

THE EFFECTS OF THE UNIVERSITY
REFORM IN TURKEY ON NARROWING
GENDER GAP IN
HIGHER EDUCATION

A Master's Thesis

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ABSTRACT

The Effects of the University Reform in Turkey on Narrowing Gender Gap in Higher Education

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This paper analyzes the effects of a university reform on gender gap in higher education. It explores the university reform in Turkey over the past years as a natural experiment. The university reform has two important features, extending the coverage zone of the universities by constructing universities in every province, and increasing the capacity of the existing universities. The main purpose of this reform is to increase accession to higher education and raising qualified employees. This paper focuses on another outcome of this reform; it examines the impacts of the expansion of the number and capacity of the universities in order to eliminate the barriers on the gender gap in higher education in Turkey. In order to conduct this research, the panel data is constructed where the unit of observation is at the province level for the period 2007-2013.

Keywords: gender gap, higher education, Turkey, enrolment capacity.

ÖZET

TÜRKİYE ÜNİVERSİTE REFORMU'NUN YÜKSEK ÖĞRENİM'DEKİ CİNSİYET AYRIMI ÜZERİNE ETKİLERİ

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Yüksek Lisans, Ekonomi Bölümü

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Bu çalışma, üniversite reformunun yüksek öğrenim seviyesinde yaşanan cinsiyet ayrımı üzerine etkilerini analiz etmektedir. Yaşanan üniversite reformunun iki önemli basamağı bulunmaktadır; her ile bir üniversite açılmasını sağlayarak üniversitelerin kapsama alanını genişletmek ve mevcut üniversitelerin öğrenci kapasitelerini arttırmak. Bu reformun asıl amacı, yüksek öğrenime erişimi kolaylaştırmak ve kalifiye çalışanlar yaratmak olarak düşünebilir. Bu çalışma, üniversite reformunu sonucu ortaya çıkan başka bir sonuca odaklanıyor; öğrenci kontenjanlarının ve üniversite sayılarının artmasının yüksek öğrenim cinsiyet ayrımına sebep olan sorunları azaltmasını inceliyor. Bu çalışmada, 2007-2013 yıllarını kapsayan il bazında veriden oluşan panel data kullanıldı.

Anahtar Kelimeler: cinsiyet ayrımı, yüksek öğrenim, üniversite reformu

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CHAPTER 1

INTRODUCTION

“All women and men have equal opportunity and means of education”

The Basic Law of National Education of Turkey (1973, Article 8)

Turkish education system has been facing severe problems such as low enrolment rates, gender gap in all levels of education as well as economic and cultural barriers to higher education since the foundation of the Republic of Turkey. The governments holding office at the time placed primary importance on improving the conditions of primary and secondary education. In this sense, the first compulsory education law was accepted in 1931 (for 5 years) then second one was accepted in 1997 (for 8 years) to amend the enrolment rate in primary education and it became obligatory for all. Reform movement in education is not limited to the primary and secondary education only. Higher education can be thought another significant area that should be encouraged in Turkey. The ruling government cooperating with the Ministry of National Education and YÖK introduced the higher education reform in 2008. Major changes targeted by the Turkish government

through the university reform were an increase in the enrolment rates and raising qualified employees.

Since Turkey has been a candidate state of the European Union, some regulations were implemented to integrate Turkey to the European education system. Progress Report on Turkey published in 2004 stated that “Women remain vulnerable to discriminatory practices, largely due to a lack of education and high illiteracy rates among women” (Regular Progress Report on Turkey, 2004). In the early 2000’s, non-governmental organizations took action about the gender gap in education and launched several donation campaigns to ameliorate gender gap in education. Due to TurkStat education statistics, there is a significant proof of neutralization of the gender gap in primary and secondary education and this essay will present the impacts of the university reform in 2008 on the gender gap issue in Turkey.

Since a historical background is provided with the improvements in the Turkish education system, it should be noted that this study mainly focuses on the higher education. A natural experiment is used in order to demonstrate the expansion of higher education system in Turkey during the period 2003-2008. The country experienced an almost doubling in the number of slots in higher education and almost doubling in the number of the universities.

Due to religious, economic and cultural reasons, there has been a gender gap in the higher education. Thus, this paper focuses on the effects of expanding the coverage of universities in the whole country and the increase in the capacity of the universities, which are the main changes that the university reform initiated, on gender gap in higher education. Decrease in the economic drawbacks of higher education (decrease in the expenses of having education in a different city than the

main residential city) as well as the elimination of the socio-cultural concerns such as not giving female children consent to receive education in other regions (distance problem) was achieved through the expansion of the coverage of the universities while they constituted important barriers to higher education before. Additionally, the increase in the capacity of particular departments that the female children tend to choose also contributed to the increase in the enrolment of the female students (Such as social science and education majors).

This paper examines the impacts of the expansion of the number and capacity of the universities in order to eliminate the barriers on the gender gap in higher education in Turkey. In order to conduct this research we construct panel data where the unit of observation is at the province level for the period 2007-2013. We use province-fixed effects and run three different regressions in order to present the impacts of the university reform on the enrolment rates and gender gap.

CHAPTER 2

LITERATURE REVIEW

Several studies analyze the consequences of educational policies on access to the education. Kyui (2012) suggested that these studies can be classified under two main headlines. The primary papers analyze compulsory schooling laws and their impacts, thus mainly focusing on secondary education. The pioneers of the studies of the impacts of compulsory education on educational attainment and wages for USA data were Angrist and Krueger (1991) and for the UK data, the studies were conducted by Oreopoulos (2006) and Pischke and von Wachter, (2008). In general, these studies come to a conclusion that there is a positive effect of compulsory education legislation on access to the education and future wages. These studies constituted the primary papers with the focus of compulsory education.

Kyui (2012) demonstrated that second set of studies examine the access to education and changes in it. She used this term “access to education” in the set that consists of three aspects; financial access, convenience of physical access, and infrastructure and limitation of access due to capacities. The first aspect, financial access, consists of influence of tuition fees and financial aid policies. It is argued that the burden of a tuition fee for a student could be stated as a major barrier to the education. While comparing Turkey to Western countries, until 2012 tuition fees of public universities were very low¹, and since 2012 public universities have been providing free education. Thus, tuition fee should not be considered as a major barrier to higher education in Turkey. Since tuition fee is removed from public universities, it cannot be conceptualized as a financial access problem in education in Turkey.

