Letter

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Employment Protection, Workforce Mix and Firm Performance

https://doi.org/10.1515/bejeap-2021-0396
Received October 18, 2021; accepted May 14, 2022

Abstract: We measure the impact of employment protection reduction in an uncertain framework on firms' hires and performance, exploiting the Italian 2015 Jobs Act. Results indicate that firms (1) stabilize workforce mainly through contract transformations of low-tenure and low-human-capital incumbent workers performing high-physical and low-intellectual tasks; (2) apply a cost-saving strategy that increases profits and decreases value added per-head. Effects are stronger among non-exporting and non-innovative firms. Our evidence casts doubts on the effectiveness of employment protection reductions in enhancing productivity in the long run.

Keywords: employment protection, human capital, productivity, tenure, tasks

JEL Classification: J08, J21, J24

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1 Introduction

Since it became a widely applied policy in the early nineties, labour market deregulation was implemented by relaxing the conditions to hire under temporary contracts (Berton, Richiardi, and Sacchi 2012), thus exacerbating the issue of dual labour markets (Hijzen, Mondauto, and Scarpetta 2017). To re-equilibrate the gap and foster permanent employment, several reforms were approved after the 2009 crisis (Eichhorst, Marx, and Wehner 2017). Italy epitomizes this narrative. In the present study we perform a mid-term diff-in-diffs evaluation of its *Jobs Act*, which reduced employment protection (EPL) for open-ended contracts signed in firms with more than 15 employees since March 2015.

Our work adds to the long-lasting debate on the impact of EPL changes in a context of economic uncertainty (Bentolila and Bertola 1990). We question whether decreasing EPL helps firm performance and through which channel, i.e. enhanced productivity versus cost competition. We focus on small/medium-size firms (employing about 20% of workers) and evaluate the impact of an EPL reduction on their gross and net worker flows (Sestito and Viviano 2018), investigating changes in their workforce human capital (HC) mix as measured by education (Charlot and Malherbet 2013), skill/task (Kahn 2018) and previous tenure (an original addition to the existing literature); we then evaluate the impact on firm performance as measured by productivity (Autor, Kerr, and Kugler 2007) and profits (Bjuggren 2018) and single out innovative (Griffith and Macartney 2014) and exporting firms (Selwaness and Zaki 2019).

We exploit a linked employer–employee dataset of labour market histories merged with firm-level balance-sheets to study the above-mentioned outcomes at the plant/firm level. Studying those outcomes jointly (Boeri 2011) allows us to cast a comprehensive view on the implications of a major reform, often considered a case-study (Picot and Tassinari 2017) and it allows us to contribute also to the literature linking productivity to worker turnover (Cappellari, Dell'Aringa, and Leonardi 2012), workforce education (Kampelmann and Rycx 2012), training and HC (Bratti, Conti, and Sulis 2021).

Our analysis suggests that workforce HC mix downgraded and firms improved their resilience through a cost-saving rather than a productivity-enhancing strategy. This is consistent with surviving in the aftermath of an economic crisis. However, it casts serious doubts upon sustainability in the longer run, in a stagnant-productivity country.

2 Data

We rely upon the administrative dataset called *Comunicazioni Obbligatorie* (COB), covering the entire population of workers' transitions (accessions, separations and any kind of contract changes e.g. from temporary to open-ended, or from part- to full-time) at the plant level in 2013–2017.[1] Plants can then be linked to their parent firm. We complement COB with ASIA,[2] an administrative archive of all active enterprises, to recover the legal definition of firm-size stock, hence reducing measurement errors virtually to zero (see Supplementary material). We also use AIDA, an archive of companies' balance-sheets, to retrieve information on firm performance.[3]

We focus on medium-size firms around the reform 15-employee threshold (10–30 employees, see Supplementary material for the firm-size legal definition we apply in the paper), and that have to make public their balance sheets (limited companies and cooperatives). We select firms that are fully located in Piedmont[4] (either single- or multi-plant, but all within Piedmont boundaries). In this way, we can analyse balance sheet data referred to an economic unit that we fully observe also in COB. This is possible thanks to the link with ASIA data. The final dataset includes 4737 plants (4514 firms) in January 2013 that decrease to 4597 (4417 firms) in December 2017, i.e., it is a *de facto* balanced panel, reflecting the low probability of shutting-down for plants/firms employing at least 10 workers.

