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ABSTRACT

Environmental transition and firm-provided welfare: Empirical insights from Italy

This paper examines the impact of green technologies adopted by Italian firms on their choices regarding the welfare services offered to employees. It uses microdata from large firm-level representative surveys, which include information on both green investments and welfare schemes provided by firms. Applying different estimation methods, we show that higher investments in green transition increase the likelihood of providing welfare schemes. Moreover, adopting green technologies leads to a higher provision of firm-related pension funds. These findings support the hypothesis that green transition in the workplace may also serve as a tool to implement welfare services and, in turn, corporate social responsibility. Finally, we discuss the policy implications.

KEYWORDS: enterprises innovation, green transition, corporate welfare
JEL CODES: O33, O13, J32

Lo studio analizza le implicazioni degli investimenti verdi sulla erogazione da parte delle imprese di servizi di welfare ai propri dipendenti – oltre gli obblighi di legge. Si utilizzano i dati della VI Rilevazione Imprese e Lavoro (RIL) condotta da Inapp su un ampio campione rappresentativo di società di persone e di capitali operanti nel settore privato extra-agricolo. L'applicazione di diversi modelli di regressione permette di illustrare i seguenti risultati. Primo, l'adozione di tecnologie verdi si accompagna a un incremento della probabilità di erogare servizi di welfare aziendale. Secondo, la relazione positiva tra investimenti in tecnologie verdi e offerta di servizi di welfare è spiegata soprattutto dall'erogazione di piani pensionistici complementari. Questi risultati evidenziano una correlazione positiva tra processi di transizione ecologica e responsabilità sociale delle imprese.

PAROLE CHIAVE: *innovazione delle imprese, transizione ecologica, welfare aziendale*
CODICI JEL: O33, O13, J32

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1. Introduction

Energy efficiency improvements and the transition to a low-carbon economy are key targets to reach climate neutrality in the EU by 2050. However, these policy shifts, which induce changes in production modes, impact work differently and may influence management and employment relations (Pestel 2019; Ringqvist 2022).

So far, available literature has paid limited attention to the influence that cleaner production plays on transformative changes in workers' conditions. Comparative analyses to identify the role of employees and their representatives on green transitions have seen them as "agents of transition or defenders of the status quo" (Kalt 2022). Räthzel and Uzzell (2011), interviewing trade unions of several countries, examined how they perceive the job *versus* environment dilemma and explored if unions "seek strategies to reconcile workers' interests with environmental needs" (Räthzel and Uzzell 2011, 4). In this area of research, as suggested by Thomas and Doerflinger (2020), three typical different union strategies on environmental issues emerge: *opposition* (outright contrast to decarbonization measures)*, hedging* (attitudes to minimize regulation), and *support* (proactive approaches to green policies).

Therefore, in cases of radical changes that modify the existing business, such as implementing new green technologies, the involvement of employees is a significant requirement to obtain commitment, and diversified knowledge (Dewar and Dutton 1986).

Managerial ability may be at the core of this issue: employers who visualize these long-term threats may offer welfare services to their employees. This strategy would represent an immunization lever against losing the expected returns associated with firm green investments. Thus, the payment of welfare provisions may prevent the opportunistic behaviour of employees, and increase their willingness not to separate, thus favouring the accumulation of skills associated with cleaner production. Furthermore, firm welfare may reveal an important move to obtain union consensus to firm environmental strategies and also a source of employer branding that helps to attract potential employees (Yasin *et al.* 2023).

From this perspective, environmental and social dimensions of sustainability may thus be consistent and even instrumental in achieving good economic performance, as advocated by the proponents of the 'triple P bottom line', i.e. people, planet, and profitability (Jamali 2006). In a more holistic view, corporate responsibility[1] may thus be broadened and should include different pillars of sustainability, including the environmental and social dimensions. This issue is particularly important for the Italian case because this country, along with Mexico, has the highest percentage of adults (around 90%) who perceive climate change as a threat among the group of OECD countries (OECD 2023).

