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INDIVIDUAL AND FAMILY RELATED DETERMINANTS OF NEET PROBABILITY: AN EMPIRICAL STUDY FOR TÜRKİYE

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Abstract

This study investigates the determinants of NEET status among Turkish youth aged 15–29, focusing on individual and family-related factors using 2010–2023 HLFS data. Employing a probit model, the analysis identifies significant influences of parental education, employment, and household income on NEET probability. A nuanced relationship emerges, with medium levels of parental education reducing NEET risk. Maternal education, particularly at the tertiary level, exerts a more pronounced influence compared to paternal education, underscoring the role of maternal engagement. Gender disparities are evident, with females disproportionately represented in the NEET category, largely due to caregiving responsibilities and societal norms. Family economic stability, measured through "decent work" status of parents, reduces NEET risk, while income displays a U-shaped relationship with NEET probability. The COVID-19 pandemic significantly increased NEET rates across all categories, disproportionately affecting females and low-educated youth. While post-pandemic recovery has been observed, gender and educational disparities persist.

Keywords: NEETs in Türkiye, Parental Education, Parental Employment, Family Income, Probit Model

JEL Codes: J13, D10, I26, C10

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INTRODUCTION

Both youth unemployment and their underemployment has emerged as a significant social policy challenge in recent years for many countries. The concept of NEET (Not in Education, Employment, or Training) emerged as the term youth unemployment proved inadequate in capturing the full extent of the issue, owing to the multifaceted challenges within the labor market. Initially, the term NEET applied to individuals aged 16-18 who had completed compulsory education and chose not to pursue further studies. However, the concept has since expanded in recent years, with supranational organizations such as the International Labor Organization (ILO), Statistical Office of the European Union (EUROSTAT), United Nations (UN), and Organization for Economic Co-Operation and Development (OECD) adopting a broader age range of 15-24 and 15-29. This shift arises from the profound impact of the crisis on this age group, as well as the recognition that this period is crucial for studying the transition to employment for individuals with tertiary education. The NEET concept encompasses young individuals who are either able to work and are actively seeking for work, as well as those who are unable to work or have chosen not to work, thereby broadening the scope of the term 'unemployed.' It incorporates both unemployment and economic inactivity (Eurofound, 2012; OECD, 2015). Unemployed NEETs refer to young individuals who are not currently working but are actively seeking employment, preparing to start a business, have been offered a job but have not yet commenced work, or have established a business that has yet to begin operations. In contrast, inactive NEETs are young people who are neither employed nor engaged in education or training, and are not actively job searching or willing to accept employment.

NEET categories are typically classified into various types, depending on the underlying reasons for an individual's status. These classifications enable policymakers and researchers to gain a deeper understanding of why a young person is not participating in education, employment, or training. One group of NEETs consists of young people who have dropped out of school or those who have completed their education but have not yet entered the workforce. Another subset includes individuals who are temporarily out of education, training, or employment, but are in a transitional phase, such as awaiting the start of a new educational program or job. A further category encompasses youth who fall into the NEET classification due to family-related reasons, such as caregiving responsibilities or other social challenges. These individuals may be temporarily or permanently disengaged from education and employment due to familial duties or personal circumstances. The final category includes those who, discouraged by a lack of opportunities, or disengaged from education and work for various personal reasons, such as health issues, family obligations, or a lack of motivation.

Not all young people are equally vulnerable. Numerous researchers highlight that NEET youth represent a heterogeneous group, with diverse circumstances and experiences. First, there are significant variations in NEET rates across different regions and countries. Employment and educational opportunities in a given region or country offer different NEET types. In some countries, the proportion of NEETs may be relatively low, comprising primarily individuals with family responsibilities or health issues, whereas in other countries, NEET rates are high, with the categories of NEET-unemployment and 'desperate' NEET-inactivity being the most prevalent. It also varies by age and gender, as the 25-29 age group and women typically represent the highest NEET proportions in most countries. In any case, NEET status signifies a high risk of social exclusion for young people, potentially leading to severe consequences, such as an increased likelihood of long-term unemployment, dependence on welfare benefits, and lower future earnings. It also has broader implications for communities and societies, contributing to diminished well-being and stunted economic growth.

The causes of becoming NEET are multifaceted. Apart from macro-level factors and policies implemented by the various governments, the findings suggest that it is primarily influenced by individual and family-related factors at the micro level. Factors such as the individual's educational attainment, work experience, skill set, gender, marital status, immigration background, and any form of disability play a key role in determining NEET status. With regard to family-related factors, which is the main focus of this study, parental education, experience, income, and employment status are factors associated with NEET status. Family background can influence the likelihood of being NEET in several ways. The parental education directly influences the educational attainment of their children, which is closely linked to NEET status. If parents with low educational levels are less likely to encourage their children to pursue higher education, this may limit the children's opportunities in the labor market and increase their likelihood of becoming NEET. The economic model of intergenerational transmission of socio-economic status (Becker & Tomes, 1986) and later referred as the intergenerational inheritance of worklessness (Solon, 2004) posits that human capital is the primary means by which income is passed down across generations. That is to say the dynamic process of human capital accumulation begins well before formal schooling and is influenced by family background. In addition, households in lower income brackets or living in poverty are more vulnerable to NEET status. Immigrant households and families with children living apart are more prone to NEET outcomes. If one or both parents are unemployed, or if they hold low-status jobs, their children are more likely to become NEET. Similarly, single parents or those less engaged in their children's education increase the likelihood of their children becoming NEET.

Türkiye ranks among OECD countries with the highest percentage of NEET. Over the past 20 years, NEET rates in Türkiye have consistently exceeded OECD average, ranging from 26.5% to 43.6%. Moreover, the economic cost of non-participation in education and employment for the NEET group in Türkiye amounts to 3.8% of GDP, the highest in OECD, where the average is approximately 0.9% of GDP (OECD, 2022; Özer & Suna, 2023). When examining NEET ratios by gender across OECD countries, it is evident that the female NEET rate is higher than the male rate in all countries except Sweden, Switzerland, Iceland, Canada, Latvia, and Lithuania. Türkiye has the second-highest female NEET rate after South Africa. On average, the male NEET rate in OECD countries is 10.8%, while the female NEET rate stands at 15.5%. In Türkiye, the male NEET rate is 17.9%, while the female NEET rate is a significantly higher 40%. This highlights a notable disparity, with the female NEET rate in Türkiye far exceeding the OECD average (OECD, 2022).

Studies conducted during the pandemic have further highlighted that the economic challenges exacerbated by the crisis have significantly increased the likelihood of young individuals being classified as NEET. In the European Union, youth unemployment rose from 2.8 million to 4.8 million during the pandemic, while the NEET group expanded from 4.7 million to 6.7 million, signaling a concerning trend (Tamesberger & Bacher, 2022). Globally, the youth NEET rate saw a 1.5 percentage point increase between 2019 and 2020, reaching its highest level in at least 15 years (ILO, 2021).

Existing studies on Turkish NEET youth are primarily descriptive and explore general trends and characteristics within NEET dynamics. The majority of these studies focus on examining the demographic characteristics, as well as identifying the potential causes and underlying factors that contribute to youth NEET. However, there has been no investigation into the impact of parental characteristics on the likelihood of being NEET, with the exception of a single study that examines the effect of parents' education and employment on the probability of having NEETs in the household. This study, however, does not address the influence of parental income status or age-related factors, such as the age difference between the youth and their mother or father.

