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Adult Education in Turkey: Stylized Facts, Determinants and Further Issues

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Abstract: We provide a novel set of stylized facts on individuals engaging in adult education using the Adult Education Survey (AES) conducted by TurkStat for the first time. This way we provide the first evidence on the determinants of participation in adult education in a developing country, Turkey. Our results indicate that old, uneducated, workingwomen with uneducated fathers and with young children in the household are less likely to take part in adult education activities in Turkey. However, young, educated, workingmen living in rural areas are more likely to participate in adult education. We also find that past performance of the sector of employment, significantly and positively affects the odds for adult education. Finally, we repeated our analysis for different fields of adult education. Our results suggest that characteristics of men and women who take courses in the most popular fields of education vary.

Keywords: Adult education, economic growth, Turkey

JEL Codes: *I21, I25*

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1. Introduction

The concept of *from cradle to grave*, in other words, lifelong learning emerged some three decades ago and it is defined as the total of activities of continuing learning and training for enhancing one's knowledge, skills and abilities. The lifelong learning concept includes formal, non-formal, and informal education.

Formal education is organized, includes a formal curriculum and leads to a formally recognized credential such as a diploma or a degree. Non-formal education, on the other hand, is only loosely organized, may or may not be guided by a formal curriculum and does not result in a formal degree or diploma. Continuing education courses for adults are an example. One step further is the informal education with no formal curriculum and no credits earned. A mother teaching her child to play chess or a friend teaching another how to use some software are examples of informal education.

The objective of this paper is to analyze the determinants of participation in non-formal education in Turkey, which builds individual skills and capacities outside the formal education system particularly for adults. What is called as adult education from now on in this paper is non-formal education.

Until recently, learning that happens outside the formal learning system is not well understood and valued. Starting with the "1996 Lifelong Learning for All" initiative by OECD education ministers, the developed world has started putting an increasing emphasis on the need to identify the full range of an individual's knowledge and skills – those acquired not only at school but also outside the formal system. In many developing countries, on the other hand, although there are ongoing lifelong learning activities, there is no well-defined strategy or target spelled out.

Turkey is no exception. The core education strategy keeps changing drastically and spins around formal education. Until very recently, there has been no information on the extent of adult education in Turkey; ergo there exist no micro studies analyzing the determinants of education outside of formal learning system. Moreover, the existing literature on participation in adult education largely reflects the views of education and sociology disciplines and lacks the economist's point of view. Filling these gaps in the literature is the central thrust of this paper.

In compliance with the Adult Education Survey (AES) of Eurostat, which is conducted to encourage lifelong learning policies in the EU and to initiate studies in the area of adult education, TurkStat has conducted its first adult education survey in 2007. AES suggests that about 4.3 million adults in Turkey participate in adult education programs indicating 12.8 percent participation rate. The survey involves information on the learning activities both at the professional and individual level, the attitudes towards learning; and the scope of learning.

In this paper, we investigate the determinants of adult education in Turkey by using the AES. Firstly, we explore the stylized facts of adult education participation in Turkey in comparison with other EU countries. Participation in adult education Turkey is less than half of the EU average. Moreover, the gender

gap in adult education is much wider compared to the EU, which led us to focus on the male and female differences in the rest of the paper.

Secondly, we analyze the determinants of participation in adult education in Turkey by using individual characteristics of the participants. Our results indicate that young, educated, workingwomen with educated fathers and with no young child in the household are more likely to take part in adult education activities in Turkey. However, young, educated, working men living in rural areas are more likely to participate in adult education.

Finally, we focus on the working population and investigate whether economic performance in the sector of employment induces higher participation in adult education. The striking finding of this analysis is that past performance of the sector of employment, significantly and positively affects the odds for adult education.

Marginal effects analysis shows that until the age of 33 men are more likely to attend adult education programs whereas after that age women's participation surpasses men's. The likelihood of women with 20 years of education to attend adult education is 7 percentage points higher than men with same years of education. However, the impact of experience at work is much smaller for women in attending adult education. The likelihood of attending non-formal courses for a man who just started working is only 17 percent while it is around 35 percent for a man who has been working for over 40 years. Finally, our analysis shows that if the previous performance of the sector of employment is high, the probability of the worker to participate in adult education increases significantly.

The main contributions of this study are twofold: Firstly, the adult education survey for Turkey is analyzed for the first time. Although there are ongoing adult education programs in Turkey, there is no information regarding the participation structure. Secondly, existing literature on participation in adult education reflects the views of education and sociology disciplines and lacks the economist's point of view. Thirdly, the existing studies on adult education are mainly on developed countries. In this respect this study is the first one that reveals the stylized facts in a developing country.

The organization of the paper is as follows. Next section provides background studies on adult education. Section 3 presents detailed information on adult education in Turkey and offers a comparison with EU countries. The empirical analysis is discussed in Sections 4 and 5. Finally, Section 6 concludes.

2. Motivation

Quality of human capital is the main propellant of productivity and sustainable growth in modern world economies. The prerequisite of enhancing the quality of human capital, thereby economic growth, is having an educated workforce. Considering the aging population of world economies, especially the developed ones, the balance between formal education and non-formal/informal learning has tilted in favor of the latter. As a consequence, investment in non-formal or adult

education has taken its place in the policy agenda of developed countries with older populations.

Aging population introduces major shifts to the labor markets in the form of changing education needs. Speed of technological change requires continuous skill updating in the labor markets. The existing level of education acquired through the formal school system is unable to cope up with the skills and knowledge required by today's employers. Consequently, there is a permanent tension between the supply side of the knowledge offered by the possible employees and the demand side of the skills required by the employers. As the most important component of lifelong learning, adult education provides a bridge between the school system and the labor market.

Lifelong learning is a new subject on the agenda of social scientists. The pioneering studies of participation in adult education come from the sociology and education disciplines. The factors that determine who does and does not receive the opportunity to participate in lifelong learning are key issues discussed in this literature. Most of the existing work focuses on the case of Europe. The results show that young people participate more frequently than older people; the employed receive more training than the unemployed; and highly skilled individuals participate more frequently than their low-skilled counterparts (Altonji and Spletzer 1991, Blundell et al. 1996, Oesterbeek 1998 McGivney 2001, O'Connell 2002, Dieckhoff et al. 2007, O'Connell and Jungblut 2008, Stenfors-Hayes et al. 2008, Dæhlen and Ure 2009).¹

With the release of AES data by Eurostat, Robert, Sagi and Balogh (2010) provide the first analysis related to the survey results and they investigate the cross-country differences in underlying causes of participation and non-participation in formal adult learning. Following this first study of the AES data, two other studies focusing on the other aspects of adult education appeared:

The first one, Roosmaa and Saar (2012), analyze the inequality in participation to adult education in EU countries by using aggregate data from the same survey. Their results indicate that inequality in participation reflects the distribution of occupations (or workplaces with different requirements) more than the available qualifications of the workforce.

The second one is by Boeren, Holford, Nicaise and Baert (2012). Using the European AES data, this paper searches for motivational patterns among adult learners in 12 European countries. They analyze motivational differences by centering the discussion on labor market, educational system and family structures using ANOVA analysis. Their results suggest that participation in adult education is affected by broader structural conditions within a country or geographical area.

There are also a few very recent individual country studies of the AES data. Lopes and Fernandes (2011) employing chi-square independence tests, correlation

¹ See Boeren, Nicaise and Baert (2010) for a detailed literature survey on the models of participation in adult education.

analysis and tests for equality of proportions, analyze the participation in adult learning in Portugal. The results show that gender, age, school level, situation towards employment and profession appear as the main determinants. Boeren (2011) focuses on the gender differences in formal, non-formal and informal adult learning in the Netherlands. Through basic descriptive analysis they report that men participate more in work-related learning. Chen and Nicaise (2010) using the Belgian AES, examine the participation of socially disadvantaged groups in formal compared to non-formal adult education, controlling for other factors that might also influence the participation. Moreover, they investigate the role of employer support in fostering participation in adult education. Their findings suggest that non-formal adult education is less equally distributed than the formal adult education.

To the best of our knowledge there are two other studies using micro data on adult education other than the AES of Eurostat. The first one is Alledinger et al. (2011) who summarize the objectives of stage 8 of German National Educational Panel Study and provide a general perspective on adult education and lifelong learning in Germany. The second study is conducted by Cruce and Hillman (2010) who investigate the demand for higher education for adults using the AES of 2005 for the US. The decision regarding whether or not to participate in formal courses for personal interest or work-related reasons is driven by demographic (e.g., age, gender, and locale) and socioeconomic variables (e.g., education level, household income, and employment status) whereas the decision regarding the extent of participation in this formal coursework is driven by economic variables (i.e., price).

