DISCUSSION PAPER SERIES

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ABSTRACT

Gendered Impact of COVID-19 Pandemic on Transitioning from University to Labor Market: Evidence from Turkey[*]

The Covid-19 pandemic led to unprecedented disruptions in the labor market. Turkey implemented a worker dismissal ban to mitigate the adverse effects, effective from April 2020 to June 2021. The pandemic and unveiled measures put pressure against recent university graduates' successful transition to the labor market, who are already vulnerable to labor market shocks due to a dramatic increase in their number in the last decade. In this paper, we examine the gendered impact of the Covid-19 pandemic and related employment protection policies on the labor market outcomes of recent university graduates. We find that both males and females are less likely to be employed during the pandemic year, with more pronounced employment losses for females. While gender differences in employment arise from females' high skill employment losses, becoming discouraged workers and staying out of the labor force to invest in self-education led to higher inactivity for females.

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1 Introduction

World Health Organization (WHO) declared the Covid-19 outbreak an international public health emergency in January 2020 and a global pandemic in early March. The first reported case in Turkey was on March 11, and less than a week, the first death was recorded on March 17, 2020. The government quickly put in place a series of social distancing measures in March, including closing schools and nonessential services, to contain the disease.

Figure 1: Aggregate employment during the pandemic
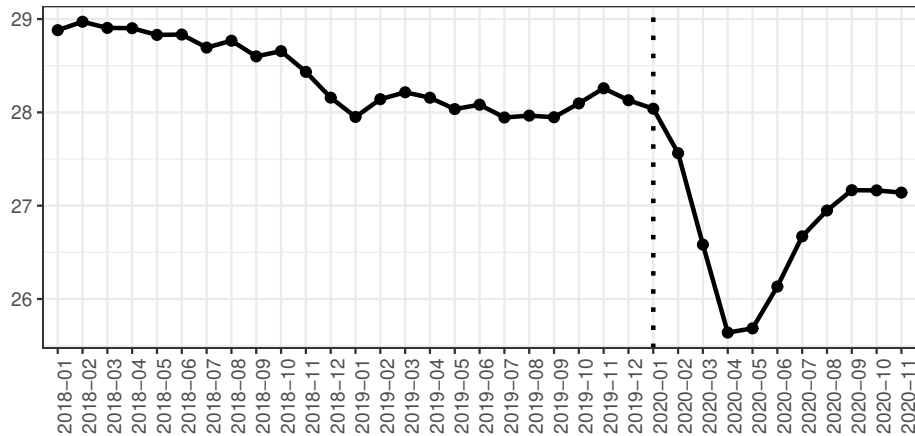
Source: Seasonally adjusted monthly labor statistics.
Notes: Numbers for each month gives the average of previous, current, and next month employment.

The temporary closure of many workplaces and weak demand due to the uncertainty regarding the persistence of the pandemic led to a dramatic fall in aggregate employment. In Turkey, according to Seasonally Adjusted Monthly Labor Statistics presented in Figure 1, the employment fall starts in March and continues gradually until June[1]. There exists a recovery of jobs from June to October, following the relaxation of social distancing measures. Despite an observable recovery, around 1 million jobs are lost during the pandemic compared to the pre-pandemic months.

Many countries implemented labor market interventions to mitigate the Covid-19 pandemic's adverse effects, such as liquidity supports, wage subsidies, unemployment benefits, and reduction of tax income (De La Flor et al., 2021). Turkey implemented policies to protect those already in employment as the government introduced a worker dismissal ban and allowed only paid or unpaid leave from April 2020 until June 2021. The government subsidized the workers whose hours were reduced or eliminated due to the pandemic related measures and provided social assistance to all workers forced to take unpaid leave. These labor market regulations partially maintain the employment status of the existing workers.[2]

The Covid-19 pandemic lowers the demand for labor and, therefore, job creation (Forsythe et al., 2020; Holgersen et al., 2020; Campos-Vazquez et al., 2021); and firing freezes in Turkey additionally limit the turnover of workers. Hence, the individuals who will transition into the labor market from

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[1]Turkstat publishes the number of employed individuals each month as an average of the current, previous, and next month. Since each month's employment statistics take the next month's employment into account, a change in direction realized in the current month is expected to be firstly observed in the previous month's employment statistics. Therefore, the fall starting in February indicates a dramatic fall in March, and the slight recovery starting in May suggests a recovery in June. Stagnant level from September to November confirms stable employment in the last quarter of the pandemic year.

[2]For a detailed discussion on the expected impact of employment protection policies during the Covid-19 pandemic on aggregate employment, see Uysal et al. (2020).

inactivity are expected to be most affected by the pandemic. In this study, we focus on a particular subset of those most vulnerable and investigate how the Covid-19 pandemic and related employment protection policies affected the labor market outcomes of recent university graduates.

The Turkish labor market has been subject to some compositional changes in the last decade due to the record number of people graduating from the university. The earlier education policies in Turkey, like extending mandatory years of schooling (Kırdar et al., 2016; Erten and Keskin, 2019) and higher education expansion (Polat, 2017; Caner et al., 2019), increased the number of university graduates aged 18-29 from 1.4 million in 2010 to 3.9 million in 2020 (Figure 2). This sudden increase challenged the labor market, whose job creation for educated workers has fallen short compared to the supply increase. Indeed, Figure 2 presenting the number of employed university graduates in comparison to university graduates shows that the gap between the two lines has been widening over time for both men and women with more substantial gap for women. Hence, the ongoing challenges that recent university graduates face in the labor market combined with the pandemic-induced lockdowns and unveiled measures have put additional pressure against university graduates' successful transition to the labor market following their leaving education or training.