Although the tuition fee is not considered as a financial problem in Turkey since 2012, we acknowledge that there are financial barriers to education in Turkey. Working children under the age of 18 is not a rare situation in Turkey. It is mostly common in the families that are economically below the average or just the average. The age of admission to a university is generally eighteen. A working child who contributes to the economic capabilities of a family during high school is regarded as a family member supporting the economy of the family rather than the child of the family. According to the TurkStat, weekly working hours of the average working child that is attending to a school (at any level) is 18.3 (Child Labor Statistics TurkStat, 2006). However, since the weekly working hours of a man is forty hours, children could be conceptualized as part-time workers. In case of a child attending

¹ Minimum wage in Turkey is approximately 1071TL, and approximately w£1100 in UK. In Turkey, tuition fee was ranging between 91-591TL and in UK, tuition fee is ranging between 6000-£9000. In France tuition fee is ranging between 150-€750 and min wage is €1445. According to these results, tuition fee in Turkey was relatively low when comparing to UK and nearly same as France.

university in another city, in addition to the loss of this economic benefit from working, there are costs of education of the child ranging from stationary costs to accommodation create a burden for the family. As a result of these costs, the families might not favor the higher education of the children.

Since this paper mainly focuses on convenience of physical access and infrastructure as well as limitation of access due to capacities, it is necessary to make a review of it. Kyui (2012) as well as Card (1995), Conneely and Uusitalo (1997) focus on the distance to high schools or colleges, or presence of high schools or colleges in the district. The main emphasis on their studies is that the opportunity of a closer education institution increases the enrolment rates since it eases the access to education. In Turkish higher education, “There will be universities in all cities” approach could be partially considered under this section. Physical access to universities may no longer be regarded as a barrier to higher education in many ways through this approach. The ability of the students to access educational institutions with ease contributed to the enrolment of more students. The relation between expansion in the coverage of universities and impacts of this policy on Turkish cultural and religious structure will be emphasized in the following section.

As the final aspect of access to education, the studies focusing on the capacity of the educational system and its changes can be considered under the infrastructure and limitation of access heading. This is the final aspect which can also be restated as the capacities part. Dufflo (2001) utilize the exposure to a major governmental project of school construction in Indonesia to clarify its effects on educational attainment. Walker and Zhu (2008) analyze the expansion of higher education in the UK during period 1994-2006, focusing on the details of the returns to education among people from different age groups. In order to access the education, the major

obstacle is that the institutions do not have the capacity. Thus, access to education greatly depends on the capacity of the higher education institutions.

Gender gap poses a major problem to the education, which must be overcome. In this sense, the literature on the gender gap and particularly the gender gap in Turkey is pervasive in the literature. Since this issue is also a major focus of the international society, it takes a significant place in the literature. Kırdar et al (2012) analyzes the effects of compulsory education on gender gap; and argue that compulsory education created great impact on neutralization of gender gap in primary education. By making the education obligatory, female children have much more opportunity for accessing the education than the period before the compulsory education law. Thus, neutralization of gender gap in education could be encouraged with the compulsory education.

Another aspect of gender gap and education in the literature is the cultural concerns. The traditional restraints of the Turkish families could be a major obstacle for the female children's access to education. Otaran, Sayın, Güven, Gürkaynak and Atakut's 2003 study touches upon these traditional beliefs and its impacts on a female child's life.

In Turkey, where current laws and regulations on education of girls are implemented to an insufficient degree and where education processes consolidate gender inequalities, girls who are registered late to the civil registration and birth registration of whom are not made as an inevitable consequence of internalized stereotyped gender roles and traditional and religious beliefs and attitudes which

attribute a law status to girls and which consider education unnecessary and insignificant are used as labor at home instead of going to school, are married at early ages and are sacrificed for education of boys due to financial challenges. (Otaran, Sayın, Güven, Gürkaynak and Atakut, 2003)

It can be inferred from that, girls are unable to access education due to traditional and religious concerns. Additionally, they also posit that the current laws and regulations on the education of girls are not effectively carried out. Thus, gender inequality became a major problem in Turkish education system.

As it can be discerned from Gender Report of Turkey, (World Bank, 2012)² when the education is considered; boys have a greater opportunity than girls and this is significant disadvantage for girls. Some religion and culture-based beliefs can also be considered as barriers which need to be overcome. Examples contain the fact that families do not find it convenient to send their adolescent girls to school due to moral concerns that root from coeducation; that girls fulfilling their duties home is considered more important than them fulfilling their school works and that boys are perceived to be more valuable for continuation of families. (İlhan-Tunç, 2009) For these reasons, girls take over a disadvantaged position compared to the boys in the competition for education. It can be also described as the boys had a head start. Thus, Turkish education experiences gender gap in education.

² http://kasaum.ankara.edu.tr/files/2013/02/World-Bank-Turkey_Gender_Note-2012.pdf

CHAPTER 3

INSTITUTIONAL CONTEXT

The Educational System in Republic of Turkey consists of three levels: primary and general education (8 years at general schools); secondary education (additional 4 years at general or specialized high schools); higher education (4 years at universities or 2 years at vocational schools). The legislative history of education in Turkey over the last 20 years has been perturbed. After 1997, the first eight years of primary school were obligatory and continuing with no interruption. The current ruling government passed through educational reforms in past years and reorganized the educational system.

3.1 Regulatory Structure

The Ministry of National Education is the unique responsible institution for the administration of all stages and types of pre-tertiary education. Yükseköğretim Kurulu (the Council for Higher Education, YÖK), which is a non-partisan and non-governmental organization, is responsible for planning and regulating of diverse elements of higher education into an integrated and harmonious operation. University budgets, overall and institutional admission caps, core curriculum guidelines at undergraduate and graduate levels, quota for all departments, and faculty head appointments are some of the duties of the council. The private institutions of higher education were allowed to operate in Turkey in 1981, but only on a non-profit basis and the all curricula of these institutions must be approved by the council. The legal base of foundation of higher education institutions is defined in article 130 of constitution and law no 2547 of 1981 as “universities cannot be established by for-profit organizations and cannot operate for profit” (Mızıkacı, 2007).

Additionally, universities, faculties, graduate schools and four-year vocational schools are founded by law. However, the two-year vocational schools, departments and divisions depend on the approval of YÖK. Council of Higher Education (YÖK) governs and coordinates the education system in Turkey as an autonomous public body since 1982. The rectors of the universities are appointed by the boards of trustee, which is subject to the ratification of YÖK. Moreover, it should also be noted that the higher education mostly depends on the government subsidies. The major source for the revenue for Turkish public universities is the government subsidies that range from 52 to 57% (Ökten and Caner, 2013). The second source presented by

Ökten and Caner in their study is funds generated by the universities as well as the student fees. They all constitute the main sources of the revenue in public universities.

3.2 Language of Education and Compulsory Education

The academic year commonly consists of two semesters and continues from September until June, there are some different variations in rural areas but they are just exceptions. From primary school to universities, all educational institutions follow similar academic calendar.

The language of education is Turkish, although some programs at the tertiary level are taught in several languages like English, French or German. In the higher education level, universities are allowed to choose their language of education. Education language is English in most of the private universities and significant number of public universities.

Compulsory education was five years, primary education, until 1997; with some regulations it was increased to eight years and then increased again twelve years in 2012. The new compulsory education consists of four years of primary, middle and secondary school.