There are no empirical studies investigating participation in adult education in Turkey. The history and development of non-formal education implementations in Turkey are summarized in Bilir (2007). He suggests that non-formal education for adults does not only provide professional and technical training; but also provides the learners with basic literacy and helps continue their educational life.

Our discussion of the previous literature suggests that micro studies on adult education are recent and very limited. Moreover, the micro data of Turkey has not been analyzed yet. Therefore, this paper constitutes the first microeconomic study of the adult education survey data in Turkey.

3. Adult Education in Turkey

In developed countries emphasis is given to adult education programs and a formal strategy is being followed to encourage and improve adult education. The European Union discloses its strategy and support on Adult Education with two communications: It is Never too Late to Learn (Commission Communication 2006) and Action Plan on Adult Learning (Commission Communication 2007).

These documents highlight the importance of adult education for achieving the Lisbon Strategy objectives of raising economic growth, competitiveness and social inclusion among the EU countries. They also point out that most education and

training systems are still largely focused on the education and training of young people and limited progress has been made in changing systems to mirror the need for learning throughout the lifespan. The documents outline the benefits of adult education as greater employability, increased productivity and better-quality employment, reduced expenditure in areas such as unemployment benefits, welfare payments and early-retirement pensions, but also increased social returns in terms of improved civic participation, better health, lower incidence of criminality, and greater individual well-being and fulfillment.

Following the Communications that highlight the importance of adult education, the EU started to implement an adult education survey (AES) in the EU area to reveal the developments in 2007 and then in 2011.

The AES covers individuals between the ages of 25 and 64 and uses the face-to-face interview technique. The survey includes data on participation rate of individuals according to age group, gender, education attainment level and labor status, as well as other indicators such as participation of work related education, participation in education during working hours and reasons for not to participate in education.

Table 1 presents the participation in adult education ratios of the EU countries and candidates for 2007 and 2011. Also, gender differences in adult education participation likelihood are available in the table.

<Insert Table 1 here>

The average adult education participation rate for 27 countries in the AES sample is 31.3 percent. Moreover, women's participation is lower than men's by only 1.4 percentage point. In other words, there is almost no gender gap in adult education participation in the EU countries. In Sweden, participation in adult education is the highest (69.4 percent), more than twice the average. On the other hand, in Romania, which joined EU in 2012, the adult education participation is the lowest (4.7 percent).

Turkey is the bottom fourth country in adult education participation. The ratio is only 12.8 percent in 2007, significantly below the EU average. Considering that Turkey does not have any clear strategy towards adult learning this result is not a surprise. Moreover, there is a significant difference of 6.6 percentage points between the participation ratios of men and women.

Next, we turn our attention to schooling ratio between women and men in Turkey to understand the much wider gender gap in adult education in Turkey. Figure 1 shows that the schooling ratio in primary education for men is 92 percent in 2007, whereas for women it is only 88 percent. These ratios decrease significantly in higher education to 22 percent and 19 percent for men and women, respectively.

<Insert Figure 1 here>

This panorama shows that when the scarcity of resources is considered there is a trade-off between targeting the further specialization of the educated group in what they do and giving minimum education to the uneducated in Turkey. The initial level of education of the individuals and their participation in adult

education in Turkey suggest that graduates of high school and higher education are more likely to participate in adult education (Figure 1). In other words, presently the existing adult education involves mostly the educated workforce. This result is consistent with the EU; a low level of initial education is a strong barrier for lifelong learning.²

<Insert Figure 2 here>

Employment status of individuals makes a significant difference in their participation in adult education as shown in Figure 2. The most disposed to participating in adult education are paid workers. Moreover, the self-employed group needs special attention because of this group's economic impact. If self-employed, in other words entrepreneurs, are supported by adult education programs, their contribution to economic activity would be significant. However, participation to adult education rate of self-employed is limited as in Figure 2.

4. Data and Empirics

4.1. Data

Adult Education Survey of TurkStat aims to compile information on formal, non-formal education and informal learning activities to develop professional or personal space of individuals in the knowledge and skills in the context of lifelong learning. The Turkish AES was conducted during the period between October 2007-January 2008 to all individuals at 18 years of age or older by using face-to-face interview technique.

The survey includes data on participation rate of individuals according to age group, gender, education attainment level and labor status, as well as other indicators such as participation of work related education, participation in education during working hours and reasons for not to participate in education.

The survey covers all settlements within boundaries of the Republic of Turkey; however, settlements with a population of below 100 have been kept outside the scope. Total sample size of the survey is 22,716 households with members 18 years of age or older. 39,478 individuals were interviewed in 17,501 responding households. However, as the data made available by TurkStat do not cover individuals between 18-25 years old, our analysis is based on individuals at the age of 25 and over, and therefore our sample size is 29,319.

4.2. Empirical Methodology

We use a binary logistic regression model to analyze the determinants of participation in adult education. Hence the probability of participating in adult education is assumed to follow a logistic distribution. The generalized form of our equation can be written as

² Robert, Sagi and Balogh (2010)

$$L = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 x_i + \beta_2' z_i + \varepsilon_i \quad (1)$$

where L is the dependent binary variable, x_i is the sector-specific variable, z_i is a vector of individual-specific variables and ε_i is a stochastic error term.

In case of binary logit regression model, the slope or marginal effects are calculated as

$$\frac{\partial L}{\partial x_i} = \hat{P}_i(1 - \hat{P}_i)\beta_1 \quad (2)$$

$$\frac{\partial L}{\partial z_i} = \hat{P}_i(1 - \hat{P}_i)\beta_2' \quad (3)$$

The Dependent Variable

Our dependent variable is binary which takes the value of 1 if the individual participated in adult education activities in the past 12 months and 0 otherwise. On average 12.8 percent of adults in Turkey participated in adult education programs in 2007.

The Sector-Specific Variable

The sector-specific variable, x_i we use in the regressions is to control for the growth of the sector of employment. *VA Growth* is the annual average growth rate of value added or the period 2003-2006 in 49 NACE Rev.2 sectors.³ The data source of the sector-specific data is the Annual Industry and Service Statistics Database, generated by surveys covering the enterprises in the manufacturing and services, carried out by TurkStat. On average, the sector of employment has experienced a 17.8 percent value added growth between 2003 and 2006.

Individual-Specific Variables

Age is the age of the individual in year 2007. As seen in Table A1 average age in our sample is 41.5 and *Age* varies between 25 and 64. *Gender* takes the value of 1 for males and 0 for females. The sample consists of 47 percent males and 53 percent females. *Year of Schooling* is an indicator for the individual's formal education level and ranges between 0 and 20 with an average of 6.5 years for adults in Turkey in 2007. *Father's Education* is 1 if the father of the individual has none to primary education and 0 otherwise. On average only 7 percent of fathers have secondary or more education. *Married* is the indicator variable for marital status and more than 86 percent of individuals in our sample are married. *Urban* takes the value of 1 if the individual lives in a city and 0 otherwise. About 70 percent of our sample lives in cities. *Young Child* is to control for the effects of dependents in the household.⁴ It takes the value of 1 if there is a child less than 6 years of age in the household and 0 otherwise. On average 25 percent of individuals in the sample have a young child in their household.

³ The results are robust to alternative definitions of sector's previous growth using employment, production or sales and available upon request.

⁴ There is no information on other types of dependents such as elderly or disabled. We have used other age cuts for young children; our results are qualitatively the same.

In our working sample estimations we use variables related to work life. *Employed* takes the value of 1 if the individual is employed and 0 otherwise. About 46 percent of individuals in our sample are employed. *Experience* is the years passed after initial employment and on average 11.5 years for working individuals in our sample. We also control for the size of establishment that the individual works for. *Full Time* takes the value 1 if the individual works full time and 0 otherwise. On average 93 percent of working individuals have full time status at work in our sample. *Large Firm* is defined as a firm with 50 workers or more. About 32 percent of working individuals in our sample work in large firms. A *Medium Firm* has 11 to 49 workers and about 25 percent of working individuals in our sample work in medium size firms.

Income earned is one of the most important variables in estimations involving particularly the working individuals. We are unable to use a continuous variable for income since it is not made available by TurkStat. However, we control for the level income by using a variable called *Above Min Wage* that takes the values of 1 if the individual earns an income higher than the minimum wage in Turkey in 2007 and 0 otherwise. Almost 53 percent of working individuals in the sample earn an above minimum wage.

Finally, we control for the skill level of the working individuals by using the OECD taxonomy. *HS-WC* takes the value of 1 if ISCO codes are 1 to 3 (legislators, senior officials and managers, professionals and technicians and associate professionals) and 0 otherwise. About 30 percent of working individuals are classified as high skilled white collar in our sample. *HS-BC* takes the value of 1 if ISCO codes are 6 or 7 (skilled agricultural and fishery workers and craft and related trades workers and 0 otherwise. About 34 percent of working individuals are classified as high skilled blue collar in our sample.

