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Graded Security and Labor Market Mobility Clean Evidence from the Italian Jobs Act

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Graded Security and Labor Market Mobility

Clean Evidence from the Italian Jobs Act

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Graded Security and Labor Market Mobility: Clean Evidence from the Italian Jobs Act

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Abstract

The Italian Jobs Act provides a unique natural experiment for testing the labor market effects of graded security in dual labor markets. The reform introduced a new labor contract based on graded security, with severance payments increasing with tenure, while phasing out the reinstatement clause applied until March 2015 to unfair dismissals. We draw on a unique dataset covering the universe of private firms having at least once 10 to 20 employees in the period 2013-16. Beyond an overall increase in mobility, we find evidence of a causal increase in open ended hirings by firms with more than 15 employees relative to smaller firms. The effect is sizable, of the order of 50 percent. We also observe an increase in the transformation from fixed term to open ended contracts as large as 100 percent. We also find evidence of an increase in firing in larger firms relative to smaller firms. Finally, we observe a reduction in job-to-job flows for workers in firms with more than 15 employees, who would have lost the reinstatement clause by moving to another firm-contract. These empirical results are coherent with theoretical predictions on the effects of graded security in imperfect labor markets, and, more broadly, with general models of dynamic labor demand with employment protection legislation.

Keywords: Labor Mobility, Jobs Act.
JEL codes: J10, J23.

1 Introduction

The effects of a reduction of employment protection on labor market mobility have been thoroughly investigated by models of dynamic labor demand as well as by equilibrium models in the labor market.[1] Economic theory unambiguously predicts that a labor market with more flexibility for standard labor contracts should be associated with larger job and worker flows. In real life labor markets, however, structural reforms of employment protection legislation are rare events (Boeri, 2011), and most reforms implemented in Europe over the last twenty years have been acting on the flexible fringe of the labor market, with more and more flexibility granted only to fixed term contracts.[2] These reforms created a dual structure, particularly significant in Southern Europe, with a stock of open ended contracts largely unaffected by the reforms, coexisting with a growing part of the labor market experiencing greater flexibility at the margin. In addition to being relatively rare events themselves, the effects of reforms of employment protection legislation on labor market mobility are not simple to identify empirically. Cross country studies are obviously difficult to interpret, as employment protection legislation interacts with a number of other country-specific institutions (Blanchard Wolfer, 2000).

The Italian Jobs Act (JA) is a structural labor market reform aimed at reducing the dual structure in the labor market. As of March 2015, Italy introduced a new labor contract for all new open ended jobs based on graded security, with severance payments steadily increasing with tenure. This design of the contract had been advocated within policy-oriented academic circles (Boeri Garibaldi, 2008; Cahuc et al. 2009; Bentolila and Jimeno, 2008) as well as by the research community (Blanchard and Tirole, 2008; Boeri Garibaldi and Moen, 2017). With the new contract the traditional reinstatement clause for unfair dismissal was suppressed. At the same time, a hiring subsidy was introduced for any new job opened on a permanent basis. While the hiring subsidy applied to all new open ended hirings, the new graded security implied new flexibility and reduction of EPL only for firms above the 15 employees threshold. As a result, the Italian JA represents a unique experiment for testing the labor market effects of graded security in dual labor markets.[3]

This paper identifies the effect of the reform by using the discontinuity present in the Italian legislation since March 2015, when the reinstatement clause for unjust firing applied only to firms with more than 15 employees. While other studies also relied on variable enforcement in the legislation to identify the effects of mostly marginal reforms of employment protection [4] this paper investigates the effect of a comprehensive labor market reform over a number of relevant margins, including not only job creation and destruction, but also firms' growth, worker turnover, and job-to-job flows.

We draw on a unique dataset covering the universe of private firms having at least once 10 to 20 employees in the period 2013-16. Firms are monitored at monthly frequencies by the Italian social security administration (INPS). We also have access to work-histories of the entire workforce employed by those firms. Overall, we use information on approximately 240 thousands Italian firms observed monthly for 4 years, as well as 6.2 million workers.

The structure of the paper is threefold.

At first we generate a set of descriptive statistics and document the key phenomena associated to the Italian JA. We observe a marked increase in labor market mobility. In the aftermath of the introduction of the graded security contract, we observe a 20 percentage increase in the number of firms crossing the 15 employees threshold. We also construct transition matrices for firms between 10 and 20 employees, obtain scalar measures of mobility across cells (Shorrock, 1978) pointing to an increase in mobility of the order of 5 percent. Next we construct aggregate statistics of job creation and job destruction, and observe a substantial net job creation in the aftermath of the JA. Job reallocation, the sum of job creation and

[1] Bentolila and Bertola (1990), Nickell (1986), Garibaldi (1998), Millard and Mortensen (1995)

[2] There is large literature on dual labor markets. Boeri Garibaldi (2008) and Berton and Garibaldi (2012) model the Italian labor market. Cahuc et al. refer to France (2016)

[3] Early research on the Italian JA include Sestito and Viviano (2016) and Fana et al. (2015)

[4] This literature includes e.g. Riphahn (2004); Boeri and Jimeno (2005); Garibaldi et al. (2004); Ichino and Riphahn (2005); Behaghel, Crepon, and Sdillot (2008); Kugler and Pica (2008); Marinescu (2009); Martins (2009); Hijzen, Mondauto, and Scarpetta (2013); Cingano, Leonardi, Messina, and Pica (2016). The impact of changes in severance pay amounts are studied in Garibaldi and Pacelli (2008), and Kugler (1999, 2005).

destruction clearly increased. We also observe a marked increase in job destruction by firms that were subject to the reinstatement clause before March 2015.

In the second part of the paper we present the main econometric results. We select all hirings and layoffs at the firm level that took place between January 2014 and December 2016. These selected jobs are subject to graded security since March 2015 for firms that had more than 15 employees before 2015. The latter firms are considered treated firms. Conversely, firms that were below 13 employees before March 2015 are considered control firms, since the new jobs with graded security are as flexible as the jobs opened before March 2015. We thus identify the effect of graded security by exploiting the difference before and after the introduction of graded security as well as the difference between smaller (control) and larger (treated) firms. We find evidence of an increase in hirings per firm on an open ended basis since March 2015 in the treated group relative to the control group. We also find evidence of an increase in the conversion of fixed term contracts into open ended contracts, both within the same firm and for workers previously employed on a fixed term basis elsewhere. In addition, we find evidence of a significant increase in firings per firm in treated firms relative to control firms. Note that since we observe firms on a monthly basis, we are able to test pre-trend effects. In all the regressions reported, differences between the treatment and control groups begin in March 2015, exactly when the new contract was introduced. The results are also quantitatively sizable. Our estimates indicate an increase in open ended hiring per firm of more than 60 percent in treated relative to control firms. As far as the transformation from fixed term contract is concerned, the results point to an increase in the transformation per firm as high as 100 percent in control firms relative to treated firms. With respect to the firing margin, our estimate suggests and increase in firing per firm by approximately 50 percent in larger firms relative to small firms.

In the third and last part of the paper we switch from firm-level data to worker-level information, and we look at the behavior of job-to-job flows. Workers who were employed in larger firms before the introduction of graded security were subject to the reinstatement clause. As a consequence, they may have fewer incentives to engage in a job-to-job switch, as the new job will be characterized by a lower degree of protection. At the same time, there is likely to be an overall increase in hirings. The same change in protection is not present for workers employed in smaller firms. Our regressions point to a significant reduction in job-to-job flows for workers employed in larger firms relative to smaller firms.

The paper proceeds as follows. Section 2 describes the institutional setting and the Italian JA. Section 3 describes the data and reports descriptive statistics on job flows, mobility and threshold passing. Section 4 describes our empirical strategy and reports the main results on hirings per firm, on conversions of fixed term contracts as well as on firings. Section 5 investigates job-to-job flows. Section 6 concludes.

2 Institutional Setting and Literature Review

With the "Jobs Act" (JA) adopted in December 2014, the Italian Government obtained from the Parliament a broad mandate to introduce measures to rationalise employment protection, expand active labour market policies and make social protection more effective. The reform of employment protection was the most radical: a standard contract with employment protection increasing with tenure was introduced in March 2015, which confined the possibility of reinstatement of workers following unfair dismissal to discriminatory dismissals, excluding this possibility for dismissals for economic reasons (*motivo oggettivo*). The new contract was applied only to new open ended contracts "grandfathering" existing rights. The new graded security contract replaced the reinstatement with a monetary compensation for economic unfair dismissals. This severance payment is flat at 4 months for the first two years, and then increasing with tenure up to a maximum of 24 months wages at a 12 years tenure. The Jobs Act also introduced a new form of out-of-court procedure, according to which the employer can pay the worker an indemnity equal to 2 monthly wages in the first two years of tenure and then an additional 1 monthly wage per year of service, with a maximum amount of 18 monthly after 18 years of service. The acceptance of this transaction prevents any further dispute by the worker, that is, appealing to courts for a dismissal to be unfair or not. Both parties have a strong incentive to settle the dispute through this procedure, since the sum paid is not subject to social contributions

or taxation. As mentioned above, the new dismissal rules applied to all new hires on a open ended basis, and do not involve workers continuing on permanent contracts in firms with more than 15 employees, who continued to be protected by the reinstatement clause. However, firms with less than 15 employees (where the reinstatement clause was not applied even before the JA) expanding above the threshold would move *all* workers (not only new hires) to the new graded security contract dismissal regulations. No change in dismissal regulations was envisaged for workers in firms with less than 15 employees remaining below that size threshold, as the open ended contract was already flexible with a maximum severance payment of 6 months. In what follows we refer to the new contract as to the *JA contract* or to the *graded security contract*.

The 2015 Budget Law also introduced a sizeable hiring subsidy for new hires in open ended contracts. Basically employers were exempted from paying social security contributions up to a 8,060 Euros cap per year and worker for the three years following the hiring. In order to discourage opportunistic behavior of employers, the hiring subsidy excluded workers with an open ended contract in the previous six months (and with an open ended contract with the same firm in the 3 months before Dec 2014). The hiring subsidy applies uniformly in larger and smaller firms and there is no firm size threshold associated to this policy.

There is some literature offering preliminary evaluation of the JA contract, and a number of papers using the 15 employees threshold to identify the effects of employment protection in the Italian labour market. Sestito and Viviano (2016) use administrative data on worker flows from the so-called Comunicazioni Obbligatorie (Cob) in a specific Italian region (Veneto) and in the period from January 2013 to June 2015. They identify the effects of the hiring subsidy and the JA by using both the 15 employees threshold and the fact that some workers were not eligible to the hiring subsidy (e.g., those with an open ended contract in the previous six months or with an open ended contract with the same firm in the 3 months before Dec 2014). They find that gross hirings were positively affected by both, the hiring subsidy and the JA, but the two effects were quantitatively different: while about 40 % of gross hires in permanent contracts can be accounted for by the hiring subsidy, about 5% of these flows can be attributed to the effects of the introduction of the graded security contract. The joint effect of the two measures is negligible. Leonardi and Nannicini, in an unpublished presentation drawing also on Cob data found that about one fourth of the effect of the two policies on gross hires could be attributed to the graded security contract. Finally, Fana, Guarrascio and Cirillo (2015), using aggregate data from Istat and Inps, found that the JA did not affect employment growth.

There are more and more empirical studies on employment protection drawing on within country variation in the enforcement of EPL, notably using the exemption of small units from the strictest EPL provisions to disantangle treatment and control groups. Garibaldi, Pacelli and Borgarello (2004), using stochastic transition matrices in firm size, looked at firm mobility around the threshold, finding that it falls as firms get closer to the 15 employees size. Schivardi and Torrini (2008) similarly found that the probability of firms' growth falls by 2 percentage points near the threshold. Boeri and Jimeno (2008) used the threshold as a second difference in evaluating a reform of employment protection: they found that a tightening of employment protection in small firms reduced layoffs below the threshold relative to a control group of large firms.

Another strand of literature which is relevant for our purposes is on the economics of graded security. Boeri, Garibaldi and Moen (2017) develop a normative theory of severance pay, providing an optimal level of graded security at different tenure levels, depending on the efficiency of the judicial system. Boeri and Garibaldi (2008), Jimeno et al. (2015) and Dolado et al. (2016) as well as Bentolila and Jimeno (2008) discuss the rationale for a *unifying contract* reducing contractual dualism between temporary and open ended contracts. This contract provides for severance increasing with tenure just like the new open-ended contract introduced by the Italian JA.

2.1 Theoretical Predictions and main results

In the appendix we provide a simple dynamic model of labor demand under uncertainty where we consider both a reduction in EPL and the introduction of a marginal hiring subsidy. The model is in the spirit of Bertola (1990). The model shows that for large firms above the threshold the hiring subsidy increases

employment both in good and bad times. Conversely, when firing costs are reduced, firms should hire more in good times and fire more in bad times. Smaller firms below the threshold should only respond to the hiring subsidy. Note that in the simple model the size threshold is exogenous.

In light of the results of this model and of the literature surveyed above, we try to summarise what are the key empirical predictions. With respect to the JA contract (lower firing costs), firms above the 15 employees threshold should increase hiring in good times and firing in bad times. The model has no clear cut predictions in terms of average employment levels. In addition, firms should transform fixed term into open ended contracts. For firms below the 15 employees threshold, the JA should not imply any substantial change. With respect to the JA contract, the theoretical predictions linking job-to-job mobility to lower EPL are not straightforward, notably with respect to workers who are employed in firms that were subject to the strictest EPL provisions before the reform. We may expect that these individuals have fewer incentives to move. In other words, the introduction of the JA contract may induce a fall in the job-to-job transitions among workers employed in firms that were protected by the strictest EPL before the reform. Finally, concerning marginal employment subsidies, firms should hire more at the open ended level regardless of their business conditions. In any event, the marginal employment subsidy applies to all firms.