3.3 Secondary and Higher Education

There were some important structural changes in secondary education in Turkey. Before the 2005-2006 academic years, the secondary programs were three years in length and secondary education is not compulsory. In 2005, the length of secondary education was increased with an additional one year. However, the English preparatory year was removed from the secondary education. There was no longer an English preparatory year but the secondary programs became 4 years in length.

In 2012, there were radical changes in this structure. In the post-2012 system, students enter secondary school after four years of primary school and four years of middle school and with an important change secondary school became compulsory. Students had three options, general, technical or vocational high school.

3.4 The University Entrance Exam in Turkey

The University Entrance Exam (called ÖSS), is a nationwide test that should be passed in order to enroll in a university in Turkey. It could be also characterized as a highly competitive exam that takes place every year. In 2002, the exam was consisted of different sections which are verbal, quantitative and foreign language. It was up to the students to decide which section they will answer depending on their university major preferences. In 2009, there was an important change in the structure

of ÖSS. It became a two-staged exam as in the period before 1999. The second stage consisted of 5 different tests and took place in 5 different sessions. The raw score was the one received from the exam but the high school performance also had an influence on the final score. There are also different fields of study in high school that could be categorized as Science, Turkish-Math, Social Sciences and Foreign Languages. Students could get extra points if their choices of major are compatible with the fields of study in high school. In 2009, this ratio was 0.15 for field-related majors but 0.12 for majors out of the field. In 2012, the ratios were fixed at 0.12 for all majors.

After the declaration of the results of the exam, the students who pass the certain threshold could submit their list of choices for university and majors. The choice list could be 24 different preferences long and ordered according to the most preferred to the least preferred. Then, the enrollment to a certain university depends on their ÖSS result. Students with relatively higher results could have the higher chance to be admitted in their first preferences. Additionally, the enrollment of the candidates also depends on the quotas of the programs since if they are full, the candidates with lower exam scores could be admitted to their less preferred programs. There is also the chance that they could not be able to be admitted to any of the programs in their preference list if the quotas of the programs are full. Therefore, it can be stated that the admission to a certain university program depends on the ÖSS score and the choice list as well as the quotas of the programs. Thus, the candidate could have an idea about the programs and their feasibility through calculation of his own score and the minimum acceptance score of the programs.

All students must have a diploma of secondary education to enter the university entering exam that consists of two stages and is administered by Student

Selection and Placement Center (ÖSYM), supervised by YÖK. At the university level, the higher education system consists of three steps- bachelor, master, and doctorate.

When the University Entrance Exam is examined with regard to the gender, it can be argued that there are specific fields and majors that particular genders choose. Saygın (2012) argues that “Girls are more likely to choose qualitative or equally weighted fields while boys tend to choose quantitative fields at high school”. Thus, while girls generally choose Turkish-Math (equally weighted) and Social Sciences (qualitative-based) in high school, boys mainly choose Science-Math (quantitative-based). This difference between the genders will be a major focus in the discussion of the impacts of the university reform.

3.5 Population and Education of Turkey and OECD countries

Turkey, as a candidate of the European Union, has a younger population compared to its European neighbors, and actually has the youngest population among the top 20 economies in the world. Approximately, one of third of Turkey is between the age of 15-29 and half of its population is under the age of 28; that’s why education youth is a crucial topic.

Turkey’s education statistics are not promising while compared to OECD countries, statistics. In Turkey, 31 percent of adults aged 25-64 (in 2010) had the equivalent of a high school diploma and this is much lower than OECD average that

is 74 percent with the lowest rate across OECD countries. The graduation rates of aged under 25 with 54 percent is again well below the OECD average of 84 percent and the second lowest rate across OECD countries.

Rates of graduation from university-level programs have been increasing rapidly in Turkey, from 6 percent in 1995 to 11 percent in 2005 and to 20 percent in 2008. Of all tertiary graduates, 40 percent are currently from degree programs of less than three years, 51 percent from bachelor's programs, and 9 percent at the graduate level, especially masters.

While comparing the qualitative side, education performance of Turkish students perform not successfully when compared to their equivalents in other OECD countries. Program for International Student Assessment (PISA) results show that the average Turkish student performs significantly lower in reading literacy, math and sciences than the OECD average. The performance gap in education is still a problem in Turkish education system, because of not having a standard education quality. The best performing schools provide significantly higher-quality education, in PISA scores, between the top 20 percent and bottom 20 percent, of 106 points and this is higher than OECD average which is 99 points.

3.6 Gender Gap in Education

Gender equality in terms of participation is not fully achieved in Turkey. The rural areas reflect this inequality more efficiently since as a result of economic

problems as well as traditional gender roles, the girls at the age of school cannot attend school or attend late. According to the Global Gender Gap Report 2012, Turkey is ranked as 108 out of 135. Three major reasons are presented by Tunç (2009) for not sending girls to school that are economic reasons, religious beliefs and traditional gender approach that favors boys over girls (Tunç, 2009). He also argues that although there is a remarkable effort for sending girls to school, the gender equality is not achieved yet. Turkish Constitution or Declaration of the Rights of the Child protects the equality of children in education and regard it as a significant right; Turkey still does not present a comforting framework.

These reform movements enable and encourage the attendance of girls in school mostly in rural areas. According to the Towards Gender Equality in Turkey: a summary assessment presented by World Bank in November 20, 2012, the 1997 education bill which was about increasing compulsory education to 8 years, the 2008 Conditional Cash Transfer Program that funded attendance of girls to the school and other nation-wide campaigns encouraging Turkish girls carry utmost importance in neutralizing this gap (World Bank, 2012). Thus, it could be argued that although urban areas present a remarkable improvement in closing the gender gap in education, the more poverty struck rural areas are slower in this sense. Greater efforts and more improvement are required in this process for further neutralization of gender gap.

Due to cultural, religious and economic reasons, Turkish families give higher priority to boys' education rather than girls'. Since these economical and moral issues usually become important when the subject is girls' education; it can be considered that girls can be more beneficial than boys, when the effects of those moral issues have decreased. Although there may not be cultural or religious barriers

for boys about moving to different city for education or living sole in different city, decreasing the effects by creating an opportunity to take education in the hometown may be significant encouragement for girls' education.

In Turkey, families give priority to education of boys rather than girls for several reasons mentioned above. Since moral and economic issues are thought to be barriers to the education of girls, they may have greater advantage when the disadvantages they faced are relatively eliminated. Moving to other cities for education is not considered as a cultural or religious issue for many families, however eliminating those disadvantages can be taken as a great encouragement for education of girls.

The purpose of this paper is to show that when the economic, cultural and religious concerns that are examined above are considered, the facilitation of physical access to higher education as well as increasing the capacity of higher education, which were emerged from university reform, encourage neutralizing gender gap in higher education.