So far, the available research has mainly centred on the public debate on unions' attitudes to green transitions. Furthermore, the available empirical research has been mainly qualitative, i.e. based on policy documents and interviews (Ringqvist 2022). Thus, to our knowledge, our study is the first one

[1] The European Commission (2002) defines CSR as "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis".

based on detailed micro-data and focused on the impact of firms' investment in green technologies on adopting firm welfare services in a large European economy, such as Italy. For instance, the recent study of Braam *et al.* (2024) analyses how employee financial participation drives corporate sustainability, but the reverse causal influence is omitted in their analysis.

Our investigation takes advantage of unique information drawn from *Rilevazione Imprese e Lavoro* (RIL), a nationwide representative survey conducted by the National Institute for the Analysis of Public Policy (Inapp). These data permit us to focus on the one hand on firm welfare (FW), which refers to a bundle of social benefits (maternal leaves and childcare, health benefits, family allowances, and pension funds) unilaterally offered by employers without any legal constraints given by norms or firm-level collective agreements with unions. On the other hand, we have information on different types of green technologies adopted and the respective monetary amounts of expenditures of these green investments.

In particular, we verify whether investing in green technologies drives companies to unilaterally provide FW, independently of collective bargaining pressures and firm-level agreements signed with unions. Furthermore, the richness of this database allows us to control for the main features of managerial, employee and company characteristics. Due to the extraordinary period taken into account (that is, years 2015-2018-2021) we also consider the Covid-19 state financial aids and tax incentives for introducing incentive pay schemes (law n. 208/2015); hence we control for other potential confounding factors that may have affected the company behaviour.

Using different econometric models, we find that firm-level greening policies foster corporate welfare policies. Overall, the main contribution of the paper is to provide micro-level evidence, that there are no trade-offs between environmental strategies and the adoption of firm welfare. This result represents a first step to exploring in future research the wide range of mediating and moderating factors that link cleaner technologies, organizational changes, and employment relations of Italian firms. In doing so we also contribute to the current debate on corporate social responsibility.

The article proceeds as follows. Section 2 discusses the literature review, the Italian institutional setting, and formulates some testable hypotheses. Section 3 introduces our data and presents descriptive statistics. Section 4 illustrates the econometric strategy before presenting and discussing the main results (section 5). Finally, section 6 concludes.

2. Background

2.1 Literature review

Related literature usually adopts the term 'occupational welfare', initially proposed by Richard Titmuss (1958) and later adopted by other authors (among others, Farnsworth 2004) to indicate social benefits provided by private employers or the state in its role of employer[2]. Additional qualifications have been later introduced and other authors with the term occupational welfare (OW) refers to the sum of benefits and services provided to employees by social partners – employers and unions – beyond the

[2] The expression 'occupational welfare', proposed by Titmuss (1958) only refers to "the totality of social benefits paid by companies to their workers by virtue of the employment contract that binds them to each other".

public benefits and based on an employment contract (Natali and Pavolini 2018, 13). Some authors include in OW all provisions offered to employees, including fringe benefits.

In our analysis, we use the term *firm welfare* (henceforth referred to as FW) to refer to those benefits provided by the unilateral actions of employers. The first component of these benefits offers protection against social risk (pensions for employees, health services, survivors' benefits), and the second one includes fringe benefits (i.e. child allowances, personal travel expenses, and similar non-social items)[3].

Recent literature has focused on increasing dualism in labour markets, which is also recorded in EU countries, and has underlined that the differential working conditions offered to insiders and outsiders have also been conducive to *welfare dualisation* (Thelen 2014). Social protection is not universal, but it is mainly addressed to some occupational groups. It has been accompanied by a progressive shift from more centralised bargaining to more decentralised agreements signed at the firm level (Baccaro and Howell 2011). In this new trend, workers have more frequently opted for 'concession bargaining', accepting a trade-off between wage moderation and an increasing supply of welfare services. In this new phase, the unilateral choices of employers have found more space. For their part, trade unions' strategies displayed new approaches and accepted 'pragmatic joint solutions' (Gasparri 2021).