Our study differs from the aforementioned research in several important aspects. First, it spans a longer time period and encompasses a wider age range. Second, in addition to the educational levels, we incorporate further family characteristics into our analysis including the decent work status of both parents, the age gap between the youth and their father, the age gap between the youth and their mother, per capita income, and its squared term. To the best of our knowledge, these determinants are being included in the analysis of NEET for the first time. This multifaceted approach provides a more comprehensive understanding of the family factors shaping NEET patterns, which previous studies on Türkiye neglect to

take into account. A U-shaped trajectory linking NEET probability to income in the household is evident when analyzing family income on a per capita basis. Additionally, the age of parents at the time of childbirth significantly influences these dynamics. Notably, highly educated women tend to have children later in life, which may further affect NEET outcomes.

The main focus of this study is to examine the prevalence of NEET youth, with a particular attention given to the complex family interrelations associated with it. Our aim is to contribute to this relatively underexplored area of research in Türkiye by utilizing the most comprehensive microdata set from the HLFS for the period 2010-2023 applying a probit model for three different age groups (15-19, 20-24 and 25-29).

The rest of the paper is as follows. Section 2 reviews the literature. Section 3 presents the data and estimation methodology. Section 4 discusses the main empirical findings, and Section 5 concludes.

RELATED LITERATURE

The influence of family characteristics on labor market outcomes of youth has been extensively examined in the literature. Studies by Corak (2006), Bjorklund & Jäntti (2009), and Raitano & Vona (2014) examine the impact of family background on educational and occupational outcomes, emphasizing the perpetuation of intergenerational income inequality. Bacher, Tamesberger, Leitgöb & Lankmayer (2014) investigate the factors influencing the NEET status in Austria. The study revealed that individuals with lower levels of education, those with parents possessing limited education, urban dwellers, and women responsible for childcare faced a higher risk of remaining NEET. Alfieri, Sironi, Marta, Rosina & Marzana (2015) demonstrate that parental educational attainment of parents significantly mitigates the risk of an individual becoming NEET. Berloffa, Filandri, Matteazzi & Nazio (2015) investigate the impact of both maternal and paternal employment on the labor market outcomes of their daughters and sons. They find that, after controlling for education and other social background factors, the employment of both fathers and mothers positively influenced the employment prospects of their sons. However, for daughters, only maternal employment is found to have a positive effect. Mascherini (2018) identifies several factors that drive young people into NEET status, including low parental education, parental unemployment, parental divorce, low family income, residence in remote rural areas, limited educational attainment, immigrant background, and various forms of disability. Caroleo, Rocca, Mazzocchi & Quintano (2020) assess the key individual and macroeconomic determinants of NEET status across European countries using various specifications of multilevel models with binary outcomes and logit models. The results show that the likelihood of being NEET diminishes as an individual's level of education rises, and that the probability of NEET status is lower when at least one parent holds a university degree.

As examples of studies investigating the impact of parental employment on NEET status, McLanahan & Sandefur (1994), Haveman & Wolfe (1994), Ermisch, Francesconi, & Pevalin (2004), and Schoon et al. (2012) suggest that growing up in a jobless household can have detrimental long-term effects, often correlating with lower levels of subsequent educational and occupational achievement. Harkonen (2011) argues that parents' labor market status is a strong predictor of children's economic well-being across Europe, highlighting those children living in households with no employed adults are especially vulnerable to experiencing income poverty. O'Neill & Sweetman (1998) and Zwysen (2015) demonstrate that individuals raised in workless households, or those with an unemployed father, are more likely to experience higher rates of unemployment, longer durations of unemployment, or to become NEETs. Zucotti & Reilly (2019), utilizing data from Understanding Society, investigate the impact of parental household employment status on the NEET experiences of young men and women from the five largest ethnic minority groups in the UK—Caribbean, African, Indian, Pakistani, and Bangladeshi—comparing them to their White British counterparts. Gallie & Paugam (2000) argue that socioeconomic factors are pivotal in determining NEET status, with young people from disadvantaged backgrounds—marked by low family income and parental unemployment—being at a significantly higher risk of becoming NEET. Bynner & Parsons (2002) study that children are more susceptible to becoming NEET if their parents have lower levels of education, if one or both parents are unemployed, or if the parents hold poor vocational status. Levinsohn, Rankin, Roberts, & Schoer (2014) argue that young people have a greater likelihood of being employed if their family members are employed. This is attributed to the increased access to information about job opportunities and the nature of various roles, as well as the potential for family members to serve as references for prospective employers.

As for studies examining the NEET Status of Turkey, Çelik (2008) discusses that as parental education increases, it is generally associated with higher parental income, which can create more opportunities for children to remain in education for a longer period, or conversely, it may extend periods of unemployment or hinder labor force participation. She argues that parental education, particularly that of the mother, impacts employment status through its effect on education. However, a father with higher education is more likely to be employed, and his use of professional networks can further enhance the chances of his child securing employment. Çelik & Lüküslü (2012) argue that early marriage continues to be perceived as the primary pathway for young women to transition into adulthood. As a result, educated women are more likely to experience unemployment, while less educated women are at a higher risk of becoming NEET or very young (adolescent) mothers. Kılıç (2014) investigates the demographic characteristics of NEET youth using a relational research approach. The study finds that women are more likely to be NEET than men, the probability of being NEET rises with age, and lower educational attainment

increases the likelihood of being NEET. Işık (2016) highlights that Turkey has the highest NEET rate among OECD countries, largely due to gender discrimination. He emphasizes the importance of an efficient education system and a structure that fosters the link between education and employment. Susanlı (2016) examines the determinants of youth NEET status in Turkey using a probit model and data from the Household Labor Force Survey over the period 2004-2013. The study concludes that individuals aged 20-24 are more likely to be NEET than those aged 15-19, women are more likely to be NEET than men, married individuals are more likely to be NEET than their single counterparts, and those living in rural areas are more likely to be NEET than those residing in urban areas. Additionally, the probability of being NEET decreases as an individual's level of education rises. However, when the model is estimated separately for men and women, it is found that married women are more likely to be NEET than unmarried women, while unmarried men are more likely to be NEET than their married counterparts. Dama (2017) examines the overall situation of NEETs in Turkey and Europe, focusing on the demographic characteristics of NEETs in Turkey. The study reveals that the risk of being NEET is higher among women and young people who have dropped out of school. Consequently, the study highlights the importance of developing policies to support this disadvantaged group. Görmüş (2017) explores the microeconomic determinants of informal youth employment using data from the Household Labor Force Survey. Through the application of logistic regression modeling, he finds that informal employment among youth is influenced by various workplace factors, including the availability of flexible work options. Erdoğan et al. (2017) investigate the determinants of NEET status in Turkey, as well as its consequences regarding trust, political participation, and political efficacy. Bingöl (2020) examines the impact of macroeconomic indicators on the NEET population in Brazil, India, Indonesia, South Africa, and Turkey, collectively known as the Fragile Five countries, as well as Russia, during the 2005-2018 period, using panel data analysis. The findings reveal that increases in HDI and FDI are associated with a rise in the NEET rate, while an increase in GDP leads to a decrease in the NEET rate. Yüksel Arabacı (2020) studies the socio-demographic characteristics of NEET youth and the factors that hinder their entry into the labor market, using the 2017 Household Labor Force Survey. The findings reveal that most NEET youth are single, live with their families, are healthy, and do not have any disabilities. The study also finds that the majority of NEET youth are unable to secure employment after leaving full-time education, and those who do manage to find work often leave due to long working hours, irregular conditions, and low wages. The research highlights that education is a critical factor influencing employment status, particularly for women. Additionally, the study reveals that the COVID-19 pandemic made NEET youth more determined than ever to earn their own income, with the pandemic serving as a catalyst for seeking paid employment. Lüküslü & Çelik (2022), based on qualitative research examining the experiences of young NEET women in six major cities in Turkey, explore the gendered dimensions of this