CHAPTER 4

THE UNIVERSITY REFORM

4.1 Main Features of the University Reform

The ruling government cooperating with the Ministry of National Education and YÖK introduced the higher education reform in 2008. Major changes targeted by the Turkish government through the university reform were an increase in the enrolment rates and supplying qualified employees for private and public sectors. Due to the development of Turkish economy after 2000, extra significance and emphasis were given to the graduate students. This created the necessity to increase the number of graduate students in particular sectors and the relation between the medical schools and health reform could be an example. After the health reform in Turkey in 2006, the capacity of the medical schools was raised by YÖK and the reason was to close the deficit of the medical sector. In order to enhance some sector-specific necessities,

industry-university workshops were organized. (Biannually by Ministry of Industry (it is now called Ministry of Science, Industry and Technology)). These workshops contributed to the determination of the needs of the industry. Therefore, an organized and efficient system through raising qualified employee to the particular sectors in need was constructed.

The reforms in higher education targeted two major changes. The first one is an increase in the enrolment rates and the second one is raising qualified employee. In order to achieve these goals, two major approaches could be mentioned. The first one is extending the coverage zone of the universities by constructing universities in every province and increasing the capacity of the universities. Before the reform movements in university, public universities were generally located in the Western coast of Turkey as well as the biggest cities of the country. When the private universities and their location are examined, it can be inferred that they were located in only the three biggest cities of Turkey. Thus, the government initiated this reform movement to change the unbalanced placement of the universities in Turkey. The motto of the reform movement was “There will be universities in every province of Turkey”. In order to achieve this goal, new universities were constructed in several provinces. Additionally, subsidies were given to the private universities in order to promote the establishment of them in provinces other than the three biggest cities of Turkey. As the Figure 1 demonstrates, there were 74 universities in 2005 while the number reached 178 in 2013.³

³ In 2005, there were 74 universities; 24 private and 53 public universities. In 2013, there were 178 universities, 69 private and 109 public universities.

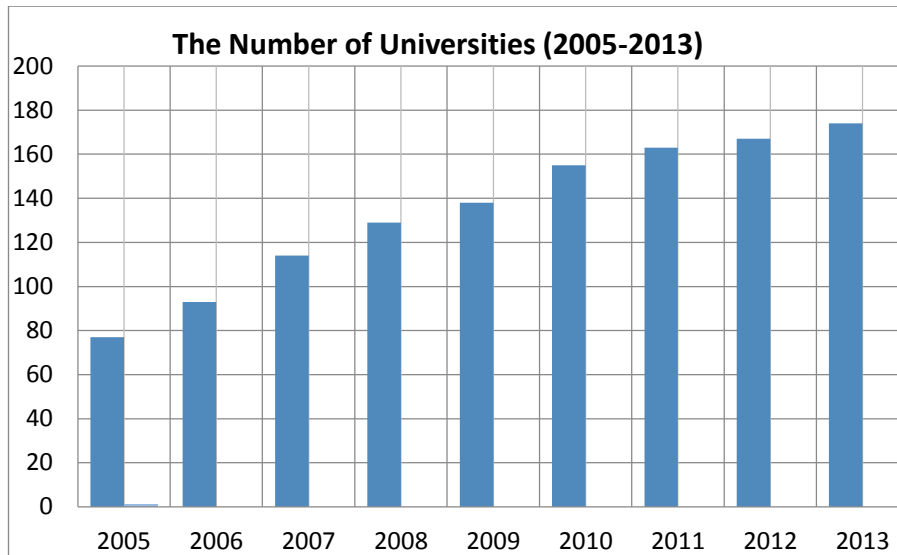


Figure 1: The number of universities in Turkey (2005-2013) (YÖK)

Another approach of the government in achieving the goal of increased enrolment rates and qualified employee was to increase the capacity of the universities. The capacity of the higher education institutions was significantly lower than the cohort that would take the exam. This created the requirement for increasing the number of the graduate students and the way to achieve this requirement was through unbalancing quality and quantity. The first move was an increase in the quantity and the assumption that quality would follow. As in the Indonesian example, Turkish government preferred to increase the capacity of higher education institutions by constructing new universities across the country. This was a costly task but an effective way. Through an increase in the capacity of the universities and construction of new universities, enrolment capacity was increased to a greater extent. The following figure shows the number of the new entrants to the university.

However, it should be noted that the three biggest cities are not included in this figure.⁴

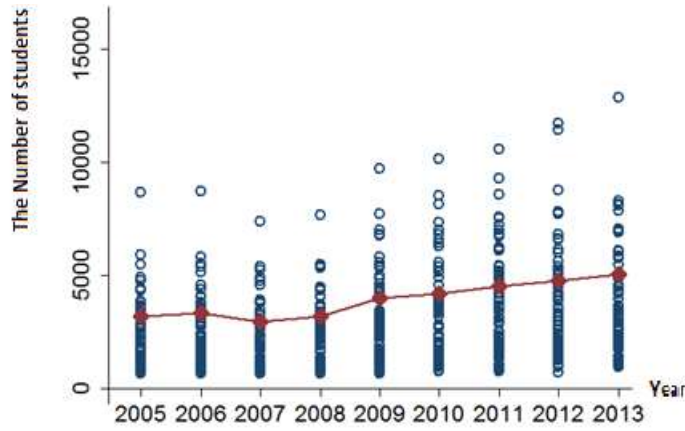


Figure 2: Number of new entrant in Turkey (2005-2011) (YÖK)

As it can be interpreted from Figure 3, the increase in the capacity of the universities is remarkable. The increase in the number of the universities is the major factor in the capacity increase but it costs a lot to construct new universities as well as increase their capacity. The cost of particular university departments differs since some majors requires more material and space than the others. For example, medical science requires university hospital as well as laboratories and technical equipment while technical departments necessitate laboratories, computer systems and other high expenditure materials. On the other hand, the construction expenses are lower in the departments in social sciences and educational sciences since they do not require technological infrastructure and high expenditure materials when compared to the quantitative fields. Thus, the major focus of the government in the capacity increase is on low-cost fields or in other words, social and educational sciences. The

⁴The reason for the exclusion of the three biggest cities is that the major target in the universities in every province approach is not the three biggest cities but the region outside of them

following tables including increase based on quantitative results and percentages demonstrate the capacity increase in every field but mostly in the social and educational sciences. Additionally, the tables also show that the major increase in the number of students in social and educational sciences is around 2007-2008.⁵