Four main reasons are behind the voluntary FW adoption, as discussed by Natali and Pavolini (2014). *First*, FW schemes may help firms in recruitment strategies of qualified workers and increase the firm ability to retain the most skilled workers. We expect that these considerations are particularly relevant for firms that operate under competitive pressures to find adequate skills to operate with new green and digital technologies. The high importance in green firms of management and retention of human capital may thus lead to adopt FW as an effective loyalty-building instrument and a non-competition pact with the most qualified employees. For instance, Seeleib-Kaiser and Fleckenstein (2009) have shown that for German firms FW, as family-friendly policies, are mainly provided to workers with (high) general and *highly* portable skills, rather than by firms that predominantly rely on firm-specific skills. Instead, coverage tends to be lower in industries requiring *low* general skills.

Wiß (2015) distinguishes between indicators of economic individual power, captured by employee skills, and political collective power, measured by the bargaining power of trade unions. Examining four European countries (Germany, Italy, the UK, and Denmark), this study shows that neither indicator alone is sufficient to explain the variation in occupational pensions across countries and sectors but is also relevant to heterogeneities of different skills across sectors[4].

Another study based on a nationally representative sample of employees from 30 European countries shows that the proportion of individuals having access to occupational welfare is higher for high-skilled workers and this positive association is stronger in industrial relation regimes in which employers have a higher propensity to invest in employee's knowledge and are interested in promoting long-term employment relationships (Riva and Rizza 2021).

[3] Another expression is company welfare. It refers to the subset of corporate welfare measures that have an economic function, not only because they supplement the contractual exchange, but also for their functional properties, i.e. because they affect the exchange between worker and employer, on doing business, on organisation, on productivity, on the quality of work performance, on worker loyalty. (Tiraboschi 2020, XXII).

[4] For instance, in Germany employees with high-general and high-specific skills can bargain generous occupational pensions with employers of finance and manufacturing industries, who need these skills.

In summary, providing employees with goods and services that improve their well-being may reduce absenteeism, decrease turnover, and increase the firm ability to retain the most qualified workers.
Second, FW may enforce loyalty and motivation. The adoption of FW schemes manifests the firm commitment to corporate social responsibility, i.e. these schemes might represent a concrete sign that the company considers employees as key stakeholders and represent a starting point to establish a "comprehensive social footprint for a company" (Hutchins and Sutherland 2008, 1697).
Third, welfare benefits may mitigate the increase in labour costs. FW may be seen as an incentive payment linked to firm performance that operates as a substitute for wage bonuses, However, differently from other variable bonuses, FW has a labour-cost advantage for the absence of social contributions to be paid on these schemes. This concern is particularly relevant for Italian companies whose labour costs between 2000 and 2013 increased by 10 percent points more than in Germany and featured a high competitiveness gap to their main competitors. This might explain why the increased diffusion of welfare schemes recorded in Italy was mainly due to new employers' activism in the private sector (Ascoli *et al.* 2018).
Fourth, cost moderation considerations are more important when fiscal incentives are present, influencing the economic convenience of FW schemes. For instance, fiscal breaks introduced on FW schemes in the Italian context, as seen below, may have played an additional propulsive role. Indeed, national norms abolished taxation on productivity bonuses paid as welfare benefits and not as salary (Resce and Paliotta 2019).
Fifth, concerning the different components of welfare schemes, we expect that pension funds may offer specific benefits to employees and their employers. These plans provide guarantee income for life to employees after their retirement and if managed by professional investors may ensure higher returns. This effect, in turn, works as an incentive device and encourages employees work more efficiently. For employers, other benefits of pension funds are related to their role not only as a sorting device to attract top talent and allowing these employers to distinguish in the job market. Most importantly, with respect to other welfare schemes, pensions plans might contribute to reduce employee turnover. If employees see that their firms invest in their future, they have a higher propensity to remain for the long term with their employer. A beneficial side effect of stable labour relations is a reduction of hiring and firing costs.
These conjectures may be particularly relevant when firms must deal with strengthening the governance of skills systems. Hence, for our analysis additional considerations deserve the role that FW may play in green firms. The OECD Skills Outlook 2023 documents that greener occupations require more technical, engineering, and managerial skills. Management policies play a key role in supporting the twin green and digital transition, and competencies acquired on the job are particularly important. This concern is relevant for the Italian context, where the share of students with good foundational levels in environmental sustainability competence, achieving at least proficiency Level 2 in the PISA science test, is one of the lowest in OECD countries and only one in four 15-year-old students or less has foundational levels (OECD 2023, 53).