group. They find that the detrimental effects of ineffective education and employment policies in Turkey disproportionately impact young women, resulting in increased vulnerability and social exclusion. Being a young woman NEET is not merely a personal choice but rather the outcome of structural factors rooted in education and employment policies, reflecting the persistence of traditional gender roles that confine women to domestic responsibilities. Özdemir, Özcan, & Üçdoğruk Birecikli (2023) identify the regional determinants of NEET status in Turkey by analyzing pooled data from the Household Labor Force Survey for the years 2014-2020 using a logit model. The findings highlight that demographic factor such as gender, marital status, age, education level, and region of residence are key determinants of NEET status. Sahin et al. (2023) investigate the relationship between the causes of youth being NEET and the effects of NEET status. The study utilizes data and scales with high validity and reliability coefficients, collected through in-person field research conducted with 3158 NEET youth by Istanbul University between September and December 2020. The influence of the causes of being NEET scale on the effects of being NEET scale is analyzed using multivariable regression methods. The analysis reveals that the effects of individual, familial, educational, environmental, and labor market factors from the causes of being NEET scale have a significant impact on the effects of being NEET scale. Literature reveals two studies regarding parental determinants of NEET for the Turkish labor market. First, Karaoglan & Okten (2022) examine the impact of an involuntary job loss experienced by the household head on the likelihood of young individuals (aged 15-24) transitioning from non-employment to employment. Using twelve two-year pseudo-panels constructed from the Turkish Household Labor Force Surveys spanning 2005 to 2016, they demonstrate that women with at least a high school degree are approximately 8.7 percentage points more likely to transition from non-employment to employment in households where the head experienced an unexpected job loss, compared to women in households where the head remained employed. The study also shows that, for females, the probability of transitioning to employment increases with education level. For males, while the job loss of the household head positively and statistically significantly affects the transition probability, no differences are observed based on education level. Yiğit, Çakmak, & Çakmak (2023) examine the relationship between parental education and employment and the likelihood of being NEET aged 15–24 years, using TurkStat Household Workforce Statistics microdata for 2021 and multinomial logistic regression. They also analyze the 2014–2020 Household Workforce Statistics microdata to explore the proportional changes in NEET status over time. The study finds that age (20–24) and long-term unemployment in men, as well as marital status (for married and divorced women), are critical factors influencing the risk of being NEET. Compulsory education is identified as the most significant factor in reducing the NEET risk for both genders. The study concludes that an increase in parental education levels reduces the likelihood of NEET within the household. Notably, the educational achievements of mothers, particularly after compulsory education

(university and postgraduate), have a greater impact on reducing NEET risk compared to the education levels of fathers.

DATA AND METHODOLOGY

Data

We use 2010-2023 period Household Labor Force Survey (HLFS) microdata for our analysis. HLFS data resembles whole country with weighted observations. The survey does not contain any specific variable for NEET, therefore we firstly created binomial (1 or 0) variables for each age group to define whether a young person is NEET or not. For instance, if a person's age is between 15 and 19, he is counted as NEET15-19 only if he is neither enrolled to education/training system nor in the job market. Thus, NEET1519=1 if these three conditions are satisfied and NEET15-19=0 if only age condition is satisfied. We used same algorithm for 20-24 and 25-29 age groups also. Unemployed individuals, referred to as active NEETs, are not included in the analysis. The impact of explanatory variables could vary between these two subgroups of active and non-active NEETs, leading to biased coefficients and potentially misleading interpretations. Moreover, active NEETs are likely to be influenced by distinct labor market conditions and other macroeconomic factors in contrast to the non-active group. Therefore, only non-active NEETs are included in the regressions. Secondly, for each observation in our sample, we created variables resembling family characteristics such as father's education level, mother's education level, age difference with mother, age difference with father, wage income per head in family and its' square and two dummy variables resembling whether the mother and father have decent jobs or not. Given the data structure of the survey, it is impossible to track family information (such as educational level, employment status of parents) for those individuals living separately. Since the main objective is to assess the effect of family characteristics on the likelihood of being a NEET, and for the exact reason that we cannot observe family background of those NEETs not living in the household due to marriage or independent living arrangements (particularly in the 25–29 age group), we exclude those not residing with their parents. Additionally, observations where either parent is deceased are excluded from the estimation. Descriptive statistics and probit model results for years 2010, 2019, 2020 and 2023 are presented, but they are available upon request.

Table 1 and Table 2 present the NEET ratios as percentage of the population for given categories. The years 2010 and 2019 represent the pre-pandemic period, where gradual improvement in NEET ratios is observed across multiple categories. For instance: overall NEET ratios for youth in the 15-19 age group decreased from 23.1% in 2010 to 19.3% in 2019, indicating progress in engaging young individuals in education, employment, or training. Similarly, the NEET ratio among the 20-24 and 25-29 age groups also

showed a downward trend. Gender disparities, on the other hand, remained prominent, with females consistently having higher NEET ratios compared to males. For example: females aged 25-29 had a NEET ratio of 59.1% in 2010, which dropped significantly to 38.1% by 2019. Males in the same age group showed much lower ratios, though increasing from 5.9% in 2010 to 7.0% in 2019, highlighting persistent gender gaps. Education levels also strongly influenced NEET rates. Youth with no diplomas had alarmingly high NEET ratios (e.g., 68.2% for 20-24 years in 2019), whereas those with higher education such as university degrees exhibited much lower rates. This underscores the role of education in reducing NEET vulnerability. Finally, family characteristics reveal a critical association with NEET ratios. For instance: children of fathers with decent employment had lower NEET rates (e.g., 12.6% in 2010), compared to those with non-decent employment (e.g., 23.3% in 2010). Overall, the pre-pandemic period reflects a positive trend of decreasing NEET ratios across age, gender, and education, though disparities persisted for females and individuals with lower education.

Table 1: NEET ratios over selected categories in years 2010, 2019

Year		**2010**			**2019**	
Age Intervals	**15-19**	**20-24**	**25-29**	**15-19**	**20-24**	**25-29**
Individual Characteristics						
Gender						
Female	33.3	51.5	59.1	25.1	38.1	46.5
Male	13.6	12.3	5.9	13.8	11.6	7.0
Marital Status						
Single	20.7	21.1	15.4	18.2	16.3	12.5
Married	73.1	63.1	42.3	51.3	57.3	39.7
Divorced	55.5	38.5	26.9	50.5	34.4	24.0
Widowed	70.6	68.9	62.8	54.6	61.9	60.1
Education						
No Diploma	54.6	64.5	68.2	63.0	64.0	65.2
Primary School		52.1	45.3	41.6	50.9	44.4
Secondary Sch	14.2	36.3	26.4	7.7	30.5	32.3
High Sch	50.4	21.9	24.8	50.3	16.0	26.5
Vocational High Sch	29.8	19.1	19.6	40.0	20.9	21.8
University and Higher	25.7	19.7	10.8			
University				30.1	16.6	14.0
Master or PhD					25.6	8.6

