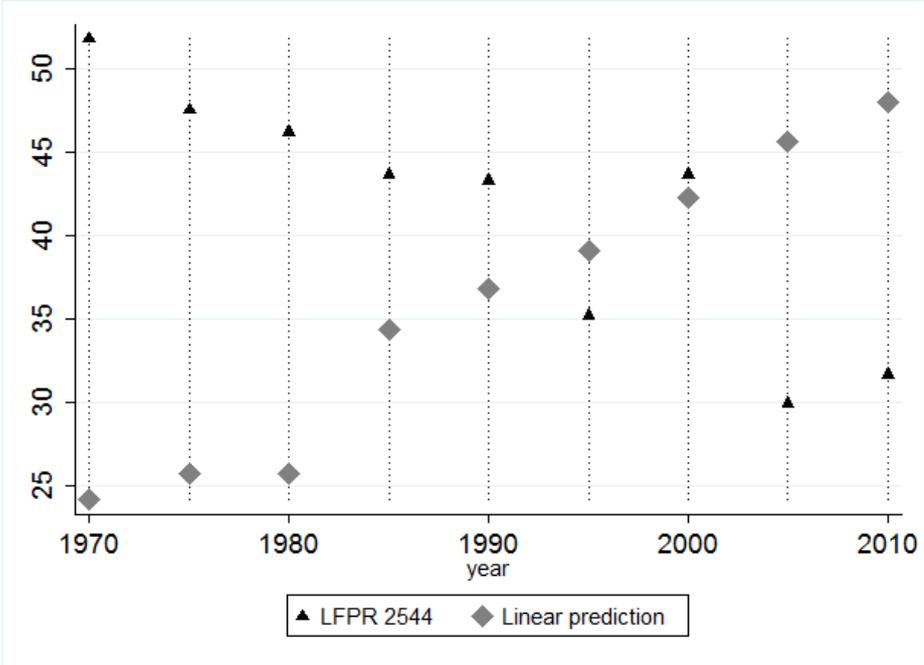
For 20-24,45-54 and 55-64 age groups, participation rate increases with education level. Increase in the average year of total schooling for males positively affects female LFPR for all ages because it reduces the social stigma against female labor. Increase in average year of total schooling for females also have positive impact on female LFPR. Education improves their skills and return to skills. However, increase in female tertiary enrollment ratio has a negative relationship with female LFPR for 20-24 age group, because a portion of 20-24 age group females can choose to continue tertiary education instead of working. So, the impact of education on 20-24 females is smaller than for the 25-44 females. This is the negative impact of tertiary education on undergraduate females' participation. For 45-54 age group, the coefficient of education is also smaller because improvement in young age education is reflected much later for 45-54 females. Education positively affects 55-64 female labor force participation with an lower coefficient.

Female LFPR increases with increase in GDP per capita for 20-64 age group. Increase in income level indicates increasing job opportunities especially in the services sector. White collar services sector attracts especially females who have a high school degree. Therefore female LFPR increases with increase in per capita income.

To sum up, when the coefficients of independent variables are compared for different age groups, the effect of education is the highest among prime age group followed by 45-54, 55-64 and 20-24 age groups and coefficients are negative for 15-19 age groups. This can be explained by the difference in education levels, as it is highest for 20-24, and followed by 25-44, 45-54, 55-64 age groups (Table 1). Although 20-24 age group has the highest education, the labor supply increases with five year lag after completing higher education, so the highest and the immediate effect of education on participation rate is observed for 25-44 age group. Then 45-54 and 55-64 age females follow the prime age.

**5.3. FEMALE LABOR FORCE PARTICIPATION RATE IN TURKEY**

Cross-country analysis indicates a positive effect of income and education level on female labor force participation for 20-24 25-44, 45-54 and 55-64 females. On the other hand, the actual LFPR level in Turkey is lower than the predicted values (Figure 5.5)<sup>19</sup>. The most striking aspect of Turkey is the decreasing LFPR in time. Therefore, the gap between the actual and fitted values becomes wider.



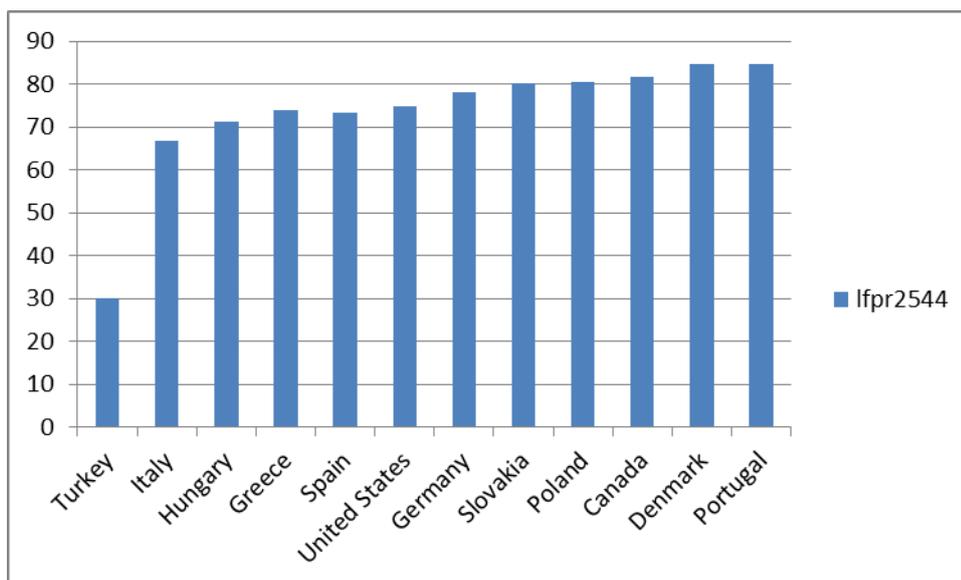
**Figure 5.5. The Actual and Fitted Values for Prime Age (For Turkey)**

\*Obtained from the regression results of the cross-country panel data.

\*\*Blue dots represent the observed values whereas the red triangles represent the fitted values for Turkey.

Comparison of Turkey with EU countries and North America indicates that the lowest female labor force participation rate belongs to Turkey (Figure 5.6). The lowest participation is observed for Italy among these high income countries. However, there is still a huge gap between Turkey and Italy. The average female LFPR of prime age group in these countries is around 70-75%. World Bank defines Turkey as upper middle income country. When I compare Turkey with the upper middle income countries (UMC), female LFPR is also the lowest among them (Figure 5.7).

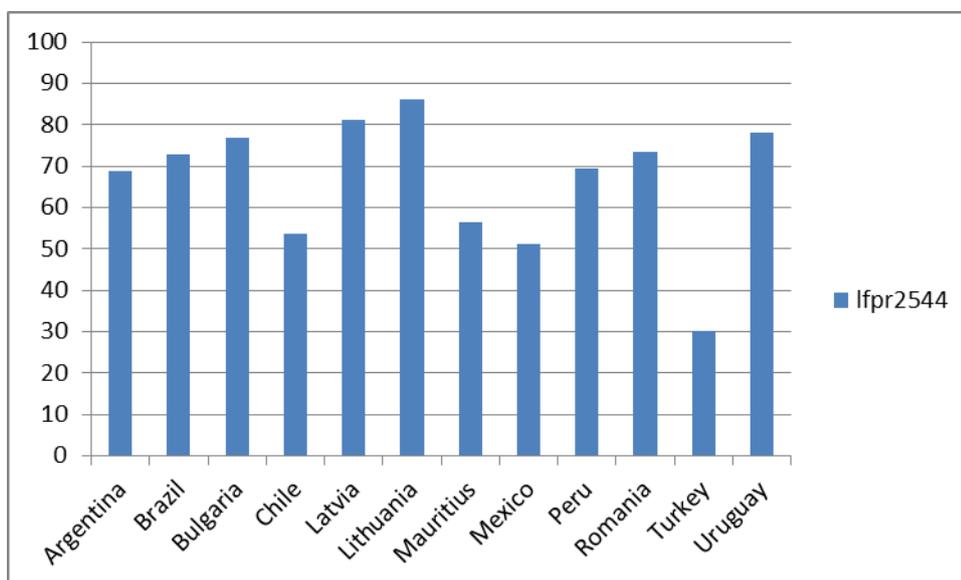
<sup>19</sup> The fitted and actual LFPR for prime age is given in the chapter. For 15-19,20-24,45-54 and55-64 is in AppendixC.



**Figure 5.6. Female LFPR in HIC**

**(Year=2005, Age Group=25-44)**

\* Data is from <http://laborsta.ilo.org>

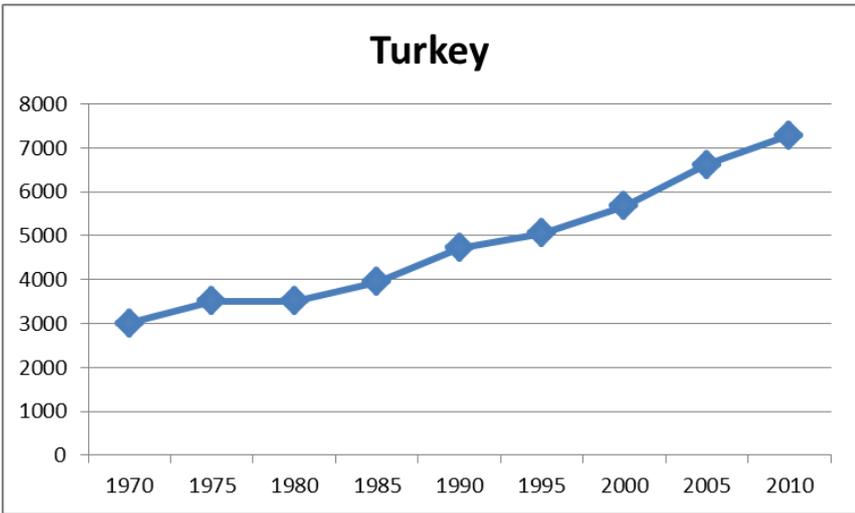


**Figure 5.7. Female LFPR in UMC**

**(Year=2005, Age Group=25-44)**

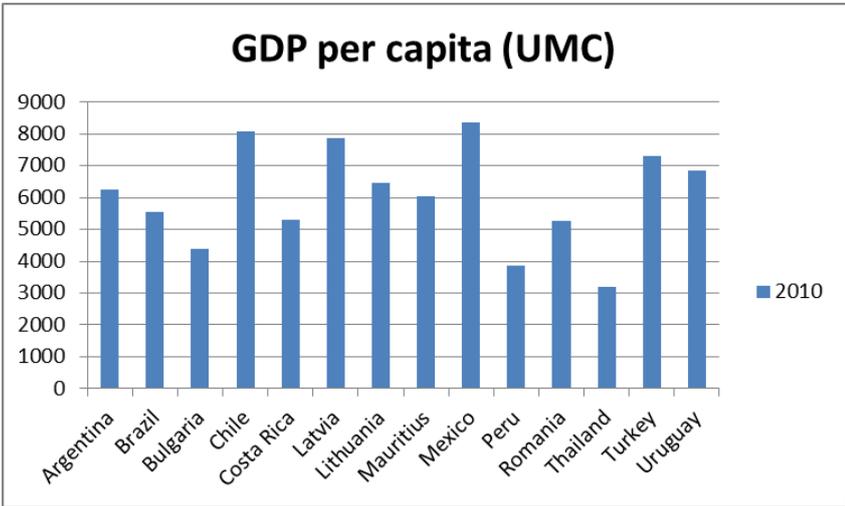
\* Data is from <http://laborsta.ilo.org>

I consider the income level in order to understand the low female LFPR in Turkey. GDP per capita of Turkey continues to increase for years (Figure 5.8). Moreover, the 2005 level of GDP per capita is above the average of upper middle income countries (Figure 5.9). Therefore, a income level of Turkey is not an explanation for low female LFPR.



**Figure 5.8. GDP per capita Trend for Turkey**

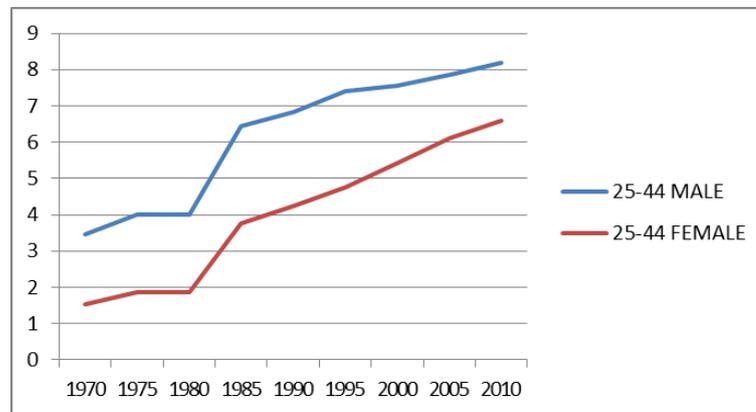
\* Data is from <http://data.worldbank.org/data-catalog/world-development-indicators>



**Figure 5.9. GDP per capita for UMC**

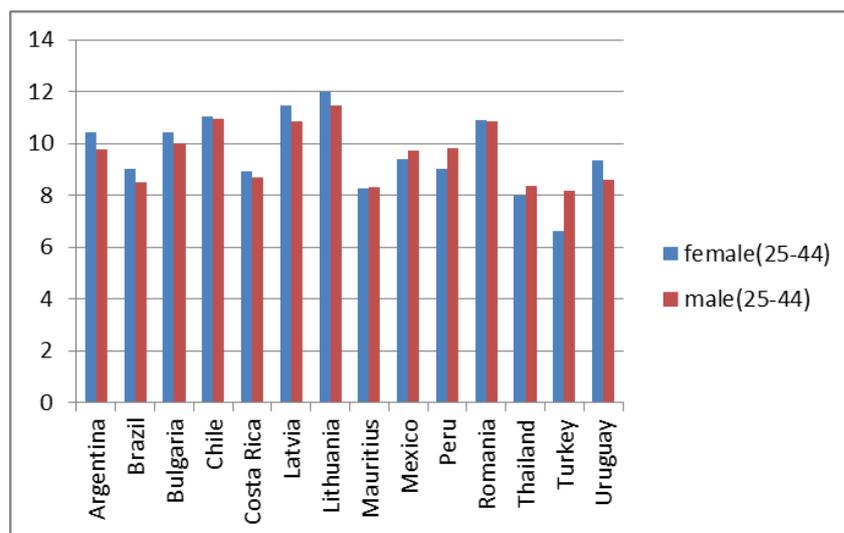
\* Data is from <http://data.worldbank.org/data-catalog/world-development-indicators>

Education variables are more explanatory for Turkey. Average year of total schooling for male and female population is increasing in time, starting from very low levels in 1970s (Figure 5.10). On the other side, the comparison of average year of total schooling for prime age males and females indicates that Turkey has the lowest education among the upper middle income countries (Figure 5.11). Average female education is the lowest for Turkey, less than primary completion level. Average education level for Turkish males is in primary level also. Additionally, Chile and Mexico have the lowest female participation in the same income level, but Chilean and Mexican females and males have almost 10 years of schooling.



**Figure 5.10. Schooling Years by Gender for Turkey (25-44Age Group)**

\*Source: Education Statistics from WDI databank.



**Figure 5.11. Comparison of Schooling Years for UMC (Year=2005)**

\*Data is from Education Statistics of WDI Databank

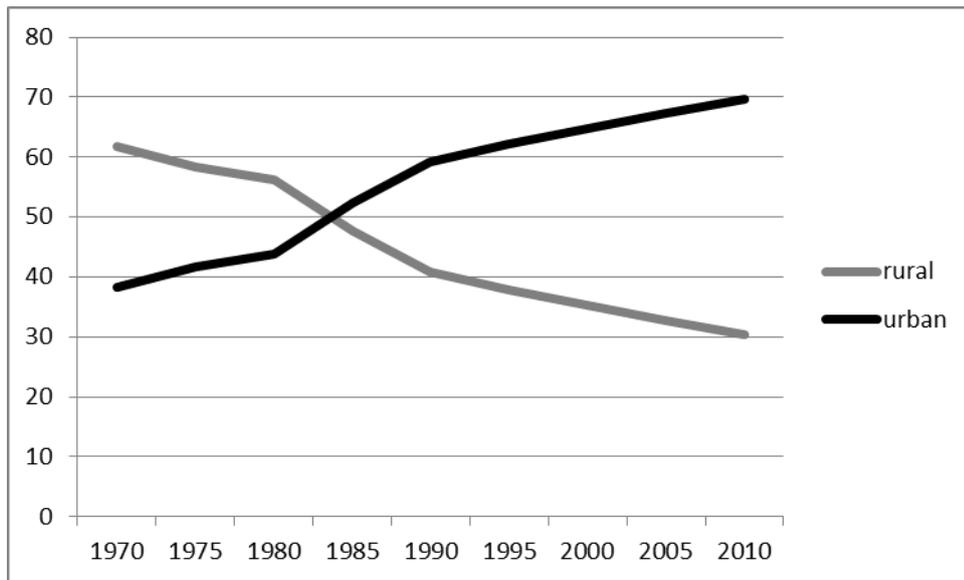
## CHAPTER 6

### STRUCTURAL ANALYSIS OF TURKISH FEMALE LABOR FORCE

The share of rural population was very high in Turkey since the foundation of the Republic. The main economic activity was agriculture in rural areas. Therefore, the largest share of population was busy with agriculture as the main economic activity. Since almost all of the rural female population was engaged in agricultural activity as unpaid family workers; the overall female participation rate was also high. The rural-urban population composition changed with industrialization and the technological improvements in agriculture, such as the extension of tractor usage in 1950s. The need for manpower in agriculture decreased whereas the need for labor increased in manufacturing. Therefore, the unemployed rural population started to migrate to urban centers in order to benefit from increasing job opportunities. This caused rural to urban migrations since 1950s.

