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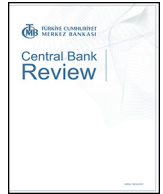
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Job mobility in Turkey[☆]

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ABSTRACT

The degree and quality of job mobility is an important factor of optimal allocation of resources and growth in an economy. Job mobility facilitates productive employer-employee matches. In that respect, job mobility allows employees to work in industries which suit their skills and enables earning gains. It also supports industry level productivity gains by providing shift of employment from less productive firms to more productive ones. In this study, a descriptive analysis of job mobility is conducted using Entrepreneurship Information System data. The results suggest that job mobility is higher among young and men. In addition, more than half of the job movers switch to jobs in bigger, more productive and more profitable firms. Job mobility is intensive within manufacturing and trade-transportation industries and employees in mining, construction, public administration, education and health industries are more likely to switch to jobs in other industries. Finally, the determinants of job mobility between regions are analyzed and a positive relation between internal migration and intra-regional job mobility is found.

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1. Introduction

Job mobility is an important factor of optimal resource allocation and growth in an economy. A sufficiently flexible job market enables employees to move to industries which suit their skills and increase their wage growth. It also facilitates within industry productivity gains by redistributing employment from less productive firms to more productive ones. Factors that are limiting the mobility of labor hence can hamper the efficient distribution of resources in the economy and the realization of the growth potential (Lee and Wolpin, 2006). In addition, inflexible labor market institutions hindering job mobility may hamper employment creation and boost unemployment.¹ On the other hand, high job mobility does not in itself imply efficiency of labor markets in an economy. While job mobility below the optimal level hinders the

efficient distribution of resources, subsidies towards job mobility can prevent occupation-specific human capital accumulation and specialization. Thus, understanding the level and efficiency of job mobility in an economy is crucial for sustainable economic growth. In this study, we match individual administrative social security data with firm level data to present the state of job mobility in the Turkish labor market for the first time to our knowledge. We display the level of job mobility at demographic, sectoral, and geographical sub-groups. We also look into details of the characteristics of firms that employees are moving from and to. Finally, we provide an empirical analysis of the determinants of cross-regional job mobility.

Early studies on job mobility, largely due to data constraints, focused on sectoral and geographical mobility (Parnes, 1954). The availability of employee-employer matched datasets in recent years allows for a more micro level analysis of job mobility. Davis and Haltiwanger (1999) show that a large component of within sector labor productivity gains are explained through the mobility of employees from low to high productivity firms. Labor mobility can increase firm productivity through various channels (Braunerhjelm et al., 2015). First, higher quality employee-employer matches can be achieved in line with employers' needs and employees' qualifications (Bessen and Maskin, 2009). In addition, job mobility contributes to spillovers in knowledge and experience across firms and regions (Braunerhjelm et al., 2015). Finally, mobility can positively affect the innovative activities of the firms. Kaiser et al. (2011), in their analysis for Denmark, has found that the number of patent

[☆] The views expressed here are of the author and do not necessarily reflect those of the Central Bank of the Republic of Turkey.

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¹ Davis and Haltiwanger (1999) show that the high level of unemployment rate in the European countries compared to the United States in the 1980s and 1990s was caused by restrictions on labor market flexibility through high costs to hiring and firing in European countries.

applications of companies transferring research and development (R&D) employees from other companies has increased. Braunerhjelm et al. (2015) reached a similar conclusion in the Swedish case. There is even evidence of an increase in the productivity and profitability of firms that employ former R&D employees in non-R&D activities (Maliranta et al., 2009).

Job mobility is important for employees to find the most suitable job and maximize their lifetime income. A third to half of all labor market movements in the US stems from the job-to-job transitions of workers (Bjelland et al., 2011). In a theoretical analysis Burdett and Mortensen (1998) suggest that on-the-job search is an important channel for employees to find the most suitable job for them. Empirical findings also show that the search for better job opportunities and job-to-job transitions have an important role in the career paths of the employees. DeLoach and Kurt (2018) found that on-the-job searchers largely consist of employees who worked in professions that require lower qualifications than theirs. Topel and Ward (1992) show that US workers worked in an average of 7 jobs in the first 10 years of their labor market careers. Their findings suggest that higher earnings was an important motivation of job mobility and earnings increases due to job mobility constituted a large portion of overall wage growth.

The average level of job mobility is an outcome of the structural characteristic of the labor market such as hiring and firing costs (Haltiwanger et al., 2008). However, short-term changes are usually due to business cycles. Job search and transition probability of employees who are not employed in occupations matching their qualifications is pro-cyclical (Davis et al., 2012). Job mobility statistics therefore serve as an indicator of general economic outlook (Hyatt and McEntarfer, 2012). Research on the impact of the 2008 economic crisis in the US on labor market transitions finds a decline in job mobility. Lazear and Spletzer (2012) find a stronger negative effect from the crisis on job-to-job mobility than on new employment creation. Empirical studies on the growth cycle and job-to-job mobility after the 2008 Financial Crisis indicate that labor mobility is countercyclical. Lazear and Spletzer (2012) have shown that most of the decrease in recruitment in the 2008 Financial Crisis is due to a decrease in job switch of employees rather than slowing down of new job creation. The negative impact of the financial crisis on job mobility reducing the efficiency of the labor market by suppressing allocation towards more productive firms. Lazear and Spletzer (2012) concluded that the decrease in job mobility after the financial crisis reduced US national income by 0.4 percent per year. Short-term decreases in job mobility may have long term adverse effects on the wage growth of employees throughout their careers. Haltiwanger et al. (2018) found an increase in the wages of employees who change jobs, but reported that this positive effect of job-to-job transition was approaching zero in contraction periods.