In the descriptive analysis of the paper we have three main results associated to the JA contract. First, we observe an increase in overall mobility. Second, we observe an increase in the number of firms passing the threshold. Third, we observe an increase in a measure of job reallocation, defined as the sum of job creation and destruction.

In the main empirical analysis of the paper we treat the JA contract as a quasi-experiment, with firms that have been always above the threshold before March 2015 considered treated firms and subject to graded security. Conversely, firms that are below the threshold in the entire period can be considered as control firms. This implies that our research strategy for the JA contract is a difference in difference. The first difference is what happens before and after March 2015, when the JA was introduced. The second difference is what happens to large firms relative to small firms.

The econometric results are divided in two parts. The first one concerns regressions of hiring and firing per firm. For hiring and firing per firm we have four clear results. First, we find a significant increase in open ended hiring in treated firms relative to control firms. Quantitatively, we find an increase in open ended hiring per firm of more than 60 percent in treated relative to control firms. Second, we find an increase in transformations from fixed term to open ended contracts, both through within firm hiring as well as through outside hiring, relative to the control group. Quantitatively, this amounts to an increase in the transformation per firm as high as 100 percent in control firms relative to treated firms. Third, we find a significant increase in firing per firm relative to the control group. Quantitatively, we find an increase in firing per firm by approximately 50 percent in larger firms relative to small firms. The second set of results concerns individual job-to-job mobility. We find that workers formerly protected by the reinstatement clause (art. 18) are less likely to switch jobs relative to the other workers. Quantitatively, the share of job-to-job transitions among all hiring falls by 8 percent for individuals whose entitlements were grandfathered by the reform relative to the other workers.

3 Data and Descriptive Analysis

The extraction from the social security records is based on the employment level of firms. We select all private firms that between January 2013 and December 2016 hit the band 10-20 employees. We observe approximately 240.000 firms each month, with a time span of 48 months. Given this set of firms, we then select all the workers who are employed in those firms between 2013 and 2016. Approximately 6.2 million different workers are observed over this 3 years time span. The total number of records and observations is approximately 250 million.

For each firm, beyond the basic details (province, city, sector, birth date, death, sector, etc.) we observe at monthly frequencies the total number of employees, part time employees, and the wage bill. Note that Inps calculates also "firm labor force" (forza aziendale), a full time equivalent concept that we use to identify

the threshold. The variable is rounded at integer values. In the legislation there is a specific definition that labour Courts should apply for measuring firm size around the threshold. Specifically, to obtain the relevant firm size in applying EPL, the judges count i) full time average open ended contracts in the last 6 months, ii) part time open-ended full time equivalent in the last 6 months and iii) average fixed term employees hired in the last 24 months weighted by their effective job duration. The actual value is rounded at integer. This suggests that in practice the threshold is not observed easily. The concept of "forza aziendale" compiled by Inps is a reasonable proxy, and we thus use it in the rest of the paper, but it is clear that the exact definition is more subtle, and it is not even obvious that firms around the threshold know at each point whether they are above or below the threshold.

3.1 Threshold Passing

The first descriptive result concerns threshold passage. Before March 2015 firms passing the 15 employees threshold were subject to the reinstatement clause in case of unfair dismissal. Conversely, as of March 2015 firms that pass the 15 employees threshold are no longer subject to reinstatement for their *entire workforce*, regardless of the tenure of their workers. We ask whether this change led to more firms passing the 15 employees threshold, as one would expect.

Formally, let us define with L_{it} firm size at time t, where t refers to (year/month). Threshold pass is defined as

$$Threshold\_Pass = \begin{cases} 1 \quad \text{if} \quad L_{i,t} \geq 16 \ \text{ and } \ L_{i,t-j} < 16 \quad \text{with } j = 1, 3, 12 \\ \\ 0 \qquad\qquad\qquad\qquad\qquad\qquad \text{otherwise} \end{cases}$$

or simply as moving beyond the 15 employees in a given interval. The legislation changes on March 7 2015, and the threshold passage can be defined on a monthly, quarterly as well as yearly basis. Figure 1 reports the simple counts of firms passing the threshold for each month, where the definition used in the Figure refers to the 12 month passage. In Figure 1 the vertical lines refer to three important dates in the Italian JA. The first line refers to December 2014, where the sizeable marginal hiring subsidies where introduced. The second vertical line refers to March 2015 when graded security was introduced. The last line refers to December 2015, when the magnitude of the marginal hiring subsidy was reduced by 50 percent. In the spirit of this paper, the key vertical line is the second one.[5]

Figure 1 indicates that threshold passage increased substantially with the JA contract. The increase in passage probably began already with the marginal hiring subsidy, but we clearly observe an acceleration after March 2015. We also observe a marked reduction in 2016. The latter is associated to the scaling down of the hiring subsidy. Table 1 reports average values of the number of firms that pass the threshold before and after 2015. Table 1 indicates an increase in the number of crossings around 20 percent. Considering the 12 months lag, threshold passage increases from an average of 8853 before March 2015 to an average monthly passage of 11360 after the JA contract.

3.2 Mobility

Beyond a simple increase in size passage, we are interested in understanding whether there was a change in firm mobility with the introduction of graded security. We assess firm mobility with simple transition matrices as well as with mobility indexes. More formally, in this section we take as state s_t the firm size at time t. We consider $s_t \in \{\leq 11, 12, ...19, \geq 20\}$ as a set recording firm size in 10 different cells, where s_{it} is size for firm i at time t measured with the firm labor force compiled by INPS. The matrix M_t records simply the probability of changing size s_{it} to size $s_{i,t+12}$

$$s_{t+12} = M_t s_t$$

[5]The same three vertical lines are reported in most Figure throughout the paper.

Table 1: Average Number of Firms Passing the 15 threshold

	Before March 2015 [c]		After March 2015 [d]		Difference in Percentage [e]	
	Total Pass. [a]	Prob. [b]	Total Pass.[a]	Prob. [b]	Total Pass.[a]	Prob. [b]
12 months lag [f]	8853	0.090%	11360	0.115%	28.32	28.21
3 months lag [g]	5525	0.056%	6482	0.066%	17.32	17.33
1 month lag [h]	2664	0.027%	2972	0.030%	11.56	11.60

[a] Total Pass. refers to the absolute number of firms that pass the 15 employee threshold
[b] Prob. is the probability that a firm below the threshold passes the 15 employee size
[c] Refers to the average between January 2014 and March 2015.
[d] Refers to the average between April 2015 and December 2016.
[e] Difference between values before March 2015 and after March 2015.
[f] Difference in size with 12 months lag
[g] Difference in size with 3 months lag
[h] Difference in size with 1 month lag

Table 2 reports average transition matrices before and after the introduction of graded security. What the Table suggests is that- for example- the probability weights associated to the main diagonal elements (where persistence is recorded) are higher before March 2015 than after the introduction of the graded security contract. In the literature, there exists various mobility measures that summarise the information reported in the transition matrix into a simple scalar measure. In the paper we focus on the trace measure introduced by Shorrock (1978), but various other measures exist in the literature that can be easily compiled.[6] Formally, the trace measure reads

$$\text{Trace Measure} =: \frac{M - Tr(M)}{m - 1} \tag{1}$$

where $Tr(M)$ is the trace of M and m is the number of states. Figure 2 reports the value of the Shorrock index between 2015 and 2016. The Figure indicates a marked increase in overall mobility, that on average goes from 0.72 to 0.76. This is a first indirect evidence that firms moved more intensively across size cells (either through expansions or contractions of the workfoorce) in the aftermath of graded mobility.

3.3 Job Flows

Our next aim is to calculate aggregate statistics on job flows in the years of the JA. The idea goes back to the original work of Davis-Haltiwanger (1999), and the distinction between expanding and contracting firms. Our focus is only on job flows by continuing firms, and we thus do not work on firms entry and exit in this section. Flows are constructed at yearly, quarterly and monthly frequencies.

We briefly outline the procedure for constructing job flows and we leave in the Appendix the more formal details. Starting from net employment growth at the firm level, we estimate seasonally adjusted employment change for each firm. Firms with positive employment change contributes to aggregate job creation while firms with negative employment change contribute to aggregate job destruction. The aggregate statistics are obtained by adding up in absolute value all the positive and negative employment changes. The gross rates are obtained by dividing aggregate flows by total employment in the previous period. We are thus in a position to construct these measures for every month between 2013 and 2016 at monthly, quarterly and yearly frequencies. Note that among the various regularities among job flows, it is well known that aggregate flows fall with firm size (Haltiwanger et al. 2008)

Figure 3 plots time series of yearly job creation, job destruction and net employment growth. We observed a marked increase in net employment growth as the JA became effective. Specifically, net employment

[6] Shorrock (1978) introduced also the Determinant measure $\frac{det(M)}{m-1}$f, where $det(M)$ is the determinant of the stochastic matrix. Sommers and Conslik (1979) introduced the Eigenvalue measure: one minus the modulus of the second largest eigenvalue of M . In addition, the mean crossing measure is the sum over i and$j$ (from 1 to m) of M

Table 2: Average Transition Matrices Before and After Graded Security

Post G. Sec.: After March 2015 [a]										
	≤ 11.00[e]	12.00[f]	13.00	14.00	15.00	16.00	17.00	18.00	≥ 19.00	
≤ 11.00[c]	0.47	0.26	0.13	0.06	0.03	0.02	0.01	0.01	0.01	1.00
12.00 [d]	0.22	0.36	0.21	0.11	0.05	0.03	0.01	0.01	0.01	1.00
13.00	0.10	0.19	0.33	0.20	0.10	0.05	0.02	0.01	0.01	1.00
14.00	0.05	0.09	0.19	0.32	0.18	0.08	0.04	0.02	0.02	1.00
15.00	0.03	0.05	0.10	0.20	0.31	0.16	0.08	0.04	0.03	1.00
16.00	0.02	0.03	0.06	0.11	0.20	0.27	0.16	0.09	0.05	1.00
17.00	0.02	0.03	0.04	0.07	0.12	0.19	0.26	0.17	0.10	1.00
18.00	0.02	0.02	0.03	0.05	0.07	0.12	0.21	0.29	0.20	1.00
≥ 19.0	0.02	0.02	0.03	0.04	0.06	0.09	0.15	0.25	0.34	1.00
Pre G. Sec. before March 2015 [b]										
	≤ 11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	≥ 19.0	
≤ 11.00[c]	0.52	0.25	0.11	0.05	0.03	0.02	0.01	0.01	0.00	1.00
12.00 [d]	0.23	0.39	0.20	0.09	0.04	0.02	0.01	0.01	0.00	1.00
13.00	0.10	0.21	0.35	0.18	0.09	0.04	0.02	0.01	0.01	1.00
14.00	0.05	0.10	0.20	0.34	0.17	0.07	0.04	0.02	0.01	1.00
15.00	0.03	0.05	0.10	0.20	0.33	0.15	0.07	0.04	0.02	1.00
16.00	0.03	0.04	0.06	0.11	0.20	0.29	0.16	0.08	0.04	1.00
17.00	0.02	0.03	0.04	0.07	0.11	0.20	0.28	0.16	0.09	1.00
18.00	0.02	0.02	0.03	0.05	0.08	0.12	0.20	0.30	0.18	1.00
≥ 19.0	0.02	0.02	0.03	0.04	0.06	0.09	0.14	0.24	0.36	1.00

[a] Refers to average value between January 2014 and March 2015
[b] Refers to average value between March 2015 and December 2016
[c] Firm size less or equal than 11 at month t
[d] Firm size equal to 12 at month t
[e] Firm size less or equal than 11 at month $t+1$
[f] Firm size equal to 12 at month $t+1$

growth was on average equal to -0.5 in 2014 and became positive and reached 2 percent in December 2015. In addition, the average growth since January 2015 amounts to 1.5 percent. In Figure 3 it is also evident that in the aftermath of the reduction in marginal hiring subsidies of December 2015, net employment growth declines substantially. Figure 3 shows that employment growth is driven mainly by an increase in aggregate job creation, while job destruction remains roughly constant throughout the period. Overall, there was thus an increase in job reallocation, defined as the sum of job creation and destruction.

Figure 4 reports the same time series measured at the quarterly frequencies. The underlying story line is similar, even though quarterly flows are more volatile. The increase in job creation since the introduction of the JA contract in March 2015 is remarkable. Figure 5 reports on the same chart the time series of job creation at different frequencies. As one should expect and in line with the job flows literature (Davis Haltiwanger, 1999), the lower the frequency, the larger the flows. Time series of job destruction (not reported) display a similar behavior. An important caveat applies to the interpretation of these results: job flows are meant to capture changes in the number of positions available in each firm. Yet, job destruction does not mean firing and job creation does net mean hiring, as workers flows are netted out at the firm level. Gross job flows do not capture the reallocation of workers occurring at given employment levels within each firm.

Overall, the descriptive analysis documents that in the aftermath of the introduction of graded security the number of firms passing the threshold increased by twenty percent, that overall mobility increased by some 5 percent and net job creation for firms in the sample increased from -0.5 to 1.5 on average.

4 Empirical Analysis

Our research strategy considers the JA contract as a quasi experiment, since the new more flexible contract reduced the facto flexibility only in firms that before March 2016 were already above the threshold. As discussed in the previous section, the definition of the threshold is not trivial, and it is not obvious that firms are fully aware of their actual size vis-à-vis the legislation. We also know from the descriptive analysis that the number of firms passing the threshold increased substantially with the JA contract. It is thus not random

the distribution of firms immediately above and immediately below the threshold. We thus define treated firms as those firms that *before* March 2015 were always above 15 employees. This definition of treatment is somewhat restrictive, but with this definition we are basically confident that those firms experienced an increase in flexibility. Any new hire on a permanent basis for these firms will involve the JA contract. On a typical month, the number of treated firms is approximately 25000, or around 9-10 percent of the total firms observed in a given month.

