

YOUTH LABOR MARKET DYNAMICS IN TURKEY: TURNOVER, WAGES
AND GENDER DYNAMICS

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AND GENDER DYNAMICS**

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ABSTRACT

YOUTH LABOR MARKET DYNAMICS IN TURKEY: TURNOVER, WAGES AND GENDER DYNAMICS

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This study examines the wage dynamics of young people (ages 15–25) who began working in Turkey between 2013 and 2022. To this end, we constructed and estimated three multidimensional fixed effects models. These models help us identify the effects of individual- and firm-level variables on wages. The first model includes age, gender, and labor turnover as explanatory variables. The second model adds experience and the number of premium days. The third model includes firm-level variables such as firm age, number of employees, percentage of female employees, and technological level. The results indicate that young men earn more than women with similar characteristics, and the wage gap increases with experience. Labor turnover negatively impacts wages for both men and women equally. Workers in large, old, and high-tech firms earn higher wages, as do those in large establishments. Finally, the gender composition of the labor force affects wages: firms with a high proportion of female workers pay less, and this negative effect is stronger for men.

Keywords: Wages, Labor Turnover, Youth Labor, Wage Determinants

ÖZ

TÜRKİYE'DE GENÇ İŞGÜCÜ PİYASASI DİNAMİKLERİ: İŞGÜCÜ DEVRİ, ÜCRETLER VE CİNSİYET DİNAMİKLERİ

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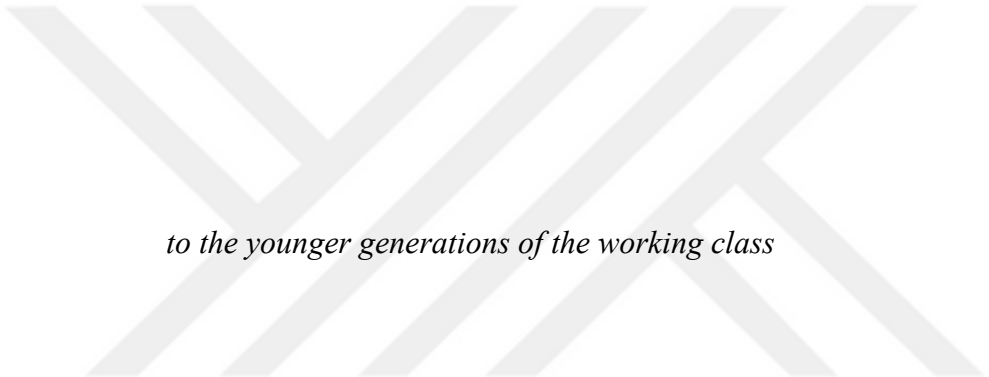
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Bu çalışma, 2013-2022 yılları arasında Türkiye'de çalışmaya başlayan gençlerin (15-25 yaş) ücret dinamiklerini incelemektedir. Bu amaçla, üç adet çok boyutlu sabit etkili model oluşturduk ve tahmin ettik. Bu modeller, birey ve firma düzeyindeki değişkenlerin ücretler üzerindeki etkilerini belirlememize yardımcı olmaktadır. İlk model, açıklayıcı değişkenler olarak yaş, cinsiyet ve işgücü devir hızını içermektedir. İkinci model, deneyim ve prim günü sayısını eklemektedir. Üçüncü model, firma yaşı, çalışan sayısı, kadın çalışanların yüzdesi ve teknoloji düzeyi gibi firma düzeyindeki değişkenleri içermektedir. Sonuçlar, benzer özelliklere sahip genç erkeklerin kadınlardan daha fazla kazandığını ve ücret farkının deneyimle birlikte arttığını göstermektedir. İşgücü devir hızı, hem erkekler hem de kadınlar için ücretleri eşit derecede olumsuz etkilemektedir. Büyük, eski ve ileri teknoloji firmalarındaki çalışanlar, büyük kuruluşlardaki çalışanlar gibi daha yüksek ücretler almaktadır. Son olarak, işgücünün cinsiyet yapısı ücretleri etkilemektedir: Kadın çalışan oranının yüksek olduğu firmalar daha az ödeme yapmakta ve bu olumsuz etki erkekler için daha güçlüdür.

Anahtar Kelimeler: Ücret, İşgücü Devri, Genç İşgücü, Ücret Belirleyicileri



to the younger generations of the working class

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CHAPTER 1

INTRODUCTION

The dynamics of the youth labor market are crucial to the present and future of Turkey's economy. The processes through which young people enter the labor market, their status within it, labor turnover, the wages they receive, and the number of days they work are not only an individual problem for young people but also an issue for the economy as a whole.

The challenges confronting young workers in the labor market are pronounced and substantial for several fundamental reasons (Kalleberg, 2020). Firstly, it is evident that young workers have been disproportionately affected by labor market uncertainty in recent years. These include a paucity of relevant skills and experience, smaller social networks, fewer economic resources to support them in their job search, and less knowledge about finding a job.

It is evident that periods of economic downturn, such as the 2007-2009 economic crises, have served to compound the aforementioned vulnerability. This is evidenced by a decline in the number of job opportunities, with existing employment opportunities often being characterized by a paucity of long-term prospects and a concomitant reduction in remuneration. The polarization of employment opportunities between high-quality, well-remunerated roles and low-quality, low-remunerated roles has had a disproportionately adverse impact on young people, particularly those with limited educational attainment. This phenomenon frequently results in underemployment or overqualification, and elevated levels of unemployment, with global youth unemployment rates being approximately three times higher than adult rates (13%).

The severity of these issues is also attributable to their long-term and structural ramifications. The transition from education to employment for young people is

becoming increasingly complex due to the prevalence of insecure employment, resulting in the exacerbation of social inequality in countries such as China.

NEET (Not in Employment, Education, or Training) is a term used to describe young people who are not currently employed, in education, or training. This situation has the potential to have a detrimental effect on both the immediate and future career prospects of these individuals, as it results in the loss of opportunities to develop their human capital at a critical juncture in their lives. The considerably higher global NEET rates for women than men (34.4% vs. 9.8%) in 98 countries, including developed and emerging economies, are indicative of pervasive gender discrimination within the labor market and an unequal distribution of labor within households (International Labor Organization, 2017).

An ageing workforce, coupled with the increasing number of older workers who are unable to retire due to economic insecurity, further complicates the situation for young people in their search for suitable employment. This, in turn, increases the likelihood of them being trapped in unsatisfactory jobs, unemployment, underemployment, and NEET status. It is evident that these alterations signify protracted structural transformations in employment relations as opposed to ephemeral business cycles. This observation underscores the imperative for the formulation of comprehensive and urgent policies to address these persistent concerns.

The challenges encountered by young workers in the Turkish labor market bear similarities, albeit with distinctive characteristics. According to Yenilmez (2014), young workers in Turkey encounter significant challenges in the labor market, including high levels of unemployment and, in particular, limited access to skilled employment opportunities. It has been demonstrated that young people are more likely to be unemployed than prime-aged workers.

They are frequently compelled to accept insecure, temporary, part-time, or informal employment. This situation, when considered in conjunction with substandard working conditions and insufficient social protection, engenders considerable challenges for young people in their efforts to transition to skilled and secure employment. Indeed, the pervasive nature of these issues has led to a situation in which many young people have been rendered despondent and have chosen to withdraw from

the labor market altogether. Moreover, the inability to secure employment that aligns with the expectations of young people, even as their educational levels rise, presents a substantial paradox.

The underlying causes of these problems are varied. The global financial and economic crisis has precipitated a labor emergency in Turkey, with the recurrent financial crises exerting a deleterious effect on economic growth and stability, resulting in elevated levels of unemployment. Moreover, inadequate employment policies, restrictions on youth job creation, and strict regulations that encourage informal employment are significant structural problems. The correlation between inadequate levels of education and the incapacity of the education system to align with labor market requirements is a contributing factor to the evident skill deficits among the youth population. Finally, demographic pressures, such as the growth of the working-age population outpacing economic growth, and inadequate investment in human capital, are also contributing factors to youth unemployment.

This study will focus on young people aged 15–25, who are the most vulnerable segment of the labor market in terms of both wages and working conditions. This fragility exacerbates the difficulties encountered in the labor market and has long-term economic consequences. These periods, when young people first enter the labor market, are very important for accumulating human capital and shaping future career paths.

The primary purpose of this thesis is to determine the basic characteristics of the youth labor market in Turkey and to examine in depth the determinants of wages and gender differences in pay. The study analyses how wages are affected by various worker and firm characteristics using multidimensional fixed effects models. The primary research questions to be addressed are concerned with ascertaining the impact of labor turnover and gender on the remuneration of young workers.

Labor turnover refers to the job-change behavior of young workers. There is no consensus in the literature regarding the relationship between labor turnover and wages. While some studies suggest that frequent job changers receive lower wages, others indicate the opposite.

Few studies investigate the effect of labor turnover on wages, especially about the

position of young people in the Turkish labor market. For this reason, this thesis simultaneously examines the effect of turnover on wages alongside all other factors expected to affect wages.

The dataset used in this thesis was obtained from the Entrepreneur Information System (EIS) of the Republic of Turkey's Ministry of Industry and Technology. The EIS is a micro dataset created using data collected from institutions such as the Social Security Institution, the Revenue Administration, and the Ministry of Trade, which facilitate employee-employer matching. The study examines workers who began working between the ages of 15 and 25 between 2013 and 2022. Therefore, the analysis also includes the early labor market phenomenon when examining the young labor market.

The study established three fixed-effect estimation models. The first model is the basic wage model, which examines basic variables such as age and gender. The second model builds on the first by incorporating experience and the number of days worked as additional variables. The third model incorporates firm-level variables, such as the proportion of female employees, firm age, number of employees, and technological sophistication, to enhance the model's explanatory power. The multi-layered nature of the analysis framework enables both individual effects and other wage determinants to be examined.

At a time when the youth labor market is the subject of considerable discussion, this study's primary contribution is its empirical approach to the labor market challenges facing young people in Turkey, including unemployment, informality, and insecurity. Additionally, this study aims to address the lack of research on the job-changing behavior of young people and its impact on wages.

Gender variation has also been a key topic of discussion in the study. Frequent discussion topics have included wage differences between male and female workers, their labor turnover decisions, and how firm characteristics affect wages differently for men and women. Thus, it has been demonstrated that the gender pay gap is not a secondary issue but rather likely based on structural reasons.

The thesis is organized as follows: After this introduction, Chapter 2 presents a literature review. Chapter 3 contains a methodology section detailing the fixed effects models employed in the study and their application to wage models. Chapter 4 covers

the models created, the data content, and descriptive statistics. Chapter 5 contains an estimation results section presenting the findings obtained from the models. Chapter 6 presents the main findings and conclusions.



CHAPTER 2

LITERATURE REVIEW

The factors influencing wages among young individuals entering the labor force have been a matter of debate. Examining characteristics at both the firm and individual levels is necessary. Because structural injustices and labor market fragmentation disproportionately impact young female workers, it is imperative to take into account how these interactions differ between demographic groups, particularly between genders. This literature review synthesizes theoretical perspectives, empirical findings, and methodological approaches to thoroughly examine how labor turnover, human capital accumulation, demographic factors, and market structures influence wage outcomes among young workers—with a focus on gendered differences in the Turkish labor market.

Labor turnover has been extensively studied in various disciplines, including economics. Several studies have also investigated the relationship between wages and labor turnover. This literature review synthesizes theoretical perspectives, empirical findings, and methodological approaches to thoroughly examine how labor turnover, human capital accumulation, demographic factors, and market structures influence wage outcomes among young workers—with a focus on gendered differences in the Turkish labor market. In this context, the conceptual and empirical foundations of labor turnover will be examined, the direction and dynamics of the relationship between wages and labor turnover will be discussed, and the findings of age-specific analyses on the young workforce will be presented.

The relationship between labor turnover and wages is an important area in the economic literature but a complex one when considering the results of studies conducted on this subject. The idea that job changers may earn lower wages than those who remain in the same workplace is generally accepted (Munasinghe & Sigman, 2004). Studies using the National Longitudinal Surveys of Youth (NLSY) data have

found a relationship between high turnover and low wages (Munasinghe & Sigman, 2004). It has also been emphasized that this inverse relationship is seen more among experienced workers. In the study of Munasinghe and Sigman (2004), this relationship was repeated by controlling for individual fixed effects and maintained its statistical significance.

Studies in the literature highlight the positive effects of labor turnover. Xu et al. (2024) stated that labor market mobility encourages knowledge dissemination and resource integration and can thus increase firm innovation. Increased productivity through increased innovation has the potential to lead to higher wages. The impact of labor turnover on wages is also highly related to job tenure and human capital accumulation. It has often been observed that workers who work longer in a workplace receive higher wage increases as their job tenure increases (Bartel & Borjas, 1981; Mincer & Higuchi, 1988). At the same time, any factor that facilitates human capital accumulation at the firm level, such as job-related training, contributes to wage increases (Bartel & Borjas, 1981; Mincer & Higuchi, 1988).

There are different views in the literature on the frequency of labor turnover and its effects on wages. The amount of training appropriate to the job in question also determines how often a person will change jobs (Antel, 1985). In firms where the labor turnover rate is low, higher job tenures provide workers with the opportunity to receive more training (Bartel & Borjas, 1981; Mincer & Higuchi, 1988). In this way, the wages of these workers increase more over time. These two studies found an empirical positive relationship between job tenure and the increase in workers' wages.

High labor turnover rates can also be a cost source for firms. Increased recruitment and training costs can reduce a firm's profitability (Garino & Martin, 2007; Brown et al., 2009). Garino and Martin (2007) state that managers' perceptions of labor turnover can be altered. These perceptions are organized into categories such as "extremely high," "very low," and "appropriate." These perceptions were used to make an inference about how labor turnover affects profits. Most managers stated that their perception of labor turnover was "extremely high," which suggests that the relationship between turnover and profits appears strong. Brown et al. (2009) stated that firms with high labor turnover rates may have lower financial performance. Garino and Martin (2007) and Brown et al. (2009) have shown that firms with high turnover

rates may experience declines in production and earnings, which can negatively affect wages.

The structure of the labor market is an important determinant of both labor turnover and the relationship between labor turnover and wages. Monopoly power in the labor market can reduce labor turnover, especially in low-skilled sectors (Kali & Liu, 2024; Barrymore & Sampson, 2023). However, there is no consensus on the direction of the effect of this monopsony power on wages. A study conducted in the USA found that increasing the monopsony power of employers in low-skilled sectors reduces labor turnover but does not affect wages (Kali & Liu, 2014). However, other research suggests that increased employer monopsony power can also lead to lower wages, which Kali and Liu (2014) attribute to changes in turnover rates.

It is also a matter of debate that firms exploiting the scarcity of job options for workers in concentrated markets can suppress wages (Kali & Liu, 2024; Barrymore & Sampson, 2023). Nevertheless, wages can also be reduced to a certain level. It is also empirically observed that low wages, below or close to the living wage, can lead to significantly higher labor turnover rates (Barrymore & Sampson, 2023).

Another topic of discussion is that increased mobility in the labor market increases the innovative capacity of the firm and encourages knowledge spillover (Xu et al., 2024). When knowledge spillovers from foreign capital and domestic capital firms in China are compared, it is stated that knowledge spillovers occur through labor turnover (Huang & Zhang, 2017). At the same time, it has been found that when the wage gap between domestic and foreign firms is sufficiently high, the presence of more skilled workers leads to an increase in productivity and, consequently, higher wages. According to Holm et al. (2020), knowledge and technology transfer is facilitated by substantial workforce turnover in multinational corporations with significant R&D operations.

Demographic characteristics, such as age and gender, as well as worker qualifications and occupations, can also influence the effect of labor turnover on wages. The impact of characteristics such as gender, age, and education level on the labor market and their effect on wages has been the subject of numerous studies (Barth & Dale-Olsen, 2009; Antel, 1985; D'Angelis, 2020). The impact of other factors on turnover and their effect

on wages is a matter of considerable debate. Zimmermann (1998) states that occupational changes in Germany may be more effective than changes at the workplace level. It is stated that job status has a significant impact on wage determination. The direction of the link between labor turnover and wages is also influenced by the worker's degree of qualification (Barth & Dale-Olsen, 2009; Kali & Liu, 2024; Acquah & Hushak, 1978).

Specific cases suggest that regional or sectoral differences influence the relationship between labor turnover and wages. For example, labor turnover in Wal-Mart locations could lead to lower wages (Munasinghe & Sigman, 2004). However, this could also be due to the firm's low wage structure. Therefore, regional and sectoral differences, as well as market structure, should be taken into consideration. According to Tedasse (2022), the high labor turnover in the Ethiopian textile sector is highly correlated with factors such as work environment satisfaction, job satisfaction, and wage satisfaction.

The effects of labor turnover on the wages of young workers have been studied using different methods (Flinn, 1986; Antel, 1985). Flinn (1986) employed the worker-firm matching model to investigate the labor turnover of young men, examining the effects of factors such as work experience on the decision to change jobs and understanding the economic consequences of labor turnover. Seniority has a significant impact on the youth unemployment rate, according to Leighton and Mincer (1979), who also noted that the effects of other characteristics, such as education, are less pronounced.

In the literature, it has been demonstrated that various approaches, such as the Costly Employment Contract Renegotiation Model, can determine the direction of the relationship between labor turnover and wages differently (Antel, 1985). Arnott and Stiglitz (1985) stated that labor turnover can also be explained by issues such as risk and moral hazard; moreover, employment contracts and market efficiency can also be affected by it. Additionally, studies are investigating the causes and consequences of labor turnover. For example, Rajapakshe (2018) focused on the consequences of labor turnover, including job satisfaction, stress, and absenteeism, in his study.

Various econometric and statistical methods have been used in studies on labor turnover. Martin (2003) used a binary outcome approach to model turnover. Panel data analysis and fixed-effects models were employed to incorporate individual and firm-

level fixed effects into the analysis (Munasinghe & Sigman, 2004; Huang & Zhang, 2017). With these models, unobservable and time-unchanging characteristics can also be included in the study.

In some studies, the instrumental variables (IV) approach was used to eliminate endogeneity problems that may arise during the study (Heyman, 2008; Barrymore & Sampson, 2023). Kali and Liu (2024) instrumented this concentration to measure employer concentration. Barrymore and Sampson (2023) employed an instrumental variable (IV) approach to examine monopsony power and endogeneity. Heyman (2008) instrumented the lagged values of the wage distribution. Heyman (2008) also used Wu-Hausman tests to test these endogeneities. Furthermore, various theoretical models were also used to examine the mechanisms underlying labor turnover. These include approaches such as job search models, worker-firm matching models, efficiency wage models, and sorting models (Munasinghe & Sigman, 2004; Brown, Garino, & Martin, 2009; Flinn, 1986; Viscusi, 1979).

Viscusi (1979) examined successful and unsuccessful job matches using a job search model. Productivity wage models suggest that firms consider the impact of turnover on productivity when calculating their costs (Brown, Garino, & Martin, 2009; Maloney, 1998). Rajapakshe (2018) employed the structural equation modeling (SEM) technique to test multiple hypotheses aimed at determining the relationship between labor turnover and wages. In a study conducted in Turkey, descriptive analysis and statistical modeling were used together to reveal trends in labor flows (Polat & Ulus, 2024).

Tadesse (2022) used probit econometric regression to analyze labor turnover in the Ethiopian textile sector. Acquah and Hushak (1978) analyzed labor turnover using microdata and statistical hypothesis testing in their study of the manufacturing industry in Ohio. Gonzaga (2003) employed the difference-in-differences approach to examine the effect of labor legislation on turnover. Xu et al. (2024) used the multidimensional fixed effects model in their study on China. In another study on China, dynamic panel threshold estimations and system GMM were used to examine the relationship between foreign direct investment and turnover (Huang & Zhang, 2017). The various methodologies employed enable the examination of the changing effects of labor turnover at the individual, firm, and market levels.

As with methodological differences, the structure and content of the data used in the literature also vary. Variables such as individual characteristics, employment history, and wages are used to understand employees' turnover decisions, which are generally individual or household-level data. In studies conducted in the United States, the National Longitudinal Surveys of Youth (NLSY) have been generally used (Royalty, 1996; Flinn, 1986; Antel, 1985). Flinn (1986) and Antel (1985) used the NLSY to understand young men's turnover decisions and analyze wage changes. D'Angelis (2020) included the NLSY97 in his analysis to examine the experiences of young and highly educated workers.

In the study conducted on this subject in Turkey, household labor force surveys covering individuals between the ages of 20-59 between the years 2005-2019 were used (Polat & Ulus, 2024). Gonzaga (2003) used monthly individual data in Pesquisa Mensal de Emprego (PME) in his study on the Brazilian scale, and Xu et al. (2024) used the China Migrants Dynamic Survey (CMDS) in his study on China, covering the years 2011-2013.

Firm-level data have also been widely used in these studies. In studies conducted in the United Kingdom, the Workplace Employee Relations Survey (WERS) and the Employer's Manpower and Skills Practices Survey (EMSPS) were used (Martin, 2003; Brown, Garino, & Martin, 2009). WERS data from 1990 (Martin, 2003) and 2004 (Brown, Garino, & Martin, 2009) were utilized, providing important insights into the number of employees and turnover rates. Rajapakshe (2018) used primary survey data in her research on the garment sector in Sri Lanka. Acquah and Hushak (1978), who examined labor turnover in the manufacturing industry in Ohio, used microdata from 1974. Heyman (2008) used panel data covering the period 1992-1999 in his study on the subject in Sweden. To determine the relationship between FDI and turnover in China, firm-level panel data covering the years 2004-2007 were included in the analysis (Huang & Zhang, 2017).