Figure 2: Evolution of number of university graduates
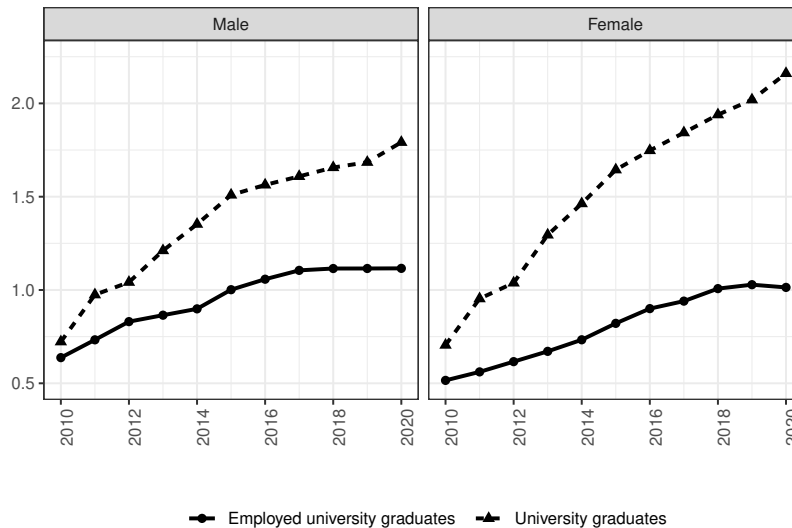
Source: Address Based Population Registry System (ABPRS), and Household Labor Forcey Surveys (HLFS).
Notes: ABPRS publishes the number of university graduates aged 18-29. The numbers on employed university graduates are calculated by authors for the same age group using the weights given in HLFS.

The earlier literature has explored the role of recessions in exacerbating inequalities in society (Perri, Steinberg, et al., 2012), and more specifically, the impact of the pandemic on labor market disadvantages faced by women (Alon et al., 2021; Albanesi and Kim, 2021; Adams-Prassl et al., 2020; Churchill, 2021; Kristal and Yaish, 2020). Understanding the gendered impact of the Covid-19 pandemic on young university graduates' transitioning from school to work contributes to this extensive literature. To the best of our knowledge, our paper is also the first one quantifying the adverse effect of the pandemic and related employment protection policies on the Turkish labor market. We focus on recent university graduates as, first, the inflation of new graduates and job creation's falling short compared to the supply increase of educated workers make recent graduates more susceptible to labor market shocks, and second, new graduates constitute a vulnerable group to the pandemic and related employment

protection policies. Similar employment protection policies had been implemented for an extended period in countries like Italy and Spain. Hence, our findings contribute to identifying demographic groups adversely affected by such labor market policies. Employment protection policies appear to reduce job losses in the short run but may have unforeseen adverse effects on vulnerable groups as we have shown. We would further argue that these adverse effects can be long lasting when we consider that initial labor market conditions of young workers can have persisting effects over their life cycle.

2 Data

The micro dataset used in this study comes from the Turkish Household Labor Force Surveys (HLFS) annually conducted in 2014-2020 by Turkstat[3]. The HLFS is one of the most extensive household surveys available in Turkey, and it collects demographic, education, and labor market information from roughly 400,000 individuals living in 150,000 households each year.

Our sample of interest comprises young university graduates aged 18-29 transitioning from university to the labor market. In HLFS, we cannot directly observe when the individuals left education, but instead, we deduce this information from other observables on labor market status in the current and previous years. Specifically, HLFS gives the labor status of the participants in the same month of the earlier year given in several categories, as in employment, unemployment, education or training, or not participating in the labor force for other reasons (in military service, disabled, retired, busy with household chores, etc.). Our sample consists of university graduates not enrolled in education or training in the current year and enrolled in education or training in the previous year.

OOne concern on our sample selection is that individuals' choice to exit education and enter the labor market can be jointly determined. Therefore, our sample in the pandemic year might differ from earlier years due to labor market conditions. First, individuals may stay in education longer during the pandemic due to difficulty finding a job in poor labor market conditions (Johnson, 2013) or concerns that graduating in bad economic conditions will have a long-term adverse effect on their wages (Kahn, 2010; Oreopoulos et al., 2012). We would expect a smaller sample in 2020 compared to earlier years in such a case.

Second, due to the possible job losses within the household or reduced household income during the recession, young adults may hurry to finish their education or postpone their postgraduate education to contribute to the household income. This phenomenon, known as added worker effect, is explored in several studies, such as Silva (2016), Botrić and Tomić (2018), Karaoglan and Okten (2022). Third, parents or younger siblings may need young adults' services as caregivers due to the closing of schools and the inability to outsource childcare and housework. Young adults may exit from or pause the education to provide such services to their families. If the second or third incentives are at work during the Covid-19 pandemic, we expect a larger sample in 2020 than in the earlier years.