The definition of control is also not trivial, since firms very close to the threshold may be in an ambiguous position, and the actual firm size relevant for the legislation is not easily observed. We decided to be conservative, and we define as control group those firms that are below 13 employees before the introduction of graded security. Those firms are clearly not treated and are not affected by more flexibility at the margin even if they were to pass the threshold. These firms enjoyed marginal flexibility also before March 2015. Note that all the results in the paper survive to a different definition of the control group, and particularly to using as control group all firms that are not treated. The size of the control group is larger than that of the treatment group, as the number of firms falls with firm size. Using the restricted definition of control, in a typical month there are approximately 200000 firms in the control group, corresponding to 80 percent of firms in the entire database. Finally, note that the hiring subsidies apply uniformly to control and treated firms and therefore should not cause any problem to the identification assumption at the basis of our analysis.

For pure descriptive purposes, Figures 6, 7 and 8 report job flows in treated and control firms. On an eye ball vision, the charts confirm the empirical regularities of the job flow literature whereby job flows are larger in smaller firms (Haltiwanger et al. 2008). Not surprisingly, we thus observe that job flows are larger in control firms. The behaviour of net employment growth and job creation in Figures 6 and 7 appears similar. A marked difference is conversely observed in the behaviour of job destruction in the aftermath of graded security. Figure 8 suggests that treated firms behave differently in the aftermath of the JA contract. Yet, as we already emphasised above, job destruction does not mean firing and to test our predictions we need proper data on hiring and firing, as we do in our econometric analysis.

The JA contract should induce an increase in *both* hiring and firing at the firm level. Before presenting the econometric specification, we summarize the main theoretical prediction. With respect to hiring we should expect i) an increase in open ended hiring in treated firms, relative to the control group; ii) an increase in transformations of fixed term contracts into open ended contracts in treated firms, relative to the control group; and finally iii) a reduced fixed term hiring in the treatment vs the control group. With respect to firing we should expect, i) an increase in overall firing in treated firms, relative to the control group, and ii) an increase in firing for economic reasons in treated firms. All these effects should become significant in March 2015 when the JA contract came into play.

From the individual employment records we identify and select all hirings that began as of January 2014. We basically consider all jobs started from that period onward. We then observe whether the hire is temporary or fixed term. We also observe whether the worker was previously employed (in the previous month) on a fixed term or open ended basis. Having observed and recorded all the hirings, we collapse these data at the firm level and consider the variable of interest (hiring, transformation, etc..) on a per-worker basis at the firm level. When the outcome is firing per firm, the procedure is the same, and the firing considered refers to contracts started after January 2014.

More formally, in what follows we let the outcome $Y_{i,t}$ be measured at the firm level at monthly frequencies, where i refers to the firm and t to the month. Treatment T_i refers to firms always above 15 employees before March 2015. The basic specification with the Graded Security Dummy (GS_i) for the period after March 2015 is as follows

$$Y_{i,t} = \alpha_i + \sum_{k=\underline{k}}^{12,2016} \gamma_k \delta_k + \beta_1 T_i + \beta_2 T_i GS_i + \epsilon_{i,t} \tag{2}$$

where α_i are firm fixed effects and δ_k are time effects. While the previous specification is a simple difference

in difference, our preferred specification estimates a difference in difference coefficient for each month so that

$$Y_{i,t} = \alpha_i + \sum_{k=\underline{k}}^{12,2016} \gamma_k \delta_k + \beta_1 T_i + \sum_{k=\underline{k}}^{12,2016} \beta_{2,k} T_i GS_k + \epsilon_{i,t} \tag{3}$$

The key coefficient of interest is β_2 in equation 2 and $\beta_{2,k}$ in equation 3. In the latter and more general specification with pre trend effects, the coefficient of interest should be significant only after March 2015.

4.1 Firm Hiring per Worker

Open Ended Hiring per Worker

The first set of results concerns hiring per firm. Figure 9 reports the simple average hiring per worker (total hires divided by total employees) in treated and control firms. Two facts are immediately relevant from the Figure. First, hiring per worker are larger in (smaller) control firms. Second, and most important for our purposes, hirings per firm are fairly stable in treated firms whereas they apparently fall in control firms with the introduction of graded security. This type of behavior is likely to be significant in the difference and difference estimation, to which we now turn.

The basic difference in difference is on open ended hirings per firm and is reported in Column(1) of Table 3. The coefficient β_2 is labelled *Treated Firms-Jobs Act*, since it is obtained by the interaction between the dummy treated firms (those who are always above 15 employees) and the graded security period (in the aftermath of March 2015) dummy. The coefficient is negative and significant in the specification of equation (2). Our preferred specification is the one of equation (3), and we present the regressors $\beta_{2,k}$ in Figure (10). The coefficients $\beta_{2,k}$ are plotted over time along the 95 percent confidence interval. The results are significant if the coefficient is different from zero in the period of the JA. The results in Figure 10 are fairly interesting, as they show that open ended hiring per firm became significant in 2015 when the new contract was introduced. Strictly speaking, the coefficient was already significant in January 2015, even though it clearly increased its size when the new contract became effective. We will see below that in most cases we will be able to pick exactly the timing of graded security. The coefficients are all reported in Table 4

Quantitatively the effect in Column (1) of Table 3 is sizable. The average hiring share in treated firms was around 0.09 before the introduction of graded security. The simple diff in diff coefficients in Column (1) of Table 3 is 0.09. The β_{2k} coefficient in March 2015 is around 0.05, and it increases to 0.08. This implies an average increase in open ended hirings per firm of more than 60 percent in treated relative to control firms.

Open Ended Hiring per Worker as Transformation from Fixed Term

We now turn to regressions concerning open ended hiring as transformation from fixed term contract. Figure 11 reports the basic time series for control and treated firms. The two series appear to move in the opposite direction in the aftermath of graded security, with a reduction in control firms and an increase in *Treated Firms-Jobs Act*.

Column (2) of Table 3 reports the simple difference in difference regression, and the coefficient *Treated Firms-Jobs Act* is positive and significant. The coefficients β_{2k} are plotted is in Figure 14. The result is remarkable. The coefficient turns positive and significant exactly in March 2015, when the contract was introduced, and remains positive thereafter. Column (2) of Table 4 reports the values of these coefficients.

Quantitatively the effect is very large. The average transformation into open ended in treated firms was around 0.06 before the introduction of graded security. The simple diff in diff coefficients in Column (1) of Table 3 is 0.067. The β_{2k} coefficient in March 2015 is around 0.07, and they increase even further. This implies an average increase in transformation into open ended among workers previously hired as fixed terms of 100 percent in treated firms relative to control firms. This does not imply directly any extra employee in terms of total employment, since all these workers were already employed.

We also look at transformation into open ended among workers that were already employed in the same firms, to see whether the large transformation is mainly an inside transformation or promotion in treated

firms. Column (3) of Table 3 reports the basic difference coefficient and it is positive and significant at 0.049. When we look at the coefficient month by month, we again find the remarkable effect that the coefficient become significant in March 2015. These workers were already inside the firm, and it appears that firms promoted these workers into open ended exactly when it was most efficient to do so. Certainly these promotion benefited from the hiring subsidy, but as we argued throughout the paper, such marginal subsidy was available also in smaller firms. The quantitative impact of these inside transformation is also very important, and implies an increase in transformation into open ended slightly less than 100 percent in treated firms relative to control. One of the main goal of the new contract was to increase stability of fixed term workers. These results confirm this prediction.

Fixed Term Hiring

We complete the look at hiring by focusing on fixed term hiring. As graded security increased the firm incentive to hire on a open ended basis, we may expect that treated firms reduced fixed term hiring relative to control firms. As we show in this section, we do not find any evidence of this behavior. Figure 15 report the basic time series for control and treated firms. The dynamics of the two series suggests that they move over time in a parallel way before and after the introduction of graded security. The simple difference in difference coefficient in Table 3 is positive (we may expected a negative one) but it is not significant. The monthly estimate of the β_{2k} coefficients reported in Column (4) of Table 4 and in Figure 10 and are clearly not significant. Overall, there is no evidence of a different behavior in fixed term hiring per firm among treated and control firms.

4.2 Firm Firing per Worker

In any model of labor demand with EPL- including the simple model proposed in the appendix- a reduction in EPL among treated firms should induce an increase in *both* hiring and firing. Graded security is a more flexible labor contract, and we should expect to find an increase in firing, alongside the important increase in open ended hiring observed in the previous section.

The empirical analysis on firm firing is very similar to the one we used for hiring per worker. We first select all new jobs hired on a open ended basis as of January 2014 and follow them for a time horizon of at most two years. The Inps *uniemens* data report a flag that identify dismissals. In addition, it distinguishes between a general firing from a firing for a unjust reasons, even though the latter one turn out to be quantitatively very few. Once we select the firing we collapse them by firm size, exactly as we did for hiring per firm. The main hypothesis to test is whether open ended jobs created in treated (large) after March 2015 are more likely to terminate with a dismissal.

We first look at overall firing. Figure 17 reports average firing per worker in treated and control firm over time. As we expect, firing per firm are larger in smaller firms. Yet, the Figure shows that in the aftermath of the introduction of graded security firing per firm increased in treated firms and declined in control firms. These should imply a positive effect in a simple difference in difference regressions. This is indeed the case in the first column of Table 5, where the coefficient *Treated Firms-Jobs Act* is positive and significant. Figure 18 reports the coefficients $\beta_{2,k}$ over time, and few months after the introduction of graded security they appear to be significant. These suggest that the new jobs in treated firms were indeed more likely to be fired in treated firms. The coefficient becomes significant in June 2015, few months after the new jobs were subject to graded security and firing began to take place.

Quantitatively, the effect on firing is also sizable. Average firing share per worker is around 0.04 in the treated group before March 2015. The simple difference in difference coefficient is around 0.03. This implies that the average firing increases by more than 50 percent in larger firms relative to small firms.

We finally look also at unjust firing per worker. The simple difference in difference coefficient is positive and significant, but one should immediately notice that the number of firms involved is around 450, against 25000 in the case of overall firing. Despite the remarkable and unique data, the power of this test is not so large.Yet, in Figure 19 it is clear that the coefficient become positive in the aftermath of March 2015, even

though with so few cases the standard deviations of the estimates are larger, as confirmed also in the second column of Table 6

5 Job to Job Flows

This section turns attention to individual behavior and individual incentive to switch jobs in the aftermath of graded security. We change the focus from firm behavior and firm mobility to workers's mobility. The question we raise concerns the incentive of switching jobs when graded security is introduced.[7]

Consider an employed individual that is working with an open ended contract that begun *before* the introduction of graded security. His/her jobs on open ended basis is more protected that any new jobs offered in the labor market from March 2015 onward. This may suggest that such worker has fewer incentive to move. Yet, as the analysis of the previous sections showed, treated firms are now more willing to hire on a open ended basis, and the worker may feel an increase in labor demand, and thus an increase in job opportunities in the aftermath of March 2015. Which of the two effects will dominate remains an empirical question.

In this section we work with all individuals that are hired on an open ended basis since January 2014. The treated individuals are those employed with an open ended contract before March 2015 hired in firms that have more than 15 employees, and are thus sfully covered by the old reinstatement clause granted by Article of 18 of he labor code. The control workers are those individuals hired on a open ended basis since January 2014 in smaller firms.

Figure 20 reports the share of total hires on open ended basis that come from a job to job transition among treated individuals and among control individuals. Overall, job to job transition amount to more than 50 percent of total hires on open ended basis. The rest of the hiring comes from individuals that are hired fixed term contract, that are hired from other employment contract or that were previously non employed. The Figure suggests that before March 2015 workers that were hired on a open ended with full protection were more likely to engage in job to job transition. This phenomenon reflects the fact that workers hired in larger firms were more likely to move to other protected firms than workers employed in smaller firms. Yet, the Figure suggests also that in the aftermath of graded security the share of open ended is almost identical. Again, this suggests that the simple difference in difference coefficient should be significant.

We can run the same regression of equations (2) and (3) also in the case of job to job transition, where the outcome Y_{it} is the probability of entering into a job to job transition. Note that the unit i refers now to an individual and not to firms. Column (1) in Table 7 suggests that the simple difference in difference coefficient is negative and equal to -0.032. The treated individuals are less likely to change job. Column (2) reports the coefficient month by month and they are also plotted in Figure 21. The effect is clearly negative. At a first glance, the big jump in the difference in difference coefficient observed before the introduction of graded security may look odd, but it is actually exactly what one would expect. Think of a worker engaged with the old protection of article 18. In the first months of 2015 a job to job transitions for treated workers would take place under the old rules. In addition, in those months the marginal hiring subsidy was already in place, and firms were generally keen of hiring on a open ended basis. In this circumstance, the spike in job to job flows is exactly what one would expect, since those months of early 2015 represent the last chances to move and being protected by the article 18.

Quantitatively, the effect of graded security on job to job transition is significant but quantitatively is not huge. The average job to job transition probability is around 40 percent among all hires. The simple diff in diff coefficients is around -0.03. This suggests that the share of job to job transitions among all hiring falls by 12 percent for individuals who were employed in contract with reinstatement clause relative to other workers. In any event, this reduction in mobility is a temporary phenomenon, since workers hired under the old contract are slowly retiring or changing jobs and thus leaving the labor force.

[7]The literature on job to job flows and EPL is recent. Postel Vinay and Turon (2013) propose a model with severance payments and job to job transition.

6 Conclusions

The paper uses a unique dataset drawn from the Italian social security records to study the effects of the Italian jobs act. The latter involve two main policies: a marginal subsidy for hiring on a open ended basis as well as a new labor contract based on graded security, in the spirit of the idea of Boeri and Garibaldi (2008) and Boeri et al. (2017). Whereas the marginal hiring subsidy applied to all firms, the new contract increased flexibility for the new hires only for firms above 15 employees. The paper uses this cross sectional discontinuity to estimate the effect of the new contract in a quasi experiment setting.