Matched employer-employee data, where firms and workers can be observed simultaneously, has also been frequently used in studies. In a study conducted in Norway, the Current System of Social Data (CSSD) was used to analyze the workforce between 1989 and 1997 (Barth & Dale-Olsen, 2009). Holm et al. (2020) utilized the IDA database, which covers all private sector employees in Denmark between 2012

and 2014. French Social Security Records (DADS) in France were included in the studies as an additional source, enabling the simultaneous observation of paid employees and firms (Bassanini, Batut, & Caroli, 2022). On the other hand, data that provide insights into market structure, such as the Herfindahl-Hirschman Index (HHI), have also been included in studies aimed at measuring employer concentration (Barrymore & Sampson, 2023; Bassanini, Batut, & Caroli, 2022).

To determine the relationship between labor turnover and low wages, it is necessary to calculate the cost of living in a particular region. For this reason, living wage data has also been used in some studies (Barrymore & Sampson, 2023). Living wage data was obtained from Revelio Labs and covers wage and turnover data for firms above a specific size in the United States. Jacoby (1983) used Bureau of Labor Statistics (BLS) data while studying historical labor mobility. The direction of this relationship has been explained by several factors, including demographics (Barth & Dale-Olsen, 2009; Barth & Dale-Olsen, 2009; D'Angelis, 2020; D'Angelis, 2020), worker experience (Munasinghe & Sigman, 2004), wage policy and market power of the firm (Kali & Liu, 2024; Barrymore & Sampson, 2023; Barrymore & Sampson, 2023; Barrymore & Sampson, 2023), human capital investments (Bartel & Borjas, 1981; Mincer & Higuchi, 1988; Antel, 1985), job tenure (Bartel & Borjas, 1981; Mincer & Higuchi, 1988), and general market conditions.

When examining the studies in the literature, using data that provides employee-employer matching, which can be observed on a person-by-person basis, and provides detailed information about the worker's characteristics is important in understanding turnover and determining the relationship between this and wages. However, there are not many studies that cover the Turkish instance on this topic; thus, they cannot give a complete picture of the Turkish labor market. The paucity of research on the young labor market further supports this. Investigating the connection between labor turnover and earnings among Turkey's youth is crucial.

Theoretically, turnover-wage dynamics can also be explained by broader economic models addressing information asymmetry and uncertainty in labor markets. Job search theory posits that turnover occurs as workers seek better matches, improved wages, or working conditions, where the process itself involves a trade-off between immediate costs and potential long-term benefits (Viscusi, 1979). Arnott and Stiglitz

(1985) argue that moral hazard and risk-sharing between employers and employees can be used to analyze turnover. They suggest that contracts and market efficiency have a significant impact on decisions regarding mobility. Efficiency wage theories also suggest that companies may intentionally set wages higher than the market to reduce turnover and increase productivity, indicating that wage-setting and turnover management have a strategic component (Maloney, 1998; Brown, Garino, & Martin, 2009).

Particularly, empirical research on the young labor market reveals distinct characteristics. Young workers, due to their limited job experience and fewer accumulated firm-specific skills, experience pronounced wage penalties from frequent turnover (Flinn, 1986; Antel, 1985). On the other hand, industries with high levels of innovation and skill offer instances of how greater labor mobility among young workers can raise wages through the promotion of human capital accumulation and optimal matching. Sector-specific analyses, such as Munasinghe and Sigman's (2004) study on low-wage retail environments like Wal-Mart, consistently indicate that high turnover tends to reinforce lower wage structures due to limited firm-specific skill accumulation and training opportunities. By highlighting the significance of local market conditions, job satisfaction, and wage levels as key factors influencing turnover behavior, regional analyses—such as Tadesse's (2022) study of the Ethiopian textile industry—also underscore the impact of sectoral and regional contexts on wage outcomes.

Econometric methodologies used in these analyses vary significantly to account for potential biases and complexities inherent in labor market data. Standard analytical techniques include difference-in-differences (DiD) methods for assessing the causal effects of labor market policies (Gonzaga, 2003), instrumental variable (IV) approaches to address endogeneity issues resulting from omitted variables or reverse causality (Heyman, 2008; Barrymore & Sampson, 2023), and fixed-effects models to account for unobserved heterogeneity (Munasinghe & Sigman, 2004; Huang & Zhang, 2017). By addressing dynamic and nonlinear interactions within the data, advanced techniques, including structural equation modeling (SEM), dynamic panel threshold modeling, and system GMM, offer even more sophistication (Huang & Zhang, 2017; Rajapakshe, 2018).

The Household Labor Force Survey (HLFS), which provides data for people aged 20 to 59 from 2005 to 2019, is the primary source of empirical research on the Turkish labor market (Polat & Ulus, 2024). However, a significant shortcoming of this data is the absence of matched employer-employee details.

When considered collectively, the literature makes it abundantly evident that there is no linear or consistent relationship between wage dynamics and labor turnover. Instead, it is influenced by a confluence of personal traits, institutional frameworks, and more general market forces. Although wage penalties are frequently the outcome of turnover, especially for young and inexperienced workers, firm-level procedures, training opportunities, and labor market segmentation can also mitigate its effects. Furthermore, gender is a significant factor interacting in complex ways with wage outcomes and turnover patterns. Despite a multitude of empirical studies conducted in other countries using a range of datasets and approaches, there remains a comparatively small body of research on Turkey, especially regarding young people entering the labor market. For this reason, there is a need to examine the situation of young workers, their wages, and gender gaps in the Turkish labor market with comprehensive data and methodologies.

CHAPTER 3

METHODOLOGY

3.1. Theoretical Background on Fixed Effect Estimation Models

We use individual level quarterly panel data for all workers formally employed in Turkey in the period 2012-2023. Panel data provide powerful tools in econometric analyses because they incorporate both time-series and cross-sectional dimensions. Panel data, which provide the opportunity to see the characteristics and behaviors of individuals that change over time, also allow for the control of unchanging and unobservable changes over time (Hsiao, 2014; Wooldridge, 2010).

Fixed effects models are most commonly used to model this type of data. Some of the characteristics that can be controlled with this model, which remain constant over time and cannot be measured, are variables such as ability, family history, and risk perception (Wooldridge, 2010).

A standard fixed effects model can be expressed as follows:

$$y_{it} = X_{it} \beta + \alpha_i + \lambda_t + \epsilon_{it}$$

where y_{it} represents the dependent variable of person i at time t , X_{it} is the vector of explanatory variables, α_i represents the fixed effects specific to the person, λ_t represents the time fixed effects, and ϵ_{it} represents the error term.

In this model, it is assumed that the fixed effects specific to the person are of a structure that remains constant over time but varies among individuals. This prevents biases arising from unobservable heterogeneities that remain constant over time. The data used in this thesis only includes people who can be observed in the workforce. In other words, people who are not working are not included in this data. This situation may create a sample selection bias. The variable turnover used in this study is an

endogenous variable. The models do not reveal the causes of the turnover phenomenon, which can be attributed to multiple reasons.

3.2. Multidimensional Fixed Effects Model

The fixed effect model used in this study is an extended version of the classical approach. In addition to the fixed effects specific to individuals, differences in time, sector, and province where the firms are located were also included as fixed effects in the model.

The general form of the model created here is:

$$\log(dw_{it}) = X_{it}\beta + \alpha_i + \lambda_t + \gamma_j + \delta_r + \epsilon_{it}$$

where α_i represents worker fixed effects, λ_t quarter time fixed effects, γ_j represents sector fixed effects (NACE4 codes) at the workplace and firm level, and δ_r represents geographic fixed effects at the workplace and firm level. In addition, not only are differences between workers controlled, but also unobservable changes between sectors and regions.

3.3. Fixed Effects Models in Estimating the Determinants of Wages

Wages have always been a topic of debate in labor economics studies. Fixed-effects estimation models have also been used to determine the effects of different variables on the wage determination process.

Fixed-effects models have also been frequently used in studies of gender wage variation (England et al., 1988; Choudhury, 1993). England et al. (1988) demonstrated that wage variation remains a valid phenomenon and argued that traditional OLS models overestimate this difference. According to Choudhury (1993), when fixed effects are included in the model, the wage difference resulting from gender difference appears to be significantly less than in standard OLS models. When fixed effects are controlled, the remaining gender effect is due to the difference in returns to labor market experience. In other words, even if men have the same experience as women in the labor market, the effect of experience on men's wages is greater than that of women.

The effect of housework on the wage determination process is also a subject of debate. It has been found that the time that married women spend on housework creates a significant decreasing trend in wages (Hersch & Stratton, 1997). Conversely, the effect of housework on men's wages is indeterminate or negligible. In other words, domestic labor can explain some of the wage variation between genders. Different model specifications, primarily fixed effect modeling, have been used in this analysis.

Apart from the discussions on gender wage variation, there are also studies examining the effect of marriage on men (Rodgers III et al., 2010). In this study examining the marital wages of married men, it was found that the selection effects were in a critical position, especially for white men using a fixed effects model. When the fixed effects were included in the model, the marital wage disappeared for white men. On the contrary, this phenomenon persisted for African American men. At this point, the importance of the selection effect creating a marital wage differential for white men is revealed.

Felbermayr et al. (2011) examined the effects of globalization on wages by creating a model that includes heterogeneous firms and search friction. This study, which found that trade liberalization reduced unemployment and thus increased real wages, employed the fixed effects estimation method while incorporating firm heterogeneity into the analysis.

Fixed effect modeling has also been used in studies on matching dynamics. Torres et al. (2013) concluded that high-wage workers are primarily employed in firms with high wage levels, indicating a positive assortative matching. However, Torres et al. (2018) stated that this positive matching tends to decrease over time. For this reason, the distinction between firms' wage levels and firm productivity was also included in the analysis.

In studies that employ firm and matching effects, it has been found that the characteristics of the firm itself are more important than employee-firm matching effects, assuming that the primary determinant of wages is firm-fixed effects (Mittag, 2015; Mittag, 2019). However, the absence of matching effects in the model can lead to bias in the model's results (Mittag, 2015). According to Mittag (2015), matching effects not included in the model cause bias when determining the effect of experience

and gender on wages. For this reason, firms are in a crucial position regarding wages (Mittag, 2019).

Fixed-effects models have been widely used in investigating the reasons for wage differences. For example, studies that found worker heterogeneity to be the variable most affecting wage differences employed a three-way high-dimensional fixed effects model (Torres et al., 2013; Torres et al., 2018). Both worker, firm, and job title effects were included in this analysis. The effect of worker heterogeneity was found to be approximately 30%-40%, while firm effects were found to be between 20%-30%. Both observable and unobservable effects were included in the analysis for both worker and firm effects.

Another determinant of wages is discussed as unionization. Addison et al. (2015) state that the bargaining power of the union increases wages as it determines the wage level within the firm. This study employs fixed-effects models and reveals that the difference stems from worker quality and job match effects.

Studies investigating the impact of job change on wage dynamics use fixed effects models (Mittag, 2015; Mittag, 2019). At this point, the "job ladder hypothesis" was put forward (Mittag, 2019). In this study, employees who leave one job and enter another are generally associated with higher wages. Starting a job for the first time or re-entering the workforce after a period of unemployment are considered exceptional cases.

Sørensen et al. (2011) examine wage increase differences using AKM (Abowd-Kramarz-Margolis) with fixed effects. This study revealed that wage increase differences are less affected by firm and worker fixed effects than wage differences. At the same time, it was found that around 76%-85% of wage increase differences are unexplained changes. While worker fixed effects can explain 7%-12% of wage increase differences, firm fixed effects can explain 4%-10%. Shahiri et al. (2023) examined the effect of job rotation on wages. The authors include variables such as experience and education in the fixed effect estimation model and revealed that experience is more important than education in terms of wage increase.

Ramos-Herrera (2023) used fixed-effect panel threshold models while examining the relationship between minimum wage and unemployment. It was determined that there

was a greater decrease in the unemployment rate when the minimum wage exceeded a certain threshold. This threshold effect was employed in the study to examine social segments with different characteristics, and its effects were strengthened through fixed effect estimation methods.

As can be seen, fixed effect estimation models are one of the methods frequently used when trying to identify different wage determinants. Primarily, when panel data is used, unobservable factors are controlled, and heterogeneity at various levels, such as individual, job title, region, sector, and firm, can be distinguished. In this way, it has the potential to provide valuable insights into the dynamics of the labor market.

3.4. Advantages and Limitations of Fixed Effects Models

Fixed effects models cannot directly estimate the effect of variables that remain constant over time. On the other hand, in models where excessive fixed effect control is used, a decrease in variance is among the expected results. At the same time, since it uses the change as a tool, it can limit variation. For this reason, this method is a tool that can sometimes have limitations.

This method also offers several advantages. With this method, unchanging and unobservable heterogeneities over time are controlled. On the other hand, it allows the separation of structural effects at different levels and multidimensional fixed effects. Examining this wide panel data in this way provides high predictive power and leads to obtaining robust standard errors. It enables the establishment of cause-effect relationships with the opportunities provided by variability.

CHAPTER 4

MODELS, DATA AND DESCRIPTIVE STATISTICS

4.1. Data

4.1.1. Determination of the Age Range

The study is about examining the variables that may affect the wage levels in the youth labor market in Turkey. For this reason, there is a need for an age range that can be defined as young. In studies, an age range is usually determined in line with the definition of young by various national or international organizations. However, it is important to know the characteristics of the labor market in Turkey in the year period in question in order to create the age range in question.

For this reason, the situation of young people in the labor force in Turkey was examined by using the Turkish Statistical Institute (TUIK) household labor force survey data. The Household Labor Force Survey is a survey conducted regularly by TUIK in order to reveal the basic dynamics of the labor market in Turkey.

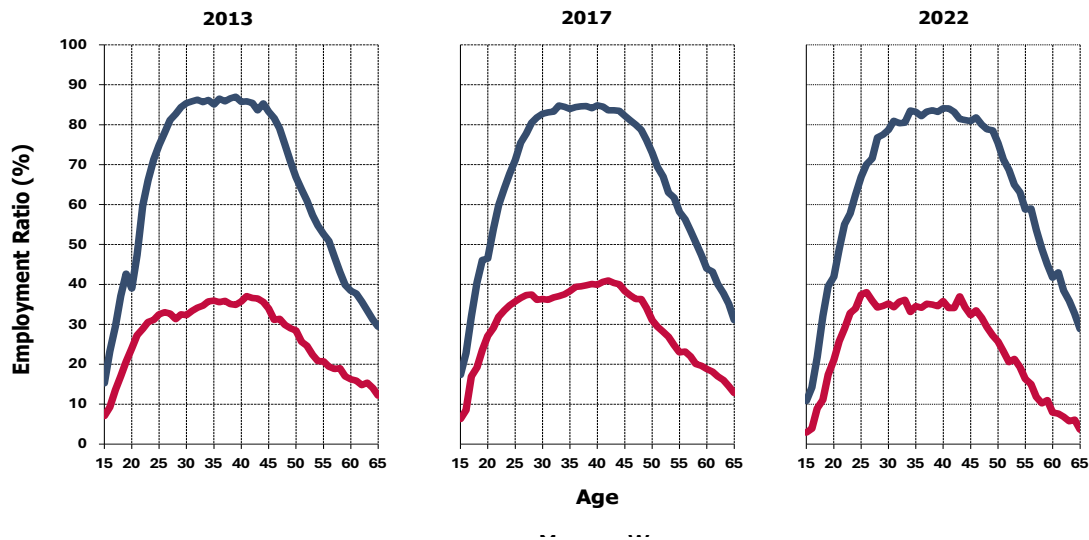


Figure 1. Employment Ratio by Age, Gender in Selected Years

Figure 1 shows the employment ratio by Age, Gender in 2013, 2017 and 2022, respectively. This rate is calculated by dividing the number of employees in each age group by the total number of people in the age group (considering the weights). While the employment rates are quite low especially in the 15-17 age group, the employment rate in the 18-20 age group has started to increase. There is a noticeable increase in the labor force participation rate at the age of 21 and above. However, this figure does not provide sufficient data to determine the lower and upper age limits. For this reason, the calculation of the first derivatives has become necessary.

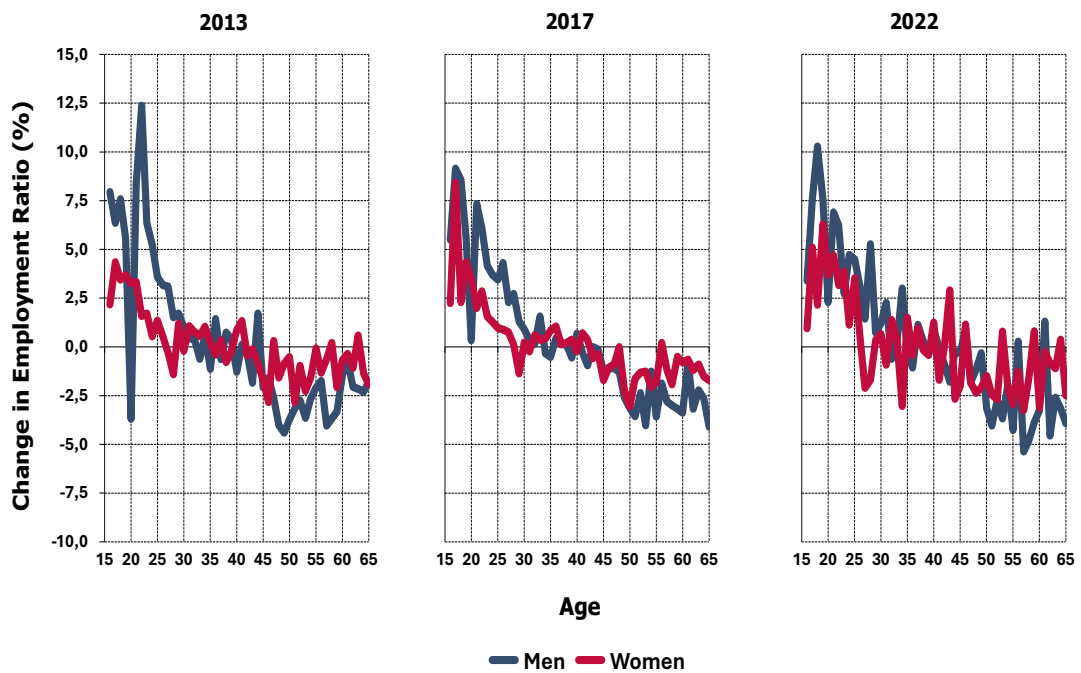


Figure 2. Change in Employment Ratio by Age and Gender

Figure 2 contains the first derivatives of the employment ratio. The course after the age of 25 exhibits a more regular and stable appearance. Conversely, the labor force participation in the 15-25 age range has a more fluctuating course. This situation can be read as an indicator that these ages are in the periods of new entry into the labor force. However, the 15-21 and 21-25 age ranges follow different dynamics within themselves. So, they also require separate examination. Therefore, this range, whose lower and upper limits are 15 and 25 years, provides a more meaningful image for analyzing the early period dynamics when young people are new to the labor force.

The result obtained from the calculations made from the household labor force survey data showed that it is appropriate for the study to cover the age range between 15-25.

4.1.2. Data Characteristics

This study aims to analyze the dynamics of the young labor market based on the data of the Entrepreneur Information System (EIS) of the Ministry of Industry and Technology of the Republic of Turkey. The Ministry has a large database that provides employer-employee matching. The EIS data is a large dataset that includes data from the Ministry of Trade, Social Security Institution, Revenue Administration, Turkish Patent and Trademark Office, and Small and Medium Enterprises Development and Support Administration of the Republic of Turkey.

This database includes data from all registered firms in Turkey, except for the public and financial sectors, and the employees working in these firms. The data provides information such as the ages, genders, wages, number of days worked of workers and sectors of firms and workplaces (4-digit, NACE Rev. 2), provinces, number of employees, and duration of activity on a quarterly basis. With the provided data, variables such as experience, unemployment, number of jobs changed, number of jobs worked, and duration of employment can be calculated.

The main dataset used in this study is the data from the Social Security Institution. This employee-level data covers the years 2006-2022. However, registration numbers of workers before 2012 cannot be accessed. The employee characteristics mentioned above are included in this data. Since the study attempts to identify the characteristics of employees who are employed for the first time, 2013 was determined as the starting year.

The second dataset is the data from the Revenue Administration. This data also includes data at the firm level. The firm characteristics mentioned above are included in this data. This data at the firm level again covers the years 2006-2022.

Although EIS is a very comprehensive dataset, it contains various limitations. People who are not working are not included in this dataset, which may lead to a sample selection bias. Additionally, the turnover variable used in the analysis is endogenous; the models do not identify the underlying causes of turnover, which may stem from various individual or institutional factors. Panel data, which comprises the same individuals throughout time, makes it possible to control for fixed and unobservable individual characteristics. The fixed-effects approach is used to estimate the model,

greatly minimizing the biases that can result from endogeneity and sample selection bias.

It is also important to note that the dataset only covers formal employment. Moreover, interns and apprentices are not included in the sample. This exclusion may limit the generalizability of the findings, particularly regarding young workers who frequently begin their labor market engagement through informal or semi-formal arrangements.

4.2. Models and Hypotheses

The main subject of this study is to determine the effects of labor turnover, demographic characteristics of workers, and characteristics of firms on the wages of employees aged between 15-25 years old in Turkey between 2013-2022. The primary research questions guiding this study are as follows: what is the effect of gender and labor turnover on wages? For this reason, three different models were created. Each model was positioned to explain more than one hypothesis. The objective of estimating the three models in sequence is to ascertain the manner in which the effects of the variables influence each other.

4.2.1. Hypotheses

The study is based on models created to test multiple hypotheses. The following hypotheses have been formulated:

H1: Age has a positive effect on wages. Many studies have found that human capital accumulation increases with age and has a positive impact on wages (Becker, 1964; Mincer, 1974).

H2: Labor turnover has a negative effect on wages.

H3: The effects of age and turnover differ according to gender. It is thought that gender wage differences are caused by structural factors such as the division of labor, discrimination and gender roles (Blau & Kahn, 2000; Goldin, 2014).

H4: Wages increase with experience. It is thought that spending more time in the labor market has a positive effect on wages (Altonji & Williams, 2005).

H5: Wages tend to decrease as the number of days worked increases.

H6: Experience has a greater effect on wages for men than for women. Altonji and Williams (2005) similarly support the idea that the positive contribution of experience to wages differs between genders.