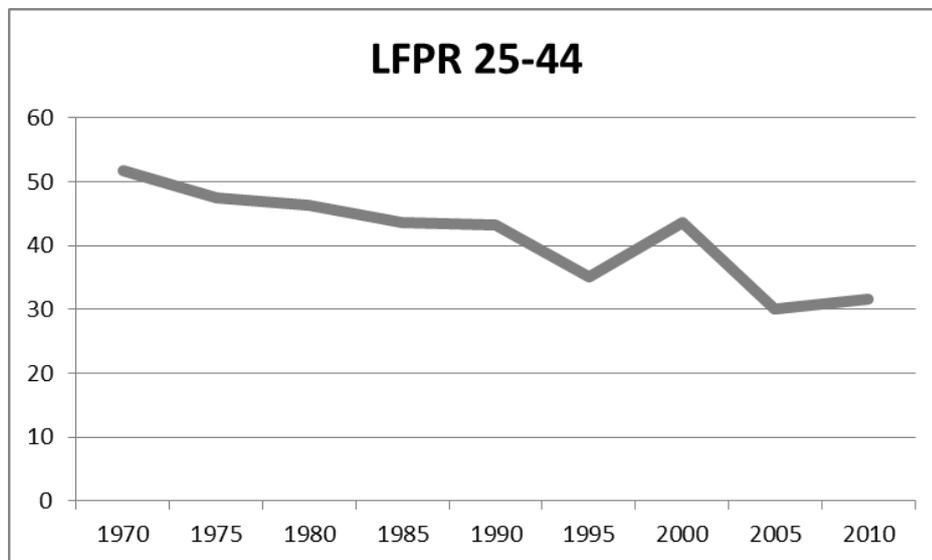
The dissolution of the agricultural population initially caused decrease in the male population in rural areas as the men migrated in order to be employed in the urban areas with increasing job opportunities. Rural female population was also decreasing but not as much as male population. So, at the initial phase of economic transformation, the share of female population remained high in rural areas. Therefore, female was still in high levels (48.3% in 1980) and almost comparable with high income countries such as Netherlands, Austria, Australia and Switzerland (Uraz et. al, 2010).

As the migrations continued, the share of urban population exceeded the rural population in the beginning of 1980s. (Figure 6.1). Between 1990 and 2000 the average annual urban population growth rate was 2.68% whereas rural population growth rate was only 0.42%.(Ercan, 2007). Such a large difference between the two indicates the effect of rural to urban migrations. As a result of migrations, reduction in the share of agricultural sector went hand in hand with the overall reduction in female labor force participation rate (Figure 6.2).



**Figure 6.1. The Share of Population by Living Areas in Turkey**

\*Source: WDI databank

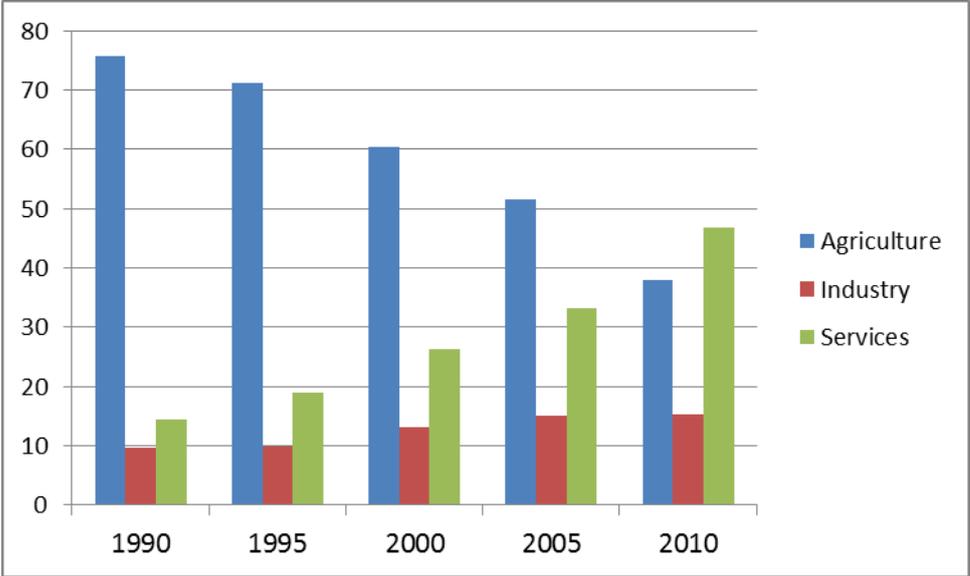


**Figure 6.2. Female LFPR by Age Groups in Turkey<sup>20</sup>**

\*Source: WDI databank

<sup>20</sup> The sharp increase in 2000 can be attributed to the added-worker effect before 2001 crises.

On the other hand, the share of rural population is still high in Turkey in 2000s<sup>21</sup>. It is around 30% although it is decreasing from 60% level in 1970. Therefore the share of agricultural employment is high because agriculture is subsidized since decades as a government policy until 2000s. However, recent and current policies remove the agricultural subsidies with the structural adjustment programs. The removal of the subsidies changes the domestic terms of trade in the disadvantage of agricultural products (Ercan, 2007; Dayıođlu&Kırdar, 2010). With the fall in agricultural prices, the incomes in agriculture sector also falls. The most important result of such a policy is continuing urbanization with another wave of migration (Ercan, 2007). Only in 2010, female employment in agriculture can fall below 50% whereas the share of services increases up to 50% (Figure 6.3). Industrial sector almost remain constant during this period<sup>22</sup>.



**Figure 6.3. Sectoral Composition of Female Employment in Turkey**

Source: WDI databank

<sup>21</sup> In comparison with UMC, the share of rural population is also one of the largest (See Figure 1C in Appendix C).

<sup>22</sup> Manufacturing has not contributed to the increase in female employment in Turkey as expected by the “feminization of labor” literature, because even during the period of export boom, the major source of employment for urban females is not manufacturing but services sector.(Baslevent & Onaran, 2004, p. 1376-1388).

However, there are many countries experiencing urbanization and following decrease in female LFPR. However female LFPR has an upward trend in almost all countries since the last decade, including Pakistan. So, it is important to understand the reasons behind the decreasing LFPR of females in Turkey, still in 2000s.

The main problem with the migrations is the increase in the share of less-skilled component of working age population in cities with the increase in poorly educated immigrants. The 15-29 age group composes the 55% of the immigrants. The median education level is four years among these “post education age” females (Ercan, 2007, s. 17)<sup>23</sup>. In rural areas education is not an important factor in labor force participation. Therefore there is not much variation among the rural females in terms of education. Females who have completed primary school or less compose the %90 of the employment in the agricultural sector (Uraz et. Al, 2010). Low level of education is not a deterrent factor for males’ labor force participation decision in rural and urban areas in Turkey (Table 6.1). However, education matters especially for female labor force participation decision in urban centers (Uraz et. Al, 2010).

**TABLE 6.1. Labor Force Participation Rate by Education in Turkey**

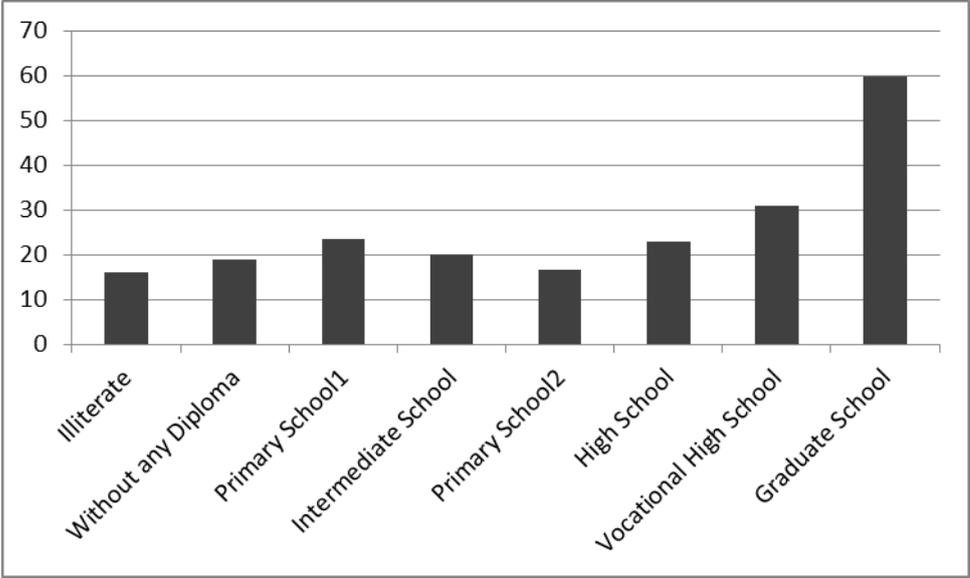
YEAR 2010	ILLETERATE		LESS THAN HIGH SCHOOL		HIGH SCHOOL		VOCATIONAL HIGH SCHOOL		HIGHER EDUCATION	
	Labor Force	LFPR (%)	Labor Force	LFPR (%)	Labor Force	LFPR (%)	Labor Force	LFPR (%)	Labor Force	LFPR (%)
<b>MALE</b>	360	36,8	11.392	69,2	2.015	68,1	1.946	81,2	2.545	84,3
<b>FEMALE</b>	791	16,3	3.803	23,8	712	30,4	565	39,8	1.512	71,0

Source: Turkstat (HLFS 2012)

\*Labor force in thousands

<sup>23</sup> Therefore the effect of increase in mandatory schooling was not felt yet at this segment. Later, more and more of them will participate in the labor force as they become educated (Ercan, 2007)

When female migrants as unpaid family workers in rural areas come to the cities, they cannot find a job as easy as males when they arrive to the cities. Their qualifications are low for the labor market. So, most of them initially drop out of labor force when they first arrived. Others can only be employed as low-paid low-skilled workers in manufacturing<sup>24</sup> or as domestic workers (such as housecleaning) in services sector. However, informality is high in these secondary sectors so these jobs are not attractive with their low emphasis on better working conditions. As a result, most of the remaining females in labor market also drop out of the labor force, especially after marriage (Erçan, 2007, s. 20). In fact, there is no mobility between the primary and secondary sectors as a result of segmented labor markets by skill. Therefore, low skilled females choose other alternatives besides working under poor conditions. Following the migrations, then, female LFPR decreases in Turkey.



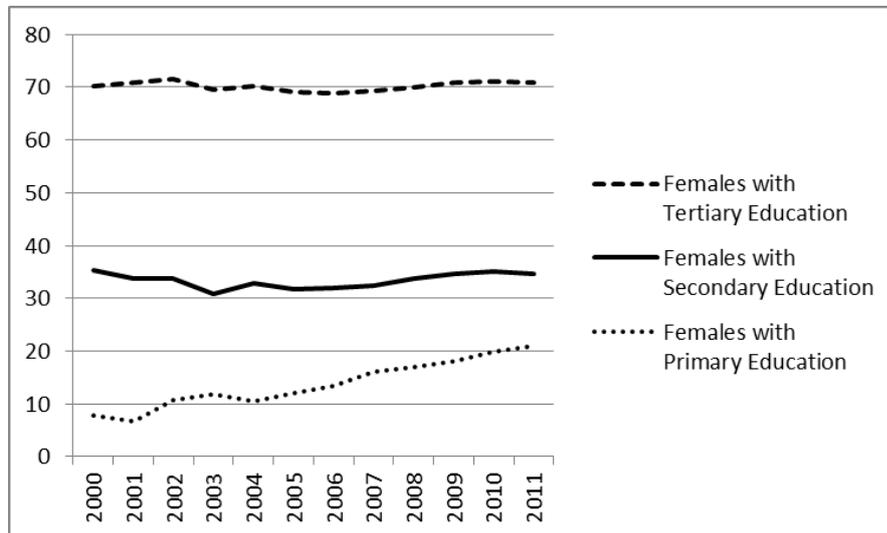
**Figure 6.4. Employment Ratio by Educational Attainment in Turkey<sup>25</sup> (Year=2010)**

Source: Turkstat (HLFS, 2012)

<sup>24</sup> With the export-oriented policies after 1970s, low-skill labor intensive sectors increasingly prefer female labor. Females work with lower wages than males, so the share of females in industrial employment increases. However, export orientation of the industry only affects employment level in industrial sector but not participation of females in Turkey (Baslevent & Onaran, 2004, p. 1376-1388).

<sup>25</sup> National employment average of females is still lower than males. Moreover, the gap increases for the least developed regions of Turkey, East and South East Anatolia. Moreover, economic stagnation increases the regional inequality (Tunalı, 2003, p.30). When a job position is opened, men are employed first as most occupations are received as male sectors, especially in the least developed regions.

On the other side, education level is higher in urban areas in all education categories in Turkey (Dayıođlu and Kırdar, 2010). However, participation rates are lower in urban areas. Therefore, higher education level is especially important in LFPR, because the females are offered better working conditions and higher wages in primary sectors as their skills improves with education. Educated females have higher employment ratio. This shows that employment is limited especially for women with low education in urban areas which is important for their participation decision (Figure 6.4). As a result, labor force participation is high among the females with tertiary education whereas it decreases for lower education levels as the employment opportunities decreases (Figure 6.5).



**Figure 6.5. LFPR of Females by Education Level**

Source: Turkstat (HLFS, 2012)

The share of services in female employment is increasing as with the increase in urban population. Within the services sector, white-collar sectors attract females with high education. Table 6.2 shows that the share of wholesale and retail trade, education and health sectors are highest in female employment in services in Turkey. These sectors require at least secondary level of education but offers better working conditions even for married females. These factors are attractive for the educated urban females and affect their labor supply decision positively.

**TABLE 6.2. Service Sector Employment in Turkey (Year=2010).**

<b>SERVICES SECTOR EMPLOYMENT</b>	<b>Employed Females</b>	<b>(%)</b>
Whole-sale and retail trade	629	23,5
Transportation and storage	59	2,2
Accommodation and food service activities	167	6,2
Information and communication	51	1,9
Financial and insurance activities	116	4,3
Real estate activities	14	0,5
Professional, scientific and technical activities	136	5,1
Administrative and support service activities	175	6,5
Public administration and defense	192	7,2
Education	478	17,8
Human health and social work activities	331	12,4
Arts, entertainment and recreation	18	0,7
Other social, community and personal service activities	314	11,7
<b>TOTAL</b>	<b>2680</b>	<b>100,0</b>

Source: Turkstat (HLFS, 2012)

The composition of female working age population indicates that 25-44 age group constitutes the highest share in labor force (Table 6.3). However, labor force participation of 25-44 females is only 36.8 % in 2010. The rate even begins to decline after 25-44.

The educational composition of female labor force by age groups also shows that, the education level of 25-44 females is less than secondary level. Only a small portion of females with education less than secondary level is in the labor force. So this can explain the low participation of females in 25-44 age group (Table 6.4).

Since female LFPR increases among educated females, the increase in the number of females with university degree is important. However, first increase in secondary education must be sustained in order to increase the tertiary education.

**TABLE 6.3. Labor Force by Age Group in Turkey (Year=2010)**

	<b>Working Age Population</b>	<b>Labor Force</b>	<b>Employed</b>	<b>LFPR (%)</b>
15-19	3012	511	417	17,0
20-24	2893	1042	779	36,0
25-44	11203	4124	3594	36,8
45-54	4064	1065	1001	26,2
55-64	2741	475	468	17,3
65+	2827	166	166	5,9
<b>Total</b>	<b>26740</b>	<b>7383</b>	<b>6425</b>	<b>27,6</b>

Source: Turkstat (HLFS, 2012)

**TABLE 6.4. Educational Share of Female Labor Force by age Groups in Turkey (2010)**

	<b>15-19</b>	<b>20-24</b>	<b>25-44</b>	<b>45-54</b>	<b>55-64</b>	<b>Total Share in Labor Force (%)</b>
<b>Less than high School</b>	80,2	39,1	55,7	81,4	94,1	62,2
<b>High School</b>	18,8	34,9	17,5	7,9	2,1	17,3
<b>Graduate School</b>	1,0	26,0	26,8	10,6	4,0	20,5

Source: Turkstat (HLFS, 2012)

Until 1997, Turkish education system was based on 5 year publicly funded compulsory education. This follows 3 years of middle and 3 years of high school education Table 6.5 indicates that tertiary level school enrollment ratio is increasing, with the increase in the secondary level school enrollment ratio of females (Tunalı&Baslevent, 2002 p.4). With this policy, female primary school enrollment can be sustained at around 95% until 2000. However, since high school education was voluntary under this system, only half of the females attend high school. The compulsory education increased to 8 years in 1997, and secondary enrollment ratio increased in time. Only with the increase in secondary enrollment ratio, increase in tertiary enrollment ratio can increase. In 2012 Turkish government increased compulsory education to 12 years with primary, intermediate and high school education as four years for each. Such a change will improve the average schooling years of females up to high school diploma in recent years.

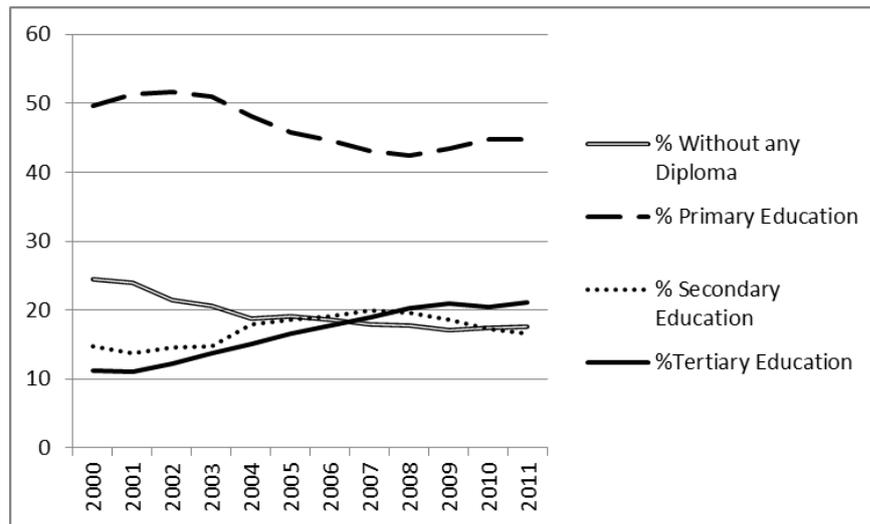
**TABLE 6.5. Female School Enrollment Ratio in Turkey**

Educational year	Primary Enrollment Ratio, females (%gross)	Secondary Enrollment Ratio, females (%gross)	Tertiary Enrollment Ratio, females (%gross)
<b>2000/'01</b>	95,31	51,84	18,79
<b>2001/'02</b>	94,51	58,38	19,99
<b>2002/'03</b>	91,91	67,52	23,04
<b>2003/'04</b>	92,14	70,76	23,88
<b>2004/'05</b>	91,85	71,08	26,63
<b>2005/'06</b>	92,24	74,88	29,94
<b>2006/'07</b>	93,37	76,66	31,89
<b>2007/'08</b>	102,57	80,70	33,56
<b>2008/'09</b>	102,71	72,05	39,28
<b>2009/'10</b>	105,88	78,97	48,48
<b>2010/'11</b>	107,81	84,73	54,04

Source: Turkstat (HLFS, 2012)

Figure 6.6 shows the educational composition of female labor force in years. The share of female labor force with primary school or less education is decreasing in time for Turkey. This poorly educated female labor force mainly represents the agricultural sector. Therefore decline in its share also indicates the rural-to-urban migrations and decreasing female LFPR of female migrants. On the other side, the share of females with high school degree or more education is increasing in time. They mainly represent the urban females. Therefore urban female LFPR increases with the increase in their share. However, the gap between females with primary and tertiary level education is so high. This means that, female labor force participation decreases with continuing rural to urban migrations. Because the decrease in the labor force participation of poorly educated female migrants cannot be compensated by the increase in the participation of educated females.