Overall, the paper finds an increase in mobility in the aftermath of the introduction of graded security, measured either as the number of firms passing the threshold or as mobility measures. In the quasi experimental setting, the paper finds a significant increase in open ended hiring in treated firms relative to control firms, as well as an increase in transformation of fixed therm contract into open contract, both overall as well as from inside transformation. The results are quantitatively sizable. Our estimates indicate an increase in open ended hiring per firm of more than 60 percent in treated relative to control firms. As far as the transformation from fixed term contract, the results are also quantitatively important, since they point to an increase in the transformation per firm as high as 100 percent in control firms relative to treated firms. In addition, all these difference in difference results become significant exactly in March 2015, when the graded security was introduced. We also find a significant and important increase in firing. Our estimate suggests and increase in firing per firm by approximately 50 percent in large firms relative to small firms.

The paper looked also at the individual incentive to switch jobs. Since workers in large firms employed on a open ended basis would lose their stricter protection in the aftermath of the reform, they probably had fewer incentives to move on a new open ended contract in the new regime. Our estimates suggest that this was indeed the case: the share of job to job transitions among all hiring falls by 8 percent for individuals who were employed in a contract with reinstatement clause relative to the other workers.

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Appendix: Model

- A basic textbook labor demand under undertainty, in the spirit of Nickel (1986) and Bertola (1990, 1999)
- Labor is homogenous. The gross wage or the marginal labor cost is taken a given by the firm and it is $w(1+\tau)$. w is the wage per unit of time and τ is the firm tax rate on labor. Capital is fixed in the short run. Firms discount the future at rate $\beta < 1$
- The firm marginal product of labor depends on labor as well as a firm specific shifter A^i. We shall indicate with $g_l^i(A_t^i, l_t)$ the marginal product of labor. The marginal product is positive and decreasing in l, while A^i is drwan from a discrete set $\mathbb{A}$. We shall assume that A^i can take only two possible value so that $\mathbb{A} = \{A^b, A^g\}$ where b, g refer respectively to good and bad business conditions. In what follows, we will assume that the shifter A^i is multiplicative so that

$$g_l^i(A_t^i, l_t) = A_t^i f_l(l_t)$$

- Time is discrete and the value A_t^i is a stochastic process that follows a markov chain with the following transition probabilitiees P, and specifically

$$P = \begin{pmatrix} \gamma & 1-\gamma \\ \\ \delta & 1-\delta \end{pmatrix} \tag{4}$$

  So the Markov chain is characterized by the triple $(\mathbb{A}, P, \pi_0)$, where π_0 is the initial distribution.
- Firing involves a fixed cost equal to F.
- The firm marginal shadow value of labor is indicated with with $V^i(l_t, A^i)$.

$$V^g(l_t, A^g) = A^g f_l(l_t) - w(1+\tau) + \beta \left[\delta Max[V^b(l_{t+1}, A^b); -F] + (1-\delta)V^g(l_{t+1}, A^g\right] \tag{5}$$

$$V^b(l_t, A^b) = A^b f_l(l_t) - w(1+\tau) + \beta \left[\gamma Max[V^g(l_{t+1}, A^b); 0] + (1-\gamma)V^b(l_{t+1}, A^b)\right] \tag{6}$$

- The model can feature optimal inaction at initial employment level if

$$-F < V^g(l, A^g) < V^b(l, A^b) < 0$$

- In the case in which the firm reacts to productivity shocks, employment dynamics will be characterized by two employment level l_b, l_g with $l_b < l_g$ solving respectively

$$V^b(l_b, A^b) = -F \tag{7}$$

$$V^g(l_g, A^g) = 0 \tag{8}$$

- This implies that the firm hires $H = (l_g - l_b) > 0$ when conditions turn good and fires $X = (l_b - l_g) > 0$ when conditions turn good. H is a measure of job creation and X is ma measure of job destruction at the firm level. Since employment is stationary, we have that $H = -X$.

- Simple algebra shows that the employment levels are the solutions to

$$l_g = f_l^{-1}\left(\frac{w(1+\tau)+\beta F\delta}{A^g}\right) \tag{9}$$

$$l_b = f_l^{-1}\left(\frac{w(1+\tau)-F(1+\beta(1-\delta))}{A^b}\right) \tag{10}$$

  where $f_l{-}1$ is a decreasing function since f_l is monotonically decreasing. Note that $l_g > l_b$ as long as $\frac{w(1+\tau)+\beta F\delta}{w(1+\tau)-F(1+\beta(1-\delta)} > A_g A_b$

- Basic comparative static shows that a permanent reduction in payroll tax τ increase both l_g and l_b, so that the *reduction in payroll tax has ambiguous effect on job creation.*

- COnversely a reduction in firing costs increase l_g and reduces l_b, so that it has unambiguous positive effects on job destruction

Appendix: Construction of Aggregate Job Flowsl

Formally, we start from net employment growth and we define

$$net_{i,t} = n_{i,t} - n_{i,t-j},$$

where $net_{i,t}$ is net employment change, while $n_{i,t}$ and $n_{i,t-j}$ are employment level at time t and $t-j$. The first step to obtain job flows is to estimate a seasonally adjusted net flow at the firm level, so that we obtain the residual from a fixed effect regression plus dummies. Formally we estimate the following firm level regression between 2014 and 2016

$$net_{i,t(j)} = \alpha_i + \sum_{k=1}^{11} D_k + \epsilon_{i,t(j)}$$

We then use the residuals to obtain net flows seasonally adjusted in each firm

$$\hat{n}et_{i,t(j)} = \hat{\epsilon}_{i,t(j)} + \overline{n}et_{i,t(j)}$$

where $\hat{n}et_{i,t(j)}$ is the seasonally adjusted net flow, and $\overline{n}et_{i,t(j)}$ Job creation in continuing firms i is (s.a.) net growth is positive

$$jc_{i,t(j)} = \begin{cases} \frac{\hat{n}et_{i,t(j)}}{n_{i,t-j}} & if \quad \hat{n}et_{i,t(j)} > 0 \\ 0 \quad \text{otherwise} \end{cases} \tag{11}$$

Job destruction is similarly defined in absolute value as

$$jd_{i,t(j)} = \begin{cases} \left| \frac{n_{i,t} - n_{i,t-j}}{n_{i,t-j}} \right| & if \quad \hat{n}et_{i,t(j)} < 0 \\ 0 \quad \text{otherwise} \end{cases} \tag{12}$$

Having obtained seasonally adjusted net flows, we are in a position to obtain aggregate gross flows. Job Creation: Average across all firms that are (net) job creating firms

$$\hat{jc}_{t(j)} = \sum_{i, n_{i,t} > n_{i,t-j}} \hat{jc}_{i,t(j)} \frac{n_{i,t-j}}{\sum n_{i,t}}$$

Job Destruction: Average across all firms that are (net) job destroying firms

$$\hat{jc}_{t(j)} = \sum_{i, n_{i,t} > n_{i,t-j}} \hat{jc}_{i,t(j)} \frac{n_{i,t-j}}{\sum n_{i,t}}$$

Table 3: Basic Regressions On Hiring per Firm

Variables	Dependent Variable: (1) Hires per-worker Open Ended	(2) Transformation per-worker into Open Ended	(3) Within Firm Transformation per-worker into Open Ended	(4) Hires per-worker Fixed Term
Treated Firms [a]	-0.209***	-0.160***	-0.155***	-0.183***
	(0.00177)	(0.00184)	(0.00260)	(0.00776)
Treated Firms Jobs-Act [b]	0.0911***	0.0671***	0.0487***	0.0126
	(0.00186)	(0.00246)	(0.00371)	(0.0107)
Constant	0.324***	0.235***	0.225***	0.284***
	(0.00123)	(0.00198)	(0.00296)	(0.00830)
Fixed Effect	YES	YES	YES	YES
Observations	506,113	133,214	49,249	1,135,062
Number of Firms	106,799	50,934	26,080	202,121

[a] Treated Firms refer to firms that between January 2014 and March 2015 employ more than 15 employees
[b] Treated Firms Jobs-Act refer to Treated Firms after March 2015
Equation estimated is the following

$$Y_{i,t} = \alpha_i + \sum_{k=\underline{k}}^{12,2016} \gamma_k \delta_k + \beta_1 T_i + \beta_2 T_i GS_i + \epsilon_{i,t}$$

where T_i are treated firms and $T_i GS_i$ is the interaction between treated firms and the dummy for graded security after March 2015
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Regressions On Hiring per Firm

Variables	Dependent Variable: (1) Hires per-worker Open Ended	(2) Transformation per-worker into Open Ended	(3) Within Firm Transformation per-worker into Open Ended	(4) Hires per-worker Fixed Term
Treated Firms [a]	-0.215***	-0.167***	-0.159***	-0.158***
	(0.00425)	(0.00543)	(0.00799)	(0.0266)
Treated Firms-JA. -Feb. 2014 [b]	-0.0282***	-0.00620	-0.00713	-0.0218
	(0.00588)	(0.00752)	(0.0114)	(0.0369)
Treated Firms-JA. -Mar. 2014	-0.0294***	-0.00140	-0.00160	-0.0363
	(0.00592)	(0.00836)	(0.0130)	(0.0395)
Treated Firms-JA. -Apr. 2014	-0.0153**	-0.0108	-0.0121	-0.0630
	(0.00637)	(0.00818)	(0.0126)	(0.0393)

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Table 4 – continued from previous page

Variables	(1) Hires per-worker Open Ended	(2) Transformation per-worker into Open Ended	(3) Within Firm Transformation per-worker into Open Ended	(4) Hires per-worker Fixed Term
Treated Firms-JA. -May. 2014	0.00470	0.000275	-0.000735	-0.0327
	(0.00638)	(0.00797)	(0.0120)	(0.0390)
Treated Firms-JA. -Jun. 2014	0.00735	0.00905	0.00444	-0.0353
	(0.00624)	(0.00789)	(0.0117)	(0.0389)
Treated Firms-JA. -Jul. 2014	0.0187***	0.0178**	0.0271**	-0.0127
	(0.00637)	(0.00801)	(0.0121)	(0.0395)
Treated Firms-JA. -Aug. 2014	0.0107	0.0113	0.0198	0.00150
	(0.00767)	(0.00964)	(0.0140)	(0.0449)
Treated Firms-JA. -Set. 2014	-0.00401	0.000288	-0.0187*	0.00127
	(0.00621)	(0.00764)	(0.0108)	(0.0382)
Treated Firms-JA. -Oct. 2014	0.00856	0.00209	-0.00407	-0.0167
	(0.00636)	(0.00796)	(0.0118)	(0.0394)
Treated Firms-JA. -Nov. 2014	0.0172**	0.00619	0.00270	-0.00566
	(0.00686)	(0.00865)	(0.0131)	(0.0409)
Treated Firms-JA. -Dec. 2014	0.0247***	0.0113	0.000753	-0.0253
	(0.00744)	(0.00948)	(0.0142)	(0.0443)
Treated Firms-JA. -Jan. 2015	0.0153**	0.00962	0.00914	-0.0416
	(0.00613)	(0.00691)	(0.00938)	(0.0395)
Treated Firms-JA. -Feb. 2015	0.0185***	0.00649	0.00876	-0.0351
	(0.00634)	(0.00725)	(0.00987)	(0.0413)
Treated Firms-JA. -Mar. 2015 [c]	0.0523***	0.0480***	0.0350***	-0.0444
	(0.00651)	(0.00820)	(0.0120)	(0.0413)
Treated Firms-JA. -Apr. 2015	0.0679***	0.0541***	0.0332***	-0.0683*
	(0.00645)	(0.00832)	(0.0122)	(0.0410)
Treated Firms-JA. -May. 2015	0.0726***	0.0511***	0.0387***	-0.0718*
	(0.00665)	(0.00858)	(0.0130)	(0.0411)
Treated Firms-JA. -Jun. 2015	0.0827***	0.0658***	0.0586***	-0.0556
	(0.00670)	(0.00891)	(0.0140)	(0.0404)
Treated Firms-JA. -Jul. 2015	0.0918***	0.0707***	0.0594***	-0.0202
	(0.00679)	(0.00911)	(0.0143)	(0.0413)
Treated Firms-JA. -Aug. 2015	0.101***	0.0789***	0.0597***	0.00549
	(0.00834)	(0.0109)	(0.0171)	(0.0474)
Treated Firms-JA. -Sep. 2015	0.0770***	0.0701***	0.0342***	0.00584
	(0.00659)	(0.00863)	(0.0128)	(0.0402)
Treated Firms-JA. -Oct. 2015	0.0874***	0.0664***	0.0519***	-0.0297
	(0.00674)	(0.00903)	(0.0140)	(0.0415)
Treated Firms-JA. -Nov. 2015	0.0962***	0.0784***	0.0522***	0.00189
	(0.00680)	(0.00946)	(0.0150)	(0.0431)
Treated Firms-JA. -Dec. 2015	0.108***	0.0906***	0.0700***	-0.00752
	(0.00618)	(0.00844)	(0.0132)	(0.0469)
Treated Firms-JA. -Jan. 2016	0.106***	0.0772***	0.0812***	0.0163
	(0.00729)	(0.0107)	(0.0167)	(0.0425)
Treated Firms-JA. -Feb. 2016	0.102***	0.0759***	0.0504***	0.0175
	(0.00754)	(0.0112)	(0.0179)	(0.0438)

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Table 4 – continued from previous page