5. Results

5.1. Baseline

We start of by providing the results of baseline regressions in Tables 2 and 3. Since there exist important differences between male and female populations of our sample as outlined in Section 3, in the remaining parts of the paper, results are reported by gender.⁵

Table 2 (women) and Table 3 (men) show logistic regression results for entire samples in column (1) and then continues to report results by different levels of formal education in columns (2) through (5). Independent of gender and formal education level, young or employed individuals are more likely to participate in adult education programs in Turkey. Marital status has no statistically significant effect.

⁵ Pooled results for the baseline specification are presented in Table A3 of the Appendix and the pooled tables of remaining sections are excluded for brevity yet available upon request.

As can be seen from the column (1) of Table 2, while *Age*, *Father's Education* and *Young Child* reduce the odds for adult education participation of women; *Years of Schooling* and *Employed* increase these odds.⁶ In other words, young, educated, working women with educated fathers and with no young children in the household are more likely to take part in adult education activities in Turkey. On the other hand column (1) of Table 3 shows that young, educated, working men living in rural areas are more likely to participate in adult education.

<Insert Table 2 here>

<Insert Table 3 here>

These differences do not go away when different education levels are considered for women and men as shown in the last four columns of both tables where results for under primary, primary, secondary and tertiary education levels are reported. While *Father's Education* is an important determinant of a woman's participation in adult education, this variable does not have a pronounced effect on a man's choice of adult education. Women with uneducated fathers are less likely to take part in education activities later in life.⁷

One more important difference between women and men is observed when the existence of a young child in the household is considered. *Young Child* is important in shaping an average woman's decision to participate in non-formal education activities in Turkey; it has no effect for an average man's decision.

The final noticeable difference is geographic. While *Urban* has a negative and significant effect on men's odds for adult education across the board, for women this variable has no such effect except for the *Tertiary* subsample reported in column (5) of Table 2. Independent of his level of education, an average man in Turkey is less likely to take part in adult education programs if he resides in a city. This is only true for women endowed with higher education.

5.2. Working Individuals

So far we have looked at the effects of demographic characteristics such as gender, marital status, parents' education on a person's involvement in informal education. However, decision to participate in adult education is driven by complex forces, which have their roots deep in psychology, sociology and economics.

One of the important determinants of getting involved in non-formal education in adulthood is increasing one's own endowment of knowledge and skills to generate a steady and higher future income stream. In this context, improved economic performance of a sector may signal the need for skill updating both for the incumbents and the new entrants into that sector. Incumbents choose to update and further their skills to adapt to new production methods and to compete

⁶ Mother's education is always insignificant in all regression due to insufficient variation in mother's education in our sample. 28,502 out of 29,203 mothers have none to primary education.

⁷ A more relevant variable here would be the husband's education for the case of Turkey, however, the data set lacks that information.

with new entrants, respectively. New entrants, on the other hand, are in unavoidable need of new skills necessary for success in the rising sector and therefore choose to get involved in adult education activities. In any case, in this line of thought, better economic performance in a sector is expected to induce more informal education in adulthood.

In this section, we conduct our analysis of working population and provide a more in-depth investigation of whether economic performance in the sector of employment induces higher participation in adult education. As before, we analyze the behavior of workingwomen and workingmen separately to investigate the motivation behind the significant differences in participation in adult education. We use *VA Growth* in the sector of employment over 2003-2006 period as a proxy for previous economic performance. In Tables 4 and 5, workingwomen and workingmen are reported respectively and columns (1) through (5) present skill subsamples.

<Insert Table 4 here>

<Insert Table 5 here>

VA Growth increases the likelihood of participation in adult education in the full working sample as well as both white-collar subsamples both in Table 4 and Table 5. In other words, both high and low skilled white-collar workers employed in well-performing sectors are more likely to be involved in non-formal education, independent of gender. When the technology driven economic growth experienced by the world in the last two decades is considered, it gets clear that sectors that employ white-collar workers intensively are the ones that performed well in the past. Therefore, skilled workers in these sectors face tougher competition both within their sector due to the dynamic, information-intensive nature of their line of business and also from new entrants into their sector from a younger and better-educated labor pool. Both of these forces work to increase the odds in favor of adult education activities undertaken by white-collar workers in high-performing sectors.

Tables 4 and 5 report individual characteristics of the working sample, as well. The results show that young, educated individuals, who live in rural areas, work in large or medium size firms and earn minimum wage or lower are more likely to partake in adult education. For men, being an experienced worker in his current job is a significant indicator of participation likelihood, whereas experience does not matter for women in participation likelihood. The impact of father's education and marital status is not as clear as it is in the baseline regressions reported in Tables 2 and 3. Working full time or part time has no significant effect on odds for adult education.

Next, we investigate the economic size of estimated coefficients in three key regressions in the previous tables, namely baseline, working and skills samples, for women and men separately. Marginal effects are reported in columns (1) through (6) in Table A4.

Using the marginal effects results in Table A4 we calculated the probability of participating in adult education by *Age*, *Years of Schooling*, *Experience* and *VA Growth*, where we report graphs of varying probabilities in Figures 3-6.

Figure 3 displays the probability of adult education participation of women and men at different ages. The Figure shows a significant difference between women and men participation. Between the ages 25-33, men participate in adult education more than women do. The likelihood flips at age 33 and women older than 33 participate in adult education more than men do.

A person with none or only a primary school education is not active in adult education independent of gender as in the regressions we reported before. However, a woman who receives 8 years of education and more is much more likely to take non-formal courses than a man with the same years of education as illustrated in Figure 4. The likelihood of women with 20 years of education to attend adult education is 7 percentage points higher than men with the same years of education.

As indicated in Table 5, for workingmen *Experience* is a significant determinant of adult education participation, whereas it is not important for women's participation decisions. Figure 6 displays the relation between experience at work and the probability of participation in adult education. The likelihood of attending non-formal courses for a man who just started to work is only 17 percent while it is around 35 percent for a man working for over 40 years. The impact of experience at work is much smaller for women in attending adult education.

Tables 4 and 5 reported that previous growth performance of the sector of employment is a determinant of adult education participation decision. Figure 6 illustrates this relation. If the previous performance of the sector represented by *VA Growth* is high, the probability of a worker to participate in adult education increases significantly.

5.3. Fields of Adult Education

Finally, we explore the determinants of participation in adult education in the most popular non-formal education fields in Turkey, namely business (marketing, advertising, accounting, etc.), language (foreign languages), humanities (religion, history, etc.), craft skills (ceramics, jewelry, wood/stone carving, handicrafts, etc.), computer use (software, internet use) and transport services (all types of driving, air traffic, cabin crew training, etc.).^{8,9}

<Insert Table 6 here>

<Insert Table 7 here>

Table 6 and Table 7 report the baseline results for women and men, respectively. The likelihood of participating in business related non-formal

⁸ Most popular fields of adult education are defined as fields where participation is 150 or more individuals in our sample of 3,632 individuals who partake in adult education.

⁹ The fields of adult education that are analyzed on Tables 6-9 constitute 46 percent of participants.

education activities is higher for young, educated, employed individuals as reported in column (1) of both tables. While married men are more likely to attend business programs, marital status has no effect on a woman's attendance in business programs. On the other hand, while women residing in cities are more likely to take business classes, men are indifferent to place of residence.

Columns (2) in Tables 6 and 7 show that having a young child in the household hinders the likelihood of women attending in language programs. The same is not true for men. Columns (3) report results for participation in humanities programs such as religion classes. Independent of *Age*, *Married* and *Employed*, individuals residing in rural areas are more likely to attend humanities programs. Different from women, men with more years of education are more likely to participate in non-formal humanities programs.

Columns (4) show that craft skills are mainly a women's activity. Probability of attending craft skills education for an average woman is determined by *Year of Schooling*, *Urban*, *Employed* and *Young Child*. Educated, stay-at-home, rural women with no young children at home are more likely to participate in crafts education. When it comes to computer use programs reported in columns (5), the only difference between women and men comes from their employment status. Workingwomen are more likely to attend computer use classes. Columns (6) present the results for transport services. Young, educated, employed women are more likely to take driving-related lessons while classes in transport services are only of interest to young men.

<Insert Table 8 here>

<Insert Table 9 here>

Tables 8 and 9 go one step further and report the results for working population for women and men, respectively. Here, we can investigate the importance of economic performance, income level and skill composition.

Table 8 shows that growth in the sector of employment affects only the chances of attending business programs for women. In other words, as the sector of employment grows, women may be more in need of skill updating in business related areas. Single, workingwomen are more likely to take language courses while only part-time workingwomen are interested in humanities programs. Craft skills programs are attended by older and educated workingwomen residing in rural areas. Computer use programs are attractive to educated part-time workingwomen while only young workingwomen partake in transport services programs. An important result in Table 8 is that skill composition of the job held by women has no effect on the probability of attending different adult education programs.