3 Models and Identification Strategy

Our identification relies on a difference-in-differences strategy which exploits the setting of the Jobs Act, that reduced EPL only for firms with more than 15 employees. Following Bjuggren (2018), we assign plants to the treated/control groups according to the modal firm's monthly size in 2013. The treated group is made of firms employing 17–30 workers, while controls employ 10–13 workers. We exclude firms around the 15-employee threshold to avoid endogenous moves of firms reluctant to grow (Garibaldi, Pacelli, and Borgarello 2004) and measurement

1 Our full COB dataset spans the period 2008–2017.

2 The linkage between the two administrative archives is virtually perfect, matching 99.5% of observations.

3 The linkage to AIDA matches about 90% of the COB-ASIA dataset, with no systematic correlation to firm size or other relevant characteristics.

4 A North-western Italian region accounting for 7% of the national economy.

errors, although this second risk is unlikely since our data allow to compute the exact legal definition of firm size (see Supplementary material).

To prompt the adoption of open-ended contracts, the reform was accompanied by temporary but generous hiring incentives that were available to all firms, small and large ones. They covered 100% social security contributions for contracts starting in 2015, decreased to 40% in 2016 and cancelled afterwards (Sestito and Viviano 2018). Our treated and control samples are very similar, and crucially they share the same distribution of wages (Supplementary material for details); hence, we argue that hiring incentives – being proportional to wages – act in the same way above and below the treatment threshold and our DiD strategy is not affected by them. In Section 4, we add a parallel trend test that reinforces this statement and excludes hints of presence of this kind of bias in our sample.

We assess the effects of the reform by estimating the following equation

$$y_{it} = \alpha_i + \gamma_t^I \text{Sector}_i I(t) + \gamma_t^P \text{Province}_i I(t) + \sum_{t=2014}^{2017} \delta_t I(\text{Size} \geq 17) + \varepsilon_{it} \tag{1}$$

which controls for units i fixed effects; one-digit sectors and eight provinces fixed effects interacted with year t. δ_t are the DiD coefficients of interest, i.e. the interaction between periods and firm size in 2013. δ_{2014} assesses the common trend, when not significantly different from the benchmark δ_{2013}. Errors are clustered within units i. Specifications are estimated also by non/innovative (16% of the sample) and non/exporting (28%) units (defined in Supplementary material).

In Model 1 we compute plant-level quarterly worker flows (hiring, transformation from temporary to open-ended contract, separation, net change), disaggregated by several measures of HC dichotomized variables: education (high if university degree), skill (high if ISCO-2 digits above 40), physical/intellectual tasks (high if scored above the median, see Supplementary material for details on the score); tenure (high if above 6 months within the same firm). Pre period goes from q1.2013 to q4.2014, while post period from q2.2015 to q4.2017; q1.2015 is deleted due to the transitory presence of hiring incentives but not of EPL reduction. Hence, y_{it}, is a flow, i plant and t year.[5]

In Model 2 y_{it} measures the performance of firm i during year t.

5 To be clearer, we pool quarterly flows and estimate Eq. (1) with yearly controls. Hence δ estimates quarterly flows, averaged over their year.

4 Results

4.1 Model 1. Workers' Flows and HC Mix

Figure 1 provides results on total workforce net change (quarterly net flows), to investigate the effect of EPL reduction on workers mix. The null effects in 2014 support the parallel trend assumption. Effects take time to show up (2015 is not significant) and mostly decrease in 2017. On average, in 2016 and 2017, each treated plant grows by one worker (0.25 each quarter) more than controls. The effect is statistically and economically significant. It is heterogenous along several dimensions of HC endowment: additional workers are mostly low-educated and unskilled, performing high-physical and low-intellectual tasks (see Supplementary material for the exact definition). The effect is similar among exporting/non-exporting firms (Figures E1 and E2) and stronger among non-innovative firms (Figures E3 and E4).