2.2 The Italian context and hypotheses

To consider the context in which FW schemes have been adopted, we present some specific traits of our case study. In the Italian institutional setting, firm welfare may be negotiated in enterprise

agreements, with the involvement of trade unions, or may be left to the free initiative and discretion of employers. A distinctive advantage of our study is that our database allows us to disentangle these two components.

Concerning occupational welfare, Italy, like the other Southern European countries, has been traditionally characterised by a limited diffusion of this form of remuneration. The SOCX OECD database shows that for 1990-2011 the share of private welfare expenditure on total welfare expenditure was close to 2.5%, well below the share recorded in Western European countries (around 9%). A significant part of welfare payments was adopted by sector-level bargaining, and another (more limited) share was defined by decentralised bargaining level or autonomous enterprise initiatives. However, despite the limited diffusion of welfare schemes, since the 1990s, these payments experienced an increase in expenditure (especially for occupational pensions) and coverage (Pavolini *et al.* 2018).

For instance, considering the take-up rates of the 38 Italian closed pension funds (i.e. those established for specific occupational categories or employees of a single company) recorded in 2000 and 2014, it is possible to verify a high degree of heterogeneity among sectors and firm size and the highest percentages in energy companies. The pension fund of Enel (Fopen) and that of the ENI group (Fondoenergia) in 2014 had reached the highest coverage, 95.5%, and 80.2% respectively, with strong increases of more than 20 and 15 percentage points compared to the year 2000 (see Pavolini *et al.* 2018, table 4).

After 2008, Italian governments fostered the diffusion of decentralised bargaining, also under the recommendation of the European Commission that intended to promote a stricter link of company remunerations to the specific firm conditions[5]. In this new phase, a significant change was represented by the legislative measure introducing tax bonuses on firm welfare, performance-related payments, and company profit sharing. The law n. 208/2015 expressly proposed tax relief on performance-related payments, also incentivising its adoption through welfare services, such as healthcare services, pension funds, general assistance, and provisions to improve work-life balance. Hence, an important novelty was the possibility for firms to shift part of compensation from cash payments to welfare provisions (Resce and Paliotta 2019). Workers could transform productivity bonuses into welfare services, rather than monetary rewards, and total tax exemption was applied to vouchers for access to these services (D'Amuri and Nizzi 2018).

Furthermore, in 2017 more goods and services were added to this category, and the same tax exemption regime was applied to new welfare measures provided by the employer, also independently from firm-level bargaining, in compliance with the general provisions laid down in the national collective bargaining agreements.

The RIL survey asks specific questions on all these issues: i) firm welfare paid independently from level negotiations; ii) the specific services financed by FW, such as care and education services, pension plans, insurance policies, and equity participations in company capital. The RIL database also permits control for adopting the second level of negotiations and the single aspects negotiated therein (cash bonuses linked to productivity or profit results and working hours).

[5] See Council Recommendation on Italy's National Reform Programme 2018 - COM (2018) 411 final.