H7: The effect of the number of days worked on wages differs by gender.

H8: Wages are lower in firms with a high proportion of female employees. This is said to be due to gender-based horizontal segregation (England, 1992).

H9: Wages increase with firm size, technological level, and operational age. These variables are considered important determinants of wage differences (Brown & Medoff, 1989; Abowd et al., 1999).

H10: Male workers benefit more from firm characteristics than female workers. This situation has been explained by studies citing the 'glass ceiling' or 'priming' effects (Petersen & Saporta, 2004).

H11: Male workers earn less in high-tech firms than in low-tech ones.

4.2.2. Models

This section will explain the models and basic variables that were established to test the hypotheses outlined in the previous section.

The first model includes only individual level variables such as age, gender and job change dynamics. The general appearance of the model is as follows:

$$\log(dw_{it}) = \alpha + \beta.Age_{it} + \delta.Turnover_{it} + \theta.Age_i.Gender_i + \varphi.Turnover_{it}.Gender_i + \mu_i + \lambda_t + v_r + v_s + \epsilon_{it}$$

where the dependent variable dw_{it} represents the logarithmic daily wage of worker i in period t . α is the fixed term, Age_{it} is the age of workers, $Gender_i$ is the gender of workers, $Turnover_{it}$ is the frequency of workers changing jobs in the last four quarters, μ_i is the worker fixed effect, λ_t is the time fixed effect, v_r is the region fixed effect, v_s is the sector fixed effect, and ϵ_{it} is the error term.

The second model is an extended model that preserves the variables in the previous model and includes the effects of the workers' experience level, and the number of

days worked. The general appearance of the second model is as follows:

$$\begin{aligned}\log(dw_{it}) = & \alpha + \beta.Age_{it} + \delta.Turnover_{it} + \theta.Age_i.Gender_i \\ & + \varphi.Turnover_{it}.Gender_i + \emptyset.Experience_{it} + \phi.\log(Mday_{it}) \\ & + \zeta.Gender_i.Experience_{it} + \eta.Gender_i.\log(Mday_{it}) + \mu_i + \lambda_t \\ & + v_r + v_s + \epsilon_{it}\end{aligned}$$

where the dependent variable dw_{it} represents the logarithmic daily wage of worker i in period t . α is the fixed term, Age_{it} is the age of workers, $Gender_i$ is the gender of workers, $Turnover_{it}$ is the frequency of workers changing jobs in the last four quarters, $Experience_{it}$ is the experience accumulated by worker i up to period t , $\log(Mday_{it})$ is the logarithm of the number of days worked in a month, μ_i is the worker fixed effect, λ_t is the time fixed effect, v_r is the region fixed effect, v_s is the sector fixed effect, and ϵ_{it} is the error term.

The third model includes the characteristics of the workers as well as the firm characteristics such as the ratio of women working in the firms, the duration of the firms' activities, the number of employees in the firms and the level of technology. The general appearance of the model is as follows:

$$\begin{aligned}\log(dw_{it}) = & \alpha + \beta.Age_{it} + \delta.Turnover_{it} + \theta.Age_i.Gender_i \\ & + \varphi.Turnover_{it}.Gender_i + \emptyset.Experience_{it} + \phi.\log(Mday_{it}) \\ & + \zeta.Gender_i.Experience_{it} + \eta.Gender_i.\log(Mday_{it}) \\ & + \rho_1.WomanRatio_{ft} + \rho_2.\log(FirmAge_{ft}) + \rho_3.\log(Worker_e) \\ & + \rho_4.\log(Worker_p) + \rho_5.\log(Technology_{ft}) \\ & + \sigma_1.Gender_i.WomanRatio_{ft} + \sigma_2.Gender_i.\log(FirmAge_{ft}) \\ & + \sigma_3.Gender_i.\log(Worker_e) + \sigma_4.Gender_i.\log(Worker_p) \\ & + \sigma_5.Gender_i.\log(Technology_{ft}) + \mu_i + \lambda_t + v_r + v_s + \epsilon_{it}\end{aligned}$$

where the dependent variable dw_{it} represents the logarithmic daily wage of worker i in period t . α is the fixed term, Age_{it} is the age of workers, $Gender_i$ is the gender of workers, $Turnover_{it}$ is the frequency of workers changing jobs in the last four quarters, $Experience_{it}$ is the experience accumulated by worker i up to period t , $\log(Mday_{it})$ the logarithm of the number of days worked in a month, $WomanRatio_{ft}$ is the percentage of women working in firms, $\log(FirmAge_{ft})$ is the logarithm of the

activity period of firm f at time t , $\log(Worker_e)$ is the logarithm of the number of employees of firms, $\log(Worker_p)$ is the logarithm of the number of employees of workplaces, $\log(Technology_{ft})$ is the logarithm of technology levels of firms, μ_i is the worker fixed effect, λ_t is the time fixed effect, v_r is the region fixed effect, v_s is the sector fixed effect, and ϵ_{it} is the error term.

4.2.3. Descriptive Statistics

The data consists of workers who started working after 2013 and have only worked one job, aged 15–25, between 2013 and 2022. Firstly, it is important to consider the number of observations and workers in the data. The following figures show the total number of observations and workers by age group.

There are 35 million observations between the ages of 15 and 20, and 37 million observations between the ages of 21 and 25. Looking at the 15–25 age group, we see that there are 72 million observations. Age groups are created according to the age at which work commenced. However, as this does not provide a clear answer regarding the structure of the data, it is also necessary to consider the number of workers.

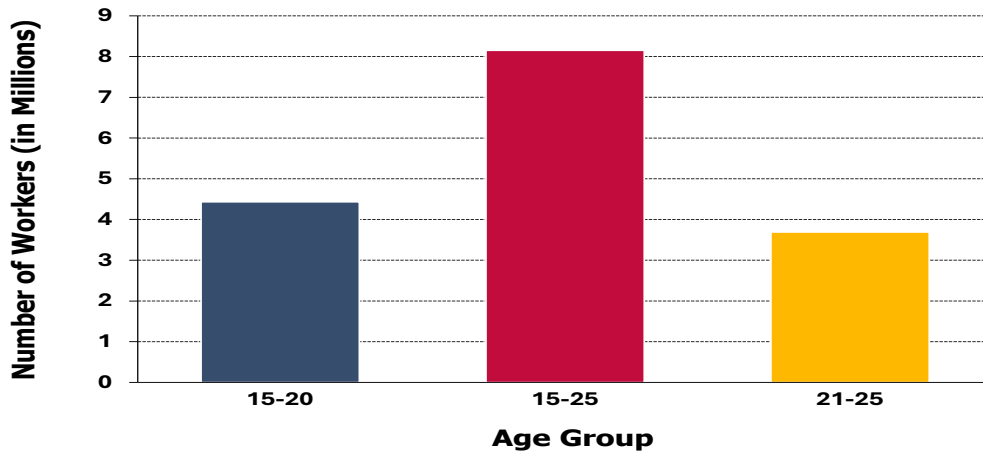


Figure 3. Number of Workers by Age Groups (2013-2022)

Figure 3 shows that there are 4 million workers aged 15–20 and 3 million aged 21–25. Therefore, the total number of workers aged 15-25 is 8 million. Age groups are created according to the age at which people start work.

The gender distribution of observations is also important in terms of the scope of the study. For this reason, gender distributions were created.

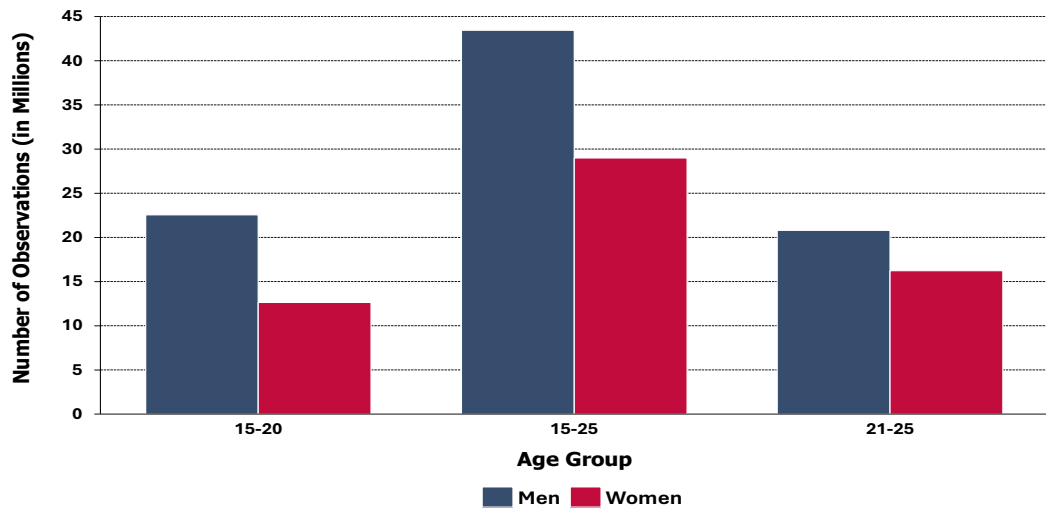


Figure 5. Number of Observations by Age Groups and Gender (2013-2022)

Figure 4 illustrates the gender distribution of observations by age group. According to this figure, there are 43 million men and 28 million women in the 15–25 age group. Additionally, there are 22 million men and 12 million women in the 15–20 age group. Finally, in the 21–25 age group, there are 20 million observations of men and 16 million observations of women.

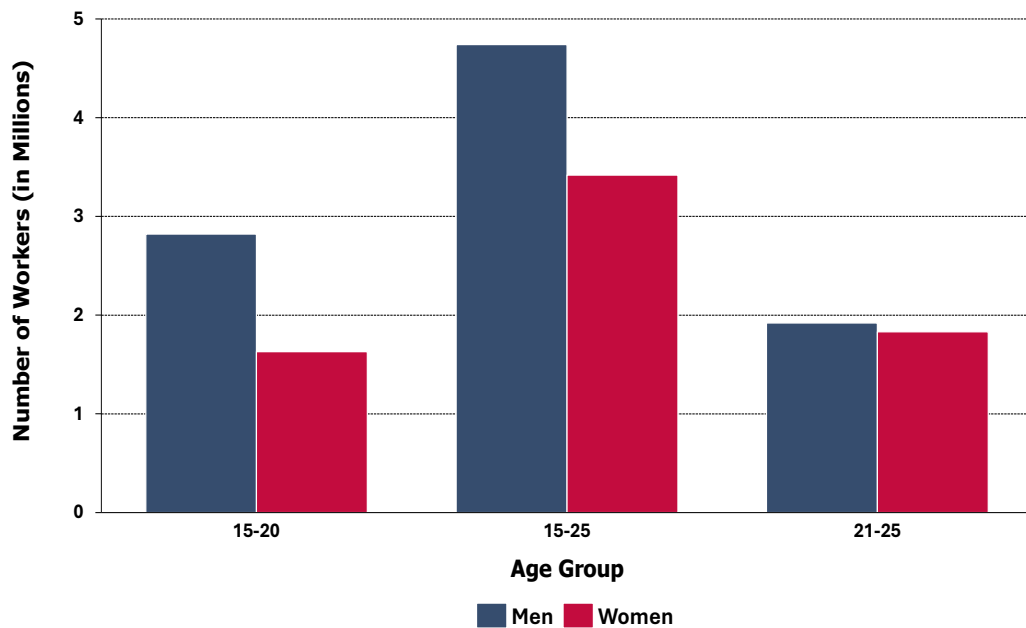


Figure 4. Number of Workers by Age Groups and Gender (2013-2022)

Figure 5 shows the number of workers in each age group and gender category. In all age groups, there are more male employees than female employees. The difference between men and women is greatest in the 15–20 age group. The age group with the least difference is the 15–25 age group. While there are 2 million male employees aged

15–20, there are 1.6 million female employees in the same age group. In the 21-25 age group, there are 1.9 million male employees and 1.8 million female employees.

Overall, the number of male employees aged 15-25 is 4.7 million while the number of female employees in this age group is 3.4 million.

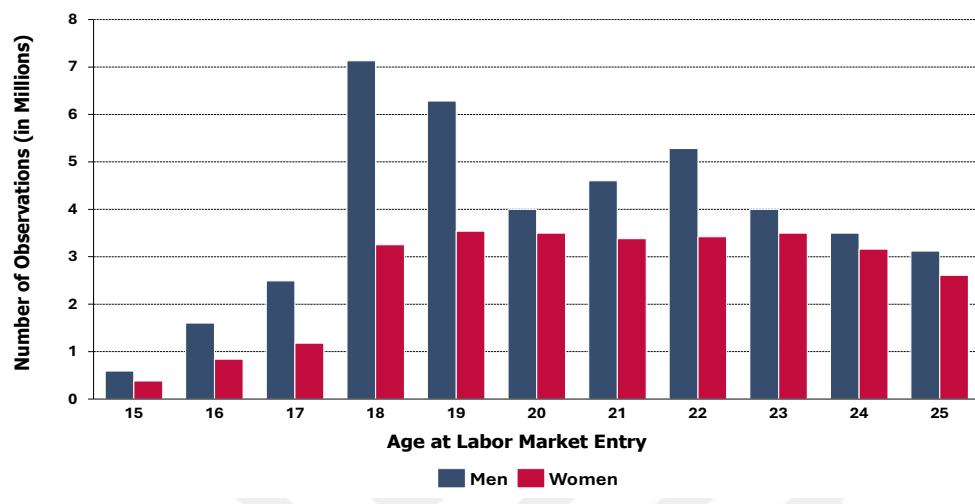


Figure 6. Age Distribution by Observations (2013-2022)

Figure 6 shows the age distribution of the observations. In the 15–25 age range, the largest number of observations is for 24-year-olds, at 7.7 million. Generally, the number of observations increases with age up to the age of 24.

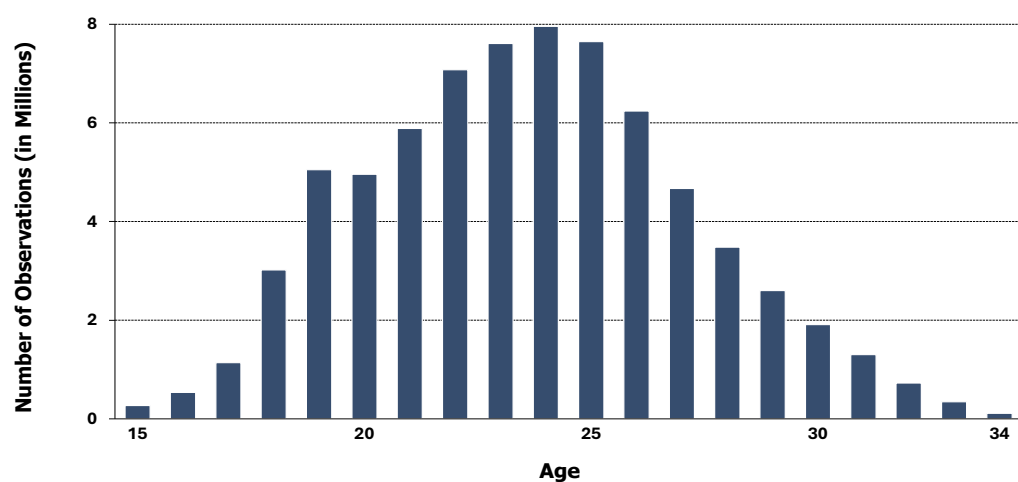


Figure 7. Number of Observations by Age at Labor Market Entry and Gender (2013-2022)

Figure 7 shows the number of observations by age at the start of employment and gender. Accordingly, the number of women increases when the age at which they start

work is between 15 and 19, but it starts to decline after that age. Men tend to start work at the age of 18, while women tend to start work at the age of 19. Generally, after the age of 18, the number of observations decreases for both genders. In the 15–20 age group, work tends to start at 18 for both genders. Conversely, in the 21–25 age group, the age at which people start work is concentrated around 21–22 for men and 21 for women.

Starting work before the age of 18 is less common in both age groups than at other ages. It can be said that the number of observations increases for women up to a certain age. While an increasing number of observations is seen up to the age of 18 in the 15–20 age group, an increasing number of observations is also seen up to the age of 22 in the 21–25 age group. However, while there is a similar tendency up to the age of 18 for men in the 15–20 age group, this tendency is more varied in the 21–25 age group.

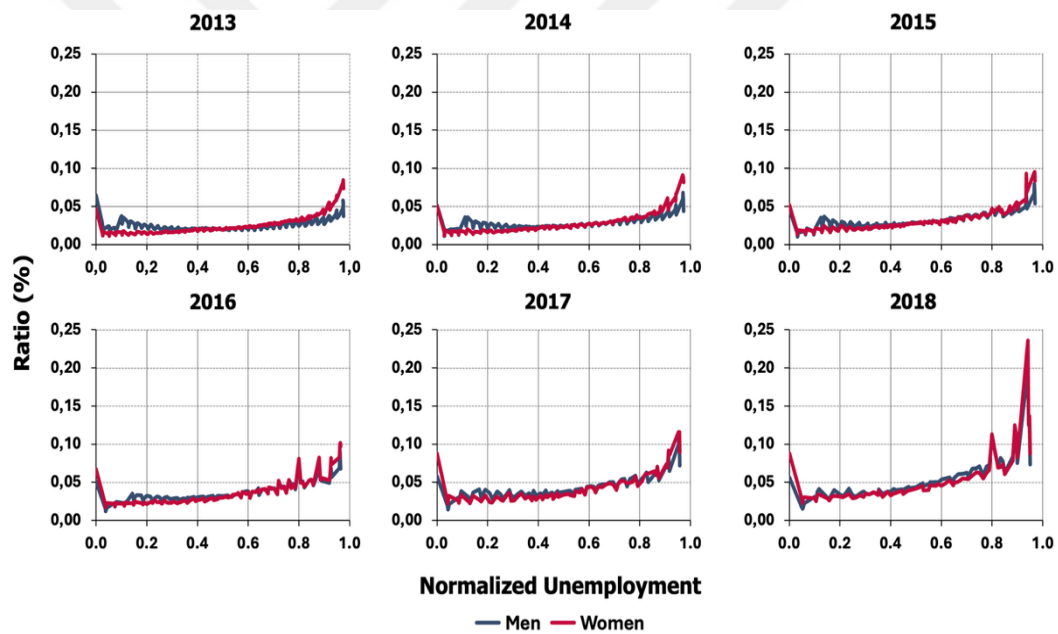


Figure 8. Normalized Unemployment Distribution by Gender (2013-2018)

Figure 8 shows normalized unemployment distribution by gender. Normalized unemployment is calculated by dividing the number of unemployed quarters by the duration in the labor force for each worker. Again, this interval, consisting of a total of 40 quarters, represents the years 2013-2022.

For both men and women, the probability of becoming unemployed increases significantly as the unemployment rate rises. However, women are particularly

affected by this increase at high unemployment levels. This divergence becomes even more pronounced in the years after 2016, demonstrating that women are more vulnerable to shocks in the labor market.

The figure only includes cohorts that entered the labor market between 2013 and 2018. As in the previous figure, this is because the observation period for individuals who entered the labor market after 2018 is not yet long enough to accurately identify trends in normalized unemployment in these groups. In other words, the period after 2018 was excluded from the analysis because the data is limited and not mature enough to fully reflect trends. Therefore, the analysis is based only on reliable, mature cohorts.

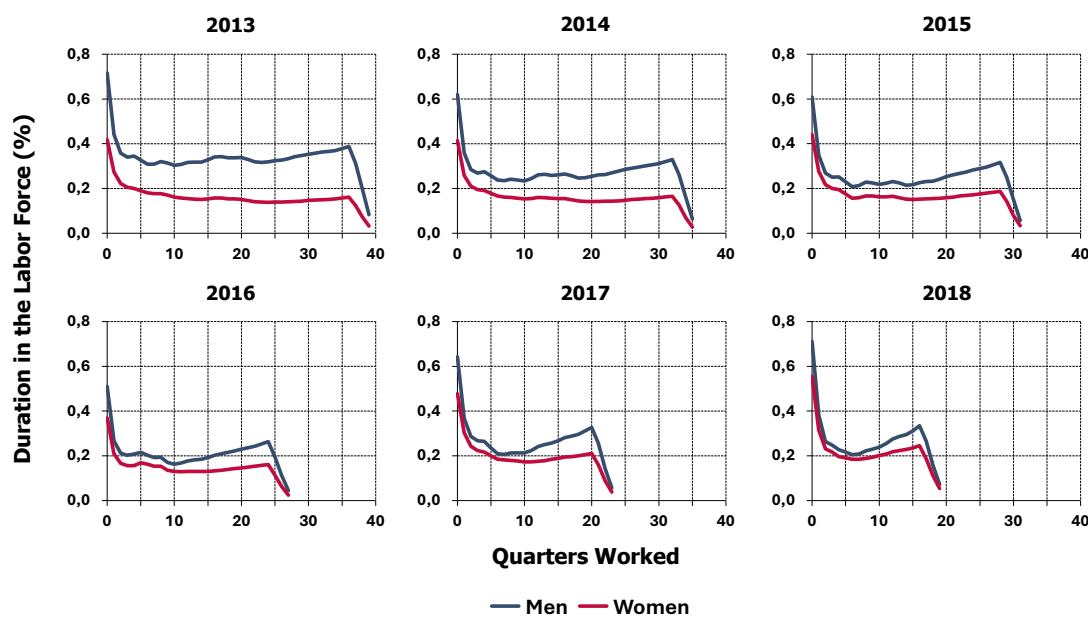


Figure 9. Duration in the Labor Force by Cohort Year and Gender (2013-2018)

Figure 9 shows how long individuals entering the labor market between 2013 and 2018 stayed in it, broken down by gender and year. Consistently across all years, it is observed that men remain in the labor market for longer than women. Labor force participation is particularly high in the first few quarters, but this rate declines in subsequent periods. This suggests that the number of exits increases over time after entry, meaning that young people's retention in employment is limited. Women, on the other hand, are understood to exit the system earlier or to have a weaker attachment to the labor force.