Figure 2 focuses on the impact of the reform on the creation of new open-ended contracts and highlights that most of them are due to transformations of temporary low tenure (<6 months) incumbents into open-ended contracts, indicating again a preference toward low-HC workers. The effect is strong for all

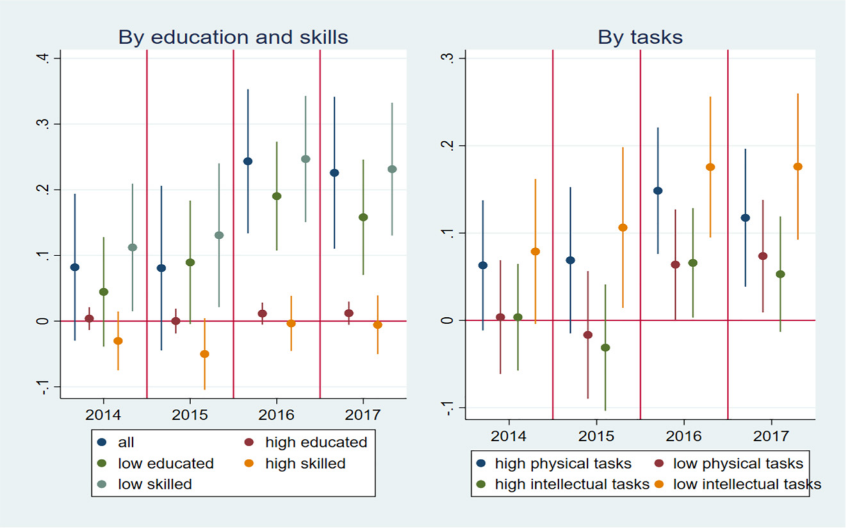

Figure 1: Total workforce: net flows by HC and job-tasks.
Source: Own computations on COB-ASIA-AIDA data. *Note*: Estimated δ from Eq. (1) and 95% c.i.

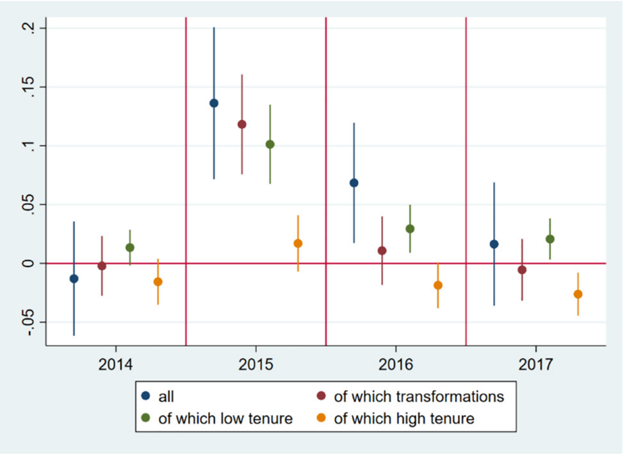

Figure 2: New open-ended contracts, by tenure.
Source and Note: See Figure 1.

firms in 2015; in 2016 decreases and it is mainly due to non-innovative firms; it disappears in 2017 for all but exporting firms (Figures E5–E8).

Figures 1 and 2 together indicate that in 2015 almost only transformations from temporary to open-ended contracts took place, with no significant effect on total workforce, while in 2016 and 2017 treated plants increased employment with respect to controls, mostly by retaining 2015 open-ended workers.

Figures 3 and 4 zoom into Figure 2 to show that new open-ended contracts are mostly transformations of temporary contracts of low-tenure, low-skilled and low-educated incumbents, performing mostly high-physical and low-intellectual tasks. No effects are found for other profiles, but high-skilled low-tenure incumbents transformed in innovative firms (Figure E11).

Concluding, in 2015 a strengthening strategy was in place, where workers shifted from temporary to open-ended contracts. Results highlight firms' determination to reduce HC adopting a surviving rather than a value-added enhancement strategy. We now move to firms' productivity and profits.