Family Characteristics						
Mother Non-Decent Emp.	21.8	22.7	15.4	19.1	18.3	14.9
Mother Decent Emp	10.7	11.5	8.5	13.9	11.0	7.2
Father Non-Decent Emp.	23.9	23.3	15.7	21.1	19.1	15.2
Father Decent Emp	16.8	19.4	12.6	15.4	14.7	11.0
Fathers Education						
No Diploma	33.3	31.2	23.2	29.4	26.4	23.4
Primary Sch	20.8	21.9	14.1	18.7	17.3	13.2
Secondary Sch	18.3	21.2	15.5	16.5	16.5	13.4
High Sch	17.4	18.2	12.0	16.8	16.8	15.1
Vocational High Sch	15.8	15.5	10.4	14.9	13.0	13.6
University and Higher	14.1	16.5	11.7			
University				15.7	15.0	10.9
Masters Or PhD				11.5	11.4	12.1
Mothers Education						
No Diploma	29.6	29.8	19.3	25.0	24.8	19.1
Primary Sch	17.5	18.2	12.6	16.2	14.9	11.5
Secondary Sch	13.9	14.3	9.2	17.1	13.2	12.6
High Sch	12.4	15.3	9.8	16.6	12.6	9.9
Vocational High Sch	14.5	14.3	6.7	13.0	14.2	11.7
University and Higher	10.8	12.8	7.7			
University				12.0	10.6	9.5
Masters Or PhD				14.0	13.9	7.3
Total NEETs Among Youth	**23.1**	**33.7**	**32.6**	**19.3**	**25.2**	**27.1**

Source: Authors' own calculations

Table 2: NEET ratios over selected categories in years 2020, 2023

Year		**2020**			**2023**	
Age Intervals	**15-19**	**20-24**	**25-29**	**15-19**	**20-24**	**25-29**
Individual Characteristics						
Gender						
Female	25.3	41.2	50.2	23.7	35.1	42.9
Male	15.3	16.2	10.3	13.5	12.6	8.0

Marital Status						
Single	19.4	21.8	16.7	17.8	17.6	13.5
Married	47.8	60.0	44.0	46.4	55.9	39.8
Divorced	52.3	40.2	27.9	41.0	41.2	28.2
Widowed	18.9	52.3	42.7	25.0	46.1	63.8
Education						
No Diploma	69.9	67.9	69.7	69.4	68.3	72.6
Primary School	49.9	54.9	45.5	43.6	53.4	53.2
Secondary Sch	8.4	34.6	37.7	6.8	34.1	35.9
High Sch	49.6	19.0	29.1	47.8	19.2	25.1
Vocational High Sch	41.7	22.8	26.3	31.2	17.6	22.1
2Years College				12.9	16.6	19.1
University	42.9	26.2	18.6		20.8	14.2
Master or PhD		28.5	7.5		24.7	7.7
Family Characteristics						
Mother Non-Decent Emp.	20.5	24.3	19.4	19.0	20.5	16.7
Mother Decent Emp	13.0	14.5	11.1	13.5	11.0	8.7
Father Non-Decent Emp.	22.9	24.6	19.8	21.4	21.4	17.3
Father Decent Emp	15.6	20.7	15.2	15.1	16.0	12.5
Fathers Education						
No Diploma	34.2	35.0	31.3	30.0	30.6	26.7
Primary Sch	20.4	23.0	18.1	18.7	18.7	15.6
Secondary Sch	16.3	21.7	17.1	15.6	16.8	13.8
High Sch	16.0	23.5	17.0	15.6	20.5	16.0
Vocational High Sch	14.0	19.3	14.6	14.1	13.8	12.8
2 Years College				19.4	20.6	14.8
University	14.6	19.2	15.0	15.5	14.0	13.1
Masters Or PhD	10.5	18.4	12.7	11.2	14.9	10.5
Mothers Education						
No Diploma	30.2	32.5	25.2	26.1	29.0	24.6
Primary Sch	16.7	20.3	16.0	17.0	16.8	12.6
Secondary Sch	14.2	20.6	16.5	12.8	15.7	11.7
High Sch	14.6	18.1	15.5	14.3	13.6	10.1
Vocational High Sch	12.9	12.8	12.9	12.1	12.6	15.2

2 Years College				12.4	11.5	14.0
University	10.3	15.2	11.9	14.0	12.0	13.3
Masters Or PhD	7.3	14.4	10.5	10.2	11.0	12.4
Total NEETs Among Youth	**20.2**	**28.9**	**30.7**	**18.5**	**23.8**	**25.7**

Source: Authors' own calculations

The year 2020 marks the height of the COVID-19 pandemic, which disrupted education systems, labor markets, and overall socio-economic stability. This is reflected in the rise in NEET ratios across most categories. The total NEET ratios for youth (15-19) increased sharply to 25.2%, up from 19.3% in 2019. Similar increases were seen in the 20-24 age group (27.1%) and 25-29 age group (20.2%). The pandemic had a greater impact on females. For instance; females aged 25-29 had their NEET ratio increase to 46.5% in 2020 compared to 38.1% in 2019. In contrast, males experienced smaller increases, with NEET ratios rising only slightly. Youth with lower educational qualifications saw the largest spikes in NEET ratios in pandemic year. For example: those with no diplomas experienced NEET rates of 69.9% for the 20-24 age group, reflecting challenges in employment and education accessibility during the pandemic. NEET rates for those with Vocational High School education also increased to 41.7% in 2020.

An important insight derived from descriptive statistics is that Family characteristics reveal that parental employment status became even more critical during the pandemic. Youth from families where parents (especially fathers) were non-decently employed experienced higher NEET rates. Actually, pandemic clearly disrupted progress, particularly affecting marginalized groups, including women, those with low education, and families with poor employment conditions.

The year 2023 represents the post-pandemic phase, where some recovery is observed, though lingering challenges remain. Total NEET ratios show partial improvement but remain higher than pre-pandemic levels. For instance: NEET ratios for the 15-19 age group decreased to 23.8% in 2023 (from 25.2% in 2020) but have not returned to the 2019 level of 19.3%. Similar trends appear in the 20-24 and 25-29 age groups, where NEET ratios remain elevated compared to 2019. Gender gaps persist post-pandemic. Particularly, females aged 25-29 recorded a NEET ratio of 42.9% in 2023, compared to 46.5% in 2020. Despite improvement, this remains far above pre-pandemic levels. Males, on the other hand, saw modest reductions, with their NEET rates reaching 8.0% in the 25-29 age group.

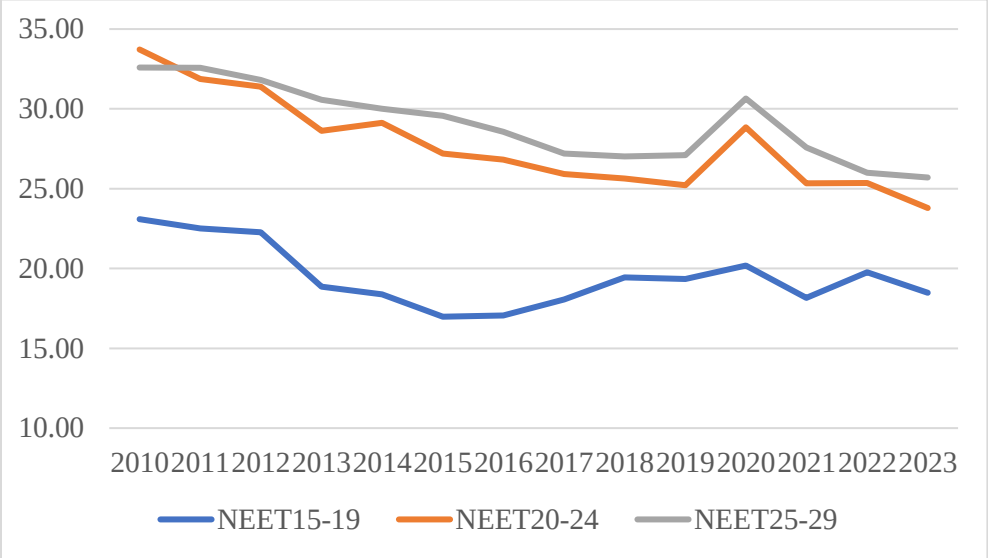
Regarding education-based trends it is noteworthy to mention that youth with no diplomas continue to face significant challenges. For example, NEET ratios for those with no diplomas in the 20-24 age group

increased to 72.6% in 2023, further emphasizing the pandemic's long-term impact on vulnerable groups. Conversely, youth with higher education (Master's or PhD) had much lower NEET ratios, such as 7.7% in 2023. Children from families where fathers had decent employment maintained lower NEET ratios compared to those with non-decent employment. This highlights the importance of family economic stability in post-pandemic recovery.