Variables	(1) Hires per-worker Open Ended	(2) Transformation per-worker into Open Ended	(3) Within Firm Transformation per-worker into Open Ended	(4) Hires per-worker Fixed Term
Treated Firms-JA. -Mar. 2016	0.0983***	0.0721***	0.0478***	0.0329
	(0.00736)	(0.0110)	(0.0182)	(0.0432)
Treated Firms-JA. -Apr. 2016	0.104***	0.0812***	0.0631***	0.0435
	(0.00739)	(0.0109)	(0.0177)	(0.0422)
Treated Firms-JA. -May. 2016	0.109***	0.0842***	0.0463**	-0.0273
	(0.00737)	(0.0111)	(0.0184)	(0.0418)
Treated Firms-JA. -Jun. 2016	0.110***	0.0811***	0.0484***	-0.0325
	(0.00744)	(0.0116)	(0.0187)	(0.0419)
Treated Firms-JA. -Jul. 2016	0.120***	0.0936***	0.0764***	-0.0266
	(0.00764)	(0.0119)	(0.0204)	(0.0428)
Treated Firms-JA. -Aug. 2016	0.130***	0.0871***	0.0580**	0.0167
	(0.00940)	(0.0145)	(0.0244)	(0.0484)
Treated Firms-JA. -Sep. 2016	0.104***	0.0877***	0.0635***	0.0201
	(0.00728)	(0.0109)	(0.0165)	(0.0413)
Treated Firms-JA.- Oct. 2016	0.105***	0.0791***	0.0607***	-0.0283
	(0.00733)	(0.0111)	(0.0179)	(0.0421)
Treated Firms-JA.- Nov. 2016	0.116***	0.0858***	0.0613***	0.0120
	(0.00761)	(0.0121)	(0.0202)	(0.0432)
Treated Firms-JA-Dec. 2016	0.132***	0.101***	0.0749***	-0.0194
	(0.00781)	(0.0119)	(0.0197)	(0.0474)
Constant	0.328***	0.238***	0.227***	0.281***
	(0.00131)	(0.00224)	(0.00334)	(0.00910)
Fixed Effect	YES	YES	YES	YES
Observations	506,113	133,214	49,249	1,135,062
Number of Firms	106,799	50,934	26,080	202,121

[a] Treated Firms refer to firms that between January 2014 and March 2015 employed more than 15 employees

[b] Treated Firms-JA-Feb. 2014 is the interaction between treated firms and a dummy for February 2014. Similarly for all other regressors

[c] Treated Firms-JA-Mar. 2015 Corresponds to the month of the introduction of the JA

Equation estimated is the following

$$Y_{i,t} = \alpha_i + \sum_{k=\underline{k}}^{12,2016} \gamma_k \delta_k + \beta_1 T_i + \sum_{k=\underline{k}}^{12,2016} \beta_{2,k} T_i GS_k + \sum_{j}^{J} \rho_j X_j + \epsilon_{i,t} \tag{13}$$

where T_k are treated firms and $T_k GS_k$ is the interaction between treated firms and the dummy for the month k

Standard errors in parentheses

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

Table 5: Basic Regressions On Firing per Firm

	Dependent Variable:	
	(1)	(2)
	Firing	Firing
	per-worker	per worker
Variables:	Open Ended	Open Ended
	All reasons	Unjustified
Treated Firms [a]	-0.174***	-0.119***
	(0.00323)	(0.0138)
Treated Firms- Jobs Act [b]	0.0519***	0.0357*
	(0.00392)	(0.0182)
Constant	0.215***	0.191***
	(0.00257)	(0.0162)
Fixed Effect	Yes	Yes
Observations	52,342	438
Number of id_azienda	24,473	405

[a] Treated Firms refer to firms that between January 2014 and March 2015 employ more than 15 employees

[b] Treated Firms Jobs-Act refer to Treated Firms after March 2015

Equations estimated is the following

$$Y_{i,t} = \alpha_i + \sum_{k=\underline{k}}^{12,2016} \gamma_k \delta_k + \beta_1 T_i + \beta_2 T_i GS_i + \epsilon_{i,t}$$

where T_i are treated firms and $T_i GS_i$ is the interaction between treated firms and the dummy for graded security after March 2015

Standard errors in parentheses

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

Table 6: Regressions On Firing per Firm

	Dependent Variable:	
	(1)	(2)
	Firing	Firing
	per-worker	per worker
Variables:	Open Ended	Open Ended
	All reasons	Unjustified
Treated Firms [a]	-0.172***	-0.155
	(0.0110)	(0.0995)
Treated Firms-JA-Jan. 2014 [b]	-0.00492	-0.0176
	(0.0148)	(0.114)
Treated Firms-JA-Feb. 2014	0.000663	-0.0177
	(0.0144)	(0.114)
Treated Firms-JA-Mar. 2014	-0.00498	0.0608
	(0.0153)	(0.114)
Treated Firms-JA-Apr. 2014	0.00905	0.0441
	(0.0151)	(0.109)
Treated Firms-JA-May. 2014	0.00312	0.0517
	(0.0147)	(0.108)
Treated Firms-JA-Jul. 2014	0.00808	0.00830
	(0.0147)	(0.108)
Treated Firms-JA-Aug. 2014	0.0198	0.0429
	(0.0153)	(0.124)
Treated Firms-JA-Sep. 2014	0.0158	0.0334
	(0.0143)	(0.114)
Treated Firms-JA-Oct. 2014	-0.000465	0.0132
	(0.0138)	(0.108)
Treated Firms-JA-Nov. 2014	-0.0140	0.0426
	(0.0145)	(0.122)
Treated Firms-JA-Dec. 2014	-0.0259*	0.0468
	(0.0141)	(0.111)
Treated Firms-JA-Jan. 2015	-0.00931	0.0380
	(0.0142)	(0.114)
Treated Firms-JA-Feb. 2015	-0.00516	0.0827
	(0.0142)	(0.119)
Treated Firms-JA-Mar. 2015 [c]	-0.00609	0.0596
	(0.0159)	(0.139)
Treated Firms-JA-Apr. 2015	0.0158	0.0744
	(0.0161)	(0.114)
Treated Firms-JA-May. 2015	0.0222	0.0712
	(0.0160)	(0.111)
Treated Firms-JA-Jun. 2015	0.0400**	0.144
	(0.0157)	(0.118)
Treated Firms-JA-Jul. 2015	0.0440***	0.0811
	(0.0162)	(0.114)
Treated Firms-JA-Aug. 2015	0.0496***	0.0635
	(0.0175)	(0.124)
Treated Firms-JA-Sep. 2015	0.0420***	0.0898

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Table 6 – continued from previous page

	Dependent Variable:	
	(1)	(2)
	Firing per-worker	Firing per worker
Variables:	Open Ended All reasons	Open Ended Unjustified
	(0.0162)	(0.115)
Treated Firms-JA-Oct. 2015	0.0399**	0.0144
	(0.0156)	(0.118)
Treated Firms-JA-Nov. 2015	0.0462***	0.126
	(0.0169)	(0.117)
Treated Firms-JA-Dec. 2015	0.0403**	0.0360
	(0.0163)	(0.114)
Treated Firms-JA-Jan. 2016	0.0466***	
	(0.0172)	
Treated Firms-JA-Feb. 2016	0.0452***	0.00490
	(0.0171)	(0.121)
Treated Firms-JA-Mar.. 2016	0.0641***	0.0215
	(0.0168)	(0.113)
Treated Firms-JA-Apr. 2016	0.0711***	0.143
	(0.0166)	(0.127)
Treated Firms-JA-May. 2016	0.0730***	0.0979
	(0.0177)	(0.117)
Treated Firms-JA-Jun. 2016	0.0623***	0.0811
	(0.0175)	(0.115)
tTreated Firms-JA-Jul. 2016	0.0778***	0.142
	(0.0179)	(0.122)
Treated Firms-JA-Aug. 2016	0.0777***	0.0369
	(0.0191)	(0.114)
Treated Firms-JA-Sep. 2016	0.0795***	0.0585
	(0.0170)	(0.111)
Treated Firms-JA-Oct. 2016	0.0691***	0.129
	(0.0171)	(0.123)
Treated Firms-JA-Nov. 2016	0.0721***	0.117
	(0.0187)	(0.113)
Treated Firms-JA-Dec. 2016	0.0366**	0.0541
	(0.0177)	(0.126)
Constant	0.215***	0.204***
	(0.00274)	(0.0185)
Fixed Effects	YES	YES
Observations	52,342	438
Number of Firms	24,473	405

[a] Treated Firms refer to firms that between January 2014 and March 2015 employ more than 15 employees
[b] Treated Firms-JA-Feb. 2014 is the interaction between treated firms and a dummy for February 2014. Similarly for all other regressors
[c] Treated Firms-JA-Mar. 2015 Corresponds to the month of the introduction of the JA

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Table 6 – continued from previous page

	Dependent Variable:	
	(1)	(2)
	Firing per-worker	Firing per worker
Variables:	Open Ended All reasons	Open Ended Unjustified
Equations estimated is the following		
$$Y_{i,t} = \alpha_i + \sum_{k=\underline{k}}^{12,2016} \gamma_k \delta_k + \beta_1 T_i + \beta_2 T_i GS_i + \epsilon_{i,t}$$		
where T_i are treated firms and $T_i GS_i$ is the interaction between treated firms and the dummy for graded security after March 2015		
Standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table 7: Regressions On Individual Job to Job Flows

	Dependent Variable:	
	(1)	(2)
	Job to Job	ob to Job
Variable:	Probability for Open Ended Workers	Probability for Open Ended Workers
Treated individual [a]	0.0558***	0.0557***
	(0.00124)	(0.00423)
Treated Individual-JA-Jan. 2014 [b]		0.00153
		(0.00648)
Treated Individual-JA-Feb. 2014		-0.00602
		(0.00636)
Treated Individual-JA-Mar. 2014		-0.0153**
		(0.00629)
Treated Individual-JA-Apr. 2014		-0.0151**
		(0.00628)
Treated Individual-JA- May. 2014		-0.00689
		(0.00619)
Treated Individual-JA-Jul. 2014		-0.00844
		(0.00629)
Treated Individual-JA-Aug. 2014		-0.00672
		(0.00767)
Treated Individual-JA-Sep. 2014		-0.0136**
		(0.00606)
Treated Individual-JA-Oct. 2014		-0.00202
		(0.00612)
Treated Individual-JA-Nov. 2014		-0.0114*

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Table 7 – continued from previous page

Variable:	Dependent Variable: (1) Job to Job Probability for Open Ended Workers	(2) Job to Job Probability for Open Ended Workers
		(0.00660)
Treated Individual-JA-Dec. 2014		-0.0225***
		(0.00707)
Treated Individual-JA-Jan. 2015		0.0613***
		(0.00572)
Treated Individual-JA-Feb. 2015		0.00699
		(0.00600)
Treated Individual-JA-Mar. 2015 [c]		-0.00829
		(0.00582)
Treated Individual-JA-Apr. 2015		-0.0195***
		(0.00571)
Treated Individual-JA-May. 2015		-0.0373***
		(0.00579)
Treated Individual-JA-Jun. 2015		-0.0471***
		(0.00585)
Treated Individual-JA-Jul. 2015		-0.0415***
		(0.00596)
Treated Individual-JA-Aug. 2015		-0.0306***
		(0.00721)
Treated Individual-JA-Sep. 2015		-0.0157***
		(0.00577)
Treated Individual-JA-Oct. 2015		-0.0364***
		(0.00583)
Treated Individual-JA-Nov. 2015		-0.0409***
		(0.00596)
Treated Individual-JA-Dec. 2015		-0.0874***
		(0.00531)
Treated Individual-JA-Jan. 2016		0.00919
		(0.00627)
Treated Individual-JA-Feb. 2016		-0.0143**
		(0.00649)
Treated Individual-JA-Mar. 2016		-0.0245***
		(0.00636)
Treated Individual-JA-Apr. 2016		-0.0412***
		(0.00632)
Treated Individual-JA-May. 2016		-0.0447***
		(0.00633)
Treated Individual-JA-Jun.2016		-0.0411***
		(0.00636)
Treated Individual-JA-Jul. 2016		-0.0328***
		(0.00655)
Treated Individual-JA-Aug. 2016		-0.0250***
		(0.00790)

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Table 7 – continued from previous page

Variable:	Dependent Variable: (1) Job to Job Probability for Open Ended Workers	(2) Job to Job Probability for Open Ended Workers
Treated Individual-JA-Sep. 2016		-0.00599
		(0.00629)
Treated Individual-JA-Oct. 2016		0.000670
		(0.00633)
Treated Individual-JA-Nov. 2016		-0.0110*
		(0.00667)
Treated Individual-JA-Dec. 2016		-0.0505***
		(0.00673)
Treated Individual-Jobs Act [d]	-0.0321***	
	(0.00156)	
Constant	0.460***	0.461***
	(0.00220)	(0.00294)
Fixed Effects	YES	YES
Observations	1,726,094	1,726,094
Number of Workers	1,465,946	1,465,946

[a] Treated individual Refers to workers hired on open ended basis in firms that before March 2015 had more than 15 employees
[b] Treated Individual-JA-Jan. 2014 is the interaction between treated inidividual and a dummy for January 2014. Similarly for all other regressors
[c] Treated Individuals-JA-Mar. 2015 Corresponds to the month of the introduction of the JA
[d] Treated Individual Jobs-Act refer to Treated Individual after March 2015
Equations estimated in Column (2) is the following

$$Y_{i,t} = \alpha_i + \sum_{k=\underline{k}}^{12,2016} \gamma_k \delta_k + \beta_1 T_i + \beta_2 T_i GS_i + \epsilon_{i,t}$$

where T_i are treated individuals and $T_i GS_i$ is the interaction between treated firms and the dummy for graded security after March 2015
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1: Absolute Number of Firms Passing the 15 employees treshold, 2013-2016