To address these concerns on sample selection, we compared the share of 18-29-year-old university graduates who exit education or training in the previous year among all individuals aged 18-29, across years. Table A.1 in the Appendix gives this percentage across years for the male sample in column (2) and the female sample in column (3). Parallel to the increase in the number of university graduates, the share of those who exit education in 18-29 year old university graduates increases over the years. For the male sample, the share in 2020 is consistent with the trend observed in earlier years. However, the

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[3]We employ yearly data in our analysis because the microdata that allows us to disentangle the impact for our sample of interest is only available annually. Based on the aggregate employment statistics shown in Figure 1, the labor market shrinkage is more prominent at the onset of the pandemic. Therefore, our results based on individuals observed throughout the year underestimates the actual impact. On the other hand, the worker dismissal bans implemented throughout 2020 limited new labor market participants' job opportunities, even in the months that employment was recovering.

share of our female sample exhibits an increase in 2020 beyond the trend, confirming that the second or third channel is more likely to be at work for our female sample. To further confirm that the possible sample selection issues are not driving our results, we controlled the robustness of our results on an alternative sample, not subject to sample selection issue. This sample comprises of young adults aged 18-29 who were in education in the previous year and may or may not be in education in current year.

We aim to determine the impact of the pandemic on the labor market outcomes of young adults. In HLFS, we observe the labor market status of an individual in three mutually exclusive groups: employed, unemployed, not in the labor market (inactive). Based on this information, we define two binary dependent variables, namely employment and inactivity, indicating whether an individual belongs to the associated group in the current year or not. We explicitly avoid using unemployment status as an outcome variable for the following two reasons: Turkey experienced a stable unemployment rate in the pandemic year due to a fall in labor force participation, especially at the onset of the Covid-19 outbreak (see Figure A.1 in the Appendix for more details). A possibly unchanged or fallen unemployment outcome for our sample of interest during the pandemic does not give many insights on challenges in transitioning from university to work. Also, unemployment's well documented relationship with the business cycle (Bell and Blanchflower, 2011; Dietrich, 2013) might violate our identification assumptions. However, unemployment represents the remaining part of the labor market, besides our variables of interest, employment and inactivity. Hence, our results can infer the unemployment effect of the pandemic, even though we prefer not to present it here.

We are further interested in the composition of employment and, for that, we employ the occupation codes given in the ISCO-08 classification. Based on ILO's classification of occupations by the required education[4], we decompose the employment variable of university graduates into two as high skilled and low skilled employment. The former indicates the individual is employed in an occupation that requires a university degree, and the latter indicates that the individual is employed in a profession requiring a lower educational degree. Note that both high and low skilled employment take value zero if the individual is not employed.

To investigate the composition of inactivity, we focus on a specific question asking the main reason for not being active in the labor market. The answers are classified into eight categories: ready to work but not actively looking for a job, discouraged worker[5], seasonal worker, housewife, in education, disabled or retired, due to personal/family reasons, and others. We focus on three categories: ready to work, discouraged, and in self-education[6]), and combine the remaining answers under the other option. We introduce binary outcome variables for each group indicating whether the individual self-states to be in that group. Note that these binary variables also take value zero if the individual is employed or unemployed, i.e., not inactive.

Table 1 reports the mean levels of our variables of employment, inactivity, and their compositions in pre-pandemic (2019) and pandemic (2020) years and the differences in means in these years separately for men and women. In 2019, while the probability of females working in high-skilled jobs is slightly higher than males, we observe a gender gap in employment to the detriment of women due to males'

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[4]ILO (2012) identifies required educational attainment for occupations by the 1-digit ISCO-08 classification. In this classification, codes 1, 2, and 3 (managers, professionals, and technicians and associate professionals) are occupations that can be performed by higher educated, 4 to 9 (clerical support workers, service and sales workers, skilled agricultural, forestry and fishery workers, craft and related trades workers, plant and machine operators, assemblers, and elementary occupations) are occupations that require lower education.

[5]Turkstat distinguishes those who are ready to work but not looking for a job for other reasons from the discouraged workers not looking for a job because they lost their hope to find a job fitting their qualifications. This classification helps us differentiate young adults not in the labor force because they believe their job search would not yield results from those waiting for better labor market conditions to participate in the labor force.

[6]Since our sample of interest includes those not enrolled in any formal education or training program, individuals in the education category are those investing in their human capital by their own efforts, given as the definition of self-education in Merriam-Webster Dictionary.

Table 1: Sample statistics

	Male			Female		
	2020	2019	2020-2019	2020	2019	2020-2019
Employment	0.356	0.412	-0.056	0.239	0.337	-0.099
	(0.013)	(0.016)	(0.020)	(0.009)	(0.013)	(0.016)
			[0.0027]			[0.0000]
High skill employment	0.145	0.165	-0.019	0.130	0.191	-0.061
	(0.009)	(0.012)	(0.015)	(0.007)	(0.011)	(0.013)
			[0.0981]			[0.0000]
Low skill employment	0.211	0.247	-0.036	0.109	0.146	-0.038
	(0.011)	(0.014)	(0.017)	(0.007)	(0.010)	(0.012)
			[0.0175]			[0.0006]
Inactivity	0.378	0.272	0.106	0.472	0.272	0.199
	(0.013)	(0.014)	(0.019)	(0.011)	(0.012)	(0.017)
			[0.0000]			[0.0000]
Ready to work	0.102	0.051	0.052	0.148	0.066	0.082
	(0.008)	(0.007)	(0.011)	(0.008)	(0.007)	(0.011)
			[0.0000]			[0.0000]
Discouraged worker	0.042	0.028	0.014	0.059	0.027	0.032
	(0.005)	(0.005)	(0.008)	(0.005)	(0.004)	(0.007)
			[0.0365]			[0.0000]
Self-education	0.123	0.107	0.020	0.188	0.108	0.080
	(0.009)	(0.010)	(0.013)	(0.009)	(0.008)	(0.013)
			[0.0708]			[0.0000]
Other	0.108	0.086	0.0211	0.077	0.071	0.006
	(0.009)	(0.009)	(0.012)	(0.006)	(0.007)	(0.009)
			[0.0431]			[0.2657]
Observations	1,396	1,008	2,404	2,061	1,340	3,401