As anticipated in Section 3, we investigate whether the contemporaneous presence of hiring incentives in the same period biases our estimates. To do so, we estimate model 1 as in Figure 2–Panel "All" with a different time definition, i.e., we estimate monthly flows (instead of quarterly ones), and we average them by bimester (instead of by year). This allows us to test the common trend assumption up to the end of February 2015, when hiring incentives where in place (they started for all firms in January 2015) but EPL reduction was not (the Jobs Act started on

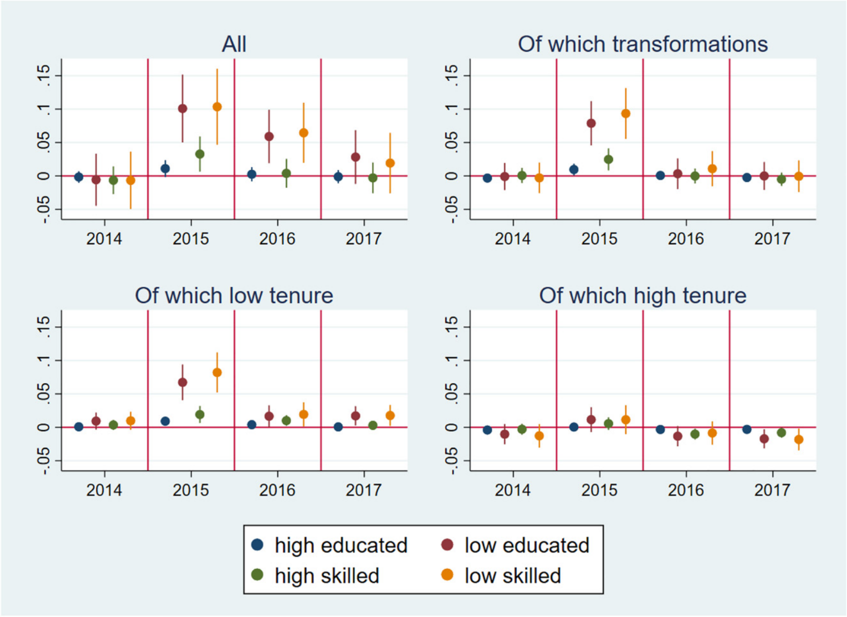

Figure 3: New open-ended contracts by tenure, education and skills.
Source and Note: See Figure 1.

March 7th). Figure 5 confirms the common trend, as flows in bimester 1–2015 are not significantly different from flows in the previous bimesters.

4.2 Model 2. Firm Performance

Productivity, as measured by value added per worker, shows a decreasing trend in treated firms with respect to controls, that becomes significantly negative for "all firms" in 2017 (Figure 6). As employment was increasing (Figure 1), we deduce that value added did not catch up with employment.

Despite a stagnant/decreasing productivity trend (Figure 6), Figure 7 indicates that profits did not suffer, particularly in non-innovative and non-exporting firms. We deem this coherent with results on HC: following a reduction in EPL, firms decreased HC by retaining mostly low-educated and low-skilled workers, hence penalizing productivity and following a profit enhancing strategy based on reduced labour costs, thanks to reduced EPL costs and reduced HC. The effect was stronger among non-exporting/non-innovative firms.

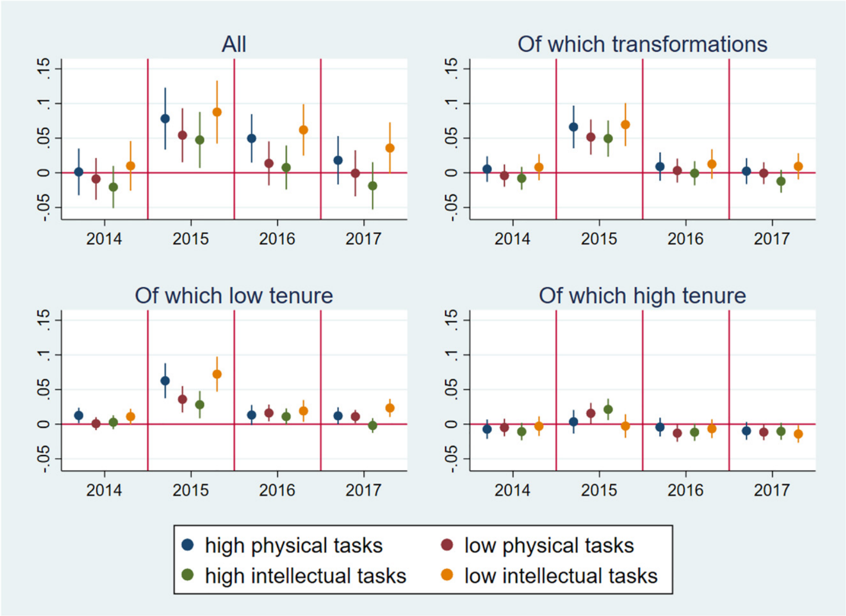

Figure 4: New open-ended contracts by tenure and tasks.
Source and Note: See Figure 1.