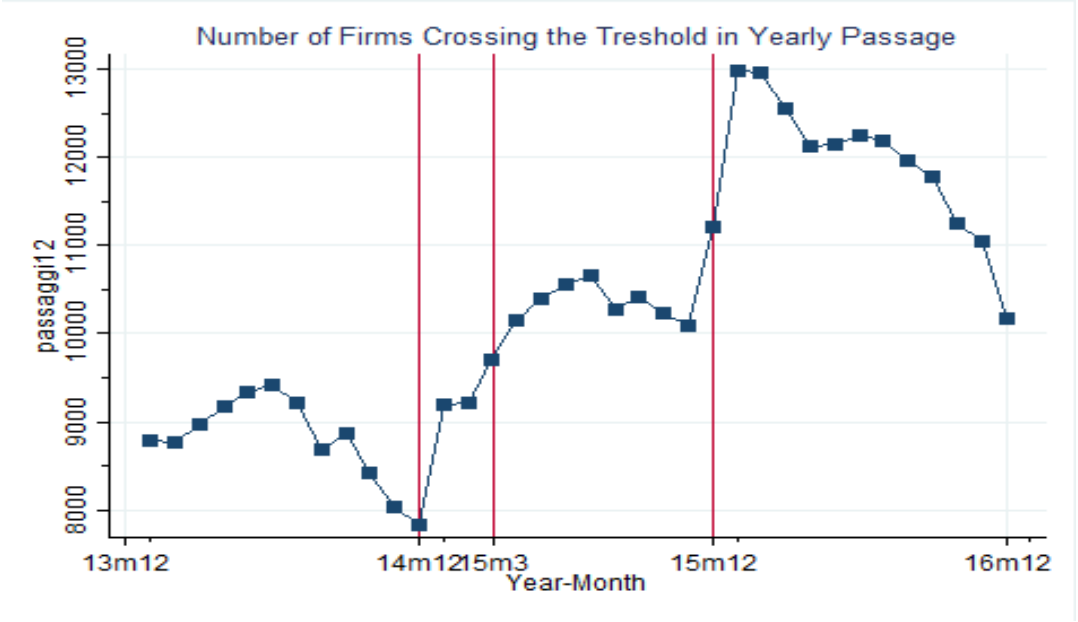

Figure 2: Shorrock Mobility Index, 2013-2016

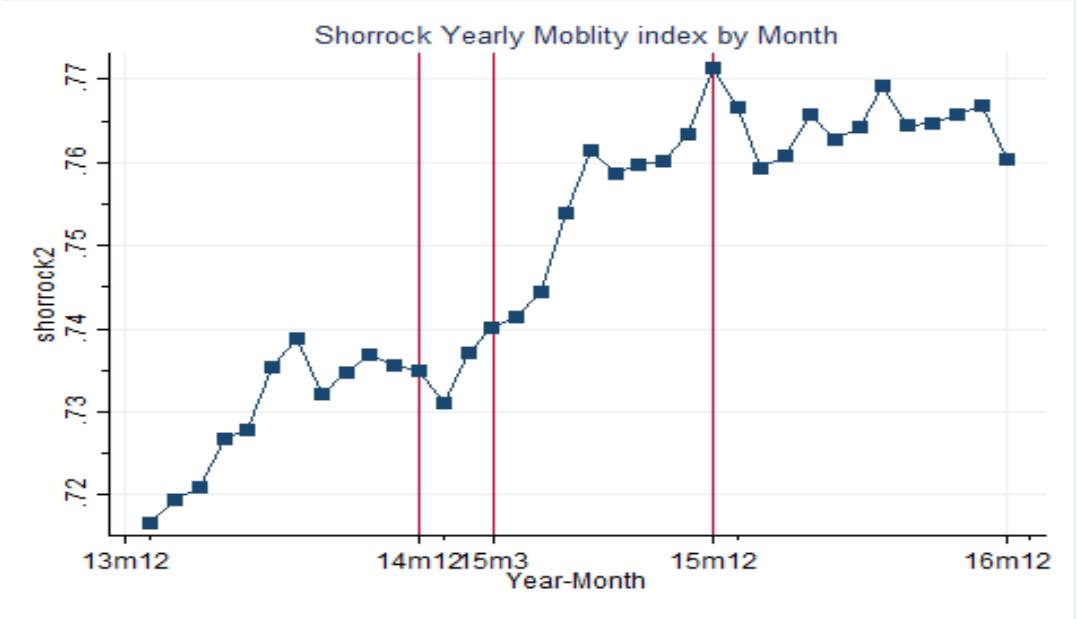

Figure 3: Seasonally Adjusted Yearly Gross Flows

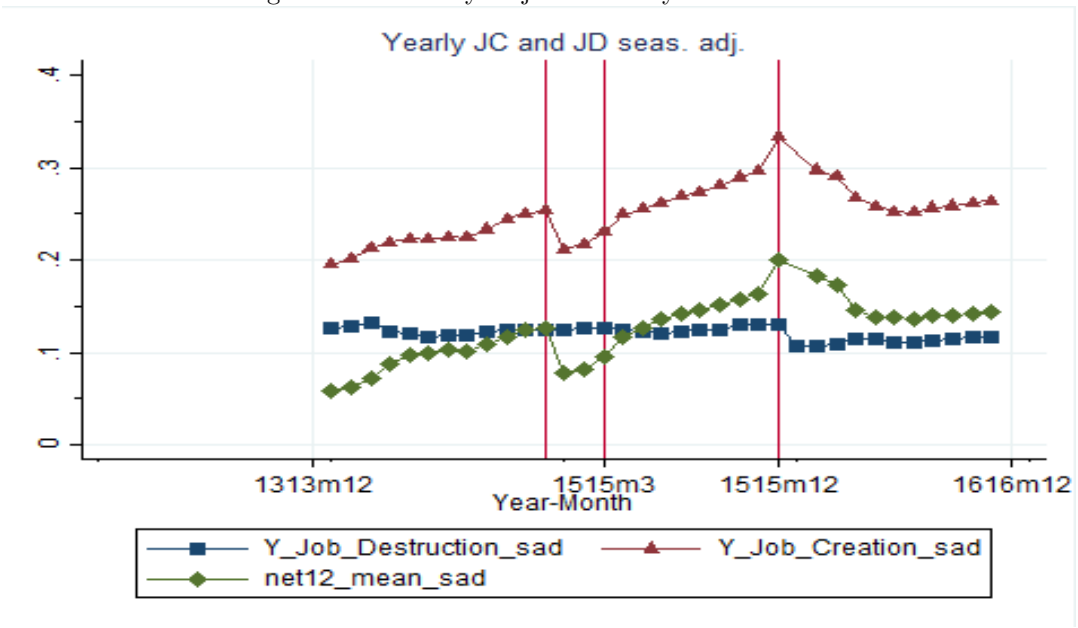

Figure 4: Seasonally adjusted Quarterly Gross Flows

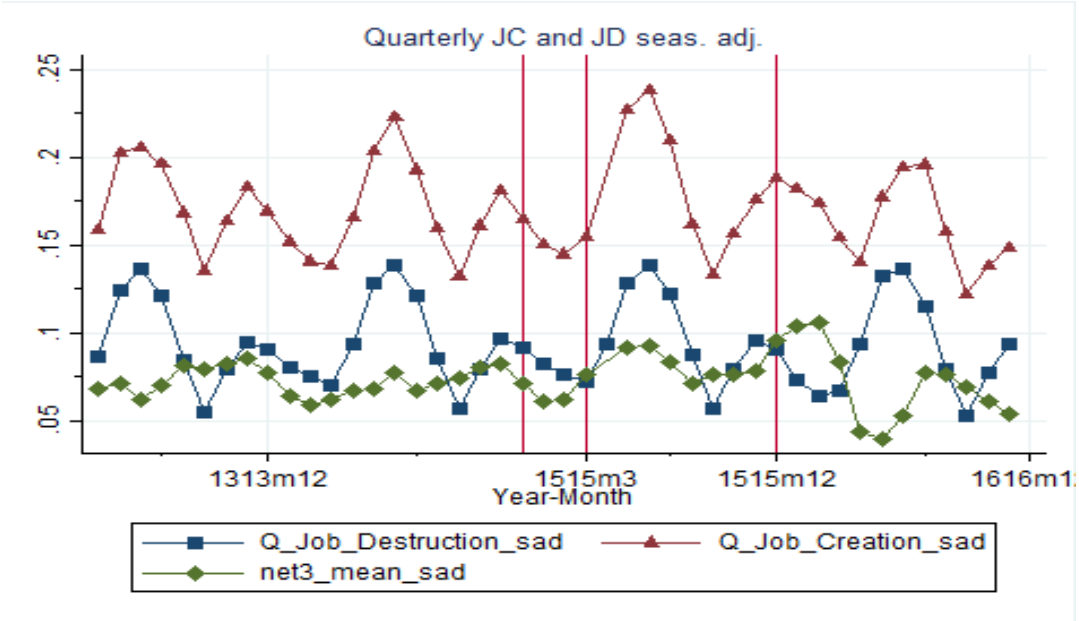

Figure 5: Seasonally Adjusted Yearly Gross Flows: 2014-2016

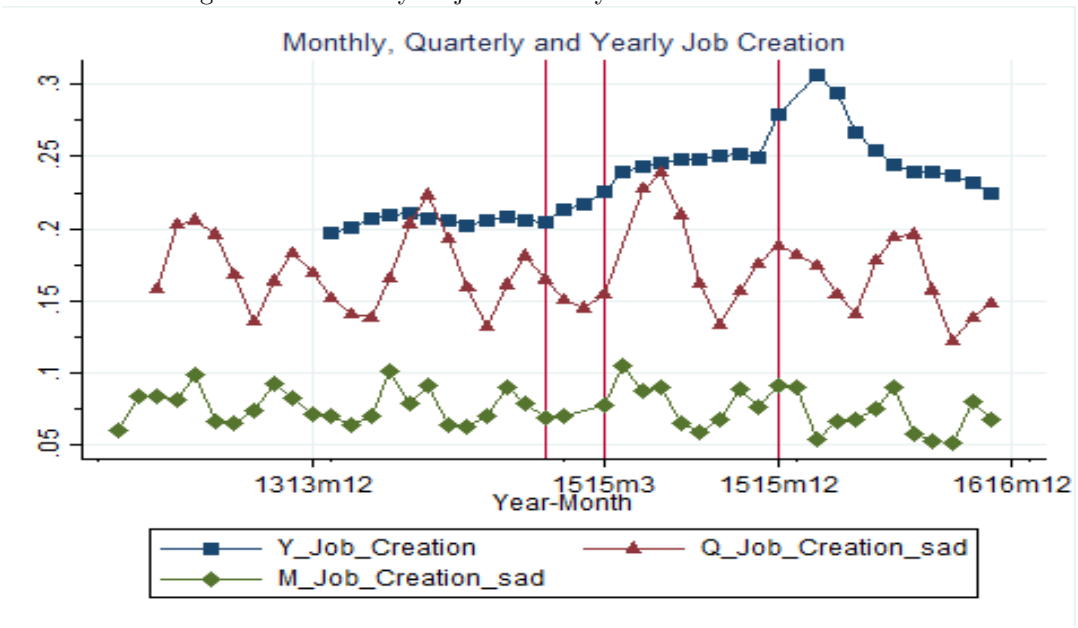

Figure 6: Net Job Creation in Treated and Control

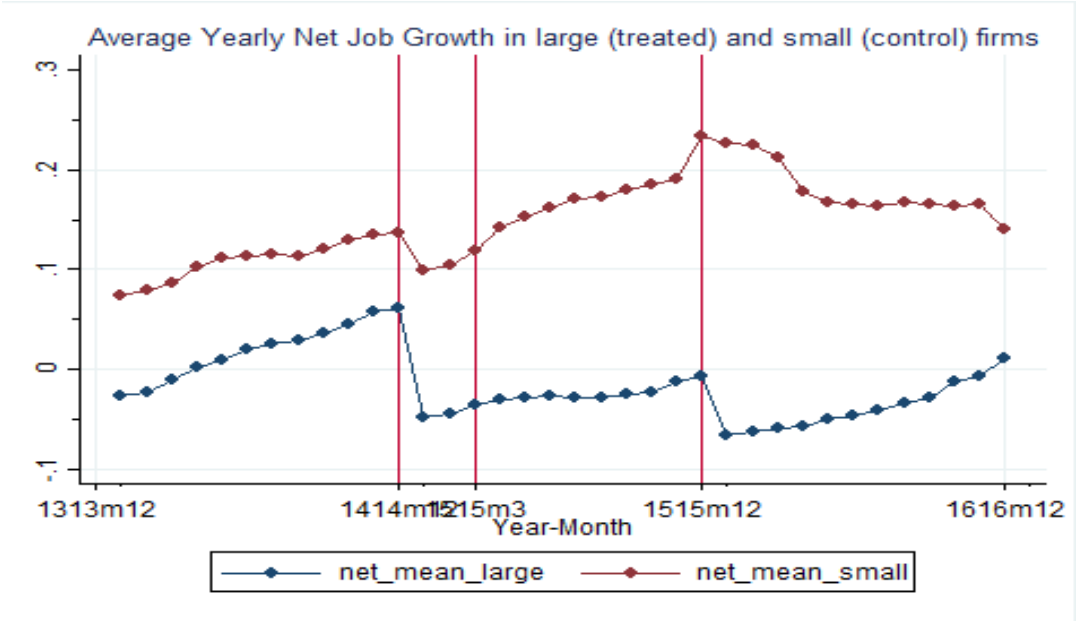

Figure 7: Gross Job Creation in Treated and Control Firms

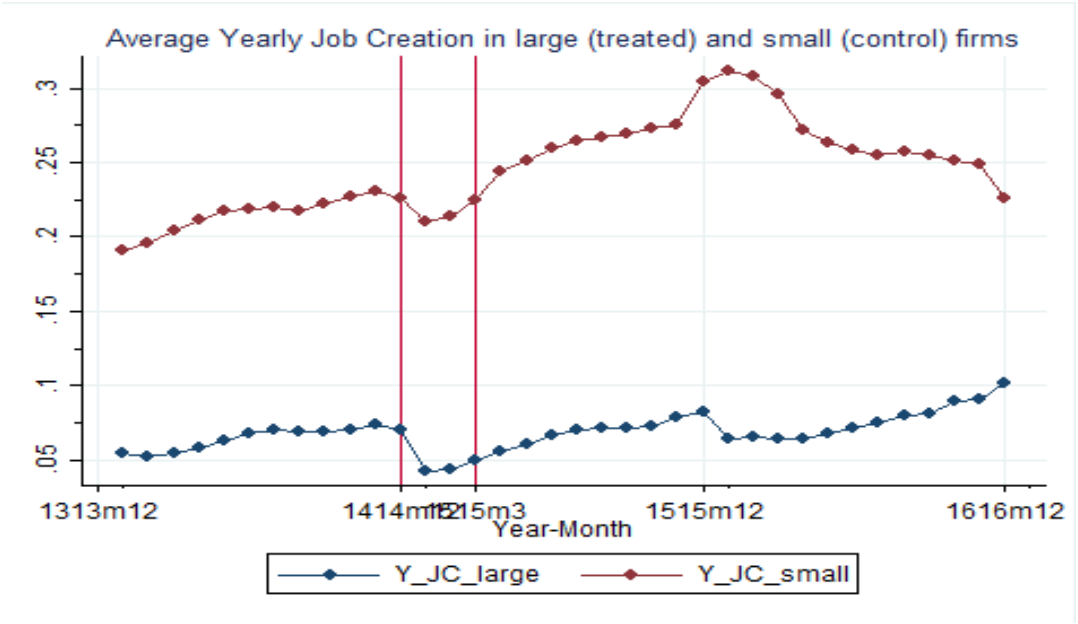

Figure 8: Gross Job Destruction in Treated and Control Firms

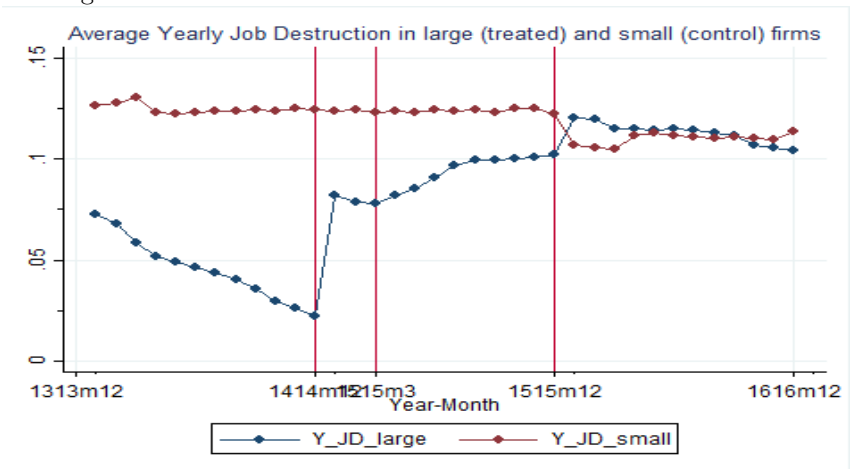