To sum up, the table indicates that pre-pandemic period showed significant progress in reducing NEET ratios across most categories. The pandemic year (2020) saw sharp increases in NEET ratios due to economic and educational disruptions, disproportionately affecting females, youth with low education, and economically disadvantaged families. In the post-pandemic period (2023), recovery is evident but incomplete. NEET ratios remain higher than 2019 levels, with persistent challenges for females, youth with no diplomas, and families with unstable employment. Thus, the table underscores the long-term effects of the pandemic on youth engagement in education and employment. While partial recovery has occurred, addressing gender disparities, supporting youth with low education, and enhancing family economic stability are critical to fully reversing the pandemic's impact.

Figure 1 depicts the long-term trends observed across different age cohorts of NEETs. For individuals aged 20–24 and 25–29, the NEET rate exhibited a consistent downward trajectory prior to 2020, and this decline resumed following the pandemic-induced peak. In contrast, the 15–19 age group experienced a more nuanced pattern: a steady decline in NEET rates between 2010 and 2015 was subsequently reversed, with an upward trend that accelerated markedly during the pandemic period.

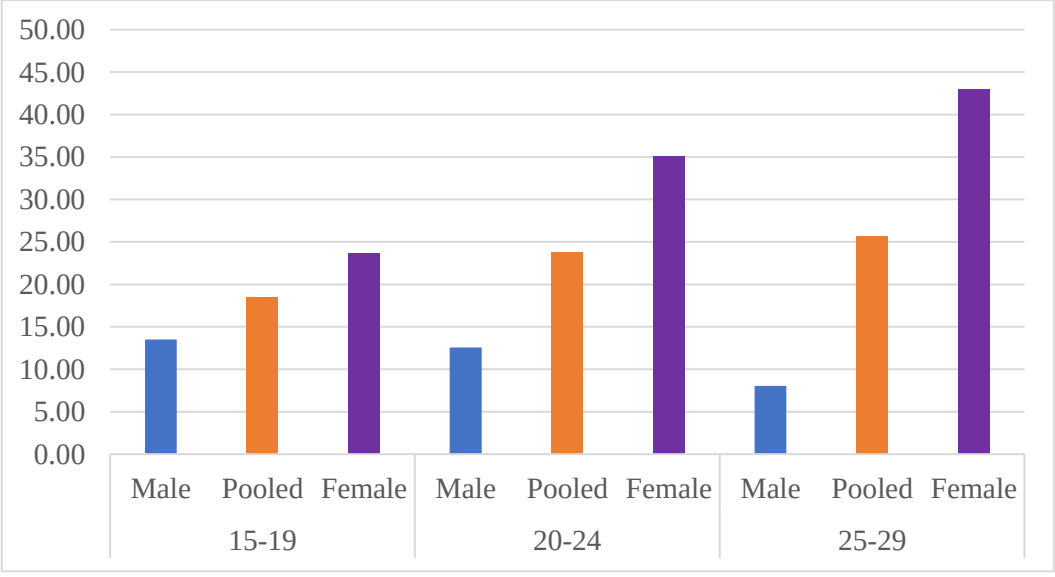
Figure 1: NEET ratios by age groups



Source: Author's own work

Figure 2 represents NEET ratios by gender and age groups for the last year of analysis, 2023 (See the ratios by gender and age groups for the selected years in the Appendix). The results highlight an increasing gender disparity in NEET rates as age advances, with the gap between male and female NEETs widening significantly in older age cohorts.

Figure 2: NEET ratios by gender and age group, 2023



Source: Author's own work

Methodology

Drawing insights from the raw data and descriptive statistics derived from the HLFS microdata, we observe that NEET (Not in Education, Employment, or Training) status is predominantly associated with two types of families: low-income households with less-educated parents and middle-class families where parents possess advanced educational qualifications. Interestingly, a nuanced pattern emerges when examining the relationship between parents' educational attainment and the prevalence of NEET youth. Specifically, as parental education levels increase—particularly mothers'—the likelihood of NEET status initially declines. However, this trend reverses when parents attain a university degree or higher, resulting in a U-shaped trajectory linking NEET probability to parental education. A similar U-shaped relationship is evident when analyzing family income on a per capita basis. Additionally, the age of parents at the time of childbirth significantly influences these dynamics. Notably, highly educated women tend to have children later in life, which may further affect NEET outcomes. To account for these complex interrelations, we incorporated a range of family characteristics into our analysis. These include the age gap between the youth and their father, the age gap between the youth and their mother, per capita income and its squared term, the educational levels of both parents, and the decent work status of each parent. This multifaceted approach provides a more comprehensive understanding of the factors shaping NEET patterns.

Following a comprehensive analysis utilizing descriptive statistics, we proceed to construct a probit model to estimate the likelihood of being NEET, framed as a function of individual and familial attributes. The individual attributes encompass factors such as age, the square of age, gender, marital status, and the educational attainment of the youth. Conversely, familial characteristics include the age gap between the youth and their parents, the nature of parental employment (categorized as decent or otherwise), the educational levels of the parents, per capita wage income within the household, and its square, to account for the inter-class dynamics influencing NEET probability. Integrating these variables, we define the NEET probability as follows:

$$\begin{aligned} Prob(NEET)_i = {} & \beta_0 + \beta_1 Age_i + \beta_2 AgeSquare_i + D_1 MaritalStatus_i + D_2 Education_i \\ & + \beta_3 AgeDifMother_i + \beta_4 AgeDifFather_i + \beta_5 FamilyIncomePerHead_i \\ & + \beta_6 FamilyIncomePerHead\_Square_i + D_3 MotherDecentEmp_i \\ & + D_4 FatherDecentEmp_i + D_5 MothersEducation_i + D_6 FathersEducation_i + \varepsilon_i \end{aligned}$$

This equation is estimated across three distinct age groups. The first group includes youth aged 15–19, the second comprises individuals aged 20–24, and the final group encompasses those aged 25–29. The expected sign of the coefficient β_1 is indeterminate for the first two groups, as ages 18 and 22 represent pivotal milestones in a young person's life—coinciding with the typical completion of high school and

university education, respectively. Consequently, trends may vary before and after these critical ages. For the 25–29 age group, however, we anticipate a negative sign, as familial pressures to secure employment are likely to intensify. The coefficient of age squared is included as a correction factor, taking the inverse sign of the linear age coefficient.