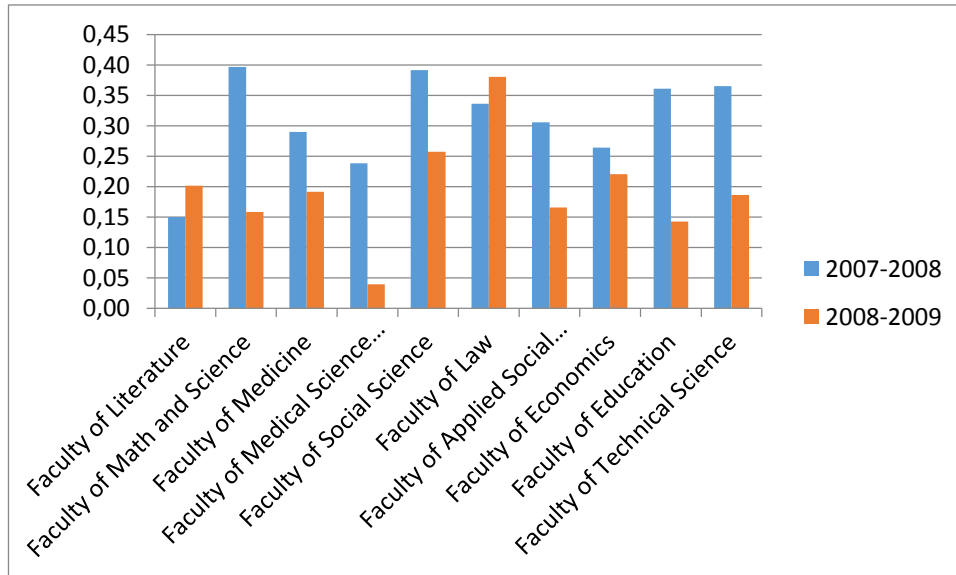


Figure 3: The percentage change of new entrance capacity of specific departments (2007-2008 and 2008-2009) (author's calculations)

⁵ The changes of new entrant capacity between 2007 and 2008 are 1582 for Faculty of Law, 27438 for Faculty of Applied Social Science (w/o Law), 14410 for Faculty of Technical Science and 14082 for Faculty of Education.

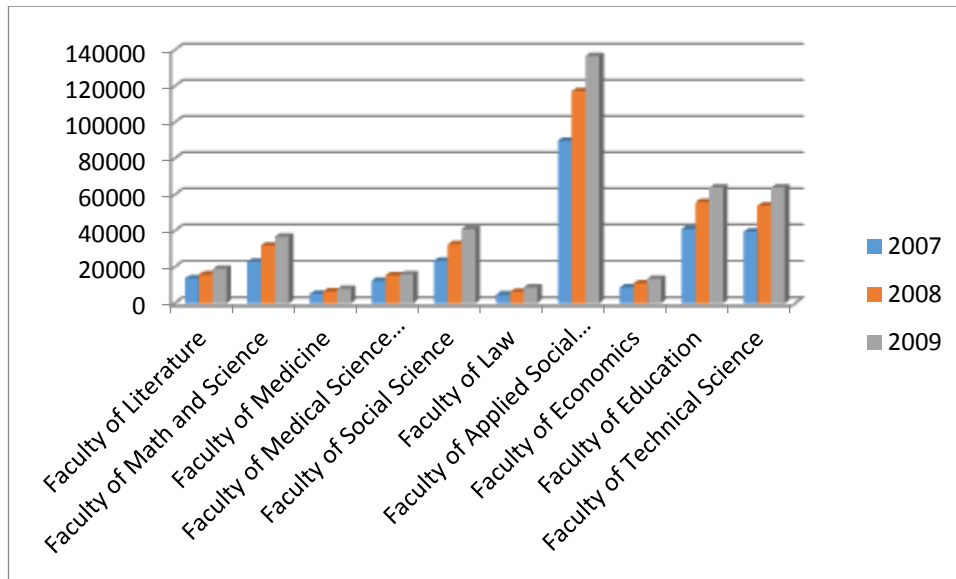


Figure 4: The new entrant capacity of specific departments (author's calculations)

4.2 The Effects of the University Reform

This paper analyzes the possible impacts of the university reform on the narrowing of gender gap in Turkish higher education. The impacts of the university reform on higher education can be conceptualized under three main topics, elimination of the physical access problem, decrease in the high competition among students and decrease in the economic costs for the families. Thus, this paper argues that through the major impacts of the reform on higher education, the narrowing of the gender gap was promoted.

As mentioned in the section 3.2, the families are reluctant to send their female children to other cities for education. However, these could be prevented or eased by the physical access provided by the university reform. The families that regard their

female children's education essential and significant when compared to the other families' perception could find the idea of a university located in their hometown more favorable. Thus, even though they reject sending their girls to other cities for education as a result of religious and cultural tendencies, they could send their children to universities in their hometown. Hence, the opportunity of higher education for girls could be increased.

In addition to these moral issues, economic concerns such as accommodation cost and living expenses in a different city could be categorized as the reasons for favoring a hometown university. Since the families are able to send their children to universities in their hometown, which would not cost as much as sending the children to other cities, higher education becomes a favorable option for the family. Therefore, it can be stated that the physical access lowers costs of higher education and the new university reform enhance the enrollment rates of the female and male children.

Another change implemented with the university reform is the increase in the capacity of the universities. Until the university reform, since the university quotas were lower than today, rationing for higher education was more severe. The competition was higher to be admitted to a university when the capacity of the universities was lower. Thus, it was essential and crucial to support high school education with a qualified private teaching institution for a year or more than a year. However, it should be noted that for families with several children, private teaching institutions could cause financial difficulties when every children was enrolled in a private institution. When these families are required to make a choice, they might favor boys over girls as a result of religious or cultural tendencies. The increase in

capacity might have increased chances of girls who suffered from lower level or parental investments in their education compared to boys.

As stated in Saygın (2012), the female children tend to choose qualitative or equally weighted sciences rather than quantitative fields in high school. For the higher education, Caner and Ökten (2010) and Saygın (2012) argue that girls are more likely to choose social science and education majors. There can be several reasons behind this appeal. Being a teacher is considered as the most convenient job for a female child in the society. Some professions such as engineering are also considered as not appropriate for females by some segments of the society. On the other hand, male children tend to choose engineering and other technical majors when compared to the female children.

Since the capacity increase in the university reform was introduced in the social and educational sciences mostly, it can be argued that the girls had an advantageous position through the reform. The capacity increase in the social and educational sciences (law is exceptional since it is a high profile department and boys are more eager to choose law than girls) is more than the capacity increase in the technical sciences and higher profile majors that boys tend to choose. Therefore, the main department choices of girls are the fields that have more capacity and less competition. Thus, the female children benefit from the university reform as well as the university reform contributes to the neutralization of the gender gap in higher education through the provision of advantageous position for girls.

This paper presents the increase in the capacity and the coverage of the higher education institutions, which was a result of the university reform in 2008. This reform movement is an important tool for demolishing the disadvantaged position of

the female children in higher education. Through eliminating the physical, economic and structural problems of the female children, the university reform contributes to the neutralization of the gender gap in higher education. This argument will be enhanced in the results section presented with the findings of this research.

CHAPTER 5

THE DATA

5.1 University Data

We use nationally representative, periodicals of higher education data for the 2005-2013 periods, made available by ÖSYM (Measuring, Selection, and Placement Center). This data set includes the number of the new entrant students, the number of the students that already studying in any higher education institutions, the number of student that recently graduated and the number of universities in the whole country.

5.2 Population and Education

The data received from ÖSYM was constructed as panel data. Individuals of the panel data was specified according to the provinces in other words the features of the individuals were regarded as the provinces. For example, when Edirne is examined, the number of the universities located at Edirne is a part of the features of the individuals in the panel data. Thus, the change in the number of the universities between 2005 and 2013 could be clearly discerned. ÖSYM periodicals include the number of the new entrants to a higher education institution and the number of the graduates (graduate is used as the newly graduate students) in the particular province and this data is available for every province in Turkey.