Table 9 presents that being an educated man with a high skilled job and working at a large firm increase the odds in favor of participating in business programs. Different from women, language programs are attended by men with little work experience and earning below minimum wage. Again different from women, craft skills programs are attractive to part-time, high skilled workingmen

who are earning above minimum wage at a medium size firm. Computer use and transport services are similar between workingwomen and workingmen.

6. Conclusion

In this paper, we analyzed the determinants of adult education in Turkey by using the Adult Education Survey in Turkey for the first time. We started by exploring the stylized facts on adult education participation in Turkey and compared it to that in other EU countries. The EU average of participation in adult education is more than double of what it is in Turkey. Moreover, we have observed a much wider gender gap in adult education in Turkey compared to the EU.

Next, we empirically examined the determinants of participation in adult education in Turkey using individual characteristics of the participants as independent variables. Our results indicate that old, uneducated, workingwomen with uneducated fathers and with young child in the household are less likely to take part in adult education activities in Turkey. However, young, educated, workingmen living in rural areas are more likely to participate in adult education.

Furthermore, we investigated whether economic performance in the sector of employment induces higher participation in adult education and found that past performance of the sector of employment, significantly and positively affects the odds for adult education. We have found that the past performance of the sector of employment, significantly and positively affects the odds for adult education.

Finally, we repeated our analysis for different fields of adult education. Our results suggest that the characteristics of men and women who take courses in the most popular fields of education varies. Being an educated man with a high skilled job and working at a large firm increase the odds in favor of participating in business programs. While having a young child in the household hinders the likelihood of women attending in language programs, craft skills are mainly a women's activity.

These results may have important implications for Turkey. When compared, Turkey comes up as a laggard in adult education participation among the European countries. It is important to identify the characteristics of participants and the programs that they are involved in because there will be an obvious need to broaden the scope of adult education programs in line with the economic growth targets of Turkey.

Turkey has a strategic plan of taking its place in the group of developed countries in the next decade, which requires sustainable high growth, and maintaining its competitiveness in the world markets. Considering the demographic changes in the country, the window of opportunity is fast closing for Turkey. The ratio of population under the age of 25 is expected to decrease by 5 percentage points in the next 10 years.¹⁰ This demographic change hints the start of aging population problem in Turkey as well. Therefore, it is necessary to take

¹⁰ See population projections made by TurkStat.

the essential policy measures to sustain the high growth pattern and competitiveness before it gets too late.

In the final analysis it is obvious that Turkey is in need of designing an adult education strategy in line with the demands of the labor market, which is dictated by the changing demographic panorama in the country.

References

- Allendinger, J., Kleinert, C., Antoni, M., Christoph, B., Drasch, K., Janik, F., Leuze, K., Matthes, B., Pollak, R. and Ruland, M. (2011) Adult Education and Lifelong Learning. *Zfe*, 14, 283-299.
- Altonji, J. and Spletzer, M. (1991) Worker Characteristics, Job Characteristics, and The Receipt of On-The-Job Training. *Industrial and Labor Relations Review*, 45, 58-79.
- Bilir, M. (2007) Non-Formal Education Implementations in Turkey: Issues and Latest Challenges. *International Journal of Lifelong Education*, 26, 621-633.
- Blundell, R., Dearden, L. and Meghir, C. (1996) *The Determinants and Effects of Work-Related Training in Britain* (London: Institute For Fiscal Studies).
- Boeren, E. (2011) Participation in Adult Education: Attitudes and Barriers. *Us-China Education Review*, 3, 369-382.
- Boeren, E., Holford, J., Nicaise, I. and Baert, H. (2012) Why Do Adults Learn? Developing a Motivational Typology Across 12 European Countries. *Globalisation, Societies and Education*, 10, 247-269.
- Chen, Z. and Nicaise, I. (2010) Equal Opportunities in Formal Versus Non-Formal Adult Education: An Empirical Analysis of Participation Patterns in Belgium. Lll2010 Working Paper.
- Cruce, T. and Hillman, N. (2010) Preparing For The Silver Tsunami: The Demand For Higher Education Among Older Adults. *Research in Higher Education*, 53, 593-613.
- Dæhlen, M. and Ure, O.B. (2009) Low-Skilled Adults in Formal Continuing Education: Does Their Motivation Differ From Other Learners? *International Journal of Lifelong Education*, 28, 661-674.
- Dieckhoff, M., Jungblut, J.M. and O'connell, P.J. (2007) Job-Related Training in Europe: Do Institutions Matter? in D. Gallie (Ed.), *Employment Regimes and The Quality of Work* (Oxford: Oxford University Press), Pp. 77-104.
- Lopes, C. and Fernandes, M.G. (2011) Formal, Non-Formal and Informal Learning and Higher Education Graduates' Reemployment: Evidence For Portugal. MPRA Paper 34445, University Library of Munich, Germany.
- McGivney, V. (2001) Fixing Or Changing The Pattern. *Reflections On Widening Adult Participation in Learning* (Leicester: Niace).
- O'connell, P.J. (2002) Does Enterprise-Sponsored Training Aggravate Or Alleviate Existing Inequalities? Evidence From Ireland. in K. Schömann and P.J. O'connell

(Eds.), *Education, Training and Employment Dynamics* (Cheltenham: Edward Elgar), Pp. 285-302.

O'Connell, P.J. and Jungblut, J.M. (2008) What Do We Know About Training At Work?. in K.U. Mayer and H. Solga (Eds.), *Skill Formation: Interdisciplinary and Cross-National Perspectives* (Cambridge: Cambridge University Press), Pp. 109-125.

Oesterbeek, H. (1998) Unravelling Supply and Demand Factors in Work-Related Training. *Oxford Economic Paper*, 50, 266-283.

Robert, P., Sagi, M. and Balogh, A. (2011) *Formal Adult Education in The Context. The View of European Statistics: The AES Data Sp 2, Comparative Report* (Tarki).

Roosmaa, E.L. and Saar, E. (2010) Participating in Non-Formal Learning: Patterns of Inequality in Eu-15 and The New Eu-8 Member Countries. *Journal of Education and Work*, 23, 179-206.

Rosenbaum, P. R., and Rubin, D. B., (1983), "The Central Role of The Propensity Score in Observational Studies For Causal Effects," *Biometrika* 70, Pp.41–55.

Stenfors-Hayes, T., Griffiths, C. and Ogunleye, J. (2008) Lifelong Learning For All? Policies, Barriers and Practical Reality For A Socially Excluded Group. *International Journal of Lifelong Education*, 27, 625-640.

Table 1. Comparison of Participation in Adult Education among EU Countries

	2007			2011		
	All	Woman	Man	All	Woman	Man
Sweden	69.4	71.2	67.7	67.0	68.7	65.3
Finland	51.2	57.2	45.2	-	-	-
Norway	50.6	51.2	50.0	56.9	57.2	56.6
Switzerland	46.9	44.6	49.3	63.1	64.0	62.2
Germany	43.1	40.4	45.8	48.4	46.0	50.7
Netherlands	42.1	39.3	45.0	54.8	50.1	59.5
Slovakia	41.2	39.1	43.4	38.3	37.7	38.9
United Kingdom	40.3	41.4	39.2	24.3	25.7	22.9
Estonia	40.2	44.2	35.8	48.0	51.3	44.4
Austria	39.8	37.8	41.8	45.5	44.8	46.2
Cyprus	39.5	37.5	41.6	40.9	40.2	41.7
Denmark	37.6	37.6	37.6	52.7	55.0	50.5
Slovenia	36.1	37.9	34.5	34.7	36.3	33.3
Czech Republic	35.4	31.2	39.6	34.9	34.9	34.9
Bulgaria	35.2	33.7	36.8	24.4	23.2	25.7
Belgium	33.5	32.3	34.6	33.1	32.2	34.1
Euro area (17 countries)	32.3	31.2	33.5	42.6	41.2	44.1
France	32.0	31.0	33.1	49.1	49.2	49.0
EU (27 countries)	31.3	30.6	32.0	36.8	36.1	37.5
Malta	31.3	30.3	32.3	34.1	32.6	35.5
Lithuania	30.9	35.3	26.0	25.9	30.1	21.3
Latvia	30.7	36.2	24.6	30.0	35.4	24.3
Spain	27.2	27.1	27.3	34.1	32.8	35.4
Portugal	22.5	21.6	23.3	39.6	40.1	39.1
Italy	20.2	20.1	20.3	34.3	32.5	36.2
Poland	18.6	18.9	18.2	21.0	21.4	20.6
Croatia	18.4	19.0	17.8	-	-	-
Turkey	12.8	9.5	16.1	-	-	-
Greece	12.7	12.8	12.6	9.6	11.2	8.0
Hungary	6.8	6.9	6.6	37.6	35.5	39.7
Romania	4.7	4.7	4.7	6.9	6.7	7.0

Source: EuroStat.