Job mobility is also an important driver of internal migration, which is an important mechanism of adjustment to local economic shocks (Bound and Holzer, 2000; Molloy et al., 2017). Economic factors such as higher income, better job match quality and improved job prospects positively affect internal migration towards a region. Molloy et al. (2017) analyze the US labor market and show that the rate of in-migration is higher in states with higher share of job changers. They also argue that the decline in job mobility after 1980s caused a reduction in the internal migration rate.

In short, job mobility is an important indicator of both macro-economic outlook and structural problems. However, the studies on this subject are concentrated on developed countries and especially on the USA due to data constraints. Clearly, the Turkish

labor market is different from that of the US and other developed countries. In its formal labor market, Turkey has very strict employment protection legislation. In particular, severance pay is seen as an element of rigidity in the labor market.² Severance payments are indeed very high by international standard and reduces separations between employees and employers.³ In addition, employees cannot qualify for severance pay if the employee resigns without specific reasons. This can reduce job mobility by limiting employee motivation to change jobs. The existence of a large informal labor market in Turkey makes the analysis more complicated as none of the strict employment protection legislations have any bearing in the informal market. For example, Aldan and Yunculer, (2016) find that despite the rigidity of legislation, wages in Turkey are affected by the business cycle and the authors attribute this result to informality in employment records. Therefore, estimating the degree of job mobility will be informative about the effects of the legislative rigidity on the labor market.

Studies on job mobility in Turkey is limited due to data constraints. Tansel and Kan (2012) examined labor market transitions using the Survey of Income and Living Conditions data. A similar approach is followed by Acar (2016) who compares labor market transitions in Turkey before and after the 2008 crisis. However, economics literature generally argues that annual datasets like the HLF5 is insufficient to study job mobility. Haltiwanger et al. (2018) argue that even a three month gap between employment observations in different jobs may not constitute job-to-job transitions since the gap may indicate unemployment. We follow the literature in defining an employee with a different job at quarter t compared to quarter $t-1$ as having made a job-to-job transition at quarter t . We use recent data available on a quarterly basis at the Entrepreneur Information System (EIS) of the Ministry of Industry and Technology to carry out a detailed analysis of the job mobility in Turkey.

Our second contribution to the literature is the analysis of destination region characteristics that are correlated with interregional job to job migration within Turkey. The regional determinants of internal migration were extensively analyzed in international literature and there are a limited number of studies on Turkey (see, for example Gökhan and Filiztekin, 2008). However, regional characteristics that determine migration due to job switches have not been analyzed thoroughly. In this study, we analyze the regional characteristics correlated with interregional job to job migration and compare them with the regional characteristics that are correlated with overall internal migration in Turkey.

Our results suggest that overall quarterly job mobility rate in Turkey is around 8%, which is very close to the estimates made for the United States. Job mobility is higher among young and men. Men (women) who switch jobs receive 7.2% (7.6%) wage premium on average for the period 2012–2015. In addition, more than half of the job movers switch to jobs in bigger, more productive and more profitable firms. Job mobility is intensive within manufacturing and trade-transportation industries. Employees in mining, construction, public administration, and education and health industries are more likely to switch to jobs in other industries. Finally, we find that the higher the level of job mobility within a region the higher the job mobility to that region from other regions.

The paper is organized as follows. In the following section, the EIS dataset will be introduced, its advantages and disadvantages will be discussed. In the third section, the size of the mobility of

² The New Economic Program of 2018 promises further discussions and reforms on the issue of severance pay.

³ Turkey ranks 31st among 192 countries in the value of severance pay as a fraction of wages. Only Israel and Korea rank higher among OECD countries. Source: www.doingbusiness.org.

employees among firms, sectors and regions will be estimated and this mobility will be examined with a breakdown of employee and firm characteristics. In the fourth section, the regional determinants of job to job migration will be analyzed in comparison with the covariates of total internal migration.

2. Data

EIS of the Ministry of Industry and Technology aims to collect and merge administrative datasets held by different public institutions on the economic activity of enterprises. Datasets from a large group of public institutions have already been integrated into the system, including data from the Ministry of Trade, the Revenue Administration, Social Security Institution, The Scientific and Technological Research Council of Turkey, the Turkish Patent and Trademark Agency, Small and Medium Enterprises Development and Support Administration and the Turkish Statistics.

The primary data set used in our analysis is the administrative records of the Social Security Institution (SSI). The SSI data allows researchers to track individual employees on a quarterly basis starting in 2012. The data set includes employee level information on age, gender, number of days worked, and wages and employer-reported information on occupations starting in 2014. By merging with other EIS datasets, we can further find out about the characteristics of any given employer, such as its sector code, geographical location, balance sheet information and the number of employees. The SSI data is available for private sector employees, excluding financial sector workers.

Since the dataset includes information on the identity of the employer, wages and the number of days worked in the last month of that quarter, labor market transitions of employees can be observed on a quarterly basis. However, there are some obstacles to observing the entire labor market. First, only registered employees who are formally employed can be tracked in the SSI data. This situation may lead to errors in determining the type of labor market transitions observed. In particular, when an employee moves from formal to informal employment, we assume that they move from employment to unemployment since informal employment cannot be observed. The reverse issue exists for movements from informal to formal employment. Therefore, the results from the SSI data will be biased towards lower job-to-job transitions and higher transitions in and out of employment. Tansel and Kan (2012) use survey data to show that annual transition probability from informal to formal employment is low. A second issue with the EIS data is that the dataset does not cover the public sector employees, self-employed and employers. As a result, it is not possible to estimate transitions between different states of employment. Similar to the first issue of informal employment, it will also lead to an upward bias in transitions in and out of employment since transitions to different states of employment cannot be identified.