It is necessary to mention the problems in gathering data in this study. One of the major and significant problems of the province-based data is the lack of background information about the university students. In this sense, the place of birth as well as the place of the high-school education could not be available. For example, the problem could be a person who was born in Adana but received higher education in Ankara. As a result, he would be included in the Ankara data and creates a complication. Particularly before the university reform, the number of the students who study in another province mostly in the three biggest cities in Turkey is high. Another problem in this case is the place of residence after the graduation since the person would be included in the data of the place of residence. The main reason is the conceptualization of people as provinces.

If the background information of the people such as the place of residence and the place of the high school could be gathered through a survey, in other words

individual-based data, the result may be more precious. However, such information is not available.

TurkStat education and population data between 2008 and 2013 providing the information based on provinces is used in this research. The information about the different levels of education in a province categorized by different age ranges is available through the TurkStat. By organizing it, the data about the graduate students between the age of 22 and 24 in the time period of 2008-2013 is gathered. The gender of the graduate students in a particular year and particular city in every year between this time periods could also be gathered from this data. However, the previous problem reemerged since the information about the conformity of the place of residence and the place of higher education could not be procured. In order to handle this problem and decrease the trouble of statistical problems originated from the data, this research uses population data.

The population data is based on provinces and ages, and the data about the gender and number of the people between 20 and 24 ages is obtained. The people at the particular age range and province is the residents of that particular city. Therefore, the number of the students living in Ankara and having education in Ankara is estimated with the population. As in the article of Kyui (2012), we create another variable with proportion of university graduate and population of that particular age. This is the way to make a comparison based on the proportion. Thus, the problem originating from the lack of the background information on individual could be a method to decrease the impacts of the problem.

5.3 Identification of University Province

The data about the current students, new entrants and the graduates of a particular university is available in ÖSYM. For example, although there was no university in Uşak for a certain time period, the data gathered from ÖSYM included new entrants, current students and the graduates in Uşak province. This wrong categorization problem could be solved through an analysis. Afyon and Uşak provinces are geographically close to each other and some departments of the university in Afyon were located in Uşak. This was the reason for the data problem about Uşak. However, this problem could be ignored since in comparison to other cities and the population of Uşak, the number of the students is low.

5.4 Timing Problems

Another problem that should be noted is the time period in the data from ÖSYM about new entrants, current students and the graduates. For example, the data about the 2005-2006 academic year is published in 2006 summer. In this regard, the data of a student who was enrolled in a university in September 2005 (The beginning of the education raise) could be gathered from the data published in 2006. The data about the person who was graduated in January (interim semester) and June 2006 is available on the 2006 data. Thus, the students of 2005-2006 academic year includes new entrants of 2005 September, current students and the graduates of 2006 June.

CHAPTER 6

METHODOLOGY

We combine ÖSYM and TurkStat education and population data and construct a panel data where unit of analysis is the province level. The major time period is the 2007-2013 period. We use province level fixed effect, since every province has its own features like the features of an individual. Following the methodology in conducting a natural experiment study such as Kyui, we consider year of higher education expansion (2008) as a treatment. We want to divide time period into two parts as before the treatment period and after the treatment period; and then define them as the control group and the treatment group.

$$D_t = \begin{cases} 1, & t \geq 2009 \\ 0, & t < 2009 \end{cases} \quad (1)$$

Since the remarkable expansion of higher education was in 2008, the treatment group could be classified as the students who took the exam in 2008 or after. This group could also be conceptualized as the ones who benefited the

opportunity of the university reform. In order to identify the treatment effect, dummy variable is assigned in this experiment. The control group consists of the ones who did not benefited from the university reform (1). However, as stated above since the data about the 2008-2009 academic year is published in 2009, 2009 is regarded as the operationalization of the reform. This is because the 2008-2009 academic year includes the ones who were affected from the university reform and the data is stored as in 2009 (Table1).

Enrolment			
Year of taking university entrance exam and entering to university	Published as (by ÖSYM)	Graduated in	
2004-2005	2005	2008	Control Group
2005-2006	2006	2009	Control Group
2006-2007	2007	2010	Control Group
2007-2008	2008	2011	Control Group
2008-2009	2009	2012	Treatment Group
2009-2010	2010	2013	Treatment Group
2010-2011	2011	2014	Treatment Group

2011-2012	2012	2015	Treatment Group
2012-2013	2013	2016	Treatment Group

Table 1: The treatment and control groups with respect to years (author's calculations)

Figure 5 demonstrates the impacts of the university reform on the year 2008. In this figure, the three biggest provinces are removed in order to discern the increase in the number of students clearly. However, it should be noted that these three provinces were included in the regression. Thus, it can be inferred from this figure that the increase started to be existent in 2009. However, this increase could be seen from the 2008-2009 academic year because of the timing problem already mentioned above. Thus, it can be argued that taking the ÖSS in 2008 could be identified as the lucky year.

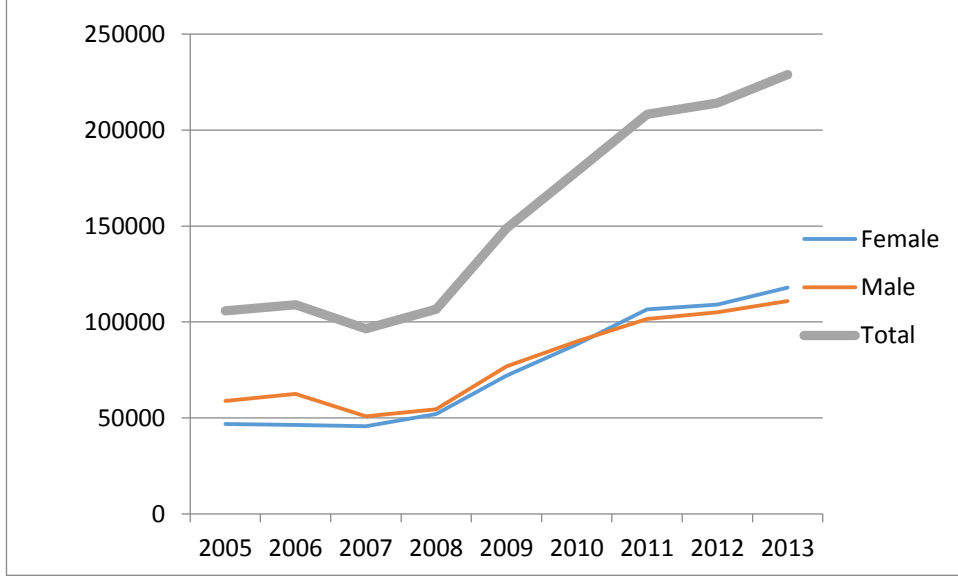


Figure 5: Number of new entrant (with respect to gender) to higher education in Turkey (2005-2013) (author's calculations)