Notes:Each cell reports the mean values of the variable given in each row for the sample of given gender and year in each column. The standard errors are given in round parenthesis, and the F-value for testing whether the mean value has the calculated sign is given in square brackets.

higher employment in jobs that do not require higher education. In the pandemic year, females disproportionately lose their employment in high-skilled jobs, leading to a gendered employment effect of Covid-19, even though similar employment losses in low skilled jobs for both genders.

The similar pre-pandemic inactivity rates of young university graduate men and women who exited their education or training in the last year have evolved differently with the pandemic, leading to a significantly higher share of young women staying out of the labor force in 2020. The composition of those who stayed out of the labor force also shows some gendered patterns: Men who are ready to work constitute half of the difference between the pandemic and pre-pandemic year. Similarly, women ready to work comprise a large part of the women who additionally stayed inactive during the pandemic. However, not participating in the labor force for self-education, observed to be around similar rates for women and men in 2019, increases significantly for women during the pandemic and constitutes 40 percent of the 20 ppt increase in women's inactivity.

3 Identification and Results

We identify the impact of the Covid-19 pandemic and related employment protection policies on employment and inactivity of young university graduates aged 18-29 who exited the education or training in the last year by following an event study approach similar to earlier literature focusing on the impact of the pandemic on several economic and social outcomes (Angelucci et al., 2020; Asik and Nas Ozen, 2021; Leslie and Wilson, 2020). We proceed by estimating the coefficients of the following equation:

$$y_{irt} = \sum_{t \neq 2019} \beta_t D_t + \alpha X_{irt} + \gamma_r + \epsilon_{irt} \tag{1}$$

where i indexes the respondent, r indexes the region of residence (available at the NUTS-2 level in HLFS), and t indexes the survey year ranging from 2014 to 2020. The binary outcome variable y_{irt} is either the employment or inactivity as defined above. D_t is a vector of survey year dummies where

2019 is omitted to estimate the time related coefficients based on the year right before the pandemic. In addition to the year dummies absorbing differences across years, we control for region effects, age and age squared, field of study dummies, real household income per capita, household size, and regional gross domestic product (GDP). In all our estimations, we report robust standard errors clustered at the region level.

Figure 3: Event study analysis of the effect of Covid-19 pandemic on transition from university to labor market

(a) Employment outcomes
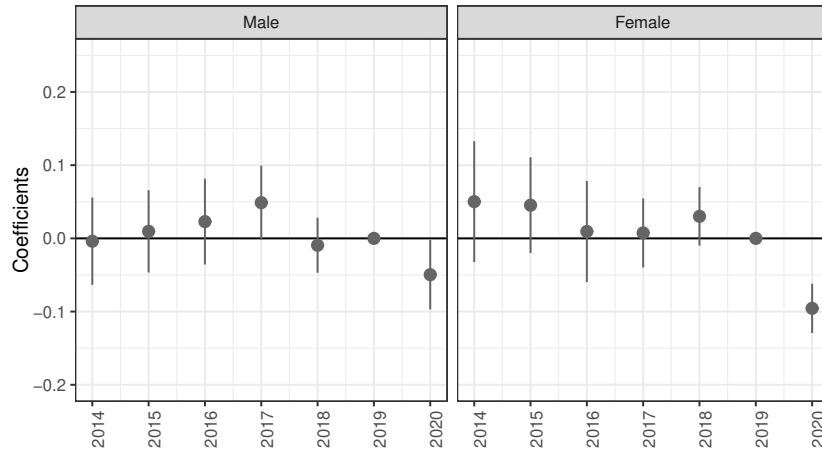
(b) NEET outcomes
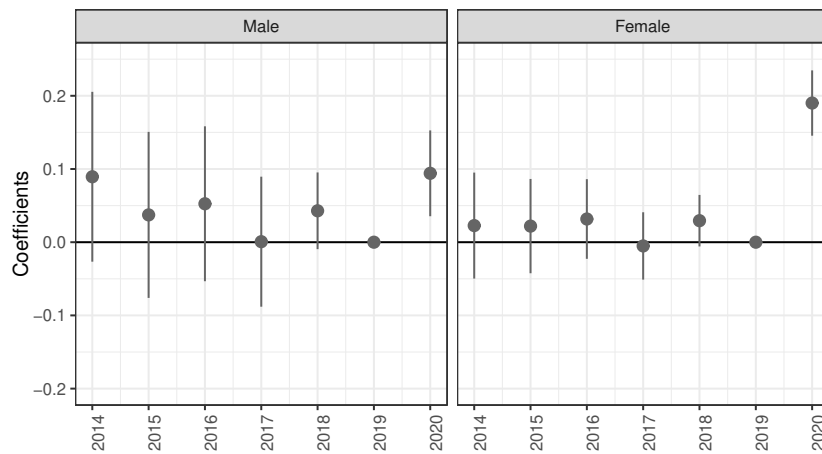
Source: HLFS 2014-2020.
Notes: Authors' calculations.