These survey data allow us to explore the integration of environmental and labour protection through firm welfare, which so far has been analysed mainly along a qualitative perspective (Tomassetti 2020). For quantitative validation, we propose the following hypotheses.

Hypotheses

FW can be adopted mainly to reward green jobs that require a higher intensity of high-level cognitive skills, whose content is, on average, less routinized and cannot be easily reallocated from brown jobs (Vona *et al.* 2018). FW schemes also permit strengthening the set of social interactions predicted by the social exchange theory (John *et al.* 2019) and may be complementary to strategies of skill sorting adopted to implement green technologies (Bessen *et al.* 2021).

Furthermore, the adoption of FW also gives the possibility of including a labour perspective in the transition process toward cleaner production (Wang and Lo 2021; Kalt 2022). By offering FW schemes, the green firms may show an inclusive view that assigns to corporate social responsibility the same priorities given to environmental and economic dimensions (Staniškienė and Stankevičiūtė 2018).

Finally, international evidence shows that many pension schemes, designed by employers, function as an incentive for employees to remain with their employer and to rise in the ranks (Naczyk 2018).

Other evidence from the Italian case also shows that occupational welfare provisions adopted through collective bargaining and mediated by trade unions have been mainly related to occupational health insurance, rather than pension funds. This is not the case for firm welfare.

Building on these arguments, we verify the following testable hypothesis:

H1. We expect companies undertaking green investments to also show higher propensities to adopt firm welfare schemes. These payments, which permit redistribution of part of the rents generated by green investments, are helpful to retain employees and increase their job tenure.

H2. Firms involved in green investments and that offer FW schemes show a higher propensity to correspond occupational pension funds. These schemes may be more suited than others to retaining employees and increasing their job tenure.

3. Empirical setting

3.1 Data sources and variables

The empirical analysis is based on the surveys conducted by the Italian National Institute for Public Policy Analysis (Inapp) on a large representative sample of partnerships and limited liability firms (*Rilevazione su Imprese e Lavoro* - RIL). The RIL surveys cover about 30,000 firms operating in the non-agricultural private sector and a sizeable subsample (40%) is followed over time, partially providing our dataset with a panel data structure, in the period under study[6]. The surveys collect a rich set of

[6] The RIL sample is stratified by size, industry, geographical area, and the legal form of firms. Inclusion depends on firm size measured by the total number of employees. This choice required the construction of a 'direct estimator' to consider the different probabilities of inclusion of firms belonging to a specific stratum. Using this estimator, the RIL sample reproduces all active firms for each stratum and, simultaneously, the total number of employees in each stratum (size, sector, geographic area, and the legal form). For more details on the RIL questionnaire, its sample design, and all methodological issues see https://rb.gy/6m7xod.

information about management and workforce characteristics, firms' productive specialization and competitive strategies, human resource management and labour relations, new technologies, and public policies.

What is noteworthy for our purposes is that the latest RIL survey, now in its 6th edition, includes detailed questions related to the adoption of various green technologies and the amounts of green investments from 2019 to 2021. In particular, our preferred measure of firm-level green transition is the total monetary amount financed between 2019 and 2021 for the following categories of activities: i) *energy efficiency* (all the interventions to reduce the consumption of electrical and thermal energy); ii) *technological development* (substantial implementation of eco-friendly equipment and cleaner production processes); iii) *resource-saving* (investments to save inputs and promoting eco-friendly practices among employees); iv) *circular economy* (investments for the re-using of products and the reduction of any wastes).

As for labour relations, RIL data provide information on welfare plans offered by employers to their employees and the different services offered by these plans.

In studying the effect of green investment on FW, we exploit the richness of the RIL database on a large set of control variables, which allows us to consider several potential confounding factors.

First of all, we control if FW schemes have been offered independently from the tax breaks on incentive pay provided by law (law n. 208/2015); hence we take into account for this important confounding factor that may obscure the actual impact of green technologies on remuneration strategies. Secondly, to study whether green investments affected industrial relations in an extraordinary period (as the one between 2019 and 2021), we control for Covid-19-related subsidies (euros per employee, taken in logs) and performance of companies, measured by sales per capita (taken in logs).