The extent of the bias caused by these problems in the EIS data can be examined using the Household Labor Force Survey (HLFS) dataset, which contains information on the employment status of

an individual both in the current year and the previous year. It further allows us to differentiate between public and private employment. We therefore generated an indicator of annual job-to-job transitions. According to 2016 data, only 5% of public sector employees were employed in a different job while the same ratio was 19% for private sector employees. We can then assume that the majority of job-to-job transitions in the Turkish labor market occur in the private sector.

The available employment categories in HLFS consist of wage-earners, the self-employed, employers and unpaid family workers. Wage earners are largely covered by the SSI data but the other statuses are excluded. Using HLFS data, Table 1 presents the number of labor market transitions in 2016 of private sector employees within a year. In 2016, approximately 4 million people work in a job different from their job last year. 79% of transitions occur between two wage-earner jobs. In summary, the SSI data covers a majority of labor market movements in Turkey and the downward bias in the mobility estimates is not of critical magnitude. Nonetheless, the mobility figures given in this study should be interpreted as lowest bounds.

3. Job mobility in Turkey

The ratio of job-to-job mobility in Turkey is obtained by dividing the number of job switchers from quarter $t-1$ to t with the total number of employees at quarter t . Fig. 1 plots the job-to-job transition and unemployment rates between 2012 and 2016. The high rate of job mobility in the first quarter of the year indicates seasonality in the rate of job-to-job transitions.

The average rate is around 8%, which is very close to the estimates made for the United States, which is considered to have a highly flexible labor market (Haltiwanger et al., 2018). The results suggest that despite the rigidity of the employment protection legislation in Turkey, labor market mobility is high. The high level of severance pay does not seem to be a barrier to voluntary job transitions and the relatively high rate of temporary employment seems to support the rate of job-to-job transitions.

The rate of job-to-job transitions can be used as an indicator of economic outlook. The relatively short period covered by the dataset makes it impractical to make a business cycle analysis. However, the relationship between job-to-job transitions and the unemployment rate suggests a counter cyclical trend in the job-to-job transition rate which is in line with the previous studies in the United States. For example, the 2 percentage point increase in the unemployment rate during the second half of 2016 is concurrent to a 1 percentage point decline in the rate of job-to-job transitions. As further years are added to the dataset, a more complete analysis of the relationship between the job-to-job transition rate and business cycles can be made.

Fig. 2 shows that job mobility is significantly different between men and women. Looking at the period average, the rate of job-to-job transitions is about 9 percent for men and 6 percent for women. The lower rate for women is in line with the international literature.

Table 1
Labor market transitions by employment status.

Number of Transitions (Thousands of Persons)				Share in All Transitions (%)			
Employment Status Previous Year				Employment Status Previous Year			
	Paid	Others	All		Paid	Others	All
Paid	3070	203	3274	Paid	79	5	84
Others	253	361	614	Others	7	9	16
All	3323	565	3888	All	85	15	100

Source: Turkish Statistical Institute, Household Labor Force Survey 2016

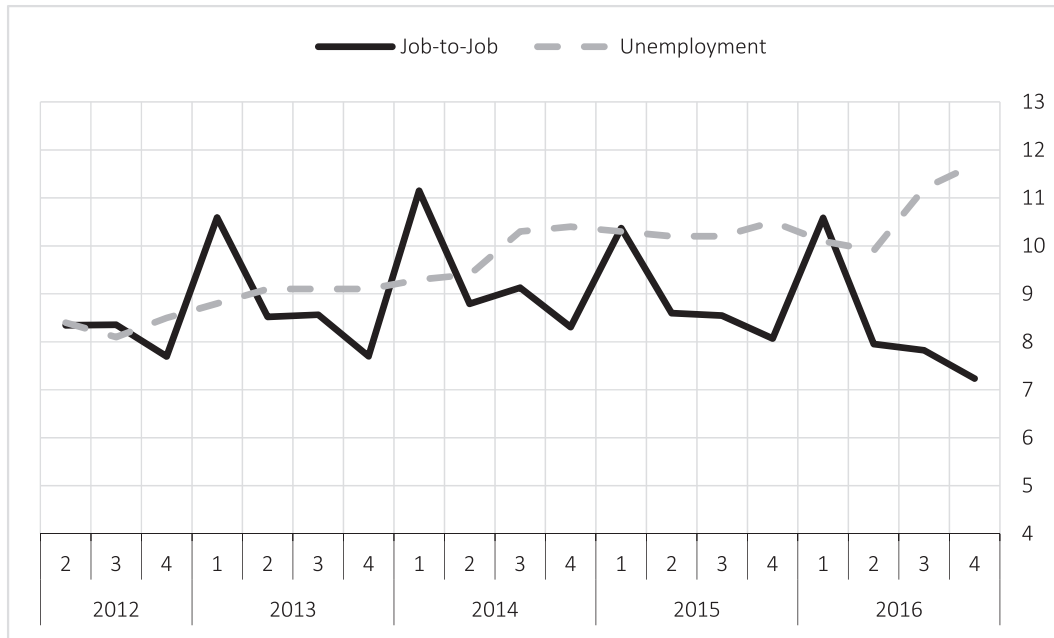


Fig. 1. Quarterly job-to-job transition and unemployment rates
Notes: Authors' calculations using EIS data.