Therefore, the urban-rural population composition becomes important in the sense of labor force participation of females because the share of urban population is increasing as opposed to rural population. Rural to urban migrations is even reinforced with the stabilization programs that eliminate the agricultural subsidies. Therefore, the share of unskilled urban female population remains to be high with the continuing migration of uneducated rural migrants.



**Figure 6.6. Share of the Female Labor Force by Education Level**

Source: Turkstat (HLFS, 2012)

Fortunately, the next generations of the immigrants are more educated as the old generations want the young ones to be employed easier, with their increased skill. Women with higher education want to be employed, so they postpone marriage and motherhood in order to increase their time available for the market. Therefore, as the education level increases among females, fertility also declines so the share of working age population increases in urban centers.

Moreover, the speed of migration is expected to decrease as time pass since the migration is a young age phenomenon. With the migration of young age population, the remaining rural female population is mainly composed of elder females. Since they have a low tendency to change the place they live, the speed of migration slows down. Moreover, the rural fertility rate declines with aging population. So, another wave of migration is not expected. Therefore the share of females with higher education increases in urban centers.

As a result, the share of urban population increases. The share of educated females in urban centers increases. The female LFPR is decreasing with a decreasing rate (Tunalı, 2003). Therefore, female LFPR can begin to increase in time. Under these conditions the next chapter includes the projections for female LFPR in Turkey and some policy recommendations in order to achieve these targets.

## CHAPTER 7

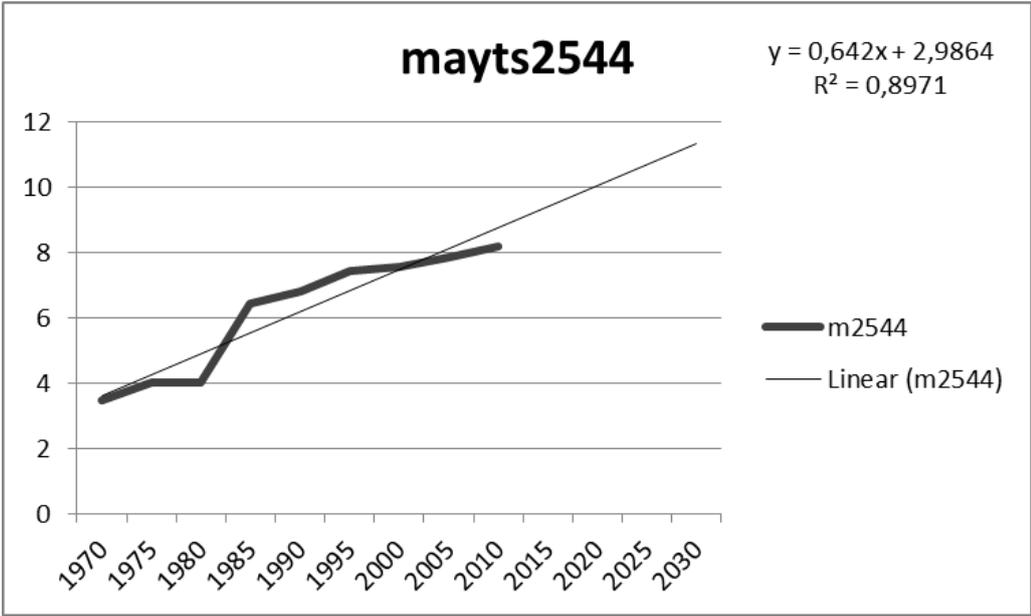
### PROJECTIONS AND POLICIES

#### 7.1. FUTURE SCENARIOS FOR TURKEY

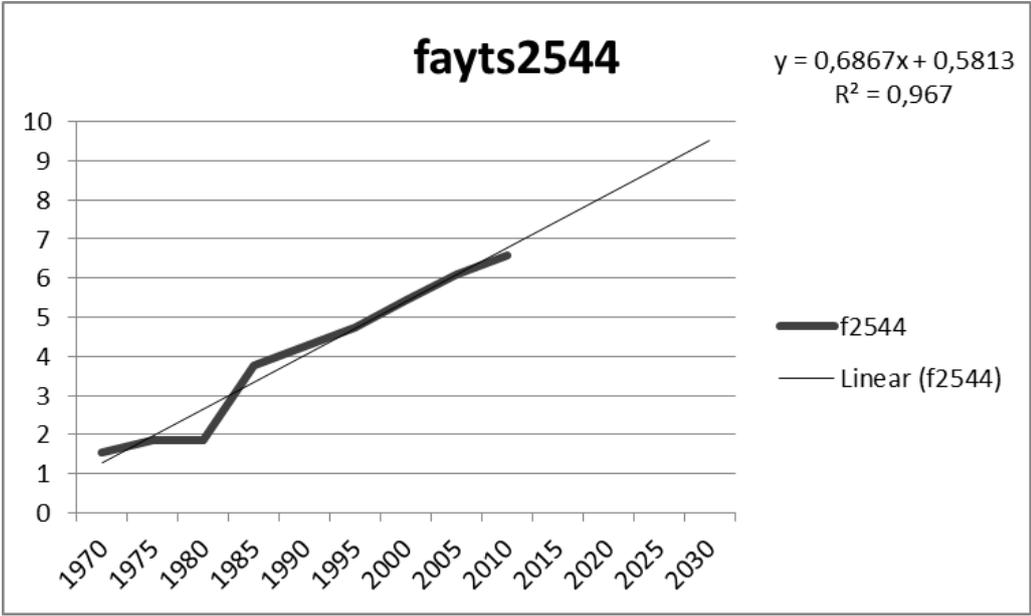
Education level of the next generations are increasing in urban centers. The education is an important barrier for female migrants in employment. They either drop out of labor force or most of them are employed informally in secondary sectors. Therefore, they encourage their children for continuing their education in order to be employed in primary sectors with better working conditions. The education level is also increasing for the daughters of more educated females also. As they benefit from higher returns, they encourage their girls for education. Actually, education itself signals the willingness to participate in the labor force. Therefore, with education, females decides to marry at later ages and have less children for increasing their duration in the labor market.

On the other side, rural-to-urban migrations are expected to decrease as the remaining stock of rural population is now lower. As a result of decreasing migrations, the uneducated female labor stock of urban centers will increase with a decreasing rate. Therefore, the female education level is increasing in urban centers with the higher school enrollment of next generations. Therefore the share of educated females will increase in female working age population in urban centers. Since tendency for labor force participation is higher among these females, the female LFPR can reach to higher levels.

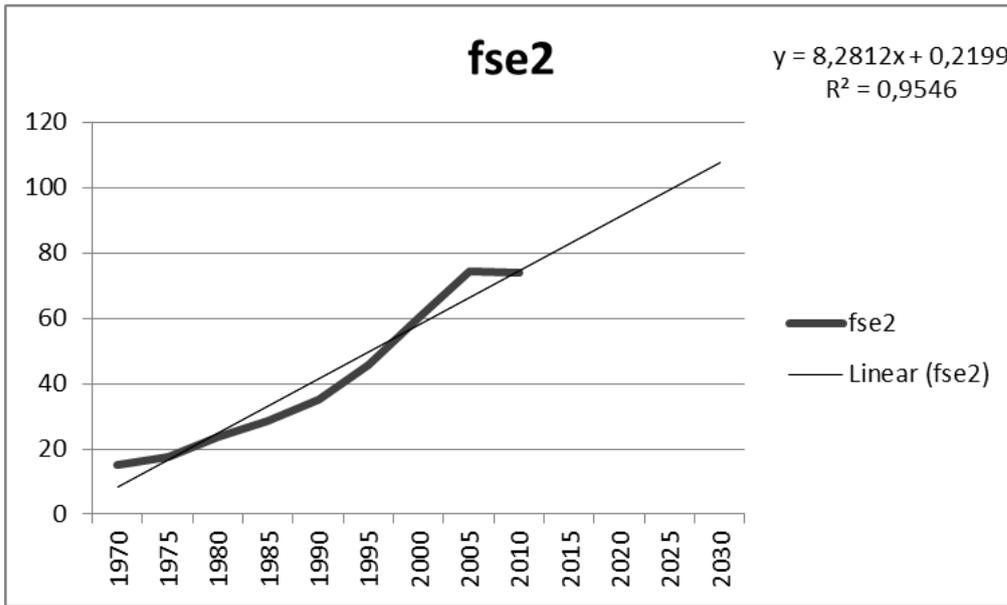
Trends in education level indicates increase in the average year of total schooling up to 12 years until 2030. This is possible because of the adoption of 12 year compulsory education (Figure 7.1 and 7.2). Moreover, secondary school enrollment ratio can reach to 95% in 2020 as with the compulsory education (Figure 7.3). The most important effect of increase in school enrollment ratio in secondary level can be observed in tertiary level. (Figure 7.4). Increase in tertiary enrollment ratio follows the increase in secondary enrollment ratio.



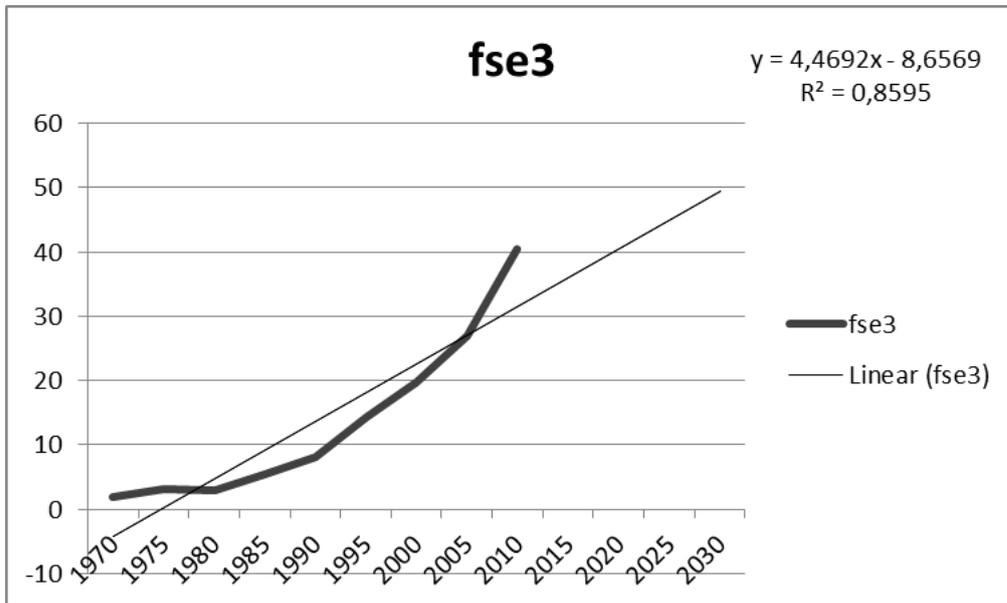
**Figure 7.1. Projection for Male Schooling YeaS**



**Figure 7.2. Projection for Female Schooling Year**

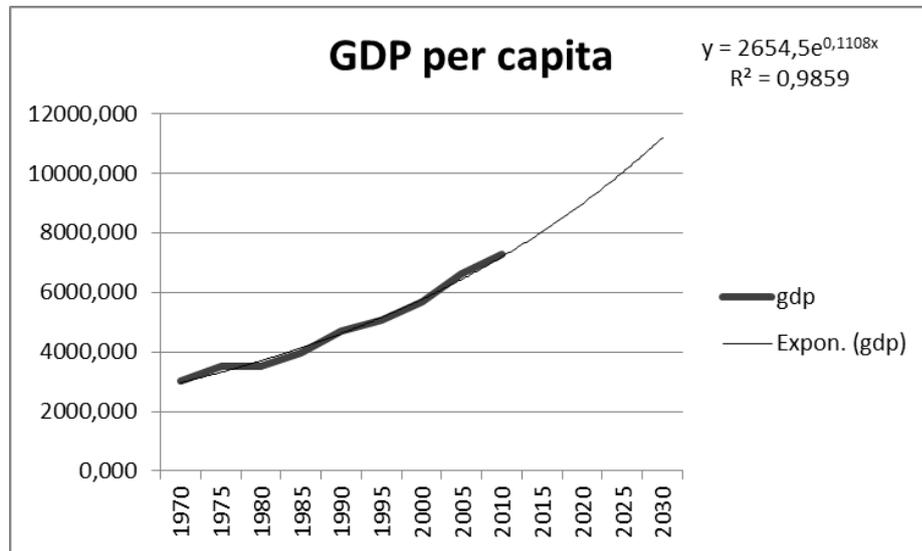


**Figure 7.3. Projections for Female School Enrollment Ratio in Secondary Level)**



**Figure 7.3. Projections for Female School Enrollment Ratio in Tertiary Level**

In addition to education, GDP per capita is significantly positive on female LFPR as a long term performance, but not for short-term performance. Female LFPR can increase as a result of “added worker” effect in times of high unemployment-low growth, in the short run.. However, they are temporary workers especially in secondary sectors. On the other hand, stable economy with is desirable because sustainable and high level of economic activity attracts female labor into the sectors with high productivity (Baslevent&Onaran, 2004, p.1376-1388). Females are willing to participate, regardless of the employment situation in family, if economic environment is stable. Turkish GDP per capita growth performance follows a stable path with growth in GDP and decline in fertility. GDP per capita has average annual growth of 2.5% (Figure 7.5). It is expected to rise up to almost 12,000\$ per capita until 2030.



**Figure 7.5. Projections for GDP per capita**

The education level continues to increase as a result of increase in the compulsory education years. However, GDP per capita trends may change as a result of developments in the world conjuncture. Two different growth scenario<sup>26</sup>s and education projections indicates that (Table 7.1), female LFPR of Turkey will increase upto 60% for prime age (Figure 7.6) after a declining pattern for long years as a result of rural-to-urban migrations. Additionally, LFPR increase for all age groups except 15-19 females. Female LFPR of 15-19 age will decrease as the education level increases.

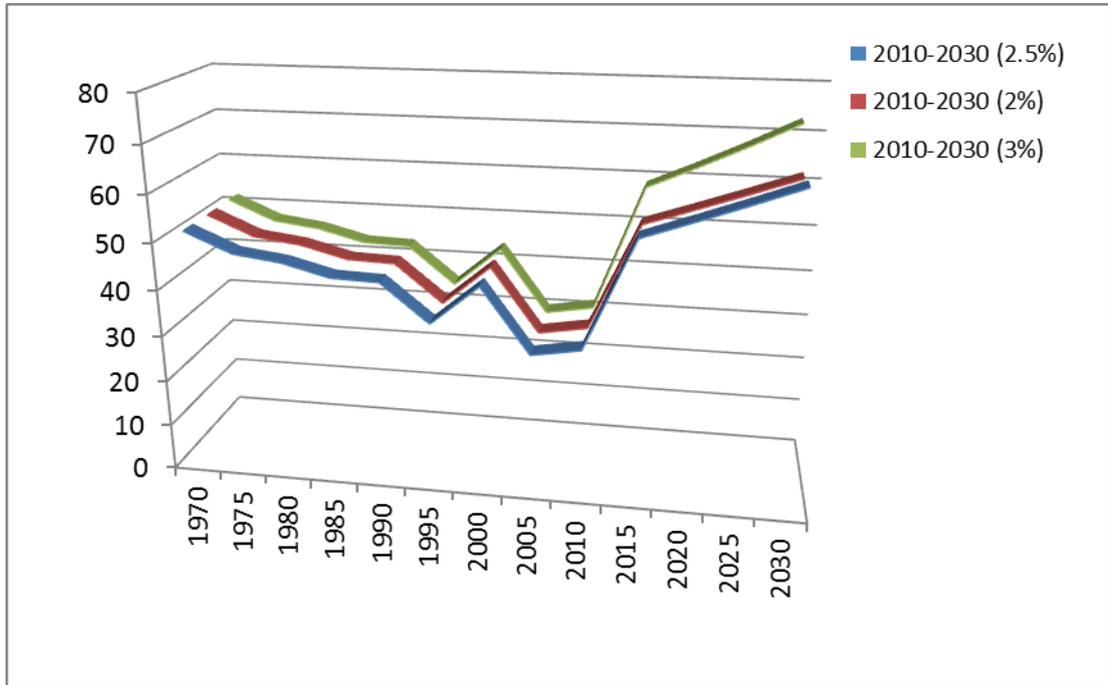
<sup>26</sup> Average annual growth rate for GDP per capita is assumed to be low at 2%, and high at 3%.

**TABLE 7.1. Female LFPR Scenarios for 2030 (using model 2)**

<b>Average Growth of GDP per capita</b>					
Years	15-19	20-24	25-44	45-54	55-64
2010	35.3	56.8	47.9	44.0	26.6
2015	33.0	57.4	51.9	45.5	26.5
2020	30.8	58.3	55.3	48.0	27.9
2025	28.6	59.1	58.6	50.5	29.3
2030	26.2	59.9	62.1	53.1	30.7
<b>Low Growth of GDP per capita</b>					
Years	15-19	20-24	25-44	45-54	55-64
2010	35.3	56.8	47.9	44.0	26.6
2015	34.2	57.6	51.7	45.1	26.2
2020	32.3	58.5	55.0	47.5	27.4
2025	30.3	59.4	58.3	49.9	28.7
2030	28.2	60.3	61.6	52.4	30.1
<b>High Growth of GDP per capita</b>					
Years	15-19	20-24	25-44	45-54	55-64
2010	35.3	56.8	47.9	44.0	26.6
2015	27.6	56.5	53.1	47.5	28.2
2020	24.4	57.3	56.8	50.4	30.0
2025	21.2	58.0	60.6	53.6	32.1
2030	18.0	58.7	64.5	56.9	34.4

25-44 females has decreasing labor force participation since years, because the highest portion of the rural-to-urban migrations come within this prime age group (**Ercan, 2007**). However, as the female school enrollment increases up to tertiary level, the labor supply of 25-44 females increases. Because females with tertiary education are ready to enter into the market just after having the diploma at the age of 24, so the labor force participation rate especially increases among 25-44 females (Figure 7.6). Same improvements can also be observed for 20-24,45-54 and 55-64 age groups. Decline in the LFPR can be reversed until 2030 and can reach to deserved levels, as with the upper middle income countries. However, it should also be noted that these predictions still overestimate the female LFPR for Turkey because the fixed effect analysis omit country specific determinant, such as cultural and religious barriers. Moreover, the cross-country dataset is dominantly composed of high income-high education countries. So the effect of education is higher than expected for Turkey<sup>27</sup>.