The coefficient β_{2020} captures the mean difference in our outcome variables in the pandemic year compared to the pre-pandemic year 2019. This coefficient can be interpreted as the impact of the Covid-19 pandemic and related policy interventions on outcome variables under the assumption that the counterfactual outcome variable would be similar in the absence of the pandemic. Panel (a) and (b) of Figure 3 present point estimates for the year dummies in equation (1) where the dependent variables are employment and inactivity, respectively. For both men and women, we find that the estimated year effects for employment and inactivity from 2014 to 2018 are not statistically different from the omitted year, 2019, indicating not systematically different pre-pandemic trends, therefore confirming our assumption.

We are interested in assessing whether the pandemic has heterogeneous effects on labor market outcomes by gender. To do that, we pooled the male and female sample, and include the interaction of all control variables with a female dummy leading us to the following equation:

$$y_{irt} = \left(\sum_{t \neq 2019} \beta_t D_t + \beta_t^F D_t F_i \right) + \alpha X_{irt} + \alpha^F X_{irt} F_t + \gamma_r + \gamma_r^F F_i + v_{irt} \tag{2}$$

where F_i is the female dummy and the remaining variables are the same as above. β_{2020} and $\beta_{2020} + \beta_{2020}^F$ capture the impact on males and females, respectively. In all our tables, we report our estimates for the composite effect on females $\beta_{2020} + \beta_{2020}^F$, in addition to the point estimates for the effect on males β_{2020}, and the heterogeneous effect on females β_{2020}^F.

We first present our coefficient estimates for employment in column (1) of Table 2. Our results indicate a 5 ppt decrease for males and a 9.6 ppt decrease for females in the pandemic year. Decomposing the employment effects in columns (2) and (3) of Table 2 gives us that pandemic effect on low skill employment is higher for males compared to high skill employment, and the impact on high skill employment is imprecisely estimated for males. The differential impact on females is negative and statistically significant for high skilled employment, while it is insignificant for low skilled employment, revealing that females' high skilled employment probability experiences a significantly higher fall due to pandemic and related policies. The composite effect for females shows that females experienced a large and significant fall in their high skilled employment probability while the impact on their low skilled employment is smaller and not statistically significant.

A relatively small employment gap to the detriment of women in the pre-pandemic year is due mainly to the overrepresentation of men in low skilled employment (see *Summary statistics* section in Online Appendix for further details). This phenomenon can be related to stronger labor market attachment of men than women, resulting in males' accepting jobs that require less than their achieved educational attainment to avoid being out of employment. Similarly, the fall in employment of university graduate women can be associated with their expectations that jobs be compatible with their educational attainment.

Consistent with the overrepresentation of men in these jobs, we observe that the adverse effect of the pandemic on low skilled employment is higher for males. In high skilled employment where males and females are equally represented before the pandemic, only females' employment exhibit a fall due to the pandemic indicating the Covid-19 outbreak's role in exacerbating the existing inequalities. We might relate these findings to employers being more reluctant to hire newly graduated females due to productivity concerns (documented in Etheridge et al. (2020); Alon et al. (2021)) mostly associated with women's taking a disproportionate role in caregiving and domestic work that cannot be outsourced during the pandemic.

Table 2: Transitioning from university to employment: The effect of Covid-19 pandemic

Dependent variable:	Employment	High skill employment	Low skill employment
Year 2020	-0.050**	-0.011	-0.039*
	(0.024)	(0.020)	(0.022)
Year 2020×female	-0.046	-0.060**	0.014
	(0.030)	(0.023)	(0.032)
Composite female	-0.096***	-0.071***	-0.025
	(0.017)	(0.012)	(0.015)
Observations	16,620	16,620	16,620

Notes: The sample includes 18-29-year-old university graduates who are not enrolled in any education or training program in the current year and left education or training in the previous year, observed in HLFS 2014-2020. Robust standard errors clustered at region level, are given in parentheses. A constant, age and age squared, region effects, field of study dummies, real household income per capita, household size and regional GDP per capita, and the interaction of all variables with female dummy are included as control variables. *p<0.1 **p<0.05 ***p<0.01.

Next, we present our coefficient estimates where the dependent variable is probability of inactivity in the first column of Table 3. The point estimates for the year 2020 dummy shows that the probability of staying out of labor force increases by 9.4 ppt for males, 19ppt for females. By decomposing inactivity based on the main reason for not participating in the labor force, we find that the increase in males' probability of being ready to work but not looking for a job is the highest and the only significant component. We do not find any significant increase in being a discouraged worker for males in the pandemic year. Hence, an essential and positive finding for males is the lack of an increase in the probability of being discouraged workers due to the pandemic, which might negatively affect the labor market outcomes of young university graduates in a more permanent way.

Even though the twofold increase in females' inactivity compared to males, females' probability of being ready to work does not significantly differ from males', with only slightly higher point estimates in magnitude for females. The gender differences in inactivity arise from being discouraged worker and in self-education since both components significantly differ for females in the pandemic year. Females exiting the education or training in the last year are 3.2 ppt more likely to be out of labor force because they lost their hope to find a job that suits their skill sets. Though the pandemic effect could be scarring for those who additionally enter the discouraged worker status, those constitute a relatively small part (around 17 percent) of the observed increase in the probability of being out of labor force.