Note that the figure only includes cohorts from the entry years 2013–2018. This is because the number of observations with entries after 2018 is low and these cohorts

have not yet been in the labor force for a sufficiently long time. In other words, individuals entering in 2019 and later have not yet been observed for a sufficient number of quarters, meaning these years are unable to accurately reflect the trend. This methodological choice prevents incomplete and misleading trends. Overall, the graphs reveal significant gender-based inequalities in the length of time that young people remain in the workforce. This implies the need for policies to specifically ensure the continued employment of women.

In addition to general characteristics, the relationship between duration in the labor force according to age and gender should also be examined.

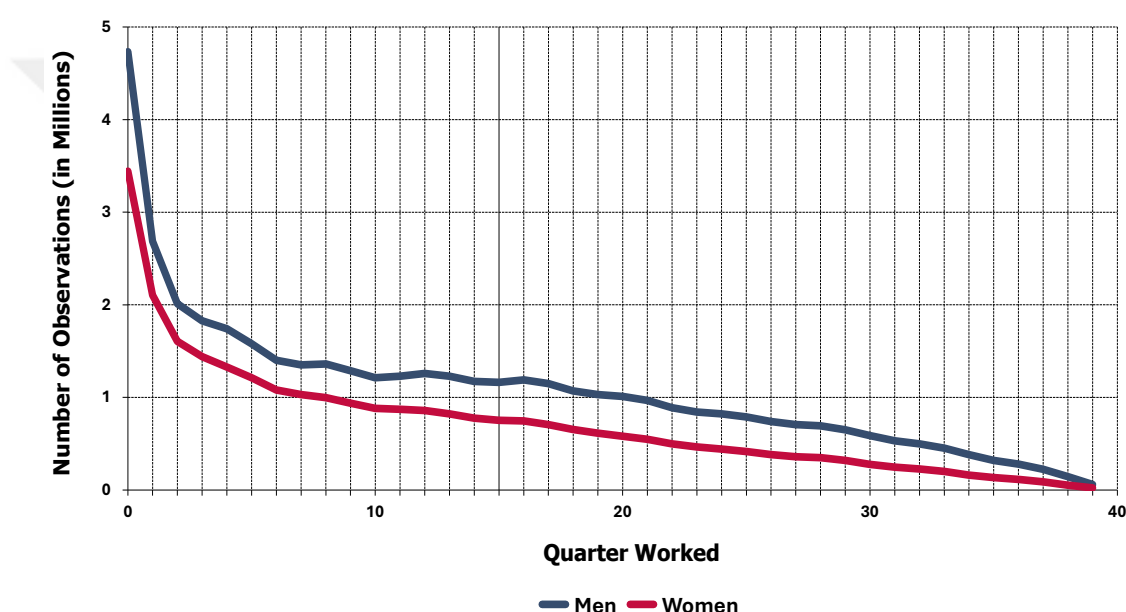


Figure 10. Relationship Between Gender and The Duration in the Labor Force (2013-2022)

Figure 10 shows the distribution of observations according to the length of time individuals spend in the labor market, divided by gender. The horizontal axis shows the number of quarters worked and the vertical axis shows the number of individuals observed in these quarters (in millions). There are quite a lot of observations in the early quartiles, which indicates a high level of participation during the initial period. The vast majority of these individuals only worked for short periods.

As time progresses, i.e. as the number of quarters increases, the number of observations decreases rapidly. Men are over-represented in each quartile, suggesting

that they tend to remain in the labor market for longer. The curve for women is lower, and this difference becomes more pronounced as the quartiles progress. This suggests that women are less strongly attached to the labor force and that leaving the labor force early is more common among them. The graph clearly illustrates the extent to which labor force participation varies by gender.

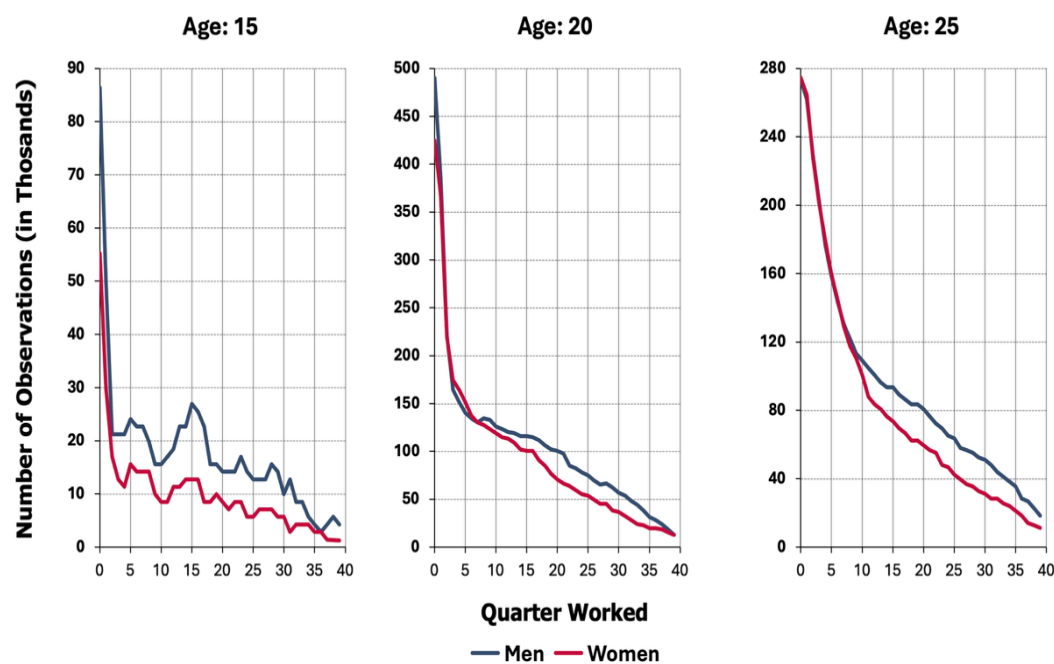


Figure 11. Relationship Between Age at Labor Market Entry, Gender and The Duration in the Labor Force (2013-2022)

Figure 11 illustrates the relationship between age at labor market entry, gender and the duration in the labor force, as shown by the number of observations. The horizontal axis shows the number of quarters worked and the vertical axis shows the number of individuals observed in each quarter (in thousands). Colors represent age of entry (15, 20 or 25 years old), and line types represent gender. The graph shows that individuals entering the labor market at older ages are more prevalent and remain in the market for longer. Notably, groups entering at age 25 have the highest number of observations across all quarters and maintain their labor force ties for longer.

From a gender perspective, women are less represented in the labor market than men in the same age group. This difference is most striking among individuals entering the labor force at age 15: women entering at a younger age quickly drop out of the system. While women entering the labor market at ages 20 and 25 follow a similar trend to men, the number of observations remains lower. These findings suggest that

individuals who enter the labor market at an early age are less likely to remain in it, and that women's labor force participation is more fragile and short-term across all age groups.

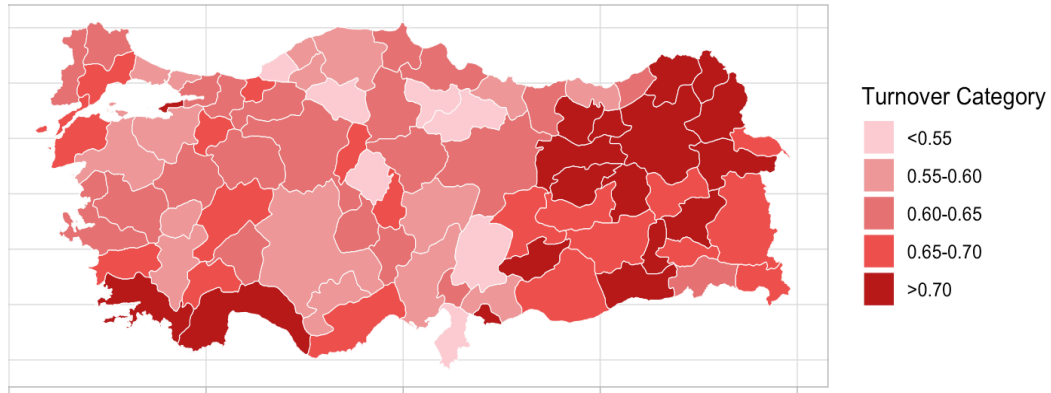


Figure 12. Average Turnover Rates in Turkey (2013-2022)

Figure 12 shows the average turnover rates (in the last four periods) of the age group considered in the study in Turkey between 2013-2022. The map illustrates the geographical distribution of labor mobility and reveals significant regional disparities. Examining the map reveals that turnover rates are very high in some provinces in the Mediterranean and Black Sea regions. Conversely, lower turnover rates are evident in the Aegean and Central Anatolia regions compared to these areas.

The high turnover rate in regions such as Antalya and its surrounding areas can be explained by the density of sectors prone to seasonal employment, such as tourism. A high turnover rate is also expected in regions such as the Black Sea, where rural employment is inconsistent. This level of geographical diversity proves once again that the turnover variable should be used frequently in wage models.

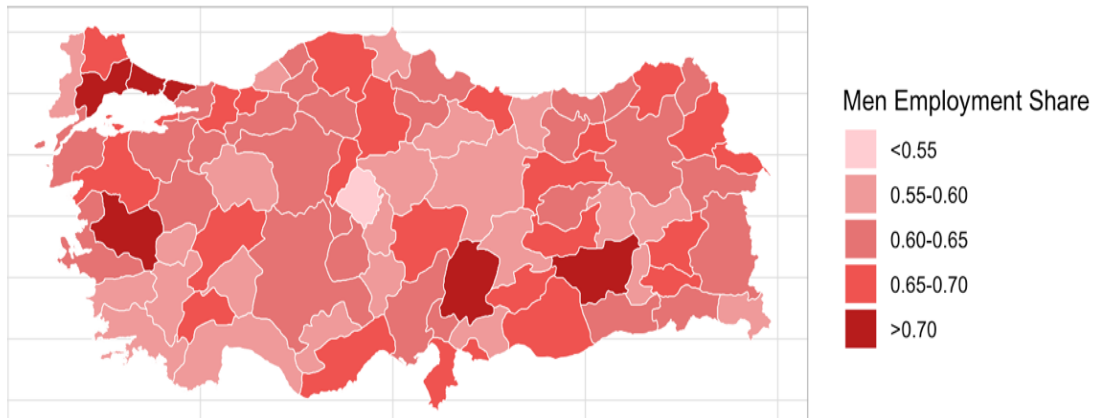


Figure 13. Average Men Employment Share in Turkey (2013-2022)

Figure 13 illustrates the average proportion of men in employment at a provincial level in Turkey between 2013 and 2022. The color scale reflects the average male employment rate in each province; darker tones represent higher rates, while lighter tones represent lower rates. At first glance, it is clear that male employment rates exceed 70% across much of Turkey. The concentration of darker tones in the Central Anatolia, Eastern Black Sea and Southeastern Anatolia regions is striking, indicating significant male employment dominance in these areas.

Conversely, lighter tones are evident in some Western and Southern provinces. These differences demonstrate that structural, sectoral and demographic differences between provinces influence male employment rates. The diversity of industrial and agricultural structures, as well as urban employment opportunities, are among the key factors affecting this distribution. By visualizing regional concentrations of male employment, the map provides an important basis for understanding geographical inequalities in the labor market.

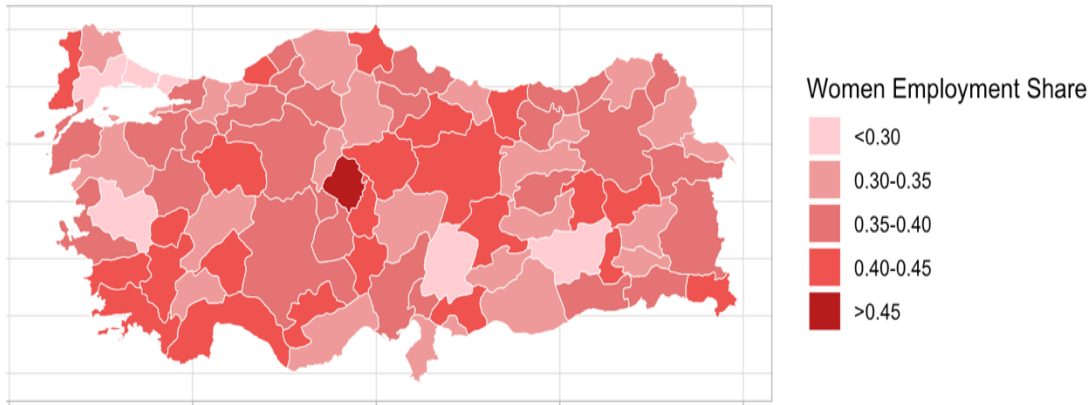


Figure 14. Average Women Employment Share in Turkey (2013-2022)

Figure 14 illustrates the provincial averages of female employment rates in Turkey between 2013 and 2022. The color scale reflects these rates; darker purple tones represent higher rates, while lighter tones represent lower ones. The predominance of lighter tones across the map suggests that female employment remains limited throughout Turkey.

At the regional level, provinces with relatively higher female employment rates tend to be found in Central Anatolia and the Black Sea regions, as well as in some provinces in Eastern Anatolia. These provinces are highlighted by darker purple tones on the

map. Conversely, lighter tones predominate in the western and southern coastal provinces. These differences are closely related to regional economic structure, sector composition, rural/urban population balance and sociocultural factors. The map shows that not only is female employment in Turkey low, it is also characterized by regional inequalities.

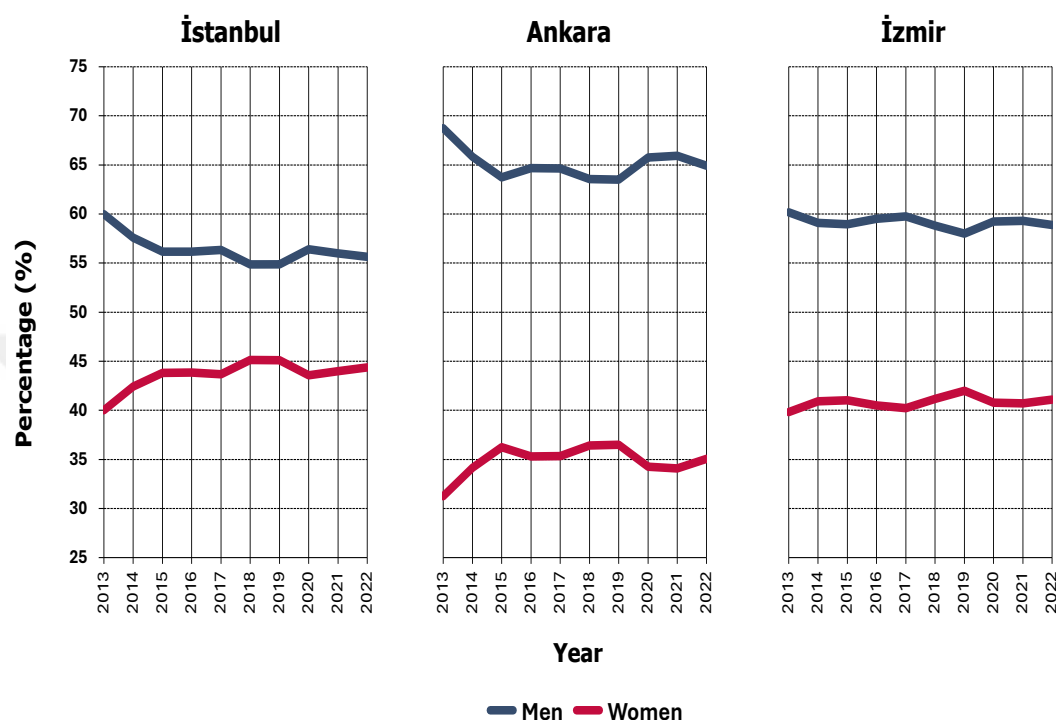


Figure 15. Percentage of Male and Female Employees in the Tree Biggest Provinces in Turkey (2013-2022)

Figure 15 illustrates the annual employment rates of men and women in Turkey's three largest cities — Ankara, İstanbul and İzmir — between 2013 and 2022. The horizontal axis shows the years, and the vertical axis shows the percentage of each gender group within the total employed population. Employment rates for men are significantly higher than for women in all three cities. In Ankara and İzmir, male employment rates are approximately 65–70%, and around 60% in İstanbul.

Female employment rates range from 30 to 45% across all three cities. A significant increase in female employment has been observed in İstanbul since 2015, though this has not established a permanent upward trend. In Ankara and İzmir, however, female employment has followed a more stable trend with limited growth. Overall, the graph shows that even in Turkey's largest and most developed cities, there is a significant

gender-based employment gap and women remain underrepresented in the labor market.

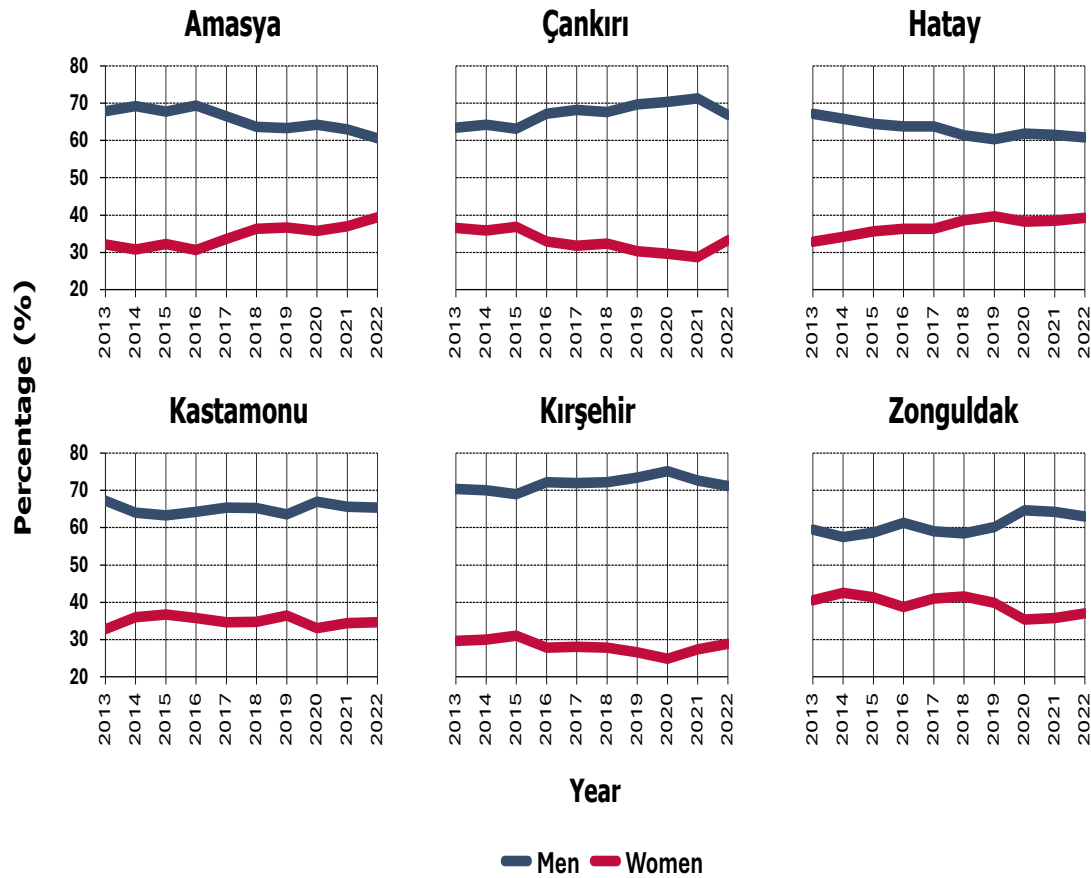


Figure 16. Gender Distribution of Employees in the 6 Provinces with the Lowest Turnover Rates (2013-2022)

Figure 16 illustrates the gender distribution of employees in the six provinces with the lowest labor turnover rates in Turkey (Amasya, Çankırı, Hatay, Kastamonu, Kırşehir and Zonguldak) between 2013 and 2022. The horizontal axis shows the years, and the vertical axis shows the percentage of female and male employees in total employment. In all provinces, the employment rate for males is significantly higher than for females, generally hovering around 60–70%.

Some differences in female employment are evident across provinces. In Hatay and Zonguldak, the female employment rate has increased steadily over the years, with the female share of total employment exceeding 30% in these two provinces. In the other provinces, especially Kırşehir and Kastamonu, the female employment rate has followed a flatter trend and has not increased significantly. Generally, in provinces

with low labor turnover rates, the employment structure remains relatively stable by gender, with a male predominance. This suggests that permanent employment also reproduces gender patterns.