<sup>27</sup> See Table 3C for fixed effect analysis with country dummies.



**Figure 7.6. Prime Age Female LFPR Projections for Turkey**

## 7.2. POLICY RECOMMENDATIONS

In the next twenty years, the age composition of the population will change. With the decrease in fertility both in rural and urban areas, the share of young population (0-14 age group) will decrease. Also the elder people will have lower share in population. Therefore the share of 15-64 age group will increase. This implies also that the share of working age population will increase. Such a demographic structure is called as “Window of Opportunity” which a country can have once in a time. With the decrease in the share of dependent population (youth and elder), the working age population do not have to take care of them during this period (Ercan , Hoşgör&Yılmaz, 2010). However, managing this rising share of working age population is important. If they can be employed in productive sectors efficiently, Turkey can experience higher growth performance and reduction in poverty. The labor force participation rate plays a very important role in that sense as it indicates the labor supply and composition of human resources in an economy (Faridi et. al, 2009)

Therefore, benefiting from the rise in potential labor force is important. The more employment should be created, in order to increase the labor force participation. However,

increase in employment should be planned by sector. Turkey should shift away from low value-added agricultural sectors to more value-added nonagricultural sectors. Labor force in the agricultural sector should be decreased because poverty rate is the highest among agricultural workers with 37.2 % in 2005 (Ercan, 2007). Moreover agricultural sector constitutes the 90% of the informal employment. So, in order to decrease poverty, increase formality and value-added income, production should shift to the sectors with high skill production.

However LFPR is in low levels mostly as a result of low female LFPR. The major reason behind the low LFPR of females is the highest share of females in urban centers with at most primary school diploma. Females cannot be employed in the skill requiring productive sectors under these conditions. Therefore employment policies should mainly focus on increasing the share of females with higher employment.

Active labor market policies in EU are mainly focused on countries with low female LFPR. However, the education level is not low even for the nonparticipant females in such countries. These policies aim at attracting females with higher reservation wages. Moreover, since the population is aging especially in Nordic countries, family policies are also conducted in order to increase fertility without decrease in female LFPR. In Sweden, parental leave programme and availability of subsidized childcare policies are reinforced with flexible working hours. So, they keep mothers in the labor force. Denmark and Switzerland also have higher labor market flexibility for females. Part time employment is wide spread among European countries. Therefore, they can attract the females who are willing to work for less hours.

There are other social and labor market policies in order to increase the female labor force participation. For example Chile and Colombia provides public day care services in order to increase the time for women in the labor force. These policies are also important in the sense of increase in the educational capabilities of their children for the next period. Improvements in infrastructure, and widespread use of consumer durables that increase the productivity at home also goes hand in hand with higher female LFPR among Latin American countries.

However, the females with low education level cannot be encouraged by these ways. These women can only work in secondary markets and mostly in informal sectors. There is no mobility between secondary sectors to primary sectors. Therefore, even females who are

working in sectors with low skill requirement, mostly drop out of labor force after they are married.

In addition to working conditions, there is a discouraging effect of low educated males on female labor force participation. Men do not accept such poor working condition for their wives or daughters. They perceive themselves as the head of household whose responsibility is to earn the income. Therefore they work in the market and women are locked with houseworks.

Also, there are sectors that are close to female employment even if females are willing to. Occupational sex segregation against these women also comes from the social stigma that “they are not capable of doing these men’s work”.

The increase in education level, therefore, both improves the working conditions for females, and eliminates the men’s discouragement of female labor. The widespread education policies are important to broke the social stigma against female labor force. Therefore, besides all other active labor market policies (ALMP) or social policies, the focus of the employment policies should be based on increasing human capital by increasing educational attainment of both males and females.

Publicly founded compulsory education is important to increase the school enrollment ratio of females. Also promoting affordable early childhood development programmes (ECD) are positively impacts the education of next generations, such as public/subsidized childcare services. Even the girls of poor families can have access to education. Subsidizing the education level of poor people can contribute to break the intergenerational transmission of poverty by this way (SPO and WB Report,2012).

The share of educated and high skilled labor force should be increased in order to fight with low labor force participation of Turkey as a result of low participation of females. Besides university education, improvement of Vocational High School Education and Training (VET) also prepares especially young women for better formal jobs in the market (SPO and WB Report).

For the remaining uneducated population, labor force improving programmes with employment guarantee can be beneficial especially for females. Employment of low skilled females is important because working females are more likely to spend their income on their children’s health and education. Therefore increase in the number of working women is also important for education of the next generations (Gürsel, Uysal and Acar, 2011).

## CHAPTER 8

### CONCLUDING REMARKS

This study focuses on the female labor force participation rate (LFPR). Cross-country fixed effect analysis of fifty-six countries shows that female LFPR increases with income and education level. Moreover, improvements in male education are especially important in low income countries whereas female education is important in high income countries. Higher female tertiary enrollment ratio is significant for higher female LFPR.

On the other hand, Turkey has a lower level of female LFPR than the predicted level. Low female education explains the lower female LFPR of Turkey than the countries with similar income level. However, female LFPR has a declining trend in time even if income and education level improves. I need to look at the institutional setup of Turkey in order to understand such an unusual situation.

The share of rural population is initially high in Turkey. Therefore agriculture is the main economic activity of the largest share of population. Since participation in the agriculture sector is easier for females, female labor force participation is also high. This state changes with industrialization accompanied by the technological improvements in agriculture, such as the extension of tractor usage in 1950s. The need for manpower in agriculture falls. Therefore, the unemployed rural population starts to migrate to urban centers in order to benefit from increasing job opportunities. This caused increasing rural to urban migrations.

The problem with the migrations is the increase in the share of unskilled working age population in cities with the increase in poorly educated immigrants. Construction sector absorbs the unskilled male migrants. But, female migrants cannot find a job as easy as males because they lack the skills that urban markets require. Moreover, they used to be unpaid family workers so they either drop out of labor force or they choose to work informally until they are married. On the other side, the education is increasing among urban females. It is important for increasing female LFPR since educated females are offered higher wages. However, decline in the participation rate among the former rural females cannot be

compensated by an increase in the participation of urban educated females. The share of unskilled urban female population remains to be high with the continuing migration of uneducated rural migrants. The high participation of females in Turkey decreases with the migrations.

The share of urban population exceeded rural population after 1980s. However, the share of rural population is still high until 2000s. Therefore, the share of agriculture in employment is high because agricultural production is subsidized since decades as a government policy until 2000s. However, recent and current policies remove the agricultural subsidies. The removal of the subsidies changes the domestic terms of trade in the advantage of industrial products. With the fall in agricultural prices, the agricultural income also falls. This causes another wave of urbanization. As a result of these policies, female LFPR decreases even in 2000s, unlike many other countries.

However the speed of migration is expected to decrease as the remaining stock in rural areas is now lower. With the migration of young age population, the remaining rural female population is mainly composed of elder females. Since they have a low tendency to change the place they live, the speed of migration slows down. Moreover, the rural fertility rate declines with aging population. So, another wave of migration is not expected. At the same time, the education level increases among the next generations of immigrants. Therefore the share of females with higher education increases in urban centers.

Under these conditions, I study different growth and education scenarios. These scenarios show that Turkey can reach to higher levels in female labor force participation until 2030 as education level continues to increase with sustainable growth rates. Understanding the determinants of labor force participation in Turkey with institutional structure is essential to comprehend appropriate employment policies. These policies should basically focus on improving education in order to sustain human resource development because the main problem of decreasing LFPR in Turkey is the large share of uneducated females in urban centers as a result of continuing migrations.

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## APPENDICES

### APPENDIX A-SUMMARYS STATISTICS

**TABLE 1A. Summary Statistics: High Income (HIC)  
Countries (Year=2005)**

Variable	Obs	Mean	Std. Dev.	Min	Max
lfpr1519	30	27.060	20.385	4.100	65.500
lfpr2024	30	63.027	10.784	42.100	79.200
lfpr2544	30	76.533	6.814	59.341	85.294
lfpr4554	30	73.637	11.155	48.600	89.310
lfpr5564	30	40.866	14.496	18.166	69.024
fayts1519	31	9.164	1.890	4.542	13.023
fayts2024	31	12.088	0.981	10.560	14.440
fayts2544	31	11.982	1.106	9.378	13.653
fayts4554	31	10.735	1.767	7.308	13.500
fayts5564	31	9.477	2.306	4.639	13.171
mayts1519	31	8.869	1.844	4.333	12.534
mayts2024	31	11.504	0.979	9.534	14.030
mayts2544	31	11.670	1.113	8.581	13.292
mayts4554	31	11.036	1.558	7.645	13.420
mayts5564	31	10.369	1.762	6.845	13.315
fse1	30	101.182	4.569	95.252	113.063
fse2	30	104.050	13.404	81.973	145.089
fse3	28	68.719	22.641	12.944	100.667
rural population	30	26.367	16.177	2.400	87.800
urban population	32	75.281	16.937	12.200	100.000
Female emp. in agriculture	32	3.625	3.969	0.200	16.600
Female emp. in industry	32	13.806	5.143	6.500	26.500
Female emp. in services	32	82.219	7.017	66.200	93.300
Wage and salaried	31	84.658	12.312	42.700	95.400
Self employed	31	15.287	12.336	4.600	57.300
Fertility	32	1.569	0.360	0.966	2.840

**TABLE 2A. Summary Statistics: Upper Middle Income (UMC) Countries****(Year=2005)**

Variable	Obs	Mean	Std. Dev.	Min	Max
lfpr1519	14	18.65714	10.22137	2.8	42.5
lfpr2024	14	51.23571	11.06384	32	67.1
lfpr2544	12	66.4898	15.93133	29.95014	86.24054
lfpr4554	12	60.98821	17.85365	24.03122	84.9315
lfpr5564	12	35.4103	10.17135	16.98363	48.28283
fayts1519	14	8.910843	0.940212	7.2226	10.1775
fayts2024	14	10.13234	1.413923	7.417	12.5325
fayts2544	14	9.293321	1.703732	6.11265	12.37202
fayts4554	14	8.061961	2.352521	4.34155	11.3348
fayts5564	14	6.697914	2.591542	3.07455	10.46525
mayts1519	14	8.4997	0.736129	7.186	9.829
mayts2024	14	10.10918	1.134264	8.5483	11.9581
mayts2544	14	9.289107	1.348222	7.310025	11.82452
mayts4554	14	8.498446	1.835426	5.15745	11.1936
mayts5564	14	7.444579	2.025479	4.43285	10.53235
fse1	14	106.2754	10.45698	93.62274	132.4461
fse2	14	89.50166	11.38352	73.14635	110.9511
fse3	14	48.69744	24.81183	21.97475	97.16306
rural population	14	31.09286	17.59281	8	67.7
urban population	14	68.90714	17.59281	32.3	92
Female emp. in agriculture	14	14.44286	15.72268	0.6	51.6
Female emp. in industry	14	19.69286	8.879922	11	42.4
Female emp. in services	14	65.65714	17.94087	33.3	88
Wage and salaried	14	74.80714	14.5247	43.8	90.4
Self employed	14	24.57857	14.32691	9.6	56.2
Fertility	14	1.888857	0.460031	1.27	2.691

**TABLE 3A. Summary Statistics: Lower Middle Income (LMC) Countries****(Year=2005)**

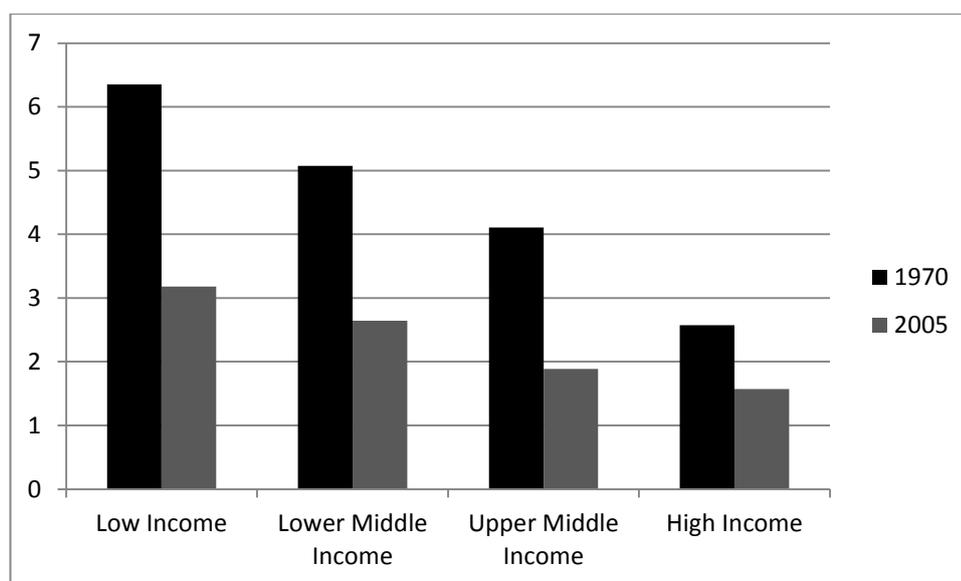
Variable	Obs	Mean	Std. Dev.	Min	Max
lfpr1519	7	17.38571	7.618711	11.2	34
lfpr2024	7	40.41429	12.25281	20.7	55.8
lfpr2544	6	54.73604	19.26152	23.14198	79.58725
lfpr4554	6	57.0528	20.17987	24.7837	77.13258
lfpr5564	4	43.78288	20.94387	21.55201	66.91177
fayts1519	7	8.269571	2.363043	4.8668	12.3596
fayts2024	7	8.972672	2.492324	4.9218	12.67
fayts2544	7	7.708153	3.461496	3.27995	12.60395
fayts4554	7	6.242614	3.651076	2.31345	11.89555
fayts5564	7	5.537571	3.503335	1.6621	10.8671
mayts1519	7	8.248857	2.035795	6.1452	12.0506
mayts2024	7	9.582072	1.653567	6.9814	12.1958
mayts2544	7	8.556096	2.258736	6.59175	12.08095
mayts4554	7	7.341928	2.547388	5.07865	11.49265
mayts5564	7	6.767129	2.713517	3.9132	10.9486
fse1	8	100.3353	13.27308	71.54593	112.4808
fse2	7	73.09508	23.15715	25.48585	88.39132
fse3	7	31.13029	23.81702	4.31946	75.77863
rural population	8	53.725	16.43174	32.2	84.9
urban population	8	46.275	16.43174	15.1	67.8
Female emp. in agriculture	7	40.95714	18.77018	13.1	67.3
Female emp. in industry	7	14.74286	8.654066	4.4	27.6
Female emp. in services	7	42.51429	17.65601	17.6	64.3
Wage and salaried	8	59.8875	22.35419	31.4	94.3
Self employed	8	40.075	22.30572	5.7	68.6
Fertility	8	2.64275	0.950002	1.2	3.786

**TABLE 4A. Summary Statistics: Low Income (LIC) Countries****(Year=2005)**

Variable	Obs	Mean	Std. Dev.	Min	Max
lfpr1519	2	16.2	3.535535	13.7	18.7
lfpr2024	2	38.65	13.64716	29	48.3
lfpr2544	2	55.3062	29.36143	34.54454	76.06787
lfpr4554	2	56.21856	34.26753	31.98776	80.44936
lfpr5564	2	46.65567	29.97057	25.46328	67.84807
fayts1519	2	6.14185	3.606032	3.592	8.6917
fayts2024	2	5.41745	2.815204	3.4268	7.4081
fayts2544	2	3.675587	0.577547	3.2672	4.083975
fayts4554	2	2.5451	0.794505	1.9833	3.1069
fayts5564	2	1.9427	0.932462	1.28335	2.60205
mayts1519	2	6.86145	0.757241	6.326	7.3969
mayts2024	2	8.15525	1.079257	7.3921	8.9184
mayts2544	2	6.519537	2.124237	5.017475	8.0216
mayts4554	2	4.18375	0.083651	4.1246	4.2429
mayts5564	2	3.4548	0.820739	2.87445	4.03515
fse1	1	102.9208	.	102.9208	102.9208
fse2	1	47.49989	.	47.49989	47.49989
fse3	1	4.26751	.	4.26751	4.26751
rural population	2	65.8	12.02082	57.3	74.3
urban population	2	34.2	12.02082	25.7	42.7
Female emp. in agriculture	1	68.1	.	68.1	68.1
Female emp. in industry	1	12.5	.	12.5	12.5
Female emp. in services	1	19.4	.	19.4	19.4
Wage and salaried	1	11.7	.	11.7	11.7
Self employed	1	86.7	.	86.7	86.7
Fertility	2	3.178	0.816001	2.601	3.755

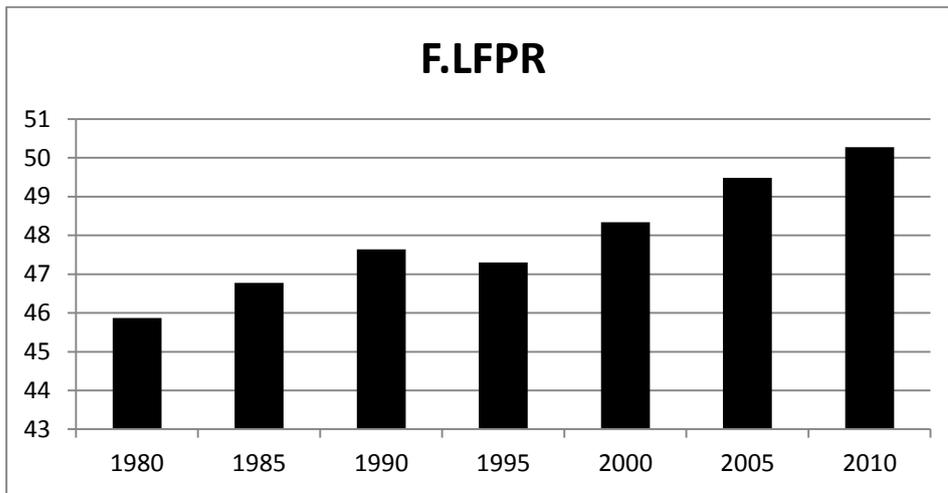
**TABLE 5A. GDP per capita by Income Level (Real 2005 USD)**

year	LOW INCOME	LOWER MIDDLE INCOME	UPPER MIDDLE INCOME	HIGH INCOME
1970	458.39	778.52	2785.68	13523.93
1975	453.11	917.30	3368.99	15614.99
1980	524.73	1142.87	3688.95	17821.29
1985	469.47	1259.00	3727.31	19347.77
1990	442.95	1246.96	3935.09	22053.34
1995	410.11	962.84	3969.98	23633.21
2000	449.04	1049.61	4475.43	27073.28
2005	438.83	1296.35	5308.53	29592.92
2010	479.82	1546.34	6055.06	31381.80