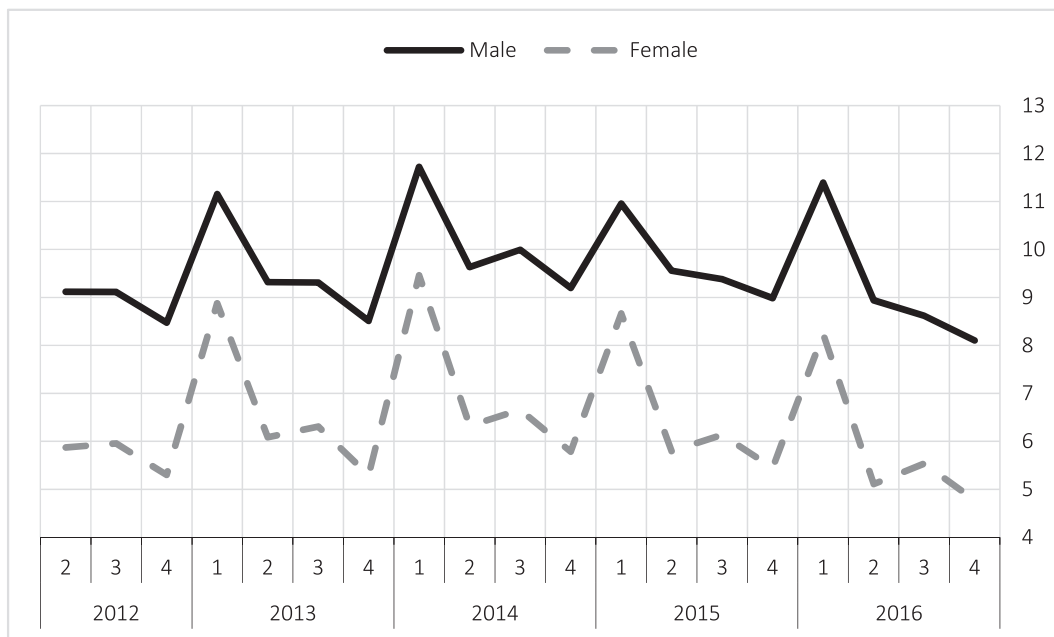


Fig. 2. Job mobility by gender
Notes: Authors' calculations using EIS data.

Frederiksen (2008) concluded that women's job-to-job transition rates are lower and women who leave their jobs are more likely to be unemployed or exit the labor market than men. The disadvantaged position of women in the Turkish labor market may further lead to lower job-to-job transition rates. The cultural position that women's primary responsibility is household work may restrict the transition to most suitable jobs in the labor market. For example, Aydemir et al. (2018) show that most of the migratory movements of women are due to marriages and education, whereas job-oriented migration movements are more common among men.

Furthermore, female employment in Turkey is highly concentrated in certain sectors, which may limit their job mobility. Given the finding that job-to-job transitions increase wages, limited job mobility among women may be a cause for the gender wage gap in Turkey.

Job-to-job transitions are an important source of wage growth for employees. Fig. 3 shows the wage premium resulting from job-to-job transitions. We estimated the wage premium in three steps. First, we constructed a counterfactual wage had the employee stayed in the previous job. We assume that the wage growth at the

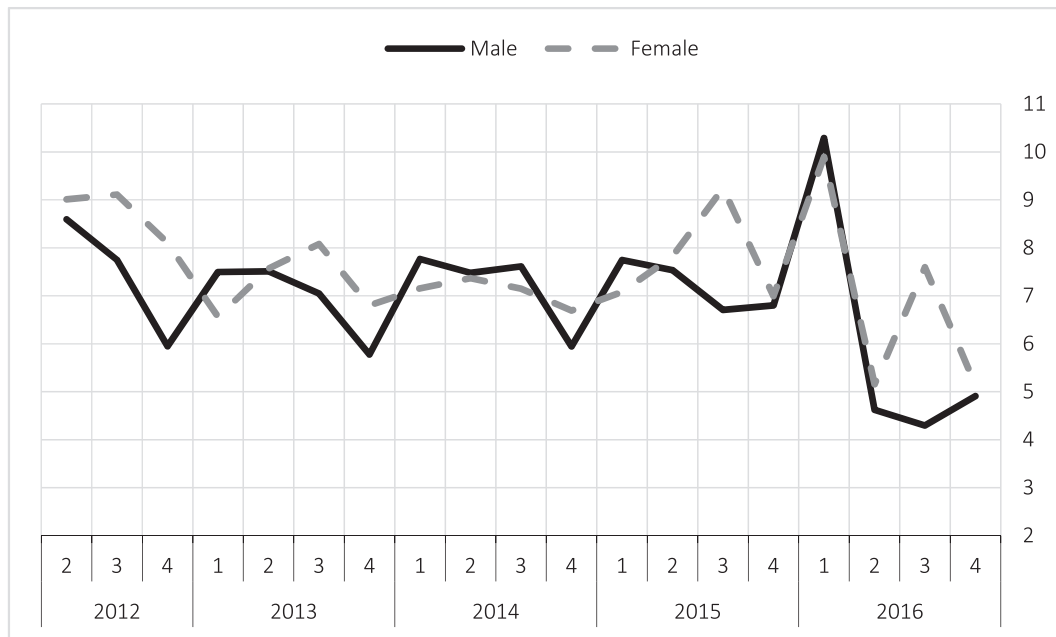


Fig. 3. Wage growth from job-to-job transitions

Notes: Authors' calculations using EIS data. Wage growth is the ratio of difference between the predicted wage in the previous job and the new wage to the predicted wages in the previous job.

previous job would have equaled that of the average of the economy during the time period. Second, we took the difference between the counterfactual previous job wage and the employees' wage at the new job. Finally, we divided this difference with the counterfactual previous job wage to arrive at the net wage premium. Between the years 2012 and 2015, wage premium for employees who switch jobs is 7.2% for men and 7.6% for women. This result confirms the role of job-to-job transitions in facilitating wage growth.