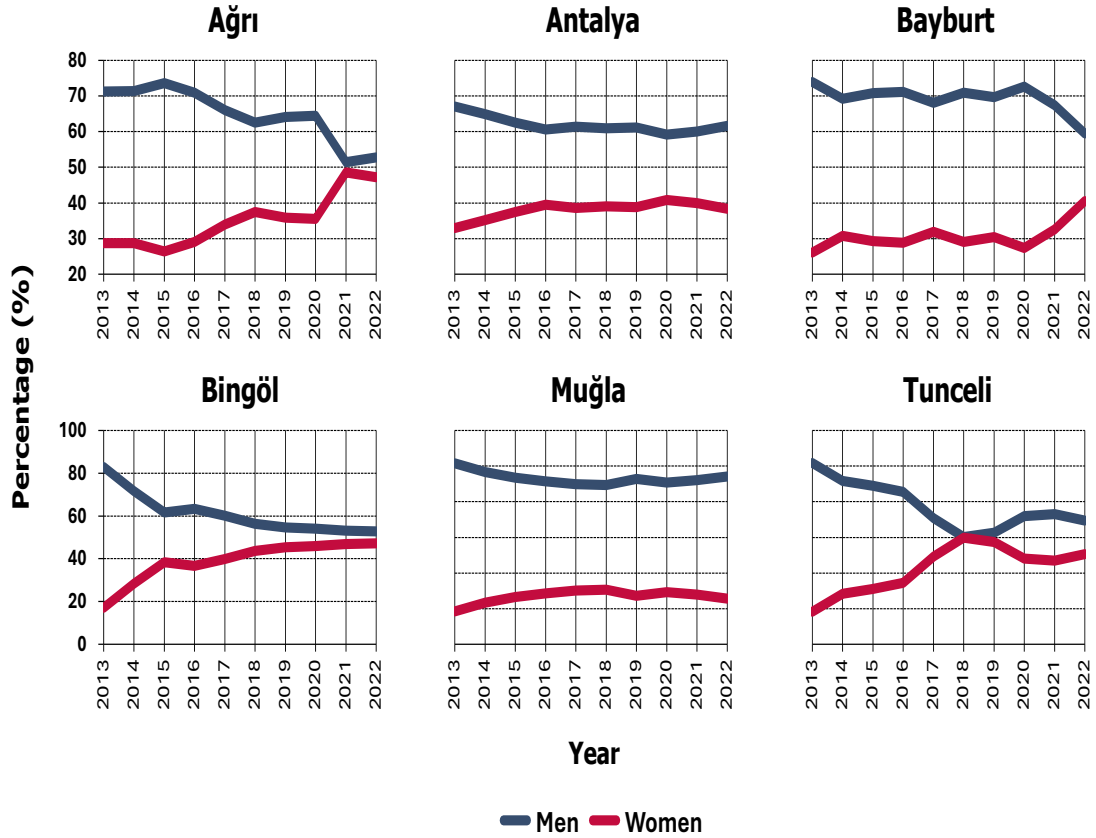


Figure 17. Gender Distribution of Employees in the 6 Provinces with the Highest Turnover Rates (2013-2022)

Figure 17 illustrates the evolution of employment rates among female and male employees in the six provinces with the highest labor turnover (Ağrı, Antalya, Bayburt, Bingöl, Muğla and Tunceli) between 2013 and 2022. The horizontal axis shows the years and the vertical axis shows the employment rates by gender. Generally, male employment rates have decreased over time in many provinces, while female employment has increased.

This trend is more pronounced in some provinces. For instance, in Tunceli, the employment rates of both genders were almost equal in 2018–2019. However, female employment has decreased again since then. In Bingöl and Ağrı, female employment has steadily increased, and the gender gap has narrowed. In Antalya, Muğla and Bayburt, there have been more limited increases in female employment, with male

employment remaining significantly dominant. These variations demonstrate that gender balances can fluctuate in provinces with high labor turnover and that the employment structure is highly sensitive to local dynamics.

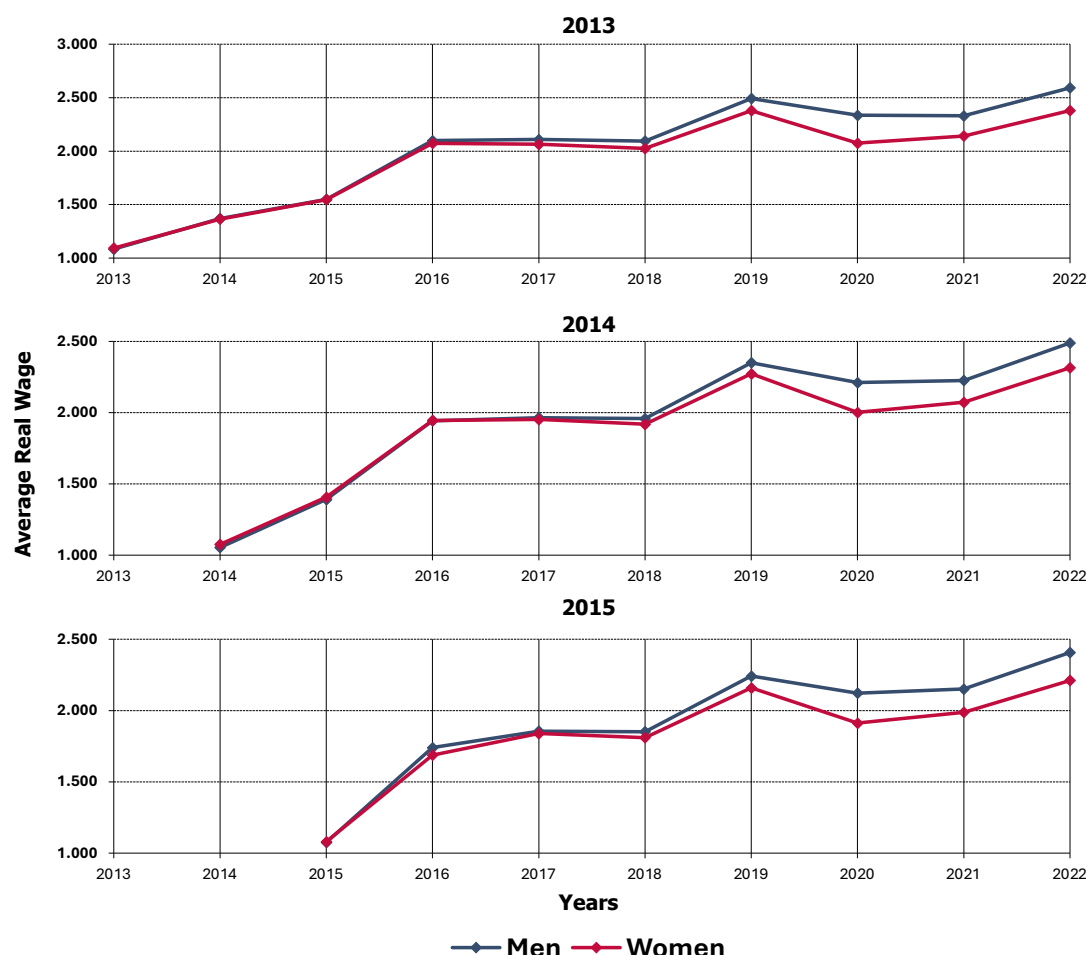


Figure 18. Average Real Wages by Cohort Years and Gender (2013-2022).

As demonstrated in Figure 18, the gender distribution of average real wages for individuals entering the labor market in 2013, 2014 and 2015 is illustrated. Each panel in the graph represents a cohort of entry; the horizontal axis indicates the years, and the vertical axis shows the average real wage level. It is evident that, in general, real wages have exhibited an upward trend over time across all cohorts. However, it should be noted that these increases do not occur in a uniform manner from year to year, with instances of relative stagnation or decline, particularly in 2020.

The gender wage gap reveals that, on an annual basis, the mean real wages of males continue to exceed those of females. This discrepancy has been observed across all

cohorts, with some years witnessing a narrowing of the gap and others a widening. While the initial wages of both men and women in the 2013 and 2014 entry cohorts were higher, the starting wages for both genders in the 2015 cohort were comparatively lower. A substantial rise in wages was evident across all categories until 2019, however, real wages underwent a modest decline in 2020, a period encompassing the onset of the pandemic, subsequently reverting to their previous levels. The graph illustrates that real wages exhibit considerable variation across time, gender, and year of entry into the workforce.

In order to comprehend the general characteristics of the data, it is necessary to examine the mean and standard deviations of the individual and firm variables.

Table 1. Descriptive Statistics (Age 15-25, Years 2013-2022)

Variable	Men		Women	
	Mean	Standard Deviation	Mean	Standard Deviation
Real Wage (2015=100)	1868.00	1413.20	1769.63	1306.03
Number of Days Worked	25.14	9.09	24.53	9.62
Age	23.59	3.68	23.74	3.41
Unemployment (quarterly)	6.71	6.84	5.41	6.66
Experience (quarterly)	4.73	6.17	4.58	5.76
Number of Job	2.29	1.61	1.99	1.30
Age at Labor Market Entry	20.46	2.56	21.00	2.50
Duration in the Labor Force (quarterly)	3.15	2.58	2.73	2.40
Number of Workers in the firm	2047.96	7713.09	3334.73	10844.95
Firm Age	21.46	17.85	19.37	16.69
Ratio of women employees in the firm	0.25	0.23	0.62	0.24

Table 1 clearly shows significant differences in the labor market characteristics of individuals aged 15–25 for the 2013–2022 period by gender. The average real wage for men (2015=100) was 1868, while for women, it was 1769.63. The wage gap clearly

favors men, but the high standard deviations indicate a significant wage dispersion among individuals. Men work an average of 2.29 different jobs, while women work 1.99. The average age of entry into the labor force is 20.46 for men and 21 for women; this clearly shows that men enter employment at an earlier age. Men have a longer unemployment period than women. Experience and length of stay in the labor force also contribute to a small gender gap. The average daily working hours for men is 25.14 days, compared to 24.53 days for women. While these figures are similar, there is a slight difference in favor of men.

There are significant differences in the firm-related variables. Women work in firms with an average of 3,335 employees, while men's firms employ an average of 2,048. However, the high standard deviations indicate that these averages are likely inflated by the influence of a few large firms. Women make up 62% of the workforce in firms with women, but only 25% of those with men. This clear difference shows that women are employed in more female-dominated environments. Women's firms are slightly younger, with an average age of 21.46 years, while men's firms are older, averaging 21.46 years. The table shows clear differences in the workforce experience of young people based on gender, in terms of structure, time and wages, experience, number of jobs, and firm composition.

Table 2. Descriptive Statistics (Age 15-20, Years 2013-2022)

Variable	Men		Women	
	Mean	Standard Deviation	Mean	Standard Deviation
Real Wage (2015=100)	1615.94	1050.78	1529.428	943.6213
Number of Days Worked	24.16	9.70	23.7823	10.01
Age	21.38	2.83	21.43	2.72
Unemployment (quarterly)	7.97	6.93	6.42	7.04
Experience (quarterly)	3.75	5.12	4.18	5.45
Number of Job	2.34	1.64	2.10	1.39
Duration in the Labor Force (quarterly)	3.06	2.56	2.83	2.44

Table 2. (continued)

Number of Workers in the firm	1968.45	7725.87	3910.13	12116.33
Firm Age	21.01	17.37	19.21	15.88
Ratio of women employees in the firm	0.24	0.22	0.61	0.23

As illustrated in Table 2, the labor market experiences of individuals aged between 15 and 20 are examined, along with the conditions of young people entering the workforce at an early age and gender differences. The mean real wage for males (1615.94) exceeds that of females (1529.43). The mean wage levels for both genders are lower than for individuals in the older age group (15–25), indicating a significant increase in wages with age. The mean number of jobs held by males is 2.34, compared to 2.10 for females. Additionally, the mean age at which males enter the workforce is marginally lower than that of females (18.32 vs. 18.58). The mean duration of unemployment is 7.97 quarters for men and 6.42 quarters for women, indicating that men remain unemployed for a longer period. The gender gap in daily working hours is relatively insignificant.

The analysis reveals that firms with a predominantly female workforce are characterized by a significantly larger average size, with an average of 3,910 employees, and a greater degree of female domination within the workforce, with a female employee population of 61%. In contrast, the firms with a predominantly male workforce exhibit a smaller average size, with an average of 3,390 employees, and a less pronounced female domination within the workforce, with a female employee population of 49%. The average male employee is employed by a firm with 1,968 employees, and the proportion of women in their firm is only 24%. Furthermore, the average age of women in firms is lower than that of men (21.01 years compared to 19.21 years). The data indicates that younger women are more likely to be employed in larger but relatively newer firms, often in environments that are female dominated. Additionally, while experience and length of time in the workforce are marginally higher among women, the differences are negligible. The data presented in this table indicates that individuals who enter the workforce at a younger age face limitations in terms of remuneration and the duration of their professional experience. Furthermore,

gender exerts a substantial influence on the nature and structure of this experience.

Table 3. Descriptive Statistics (Age 21-25, Years 2013-2022)

Variable	Men		Women	
	Mean	Standard Deviation	Mean	Standard Deviation
Real Wage (2015=100)	2140.53	1679.19	1955.80	1502.73
Number of Days Worked	26.19	8.26	25.12	9.26
Age	25.98	2.93	25.53	2.74
Unemployment (quarterly)	5.34	6.47	4.63	6.25
Experience (quarterly)	5.78	6.98	4.88	5.97
Number of Job	2.23	1.58	1.91	1.23
Age at Labor Market Entry	22.76	1.37	22.88	1.36
Duration in the Labor Force (quarterly)	3.25	2.61	2.66	2.38
Number of Workers in the firm	2133.93	7698.32	2888.78	9801.79
Firm Age	21.94	18.34	19.49	17.29
Ratio of women employees in the firm	0.25	0.23	0.62	0.24

The average labor market indicators for individuals aged 21–25, presented in Table 3, indicate a more mature and stable employment experience compared to the previous age group. The mean real wage for males is 2140.53 TL, whereas for females it is 1955.81 TL. This finding suggests that wage differentials increase with age. The mean number of days worked per week is 26.19 for males and 25.12 for females. While this difference is minimal, it is hypothesized that men are more represented than women in weekly or monthly employment durations. The mean number of jobs held by men is 2.23, compared to 1.91 for women. This finding suggests that men have experienced a greater number of job changes. The age at which the population enters the labor force is approximately 22 for both sexes; however, for males this is slightly earlier (22.76 vs. 22.88). The duration of unemployment for men is 5.34 quarters, and for women it is 4.63 quarters. This difference has narrowed in comparison with previous age groups.

With regard to firm characteristics, it is evident that women are predominantly employed by larger firms, with an average of 2,889 employees, while the size of firms employing men is 2,134. The proportion of women in firms that employ women remains at 62%, while this figure for men is only 25%. With regard to the age of the firm, male employees are employed by firms with an average experience of 21.94 years, while the average experience of female employees is 19.49 years. The findings of this study indicate that women in the 21–25 age group are employed in larger, yet comparatively younger, female-dominated workplaces. In the contemporary era, labor market indicators within this age group are typified by elevated wages, augmented experiential knowledge and protracted tenure. Nevertheless, gender-based inequalities persist in all of these indicators.

Table 4. Descriptive Statistics (2013)

Variable	Men		Women	
	Mean	Standard Deviation	Mean	Standard Deviation
Real Wage (2015=100)	1084.23	688.19	1093.00	690.65
Number of Days Worked	23.05	9.93	22.97	10.02
Age	21.06	2.51	21.24	2.52
Unemployment (quarterly)	9.86	9.34	8.83	9.73
Experience (quarterly)	0.57	0.83	0.59	0.83
Number of Job	1.10	0.32	1.06	0.26
Age at Labor Market Entry	21.06	2.51	21.24	2.52
Duration in the Labor Force (quarterly)	0.18	0.23	0.17	0.22
Number of Workers in the firm	805.86	2636.58	1139.88	3503.37
Firm Age	20.24	16.8	18.31	15.76
Ratio of women employees in the firm	0.22	0.23	0.63	0.25

The 2013 data presented in Table 4 offers significant insights into the period during which individuals aged 15–25 first entered the labor market. The mean real wage for males was 1084.23 TL, whereas for females it was 1093 TL. This discrepancy is negligible, suggesting that the gender wage gap is not yet significant in this age group.

The number of daily working days is also very similar (23.05 for men and 22.97 for women). The mean age for both genders is approximately 21, which is also the same age at which individuals first enter the labor force. This finding indicates that the majority of individuals in the 2013 sample were recent entrants into the labor force. The experience of the subjects is limited to an average of 0.5 quarters, and the length of time spent in the labor force is approximately 0.18 quarters. This indicates that the dataset predominantly comprises individuals who are entering the labor force for the first time.

The duration of unemployment is comparatively elevated for both genders, with men experiencing an average of 9.86 quarters and women 8.83 quarters of unemployment. This finding suggests that securing stable employment can be challenging for individuals upon their initial entry into the workforce, and that the process of seeking employment may be protracted. An analysis of firm characteristics reveals that the average number of employees in firms with women is 1,139, while the average number of employees in firms with men is 805. Furthermore, the average age of women's employers is found to be lower than that of men's employers (20.24 years compared to 18.31 years). The proportion of women working in women's employers is notably higher at 63%, compared to 22% in men's employers. The findings of this study demonstrate that young individuals had very limited connections to the workforce in 2013, their experiences were early and temporary, and that women were employed in different organizational structures.

Table 5. Descriptive Statistics (2022)

Variable	Men		Women	
	Mean	Standard Deviation	Mean	Standard Deviation
Real Wage (2015=100)	2092.03	1667.88	1948.93	1498.14
Number of Days Worked	26.01	8.33	25.44	8.82
Age	24.70	3.98	24.85	3.62
Unemployment (quarterly)	6.57	7.50	5.37	7.31
Experience (quarterly)	5.72	7.51	5.31	6.91
Number of Job	2.71	1.88	2.30	1.50

Table 5. (continued)

Age at Labor Market Entry	20.29	2.51	21.07	2.46
Duration in the Labor Force (quarterly)	4.41	3.05	3.78	2.92
Number of Workers in the firm	2571.85	100067.48	4452.23	14388.26
Firm Age	20.73	18.33	18.55	17.07
Ratio of women employees in the firm	0.25	0.23	0.61	0.24

As illustrated in Table 5, the contemporary circumstances pertaining to young individuals aged 15–25 within the labor market in 2022 are hereby delineated. The mean real wage for males is 2092.03 TL, whereas for females it is 1948.93 TL. This discrepancy has increased in comparison with previous years, indicating that the gender wage gap has become more pronounced over time. The mean number of days worked per week is 26.01 for men and 25.44 for women; both groups are employed almost full-time. The data indicates that males have marginally higher levels of experience (5.72 quarters for males and 5.31 quarters for females) and length of time in the labor force. The mean number of jobs held by men is 2.71, compared to 2.30 for women. The available data suggest that men are both longer and more intensively engaged in the labor market.

Furthermore, there are also notable differences in firm-related indicators. The mean number of employees per firm is 4.452 for women, and 2.572 for men. While the proportion of women working in firms with women is 61%, this figure is only 25% for men, suggesting that, as in previous years, women's employment is concentrated in gender-concentrated workplaces in 2022. The mean age of the population under scrutiny was found to be 18.55 years for women and 20.73 years for men. A comprehensive analysis of the 2022 reveals that young people in the labor market have accumulated more experience, have been employed for a greater duration, and have held a higher number of positions. However, gender disparities persist in terms of remuneration, stability, and workplace composition. The evidence suggests that women face significant disadvantages in several areas. These include, but are not limited to, the gender wage gap and the length of their employment.

An analysis of descriptive statistics from 2013 to 2022 reveals a striking insight into

the evolution of the labor market position of young people aged 15 to 25 in Turkey over time. The analysis demonstrates how this process varies according to gender. As a general rule, there is a positive correlation between age and the experience level, length of time in the labor force, and average real wages of employees of both sexes. However, it is evident that men consistently occupy a more advantageous position than women in these indicators. Men enter the labor force at an earlier age, hold more jobs, and remain in the labor market for longer. Conversely, women are predominantly employed in larger, female-dominated firms, yet they exhibit a marked disparity in remuneration, experience, and stable employment when compared to their male counterparts.

The data over time also points to significant structural stability. Even though the proportion of women employed in female-owned firms remains high year after year (approximately 60%), this rate is substantially lower in male-owned firms, at approximately 25%. This finding suggests that the organizational structure of firms in which women are concentrated is largely gender segregated. Conversely, data from 2013 indicates that individuals entering the workforce had limited experience and short-term employment. However, by 2022, young people had accumulated more extensive experience in the workforce, yet gender disparities remained evident. When considered holistically, it becomes evident that the younger workforce has become more stable over time. However, this transformation has not eradicated gender-based inequalities.

CHAPTER 5

ESTIMATION RESULTS

The main purpose of the study is to demonstrate the extent to which logarithmic wage levels are explained by worker- and firm-level variables, and to examine the relationship between them. To this end, three different multidimensional fixed effects models were developed. The first model used basic variables such as age, gender and turnover as explanatory variables. The second model expanded on this by adding variables such as employees' experience and number of days worked. The scope of the third model was increased by adding firm-level variables. In other words, these regressions enabled a systematic analysis of the effects of different variables on wages. By estimating three models in succession, it is possible to ascertain the impact of each variable on wages.

The findings of the model demonstrate that young men who possess analogous characteristics receive higher remuneration than their female counterparts. Furthermore, it is evident that the wage disparity between the sexes increases with the accumulation of professional experience. The phenomenon of labor turnover has been demonstrated to exert a deleterious effect on remuneration, affecting both male and female employees in a similar manner. It has been demonstrated that employees in large, older, and high-tech firms, akin to those employed in large enterprises, receive higher wages. It has finally been demonstrated that the gender composition of the workforce exerts an influence on wages. Specifically, it has been shown that firms with a higher proportion of women employees pay lower wages, and that this negative effect is stronger for men.

First, the explanatory power of the models was evaluated. The adjusted R^2 value of the basic model is 0.9162, with an RMSE of 0.1819. The second model showed a very slight increase in adjusted R^2 and a very slight decrease in RMSE. In the third model, which included firm characteristics in the analysis, the adjusted R^2 value increased to

0.9194 and the RMSE value decreased to 0.1778. Increasing the complexity of the model increased its explanatory power and decreased the margin of error. The third model therefore appears to be the model with the highest explanatory power and the lowest margin of error.

The employment of interaction terms facilitates the examination of how the effects of independent variables on the dependent variable vary under different conditions. The present study investigated whether the relationship between an explanatory variable and the dependent variable differed based on another explanatory variable, gender. In order to model this relationship, an interaction term was included in the regression model. This interaction term was obtained by multiplying all explanatory variables by gender. This approach, in contrast to a basic regression model which assumes constant regression coefficients, permits the examination of the heterogeneity of the relationship between variables and the extent to which the marginal effect of one variable varies depending on the value of another variable.