Table 2. Baseline Regressions, Women

	(1)	(2)	(3)	(4)	(5)
VARIABLES		Under Primary	Primary	Secondary	Tertiary
Age	-0.024*** (0.003)	-0.013 (0.010)	-0.031*** (0.005)	-0.021*** (0.007)	-0.022*** (0.007)
Years of Schooling	0.174*** (0.008)				
Father's Education	-0.295*** (0.091)	-1.663*** (0.458)	-0.845*** (0.199)	-0.110 (0.155)	-0.280** (0.125)
Married	-0.012 (0.078)	0.060 (0.289)	-0.105 (0.135)	-0.045 (0.153)	0.019 (0.143)
Urban	0.030 (0.075)	0.316 (0.238)	0.032 (0.102)	0.048 (0.181)	-0.516** (0.203)
Employed	0.692*** (0.065)	0.788*** (0.267)	0.307*** (0.115)	0.875*** (0.128)	1.166*** (0.142)
Young Child	-0.348*** (0.079)	-0.698** (0.316)	-0.548*** (0.127)	-0.141 (0.153)	-0.214 (0.167)
Constant	-2.486*** (0.195)	-1.743** (0.734)	-0.591* (0.305)	-0.847** (0.351)	0.189 (0.358)
Observations	15,476	3,737	8,584	1,903	1,252
Pseudo R-squared	0.164	0.0286	0.0183	0.0383	0.0702

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively.

Table 3. Baseline Regressions, Men

	(1)	(2)	(3)	(4)	(5)
VARIABLES		Under Primary	Primary	Secondary	Tertiary
Age	-0.024*** (0.003)	0.023 (0.014)	-0.027*** (0.005)	-0.031*** (0.006)	-0.024*** (0.006)
Years of Schooling	0.179*** (0.007)				
Father's Education	-0.083 (0.084)		-0.609*** (0.206)	-0.256* (0.140)	0.046 (0.113)
Married	0.021 (0.081)	-0.553 (0.850)	-0.158 (0.127)	0.139 (0.146)	0.116 (0.147)
Urban	-0.351*** (0.057)	-2.294*** (0.801)	-0.283*** (0.077)	-0.224** (0.114)	-0.423*** (0.136)
Employed	1.090*** (0.086)	0.843 (0.644)	1.080*** (0.125)	0.874*** (0.164)	1.346*** (0.179)
Young Child	-0.073 (0.061)	0.765 (0.466)	-0.129 (0.091)	-0.024 (0.111)	-0.117 (0.128)
Constant	-2.860*** (0.197)	-4.481*** (1.081)	-1.030*** (0.317)	-0.580* (0.331)	-0.420 (0.332)
Observations	13,843	831	8,364	2,742	1,900
Pseudo R-squared	0.132	0.138	0.0451	0.0373	0.0579

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively. Father's Education is dropped in column (2) due to perfect prediction of failure in the logit model.

Table 4. Working Individuals, Women

	(1)	(2)	(3)	(4)	(5)
VARIABLES		HS-WC	LS-WC	HS-BC	LS-BC
VA Growth	0.018*** (0.005)	0.015** (0.006)	0.018* (0.011)	0.001 (0.026)	0.008 (0.015)
Age	-0.022** (0.010)	-0.019 (0.013)	-0.030 (0.025)	-0.007 (0.048)	-0.036 (0.027)
Years of Schooling	0.145*** (0.019)	0.094*** (0.030)	0.120*** (0.045)	0.052 (0.103)	0.133** (0.062)
Father's Education	0.097 (0.156)	0.166 (0.171)	0.154 (0.449)	-1.255 (1.512)	-0.078 (0.962)
Married	-0.169 (0.142)	-0.381** (0.183)	-0.060 (0.336)	1.912** (0.892)	0.417 (0.535)
Urban	-0.721*** (0.166)	-0.969*** (0.264)	-0.791** (0.389)	0.036 (0.741)	-0.614 (0.377)
Young Child	0.105 (0.160)	0.048 (0.200)	0.117 (0.389)	-0.011 (0.797)	0.435 (0.456)
Experience	0.017 (0.011)	0.025* (0.014)	-0.034 (0.034)	-0.016 (0.038)	0.051 (0.036)
Large Firm	0.813*** (0.163)	0.525** (0.226)	1.371*** (0.366)	2.459** (0.968)	1.242** (0.531)
Medium Firm	0.565*** (0.166)	0.550** (0.227)	0.157 (0.353)	2.201** (0.999)	0.813 (0.648)
Full Time	-0.333 (0.232)	-0.166 (0.315)	-0.877** (0.420)	-1.775 (1.115)	-0.457 (0.718)
Above Min. Wage	-0.261* (0.152)	-0.226 (0.209)	-0.162 (0.334)	-0.660 (0.799)	-0.272 (0.548)
Constant	-1.627*** (0.509)	-0.632 (0.767)	-0.696 (1.289)	-2.240 (2.523)	-1.853 (1.667)
Observations	1,587	738	356	156	337
Pseudo R-squared	0.155	0.0701	0.132	0.132	0.107

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively.

Table 5. Working Individuals, Men

	(1)	(2)	(3)	(4)	(5)
VARIABLES		HS-WC	LS-WC	HS-BC	LS-BC
VA Growth	0.010*** (0.003)	0.009** (0.004)	0.018** (0.008)	0.008 (0.007)	-0.001 (0.006)
Age	-0.034*** (0.006)	-0.036*** (0.009)	-0.042*** (0.014)	-0.045*** (0.013)	-0.023* (0.012)
Years of Schooling	0.123*** (0.010)	0.094*** (0.017)	0.087*** (0.029)	0.097*** (0.025)	0.129*** (0.027)
Father's Education	-0.064 (0.111)	0.142 (0.133)	-0.608* (0.325)	-0.814** (0.328)	-0.133 (0.336)
Married	-0.001 (0.108)	0.065 (0.161)	0.289 (0.290)	-0.096 (0.239)	-0.257 (0.239)
Urban	-0.593*** (0.089)	-0.539*** (0.166)	-0.936*** (0.210)	-0.283 (0.185)	-0.741*** (0.177)
Young Child	-0.101 (0.082)	-0.147 (0.133)	0.232 (0.203)	-0.325* (0.173)	-0.143 (0.180)
Experience	0.024*** (0.005)	0.024*** (0.009)	0.051*** (0.016)	0.026** (0.011)	-0.012 (0.013)
Large Firm	0.926*** (0.086)	0.767*** (0.139)	1.533*** (0.226)	0.846*** (0.176)	1.065*** (0.195)
Medium Firm	0.477*** (0.091)	0.572*** (0.143)	0.890*** (0.230)	0.161 (0.200)	0.170 (0.228)
Full Time	0.175 (0.261)	-0.072 (0.362)	0.539 (1.247)	0.103 (0.600)	1.303 (1.033)
Above Min. Wage	-0.340*** (0.080)	-0.335** (0.145)	-0.008 (0.209)	-0.247 (0.161)	-0.321* (0.180)
Constant	-1.453*** (0.372)	-0.830 (0.556)	-1.711 (1.465)	-0.172 (0.866)	-2.417* (1.257)
Observations	5,579	1,667	917	1,441	1,554
Pseudo R-squared	0.113	0.0760	0.146	0.0753	0.0996

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively.

Table 6. Fields of Adult Education, Baseline, Women

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Business	Language	Humanities	Craft Skills	Computer Use	Transport Services
Age	-0.056*** (0.011)	-0.037*** (0.012)	-0.002 (0.007)	-0.010 (0.007)	-0.052*** (0.014)	-0.110*** (0.019)
Years of Schooling	0.150*** (0.023)	0.216*** (0.025)	-0.009 (0.019)	0.149*** (0.018)	0.218*** (0.026)	0.103*** (0.034)
Father's Education	-0.387* (0.205)	-0.409* (0.229)	0.141 (0.378)	0.003 (0.263)	0.293 (0.301)	-0.044 (0.388)
Married	-0.285 (0.198)	-0.403* (0.225)	0.092 (0.214)	-0.038 (0.202)	0.246 (0.288)	0.273 (0.339)
Urban	1.105*** (0.337)	-0.135 (0.280)	-0.373** (0.160)	-0.395** (0.171)	0.333 (0.352)	0.002 (0.342)
Employed	2.044*** (0.269)	0.229 (0.222)	-0.266 (0.201)	-1.464*** (0.263)	0.658** (0.282)	0.553* (0.326)
Young Child	-0.051 (0.218)	-0.821** (0.345)	-0.403* (0.214)	-0.567*** (0.207)	-0.402 (0.309)	-0.403 (0.320)
Constant	-5.290*** (0.599)	-4.666*** (0.591)	-4.135*** (0.572)	-4.299*** (0.465)	-6.016*** (0.802)	-2.702*** (0.861)
Observations	15,476	15,476	15,476	15,476	15,476	15,476
Pseudo R-squared	0.275	0.166	0.00629	0.0494	0.156	0.108

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively.