We then estimate the following regression model:

$$Y_{it} = X_{it}\beta_1 + D_t\beta_2 + \alpha_i + \varepsilon_{it} \quad (2)$$

Where Y_{it} is the ratio of female graduate (22-24 years old) to male graduate (22-24 years old), X_{it} is the total number of new entrant, α_i is the unobserved time-invariant individual effect and ε_{it} is the error term. Unobserved time-invariant individual effect can generally thought as ability; in this situation, α_i can be thought as unobserved features of provinces that affect quality of education or any unobserved effect that attract students attention to that province. Since it is not observable, we cannot directly control it. That's why we use fixed effect model to eliminate unobserved time-invariant individual effect by using within transformation.

$$Y_{it} - \bar{Y}_i = (X_{it} - \bar{X}_i)\beta_1 + (D_t - \bar{D})\beta_2 + (\alpha_i - \bar{\alpha}_i) + (\varepsilon_{it} - \bar{\varepsilon}_i) \quad Eq.3$$

$$\check{Y}_{it} = \check{X}_{it}\beta_1 + \check{D}_t\beta_2 + \check{\varepsilon}_{it} \quad Eq.4$$

We add year effect to our equation to observe the effect of the reform year by year. Since the population and education data gathered from TurkStat presents the age range between 22 and 24 as a whole, the impacts of the reform could not be fully observed. This is because the data was based on the age ranges rather than focusing on a particular age and the impacts of the reform on that particular age. In order to have a clearer understanding about the impacts of the reform on particular ages, an overall assessment was carried out according to the following table and more than one regression analysis was performed. (Table 2)

<i>Year of University Entrance Exam</i>	<i>Graduation Year</i>	
2005	2009	<i>Control group</i>
2006	2010	<i>Control group</i>
2007	2011	<i>Control group</i>
2008	2012*	<i>Treatment group</i>
2009	2013**	<i>Treatment group</i>
2010	2014***	<i>Treatment group</i>

Table 2: The treatment and control groups with respect to years

TurkStat presents the number of the graduates based on the age range, which is 22-24 and this might cause a problem for this research. When the treatment year was accepted as 2008 (Since these are the TurkStat data, adopting the treatment year as 2008 is not a problem), the ones who benefited the university reform primarily would be graduated in 2012. Thus, the data published in 2012 would include approximately 33% (*) of the treatment group. Similarly, the data published in 2013 would include

approximately 66% (**) of the treatment group that benefited from the reform. Therefore, the data published in 2014 would cover most of the people who benefited from the reform since almost all of the graduates would be the ones who experienced the impacts of the reform (***). Thus, several regression analyses were conducted for these three year cases while examining the treatment effect.

CHAPTER 7

RESULTS

We construct panel data where unit of observation is at the province level for the year 2007-2012. This section identifies and estimates the relationship between enrolment capacity and its effects on the ratio of the number of the female graduates and the male graduates in each province. The exposure of a province to the expansion of the higher education reform is identified by the year 2008. We run two main regressions in order to examine the effects of the university reform, the increase in the enrolment capacity and both. In order to spot the effects on the provinces, we use fixed effects at the province level and year dummies. Since YÖK and MEB decide on the departments that would open, the changes in the capacity of higher education system⁶ provides an exogenous variation in access to higher education. Additionally, as presented above since the students have education in different provinces and have no effect on the statistics in their hometown; we estimated the

⁶ As mentioned in previous parts, the sizes of departments were changed differently.

number of the graduate students and the cohort in provinces and tried to observe the difference.

We want to study the relationship between the enrolment capacity and gender ratio of the graduate students, and thus we run a simple regression for the model (2). First, we discuss the OLS estimation to examine the relationship between the enrolment capacity and the effects of the university reform for the proportion of female graduate to male graduate (22-24 year old) at the province level. Table 3 shows the summary of the estimated results for our main data set. Column named (1) shows the regression only on the dummy variable while column named (2) shows the regression of the enrolment capacity on the proportion of female graduate to males. Column named (3) shows regression of both the enrolment capacity and dummy variable on the proportion of female graduate to male.

These estimation results suggest that the university reform provides 11% positive effect on the gender ratio (Column (1)). Moreover, these results demonstrate that the expansion of the capacity has a positive effect on the gender ratio but it is not significant in comparison to the treatment effect. (See column (2) and (3)). Therefore, the university reform has a direct influence on the neutralization of gender gap in the number of the graduate at province level but the effect of the enrolment capacity expansion is relatively smaller than the rest of the university reform.

This research uses the following variables which determine the expansion of the higher education system:

1. The number of slots in the higher education system at province levels.
(Enrolment)

2. Treatment dummy that determine the year of university reform.
(TreatDummy)
3. The proportion of female graduate to male graduate (22-24year old) at the province level.(F2Mgrad)

VARIABLES	(1) F2MGrad	(2) F2MGrad	(3) F2MGrad
TreatDummy	0.116*** (0.0238)		0.114*** (0.0204)
Enrolment		8.59e-07** (3.79e-07)	7.99e-07** (3.67e-07)
Constant	0.973*** (0.0137)	1.034*** (0.0103)	0.995*** (0.0121)
Observations	486	436	436
R-squared	0.047	0.012	0.078

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table 3: Basic OLS regression to observe effects of university reform. 22-24 years old. All provinces, (2005-2013)

This time we do the same regression but we change our data set. In the new data set we eliminate the three major cities. As explained before, this research focuses on the cities that do not have a university and as a result they are the main targets in the university reform.

When we compare the results in (Column (1), Table 4), it can be observed that the university reform has a better impact on the smaller cities than the whole country. In the previous part, the change in the enrolment capacity is not significant. However, it can be discerned that this time the change in the enrolment capacity has positive and significant effect. Then we can say that the university reform has better impact on neutralization of gender gap in smaller cities.

The following variables that determine the expansion of the higher education system are used:

1. The number of slots in the higher education system at province levels.
(Enrolment)
2. Treatment dummy that determine the year of university reform.
(TreatDummy)
3. The proportion of female graduate to corresponding male graduate (22-24year old) at the province

VARIABLES	(1) F2MGrad	(2) F2MGrad	(3) F2MGrad
TreatDummy	0.118*** (0.0244)		0.0940*** (0.0199)
Enrolment		0.224*** (0.0275)	0.203*** (0.0272)
Constant	0.962*** (0.0141)	0.832*** (0.0259)	0.818*** (0.0255)
Observations	462	412	412
R-squared	0.049	0.139	0.184

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Basic OLS regression to observe effects of university reform. 22-24 years old. All provinces (w/o three major cities), (2005-2013)

As in the previous part, the university reform has positive and significant effect on the neutralization of the gender gap. Thus, we want to study the relationship between enrolment capacity and graduate gender ratio at province based and the impacts of the provinces on the gender ratio. Then we run a simple regression for the model Eq. 4. The empirical model accounts for the influence of the enrolment capacity change and university reform by adding the year and province effects. The estimation procedure is described in the Methodology part.