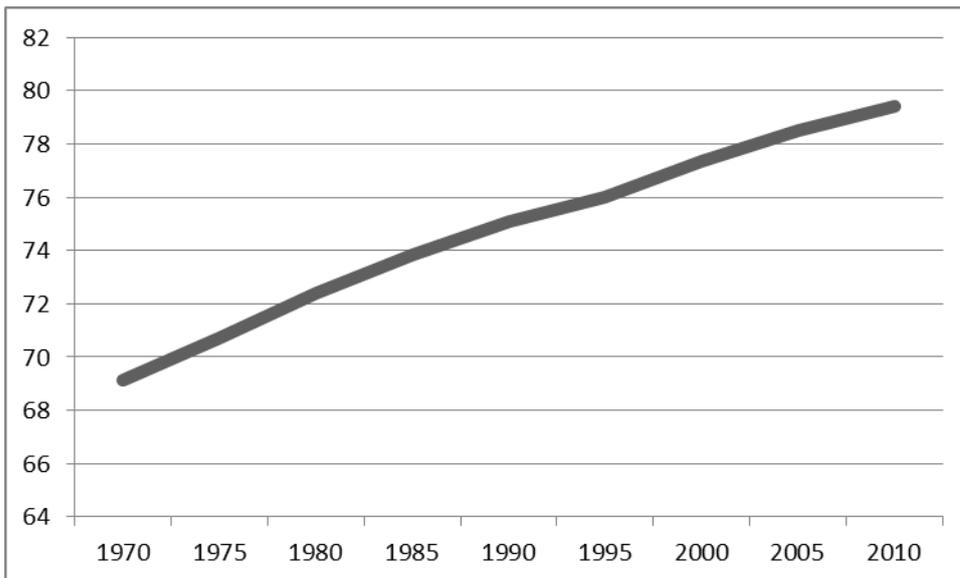
**Figure 1A. Fertility of Female (Year=1970, 2005)**

\*Data is obtained from <http://data.worldbank.org/data-catalog/world-development-indicators>



**Figure 2A. Female Labor Force Participation Rate (world average)**

\*Data is obtained from <http://data.worldbank.org/data-catalog/world-development-indicators>



**Figure 3A. Female Life Expectancy In The World**

\*Data is obtained from <http://data.worldbank.org/data-catalog/world-development-indicators>

## APPENDIX B-REGRESSION RESULTS

<b>TABLE 2B. Regression Results (Dependent Variable=lfpr2024)</b>			
<b>MODEL 1</b>			
mayts2024	1.252 (0.782)	Observations	325
gdp	-0.000121 (0.000347)	Number of numericcode	52
gdpsq	3.80e-07 (4.49e-07)	R-squared	0.062
Constant	45.58*** (6.697)	R-squared by hand	0.0619
		Log Lik	-1096
<b>MODEL 2</b>			
fayts2024	1.423* (0.760)	Observations	325
gdp	-0.000352 (0.000378)	R-squared	0.075
gdpsq	6.09e-07 (4.55e-07)	Number of numericcode	52
Constant	46.66*** (5.635)	R-squared by hand	0.0752
		Log Lik	-1093
<b>MODEL 3</b>			
fse3	-0.135 (0.0810)	Observations	265
gdp	0.000967 (0.000585)	Number of numericcode	51
gdpsq	-4.56e-07 (6.00e-07)	R-squared	0.064
Constant	48.94*** (5.338)	R-squared by hand	0.0644
		Log Lik	-890.5

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<b>TABLE 3B. Regression Results (Dependent Variable=lfpr2544)</b>			
<b>MODEL 1</b>			
mayts2544	4.253*** (0.994)	Observations	307
gdp	0.00101** (0.000384)	Number of numericcode	52
gdpsq	-3.45e-07 (4.66e-07)	R-squared	0.607
Constant	7.097 (7.905)	R-squared by hand	0.607
		Log Lik	-1025
<b>MODEL 2</b>			
fayts2544	4.466*** (0.826)	Observations	307
gdp	0.000227 (0.000421)	Number of numericcode	52
gdpsq	3.54e-07 (4.94e-07)	R-squared	0.631
Constant	16.61*** (5.584)	R-squared by hand	0.631
		Log Lik	-1015
<b>MODEL 3</b>			
fse3	0.0655 (0.0922)	Observations	257
gdp	0.00209*** (0.000594)	Number of numericcode	49
gdpsq	-1.56e-06** (6.51e-07)	R-squared	0.450
Constant	32.62*** (5.800)	R-squared by hand	0.450
		Log Lik	-894.5

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<b>TABLE 4B. Regression Results (Dependent Variable=lfpr4554)</b>			
<b>MODEL 1</b>			
mayts4554	3.469*** (1.134)	Observations	307
gdp	0.000924 (0.000569)	Number of numericcode	52
gdpsq	-2.46e-07 (7.32e-07)	R-squared	0.562
Constant	15.09* (7.538)	R-squared by hand	0.562
		Log Lik	-1045
<b>MODEL 2</b>			
fayts4554	3.634*** (0.964)	Observations	307
gdp	0.000477 (0.000637)	Number of numericcode	52
gdpsq	1.22e-07 (8.08e-07)	R-squared	0.572
Constant	22.23*** (5.697)	R-squared by hand	0.572
		Log Lik	-1041
<b>MODEL 3</b>			
fse3	0.140 (0.0972)	Observations	257
gdp	0.00147** (0.000729)	Number of numericcode	49
gdpsq	-9.13e-07 (7.59e-07)	R-squared	0.472
Constant	33.57*** (6.949)	R-squared by hand	0.472
		Log Lik	-890.7

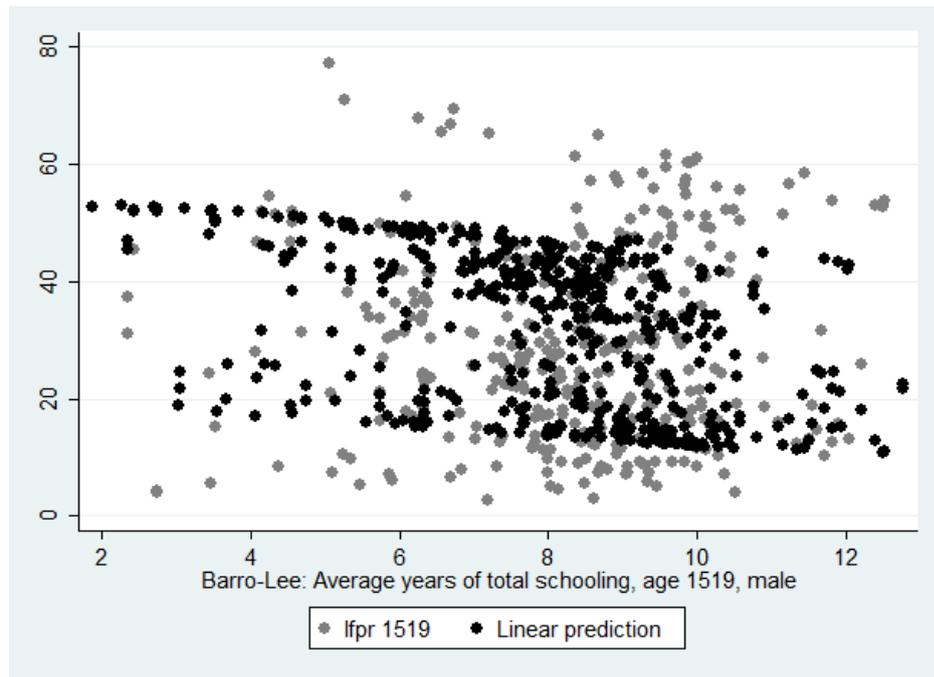
Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

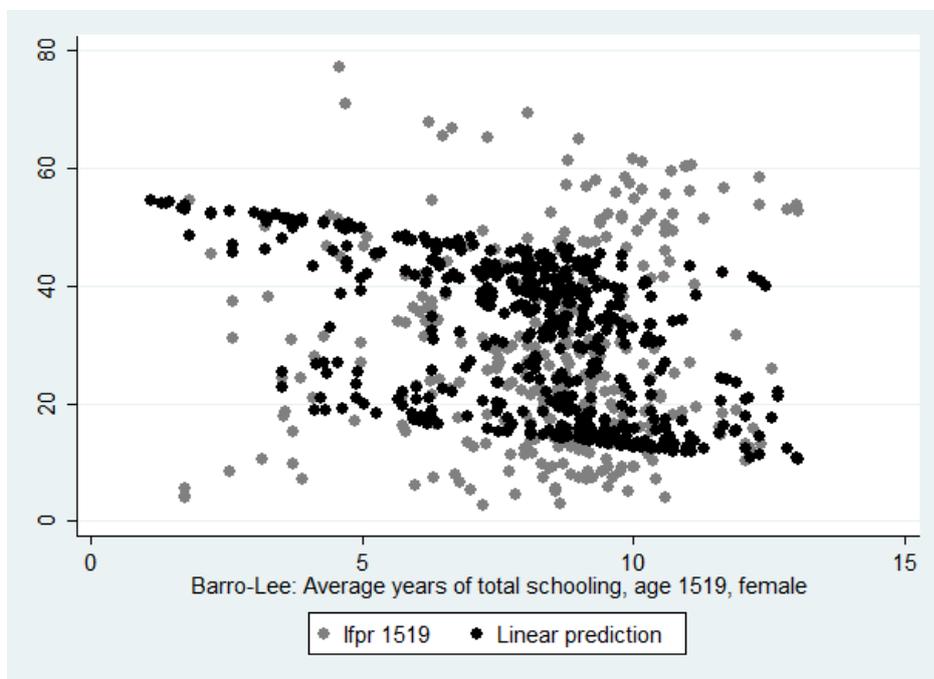
<b>TABLE 5B. Regression Results (Dependent Variable=lfpr5564)</b>			
<b>MODEL 1</b>			
mayts5564	2.139** (1.033)	Observations	303
gdp	0.000171 (0.000492)	Number of numericcode	52
gdpsq	5.18e-07 (6.10e-07)	R-squared	0.351
Constant	12.50** (5.675)	R-squared by hand	0.351
		Log Lik	-1015
<b>MODEL 2</b>			
fayts5564	2.537*** (0.836)	Observations	303
gdp	-1.63e-05 (0.000485)	Number of numericcode	52
gdpsq	6.39e-07 (6.30e-07)	R-squared	0.370
Constant	14.38*** (4.702)	R-squared by hand	0.370
		Log Lik	-1010
<b>MODEL 3</b>			
fse3	0.193** (0.0832)	Observations	254
gdp	-3.79e-05 (0.000563)	Number of numericcode	49
gdpsq	4.87e-07 (6.18e-07)	R-squared	0.367
Constant	25.00*** (5.227)	R-squared by hand	0.367
		Log Lik	-844.9

Robust standard errors in parentheses

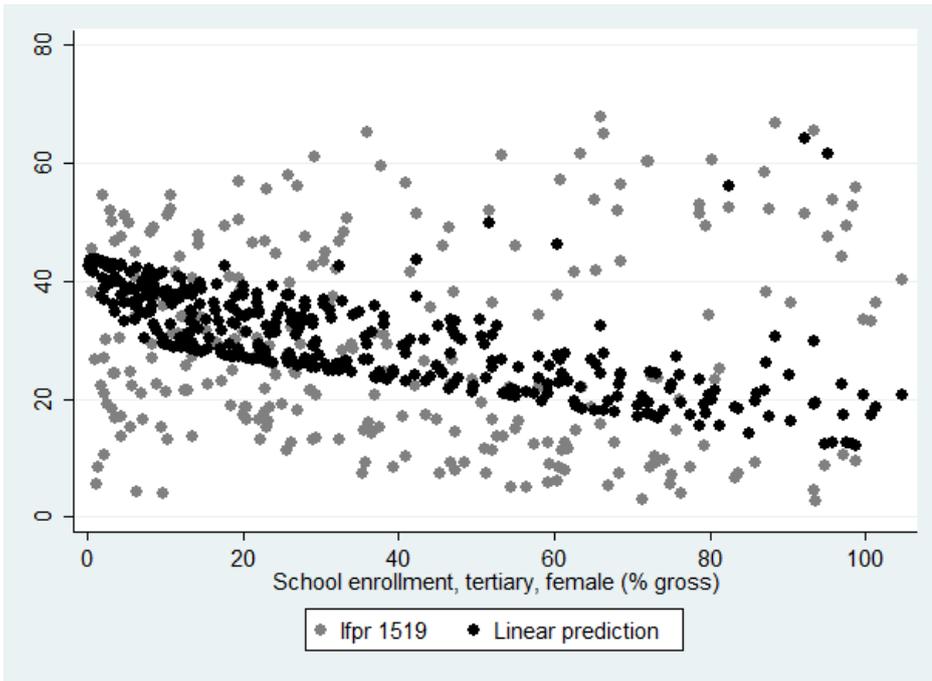
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



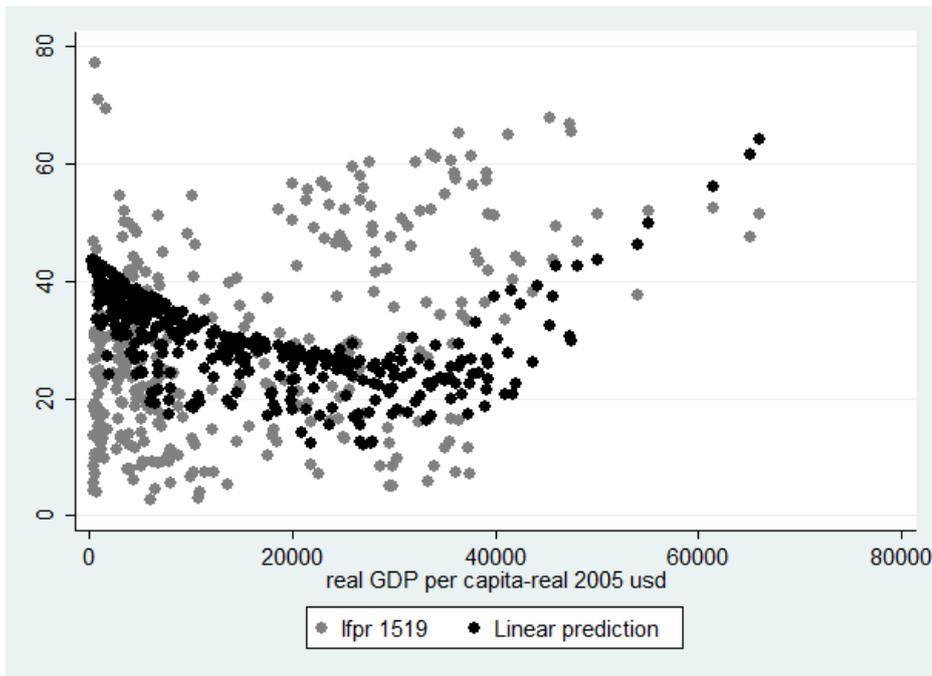
**Figure 1B. Female LFPR and Male Education (15-19 Age Group)**



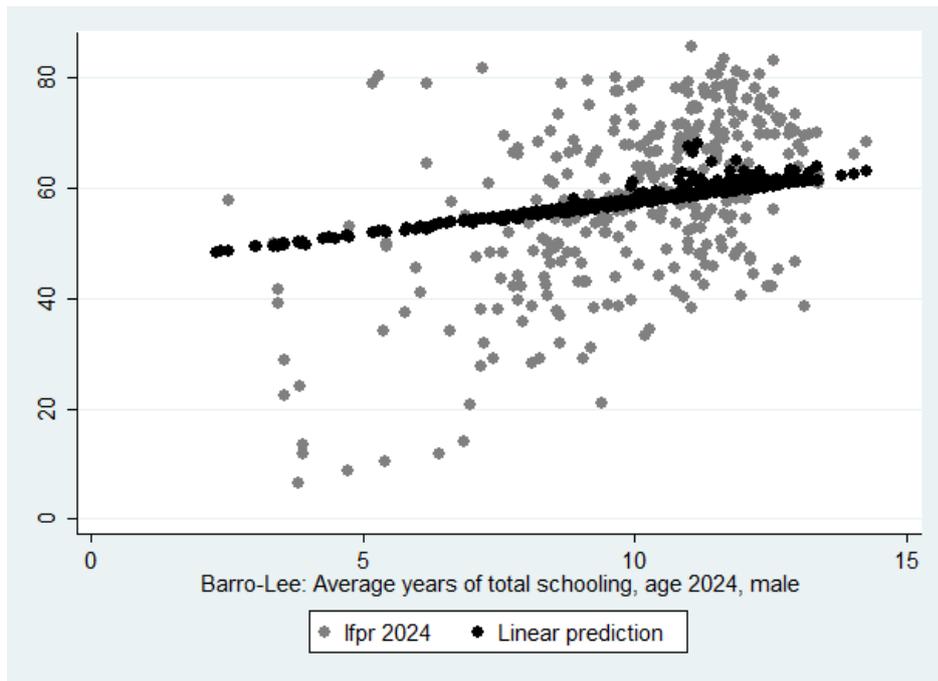
**Figure 2B. Female LFPR and Female Education (15-19 Age Group)**