Table 7. Fields of Adult Education, Baseline, Men

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Business	Language	Humanities	Craft Skills	Computer Use	Transport Services
Age	-0.013** (0.006)	-0.051*** (0.019)	0.006 (0.021)	-0.024 (0.045)	-0.035*** (0.010)	-0.077*** (0.010)
Years of Schooling	0.224*** (0.013)	0.255*** (0.037)	0.250*** (0.045)	0.092 (0.087)	0.234*** (0.020)	-0.008 (0.019)
Father's Education	0.037 (0.146)	0.018 (0.366)		-0.164 (1.240)	0.247 (0.257)	-0.100 (0.250)
Married	0.350** (0.161)	-0.610* (0.355)	-0.016 (0.694)		-0.345 (0.222)	-0.019 (0.198)
Urban	0.065 (0.130)	0.284 (0.364)	-1.737*** (0.396)		-0.129 (0.212)	-0.080 (0.153)
Employed	1.468*** (0.227)	0.325 (0.420)	-0.069 (0.492)	-0.668 (0.908)	0.399 (0.288)	0.197 (0.204)
Young Child	-0.135 (0.121)	-0.022 (0.324)	0.230 (0.487)	-1.131 (1.014)	0.147 (0.197)	-0.012 (0.157)
Constant	-6.725*** (0.443)	-6.172*** (1.046)	-7.520*** (1.154)	-5.959** (2.839)	-5.681*** (0.625)	-1.136** (0.513)
Observations	13,843	13,843	12,854	8,563	13,843	13,843
Pseudo R-squared	0.136	0.146	0.102	0.0238	0.116	0.0525

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively. In column (3) Father's Education is dropped due to perfect prediction of failure and in column (4) Married and Urban dropped due to perfect prediction of failure. Sample size adjusts accordingly.

Table 8. Fields of Adult Education, Skills of Working Individuals, Women

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Business	Language	Humanities	Craft Skills	Computer Use	Transport Services
VA Growth	-0.023** (0.009)	-0.007 (0.015)	-0.020 (0.014)	0.007 (0.026)	0.019 (0.016)	0.003 (0.015)
Age	-0.064*** (0.022)	-0.027 (0.032)	0.004 (0.039)	0.080** (0.032)	-0.002 (0.034)	-0.130** (0.052)
Years of Schooling	0.056 (0.035)	0.271*** (0.093)	0.080 (0.100)	0.148** (0.062)	0.141*** (0.047)	-0.025 (0.073)
Father's Education	0.083 (0.304)	-0.018 (0.343)		1.086 (1.288)	0.221 (0.454)	-0.663 (0.575)
Married	-0.309 (0.283)	-1.260*** (0.436)		0.671 (0.809)	-0.419 (0.433)	0.958 (0.608)
Urban	0.324 (0.422)	-0.367 (0.509)	-0.989 (1.003)	-1.153* (0.663)	-0.109 (0.549)	-0.432 (0.579)
Young Child	0.211 (0.299)	0.052 (0.601)	-0.560 (0.933)	-0.790 (1.078)	0.588 (0.455)	-0.367 (0.600)
Experience	0.032 (0.025)	-0.040 (0.042)	-0.030 (0.040)	-0.007 (0.034)	0.037 (0.032)	0.101* (0.058)
Large Firm	0.357 (0.328)	0.724 (0.492)		-0.911 (0.809)	-0.402 (0.577)	-0.058 (0.598)
Medium Firm	-0.168 (0.345)	-0.068 (0.568)	-0.260 (1.142)	0.180 (0.563)	0.402 (0.480)	-0.199 (0.653)
Full Time	0.055 (0.555)		-2.007** (0.961)	-0.395 (0.926)	-1.176** (0.526)	0.282 (1.170)
Above Min. Wage	0.052 (0.295)	-0.559 (0.486)	-0.008 (0.782)	0.142 (0.740)	0.785 (0.487)	0.595 (0.618)
HS-WC	0.370 (0.327)	-0.158 (0.501)	1.765 (1.312)	-1.222 (0.922)	0.379 (0.606)	-0.025 (0.800)
HS-BC	-1.086 (0.768)		1.801 (1.213)	-0.765 (1.423)		
Constant	-1.798* (1.054)	-4.844*** (1.865)	-3.700 (2.416)	-8.960*** (2.839)	-5.680*** (1.535)	-0.726 (2.448)
Observations	1,587	1,330	593	1,587	1,431	1,431
Pseudo R-squared	0.0658	0.180	0.173	0.130	0.0949	0.0679

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively. In column (2) Full Time and HS-BC, in column (3) Father's Education, Married and Large Firm, in columns (5) and (6) HS-BC are dropped due to perfect prediction of failure.

Table 9. Fields of Adult Education, Skills of Working Individuals, Men

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Business	Language	Humanities	Craft Skills	Computer Use	Transport Services
VA Growth	-0.010* (0.005)	-0.019 (0.014)	0.018 (0.024)	-0.004 (0.056)	0.013 (0.008)	0.011 (0.008)
Age	-0.032*** (0.012)	-0.022 (0.027)	0.037 (0.083)	0.013 (0.058)	-0.038** (0.019)	-0.075*** (0.018)
Years of Schooling	0.105*** (0.023)	0.174*** (0.057)	0.117 (0.168)	0.239 (0.170)	0.140*** (0.037)	-0.066** (0.032)
Father's Education	0.059 (0.191)	0.555 (0.455)		0.230 (1.013)	0.441 (0.356)	-0.466 (0.316)
Married	0.211 (0.210)	-0.733 (0.476)			-0.307 (0.316)	-0.369 (0.259)
Urban	-0.192 (0.191)	-0.041 (0.486)	-1.428 (0.900)		-0.485 (0.302)	-0.303 (0.227)
Young Child	-0.205 (0.165)	0.030 (0.412)	1.278 (1.260)		0.102 (0.262)	0.091 (0.214)
Experience	0.018* (0.011)	-0.070** (0.035)	-0.028 (0.053)	0.059 (0.062)	0.012 (0.020)	-0.008 (0.017)
Large Firm	0.788*** (0.180)	0.292 (0.383)	-0.251 (0.558)		0.486 (0.333)	0.060 (0.219)
Medium Firm	0.327* (0.198)	-0.026 (0.441)		1.548* (0.862)	0.879*** (0.314)	-0.249 (0.237)
Full Time	1.561 (0.990)	-0.220 (1.026)		-1.582* (0.958)	-0.021 (0.802)	1.012 (1.006)
Above Min. Wage	-0.184 (0.183)	-0.774* (0.424)	0.293 (0.597)	3.399** (1.559)	-0.575* (0.310)	-0.062 (0.226)
HS-WC	0.730*** (0.212)	0.711 (0.489)	15.345 (0.000)	16.757*** (2.323)	0.523 (0.336)	-0.253 (0.287)
HS-BC	-0.547** (0.255)	-0.692 (0.796)	14.122*** (1.308)	15.808*** (2.288)	-0.172 (0.434)	-0.141 (0.219)
Constant	-5.133*** (1.132)	-5.083*** (1.654)	-23.018*** (3.487)	-27.258 (0.000)	-4.923*** (1.399)	-0.724 (1.287)
Observations	5,579	5,579	3,118	1,679	5,579	5,579
Pseudo R-squared	0.108	0.162	0.182	0.289	0.123	0.0498

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively. In column (3) Father's Education, Married, Medium Firm and Full Time, in column (4) Married, Urban, Young Child and Large Firm are dropped due to perfect prediction of failure.