Job-to-job transitions move employees towards better firms if the labor market is well functioning. We define good firms as larger, more productive and more profitable. Table 2 presents the difference in these indicators of the firm job movers moved from and the firm they moved to. As an indicator of profitability, we use the ratio of gross profits to sales. Labor productivity is measured as sales per employee. We measure the size of firms using their number of employees. Table 2 shows that 55.9% of job movers moved to a larger firm. In addition, a majority of job movers transitioned to jobs in firms that are more profitable (58.2%) and have higher labor productivity (57.1%). The differences in new and old firms of job movers confirms the role of job-to-job transitions in efficient resource allocation.

Fig. 4 shows the job transition rates across age groups in 2015. The rates are obtained by dividing the total number of job switches in each quarter to the average total employment in each age group. The transition rate decreases with age. While the rate is at 11.6%

among the young (15–24 year olds), it decreases to 9.2% in the 25–34 age group and gradually declines to 7.2% in older age groups. Younger employees often have to switch to find jobs suitable to their qualifications. Furthermore, their costs of leaving a job are lower since they have lower tenure and therefore less rights to severance pay. The impact of employment protection legislation is likely to increase with age while the rate of job-to-job transitions declines.

Neal (1999) argues that job search occurs in two stages. The first stage consists of finding the sector and occupation while the second is the choice of employer. Furthermore, he finds that younger employees are more likely to switch between sectors and occupations. Fig. 4 includes information on sector, occupation and province (NUTS-3 level) switch rates alongside the job-to-job transition rates.⁴ Both sector and occupation codes are at the 4 digit level. Most job movers in Turkey appear to also change their occupation and sector. While low compared to sector and occupation changes, changing provinces also appears to be common in Turkey. A third of all job-to-job transitions appear to involve moving to a different province. In line with the findings of Neal (1999), we find changes in occupations, sectors and provinces to be more common among the young. The difference between age groups may be explained by the lack of familial attachments to a region and the relatively low level of sector-specific human capital of younger employees. The high degree of transitions between occupations and sectors suggests that the Turkish labor market is highly flexible but it may also lead to a lack of specialization and sector or occupation specific human capital accumulation.

Table 3 shows the number of job-to-job transitions between sectors in 2015. Rows indicate the initial sector while the columns indicate the sector employees switched to. The total number at the end of a row indicate the outflow from while the number at the

Table 2

New firm – Old Firm Comparison (%).

	Profitability		Productivity		Number of employees	
	Lower	Higher	Lower	Higher	Lower	Higher
Male	41.6	58.4	42.7	57.3	43.9	56.1
Female	43	57	43.7	56.3	44.6	55.4
All	41.8	58.2	42.9	57.1	44.1	55.9

Notes: Authors' calculations using EIS 2015 data. Each cell shows a comparison between the new and old jobs of job movers.

⁴ Provinces are defined using the headquarter locations of firm. There are likely to be some mismeasurement when the province that the employee works in is not the same as the location of the firm headquarter.

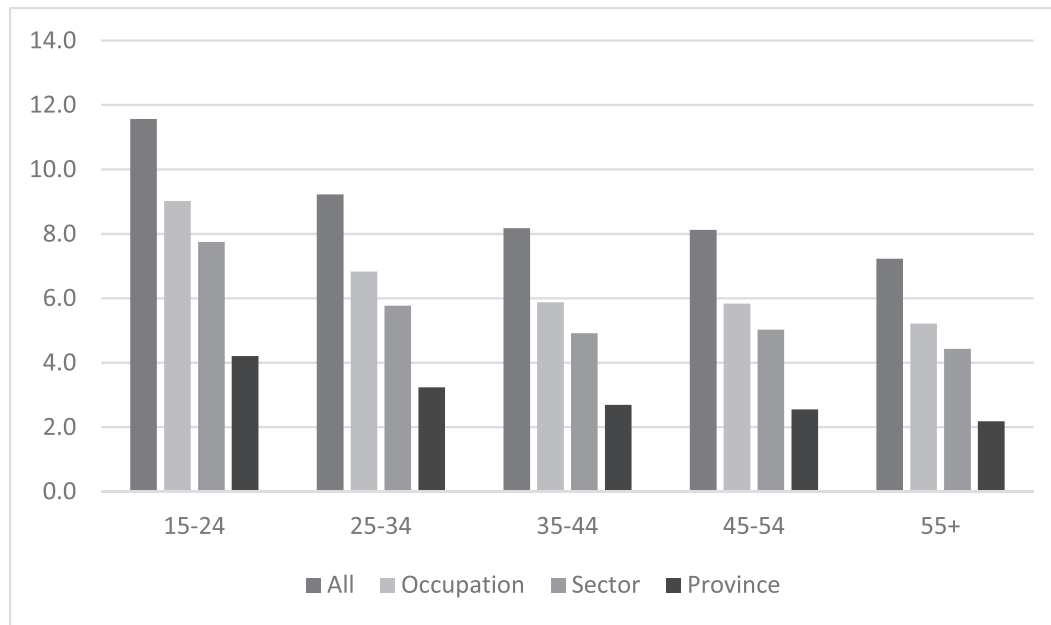


Fig. 4. Job Mobility by Age Group

Notes: Authors' calculations using EIS data. Occupation and sectors are coded at the 4-digit ISCO and NACE levels. Provinces are defined at the 81 NUTS-3 level. Rates are average of the job mobility rates in four quarters of 2015. Job mobility rates are obtained by dividing the total number of job switches in a quarter to the average total employment in each age group.