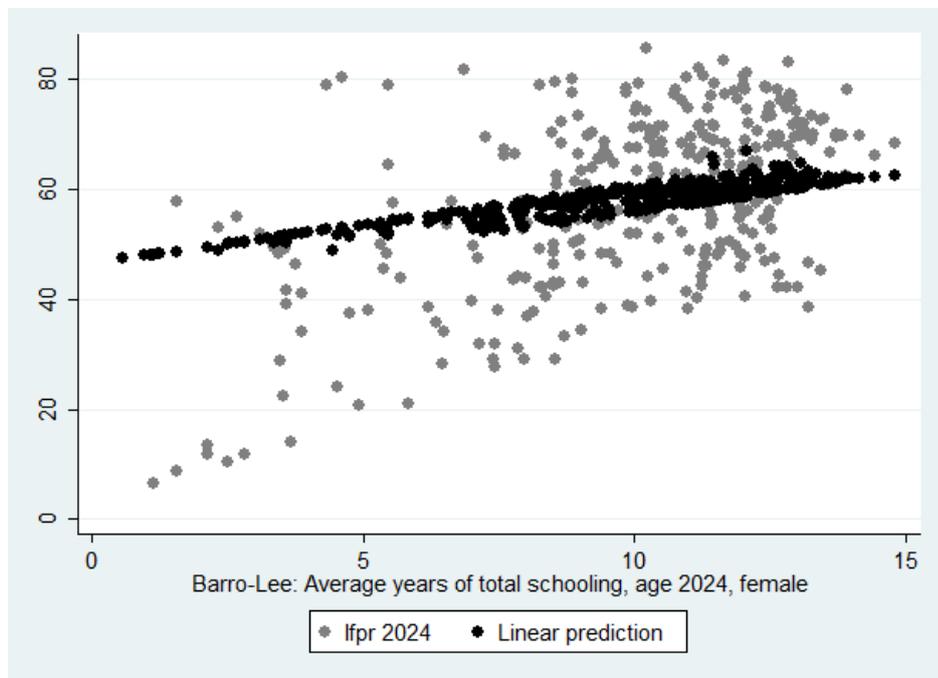
**Figure 3B. Female LFPR and Female Tertiary Enrollment (15-19 Age Group)**



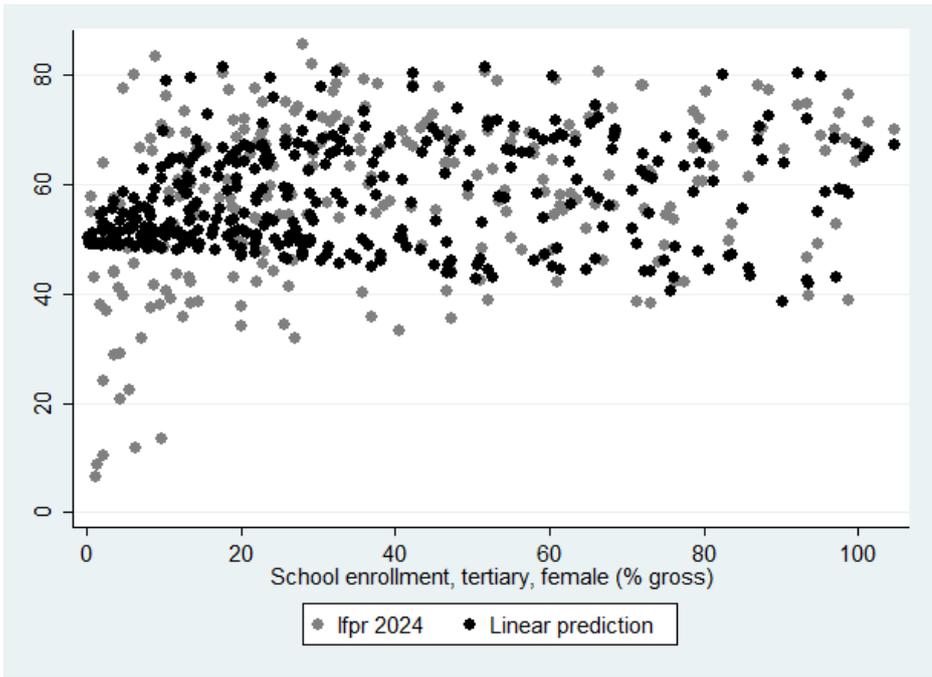
**Figure 4B. Female LFPR and GDP per capita (15-19 Age Group)**



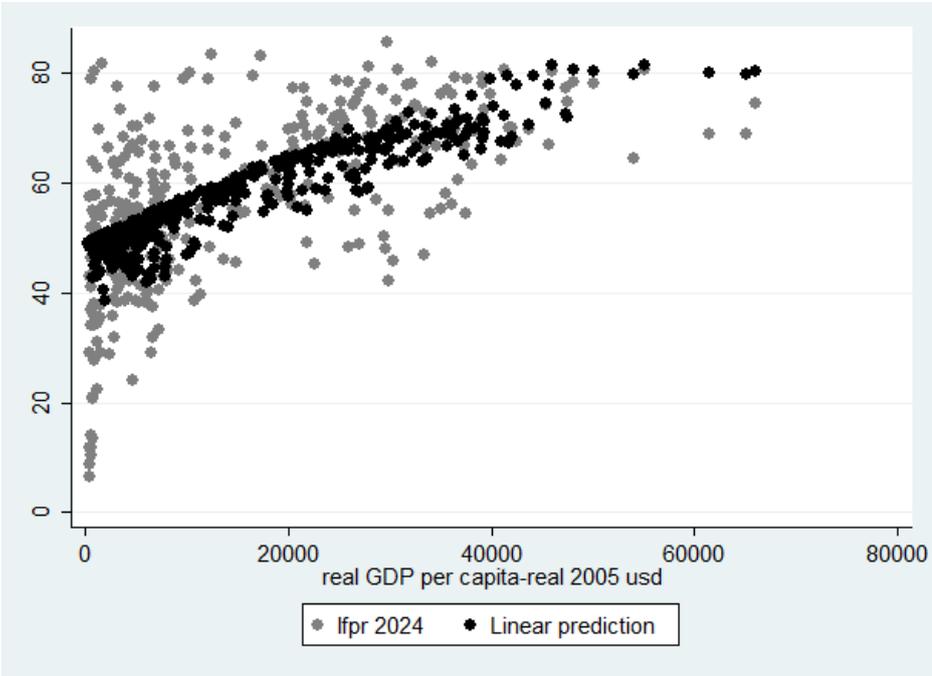
**Figure 5B. Female LFPR and Male Education (20-24 Age Group)**



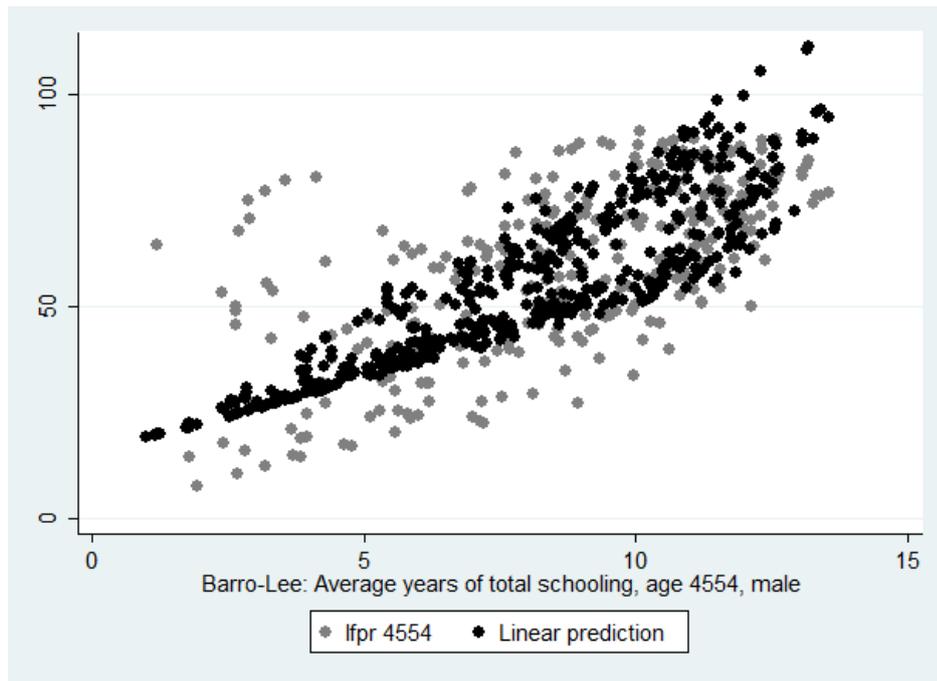
**Figure 6B. Female LFPR and Female Education (20-24 Age Group)**



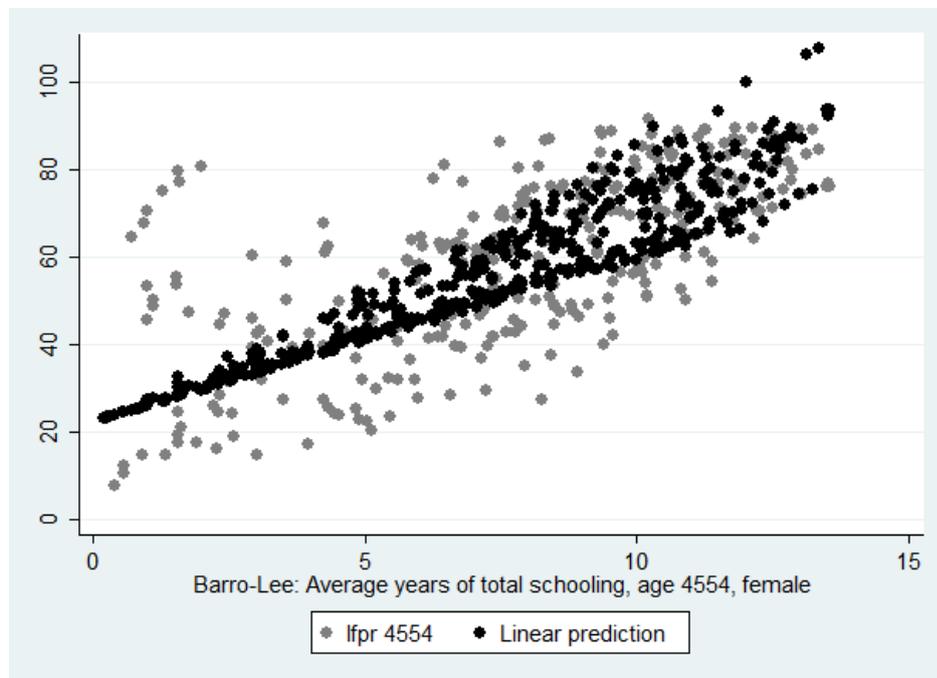
**Figure 7B. Female LFPR and Female Tertiary Enrollment (20-24 Age Group)**



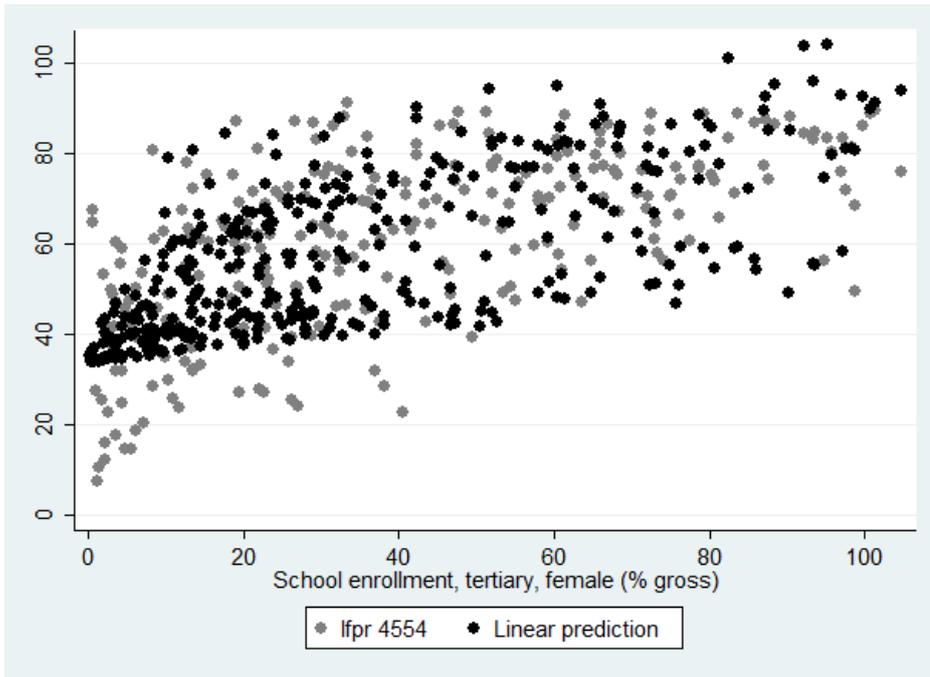
**Figure 8B. Female LFPR and GDP per capita (20-24 Age Group)**



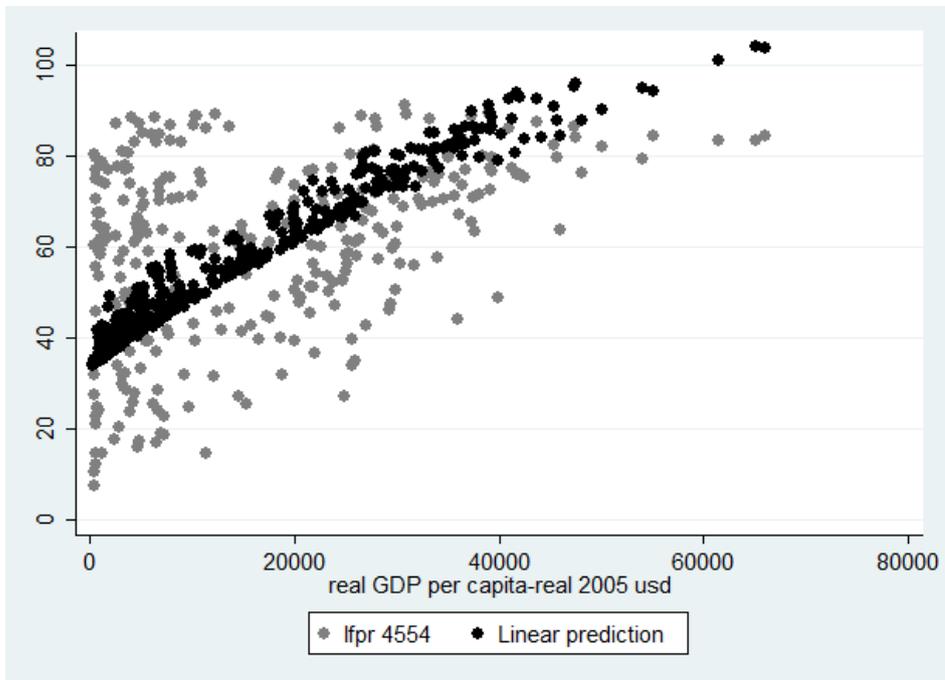
**Figure 9B. Female LFPR and Male Education (45-54 Age Group)**



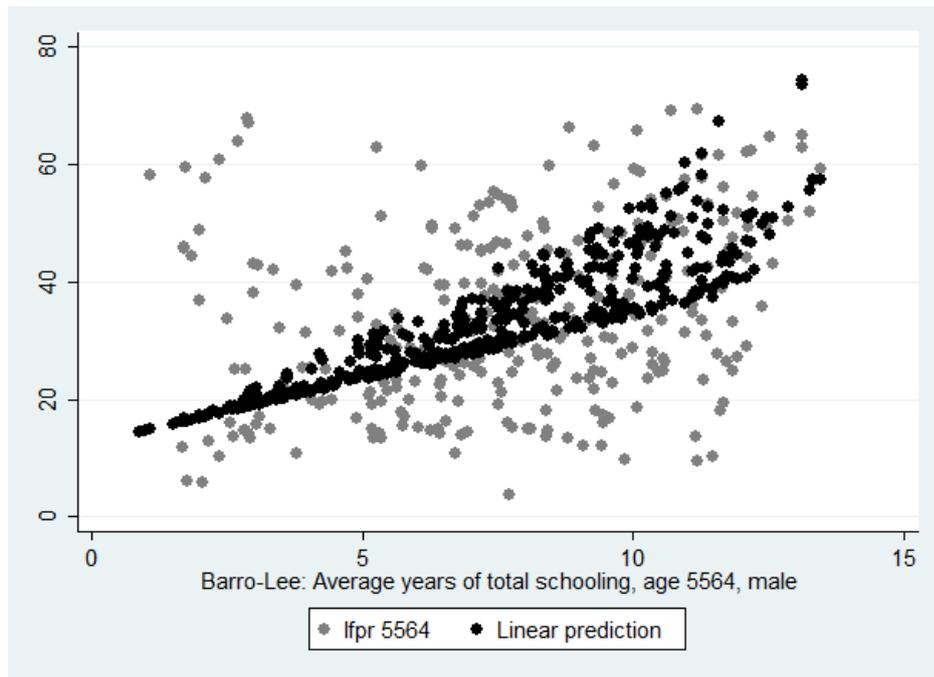
**Figure 10B. Female LFPR and Female Education (45-54 Age Group)**



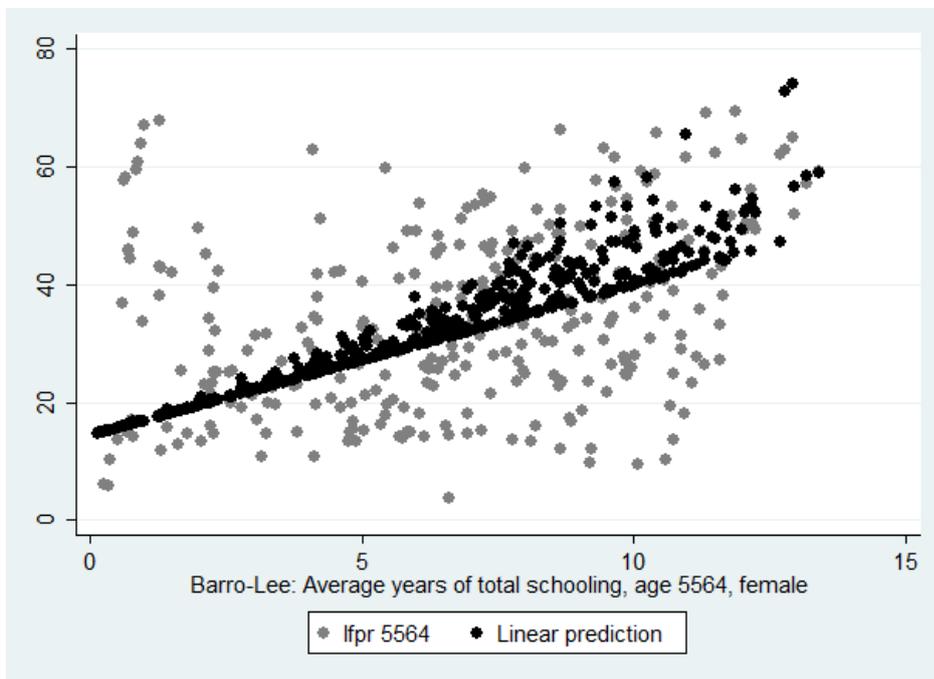
**Figure 11B. Female LFPR and Female Tertiary Enrollment (45-54 Age Group)**