Regarding education, we expect its coefficient to be negative, reflecting the tendency for higher educational attainment to reduce the probability of being NEET. For marital status, the expected sign remains ambiguous, as the influencing factors differ between genders. Since our analysis pools male and female respondents, the net effect is uncertain. Turning to family characteristics, the relationship between parental age at childbirth, especially for mother's age at birth, and NEET probability is complicated. For low socioeconomic background parents, there is a negative association between early parental age at birth and children's labor market outcomes. Teenage births often lead to the mother's discontinuation of her education, hence increases the likelihood of her child becoming NEET as the child may face lower educational and socioeconomic opportunities because of the reduction in human capital. Thus, for women from lower socioeconomic backgrounds, there exists a negative correlation between the probability of being NEET and the age difference from the mother. The case for well-educated middle-class women is exactly the opposite. Those educated women who give birth at relatively older ages are more likely to indulge their child, which in turn increases the NEET probability. The age difference between the youth and the mother is expected to have a positive effect on NEET probability in this case. A significant age gap, especially with the mother, may indicate overprotectiveness, which could diminish the pressure to seek employment and thereby increase NEET likelihood. As a result, the net effect of age difference on NEET probability depends on the sample decomposition and strength of these two contradictory effects. Parents with stable, "decent" employment are less likely to have NEET children in lower-class families, where financial constraints compel youth to enter the workforce. However, in middle-class families, reduced financial pressures may diminish such compulsion, leading to an ambiguous net effect. Household income per capita and its square are included to capture the hypothesized U-shaped relationship. For lower socio-economic classes, increasing income is expected to reduce NEET probability, while for middle- and upper-class families, higher income levels may have the opposite effect. Finally, parental education, particularly the mother's, is anticipated to exhibit a non-linear relationship with NEET probability. At lower levels, increased parental education tends to reduce NEET likelihood. However, beyond a certain threshold, the relationship may reverse, with higher parental education potentially leading to increased NEET probability.

RESULTS

Probit regressions were conducted for three age groups, following checks for normality through kurtosis and skewness tests. The pre-pandemic probit regression outcomes for NEET across age cohorts (15–19, 20–24, and 25–29) for the years 2010 and 2019 are summarized in Table 3. Results for the pandemic period and subsequent recovery are provided in Table 4, while findings for other years are available upon request.

According to the pre-pandemic results in Table 3, age exerts a positive influence on NEET probability for the 15–19 age group, whereas its effect turns negative for older cohorts. This impact is statistically significant at the 0.1% level across all groups and years. A notable observation is that being male consistently reduces the likelihood of NEET status across all age groups in both years, with statistically significant negative coefficients. This indicates that males exhibit lower NEET probabilities compared to females, reflecting underlying gender disparities. The gender effect is particularly pronounced for the 25–29 age group in all observed years. Marital status also plays a significant role: being married significantly increases NEET probability for the youngest cohort (15–19) but decreases it for older groups. This effect is more pronounced in 2019, suggesting that marriage among the youngest cohort, especially for females, increasingly withdrew individuals from the labor market and education. Conversely, divorce and widowhood exhibit varied impacts. Divorce reduces NEET probability for the 25–29 cohort in 2010, while the opposite effect is observed for other age groups in both years. For widowed individuals in 2010, NEET probability is particularly high among the 25–29 cohort; however, this effect diminishes across all groups by 2019. Educational attainment emerges as a critical factor in mitigating NEET probability across all age groups, with the exception of high school education for the 15–19 cohort. In 2010, holding other factors constant, a high school graduate aged 15–19 was 49% more likely to be NEET compared to those without a diploma. Although this positive effect declined in 2019, it remained statistically significant. Importantly, the protective effect of education strengthens with age, with the most pronounced effects observed for the 25–29 age cohort. Furthermore, university enrollment and advanced degrees (e.g., Master's/PhD) significantly reduce NEET probability, highlighting the robust protective role of higher education against NEET status. The relationship between parental education and NEET probability is complex. In 2010, higher parental education levels consistently reduced NEET probability for the 15–19 cohort. However, for older age groups, an inverse relationship emerges, whereby higher paternal education gradually increases NEET probability. By 2019, the probit results reveal a nonlinear relationship between parental education and NEET likelihood. For instance, children of mothers holding Master's or PhD degrees were more likely to be NEET compared to those with mothers lacking formal education. A similar, albeit slightly weaker,

trend is observed for paternal education. Per capita income demonstrates a negative correlation with NEET probability, though its magnitude remains relatively modest. As anticipated, the squared income term exhibits a positive sign, aligning with expected correction functions. The indulgence effect indicating a positive relationship between the age difference between the youth and the mother and NEET probability is apparent for the pre-pandemic period years across all age groups. Parental employment, particularly that of mothers and fathers, generally exhibits protective effects against NEET status, albeit with variations. Notably, in 2010, mothers holding decent employment reduced the NEET probability across all age groups; however, this effect turned positive in 2019. This suggests that, in 2019, mothers with decent employment were more likely to have NEET children compared to mothers engaged in less secure forms of employment.

A comparison between 2010 and 2019 reveals a marginal decline in NEET probabilities for certain groups, particularly males and individuals with higher education levels, indicating incremental improvements in structural factors. Nevertheless, education remains a pivotal determinant of NEET probability, while marriage continues to significantly restrict labor market participation, particularly among younger women.

In conclusion, age, gender, marital status, education, and familial characteristics are key determinants of NEET probability. Higher levels of educational attainment and supportive family backgrounds serve to mitigate NEET risks, whereas lower education levels and marriage, particularly for women, exacerbate the likelihood of NEET status. These findings underscore persistent structural challenges that predated the pandemic, particularly among vulnerable demographic groups.

Table 3: Probit regression results, 2010 and 2019

Year		**2010**			**2019**	
Age Interval	**15-19**	**20-24**	**25-29**	**15-19**	**20-24**	**25-29**
Prob (NEET)						
Individual Characteristics						
Age	1.114***	-.868***	-.36***	1.422***	-1.015***	-.761***
AgeSquare	-.031***	.017***	.007***	-.04***	.021***	.014***
Male	-.593***	-.583***	-.798***	-.385***	-.423***	-.534***
Marital Status						
Married	.154***	-.196***	-.367***	.099***	-.079***	-.286***
Divorced	.62***	.166***	-.007	1.024***	.347***	.076***
Widowed	.712***	.971***	1.107***	.719***	.713***	.848***

Education						
Primary School		-.272***	-.895***	-.557***	-.35***	-.843***
Secondary Sch	-.87***	-.648***	-1.172***	-1.623***	-.86***	-1.022***
High Sch	.489***	-.777***	-1.309***	-.014***	-1.021***	-1.277***
Voc. H. Sch	-.145***	-.935***	-1.476***	-.328***	-.825***	-1.498***
Un. And Higher	-.312***	-.566***	-1.408***			
University				-.686***	-.77***	-1.289***
Family Characteristics						
Age Dif Mother	.005***	.004***	.003***	.005***	.008***	.011***
Age Dif Father	-.008***	-.001***	0*	-.003***	-.006***	-.003***
Mother Dec. Emp	-.127***	-.005	-.073***	.051***	.137***	.013**
Father Dec. Emp	-.037***	.183***	.224***	-.004**	.153***	.237***
Inc. Per Head	-.001***	-.002***	-.003***	0***	-.001***	-.001***
In. Per Head Sq.	0***	0***	0***	0***	0***	0***
Fathers Education						
Primary Sch	-.13***	.062***	.032***	.177***	.057***	.054***
Secondary Sch	-.222***	.143***	.236***	-.094***	.081***	.141***
High Sch	-.266***	.149***	.206***	-.088***	.121***	.247***
Voc. H. Sch	-.258***	.069***	.173***	-.11***	-.014***	.339***
Un. and Higher	-.179***	.295***	.59***	-	-	-
University	-	-	-	.006	.312***	.248***
Masters Or PhD	-	-	-	.051***	.438***	.823***
Mothers Education						
Primary Sch	-.311***	-.187***	-.079***	.313***	.184***	.024***
SecondarySch	-.513***	-.308***	-.231***	.042***	-.077***	.128***
High Sch	-.563***	-.256***	-.27***	.017***	-.107***	-.102***
Voc.H.Sch	-.455***	-.274***	-.429***	-.147***	-.012**	.118***
University And Higher	-.509***	-.198***	-.328***			
University	-	-	-	-.135***	-.176***	.003
Masters Or PhD	-	-	-	.084***	.216***	-.103***
Constant	-9.424***	10.867***	5.615***	-12.39***	12.29***	10.448***
Observations	36752	19462	12519	29451	16420	9582
Pseudo R^2	.2	.136	.238	.272	.112	.192

Source: Authors' own calculations. *** p<.01, ** p<.05, * p<.1. The zero values represent decimals that are very close to zero.