Other essential control factors include company characteristics (size, age, innovation, productivity, employer's membership and public procurement) and strategies (adoption of digital technologies, internationalisation); workforce characteristics (the shares of executives, white collars, and female workers, fixed-term contracts) and personnel policies (hirings); and management characteristics and governance (education, gender, family ownership). All these characteristics could be crucial in determining a company's welfare strategies.

We excluded micro-firms (those with less than ten employees) to retain companies with a minimum level of internal organisation and employment relations. After deleting observations with missing values for the main variables, our cross-sectional sample was reduced to 17,013 companies. Concerning the longitudinal analysis, our restricted samples amount to 6788 companies observed in the RIL surveys 2018 and 2021 (unbalanced two-year panel of 13,590 observations, t=2) and to 4188 companies continuously observed in the RIL surveys 2015, 2018, and 2021 (unbalanced three-year panel of 11,434 observations t=3).

Table 1 provides some descriptive data. Our whole sample reflects the structure of the Italian economy, where small firms are dominant (27 and 33 is the average number of employees in the cross-sectional and longitudinal samples, respectively) and, and 86% is the fraction of family-owned companies). The profile of the human capital of managers shows that only 26% showed tertiary educational attainment, and 18% of them were female executives. The workforce composition shows that the share of temporary workers is about ten percent of total employees while that of females is about 33-35% across different samples.

Table 1 Descriptive statistics

	T=1		T=2		T=3	
	Mean	**Std dev**	**Mean**	**Std dev**	**Mean**	**Std dev**
			Key variables			
Welfare services (0/1)	0.044	0.204	0.043	0.204	0.050	0.218
Green technologies (0/1)	0.194	0.395	0.2295	0.420	0.230	0.421
Green expenditures pc*	252.389	1494.587	313.203	1668.27	342.617	1772.979
			Typologies of welfare services			
No services	0.960	0.197	0.958	0.201	0.951	0.217
Maternal leaves and child care	0.002	0.039	0.005	0.068	0.004	0.065
Health expenses	0.008	0.092	0.010	0.099	0.013	0.113
Family allowances/aids	0.005	0.069	0.004	0.067	0.005	0.071
Pension funds	0.007	0.082	0.0070	0.083	0.007	0.083
Others (fringe benefits etc.)	0.019	0.136	0.0160	0.126	0.020	0.141
			Management characteristics			
Tertiary education	0.264	0.441	0.271	0.444	0.263	0.440
Upper secondary education	0.549	0.498	0.550	0.498	0.551	0.497
Female	0.180	0.384	0.148	0.355	0.151	0.358
Family ownership	0.861	0.346	0.858	0.349	0.871	0.335
			Employee characteristics			
Share of executives	0.040	0.100	0.043	0.096	0.040	0.092
Share of white collar	0.350	0.317	0.388	0.323	0.405	0.329
Share of blue-collar	0.609	0.337	0.569	0.341	0.555	0.344
Share of FT contracts	0.097	0.186	0.120	0.195	0.102	0.178
Share of female	0.332	0.270	0.357	0.269	0.354	0.276
Hiring (0/1)	0.759	0.428	0.675	0.468	0.605	0.489
			Company characteristics			
Digital technologies	0.108	0.310	0.136	0.342	0.093	0.291
% sales from foreign mkt	7.313	19.476	9.014	21.426	8.963	21.184
ln(Covid financial aids) 3-digit	11.346	0.862	11.412	0.867	11.412	0.893
Public procurement	0.292	0.455	0.299	0.458	0.310	0.463
Process innovation	0.183	0.387	0.316	0.465	0.322	0.467
Product innovation	0.179	0.383	0.294	0.455	0.286	0.452
ln(firms age in years)	2.960	0.776	3.128	0.713	3.285	0.546
ln(sales per employee)	11.652	1.224	11.759	1.235	11.790	1.175
Employers' membership	0.513	0.500	0.526	0.499	0.591	0.492
Tax PRP Reform	0.024	0.153	0.038	0.190	0.030	0.171
N of employees	27.149	246.198	33.101	160.31	33.167	172.020
North West	0.294	0.456	0.378	0.485	0.365	0.481
North East	0.259	0.438	0.260	0.439	0.292	0.455
Centre	0.224	0.417	0.217	0.412	0.224	0.417
South	0.223	0.416	0.145	0.352	0.119	0.324
N of obs	17013		13590		11434	