A remarkable gendered outcome is a significant increase in females' probability of investing in their human capital without enrolling in any formal education activity. In Turkey, recent university graduate women struggle to find a suitable job for their educational attainment parallel to the inflation of university graduates (Figure 2). Hence, they might increasingly prefer to enroll in private tutoring centers (PTCs) to pass the public sector exams or graduate school to increase their employability. Women who could not enroll in such activities due to worsened economic conditions and social distancing measures limiting access to formal education might prefer to educate themselves within their own efforts. The increasing demand for their caregiving services during the pandemic might be another channel resulting in young females investing in their education within their homes to simultaneously take care of their families in need.

Table 3: Transitioning from university to inactivity: The effect of Covid-19 pandemic

Dependent variable:	Out of labor force	Ready to work	Discouraged	Self-education	Other
Year 2020	0.094***	0.054***	-0.003	0.023	0.020
	(0.029)	(0.014)	(0.011)	(0.020)	(0.015)
Year 2020×female	0.096**	0.018	0.034*	0.054**	-0.010
	(0.037)	(0.020)	(0.017)	(0.023)	(0.016)
Composite female	0.190***	0.072***	0.032***	0.077***	0.010
	(0.022)	(0.017)	(0.010)	(0.018)	(0.010)
Observations	16,620	16,620	16,620	16,620	16,620

Notes: The sample includes 18-29-year-old university graduates who are not enrolled in any education or training program in the current year and left education or training in the last year, observed in HLFS 2014-2020. Robust standard errors clustered at region level, are given in parentheses. A constant, age and age squared, region effects, field of study dummies, real household income per capita, household size and regional GDP per capita, and the interaction of all variables with female dummy are included as control variables. *p<0.1 **p<0.05 ***p<0.01.

4 Robustness Check

We conduct two essential robustness checks using different samples. First, to establish that the gendered pattern in our sample selection, documented above, is not driving our gendered results, we introduce an alternative sample not subject to the discussed sample selection issue.This sample comprises young adults aged 18-29 who were in education in the previous year and may or may not be in education in the current year. Table 4, first present our results on the baseline sample in Panel (A) for

comparison and the alternative sample in Panel (B). The significance patterns for all coefficients remain the same when we estimate for the larger sample not subject to sample selection issues.

Table 4: Robustness check: Alternative samples

Dependent var:	Employment	High skill emp.	Low skill emp.	Inactivity	Ready to work	Discouraged	Self-education	Other
Baseline analysis: Sample includes those enrolled in the previous year and not enrolled in the current year								
Year 2020	-0.050**	-0.011	-0.039*	0.094***	0.054***	-0.003	0.023	0.020
	(0.024)	(0.020)	(0.022)	(0.029)	(0.014)	(0.011)	(0.020)	(0.015)
Year 2020×Female	-0.046	-0.060**	0.014	0.096**	0.018	0.034*	0.054**	-0.010
	(0.030)	(0.023)	(0.032)	(0.037)	(0.020)	(0.017)	(0.023)	(0.016)
Composite female	-0.096***	-0.071***	-0.025	0.190***	0.072***	0.032***	0.077***	0.010
	(0.017)	(0.012)	(0.015)	(0.022)	(0.017)	(0.010)	(0.018)	(0.010)
Observations	16,620	16,620	16,620	16,620	16,620	16,620	16,620	16,620
Alternative sample: Sample includes those enrolled in the previous year								
Year 2020	-0.016	-0.005	-0.011	0.052*	0.033**	0.004	-0.003	0.018
	(0.019)	(0.016)	(0.018)	(0.026)	(0.014)	(0.006)	(0.018)	(0.011)
Year 2020×Female	-0.049*	-0.048***	-0.001	0.105***	0.028	0.027**	0.052**	-0.002
	(0.027)	(0.017)	(0.026)	(0.034)	(0.017)	(0.011)	(0.021)	(0.013)
Composite female	-0.064***	-0.053***	-0.012	0.157***	0.061***	0.031***	0.049***	0.016**
	(0.016)	(0.010)	(0.012)	(0.020)	(0.013)	(0.008)	(0.017)	(0.008)
Observations	25,969	25,969	25,969	25,969	25,969	25,969	25,969	25,969

Notes: The sample includes 18-29-year-old university graduates with given education outcomes in the current and previous year, observed in HLFS 2014-2020. Robust standard errors clustered at region level, are given in parentheses. A constant, age and age squared, region effects, field of study dummies, real household income per capita, household size and regional GDP per capita, and the interaction of all variables with female dummy are included as control variables. *p<0.1 **p<0.05 ***p<0.01.

Second, we restrict our baseline sample to older age groups of 20-29 and 22-29, more likely to have graduated from university. Table 5 presents our results for aged 18-29, 20-29, and 22-29 in panels (A), (B), and (C), respectively. Though some coefficients become less significant as we focus on smaller samples, the general findings remain the same for all age groups, confirming our results.