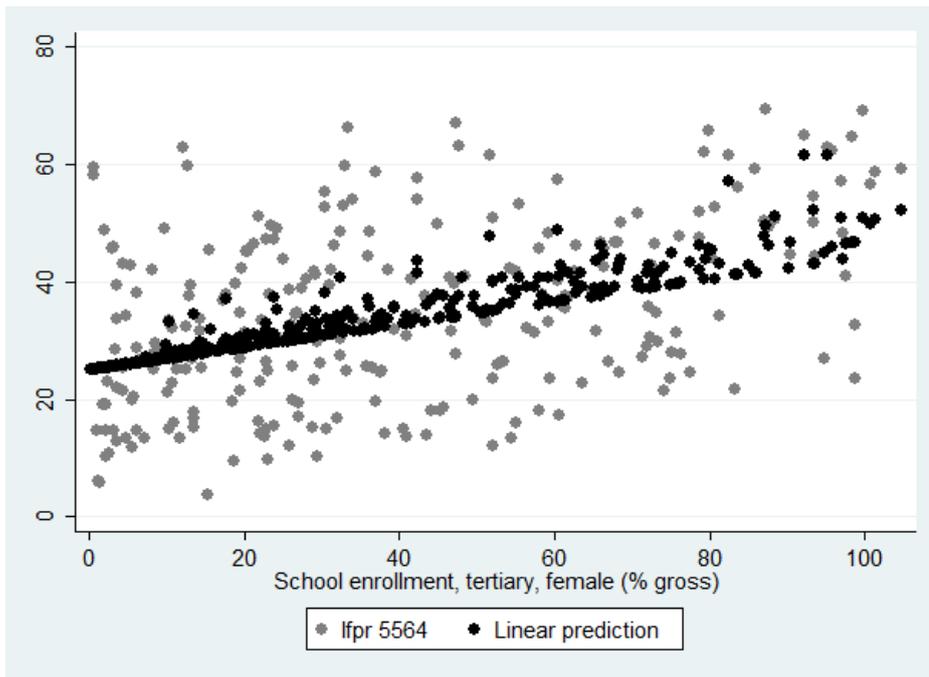
**Figure 12B. Female LFPR and GDP per capita (45-54 Age Group)**



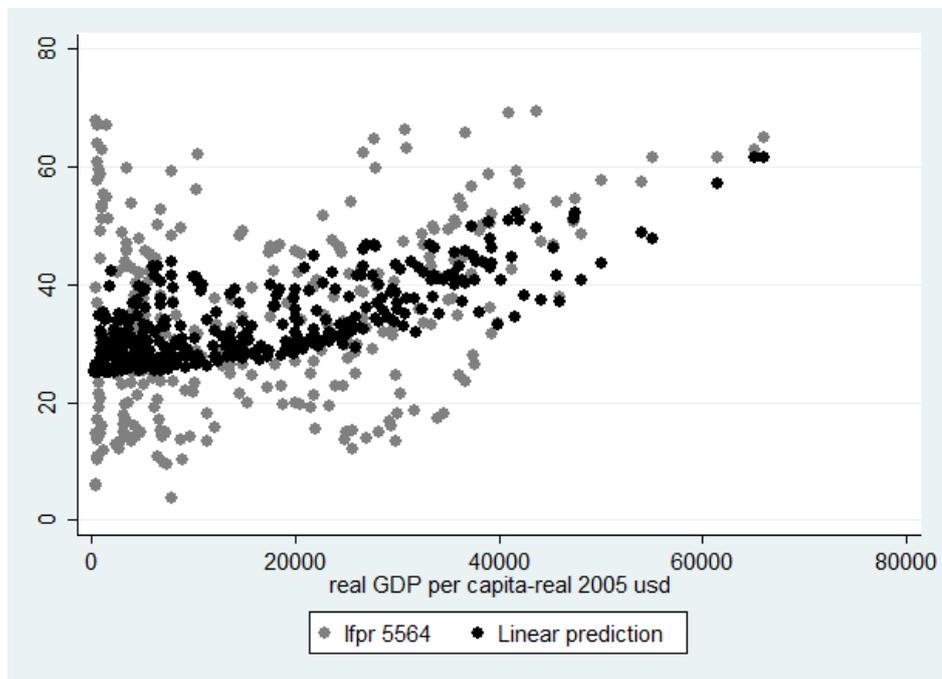
**Figure 13B. Female LFPR and Male Education (55-64 Age Group)**



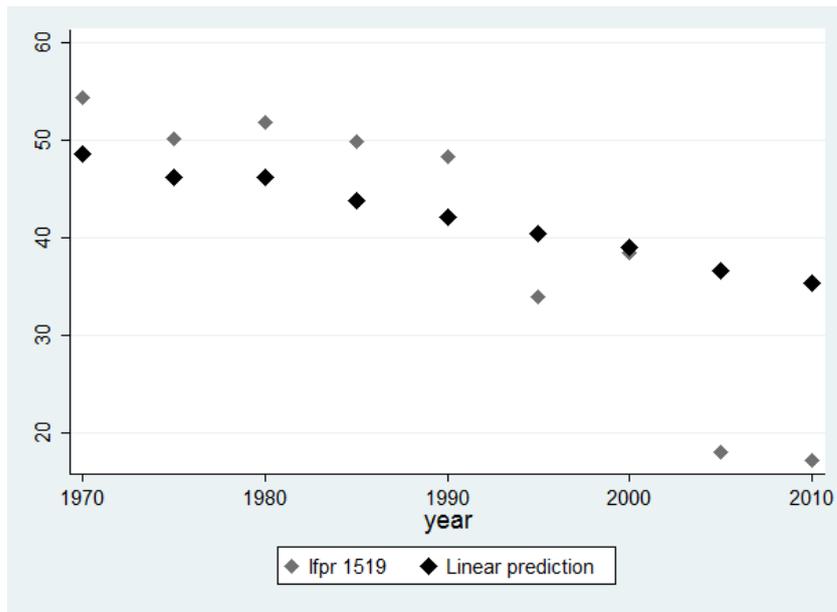
**Figure 14B. Female LFPR and Female Education (55-64 Age Group)**



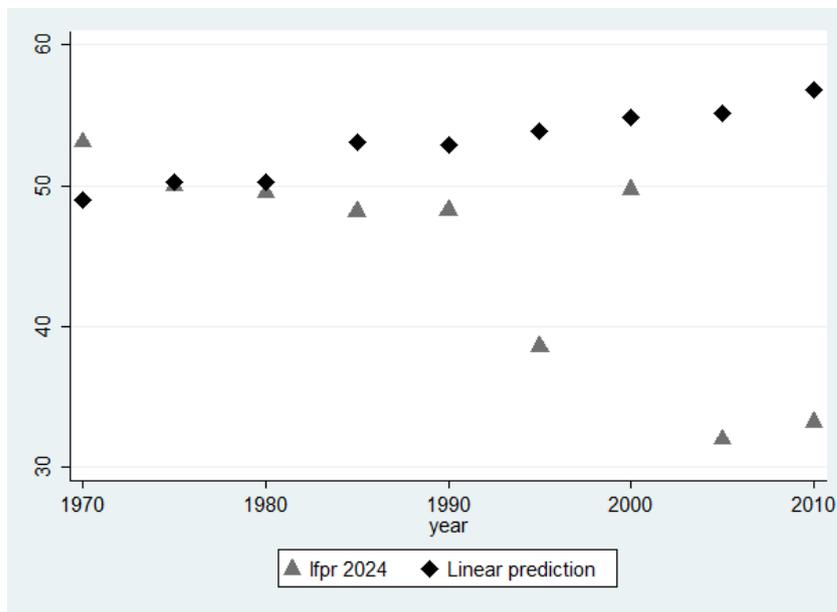
**Figure 15B. Female LFPR and Female Tertiary Enrollment (55-64 Age Group)**



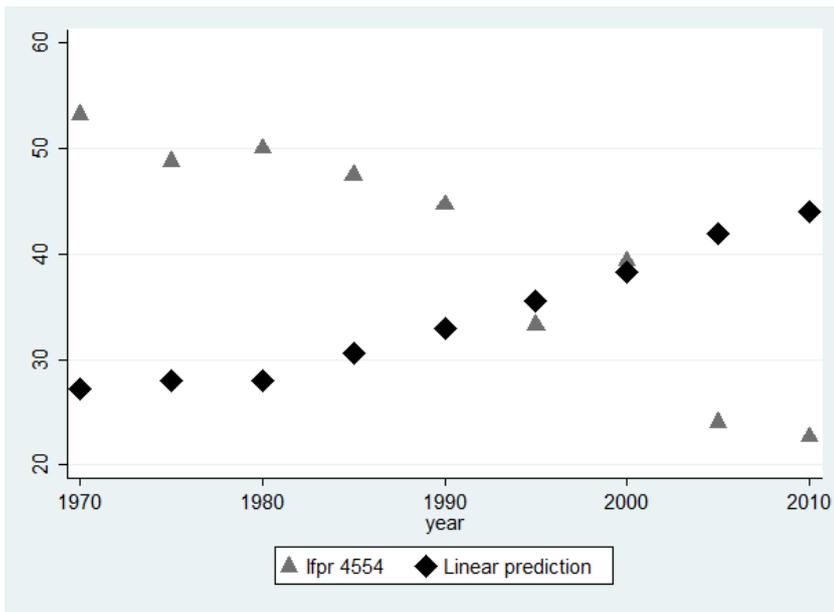
**Figure 16B. Female LFPR and GDP per capita (55-64 Age Group)**



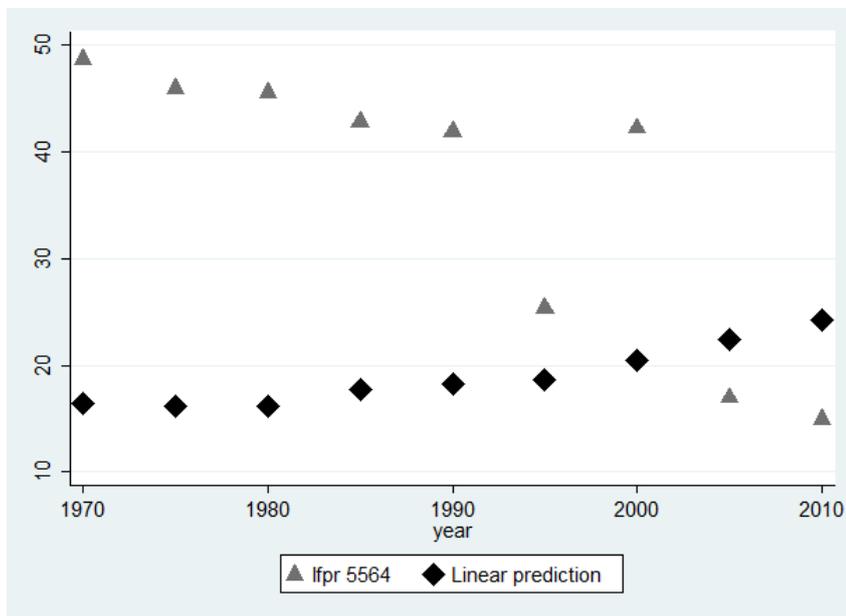
**Figure 17B. Observed and Fitted values for Turkey (15-19 females)**



**Figure 18B. Observed and Fitted values for Turkey (20-24 females)**



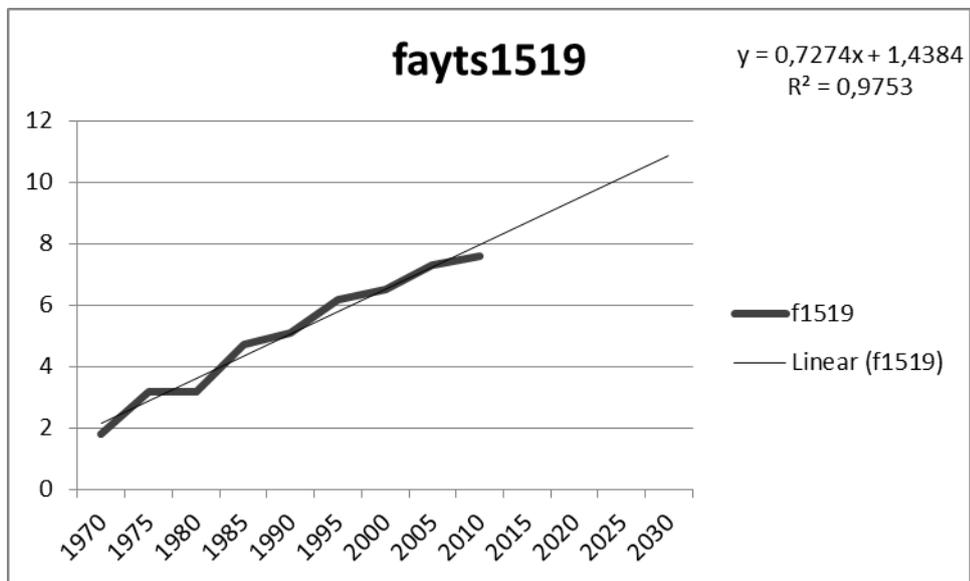
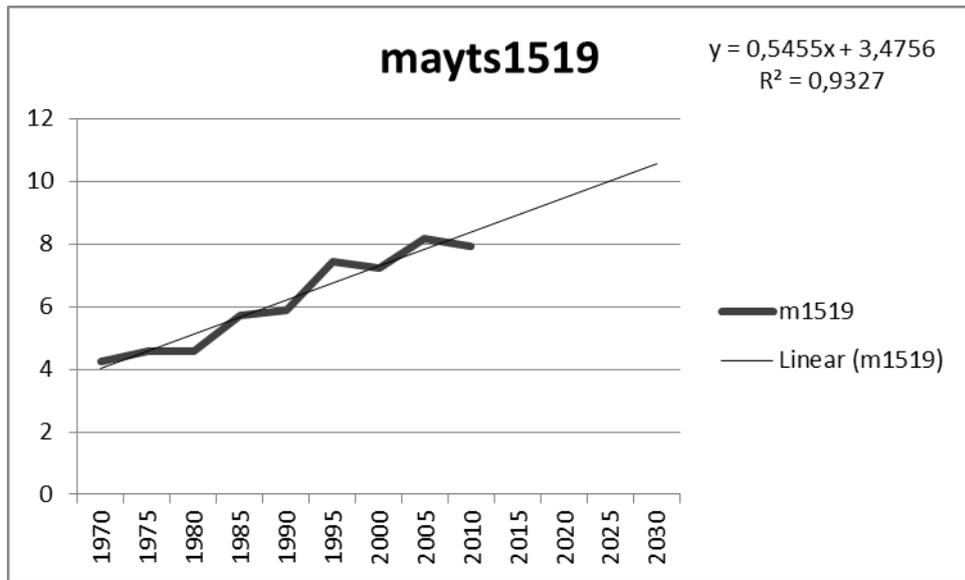
**Figure 19B. Observed and Fitted values for Turkey (45-54 females)**

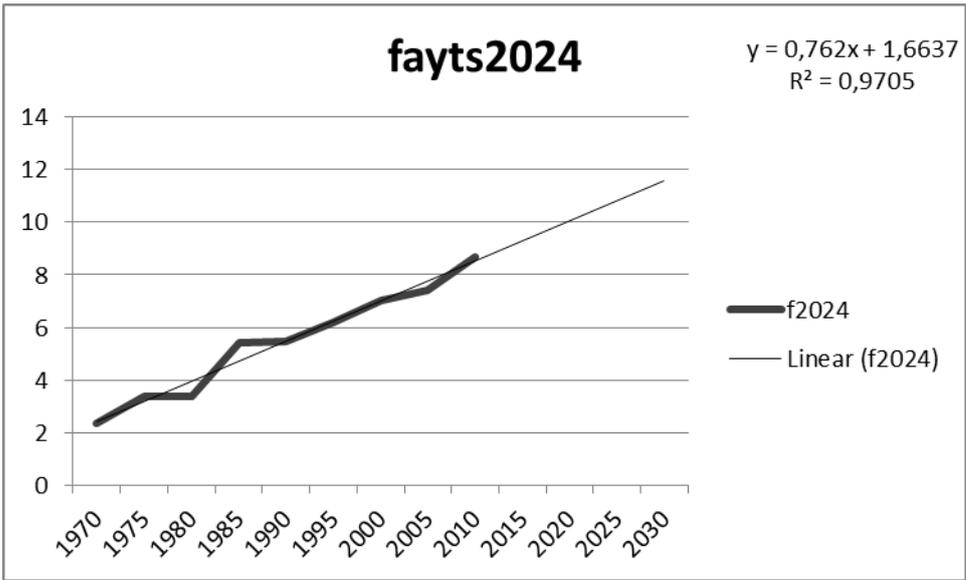
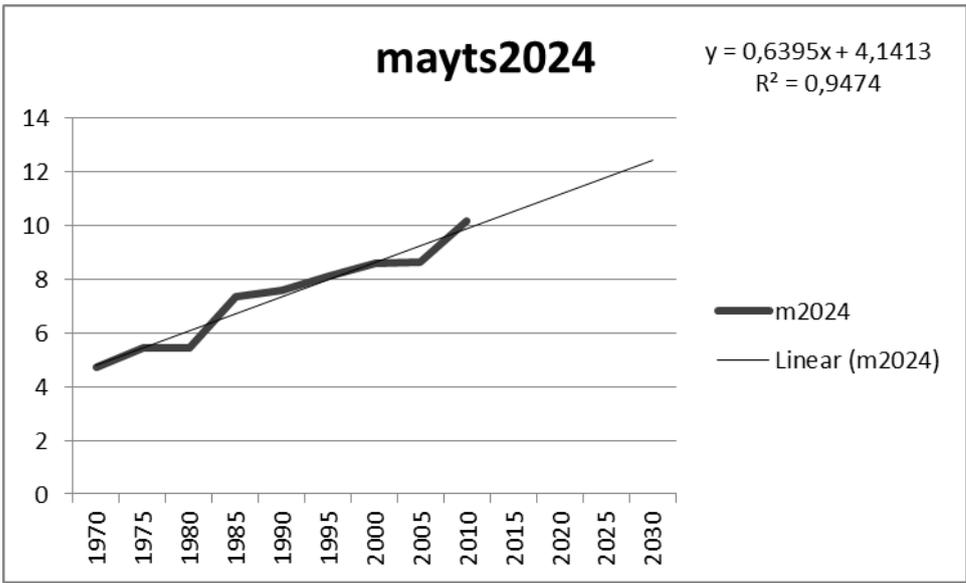