Note: sampling weights applied. * in euros.
Source: Authors' elaborations on RIL 2021-2018-2015 data

One out of five companies introduced at least one type of green investment, even though the average monetary amount of all per capita green investments was 252.39 euros and there was large variability among firms (1,494.59 euros). The incidence of firms introducing digital technologies was slightly lower, around 11%.

Concerning our dependent variables, for the whole sample, we observe that in 2021 only 4.4 per cent of firms offered welfare services, and this percentage seems relatively stable over the sampled period. The welfare services that were more frequently adopted were health services and pension funds.

Summary statistics results tell us that to isolate the partial effect of green investments on FW, we should use the information above as controls in our econometric strategy. At the same time, we adopt econometric methods to reduce endogeneity and self-selection problems.

3.2 Econometric strategy

To easily interpret the coefficients and avoid complexities generated by using non-linear models, we base our empirical strategy on different types of linear probability models[7].

In our baseline analysis, we use cross-sectional OLS regression, see equation [1]. We explain the likelihood of implementing welfare benefits through green investments – taken as an implementation of green technologies (binary variable) or green investment per capita (continuous variable). Additionally, we include a large set of control variables to account for other factors that may affect our outcome. The first regression reads as follows:

$$FW_{i,t} = \alpha + \beta Green_{i,t} + \vartheta C_{i,t} + \gamma M_{i,t} + \delta E_{i,t} + \eta_j + \zeta_r + \varepsilon_{i,t} \quad [1]$$

where, *i= 1, …17,013* are our companies and *t* only equals 2021 in this equation (that is, a cross-section). FW is a binary variable that stands for our dependent variable; *green inv.* are the green investments alternatively considered as a binary regressor or investments in euros per capita taken in log[8], $\boldsymbol{C}$**,** $\mathbf{M}$**,** and $\boldsymbol{E}$ are vectors including company, management, and employee characteristics (see Table 1), η_j and ζ_r are industry and region fixed effects. We use the more feasible and computationally efficient estimator proposed by Correia (2016), which overcomes problems arising from multiple levels of fixed effects.

Equation [1] with OLS specification is a functional initial approach, but it may be affected by unobserved heterogeneity. Even with numerous controls, some unknown variables can still correlate with the variable of interest and the error term, which might cause inconsistent estimates.

[7] According to Wooldridge (2010) and many other econometricians, the linear probability model could produce biased coefficients if the predicted value for the probability of adopting welfare schemes is out of the [0-1] range. This is not our case for the baseline OLS estimation reported in table 2, as the prediction for our dependent variable falls in this range for most of the observations. Results from this test are available upon request.

[8] The usual transformation, obtained by adding 1 to all numerical values of *green inv.pc* in order to avoid missing values once the log is taken, applies.