Table 5: Robustness check: Alternative age groups

Dependent var:	Employment	High skill emp.	Low skill emp.	Inactivity	Ready to work	Discouraged	Self-education	Other
Panel A: 18-29-year-olds in HLFS 2014-2020								
Year 2020	-0.050**	-0.011	-0.000	0.094***	0.054***	-0.003	0.023	0.020
	(0.024)	(0.020)	(0.010)	(0.029)	(0.014)	(0.011)	(0.020)	(0.015)
Year 2020×Female	-0.046	-0.060**	-0.002	0.096**	0.018	0.034*	0.054**	-0.010
	(0.030)	(0.023)	(0.013)	(0.037)	(0.020)	(0.017)	(0.023)	(0.016)
Composite female	-0.096***	-0.071***	-0.025	0.190***	0.072***	0.032***	0.077***	0.010
	(0.017)	(0.012)	(0.015)	(0.022)	(0.017)	(0.010)	(0.018)	(0.010)
Observations	16,620	16,620	16,620	16,620	16,620	16,620	16,620	16,620
Panel B: 20-29-year-olds in HLFS 2014-2020								
Year 2020	-0.052**	-0.011	-0.003	0.098***	0.052***	-0.003	0.027	0.022
	(0.024)	(0.020)	(0.010)	(0.029)	(0.013)	(0.011)	(0.019)	(0.016)
Year 2020×Female	-0.046	-0.061**	-0.001	0.092**	0.020	0.033*	0.052**	-0.012
	(0.030)	(0.023)	(0.013)	(0.037)	(0.019)	(0.017)	(0.023)	(0.017)
Composite female	-0.098***	-0.072***	-0.026*	0.191***	0.072***	0.030***	0.079***	0.010
	(0.017)	(0.012)	(0.015)	(0.022)	(0.016)	(0.010)	(0.018)	(0.010)
Observations	16,384	16,384	16,384	16,384	16,384	16,384	16,384	16,384
Panel C: 22-29-year-olds in HLFS 2014-2020								
Year 2020	-0.046**	-0.026	0.002	0.083**	0.047***	-0.002	0.026	0.013
	(0.022)	(0.024)	(0.010)	(0.031)	(0.014)	(0.012)	(0.022)	(0.016)
Year 2020×Female	-0.064**	-0.056*	-0.006	0.096***	0.016	0.031*	0.044*	0.005
	(0.028)	(0.028)	(0.012)	(0.032)	(0.018)	(0.017)	(0.024)	(0.018)
Composite female	-0.111***	-0.082***	-0.028	0.179***	0.063***	0.029***	0.070***	0.018
	(0.019)	(0.015)	(0.017)	(0.020)	(0.016)	(0.010)	(0.018)	(0.012)
Observations	13,317	13,317	13,317	13,317	13,317	13,317	13,317	13,317

Notes: The sample includes university graduates of given age group who are not enrolled in any education or training program in the current year and left education or training in the previous year, observed in HLFS 2014-2020. Robust standard errors clustered at region level, are given in parentheses. A constant, age and age squared, region effects, field of study dummies, real household income per capita, household size and regional GDP per capita, and the interaction of all variables with female dummy are included as control variables. *p<0.1 **p<0.05 ***p<0.01.

5 Conclusion

In this paper, we examine how the Covid-19 pandemic and related employment protection policies affected labor market outcomes of recent university graduates. We find that both males and females are less likely to transition to employment during the pandemic year using an event study design. The impact is more pronounced for females, and the gendered implications arise from high-skilled employment losses for females.

As expected, females are more likely to be inactive due to the pandemic compared to males. By further investigating the reasons for economic inactivity, we find that most young males and females are ready to work but waiting for the labor market recovery to participate in the labor market. A small share of inactive females lost their hope of finding employment suitable to their educational attainment compared to their male counterparts. A larger share of women compared to their male peers prefers to stay out of the labor force and invest in self-education during the pandemic. Similar employment protection policies had been implemented for an extended period in several countries including Italy and Spain. Hence, our findings contribute to identifying demographic groups adversely affected by such labor market policies.

References

Adams-Prassl, Abi et al. (2020). "Inequality in the impact of the coronavirus shock: Evidence from real time surveys". In: *Journal of Public Economics* 189, p. 104245.

Albanesi, Stefania and Jiyeon Kim (2021). "Effects of the COVID-19 recession on the US labor market: Occupation, family, and gender". In: *Journal of Economic Perspectives* 35.3, pp. 3–24.

Alon, Titan et al. (2021). *From Mancession to Shecession: Women's Employment in Regular and Pandemic Recessions*. Tech. rep. National Bureau of Economic Research.

Angelucci, Manuela et al. (2020). *Remote work and the heterogeneous impact of covid-19 on employment and health*. Tech. rep. National Bureau of Economic Research.

Asik, Gunes A and Efsan Nas Ozen (2021). "It takes a curfew: The effect of Covid-19 on female homicides". In: *Economics Letters* 200, p. 109761.

Bell, David NF and David G Blanchflower (2011). "Young people and the Great Recession". In: *Oxford Review of Economic Policy* 27.2, pp. 241–267.

Botrić, Valerija and Iva Tomić (2018). "EU-Mediterranean youths in the crisis: substitution vs. income effect". In: *Journal of Youth Studies* 21.5, pp. 653–668.

Campos-Vazquez, Raymundo M, Gerardo Esquivel, and Raquel Y Badillo (2021). "How has labor demand been affected by the COVID-19 pandemic? Evidence from job ads in Mexico". In: *Latin American Economic Review* 30, pp. 1–42.

Caner, Asena, Merve Demirel, and Cagla Okten (2019). *Attainment and Gender Equality in Higher Education: Evidence from a Large Scale Expansion*. Tech. rep. IZA Discussion Papers.

Churchill, Brendan (2021). "COVID-19 and the immediate impact on young people and employment in Australia: A gendered analysis". In: *Gender, Work & Organization* 28.2, pp. 783–794.