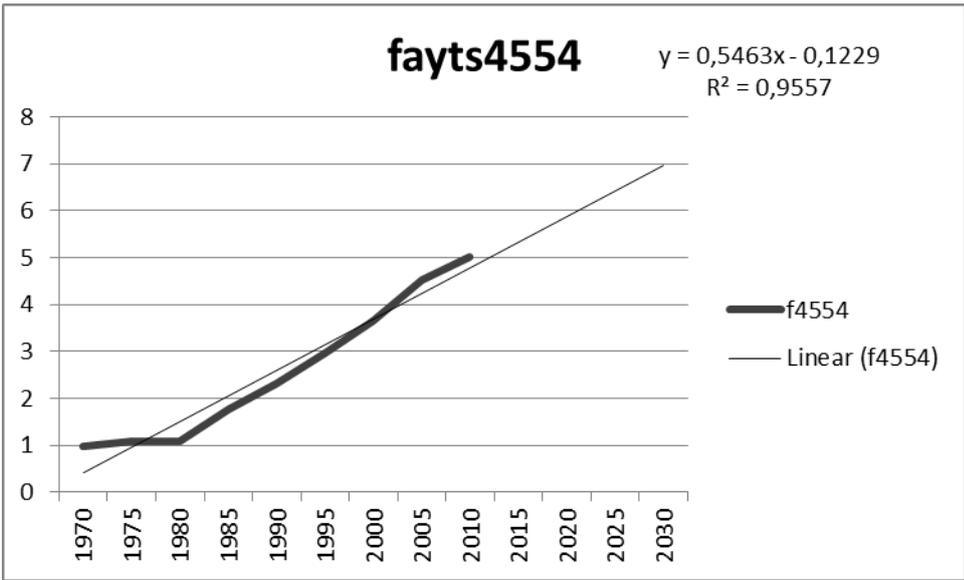
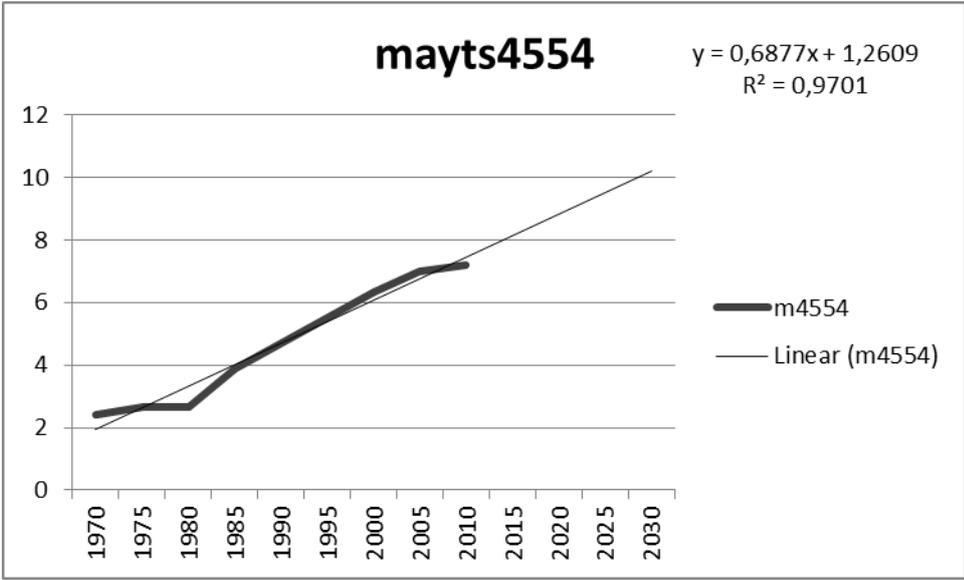
**Figure 20B. Observed and Fitted values for Turkey (55-64 females)**

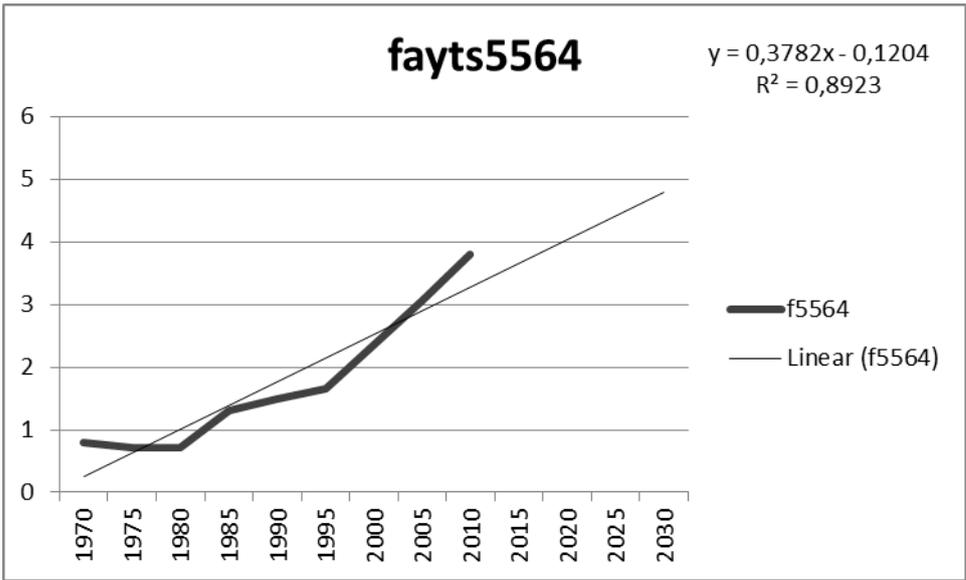
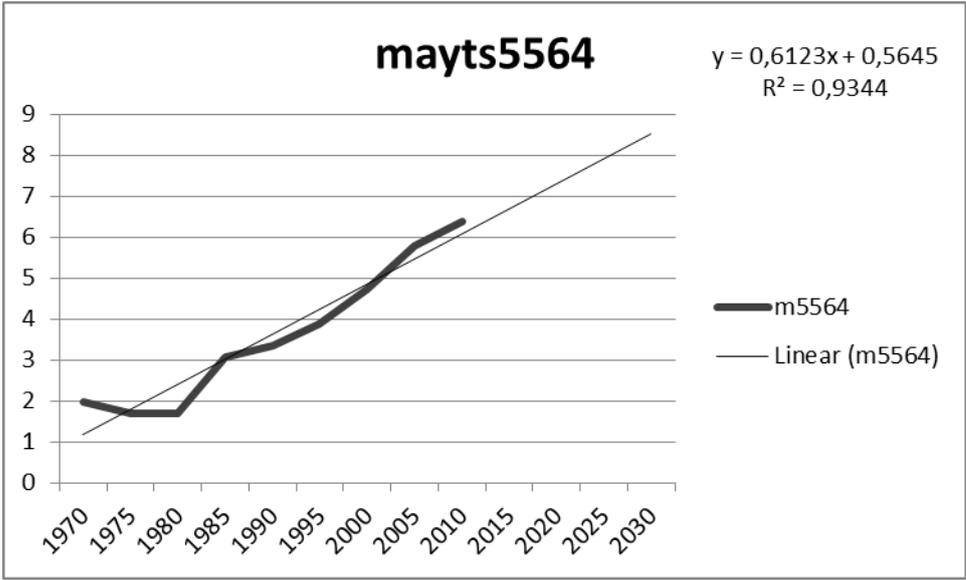
## APPENDIX C-PROJECTIONS

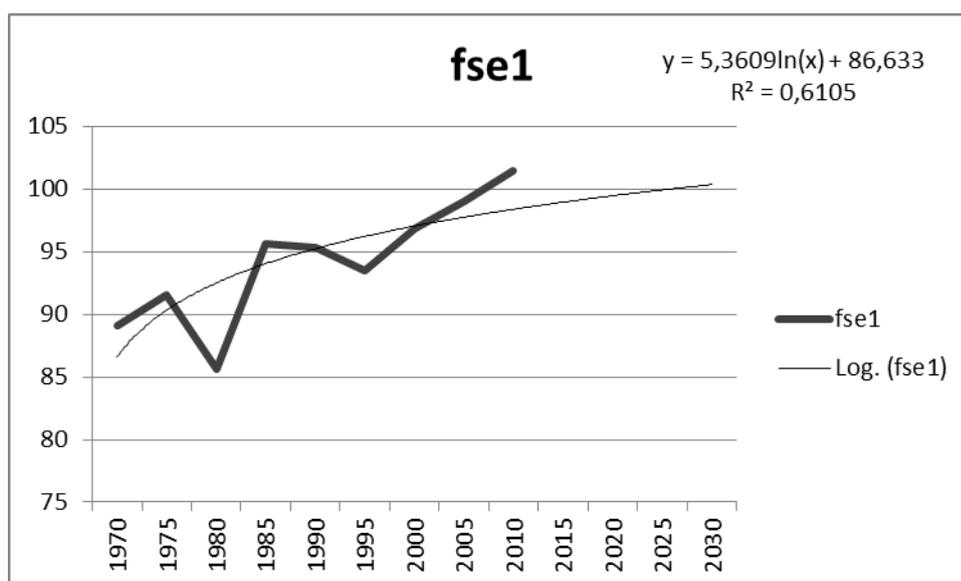
### Figures for trendlines of Variables











**TABLE 1C. Projections For Female LFPR in Turkey (using model 1)**

Average Growth of GDP per capita					
Years	15-19	20-24	25-44	45-54	55-64
2010	35.2	57.6	49.1	46.7	27.7
2015	33.1	58.0	55.0	50.6	28.5
2020	31.2	58.8	58.6	53.8	30.1
2025	29.1	59.5	62.3	57.1	31.7
2030	26.9	60.3	66.2	60.5	33.3
Low Growth of GDP per capita					
Years	15-19	20-24	25-44	45-54	55-64
2010	35.2	57.6	49.1	46.7	27.7
2015	34.5	58.1	54.2	49.9	28.3
2020	32.7	58.8	57.7	52.9	29.8
2025	30.9	59.6	61.2	56.0	31.3
2030	29.1	60.4	64.8	59.2	32.9
High Growth of GDP per capita					
Years	15-19	20-24	25-44	45-54	55-64
2010	35.2	57.6	49.1	46.7	27.7
2015	27.4	57.9	58.6	54.0	29.6
2020	24.4	58.6	63.1	58.0	31.5
2025	21.3	59.4	67.9	62.3	33.5
2030	18.2	60.2	72.9	66.9	35.7

**TABLE 2C. Projections For Female LFPR in Turkey (using model 3)**

Average Growth of GDP per capita					
Years	15-19	20-24	25-44	45-54	55-64
2010	23.1	36.7	51.3	50.4	32.8
2015	22.9	36.6	52.8	51.0	32.0
2020	20.6	35.2	55.3	53.2	32.9
2025	18.2	33.6	58.1	55.5	33.8
2030	15.7	32.0	61.2	58.1	34.7
Low Growth of GDP per capita					
Years	15-19	20-24	25-44	45-54	55-64
2010	23.1	36.7	51.3	50.4	32.8
2015	24.1	37.3	50.9	49.7	31.9
2020	22.1	36.1	52.9	51.5	32.8
2025	19.9	34.7	55.2	53.5	33.7
2030	17.7	33.3	57.7	55.7	34.6
High Growth of GDP per capita					
Years	15-19	20-24	25-44	45-54	55-64
2010	29.6	36.7	51.3	50.4	32.8
2015	22.8	33.2	62.1	57.4	32.2
2020	20.3	31.0	67.1	61.3	33.2
2025	17.7	28.5	73.2	65.8	34.3
2030	15.1	25.8	80.3	71.1	35.5

TABLE 3C. Fixed Effect Analysis using Country Dummies

r2544	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
f2544	4.466133	.539165	8.28	0.000	3.40429	5.527977
gdp	.0002266	.0003446	0.66	0.511	-.000452	.0009053
gdpsq	3.54e-07	4.92e-07	0.72	0.472	-6.15e-07	1.32e-06
numericcode						
2	-7.099175	5.431601	-1.31	0.192	-17.79629	3.597941
3	14.04401	6.267381	2.24	0.026	1.700888	26.38713
4	23.91637	12.63227	1.89	0.059	-.9619022	48.79465
5	7.989941	5.721772	1.40	0.164	-3.278646	19.25853
6	18.97861	5.24337	3.62	0.000	8.652201	29.30502
7	28.88214	6.831008	4.23	0.000	15.429	42.33528
8	2.635648	5.908203	0.45	0.656	-9.000099	14.27139
9	-4.045851	3.927424	-1.03	0.304	-11.78061	3.688906
10	11.01233	3.753742	2.93	0.004	3.619629	18.40503
12	10.36593	4.383547	2.36	0.019	1.732878	18.99899
13	16.30437	6.926045	2.35	0.019	2.664067	29.94468
15	17.47623	4.831117	3.62	0.000	7.961724	26.99074
16	19.18822	5.882053	3.26	0.001	7.603977	30.77247
17	14.72309	6.101896	2.41	0.017	2.705881	26.7403
19	4.511477	5.77173	0.78	0.435	-6.855498	15.87845
20	3.428336	4.648338	0.74	0.461	-5.726205	12.58288
21	52.36825	4.547424	11.52	0.000	43.41245	61.32405
22	5.557726	5.132827	1.08	0.280	-4.550978	15.66643
23	5.942724	4.781144	1.24	0.215	-3.473368	15.35882
24	15.30341	5.398386	2.83	0.005	4.671706	25.93511
25	25.98038	4.443709	5.85	0.000	17.22884	34.73192
26	-2.208502	4.588881	-0.48	0.631	-11.24595	6.828943
27	-.9834919	5.627874	-0.17	0.861	-12.06715	10.10017
28	-5.66071	5.826804	-0.97	0.332	-17.13615	5.814729
29	-2.832892	4.498188	-0.63	0.529	-11.69172	6.02594
30	23.60242	4.048377	5.83	0.000	15.62946	31.57539
31	23.16762	4.445663	5.21	0.000	14.41223	31.92301
32	12.17803	3.842015	3.17	0.002	4.611477	19.74458
33	-.0107518	4.477792	-0.00	0.998	-8.829415	8.807911
34	-2.022656	7.056994	-0.29	0.775	-15.92086	11.87555
35	-.5661681	4.887597	-0.12	0.908	-10.19191	9.059576
36	-6.308854	8.103283	-0.78	0.437	-22.26764	9.649933
37	-.8841181	4.595518	-0.19	0.848	-9.934633	8.166397
38	19.4039	4.615947	4.20	0.000	10.31315	28.49465
39	8.656284	4.747661	1.82	0.069	-.693866	18.00643
40	25.05608	4.836141	5.18	0.000	15.53168	34.58049
41	24.89363	5.884844	4.23	0.000	13.30389	36.48337
43	20.34152	4.450028	4.57	0.000	11.57753	29.1055
44	11.69459	5.807741	2.01	0.045	.2566914	23.13248
45	18.39729	4.493657	4.09	0.000	9.547382	27.2472
46	1.155864	5.666892	0.20	0.839	-10.00464	12.31637
47	-2.117465	4.945912	-0.43	0.669	-11.85805	7.623124
48	11.73424	5.973351	1.96	0.051	-.0298077	23.49829
49	-2.823313	7.653523	-0.37	0.713	-17.89633	12.24971
50	56.319	4.210423	13.38	0.000	48.0269	64.6111
51	6.563956	4.720986	1.39	0.166	-2.733659	15.86157
52	14.70838	6.942526	2.12	0.035	1.035612	28.38114
53	17.13513	5.135974	3.34	0.001	7.020223	27.25003
54	11.39579	6.663304	1.71	0.088	-1.727071	24.51865
55	-8.529687	5.764229	-1.48	0.140	-19.88189	2.822515
56	19.69521	6.370882	3.09	0.002	7.148255	32.24217
_cons	7.596258	5.182058	1.47	0.144	-2.609402	17.80192

Some Outlier Countries:

- Numericcode 4: Bangladesh
- Numericcode 21: Haiti
- Numericcode 33: Mexico
- Numericcode 37: Pakistan
- Numericcode 48: Sweden
- Numericcode 49: Switzerland
- Numericcode 52: Turkey

## COUNTRY LIST

### Low Income Countries:

- 1 Bangladesh
- 2 Haiti

### Lower Middle-Income Countries:

- 1 Egypt
- 2 Georgia
- 3 Honduras
- 4 Indonesia
- 5 Pakistan
- 6 Philippines
- 7 Sri Lanka
- 8 Ukraine

### Upper Middle-Income Countries:

- 1 Argentina
- 2 Brazil
- 3 Bulgaria
- 4 Chile
- 5 Costa Rica
- 6 Latvia
- 7 Lithuania
- 8 Mauritius
- 9 Mexico
- 10 Peru
- 11 Romania
- 12 Thailand
- 13 Turkey
- 14 Uruguay

### High Income Countries:

- 1 Australia
- 2 Austria
- 3 Belgium
- 4 Canada
- 5 Cyprus
- 6 Czech Republic
- 7 Denmark
- 8 Estonia
- 9 Finland
- 10 France
- 11 Germany
- 12 Greece
- 13 Hong Kong, China
- 14 Hungary
- 15 Israel
- 16 Italy
- 17 Japan
- 18 Korea, Republic of
- 19 Netherlands
- 20 New Zealand
- 21 Norway
- 22 Poland
- 23 Portugal
- 24 Puerto Rico
- 25 Singapore
- 26 Slovakia
- 27 Spain
- 28 Sweden
- 29 Switzerland
- 30 Trinidad and Tobago
- 31 United Kingdom
- 32 United States



## TEZ FOTOKOPİSİ İZİN FORMU

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Fen Bilimleri Enstitüsü

Sosyal Bilimler Enstitüsü

Uygulamalı Matematik Enstitüsü

Enformatik Enstitüsü

Deniz Bilimleri Enstitüsü

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Adı : EZGİ

Bölümü : İKTİSAT

TEZİN ADI (İngilizce) :

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2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir.
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz.

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