Figure 9: Open Ended Hiring in Treated and Control

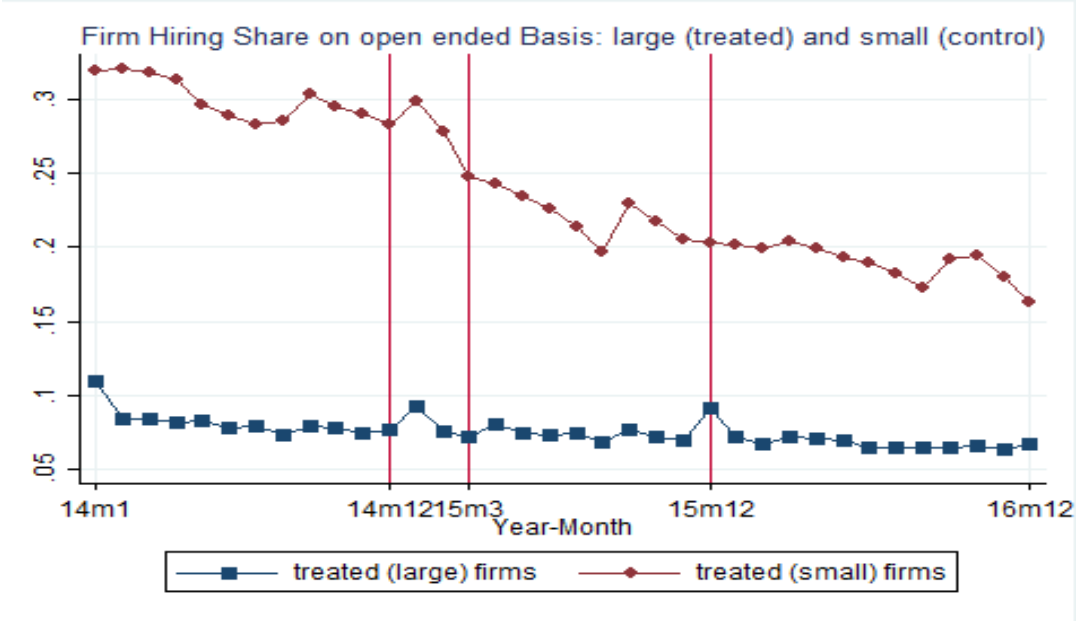

Figure 10: Diff-in-diff Coefficients open ended for Hiring per Worker

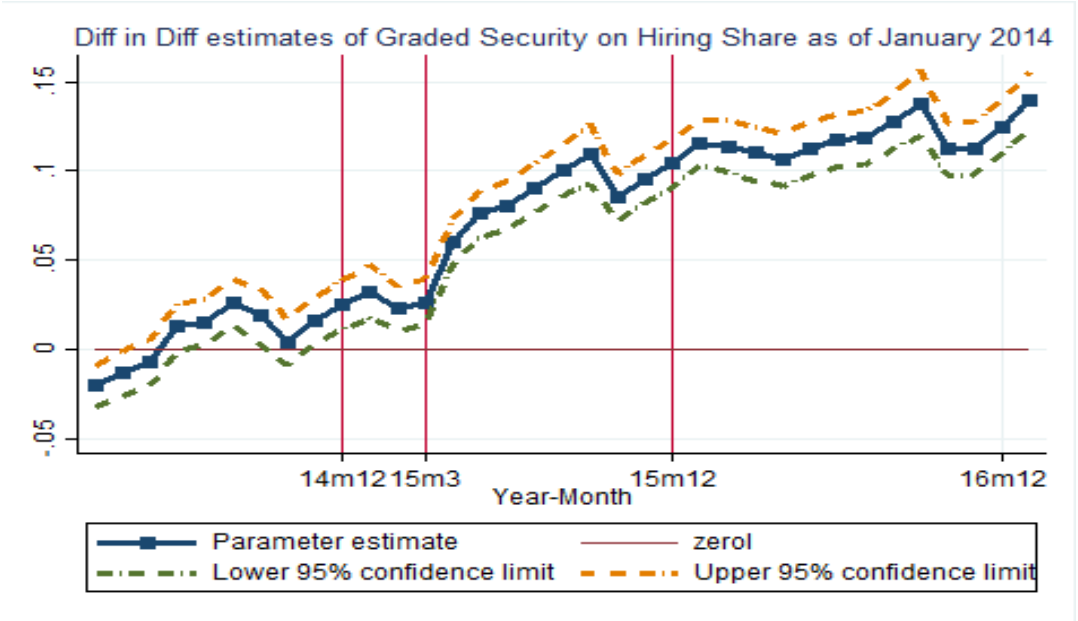

Figure 11: Open Ended Hiring as transformation from fixed term in Treated and Control

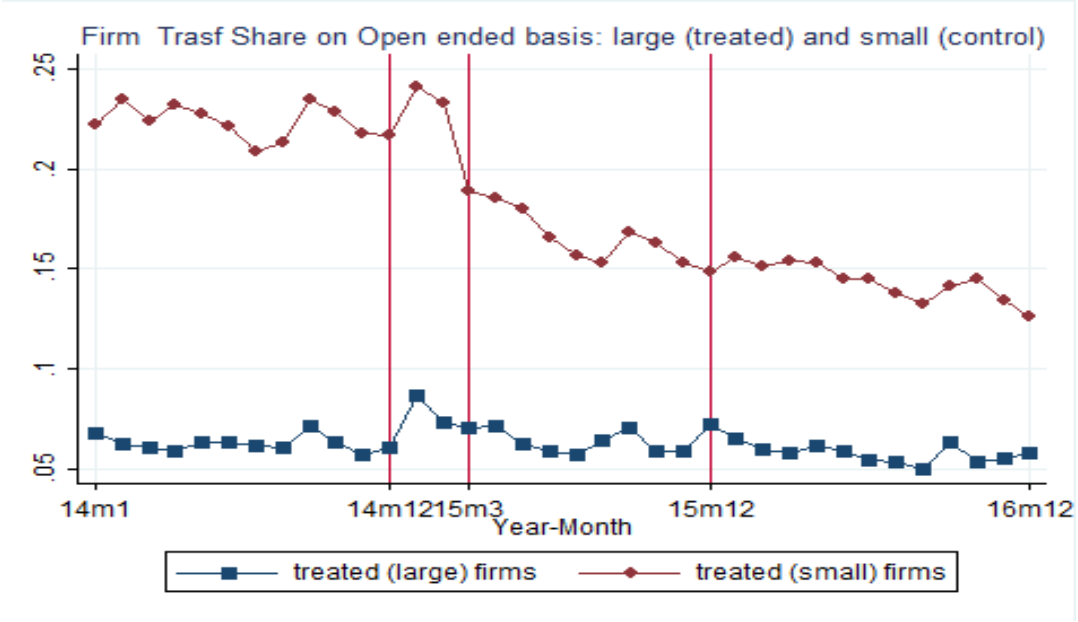

Figure 12: Diff-in-diff Coefficients in transformation from fixed term contract per Worker

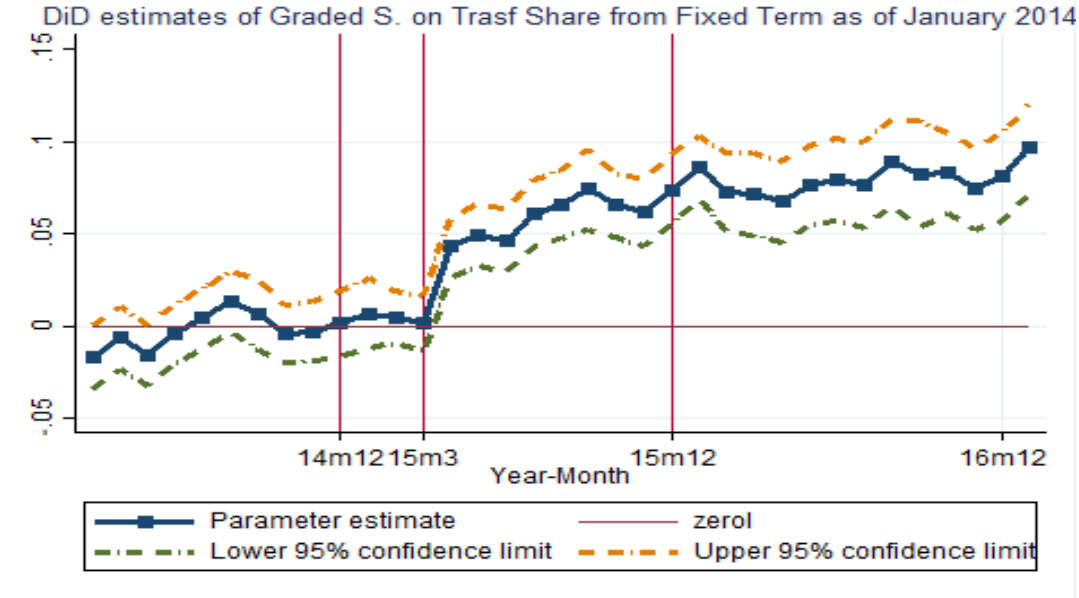

Figure 13: Open Ended Hiring as INSIDE transformation from fixed term in Treated and Control

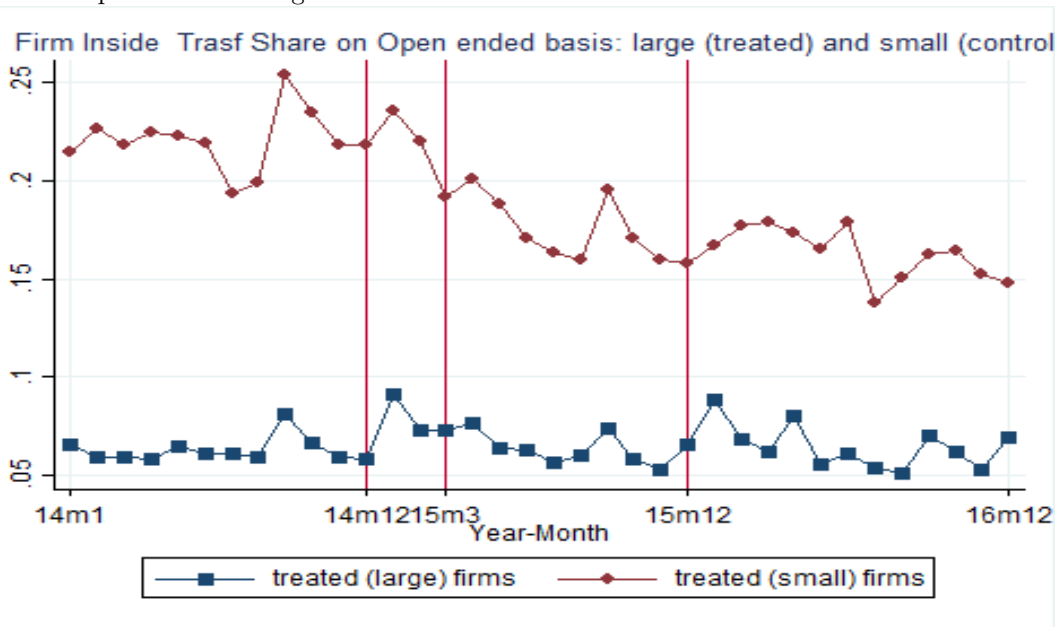

Figure 14: Diff-in-diff Coefficients as inside in transformation from fixed term contract per Worker