bottom of a column indicate the inflow to the corresponding sector. We further report the net outflow or inflow to a sector at the end of each column. The cells report percentage points that indicate the share of employees that entered a given sector through job-to-job transitions. For example, there were 901,418 job movers from the manufacturing sector while 907,042 employees moved to a job in the manufacturing sector. In total, a net of 5625 employees moved to the manufacturing sector from other sectors. A majority, 55.8% of manufacturing sector movers transitioned to a job in the manufacturing sector while the second most popular sector was hotels and accommodation sector with 14.8%. Overall, there was a net inflow in formal employment into accommodation, finance, manufacturing and other service sectors. Sectors that had a net outflow were transportation and construction sectors.

The direction of labor movements suggests that there is intense within sector movement in manufacturing and retail-transport sectors. On the other hand, there is a large outflow from agriculture, mining, construction, public administration, education and health sectors to other sectors. Only 27.9 percent of those who moved to a new job from the construction sector moved to another job in the construction. Construction sector employees are mostly moving to retail and transportation, manufacturing and other services. Similarly, only 19.1 percent of those in the agricultural sector and only 28.5 percent of those who change their jobs in the mining sector have found jobs in the same sector. Labor intensive sectors where low-skilled labor is employed have the lowest within sector movements. These sectors may instead serve as stepping stones to other jobs.

The regional transition matrix which has a similar layout to the sectoral transition matrix is presented in Table 4. This table clearly demonstrates that in all regions, intra-regional job mobility constitute the majority of total employee movements. There has been a net outflow from Istanbul, Aegean and Northeast Anatolia to other regions. On the other hand, the Mediterranean region has been the region most affected by job mobility. Outflows from Istanbul to other provinces are mostly carried out to Western Marmara and Aegean regions. For employees in all other regions,

Istanbul is the most popular destination region.

4. Job mobility and internal migration

Previous section showed that there is considerable regional job mobility in Turkey. A question posed by Molloy et al. (2017) then becomes relevant: does job mobility enhance geographical mobility? It is also interesting to determine the factors behind the internal migration of job switchers in comparison with general internal migration. Job switchers constitute a specific subpopulation of general migrants. It can be expected that some of the characteristics of job switcher migrants are different from general migrants. Job switchers had formal jobs in their region of origin and have found a formal job in the destination region as well. On the other hand, total migrant population include those who work informally, unemployed who migrate in order to find a job as well as migrants who migrate for non-economic reasons such as education, marriage, retirement. Hence, regional demographic and economic factors motivating job switchers may be different than those that motivate migrants in general.

In order to analyze the destination characteristics that attract job to job movers and compare them with total migrants, we estimate a linear model of internal migration between 26 NUTS-2 regions in Turkey using the following equation;

$$r \ln M_{ij} = \gamma_1 \ln P_j + \gamma_2 \ln D_{ij} + \beta X_j + \alpha_i + \varepsilon_{ij} \quad (1)$$

Here, eM_{ij} represents the number of people moving from origin region i to destination region j . We expect that M_{ij} is positively correlated with the population of the destination region P_j and negatively correlated with the distance between the origin and destination regions D_{ij} . Vector X_j includes destination region characteristics derived from the literature. Regions with higher wages and better employment opportunities may attract internal migrants (Pissarides and McMaster, 1990). Therefore, we include average hourly wage and unemployment rate of the destination in the regressions. As we have shown in Fig. 4, regional job mobility is

Table 3
Sectoral transition matrix.

Sector:	Unknown	Agriculture	Mining	Manufacturing	Construction	Retail, transportation	Accommodation	Information, communication	Finance and insurance	Real estate services	Professional administrative services	Public administration, education and health	Other services	Number of transitions
Unknown	51.2	0.2	0.2	8.1	0.4	8.5	10.1	2.6	4.8	1.3	0.5	3.8	8.3	226,589
Agriculture	2.3	19.1	0.7	19.3	0.8	14.9	20.2	5.4	6.2	0.2	1.0	3.6	6.0	16,392
Mining	1.2	0.8	28.5	20.8	2.4	19.9	12.4	6.1	2.3	0.2	0.4	2.4	2.7	34,526
Manufacturing	2.0	0.4	0.7	55.8	0.7	11.2	14.8	3.0	3.7	0.4	0.4	2.2	4.8	901,418
Construction	1.5	0.2	1.4	12.4	27.9	20.9	8.0	5.7	2.3	0.5	0.3	3.8	15.1	64,967
Retail, transportation	1.9	0.3	0.8	11.3	1.4	59.3	10.6	2.9	3.5	0.3	1.1	3.7	3.0	941,018
Accommodation	3.2	0.4	0.5	18.8	0.5	13.6	41.5	4.9	5.8	1.0	0.6	3.1	6.0	698,302
Information, communication	2.2	0.4	0.9	10.9	1.3	10.3	13.8	45.0	3.7	0.5	0.4	1.7	9.1	265,613
Finance and insurance	3.1	0.3	0.3	9.7	0.3	9.1	11.5	2.6	52.1	0.5	0.6	1.9	8.0	330,925
Real estate services	4.8	0.1	0.1	7.0	0.4	4.9	12.7	2.0	3.6	37.9	0.5	8.9	17.1	57,303
Professional, administrative services	3.6	0.3	0.5	10.4	0.5	35.2	14.3	3.2	6.9	0.8	8.6	5.0	10.7	31,998
Public administration, education health	5.3	0.3	0.5	12.6	1.4	22.4	14.2	2.8	4.1	2.4	0.9	20.8	12.3	157,344
Other services	3.2	0.2	0.2	7.6	1.3	5.3	7.8	4.6	5.1	1.4	0.5	3.0	59.7	548,620
Number of transitions	221,919	16,676	33,949	907,042	57,515	931,642	710,192	26,123	342,314	53,116	30,572	155,423	553,425	
Net transitions	-4,670	284	-577	5,624	-7,452	-9,376	11,890	-4,383	11,389	-4,187	-1,426	-1,921	4,805	