Table 6. Age Determinants of Daily Wage

Variable	Basic Wage Model	Extended Model	Firm Effects Model
Age 16	0.051	0.050	0.047
Age 17	0.103	0.104	0.094
Age 18	0.193	0.193	0.187
Age 19	0.262	0.263	0.256
Age 20	0.307	0.307	0.300
Age 21	0.348	0.347	0.340
Age 22	0.388	0.385	0.380
Age 23	0.430	0.426	0.421
Age 24	0.476	0.470	0.466
Age 25	0.526	0.519	0.514
Age 26	0.579	0.569	0.565
Age 27	0.631	0.619	0.614
Age 28	0.682	0.667	0.663
Age 29	0.730	0.713	0.709

Note: All coefficients are statistically different from zero at the 1% level.

Table 6 illustrates how three models, developed during the course of the study, estimate the impact of age on daily wages. The estimated coefficients represent the difference in wages for a given age group compared to the reference age (15 years old). As the values are based on the log of daily wages, the coefficients can be interpreted as approximate percentage changes.

As can be seen from the estimation results, wages increase with age. On average, a 34-year-old worker's wage is 133% higher than that of a 16-year-old. The increase is higher in the earlier years and slower in the later ones. The estimation coefficients increase steadily from age 16 to 34. This suggests that the wages of young workers increase significantly each year that they remain in the labor market. For instance, a 25-year-old worker earns 52% more than a 16-year-old, who earns 92% more than the reference age.

While the effect of age on daily wages varies slightly in each model, it follows the same trend and is statistically significant. The firm effects model also yields results similar to those of the basic wage model. This shows that the effect of age on wages remains consistent when the model is expanded to include firm-level variables.

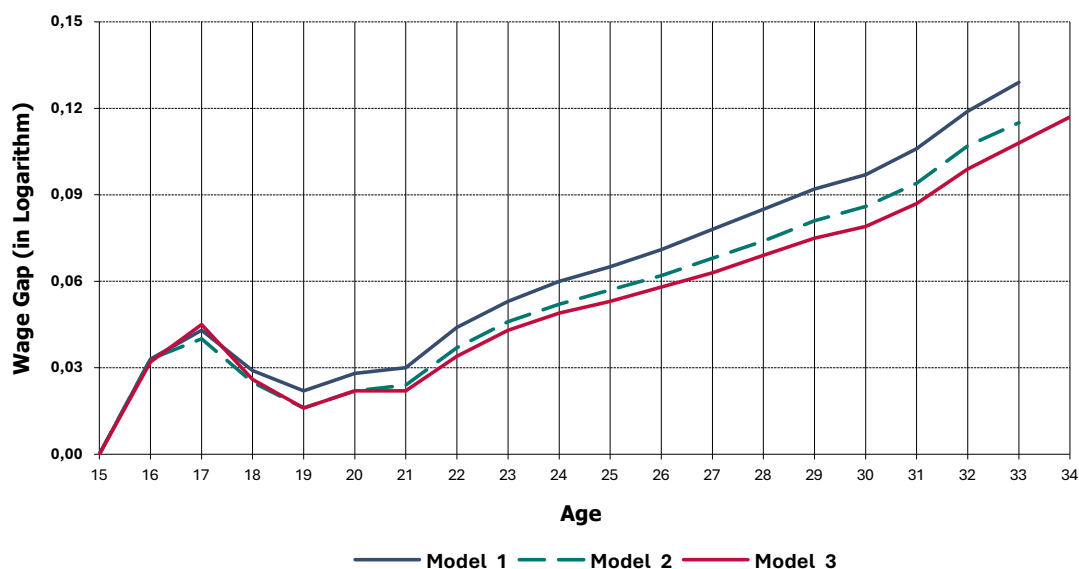


Figure 19. Estimated Wage Gap by Age between Male and Female Workers (2013-2022)

Figure 19 illustrates the age-based wage disparity between male and female within each model. The wage gap observed in the initial model gradually increases with age,

widening particularly significantly as one approaches age 30. The discrepancy in remuneration between the two models is reduced when the second model is employed. This decline can be attributed to the incorporation of variables that reflect continuity in the labor market, such as experience and premium days.

The wage gap can be explained by a number of factors, including the shorter and more intermittent labor market experience of women, due to factors such as marriage, childcare, and difficulties in finding and maintaining employment. In addition, women's ability to continue working with less experience compared to men of the same age contributes to the wage gap. It is therefore evident that, upon controlling for experience, a partial narrowing of the wage gap between women and men is observed.

The decline observed between the second and third models is attributable to the control for firm characteristics. This decline indicates that the employment of women and men in different types of firms contributes to the wage gap. The phenomenon of men being concentrated in firms that offer relatively higher wages, and women in firms that offer lower wages, is referred to in the literature as the "sorting" effect. This finding indicates that wage disparities are influenced not only by individual characteristics but also by the characteristics of the firms in which individuals find themselves in the labor market. Consequently, the decline in the wage disparity with the incorporation of experience and firm-level variables suggests that the gender wage gap is attributable to both workforce continuity at the individual level and inter-firm segregation at the institutional level.

Table 7. Turnover Determinants of Daily Wage

Variable	Basic Wage Model	Extended Model	Firm Effects Model
Turnover	-0.017	-0.015	-0.013
Turnover x Gender (male=1)	-0.001	-0.0001*	0.000003*

Note: * is not significant at the 5% level

Another factor that influences daily wages is the turnover rate over the last four quarters. Table 7 shows the estimated values of the turnover and gender-interactive turnover rate variables, both of which are included as explanatory variables in all three

models. Accordingly, the effect of the turnover rate on wages is negative in all three models. In other words, an increase in an employee's past job turnover frequency reduces their daily wage on average. Each 1% increase in the turnover rate causes daily wages to decrease by between 0.013% and 0.017%. Although this effect size appears small, it is consistent. However, the effect becomes smaller when more control variables are added to the analysis. This suggests that some of the effect of turnover on wages may be explained by firm characteristics.

When the effects of turnover and gender are examined simultaneously, it becomes apparent that the impact of turnover on the wages of men and women is not significantly different. The coefficients converge almost to zero in all three models, indicating that there is no significant difference between the two groups at this point.

Table 8. Experience Determinants of Daily Wage

Variable	Extended Model	Firm Effects Model
Experience (quarterly)	0.001	0.0007
Experience x Gender (male=1)	0.0002	0.0003

Note: All coefficients are statistically different from zero at the 1% level.

Years of experience is one of the determinants of wages. Table 8 shows the estimation results of models that include experience as an explanatory variable. According to the results of the extended model, each quarter spent in the labor market increases daily wages by 0.001 units. Converting this to years indicates that one year of experience results in an approximate wage increase of 0.4%. The firm effects model underestimates this effect compared to the extended model. In this model, the effect of one year of experience on wages is estimated at 0.28%. This difference suggests that accounting for firm-level variables diminishes the impact of experience on wages. Some of the wage increase may be due to heterogeneity across firms, which suggests that the true impact of experience on wages is smaller.

When examining experience and gender together, it is evident that men earn a higher return from experience than women. For each quarter of experience, men's daily wages increase by 0.0002 units more than women's. This coefficient is estimated to be slightly higher in the firm effects model. In other words, even when firm-level variables are

included in the analysis, men's gains from experience persist and intensify. These results once again prove gender-based discrimination in the labor market.

Table 9. Worked Days Determinants of Daily Wage

Variable	Extended Model	Firm Effects Model
Worked Days (log)	-0.021	-0.023
Worked Days (log) x Gender (male=1)	0.016	0.015

Note: All coefficients are statistically different from zero at the 1% level.

Table 9 shows the estimated values in models that include the number of days worked, which is a determinant of wages, in the analysis. Accordingly, an increase in the number of days worked leads to a reduction in daily wages. In other words, individuals who work more days earn lower daily wages. This effect becomes more pronounced when firm-level variables are included, demonstrating that it holds true regardless of differences between firms.

When the effects of the number of days worked and gender are examined together, it becomes apparent that men earn higher daily wages based on the number of days worked than women do. When women work more days, their wages decrease by a greater amount. In other words, some of this negative effect can be offset by men.

Table 10. Firm Level Determinants of Daily Wage

Variable	Firm Effects Model
Female Ratio in Firm	-0.015
Firm Age (log)	0.006
Firm Size (log)	0.024
Workplace Size (log)	0.016
Technology Use	0.003
Female Ratio in Firm x Gender (male=1)	-0.006
Firm Age (log) x Gender (male=1)	0.001
Firm Size (log) x Gender (male=1)	0.001
Workplace Size (log) x Gender (male=1)	0.004

Table 10. (continued)

Technology Use x Gender (male=1)	-0.001
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Note: All coefficients are statistically different from zero at the 1% level.

The firm effects model includes firm-level determinants in the analysis. Table 10 shows the estimated values of these variables. As the proportion of women in a firm increases, the average daily wage decreases. This indicates that wages tend to be lower in female-dominated firms. When the proportion of women working in a firm increases by 10%, wages decrease by approximately 0.15%.

Firm age is included in the analysis in log form. Firm age refers to how long the firm has been operating. The results show that wages are higher in firms that have been operating for longer. For instance, a firm operating for 10 years experiences an approximate 0.06% increase in daily wages after one year.

Firm size was included in the analysis in terms of the number of employees. As firm size increases, so do wages. In other words, daily wages for employees in larger firms are higher. For every 1% increase in the number of employees, daily wages increase by around 0.024%.

Workplace size was also included in the analysis in terms of the percentage of employees in the workplace. Similarly, wages increase in larger workplaces. When workplace size increases by 10%, daily wages increase by around 0.16%. Technology use was included in the analysis based on the EIS criteria of the Turkish Ministry of Industry and Technology (1 = low-tech, 2 = medium-low-tech, 3 = medium-high-tech, 4 = high-tech and 5 = non-manufacturing). According to the results of the analysis, wages tend to increase slightly as technology use increases. Daily wages in firms using technology are 0.3% higher than in those not using it.

It is also important to consider the impact of firm-level variables on gender. As the proportion of women in a firm increases, the wages of male employees decrease. In other words, men's wages are relatively lower in firms with a higher proportion of women. A 10% increase in the proportion of women in a firm results in a 0.06% decrease in male employees' daily wages.

As a firm's length of operation increases, so do the daily wages of male employees. In

other words, older firms pay higher wages to male employees. For every 10% increase in a firm's age, men's wages increase by 0.01%.

As a firm's number of employees increases, men's wages rise relative to women's. Men working in larger firms typically earn 0.1% more per day. A similar pattern emerges as the firm grows. Men working in larger firms earn 0.4% higher wages. However, as the level of technology in a firm increases, men's wages decrease. Each additional level of technological advancement results in a 0.1% decrease in men's wages.

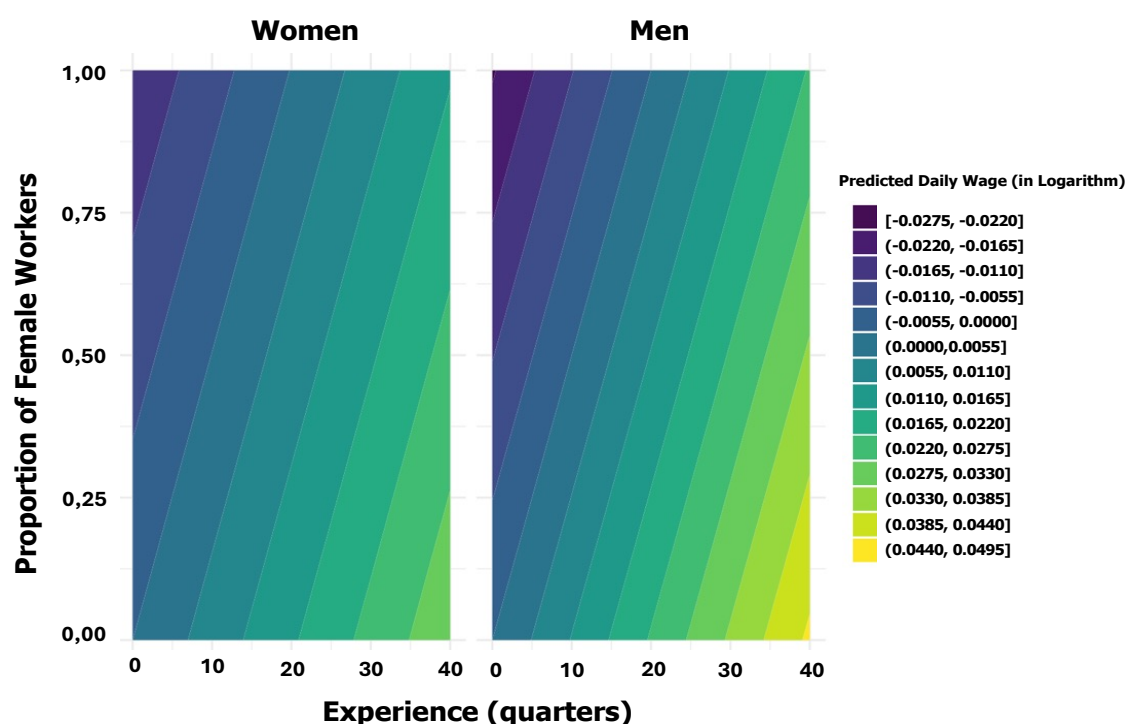


Figure 20. Effect of Experience and Female Ratio on Daily Wage (2013-2022)

Figure 20 illustrates the impact of experience and the female-to-male ratio on the logarithm of wages. As experience increases, wages rise for both genders. However, as the proportion of women employed by firms increases, wages decrease. This decrease applies to both genders but is greater for men. In other words, this color gradient illustrates the positive effect of experience on wages and the negative effect of the proportion of women employed at the same time.

For female employees, wages appear to be slightly lower in firms with a higher proportion of female employees. However, this effect is limited and more pronounced at lower levels of experience. This suggests that, overall, wages may be relatively low in workplaces with a high proportion of women, but the effect is less pronounced for

women. While an increase in the female ratio slightly lowers women's wages, this relationship is relatively weak.

For male employees, an increase in the female ratio decreases logarithm of wage values more significantly. As shown in the graph, the male wage advantage diminishes or even disappears in firms with a higher female ratio. This finding is consistent with the -0.006 coefficient for the 'Female Ratio in Firm $\times$ Gender (Male = 1)' variable presented in the previous table. Consequently, as the female ratio increases, the relative disadvantage of men's wages increases, demonstrating the significant impact of the gender composition of firms on wage structure.

The study revealed the explanatory effects of both worker- and firm-level variables in the wage determination process. Basic worker characteristics such as age and gender account for a significant proportion of wage differences. However, the explanatory power of the model increases when variables such as experience and the number of days worked, as well as firm-level data such as firm age, number of employees, technology level and the ratio of female employees, are included in the model. The finding that wages tend to increase with experience and age is important in terms of gender-based wage inequalities.

The observed differences in turnover rates between provinces where firms are located, and the negative effect of turnover on wages, once again demonstrate the impact of labor mobility on wages. Including firm-level data in the model helped to clarify the differences in wages and revealed the inadequacy of one-dimensional approaches. This framework has revealed the necessity of multidimensional modelling.

Age is a factor that exerts a significant influence on daily wages, with a considerable degree of explanatory power. In all three models, age groups are the variables with the largest positive impact on wages. The wages of workers aged 30 and over exhibit the highest coefficients in comparison to the reference group, under conditions where all other factors remain constant. This finding indicates that as workers accumulate more experience and human capital over time, their wages exhibit a direct and significant increase. This finding is consistent with approaches in economic theory that emphasize the returns to experience and human capital.

There are also variables that exert a deleterious effect on wages. The turnover variable

has been demonstrated to exert a consistently deleterious effect on wages. This finding suggests that individuals with high rates of job turnover may be compensated with lower wages.

The days worked variable has also been demonstrated to exert a negative influence on wages, thus indicating that an increase in working hours can result in a reduction in wages.

Firm size has been identified as a significant predictor of wage levels. This finding suggests that larger firms tend to offer higher wages to their employees, likely as a result of economies of scale or more sophisticated corporate structures. The comprehensive analysis of these variables and their interaction terms provides a comprehensive insight into the complex economic effects of individual and institutional characteristics on wage levels.

CHAPTER 6

CONCLUSIONS

The study examined wage dynamics among young workers aged 15–25 who joined the labor market between 2013 and 2022. This study focuses on the wage gap between young men and women, exploring the reasons for this difference. While the study specifically examines turnover and gender dynamics, it also considers a wide range of related variables.

Three multidimensional fixed-effects models were constructed to test these hypotheses. The basic wage model includes key variables such as age, turnover and gender. In addition to the previous model, the extended model adds the number of days worked and experience to the analysis. The firm-effects model adds firm-level variables such as the percentage of women employed, firm size, workplace size, firm age and technology level. This sequential estimation method enables us to determine the interaction between the effects of the variables.

The analyses in the study were based on data from the Ministry of Industry and Technology of the Republic of Turkey Entrepreneur Information System (EIS). The EIS data covers all registered firms and employees in Turkey, with the exception of those employed in the public and financial sectors. Despite the limitations of the data used in the study, it provides a comprehensive overview of the youth labor market in Turkey.

The findings of the study support the idea that women are at a disadvantage compared to men in both the youth labor market and the labor market as a whole. The model results provide valuable insights, particularly with regard to the gender wage gap. When the model results are compared, it is found that the wage gap narrows when moving from the basic wage model to the extended model. Women's lower employment stability partly explains this difference. The gender wage gap narrows

when the experience variable is added to the model. This suggests that women are unable to accumulate experience due to factors such as temporary employment, greater difficulty in finding jobs, and marriage and childbirth.

A key finding of the analysis is that turnover rates have a strong and consistent negative impact on wages. The analysis also reveals the significant impact of individual characteristics, such as age and experience, on wage levels. The regression results indicate that wages increase significantly with age. This finding aligns with the principles of human capital theory, which states that individuals' experience and accumulation of human capital directly and significantly increases their wages with age. However, a more significant increase in wages was observed among male workers.

The analysis shows that wages are closely related to both individual characteristics and the structural characteristics of the firms they work for. Econometric analysis reveals a positive relationship between firm size, age and technological sophistication, and wages. This study's findings suggest that larger, more established firms with advanced technological capabilities tend to offer higher wages to their employees. However, an increase in the proportion of female employees within a firm has been shown to negatively impact wages.

When firm-level control variables are added, the gender wage gap narrows further. This indicates a sorting effect: men tend to join firms offering higher wages, while women tend to join firms offering lower wages. Men tend to join firms offering higher wages, while women tend to join those offering lower wages.

This study addresses a significant gap in the existing literature on youth labor market dynamics in Turkey. Empirical studies in Turkey using such a comprehensive and detailed micro-dataset to examine the wage structure of the youth workforce are scarce. This thesis makes a substantial empirical contribution to the field by addressing the inadequacy of micro-level analyses of employment and wage dynamics. The findings reveal the complexity of the factors affecting young workers' wages, providing a solid basis for future policy recommendations. Considering the findings of this study, it is evident that policies targeting the youth workforce should not focus solely on the individual. Gender inequality is a prevalent issue from the outset of the

labor market.

Our findings have important implications for economic policy making. Policies targeting the youth workforce should focus not only on improving individual skills, but also on reducing labor turnover and addressing gender inequality in firms' wage structures. While this study provides a valuable overview of the youth labor market, it is important to note that the data are subject to certain inherent limitations. These limitations present significant opportunities for future research. The study excluded the public and financial sectors, as well as informal employment. It is recommended that future research efforts expand the analysis through the use of more comprehensive datasets covering these sectors.

The absence of data on individuals' educational attainment has resulted in a key component of human capital theory being excluded from the analysis. It is important to recognize the potential of incorporating data on education and skill levels into studies to achieve a more comprehensive understanding of the topic under consideration. Such studies can provide valuable insights into wage dynamics that might otherwise be overlooked.

The study uses a fixed-effects model. Using various econometric methodologies, including regression discontinuity analysis (RDD) and instrumental variables (IV), enables us to determine the causal relationship between wages and turnover more precisely. The findings of this study provide a general framework. Furthermore, it has been demonstrated that inter-sectoral disparities significantly impact wage dynamics. Further studies focusing particularly on sectors with high youth employment are recommended.

In conclusion, this study provides a comprehensive analysis illuminating the complex dynamics of the youth labor market in Turkey. The findings reveal that wages are influenced by various factors, such as gender, labor turnover, individual characteristics, and firm structure. The significant positive impact of age and firm size on wages emphasizes the importance of human capital and institutional structure. Conversely, the significant effect of gender and labor turnover on wages highlights areas that urgently require the attention of policymakers. This thesis aims to inform academic literature and policymaking, ensuring that young people have access to

better living standards and secure employment.



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APPENDICES

A. FIXED EFFECT MODELLING RESULTS

Appendix 1

Estimation Method: `feols` and `fixest` Package

The R programming language was used in the estimation of the model through the “feols()” function in the “fixest” package. This package uses fast and memory-friendly algorithms in estimating models with high-dimensional fixed effects (Bergé, 2018; Correia et al., 2020).

In the model, individual characteristics such as age groups, quarterly experience, and gender were used. At the same time, firm characteristics such as the proportion of women among employees in the firm, the age of the firm, and the number of employees in the firm and workplaces were also included in the model. On the other hand, various interaction terms were included. The fixed effects are at six different levels: worker, date, sector (sectors of firms and workplaces) and province (provinces where the firm and workplace are located).

Standard errors were clustered at the individual level. In this way, potential correlations that may be caused by repeated observations for the same worker over time were also included.

Appendix 2

Model 1 results are presented in this section.