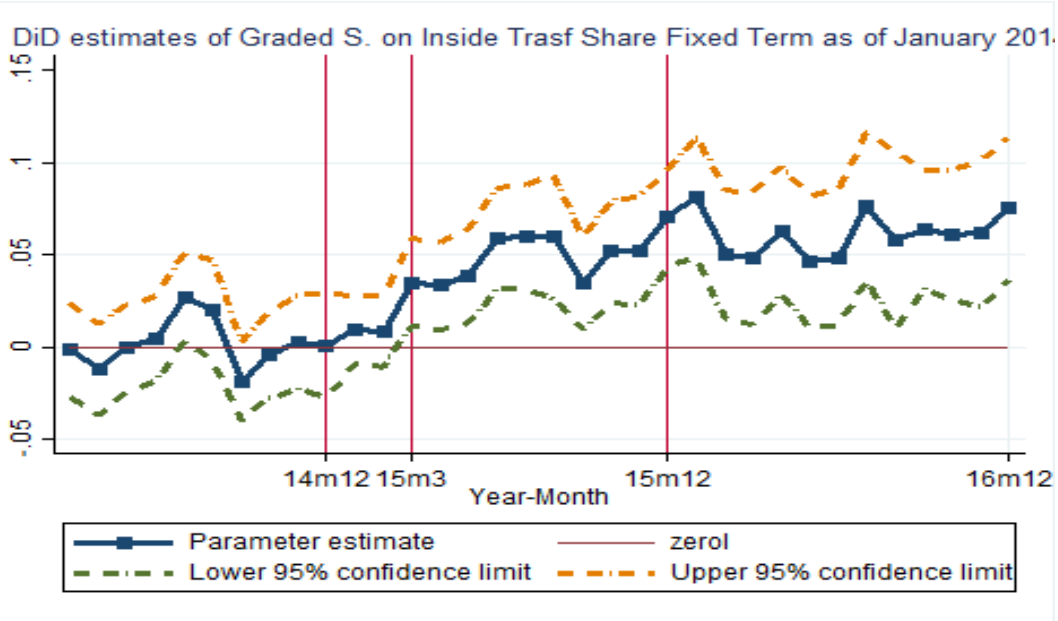

Figure 15: Fixed Term Hiring in Treated and Control

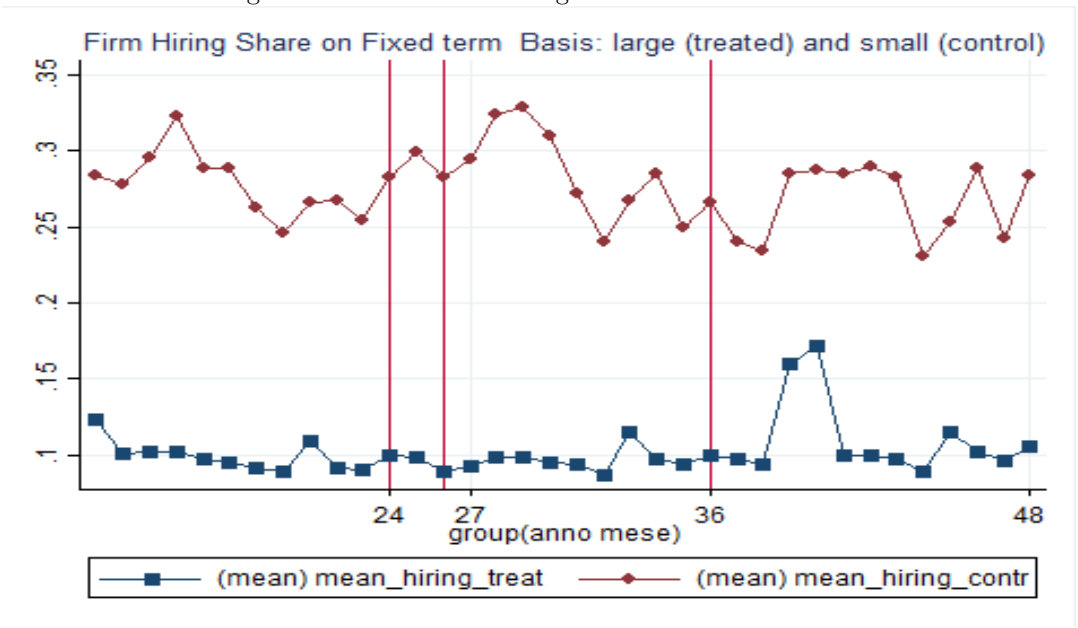

Figure 16: Diff-in-diff Coefficients of fixed term contract per Worker

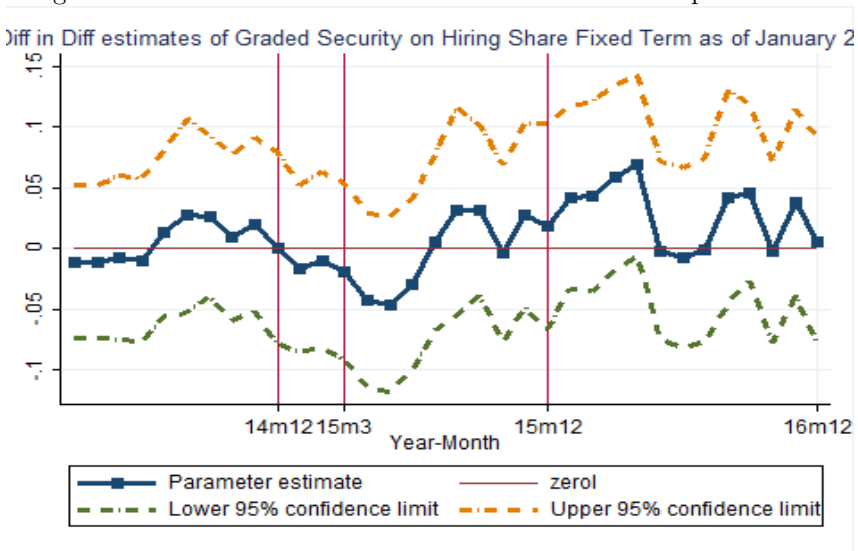

Figure 17: Firing per Worker in of New Jobs started after january 2014

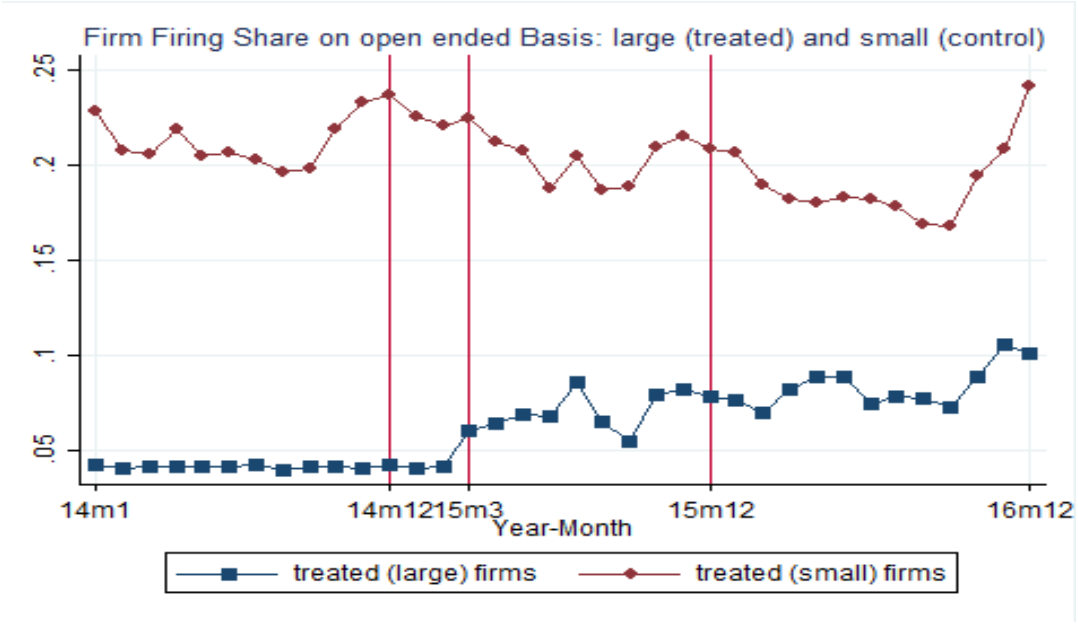

Figure 18: All Firing:Diff in Diff estimates in Control and Treated Jobs/Firms

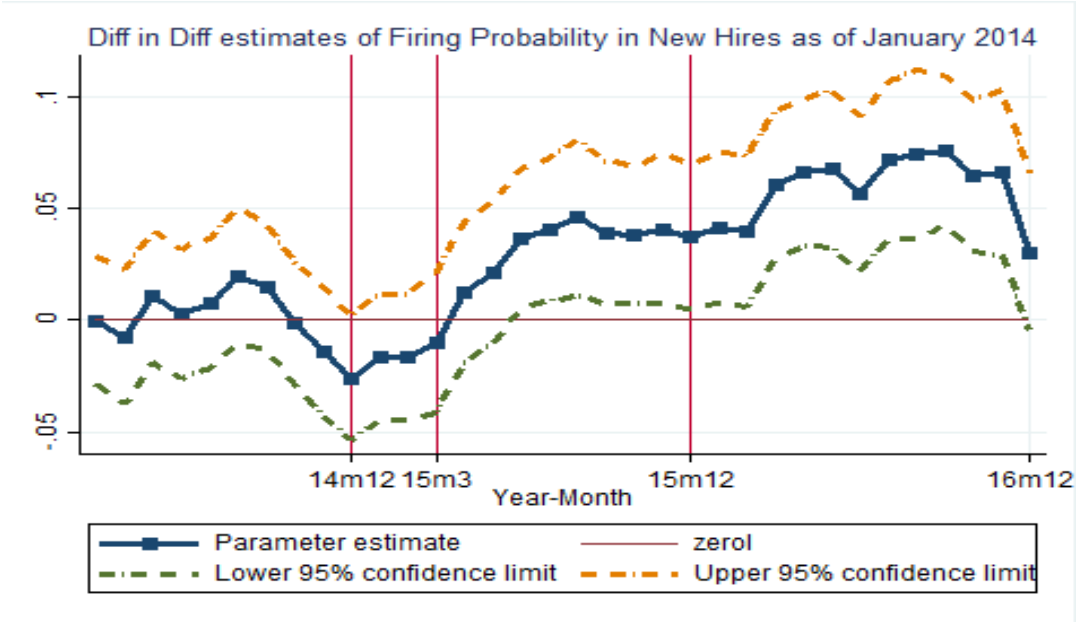

Figure 19: Unjust Firing: Diff in Diff estimates in Control and Treated Jobs/Firms

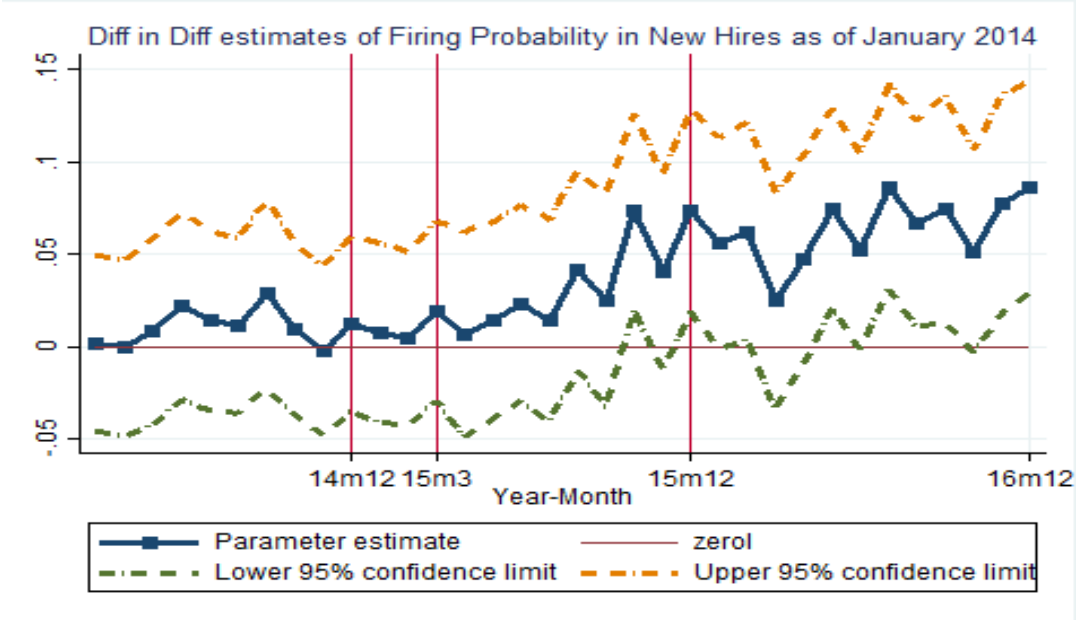

Figure 20: Job to job transitions in treated and control firms

Figure 21: Job to Job: Diff in Diff estimates in Control and Treated Jobs/Firms