Table 4 presents the probit regression results for NEET status across three age cohorts (15–19, 20–24, and 25–29) during the pandemic year (2020) and the post-pandemic year (2023). During the pandemic, age exerts a positive and statistically significant effect on NEET probability for the 15–19 and 25–29 cohorts, with a stronger impact observed for the youngest group. Conversely, for the 20–24 cohort, age significantly decreases NEET probability. By the post-pandemic year, the positive effect of age remains significant only for the 15–19 cohort. Notably, the squared age term consistently takes the opposite sign of the age term for all cohorts, reflecting a statistically significant non-linear relationship.

Table 4: Probit regression results, 2020 and 2023

Year	**2020 (Pandemic)**			**2023 (Post Pandemic)**		
Age Interval	**15-19**	**20-24**	**25-29**	**15-19**	**20-24**	**25-29**
Prob (NEET)						
Individual Characteristics						
Age	1.245***	-1.616***	.238***	1.36***	-.934***	-.957***
Age Square	-.033***	.035***	-.005***	-.038***	.02***	.018***
Male	-.318***	-.388***	-.576***	-.38***	-.434***	-.572***
Marital Status						
Married	-.177***	-.165***	-.31***	.069***	-.041***	-.131***
Divorced	.595***	.211***	.077***	.827***	.552***	.144***
Widowed	-	-.145**	.007	-	1.005***	.623***
Education						
Primary School	-.385***	-.516***	-.7***	-.593***	-.723***	-.961***
Secondary Sch	-1.587***	-.842***	-.982***	-1.714***	-1.021***	-1.488***
High Sch	-.153***	-1.124***	-1.174**	-.156***	-1.136***	-1.546***
Voc. H. Sch	-.443***	-.944***	-1.158**	-.63***	-1.298***	-1.803***
2Y. College				-.838***	-1.172***	-1.819***
University	-.429***	-.648***	-1.228**	-	-.77***	-1.289***
Mas/PhD		-.34***	-1.336**			
Family Characteristics						
Age Dif Mother	-.004***	-.004***	.004***	.002***	.004***	-.003***
Age Dif Father	0	.006***	-.002***	-.004***	-.002***	.002***

Mother Dec. Emp	-.019***	.051***	.17***	-.042***	.013***	.259***
Father Dec. Emp	-.04***	.183***	.3***	-.092***	.077***	.116***
Inc. Per Head	0***	-.001***	-.001***	0***	0***	0***
In. Per Head Sq.	0***	0***	0***	0***	0***	0***
Fathers Education						
Primary Sch	.177***	.065***	.054***	-.112***	-.041***	.129***
Secondary Sch	-.123***	.025***	.071***	-.197***	-.052***	.166***
High Sch	-.106***	.158***	.1***	-.199***	.115***	.359***
Voc. H. Sch	-.138***	.02***	.046***	-.167***	-.023***	.241***
2Y. College				-.031***	.354***	.441***
University	-.001	.218***	.293***	.034***	.153***	.362***
Mas/PhD	.082***	.509***	.78***	.02**	.306***	.398***
Mothers Education						
Primary Sch	.43***	.258***	.123***	-.345***	-.203***	-.233***
Secondary Sch	-.101***	.083***	.173***	-.471***	-.284***	-.233***
High Sch	-.129***	-.067***	-.05***	-.477***	-.398***	-.348***
Voc. H. Sch	-.196***	-.24***	-.082***	-.599***	-.416***	-.21***
2Y. College				-.435***	-.439***	-.135***
University	-.246***	.002	.031***	-.426***	-.425***	-.003
Mas/PhD	-.193***	-.009	-.606***	-.42***	-.307***	.413***
Constant	-11.144***	18.753***	-2.329**	-10.988**	11.778***	14.165***
Observations	36438	21946	12320	34531	19942	11821
Pseudo R^2	.274	.1	.178	.271	.121	.2

Source: Authors' own calculations. *** p<.01, ** p<.05, * p<.1. The zero values represent decimals that are very close to zero.

Males are significantly less likely to be NEET compared to females across all age groups and years, underscoring a persistent gender disparity. For example, the coefficient for males in the 15–19 age group is -0.318*** in 2020 and -0.388*** in 2023. Furthermore, the magnitude of the effect strengthens with age, as evidenced by increasingly negative coefficients for older age cohorts. Marital status also exhibits notable effects. Being married significantly reduces NEET probability, particularly for older individuals (e.g., -0.317*** for the 25–29 cohort in 2020). In contrast, divorce significantly increases the likelihood of NEET status, as reflected by positive coefficients for certain age groups (e.g., 0.595*** for 15–19 in 2020). Widowhood yields mixed results but generally increases NEET probability, albeit with varying levels of statistical significance. Education remains a critical determinant of NEET status in both the pandemic and

post-pandemic periods, albeit with a non-linear trajectory. While higher education generally reduces NEET probability, the effect magnitude does not increase linearly with education level. For instance, in 2020, the effect of holding a primary school diploma is stronger than that of a high school diploma for the 15–19 cohort. Specifically, primary school graduates are less likely to be NEET compared to high school graduates. The magnitude of the coefficients increases up to secondary school level, declines at high school level, and then rises again as education levels advance. This non-linear pattern is evident across all age groups. Notably, vocational high school education emerges as particularly effective in reducing NEET probability, consistently outperforming general high school and even university education across all age cohorts. This underscores the critical role of vocational education in facilitating youth employment. The effects of age difference with parents vary in both magnitude and direction. For instance, the likelihood of NEET status decreases with greater age differences between children and their mothers for the 15–19 and 20–24 cohorts in 2020, while the effect is reversed for the 25–29 cohort. This demonstrates the fact that indulgence effect is stronger for the latter in this year. However, the coefficients for parental age differences remain small but statistically significant across all years and cohorts. Notably, the magnitude of the effect for age difference with mothers generally exceeds that for fathers. However, post-pandemic period shows exactly a reverse pattern. The likelihood of NEET status decreases with greater age differences between children and their mothers for the 25-29 age group indicating that indulgence effect is weaker. Per capita income exhibits a consistent negative correlation with NEET probability, as evidenced by statistically significant negative coefficients (e.g., -0.010*** for the 15–19 cohort in 2020). However, the squared income term is positive, indicating a diminishing return effect and reflecting a U-shaped relationship between income and NEET likelihood.