Notes: Authors' calculations using 2015 EIS data. Number of transitions are the total of job switches in four quarters of 2015.

higher among young workers. Hence, it can be argued that job switchers move to regions where employment opportunities are relatively better for young. Besides, the propensity to migrate is found to be higher among young in Turkey according to census data (Var et al., 2014). In order to account for relative position of young in the labor market, we include young unemployment rate relative to total unemployment rate in the destination region in the regressions. Better education opportunities may also attract migrants into a region (Greenwood, 1997). We further include the share of college graduates as a proxy for educational opportunities in a region and the job mobility within destination region in order to see whether job mobility increases geographical mobility.⁵ We use all variables in logarithmic form so that the coefficients can be interpreted as elasticities. Finally, we include region of origin fixed effects, α_i in order to capture all economic and social characteristics of the origin region.

Regression results are presented in Table 5. The first column shows the results for job-to-job migration and the second column for total migration. Migration between two regions increases with population and decreases with distance in both regressions, as expected. The coefficient of wage rate is also similar and is in line with the literature in both regressions; people move to regions with higher wages. Job-to-job movers migrate to regions with higher intra-regional job mobility for better job prospects in later stages of their career supporting the argument of Molloy et al. (2017) that intra-regional job mobility enhances geographical mobility. As we have shown in Fig. 3, job-to-job transition is a way to increase wages for individuals. It can be expected that job switchers move to regions where they think that they can change their jobs in their new location more easily. On the other hand, the coefficient of job mobility is positive but insignificant for total migration. The fact that the population of total migrants is composed of several sub-populations with different motives for migration might have led to this result. The coefficient of unemployment rate in the destination region is negative for total migrants in line with earlier literature on Turkey (Gökhan and Filiztekin, 2008). Lower young unemployment rate relative to total unemployment rate also attracts new migrants. In case of job switchers, only relative unemployment rate among young is significant with its coefficient much lower than the coefficient for total migrants. Relatively less importance of unemployment rate in the destination region for job switchers may stem from the fact that these workers work in the formal market and may be higher skilled on average and are not affected by the regional unemployment rate. This explanation is consistent with the argument that variations in regional unemployment rates stems from variations in unemployment among low skilled (McCormick, 1997). Finally, the coefficients of the share of college graduates are positive in both regressions which might reflect the pulling effect of complementarity between high skilled workers.

5. Conclusion

Job mobility is an important factor of optimal resource allocation and growth in an economy. It facilitates productive employer-employee matches and allows employees to work in industries which suit their skills and enable wage growth. It also supports within industry productivity gains by shifting employment from less productive firms to more productive ones. Last but not least, job mobility may enhance geographical mobility which is an important mechanism of adjustment to local economic shocks. Therefore, lack of job mobility may be an indicator of labor market tightness.

⁵ Variable definitions and sources, descriptive statistics and cross correlations between explanatory variables are given in the appendix.

Table 4
Regional transition matrix.

Region:	Istanbul	West Marmara	Aegean	East Marmara	West Anatolia	Mediterranean	Central Anatolia	West Black Sea	East Black Sea	Northeast Anatolia	Centraleast Anatolia	Southeast Anatolia	Number of transitions
Istanbul	79.8	1.6	3	4.4	4.7	2.6	0.6	0.8	0.5	0.3	0.5	1.2	1,878,614
West Marmara	22.3	65.1	3.3	2.7	2.8	0.9	0.3	0.5	0.3	0.2	0.4	1.2	1,210,055
Aegean	10.2	0.7	77.2	2.1	4.2	2.5	0.5	0.5	0.2	0.3	0.4	1.3	513,137
East Marmara	18.1	0.8	2.7	69.5	4	1.5	0.5	0.7	0.4	0.3	0.5	1.1	442,299
West Anatolia	12.7	0.5	3	2.4	69.6	3.7	1.9	1.3	0.6	0.5	1.1	2.8	685,046
Mediterranean	9.3	0.3	2.7	1.3	5.6	75.5	0.9	0.3	0.3	0.1	0.6	3	432,715
Central Anatolia	8	0.3	1.4	1.2	8.2	2.8	75	1.1	0.3	0.3	0.5	0.9	148,314
West Black Sea	10.1	0.5	1.3	2.1	6.8	1.1	1	74.2	1.2	0.3	0.4	1	12,984
East Black Sea	10.1	0.6	1.2	1.7	5.6	1.3	0.7	1.7	74.1	1.2	0.4	1.3	88,982
Northeast Anatolia	11.5	0.5	2.5	2.4	8.5	1.1	0.8	0.5	2.8	66.3	1.5	1.7	47,819
Central-east Anatolia	9.5	0.6	2.2	2.1	7.3	2.8	0.8	0.5	0.5	1.2	68.2	4.4	101,041
Southeast Anatolia	8.7	0.7	2.7	1.6	5.9	4.8	0.6	0.4	0.6	0.2	1.7	72	298,299
Number of transitions	1,861,636	124,587	517,023	439,530	686,465	445,332	149,831	132,214	89,958	48,296	101,144	291,145	
Net inflow	-16,978	3,532	3,886	-2,769	1,419	12,617	1,517	2,374	976	477	103	-7,154	

Notes: Authors' calculations using 2015 EIS data. Number of transitions are the total of job switches in four quarters of 2015.