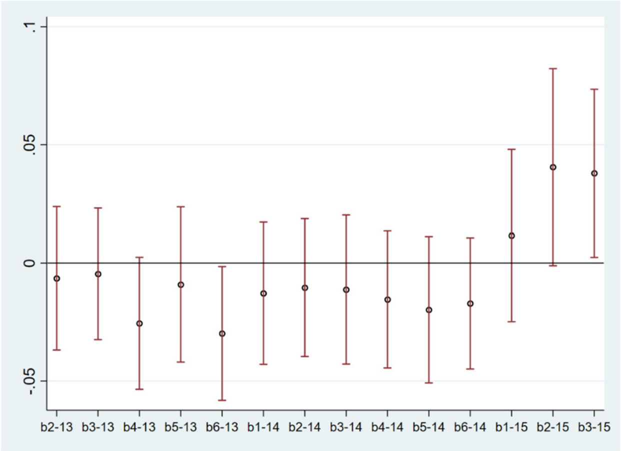

Figure 5: New open-ended contracts, all.
Source and Note: See Figure 1. Monthly flows, benchmark is bimester 1 of 2013 (January–February).

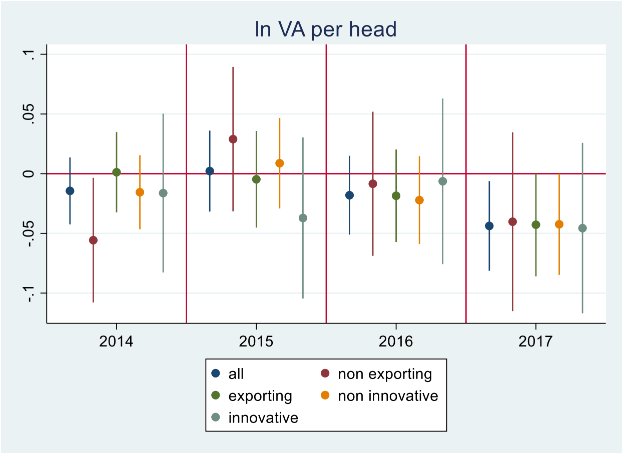

Figure 6: Firm-level productivity.
Source and Note: See Figure 1. No s.e. clustering for innovative firms due to small sample size.

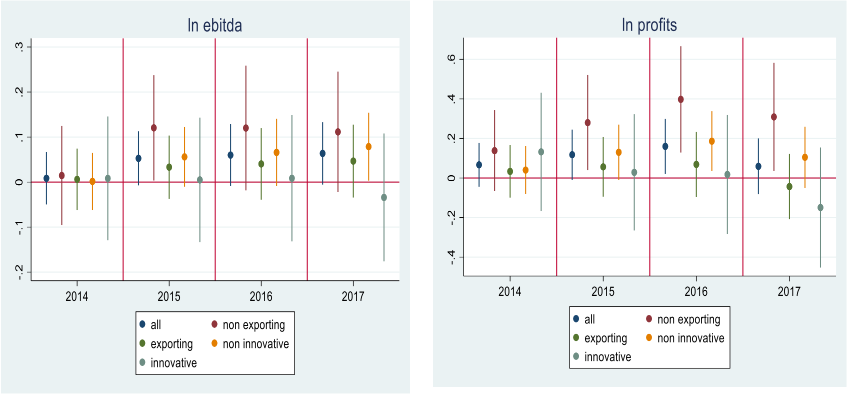

Figure 7: Effect on firm-level performance.
Source and Note: See Figure 5.