Parental education also demonstrates a non-linear relationship with NEET probability. For instance, in 2020, paternal education exerts a positive effect on NEET probability at the primary school and Master's/PhD levels for the 15–19 cohort, suggesting increased NEET likelihood among children whose fathers hold these educational qualifications. Similarly, maternal education at the Master's/PhD level positively influences NEET probability for the 25–29 cohort in 2023. Overall, maternal education exerts a stronger influence on NEET status than paternal education across all cohorts and years. This pattern may be linked to the well-documented relationship between maternal education and early childhood development outcomes.

In summary, the results reveal consistent patterns across both pandemic and post-pandemic periods. Education and gender emerge as the most significant determinants of NEET status, with males consistently less likely to be NEET compared to females. Individuals with lower educational attainment, females, and

those from disadvantaged family backgrounds—characterized by lower income or parental unemployment—face a higher likelihood of NEET status. The findings underscore the enduring importance of structural factors, particularly education and gender disparities, in shaping NEET outcomes. Importantly, both vocational education and higher education continue to play a pivotal role in mitigating NEET risk and facilitating youth labor market participation.

CONCLUSION

The findings of this study provide significant insights into the influence of individual and family-related factors on the probability of young individuals in Türkiye becoming NEET. Utilizing data from the Turkish Household Labor Force Survey spanning 2010–2023 and employing a probit model, the analysis reveals complex interrelations between family characteristics and NEET status.

Firstly, empirical results show that there is a non-linear relationship between education level and NEET risk. Those with medium level education are the ones with lowest risk of being NEET, while those without any diploma are the ones with highest NEET risk. Findings also show that especially vocational high school diploma significantly decreases the NEET risk.

Secondly, the effect of age depends on the cohort in question. For elder groups, increase in age is results in a lower NEET risk while for 15-19 group age and NEET risk have positive correlation. Results also indicate that the effect of marriage widely depends on gender and age group. Gender disparities further underscore the NEET phenomenon in Türkiye. Consistent with existing literature, females are disproportionately represented in the NEET group, particularly within the inactive NEET category. Family-related obligations, such as caregiving responsibilities and societal expectations surrounding early marriage, were identified as critical barriers hindering female participation in education and employment. The findings reaffirm the role of traditional gender norms in perpetuating structural disadvantages for young women.

Family characteristics are also influential on NEET probability. Firstly, parental education levels emerged as one of the most influential determinants of NEET likelihood with non-linear pattern. Specifically, a upper medium (high school) level of parental education substantially reduces the probability of youth falling into the NEET category, however higher levels of parental education are associated with higher risk of youth falling into it. The impact of maternal education, particularly at the tertiary level, was found to be more pronounced compared to paternal education. This suggests that mothers' educational attainment exerts a stronger influence on youth outcomes, likely reflecting the crucial role of maternal engagement in a child's early education and career aspirations. Conversely, youth with parents who possess

lower levels of education exhibit a markedly higher probability of NEET status, affirming the intergenerational transmission of educational disadvantage.

Secondly, the analysis highlights the pivotal role of parental employment status. Households with at least one parent engaged in "decent work" – characterized by stable, formal employment – significantly reduce the risk of youth becoming NEET. This result underscores the importance of economic stability within the household in facilitating educational and employment opportunities for young individuals. Notably, the absence of decent parental employment, exacerbates NEET vulnerability. Such findings align with theoretical frameworks on the intergenerational inheritance of worklessness, where jobless parents fail to provide both financial resources and social capital necessary for labor market integration.

A noteworthy dimension explored in this study pertains to household income. The analysis reveals a U-shaped relationship between per capita household income and NEET probability. Youth from the lowest-income households face a disproportionately high risk of NEET status, attributed to financial pressures necessitating early labor market entry or the inability to invest in education. Conversely, youth from the highest-income brackets also exhibit a moderate increase in NEET likelihood, possibly reflecting voluntary non-participation driven by extended educational pursuits or other personal choices. This U-shaped trajectory highlights the nuanced nature of income dynamics within NEET outcomes.

In terms of age dynamics between parents and youth, the results indicate a significant but small magnitude coefficient of the parental age gaps. A wider age gap, particularly between the youth and their especially mother, corresponds to a higher likelihood of NEET status. This may reflect delayed parenthood among more highly educated individuals, whose children are generally less prone to NEET outcomes. Probably, the influence of maternal age at childbirth also manifests through educational pathways, where younger maternal age correlates with increased NEET risks, likely due to limited maternal education and economic resources. On the other hand, late childbirth also may have an exaggerated care on child, which may increase the NEET risk. Thus, young mothers and relatively older age mothers create contradictory effects in the model which in turn results in small but significant coefficients. Additionally, the study explores the literature on intersection of family structure and NEET status. Single-parent households and families with immigrant backgrounds exhibit a higher likelihood of youth NEET outcomes. Such households often grapple with economic instability, limited social capital, and reduced parental involvement, further amplifying NEET risks.

Another significant finding of the study pertains to the divergent long-term trends observed across different age cohorts. For individuals aged 20–24 and 25–29, the NEET rate exhibited a consistent

downward trajectory prior to 2020, and this decline resumed following the pandemic-induced peak. In contrast, the 15–19 age group experienced a more nuanced pattern: a steady decline in NEET rates between 2010 and 2015 was subsequently reversed, with an upward trend that accelerated markedly during the pandemic period. Moreover, the results highlight an increasing gender disparity in NEET rates as age advances, with the gap between male and female NEETs widening significantly in older age cohorts.

Overall, the empirical findings underscore the multifaceted nature of NEET dynamics in Türkiye. Family-related factors, particularly parental education, employment status, and household income, exert a decisive influence on the NEET probability of young individuals. These insights highlight the necessity of targeted policies aimed at breaking intergenerational cycles of disadvantage, promoting parental engagement, and addressing gender-specific barriers to education and employment.

Parental education, employment status, and household income are pivotal determinants influencing the likelihood of a young individual becoming NEET. However, these variables may themselves be shaped by latent, unobserved factors. Such factors include family dynamics or the level of parental involvement, where the degree of support or attention provided by parents can significantly impact a child's educational outcomes. Additionally, contextual influences like neighborhood or community conditions—such as residing in an economically disadvantaged area—may limit access to opportunities for both education and employment. Mental health and personal issues, such as depression, anxiety, or other psychosocial challenges, further complicate one's capacity to engage with education or work. Moreover, cultural factors—such as regional or community-specific attitudes toward education and employment—can introduce confounding effects in the analysis of the relationship between parental circumstances and NEET status. To account for these unobserved variables and better isolate the influence of parental background on NEET outcomes, incorporating statistical techniques including fixed-effects models, instrumental variable approaches, and propensity score matching as future research could strengthen causal inferences. Furthermore, the subset of NEET individuals who are unemployed, referred to as active NEETs, could be incorporated into the estimation process. To achieve this, future research could involve conducting separate regression analyses for active and non-active NEETs across different age groups.

AUTHOR STATEMENT

Researcher declared that all contributions to the article were his own. Researcher have not declared any conflict of interest.

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Appendix

Appendix 1: NEET ratios by gender and age groups for the selected years

Age	Year	2010	2019	2020	2023
15-19	Male	13,59	13,81	15,25	13,50
	Female	33,31	25,14	25,34	23,69
	Pooled	23,09	19,34	20,19	18,48
20-24	Male	12,27	11,63	16,22	12,56
	Female	51,52	38,14	41,22	35,06
	Pooled	33,72	25,22	28,85	23,79
25-29	Male	5,88	6,96	10,34	8,03
	Female	59,07	46,46	50,18	42,94
	Pooled	32,59	27,11	30,65	25,70