Figure 1. Participation in Adult Education by Initial Level of Education

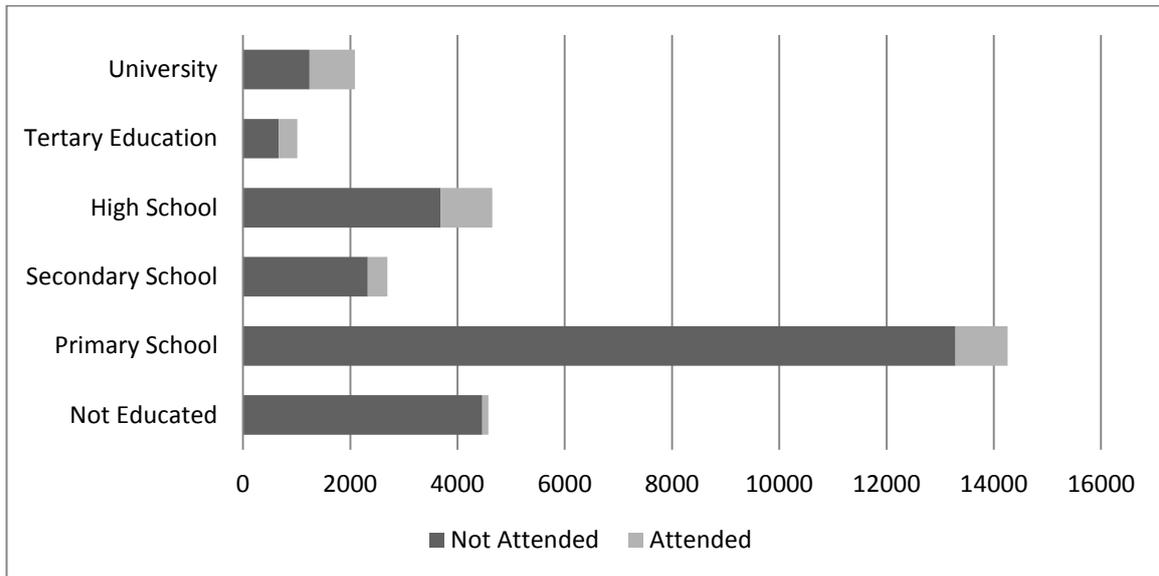


Figure 2. Participation to Adult Education by Participation to Labor Force

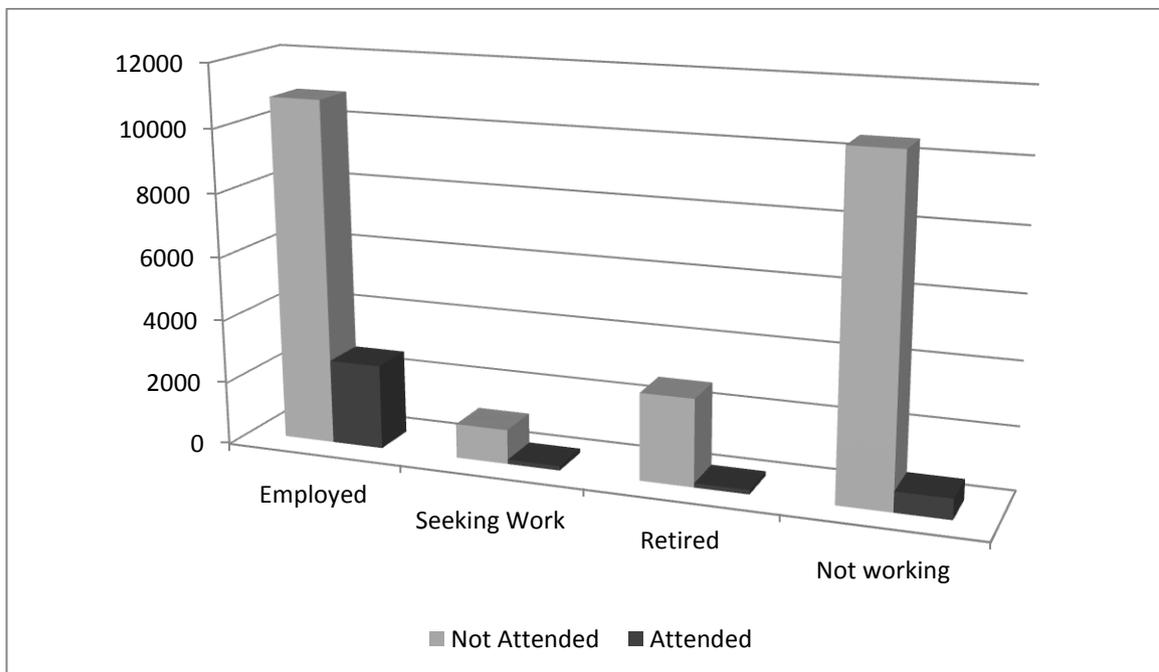


Figure 3. Probability of Participation to Adult Education by Age

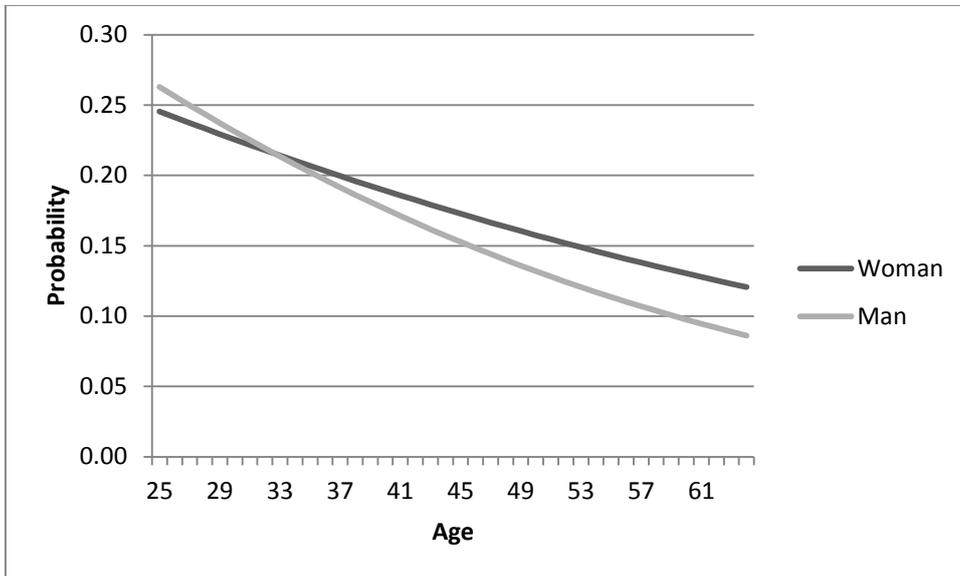


Figure 4. Probability of Participation to Adult Education by Years of Schooling

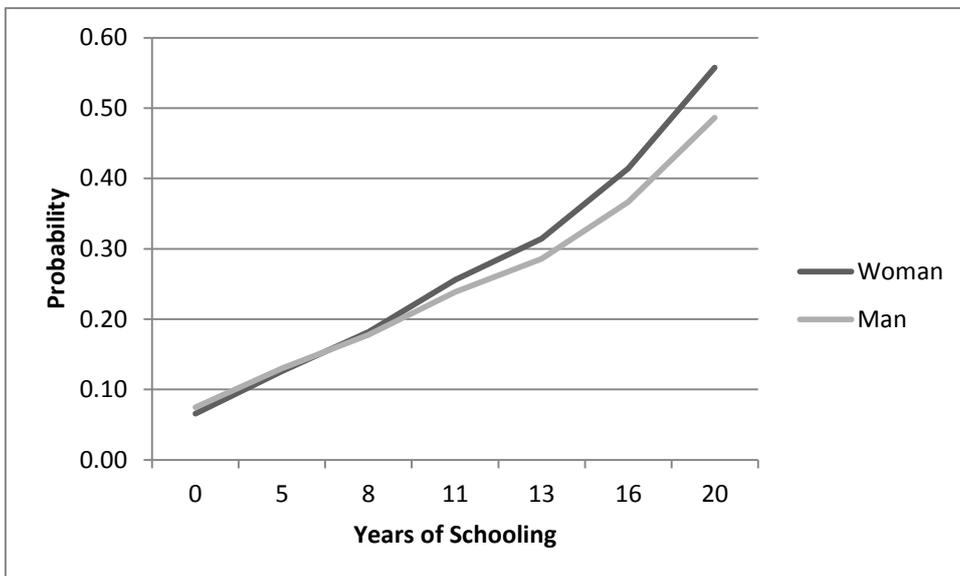


Figure 5. Probability of Participation to Adult Education by Working Experience

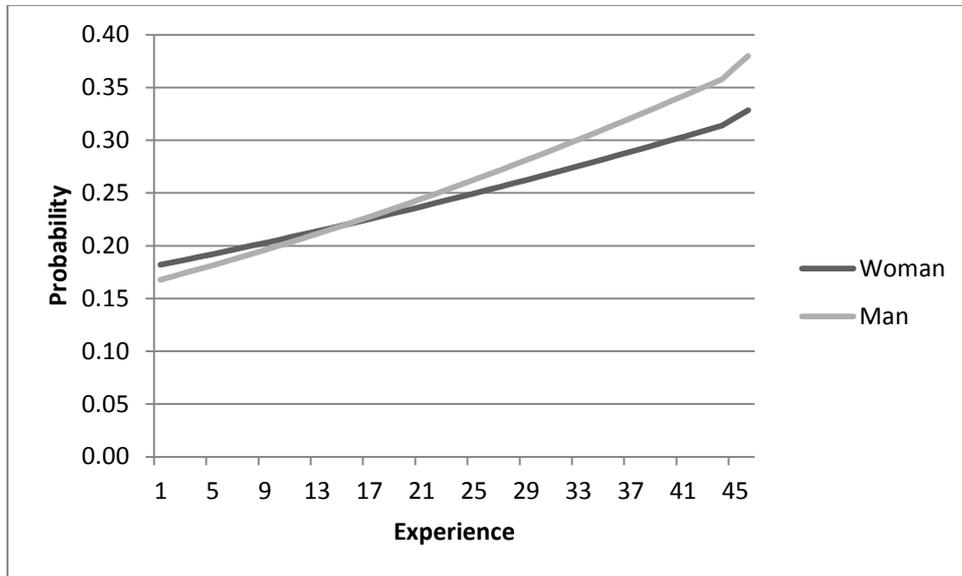
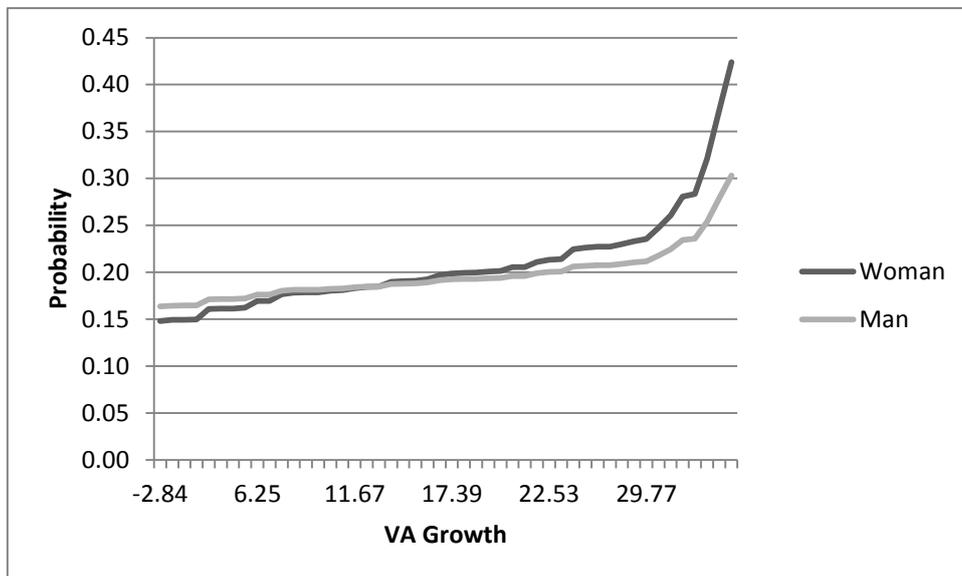


Figure 6. Probability of Participation to Adult Education by VA Growth



Appendix

Table A1. Summary Statistics

Variable	Full		Female		Male	
	Observation	Mean	Observation	Mean	Observation	Mean
Adult Education	29319	0.124	15476	0.094	13843	0.157
VA Growth	8937	17.811	1752	19.286	7185	17.451
Age	29319	41.503	15476	41.272	13843	41.762
Gender	29319	0.472	15476	0.000	13843	1.000
Years of Schooling	29319	6.532	15476	5.527	13843	7.655
Father's Education	29319	0.928	15476	0.927	13843	0.929
Married	29319	0.862	15476	0.842	13843	0.885
Urban	29319	0.698	15476	0.692	13843	0.704
Young Child	29319	0.251	15476	0.239	13843	0.264
Employed	29319	0.462	15476	0.221	13843	0.731
Experience	13530	11.595	3417	12.432	10113	11.312
Large Firm	10163	0.318	3012	0.260	7151	0.343
Medium Firm	10163	0.247	3012	0.202	7151	0.265
Full Time	13530	0.936	3417	0.858	10113	0.962
Above Min. Wage	29319	0.244	15476	0.088	13843	0.418
HS-WC	29319	0.140	15476	0.066	13843	0.223
HS-BC	29319	0.158	15476	0.082	13843	0.243
Business	29319	0.020	15476	0.010	13843	0.031
Language	29319	0.005	15476	0.006	13843	0.004
Humanities	29319	0.007	15476	0.012	13843	0.002
Craft Skills	29319	0.007	15476	0.012	13843	0.001
Computer Use	29319	0.008	15476	0.005	13843	0.011
Transport Services	29319	0.010	15476	0.004	13843	0.016

Table A2. Correlations

	VA Growth	Age	Gender	Years of Schooling	Father's Education	Married	Urban	Young Child	Experience	Large Firm	Medium Firm	Full Time	Above Min. Wage	HS-WC	HS- BC
VA Growth	1														
Age	0.070	1													
Gender	-0.061	0.084	1												
Years of Schooling	0.236	-0.138	-0.159	1											
Father's Education	-0.099	0.079	0.125	-0.377	1										
Married	-0.011	0.276	0.177	-0.180	0.135	1									
Urban	-0.038	-0.023	-0.023	0.093	-0.042	-0.029	1								
Young Child	-0.025	-0.240	0.125	-0.055	0.046	0.243	-0.012	1							