OLS estimation, Dep. Var.: log_dw

Observations: 49,070,540

Fixed-effects: wid: 5,159,154, date: 40, nace4_p: 615, nace4_e: 608, ilkod_e: 81, ilkod_p: 81

Standard-errors: Clustered (wid)

Table 11. Results of the Model 1

Variable	Estimate	Std. Error	t value	Pr(> t)
Age 16 ***	0.051	0.009	5.259	1.4480e-07
Age 17 ***	0.103	0.017	5.814	6.0704e-09
Age 18 ***	0.193	0.025	7.436	1.0318e-13
Age 19 ***	0.262	0.034	7.668	1.7441e-14
Age 20 ***	0.307	0.042	7.224	5.0486e-13
Age 21 ***	0.348	0.050	6.855	7.1307e-12
Age 22 ***	0.388	0.059	6.566	5.1558e-11
Age 23 ***	0.430	0.067	6.380	1.7672e-10
Age 24 ***	0.476	0.075	6.293	3.1024e-10
Age 25 ***	0.526	0.084	6.269	3.6201e-10
Age 26 ***	0.579	0.092	6.276	3.4583e-10
Age 27 ***	0.631	0.100	6.272	3.5500e-10
Age 28 ***	0.682	0.108	6.26	3.7949e-10
Age 29 ***	0.730	0.117	6.227	4.7382e-10
Age 30 ***	0.775	0.125	6.172	6.7437e-10
Age 31 ***	0.815	0.133	6.092	1.1105e-09
Age 32 ***	0.855	0.142	6.013	1.8135e-09
Age 33 ***	0.890	0.150	5.912	3.3738e-09
Age 34 ***	0.923	0.158	5.810	6.2211e-09
Turnover ***	-0.017	0.0001	-152.230	<2.2e-16
Turnover x Gender***	-0.001	0.0001	-7.037	1.9638e-12
Age 15 x Gender ***	-0.138	0.005	-25.133	<2.2e-16
Age 16 x Gender ***	-0.105	0.003	-27.555	<2.2e-16
Age 17 x Gender ***	-0.095	0.003	-27.124	<2.2e-16
Age 18 x Gender ***	-0.109	0.003	-33.083	<2.2e-16
Age 19 x Gender ***	-0.116	0.003	-35.710	<2.2e-16
Age 20 x Gender ***	-0.110	0.003	-33.838	<2.2e-16
Age 21 x Gender ***	-0.108	0.003	-33.313	<2.2e-16
Age 22 x Gender ***	-0.094	0.003	-29.190	<2.2e-16

Table 11. (continued)

Age 23 x Gender ***	-0.085	0.003	-26.374	<2.2e-16
Age 24 x Gender ***	-0.078	0.003	-24.413	<2.2e-16
Age 25 x Gender ***	-0.073	0.003	-22.825	<2.2e-16
Age 26 x Gender ***	-0.067	0.003	-21.033	<2.2e-16
Age 27 x Gender ***	-0.060	0.003	-18.952	<2.2e-16
Age 28 x Gender ***	-0.053	0.003	-16.944	<2.2e-16
Age 29 x Gender ***	-0.046	0.003	-14.659	<2.2e-16
Age 30 x Gender ***	-0.041	0.003	-13.096	<2.2e-16
Age 31 x Gender ***	-0.032	0.003	-10.501	<2.2e-16
Age 32 x Gender ***	-0.019	0.003	-6.238	4.4117e-10
Age 33 x Gender ***	-0.009	0.002	-3.354	7.9397e-04

RMSE: 0.181931

Adjusted R²: 0.916162

Within R²: 0.005771

(Gender: for male=1, female=0)

Appendix 3

Model 2 results are presented in this section.

OLS estimation, Dep. Var.: log_dw

Observations: 49,070,540

Fixed-effects: wid: 5,159,154, date: 40, nace4_p: 615, nace4_e: 608, ilkod_e: 81, ilkod_p: 81

Standard-errors: Clustered (wid)

Table 12. Results of the Model 2

Variable	Estimate	Std. Error	t value	Pr(> t)
Age 16 ***	0.050	0.009	5.216	1.8214e-07
Age 17 ***	0.104	0.017	5.884	3.9971e-09
Age 18 ***	0.193	0.025	7.457	8.8120e-14
Age 19 ***	0.263	0.034	7.716	1.1979e-14
Age 20 ***	0.307	0.042	7.249	4.1895e-13

Table 12. (continued)

Age 21 ***	0.347	0.050	6.855	7.1314e-12
Age 22 ***	0.385	0.058	6.544	5.9787e-11
Age 23 ***	0.426	0.067	6.338	2.3132e-10
Age 24 ***	0.470	0.075	6.236	4.4851e-10
Age 25 ***	0.519	0.083	6.196	5.7784e-10
Age 26 ***	0.569	0.092	6.188	6.0577e-10
Age 27 ***	0.619	0.100	6.168	6.8882e-10
Age 28 ***	0.667	0.108	6.143	8.0526e-10
Age 29 ***	0.713	0.116	6.096	1.0847e-09
Age 30 ***	0.755	0.125	6.030	1.6375e-09
Age 31 ***	0.793	0.133	5.941	2.8172e-09
Age 32 ***	0.830	0.141	5.855	4.7533e-09
Age 33 ***	0.863	0.150	5.749	8.9522e-09
Age 34 ***	0.894	0.158	5.643	1.6630e-08
Turnover***	-0.015	0.0001	-121.173	<2.2e-16
Turnover x Gender	-0.0001	0.0001	-0.881	3.7801e-01
Experience (quarterly)***	0.001	0.00003	34.302	<2.2e-16
Gender x Experience (quarterly)***	0.0002	0.00004	6.204	5.4795e-10
Worked Days (log) ***	-0.021	0.0002	-95.208	<2.2e-16
Gender x Worked Days (log) ***	0.016	0.0002	59.877	<2.2e-16
Age 15 x Gender ***	-0.124	0.005	-22.076	<2.2e-16
Age 16 x Gender ***	-0.091	0.003	-23.092	<2.2e-16
Age 17 x Gender ***	-0.084	0.003	-22.976	<2.2e-16
Age 18 x Gender ***	-0.099	0.003	-28.595	<2.2e-16
Age 19 x Gender ***	-0.108	0.003	-31.667	<2.2e-16
Age 20 x Gender ***	-0.102	0.003	-30.195	<2.2e-16
Age 21 x Gender ***	-0.100	0.003	-29.845	<2.2e-16
Age 22 x Gender ***	-0.087	0.003	-26.028	<2.2e-16
Age 23 x Gender ***	-0.078	0.003	-23.503	<2.2e-16
Age 24 x Gender ***	-0.072	0.003	-21.901	<2.2e-16

Table 12. (continued)

Age 25 x Gender ***	-0.067	0.003	-20.630	<2.2e-16
Age 26 x Gender ***	-0.062	0.003	-19.127	<2.2e-16
Age 27 x Gender ***	-0.056	0.003	-17.289	<2.2e-16
Age 28 x Gender ***	-0.050	0.003	-15.515	<2.2e-16
Age 29 x Gender ***	-0.043	0.003	-13.454	<2.2e-16
Age 30 x Gender ***	-0.038	0.003	-12.113	<2.2e-16
Age 31 x Gender ***	-0.030	0.003	-9.731	<2.2e-16
Age 32 x Gender ***	-0.017	0.003	-5.709	1.1316e-08
Age 33 x Gender ***	-0.009	0.002	-3.128	1.7595e-03

RMSE: 0.181784

Adjusted R²: 0.916297

Within R²: 0.007375

(Gender: for male=1, female=0)

Appendix 4

Model 3 results are presented in this section.

OLS estimation, Dep. Var.: log_dw

Observations: 47,124,293

Fixed-effects: wid: 4,995,063, date: 40, nace4_p: 614, nace4_e: 606, ilkod_e: 81, ilkod_p: 81

Standard-errors: Clustered (wid)

Table 13. Results of the Model 3

Variable	Estimate	Std. Error	t value	Pr(> t)
Age 16 ***	0.047	0.010	4.701	2.5786e-06
Age 17 ***	0.094	0.018	5.111	3.1951e-07
Age 18 ***	0.187	0.026	6.951	3.6196e-12
Age 19 ***	0.256	0.035	7.208	5.6432e-13
Age 20 ***	0.300	0.044	6.795	1.0762e-11
Age 21 ***	0.340	0.052	6.458	1.0570e-10

Table 13. (continued)

Age 22 ***	0.380	0.061	6.192	5.9118e-10
Age 23 ***	0.421	0.070	6.014	1.8016e-09
Age 24 ***	0.466	0.078	5.924	3.1343e-09
Age 25 ***	0.514	0.087	5.893	3.7858e-09
Age 26 ***	0.565	0.095	5.891	3.8312e-09
Age 27 ***	0.614	0.104	5.877	4.1568e-09
Age 28 ***	0.663	0.113	5.861	4.5828e-09
Age 29 ***	0.709	0.121	5.822	5.8052e-09
Age 30 ***	0.752	0.130	5.767	8.0506e-09
Age 31 ***	0.791	0.139	5.687	1.2922e-08
Age 32 ***	0.828	0.147	5.606	2.0658e-08
Age 33 ***	0.861	0.156	5.506	3.6527e-08
Age 34 ***	0.892	0.165	5.402	6.5580e-08
Turnover***	-0.013	0.0001	-102.999	2.2e-16
Turnover x Gender	0.000003	0.0001	0.021	9.8259e-01
Experience (quarterly)***	0.0007	0.00003	23.06	<2.2e-16
Gender x Experience (quarterly)***	0.0003	0.00004	7.818	5.3321e-15
Worked Days (log) ***	-0.023	0.0002	-101.543	<2.2e-16
Gender x Worked Days (log) ***	0.015	0.0002	54.187	<2.2e-16
Female Ratio in Firm***	-0.015	0.001	-15.005	<2.2e-16
Gender x Female Ratio in Firm***	-0.006	0.001	-5.380	7.4250e-08
Firm Age (log) ***	0.006	0.0001	34.203	<2.2e-16
Gender x Firm Age (log) ***	0.001	0.0002	6.607	3.9214e-11
Firm Size (log) ***	0.024	0.0001	223.836	<2.2e-16
Gender x Firm Size (log) ***	0.001	0.0001	14.244	<2.2e-16
Workplace Size (log) ***	0.016	0.0001	98.752	<2.2e-16
Gender x Workplace Size (log) ***	0.004	0.0001	24.690	<2.2e-16
Technology Use***	0.003	0.0002	12.532	<2.2e-16

Table 13. (continued)

Gender x Technology Use***	-0.001	0.0002	-8.543	<2.2e-16
Age 15 x Gender ***	0.047	37.585	0.001	9.9900e-01
Age 16 x Gender ***	0.079	37.585	0.002	9.9830e-01
Age 17 x Gender ***	0.092	37.585	0.002	9.9805e-01
Age 18 x Gender ***	0.073	37.585	0.001	9.9845e-01
Age 19 x Gender ***	0.063	37.585	0.001	9.9864e-01
Age 20 x Gender ***	0.069	37.585	0.001	9.9852e-01
Age 21 x Gender ***	0.069	37.585	0.001	9.9826e-01
Age 22 x Gender ***	0.081	37.585	0.002	9.9826e-01
Age 23 x Gender ***	0.090	37.585	0.002	9.9808e-01
Age 24 x Gender ***	0.096	37.585	0.002	9.9796e-01
Age 25 x Gender ***	0.100	37.585	0.002	9.9787e-01
Age 26 x Gender ***	0.105	37.585	0.002	9.9777e-01
Age 27 x Gender ***	0.110	37.585	0.002	9.9765e-01
Age 28 x Gender ***	0.116	37.585	0.003	9.9754e-01
Age 29 x Gender ***	0.122	37.585	0.003	9.9740e-01
Age 30 x Gender ***	0.126	37.585	0.003	9.9732e-01
Age 31 x Gender ***	0.134	37.585	0.003	9.9715e-01
Age 32 x Gender ***	0.146	37.585	0.003	9.9689e-01
Age 33 x Gender ***	0.155	37.585	0.004	9.9670e-01
Age 34 x Gender ***	0.164	37.585	0.004	9.9651e-01

RMSE: 0.177799

Adjusted R²: 0.919375

Within R²: 0.046115

(Gender: for male=1, female=0)

B. DATA PREPERATION

Employee Data

Workers who started work for the first time in 2013 and later, whose starting age was between 15-25, and who worked in only one job at a time were included. The date variable was created with year and month information and used as the quarter number in most analyses.

Firm and Workplace Data

Firm and workplace (plant) data were combined over year, firm ID and SGK ID. Repeated observations were removed. Only necessary variables (NACE code, province code, etc.) were used.

Job Entry and Work History Variables

Job entries were determined from employee-employer matches, 1 was assigned to the periods of first job entry and firm change, and 0 to the others. The total number of jobs of the workers during the specified period and the number of jobs they were in were calculated in this way. The experience variable was determined by calculating the time spent in the same firm. In order to measure how many jobs people changed, changes over time were examined according to firm IDs. The fact that the same worker changed companies in successive periods was accepted as a job change. The turnover variable was created by taking the moving total of the dummy variable created for four periods. In other words, the model takes into account the labor turnover in the last four periods.

Wage and Unemployment Variables

Daily wage is the ratio of gross wage to the number of premium days. Unemployment is the total number of quarters not worked in the period in question. The first and last periods in which each worker was observed in the labor force were calculated, and the theoretical maximum number of quarters between these two dates was determined.

Then, the number of quarters the worker was observed in this period was examined and the difference was taken, and the unemployment variable was created by assuming that the worker was unemployed in these periods.

The unemployment rate was normalized and calculated by comparing the period of observation in the labor force with the theoretical maximum working period. Thanks to this, the differences in the observation period between the workers do not affect the analysis.



C. TURKISH SUMMARY / TRKE ZET

Gen iřgc piyasasının analiz edilmesi iřgc piyasasının geleceęi aısından ciddi nem tařıtmaktadır. Genlerin iřgc piyasasına giriř sreci, yalnızca bireysel yařamlarını deęil, lke ekonomisinin geleceęini de řekillendirmektedir. Bu srete dřk cretler, yksek iřsizlik oranı, kayıt dıřılık ve iřgc devri gibi karřılařılan zorluklar genleri kalıcı biimde etkileyebilmekte ve uzun vadeli eřitsizliklere neden olabilmektedir.

Gen iřgc piyasasının dinamiklerini anlamak, sadece mevcut cret farklılıklarını analiz etmekle sınırlı deęildir; aynı zamanda bu farklılıkların uzun vadede nasıl toplumsal sorunlara dnřtęn de irdelemeyi gerektirir. Sosyoekonomik eřitsizliklerin kalıcı hale gelmesinde erken yařta maruz kalınan dřk cretler, gvencesiz istihdam biimleri ve sınırlı kariyer olanakları belirleyici rol oynamaktadır. Bu baęlamda genlerin alıřma hayatına hangi kořullarda bařladıkları, ilerleyen yıllarda sermaye birikimi, konut edinimi, sosyal gvenlik kapsamına eriřim ve aile kurma kararları gibi pek ok alanda etkili olmaktadır. Bu nedenle gen iřilerin cret dzeyleri, yalnızca bireysel gelir dzeylerini deęil, aynı zamanda toplumsal eřitlięi de doęrudan ilgilendiren bir meseledir.

Bu baęlamda, bu tez alıřması Trkiye’de 2013-2022 yılları arasında 15–25 yař aralıęında iře bařlayan genlerin iřgc piyasasındaki durumlarını konu edinmektedir. Arařtırmanın temel amacı, genlerin cret dzeylerini etkileyen bireysel ve kurumsal faktrleri incelemek ve zellikle iřgc devrinin cretler zerindeki etkisini ok boyutlu sabit etkiler modeli ile analiz etmektir. Bu model yaklařımı hem birey hem firma hem de zamana baęlı etkileri kontrol edebilme gcne sahip olduęu iin bu alandaki sınırlı sayıdaki alıřmalara nemli bir katkı saęlamaktadır.

alıřma, yalnızca bireysel demografik deęiřkenlere (yař, cinsiyet, deneyim, iřgc devri) deęil; aynı zamanda alıřılan firmaların zelliklerine (kadın alıřan oranı, firma yařı, teknoloji dzeyi, byklk) de odaklanmaktadır. Bylece genlerin cret belirleyicileri ok ynl olarak analiz edilmekte; iřgc piyasasında kadınlar ile

erkekler arasında ortaya çıkan eşitsizlikler, sektörler arası ücret farkları ve iş değiştirme davranışlarının etkileri detaylı biçimde değerlendirilmektedir.

Tezin önemli bir katkısı, Türkiye Cumhuriyeti Sanayi ve Teknoloji Bakanlığı Girişimci Bilgi Sistemi (GBS) veri setini kullanmasıdır. GBS kayıtsız çalışanlar ve kamu ve finansal sektöre dair bilgi içermemesine rağmen çok kapsamlı bir veri setidir. Bu veri seti, Sosyal Güvenlik Kurumu (SGK), Gelir İdaresi Başkanlığı (GİB) ve Ticaret Bakanlığı gibi resmî kurumlardan elde edilen mikro düzeyde birey-firma eşleşmeli veriler içermektedir. Bu sayede genç bir çalışanın zaman içinde çalıştığı tüm firmalar, elde ettiği ücretler ve bu firmaların yapısal özellikleri ayrıntılı biçimde izlenebilmekte; ampirik analizlerin doğruluğu güçlenmektedir.

GBS veri setinin önemli bir avantajı da uzunlamasına yapısı sayesinde bireylerin zaman içinde yaşadığı değişimlerin izlenebilmesidir. Aynı çalışanın farklı zaman dilimlerinde çalıştığı firmalar, prim günleri, ücret seviyesi ve deneyim kazanımı gibi unsurlar detaylı şekilde takip edilebilmektedir. Bu yapı sayesinde, sabit etkiler modeli yalnızca bireyler arasındaki farkları değil, bireylerin kendi içindeki değişimini de kontrol altına alarak daha güvenilir tahminler üretmektedir. Özellikle bireylerin yaş aldıkça ve deneyim kazandıkça nasıl bir ücret rotasında ilerledikleri bu yöntemle açıklanabilmektedir.

Bu çerçevede aşağıda ayrıntısı verilecek olan üç tane model kurulmuştur. Her bir model birden fazla hipotezi test etme amacını taşır. İlk modelde test edilen hipotezler şu şekilde sıralanabilir. Ücretler yaşla birlikte artar. Erkekler kadınlardan daha fazla ücret artışı alır. Yaşın ücretler üzerindeki etkisi cinsiyetler arasında farklılık gösterir. İşgücü devir hızı arttıkça ücretler azalır. İşgücü devir hızının ücretler üzerindeki etkisi erkekler ve kadınlar arasında farklılık gösterir.

Deneyim ve çalışılan gün sayısının dahil edildiği ikinci modelde test edilen hipotezler şu şekildedir: Ücretler, çalışanın deneyimi arttıkça artar. Ücretler, çalışılan gün sayısı arttıkça azalır. Deneyimin ücretler üzerindeki etkisi erkekler için kadınlardan daha fazladır. Çalışılan gün sayısının ücretler üzerindeki etkisi cinsiyete göre farklılık gösterebilir.

Firma düzeyindeki değişkenleri içeren üçüncü modelde test edilen hipotezler şu şekildedir: Kadın çalışan oranının yüksek olduğu firmalarda ücretler daha düşüktür.

Firmanın faaliyet süresi, büyüklüğü ve teknoloji seviyesi arttıkça, çalışanlarının ücretleri artar. Erkek çalışanlar, firmanın özelliklerine bağlı olarak kadın çalışanlardan daha yüksek ücret alırlar. Erkeklerin ücretleri, yüksek teknoloji seviyesine sahip firmalarda, düşük teknoloji seviyesine sahip firmalardan daha düşüktür.

Bu çerçevede analiz edilen dönemin (2013–2022) Türkiye emek piyasasında büyük değişimlerin yaşandığı bir süreci kapsamı da çalışmaya ayrı bir önem kazandırmaktadır. Bu dönemde yaşanan ekonomik dalgalanmalar, istihdam politikaları ve pandemi sonrası işgücü piyasasındaki dönüşümler, gençlerin istihdam deneyimlerini doğrudan etkilemiştir.

İşgücü piyasasında ücret belirleyicileri ve işgücü devrinin etkileri uzun süredir araştırmacıların ilgisini çeken konular arasında yer almaktadır. Özellikle genç çalışanlar söz konusu olduğunda, bu iki unsur arasında karmaşık bir ilişki olduğu düşünülmektedir. Gençlerin iş hayatına giriş süreçlerinde deneyim eksikliği, sektör tercihi, cinsiyet ayrımı ve iş güvencesizliği gibi unsurlar hem işgücü devrinin artmasına hem de daha düşük ücretlerle çalışmaya neden olabilmektedir.

İktisadi teori bağlamında, Becker (1964) 'ın insan sermayesi teorisi, bireylerin iş deneyimi kazandıkça üretkenliklerinin arttığını ve bunun ücretlere yansımaları gerektiğini savunur. Ancak bu teori, tüm bireylerin eşit şartlarda deneyim kazanabildiğini varsayar. Gerçek hayatta, özellikle genç çalışanlar için iş deneyiminin niteliği, işgücü devri ile doğrudan ilişkili olabilir. Çok sık iş değiştiren bireylerin sürekli yeniden öğrenme süreçleri yaşaması, deneyim kazanımını sektöre uğratabilir.

Literatürde işgücü devrinin ücretler üzerindeki etkisine dair yaklaşımlar ikiye ayrılır: Birinci görüş, sık iş değiştirmenin iş deneyiminin niteliğini zayıflattığını ve bu nedenle ücretleri aşağı çektiğini savunur. Diğer görüş ise, belirli sektörlerde işgücü mobilitesinin verimliliği artırarak ücretleri olumlu etkilediğini ileri sürer. Ancak bu etkilerin cinsiyet, eğitim düzeyi ve sektör yapısıyla etkileşimli olduğu da unutulmamalıdır. Türkiye özelinde bu tür farklılaştırılmış etki analizlerinin yapılması, ilgili politikaların hedeflenmesinde büyük önem arz etmektedir. Antel (1985) ve Flinn (1986) gibi erken dönem çalışmalarda, genç erkeklerin iş değiştirme davranışlarının ücret üzerindeki uzun vadeli etkileri incelenmiş, iş gücü devrinin başlangıçta olumlu görünse de uzun vadede düşük ücretle sonuçlanabileceği gösterilmiştir.