Table 5
Determinants of internal migration.

	Job to Job Migration	Total Migration
Population	-0.805*** (0.0300)	-0.578*** (0.0297)
Distance	0.759*** (0.0410)	0.743*** (0.0477)
Intra-Region Job Mobility	0.338* (0.194)	0.162 (0.241)
Wage	0.859*** (0.201)	0.765*** (0.234)
Unemployment	-0.0506 (0.0531)	-0.205*** (0.0573)
Relative Young Unemployment	-0.208* (0.117)	-0.419*** (0.147)
Share of College Graduates	0.656*** (0.157)	0.476** (0.187)
R ²	0.897	0.803
Number of Observations	650	650

Notes: Robust standard errors in parentheses. *, ** and *** represent significance at 10%, 5% and 1%, respectively. All variables are in logarithmic form. Regressions include origin region fixed effects.

Employment protection legislation (EPL) in Turkey is considered to be relatively strict and both hiring and firing processes are more difficult than the OECD average. Despite high EPL, we find that job mobility in Turkey is relatively high and comparable with the US where labor market is perceived to be flexible. We further document that job mobility is higher among men and the young. Job-to-job transitions are an important source of wage growth, as we find wage premiums of 7.2% for men and 7.6% for women after moving

to a new job. Unlike entering employment from unemployment, most job-to-job transitions result in a better match for the employee. We further find that the majority of employees move to larger, more productive and more profitable firms. Our sectoral analysis shows that the majority of job-to-job transitions occur within sector in manufacturing and retail-transportation sectors. Labor-intensive sectors like construction, agriculture and mining tend to have high outflow rates.

Our regional analysis shed light on regional characteristics that affect job to job mobility between regions. Some covariates, such as distance between origin and destination regions and some characteristics of destination regions such as population, wages and level of education have similar coefficients both for job to job migration and total migration. However, some differences also exist. Unemployment rate in destination region is more important for total migration whereas intra-region job mobility is important for only job to job movers.

Our results leave room for further research. First, the effects of individual characteristics on the decision for changing job within the same industry, within industries in the same region and between regions can be analyzed. In that respect, the administrative data lack some important individual variables, such as education level. Second, transitions between private and public employment can be analyzed if data is extended to public sector. Third, our finding that job mobility within a region attracts job changers from other regions calls for further research on the determinants of intra-region job mobility. Finally, impact of large transportation projects or socio-economic shocks such as refugee inflow on job mobility can be examined in further detail.

Appendix

Table A1
Definition and sources of the variables in Table 5

Variable name	Definition	Source
Job to Job Migration	Number of job switchers between nuts12level regions. Includes only private sector formal employment	Entrepreneurship Information System (EIS), Administrative matched employer-employee data
Population	Total population in a region	Turkish Statistical Institute (Turkstat)
Distance	Distance between nuts2 level regions. Calculations are based on the center of the largest city in a regions	General Directorate of Highways
Wage	Mean hourly wage (Private Sector)	Labor Force Survey, TURKSTAT
Unemployment Rate	Regional unemployment rate at nuts2 level	Turkstat Regional Indicators Database
Relative Unemployment Rate	Young unemployment rate divided by total unemployment rate at nuts2 level	Turkstat Regional Indicators Database
Share of College Graduates	Number of college graduates to population ratio at nuts2 level	Turkstat Regional Indicators Database
Within region job mobility	Within region job switchers to total workers ratio	EIS data

Table A2
Descriptive Statistics for the Variables in the Regressions

	Obs.	Mean	Std. Dev.	Min	Max
Job to Job Migration	650	7394.84	55,781.12	41	1,266,170
Total Migration	650	3727.41	5333.11	0	51,121
Distance (km)	650	773.58	388.00	35	1768
Population	650	3,028,502	2,565,092	757,711	14,657,434
Intra-region Mobility	650	0.36	0.03	0.30	0.42
Average Hourly Wage	650	6.03	1.09	4.09	8.94
Unemployment Rate	650	9.50	4.61	3.90	24.80
Relative Unemployment Rate	650	1.97	0.47	1.14	3.33
College Share	650	12.79	2.84	8.71	21.51

Table A3
Cross Correlations of Independent Variables in the Regressions

	Distance	Population	Intra-region Job Mobility	Average Hourly Wage	Unemployment Rate	Relative Unemployment Rate	College Share
Distance	1						
Population	-0.03	1					
Intra-region Job Mobility	0.04	0.00	1				
Average Hourly Wage	-0.10	0.68	-0.18	1			
Unemployment Rate	0.02	0.27	0.16	-0.11	1		
Relative Unemployment Rate	-0.09	-0.27	-0.46	0.13	-0.58	1	
College Share	-0.13	0.53	-0.06	0.87	-0.01	0.13	1

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