Experience	0.091	0.442	0.081	0.006	0.031	0.159	-0.019	-0.071	1						
Large Firm	-0.005	-0.052	-0.036	0.177	-0.069	-0.006	0.053	0.000	0.020	1					
Medium Firm	0.009	-0.048	-0.024	0.056	-0.012	-0.014	0.029	0.007	-0.049	-0.440	1				
Full Time	-0.026	-0.032	0.137	0.019	0.008	-0.007	0.030	0.010	-0.018	0.085	0.028	1			
Above Min. Wage	-0.110	-0.088	0.053	-0.437	0.188	-0.011	-0.086	0.055	-0.224	-0.072	-0.015	0.004	1		
HS-WC	0.205	0.003	-0.146	0.590	-0.297	-0.086	0.098	-0.059	0.099	0.059	0.055	0.001	-0.460	1	
HS-BC	-0.138	-0.007	0.160	-0.278	0.143	0.077	-0.034	0.053	0.072	-0.068	-0.021	-0.010	0.128	-0.381	1

Table A3. Baseline Regressions, Pooled Sample

	(1)	(2)	(3)	(4)	(5)
VARIABLES		Under Primary	Primary	Secondary	Tertiary
Age	-0.025*** (0.002)	-0.005 (0.008)	-0.030*** (0.003)	-0.026*** (0.005)	-0.023*** (0.005)
Gender	-0.072* (0.043)	-0.224 (0.262)	0.219*** (0.067)	-0.271*** (0.092)	-0.132 (0.082)
Years of Schooling	0.176*** (0.005)				
Father's Education	-0.176*** (0.062)	-1.596*** (0.448)	-0.725*** (0.145)	-0.188* (0.104)	-0.100 (0.083)
Married	0.018 (0.056)	0.008 (0.271)	-0.091 (0.092)	0.036 (0.105)	0.077 (0.102)
Urban	-0.198*** (0.045)	-0.071 (0.209)	-0.140** (0.061)	-0.144 (0.096)	-0.465*** (0.113)
Employed	0.853*** (0.047)	0.759*** (0.222)	0.671*** (0.068)	0.892*** (0.099)	1.244*** (0.110)
Young Child	-0.163*** (0.048)	-0.328 (0.252)	-0.267*** (0.073)	-0.054 (0.090)	-0.145 (0.101)
Constant	-2.536*** (0.127)	-1.981*** (0.681)	-0.783*** (0.207)	-0.527** (0.218)	-0.045 (0.228)
Observations	29,319	4,574	16,948	4,645	3,152
Pseudo R-squared	0.155	0.0219	0.0372	0.0376	0.0615

Table A4. Marginal Effects

VARIABLES	(1) <u>Baseline</u>		(3) <u>Working Sample</u>		(5) <u>Working Sample, by</u> <u>Skill</u>	
	Women	Men	Women	Men	Women	Men
VA Growth			0.003	0.001	0.003	0.001
Age	-0.001	-0.002	-0.004	-0.005	-0.004	-0.005
Years of Schooling	0.010	0.018	0.027	0.018	0.021	0.015
Father's Education	-0.019	-0.009	0.018	-0.010	0.022	-0.003
Married	-0.001	0.002	-0.032	-0.000	-0.031	0.002
Urban	0.002	-0.038	-0.150	-0.100	-0.161	-0.103
Young Child	-0.019	-0.007	0.020	-0.015	0.022	-0.016
Experience			0.003	0.004	0.003	0.004
Large Firm			0.160	0.153	0.163	0.161
Medium Firm			0.111	0.076	0.109	0.078
Full Time			-0.067	0.025	-0.070	0.024
Above Min. Age			-0.049	-0.052	-0.024	-0.038
HS-WC					0.132	0.071
LS-WC					0.054	0.038
Employed	0.049	0.094				
Observations	15,476	13,843	1,587	5,579	1,587	5,579

Notes: Standard errors are in parentheses. *, **, *** denote significance at the 10%, 5%, 1% level, respectively.