5 Conclusions

The role of HC in explaining firms' performance has been widely debated; however, little has been said regarding their joint relationship with EPL. We assess that EPL reductions may be unsuccessful in enhancing HC, as small/medium-size firms take advantage of the reform to become more resilient through a defensive strategy rather than by investing. This is mostly true for those not exposed to international competition or not innovative. External validity is limited, as no evaluation design is available for larger firms; however, 10–30 employee firms cover a significant share of employment in Italy. Such policies should therefore be more carefully designed to trigger the desired growth goals.

Acknowledgments: We wish to thank Michelangelo Filippi for data assistance and the participants to the seminar held at the Department of Economics and Statistics of the University of Torino, to the Third Astril Conference, and to COMPIE 2021. We would like also to thank the anonymous reviewers for their useful comments. The University of Torino and the Compagnia di San Paolo Bank Foundation are kindly acknowledged for financial support through the project *Young in, old out: demography and labor policies*.
Research funding: University of Torino and Compagnia di San Paolo Bank Foundation. The funders had no involvement in the conduct of research, preparation of the article or the decision to submit it.
Conflict of interest statement: None.

References

Autor, D., W. Kerr, and A. Kugler. 2007. "Does Employment Protection Reduce Productivity? Evidence from US States." *The Economic Journal* 117: F189–217.
Bentolila, S., and G. Bertola. 1990. "Firing Costs and Labour Demand: How Bad is Eurosclerosis?" *The Review of Economic Studies* 57 (3): 381–402.
Berton, F., M. Richiardi, and S. Sacchi. 2012. "The Political Economy of Work, Security and Flexibility." In *Italy in Comparative Perspective*. Bristol: The Policy Press.
Bjuggren, C. M. 2018. "Employment Protection and Labor Productivity." *Journal of Public Economics* 157: 138–57.
Boeri, T. 2011. "Institutional Reforms and Dualism in European Labour Markets." In *Handbook of Labour Economics*, edited by O. Ashenfelter, and D. Card,. Amsterdam: Elsevier.
Bratti, M., M. Conti, and G. Sulis. 2021. "Employment Protection and Firm-Provided Training in Dual Labour Markets." *Labour Economics* 69.
Cappellari, L., C. Dell'Aringa, and M. Leonardi. 2012. "Temporary Employment, Job Flows and Productivity: A Tale of Two Reforms." *The Economic Journal* 122 (562): F188–215.
Charlot, O., and F. Malherbet. 2013. "Education and Employment Protection." *Labour Economics* 20: 3–23.
Eichhorst, W., P. Marx, and C. Wehner. 2017. "Labour Market Reforms in Europe: Towards More Flexicure Labour Markets?" *Journal of Labour Market Research* 51 (3): 1–17.
Garibaldi, P., L. Pacelli, and A. Borgarello. 2004. "Employment protection legislation and the size of firms." *Giornale degli Economisti e Annali di Economia* 63 (1): 33–68.
Griffith, R., and G. Macartney. 2014. "Employment Protection Legislation, Multinational Firms and Innovation." *The Review of Economics and Statistics* 96 (1): 135–50.
Hijzen, A., L. Mondauto, and S. Scarpetta. 2017. "The Impact of Employment Protection on Temporary Employment: Evidence from a Regression Discontinuity Design." *Labour Economics* 46: 64–76.

Kahn, L. 2018. “Permanent Jobs, Employment Protection and Job Content.” *Industrial Relations* 57 (3): 469–538.
Kampelmann, S., and F. Rycx. 2012. “The Impact of Educational Mismatch on Firm Productivity: Evidence from Linked Panel Data.” *Economics of Education Review* 31 (6): 918–31.
Picot, G., and A. Tassinari. 2017. “All of One Kind? Labour Market Reforms under Austerity in Italy and Spain.” *Socio-Economic Review* 15 (2): 461–82.
Selwaness, I., and C. Zaki. 2019. “On the Interaction between Exports and Labor Market Regulation: Evidence from MENA Countries.” *The Quarterly Review of Economics and Finance* 73: 24–33.
Sestito, P., and E. Viviano. 2018. “Firing Costs and Firm Hiring: Evidence from an Italian Reform.” *Economic Policy* 33 (93): 101–30.

Supplementary Material: The online version of this article offers supplementary material (https://doi.org/10.1515/bejeap-2021-0396).