Now, we discussed the fixed effect estimation to examine the relationship between enrolment capacity and effects of the university reform for the proportion of female graduate to male graduate (22-24 year old) at the province level and observe the year effect. Table 5 shows the summary of the estimated results for our main data set. Column named (1) shows the regression only on the dummy variable, column named (2) shows regression of the enrolment capacity on the proportion of female graduate to male and column named (3) shows regression of both, enrolment capacity and dummy variable on the proportion of female graduate to male.

These estimation results posit that university reform provides a 22.5% positive effect on the gender ratio (Column (1)). However, it should be noted that there is a significant and negative effect in 2012. Additionally, these results demonstrate that the expansion of the capacity has a negative effect and insignificant effect on the gender gap (see column (2) and (3)). Although the enrolment rate has negative effect, we can see in the regression which includes just the enrolments and there is a significant and positive effect on gender ratio in every years.

When we run the third regression, with dummy variable and enrolment capacity, we observe that university reform has a positive and significant effect. On the other hand, again there is negative and significant effect in year 2012 and enrolment capacity. This was mentioned in the discussion on the university reform. The changes in the capacities of the particular departments were also presented and the negative effect in year 2012 was a result of the exogenous change. Additionally, the impact of the treatment can be observed directly. The university reform has a direct influence on narrowing of gender gap in the number of graduates at province level but the effect of the enrolment capacity expansion is relatively smaller than the rest of the university reform.

The following variables that determine the expansion of the higher education system are used:

1. The number of slots in the higher education system at province levels.
(Enrolment)
2. Treatment dummy that determine the year of university reform.
(TreatDummy)
3. The proportion of female graduate to corresponding male graduate (22-24year old) at the province.
4. The year effect coefficient. (named as i.year)

VARIABLES	(1) F2MGrad	(2) F2MGrad	(3) F2MGrad
TreatDummy	0.225*** (0.0169)		0.223*** (0.0165)
2009.year	0.0530*** (0.0169)	0.0524*** (0.0165)	0.0524*** (0.0165)
2010.year	0.0884*** (0.0169)	0.0706*** (0.0164)	0.0706*** (0.0164)
2011.year	0.112*** (0.0169)	0.109*** (0.0163)	0.109*** (0.0163)
2012.year	-0.0911*** (0.0169)	0.132*** (0.0165)	-0.0910*** (0.0161)
Enrolment		-3.31e-07 (1.05e-06)	-3.31e-07 (1.05e-06)
2013.year		0.223*** (0.0165)	
Observations	486	436	436
R-squared	0.338	0.384	0.384
Number of province	81	79	79

Standard errors in parentheses

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

Table 5: Fixed effect regression with treatment dummy to observe effects of university reform. 22-24 years old. All provinces, (2005-2013)

This time we do the same regression but we change our data set. In the new data set we eliminate three major cities to be able to observe the target cities of the university reform directly.

When we compare the results in Column (1), it can be observed that the university reform again has a better impact on the smaller cities than the whole country, when we add province fixed effect. In the previous part, the change in the enrolment capacity is negative and not significant but this time it has positive effect. (Column (2) in Table 5 and Table 6) Then we can say that the university reform has better impact on neutralization of gender gap in smaller cities.

When we run the third regression, with dummy variable and enrolment capacity, we observe that the university reform has a positive and significant effect. On the other hand, there is positive and insignificant effect on the enrolment capacity. There is significant and negative effect again in 2012.

The following variables that determine the expansion of the higher education system are used:

1. The number of slots in the higher education system at province levels.
(Enrolment)
2. Treatment dummy that determine the year of university reform.
(TreatDummy)
3. The proportion of female graduate to corresponding male graduate (22-24year old) at the province.
4. The year effect coefficient. (named as i.year)

VARIABLES	(1) F2MGrad	(2) F2MGrad	(3) F2MGrad
TreatDummy	0.228*** (0.0175)		0.216*** (0.0195)
2009.year	0.0512*** (0.0175)	0.0514*** (0.0171)	0.0514*** (0.0171)
2010.year	0.0899*** (0.0175)	0.0660*** (0.0178)	0.0660*** (0.0178)
2011.year	0.114*** (0.0175)	0.104*** (0.0186)	0.104*** (0.0186)
2012.year	-0.0918*** (0.0175)	0.127*** (0.0183)	-0.0894*** (0.0169)
Enrolment		0.0378 (0.0375)	0.0378 (0.0375)
2013.year		0.216*** (0.0195)	
Observations	462	412	412
R-squared	0.342	0.392	0.392
Number of province	77	75	75

Table 6: Fixed effect regression with treatment dummy to observe effects of university reform. 22-24 years old. All provinces, (w/o three major cities), (2005-2013)

CHAPTER 8

CONCLUSION

This paper examines the impacts of the 2008 university reform on Turkish higher education. In order to present the impacts of the university reform on the enrolment rates and gender gap, we conducted regression analysis. The data for the analysis was gathered from ÖSYM and TurkStat for time period of 2005-2013. Through these sources, particular age ranges, gender and the provinces are identified with the certain information on the number of the new entrant students, the number of students that are already studying in higher education institutions, the number of students that were recently graduated and the number of universities in the whole country. The data received from ÖSYM was constructed as panel data and the individuals of the panel data was specified according to the provinces. Thus, more than one regression analyses are conducted in order to present the impacts of the university reform for different groups so that the treatment effect would be demonstrated more efficiently.

Major changes targeted by the Turkish government through the university reform were an increase in the enrolment rates and raising qualified employees for private and public sectors. As a result of this reform, the coverage areas of the universities were widened and the problem of the physical access was resolved. Additionally, it is necessary to state that the increase in the capacity of the universities also contributed to the increasing enrolment rates. Thus, the increase in the number of the universities and their zone of coverage paved the way for the increase in the enrolment rates. Additional changes originated from the university reform could be stated as the neutralization of the gender gap. When the economic, cultural and religious concerns that are presented in this paper are considered, it could be argued that the facilitation of physical access to higher education as well as increasing the capacity of the universities on particular departments that the female children favor most, which were emerged from the university reform, removed the concerns of the Turkish families and presented an advantageous position for the girls. Thus, the university reform contributed to the neutralization of the gender gap in higher education.

It should be noted that this study would present more efficient results if the background information of the people such as the place of residence and the place of the high school as well as the age could be gathered through a survey. However, such information is not available. Therefore, it can be argued that if the individual-based data would be available for this research, the results would be explained more effectively and in detail in the analysis.

In conclusion, the impacts of the university reform on the gender gap are presented. The only nation-wide change that would affect the gender gap is the university reform. This is why this research is a natural experiment. As stated in the beginning of this paper that “All women and men have equal opportunity and means

of education” (The Basic Law of National Education of Turkey, 1973, Article 8). It is a significant improvement to be able to see major improvements in neutralization of gender gap in Turkey.

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