De La Flor, Luciana et al. (2021). "Taking Stock of COVID-19 Labor Policy Responses in Developing Countries". In.

Dietrich, Hans (2013). "Youth unemployment in the period 2001–2010 and the European crisis–looking at the empirical evidence". In: *Transfer: European Review of Labour and Research* 19.3, pp. 305–324.

Erten, Bilge and Pinar Keskin (2019). "Compulsory schooling for whom? The role of gender, poverty, and religiosity". In: *Economics of Education Review* 72, pp. 187–203.

Etheridge, Ben, Yikai Wang, and Li Tang (2020). *Worker productivity during lockdown and working from home: Evidence from self-reports*. Tech. rep. ISER Working Paper Series.

Forsythe, Eliza et al. (2020). "Labor demand in the time of COVID-19: Evidence from vacancy postings and UI claims". In: *Journal of public economics* 189, p. 104238.

Holgersen, Henning, Zhiyang Jia, and Simen Svenkerud (2020). "Labor demand during the covid-19 crisis in norway: Evidence from vacancy posting data". In: *Available at SSRN 3663479*.

ILO (2012). *International Standard Classification of Occupations 2008 (ISCO-08): Structure, group definitions and correspondence tables*. International Labour Office.

Johnson, Matthew T (2013). "The impact of business cycle fluctuations on graduate school enrollment". In: *Economics of education review* 34, pp. 122–134.

Kahn, Lisa B (2010). "The long-term labor market consequences of graduating from college in a bad economy". In: *Labour economics* 17.2, pp. 303–316.

Karaoglan, Deniz and Cagla Okten (2022). "The effect of parental job loss on youth transition to employment in Turkey". In: *LABOUR*.

Kırdar, Murat G, Meltem Dayıoğlu, and Ismet Koc (2016). "Does longer compulsory education equalize schooling by gender and rural/urban residence?" In: *The World Bank Economic Review* 30.3, pp. 549–579.

Kristal, Tali and Meir Yaish (2020). "Does the coronavirus pandemic level the gender inequality curve?(It doesn't)". In: *Research in Social Stratification and Mobility* 68, p. 100520.

Leslie, Emily and Riley Wilson (2020). "Sheltering in place and domestic violence: Evidence from calls for service during COVID-19". In: *Journal of Public Economics* 189, p. 104241.

Oreopoulos, Philip, Till Von Wachter, and Andrew Heisz (2012). "The short-and long-term career effects of graduating in a recession". In: *American Economic Journal: Applied Economics* 4.1, pp. 1–29.

Perri, Fabrizio, Joe Steinberg, et al. (2012). "Inequality and redistribution during the Great Recession". In: *Economic Policy Paper* 1.

Polat, Sezgin (2017). "The expansion of higher education in turkey: Access, equality and regional returns to education". In: *Structural Change and Economic Dynamics* 43, pp. 1–14.

Silva, Daniel Gomes da (2016). "The Added Worker Effect for Married Women and Children in Brazil: A Propensity Score Approach". In.

Uysal, Gokce, Hamza Mutluay, and Mehmet Cem Sahin (2020). "Covid-19 pandemisinin isgucu piyasasında yarattığı tahribat nasıl takip edilmeli?" In.

Appendix

Table A.1: Sample selection: Share of sample

Year	Male sample share	Female sample share
2014	2.21%	2.40%
2015	2.21%	2.92%
2016	2.40%	3.25%
2017	2.77%	3.55%
2018	2.55%	3.38%
2019	2.77%	3.61%
2020	3.05%	4.40%

Source: HLFS, 2014-2020.
Notes: Sample shares for males and females are calculated as the share of 18-29-year-old university graduates who exit the education or training in the previous year among all 18-29-year-old individuals observed for each year.

Figure A.1: Monthly labor statistics
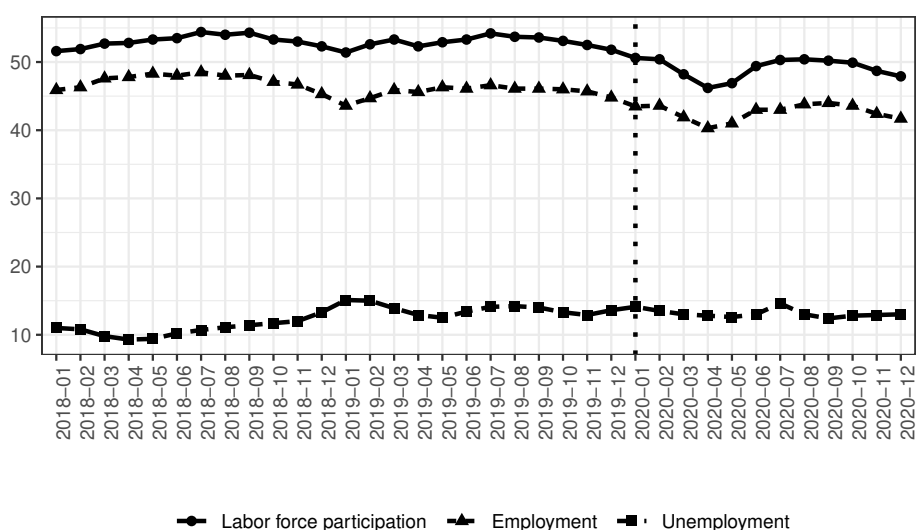
Source: Monthly labor statistics.
Notes: Each month gives the average of previous, current, and next month outcomes.