Ayrıca, England vd. (1988) gibi iktisatçılar, sabit etkiler modelleriyle kadınların ücretlerinin erkeklerle kıyaslandığında sistematik olarak daha düşük kaldığını göstermiştir. Özellikle kadınların çalıştığı sektörler, firma yapıları ve işten ayrılma nedenleri gibi etkenlerin bu eşitsizliğe katkıda bulunduğu görülmektedir.

Choudhury (1993), panel verilerle yaptığı çalışmasında, deneyimin ücret üzerindeki etkisinin cinsiyete göre farklılaştığını tespit etmiş, kadınların aynı deneyim düzeyinde daha düşük ücret aldığını göstermiştir. Türkiye’de bu konu özelinde yapılmış az sayıda çalışmadan biri olan Polat ve Ulus (2024), genç işgücü için işgücü akımlarını betimleyici biçimde analiz etmiş ancak ücret belirleyicilerini mikro düzeyde incelememiştir.

Xu vd. (2024), işgücü piyasasındaki hareketliliğin bilgi yayılımını ve kaynak entegrasyonunu teşvik ederek firma inovasyonunu artırabileceğini ve bu artan inovasyon ve verimliliğin potansiyel olarak daha yüksek ücretlere yol açabileceğini ifade etmişlerdir. Ayrıca, Mittag (2019) tarafından ortaya konulan "iş merdiveni hipotezi"ne göre, çalışanların bir işten ayrılıp başka bir işe girmelerinin genellikle daha yüksek ücretlerle ilişkili olduğu öne sürülmüştür. Bu farklı bakış açıları, işgücü devrinin etkisinin çalışanın konumu, sektör ve ülke bağlamına göre değişebileceğini ortaya koymaktadır.

Literatürde sabit etkiler modelleri, bireylerin zaman içinde değişmeyen özelliklerini kontrol etmek için yaygın olarak kullanılır. Ancak çok boyutlu sabit etkiler yaklaşımı hem birey hem firma hem de zaman düzeyindeki heterojenlikleri aynı anda kontrol edebildiği için daha güçlü ve doğru sonuçlar sunmaktadır. Bu bağlamda, tezde kullanılan model yapısı, özellikle veri setinin birey-firma eşleşmelerine imkân tanınması sayesinde, literatürdeki pek çok çalışmanın ötesine geçmektedir.

Genç işgücüyle ilgili literatür, çoğu zaman Batı ülkeleri verisine dayalıdır. Gelişmekte olan ülkelerde, özellikle Türkiye gibi kayıt dışı istihdamın yaygın olduğu ülkelerde, gençlerin karşılaştığı sorunlar daha farklıdır. Bu nedenle, Türkiye bağlamında kayıtlı çalışanlara odaklanan bu çalışma hem boşluğu doldurmakta hem de ampirik katkı sunmaktadır.

Literatürde farklı ülkelerde yapılan çalışmalarla karşılaştırıldığında, Türkiye’de genç işgücü üzerine yapılan araştırmaların sayıca az ve kapsam açısından sınırlı olduğu

dikkat çekmektedir. Özellikle ABD ve Avrupa ülkelerinde gençlerin ücret belirleyicilerine dair yapılan mikro düzey analizler, cinsiyet, sektör ve etnik köken gibi farklı değişkenleri de modele dahil etmektedir. Türkiye’deki çalışmalar ise genellikle toplulaştırılmış istatistiklere dayanmakta, birey-firma eşleşmesine imkân tanıyan veri setlerine nadiren erişilebilmektedir. Bu tez, bu boşluğu doldurarak Türkiye’ye özgü yapısal koşullar altında gençlerin ücret deneyimlerini ayrıntılı biçimde ortaya koymaktadır.

Bu çalışmada kullanılan veri seti, Türkiye Cumhuriyeti Sanayi ve Teknoloji Bakanlığı tarafından yürütülen Girişimci Bilgi Sistemi (GBS)’nden elde edilmiştir. GBS, farklı kamu kurumlarından alınan mikro verilerin bütünleştirilmesiyle oluşturulmuştur. Bu yönüyle, Türkiye’de mikro düzeyde birey-firma eşleşmesi yapılabilen nadir ve güçlü veri kaynaklarından biridir.

Çalışma, 2013–2022 döneminde en az bir defa özel sektörde çalışmış ve işe başladığında 15–25 yaş aralığında olan bireyleri kapsamaktadır. Kamuda ve finans sektöründe çalışanlar analiz dışında bırakılmıştır. Bu sınırlama, özel sektörün yapısal çeşitliliğini gözlemleme olanağı sağlarken, aynı zamanda gençlerin piyasaya geçiş sürecinde karşılaştığı dinamikleri daha net ortaya koymaya imkân tanımaktadır.

Veri setinde çalışan düzeyinde; yaş, cinsiyet, günlük ücret, prim gün sayısı, deneyim süresi, iş değiştirme sıklığı gibi değişkenler yer almaktadır. Firma düzeyinde ise; kadın çalışan oranı, toplam çalışan sayısı, firma yaşı, teknoloji düzeyi ve faaliyet sektörü gibi değişkenler bulunmaktadır. Bu veri zenginliği, bireylerin ücretleri üzerindeki etkileri sadece demografik değil aynı zamanda kurumsal yapı açısından da incelemeye olanak sağlamaktadır.

Araştırmada kullanılan temel bağımlı değişken, bireylerin aylık ücretlerinin doğal logaritmasıdır. Bağımsız değişkenler arasında yaş, cinsiyet, deneyim süresi, prim gün sayısı ve işgücü devri (son 4 çeyrekteki iş sayısı) yer almaktadır. Firma düzeyi değişkenler, bu bireysel değişkenlere ek olarak farklı modellerde devreye sokulmuştur.

Çalışmada üç ayrı panel regresyon modeli kurulmuştur. Oluşturulan ilk model yaş, cinsiyet ve işgücü devri gibi temel bireysel değişkenleri barındırmaktadır. İkinci model ise bunlara ek olarak deneyim süresi ve prim gün sayısını içermektedir. Üçüncü ve en kapsamlı model ise kadın çalışan oranı, teknoloji düzeyi, firma yaşı, firmadaki çalışan

sayısı ve iş yerindeki çalışan sayısı gibi firma düzeyindeki değişkenleri de analize dahil etmektedir.

Her üç modelde de çok boyutlu sabit etkiler kullanılmıştır. Bu yaklaşım; birey, sektör, yıl ve bölge düzeyindeki gözlemlenemeyen heterojenlikleri kontrol etmeye imkân tanır. Örneğin, bir bireyin doğu Anadolu’da yaşıyor olması ya da kadın olması gibi, zamanla değişmeyen ama ücret üzerinde etkili olan sabit faktörler bu yolla kontrol altına alınmıştır.

Regresyon analizleri, heteroskedastisiteye dayanıklı standart hatalarla tahmin edilmiştir. Cinsiyet etkileşimleri yoluyla erkekler ve kadınlar arasındaki farklar detaylı biçimde test edilmiştir.

Verilerin görsel analizleri için ortalama ücretlere göre yaş, deneyim ve kadın çalışan oranı gibi değişkenlerin etkileri grafiksel olarak da değerlendirilmiştir. Bu görseller, model sonuçlarını destekleyici nitelikte olup, özellikle yaşla birlikte artan ücret farkı, deneyimin artışıyla ortaya çıkan cinsiyet ayrımı ve firma özelliklerine göre ücret düzeyindeki değişimleri ortaya koymuştur.

Bu yöntemsel yapı sayesinde tez, sadece nedensellik ilişkilerine dair değil, aynı zamanda açıklayıcı çıkarımlara da zemin sunmaktadır. Türkiye’de bu düzeyde birey-firma eşleşmeli veriyle çalışan analiz sayısı oldukça sınırlı olduğundan, çalışmanın yöntem kısmı literatüre özgün ve güçlü bir katkı sunmaktadır.

Bu tezde, genç çalışanların ücretlerini etkileyen faktörleri çok boyutlu olarak analiz etmek amacıyla üç aşamalı regresyon modeli geliştirilmiştir. Modeller, bireylerin demografik özellikleri, işgücü piyasasındaki deneyimleri ve çalıştıkları firmaların yapısal özellikleri üzerinden kurgulanmış, analizlerde çok boyutlu sabit etkiler yaklaşımı benimsenmiştir. Bu yöntem sayesinde birey, sektör, yıl ve bölge gibi sabit ama ücretleri etkileyebilecek faktörler kontrol altına alınarak daha sağlam tahminler elde edilmiştir.

İlk model, bireylerin temel demografik özelliklerini içermekte ve özellikle yaş, cinsiyet ve işgücü devri değişkenlerine odaklanmaktadır. Bu modelde, genç bireylerin sık iş değiştirme davranışlarının ücretler üzerindeki etkisi incelenmiştir. Analizler, işgücü devri arttıkça ücretlerin istatistiksel olarak anlamlı şekilde düştüğünü

göstermiştir. Aynı zamanda erkeklerin ücretlerinin, benzer yaş ve devre sahip kadınlara göre daha yüksek olduğu da tespit edilmiştir. Bu sonuçlar, işgücü devrinin ücret düşürücü etkisini ve cinsiyet temelli farkları erken yaşlarda ortaya koymaktadır.

İkinci model, ilk modele kıyasla daha gelişmiş bir yapıdadır ve bireylerin işgücü piyasasındaki deneyim süresi ile prim gün sayılarını da analiz kapsamına alır. Bu sayede gençlerin zaman içinde kazandıkları tecrübenin ve çalıştıkları gün sayısının ücretlere nasıl yansıdığı araştırılmıştır. Bulgular, iş deneyimi süresi arttıkça ücretlerin anlamlı biçimde yükseldiğini, ancak ay içindeki prim gün sayısının bazı durumlarda ücretleri olumsuz etkileyebildiğini göstermektedir. Bu durum, iş yoğunluğunun ücret artışıyla her zaman paralel gitmediğini ve düşük nitelikli yoğun işlerin ücret artışına dönüşmediğini ortaya koymaktadır.

Üçüncü model, bireylerin bireysel özelliklerine ek olarak firma düzeyinde yapısal faktörlerin de ücretlere etkisini analiz etmektedir. Bu kapsamda firmanın büyüklüğü (çalışan sayısı), yaşı, teknoloji düzeyi ve kadın çalışan oranı gibi değişkenler değerlendirmeye alınmıştır. Model sonuçları, yüksek teknoloji düzeyine sahip, büyük ölçekli ve köklü firmalarda çalışan bireylerin daha yüksek ücret alma eğiliminde olduğunu göstermektedir. Öte yandan, kadın çalışan oranının yüksek olduğu firmalarda ücretlerin ortalama olarak daha düşük olduğu da dikkat çekicidir. Bu durum, yatay cinsiyet ayrımcılığının ve sektörel ayrışmanın bir sonucu olarak yorumlanmaktadır.

Firma düzeyindeki analizlerde kadın çalışan oranının yüksek olduğu işyerlerinde ücret düzeylerinin görece düşük olduğu görülmektedir. Bu bulgu, sektörel cinsiyet ayrışması ile birlikte değerlendirildiğinde, kadınların daha çok düşük ücretli sektörlerde yoğunlaştığını ve bu durumun firma ortalamasını da aşağı çektiğini göstermektedir. Kadın istihdamının yoğun olduğu firmalarda ücretin düşük olması, sadece bireysel ayrımcılığın değil, aynı zamanda piyasa düzeyindeki sistematik ayrımcılığın bir yansımasıdır. Dolayısıyla bu sonuç, işgücü piyasasındaki yapısal cinsiyet eşitsizliklerinin yalnızca bireysel değil, kurumsal düzeyde de üretildiğini göstermektedir. Bu modellerde, aynı zamanda cinsiyet etkileşimleri de analiz edilmiştir. Örneğin, erkek bireylerin sık iş değiştirmesinin kadınlara kıyasla daha güçlü negatif ücret etkisi yarattığı ortaya konulmuştur. Bu da toplumsal cinsiyet eşitsizliklerinin yalnızca başlangıç ücretlerinde değil, iş yaşamı boyunca da sürdüğüne

işaret etmektedir.

Sonuç olarak, bu üç aşamalı model yapısı hem bireysel hem kurumsal düzeyde gençlerin ücret dinamiklerini kapsamlı biçimde analiz etme imkânı sağlamıştır. Türkiye’de bu ölçekte birey-firma eşleşmeli veriyle çalışan az sayıda ampirik araştırma olması nedeniyle, bu yaklaşım hem teorik hem metodolojik anlamda literatüre katkı sunmaktadır.

Tezde yer alan üç modelin regresyon sonuçları, genç bireylerin ücretlerini etkileyen faktörleri farklı düzeylerde ortaya koymaktadır. İlk model, temel demografik değişkenlere odaklanmakta ve özellikle yaş, cinsiyet ve işgücü devrinin log ücret üzerindeki etkilerini analiz etmektedir. Bu modelin sonuçlarına göre, yaşın artması ücretler üzerinde pozitif bir etki yaratmakta; yani yaşla birlikte ücretlerde anlamlı bir artış gözlemlenmektedir. Bu durum, yaşın sadece biyolojik bir ölçü değil, aynı zamanda iş deneyimi ve kurumsal güvenle ilişkili olduğunu düşündürmektedir. Aynı modelde cinsiyet değişkeninin etkisi de belirgin bir şekilde ortaya çıkmakta; erkek bireylerin kadınlara kıyasla daha yüksek ücret aldığı tespit edilmektedir. Ayrıca işgücü devri, yani bireylerin son dört çeyrekte kaç farklı işte çalıştığı, negatif ve istatistiksel olarak anlamlı bir etkiye sahiptir. Bu da sık iş değiştiren genç bireylerin, ücret açısından daha dezavantajlı konumda olduklarını göstermektedir.

İkinci model, bireysel iş deneyimi (çeyreklik bazda) ve prim günü gibi emek piyasasında kalış süresini ve yoğunluğunu yansıtan değişkenleri de modele eklemektedir. Bu modelde iş deneyiminin ücretler üzerinde pozitif ve güçlü bir etkisi olduğu ortaya konmuştur. Bireyin işe giriş yılı ile tahmin yılı arasındaki fark olarak tanımlanan deneyim süresi, ücret artışının temel belirleyicilerindendir. Ancak ay içerisindeki toplam prim günü sayısı, beklentilerin aksine, bazı örneklemeler için negatif bir etkiye sahiptir. Bu bulgu, uzun süre çalışan bireylerin her zaman daha yüksek ücret almadığını; özellikle düşük ücretli, yoğun tempolu işlerde prim gününün ücret artışına dönüşmeyebileceğini düşündürmektedir.

Üçüncü ve en kapsamlı modelde ise firma düzeyindeki faktörler devreye girmektedir. Firma büyüklüğü, kadın çalışan oranı, firma yaşı ve teknoloji düzeyi bu modelin bağımsız değişkenleri arasında yer almaktadır. Sonuçlar, büyük ölçekli, yaşça daha köklü ve teknoloji düzeyi yüksek firmalarda çalışan gençlerin daha yüksek ücret alma

eğiliminde olduğunu ortaya koymaktadır. Bu durum, firma yapısının yalnızca kurumsal kapasiteyi değil, aynı zamanda ücret ödeme gücünü de temsil ettiğini göstermektedir. Ancak özellikle kadın çalışan oranı yüksek firmalarda ücretlerin ortalama olarak daha düşük olduğu sonucu dikkat çekicidir. Bu bulgu, yatay mesleki ayrışmanın ve kadın emeğinin düşük ücretli işlerde yoğunlaşmasının bir yansıması olarak yorumlanabilir.

Modellerde yer alan cinsiyet etkileşim terimleri, ücret farklılıklarının erkekler ve kadınlar arasında sistematik olduğunu da göstermektedir. Örneğin, erkeklerin işgücü devrinden daha olumsuz etkilendiği, yani erkek bireylerin sık iş değiştirmesinin ücretleri kadınlara göre daha fazla azalttığı görülmüştür. Bu sonuç, emek piyasasında erkeklerin daha yüksek ücretli işlerde çalıştığını ancak bu işlerde süreklilik sağlanamadığında düşüşlerin daha sert yaşandığını ortaya koymaktadır. Kadınlar açısından ise ücret seviyeleri daha düşük başlamasına rağmen, işgücü devri etkisi daha ılımlıdır.

Günlük ücret ile yaş arasındaki ilişki pozitif yönlü olup, erkeklerde bu artış daha keskin bir şekilde gerçekleşmektedir. Deneyim arttıkça ücret artışı da hızlanmakta; ancak kadınların bu artıştan erkekler kadar faydalanamadığı anlaşılmaktadır. Kadın çalışan oranının yüksek olduğu firmalarda her iki cinsiyetin ücretlerinde düşüş gözlemlense de bu düşüş erkekler için daha belirgindir. Bu durum, firma yapısının ücret dinamikleri üzerinde doğrudan etkili olduğunu ve bazı durumlarda cinsiyet farkını derinleştirdiğini göstermektedir.

Ayrıca, analiz kapsamında bölgesel farklılıklar da göz önüne alınmıştır. Türkiye'nin çeşitli illeri arasında işgücü devri oranlarında ciddi farklar gözlenmiştir. Özellikle tarım ve turizm gibi mevsimsel sektörlerin baskın olduğu illerde işgücü devri oranları daha yüksektir. Bu bölgelerde iş güvencesizliği ve geçici istihdamın yaygın olması, gençlerin istikrarlı işlere ulaşmasını zorlaştırmaktadır. Buna karşılık sanayi bölgelerinde, daha uzun süreli istihdam ve görece daha yüksek ücretler gözlemlenmiştir.

Sonuç olarak, bulgular işgücü devrinin ücretler üzerinde güçlü ve çoğunlukla negatif bir etkiye sahip olduğunu, bu etkinin cinsiyet, deneyim ve firma yapısına bağlı olarak farklılaştığını göstermektedir. Türkiye’de gençlerin istikrarlı, yüksek ücretli ve

sürdürülebilir işlerde çalışma olasılıkları büyük ölçüde bulundukları bölgeye, çalıştıkları firmaya ve cinsiyetlerine göre şekillenmektedir. Bu da emek piyasasındaki yapısal eşitsizliklerin, yalnızca bireysel değil sistemik çözümler gerektirdiğine işaret etmektedir.

Bu tez çalışması, Türkiye’de 2013–2022 yılları arasında işe başlayan genç bireylerin ücret düzeylerini etkileyen bireysel ve firma düzeyindeki faktörleri analiz ederek, genç işgücü piyasasının temel dinamiklerine ışık tutmayı hedeflemiştir. Çok boyutlu sabit etkiler modeli kullanılarak yapılan analizler, işgücü devrinin gençlerin ücretleri üzerinde negatif ve istatistiksel olarak anlamlı bir etkisi olduğunu ortaya koymuştur. Gençlerin sık iş değiştirmesi, iş deneyiminin yarıda kesilmesine, kurumsal aidiyetin zayıflamasına ve dolayısıyla düşük ücretlerle çalışılmasına neden olmaktadır. Bu durum, yalnızca bireysel düzeyde bir gelir kaybı değil, aynı zamanda işgücü piyasasında verimlilik kaybı anlamına da gelmektedir.

Çalışmanın bulguları, cinsiyet temelli ücret farklarının da önemli bir sorun olarak varlığını sürdürdüğünü göstermektedir. Erkeklerin ücretleri kadınlara kıyasla sistematik olarak daha yüksektir. Üstelik bu fark, yaş ve deneyim arttıkça daha da belirgin hâle gelmektedir. Kadınların işgücü piyasasına geçici biçimde katılması, daha düşük ücretli sektörlerde yoğunlaşması ve firma düzeyinde dezavantajlı yapılarla karşılaşması bu eşitsizliğin temel nedenleri arasındadır. Bu durum, yalnızca bireysel değil yapısal ve kültürel düzeyde de çözüm gerektiren bir mesele olarak değerlendirilmektedir.

Firma düzeyi faktörler açısından yapılan analizler, büyük ve yüksek teknoloji kullanan firmalarda ücretlerin daha yüksek olduğunu; buna karşılık kadın çalışan oranı yüksek olan firmalarda ücretlerin düştüğünü ortaya koymuştur. Bu bulgu, kadın emeğinin düşük değer gördüğü sektör ve firmalarda ücret baskısının daha güçlü olduğunu göstermektedir. Ayrıca, firmaların kurumsal kapasitesi ücretler üzerinde doğrudan belirleyici olmaktadır. Bu nedenle, gençlerin hangi tür firmalarda çalıştığı yalnızca bireysel başarılarını değil, uzun vadeli gelir düzeylerini de doğrudan etkilemektedir.

Tezin en önemli katkılarından biri, çok katmanlı mikro düzeyde veri kullanılarak hem bireysel hem kurumsal düzeyde analiz yapılmasıdır. Türkiye’de bu tür veri setleri oldukça sınırlıdır ve çoğu araştırma ya birey düzeyine ya da firma düzeyine

odaklanmaktadır. Bu çalışma ise iki düzeyi birlikte analiz ederek işgücü piyasasındaki eşitsizlikleri daha bütüncül bir yaklaşımla değerlendirmiştir. Aynı zamanda, GBS verisi sayesinde, yüksek doğrulukla çalışan ücretleri ve iş değişiklikleri gözlemlenebilmiştir.

Sonuç olarak, bu tez Türkiye’de genç işgücü piyasasına yönelik olarak yapılan araştırmalar arasında kapsamlı veri ve güçlü yöntem altyapısıyla öne çıkmaktadır. İşgücü devrinin ücretleri düşürdüğü, kadınların emek piyasasında dezavantajlı olduğu ve firma düzeyindeki yapısal faktörlerin ücretlerde belirleyici olduğu açıkça ortaya konmuştur. Bu bulgular, emek piyasasında eşitliği ve verimliliği sağlamak adına bireysel değil, sistemik politika müdahalelerinin zorunlu olduğunu göstermektedir. Gençlerin daha yüksek ücretli, istikrarlı ve verimli işlerde çalışabilmeleri için sadece bireysel becerilere değil, aynı zamanda eşitlikçi ve yapısal bir piyasa düzenlemesine de ihtiyaç duyulmaktadır.

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