To address this issue, we have opted to use short panel data. This comes at the cost of losing observations, but it enables us to exploit available information for two years (t=2) or three years (t=3), except for green investments (only available for 2021). The short panel data specification for t=2 reads as follows:

$$FW_{i,t} = \alpha_i + \kappa Year2021 + \lambda(Green \cdot Year2021) + \vartheta^{pd2} \cdot C_{i,t} + \gamma^{pd2} \cdot M_{i,t} + \delta^{pd2} \cdot E_{i,t} + \varepsilon_{i,t} \quad [2]$$

where i=1, …6,788 stands for companies and t=2018 and 2021 for years, α_i is a company level fixed effect also absorbing the green investment as standing alone term (as we have only information in 2021 for this variable); ($green\ inv. \cdot Year2021$) is the interaction term between green investments (either binary variable or continuous variables, as explained for equation 1) and the dummy Year 2021, while the subscript 'pd2' means that the coefficients of our usual control variables now refer to the panel data model with t=2.

Two points are worth noting for equation [2]. The first relates to the notable shrinking in the sample size, as the number of companies is more than halved (from 17013 to 6788). Hence, besides controlling for unobserved heterogeneity, the panel data estimation allows us to perform a sensitivity analysis, as we test the effect of green investments on this reduced sample.

Second, the variable of interest now is the interaction term ($green\ inv. \cdot Year2021$); the coefficient λ associated to this term should capture the variation between 2018 and 2021 of our dependent variables caused by green investments. In other words, this specification is similar to the simplest case of difference-in-difference set-up with only two periods (2018 and 2021).

The most important concern with a short panel t=2 is that we cannot control what happens to the probability of offering FW schemes in years before the period of interest. In other words, if the probability of implementing FW also changed before the period of interest, we cannot guarantee that green investments are the only cause for this change. Since we have information dating back to 2015 for all variables used in our empirical analysis, except for green investments, we perform a *common trend test* on a further restricted sample of companies, including 3 years. The short panel data specification for t=3 reads as follows:

$$FW_{i,t} = \alpha_i + \kappa Year2021 + \lambda(Green \cdot Year2021) + \tau Year2018 + \xi(Green \cdot Year2018) + \vartheta^{pd3} \cdot C_{i,t} + \gamma^{pd3} \cdot M_{i,t} + \delta^{pd3} \cdot E_{i,t} + \varepsilon_{i,t} \quad [3]$$

where i=1, …4,188 stand for companies and t=2015, 2018 and 2021 for years. All other variables are similar to those reported in equation [2], with the exception of an additional year dummy (2018) and the interacted term ($\text{green inv.} \cdot Year2018$). Non-statistically significance of the coefficient ξ signals that for firms investing in green technologies, the probability to change industrial relations was not affected by other factors in the years 2015-2018, that is, before our period of interest. In other words, this additional interaction term allows us to perform a *common trend test*.

An additional robustness check was performed by combining the diff-in-diff models with propensity score matching (PSM). *PSM* matching aims to consider the selection of the treatment based on observables. Diff-in-diff controls for unobservable but temporally invariant factors influencing outcomes between treated and control firms. By combining the two approaches, we implement a hybrid method, i.e., a doubly robust estimator that usually performs better than standard alone approaches (Heckman *et al.* 1998; Smith and Todd 2005; Caliendo and Kopeinig 2008; Cerulli 2015).

The explanatory variables used to match the two samples are discussed in the previous section (table 1). To adjust for observable differences between the treated and untreated firms (see Heckman *et al.*1998), the matching procedure is then run on the longitudinal component of the RIL data that allows us to collect information on firms operating in all three sample years (2015-2018-2021).
The propensity score matching is implemented with a nearest-neighbour method (one-to-one matching) and replacement[9]. By doing so, we obtain a frequency (weight) with which the observation is used as a match. Each treated firm is given a weight that equals 1, while control units may have a weight different from 1. This is because control observations may match more than one treated unit (this approach is expected to create a better balance between the characteristics of treatment and control units). Eventually, we run a diff-in-diff regression on the 'matched sample' identified by observations with weights assigned through the procedure above[10].

4. Results

4.1 Baseline OLS and panel data specifications

Estimates for the baseline OLS regressions described by equation [1] are reported in table 2. Besides the variable of interest (Green technology investments), in this table, we show the effects of selected control variables capturing important confounding factors that may have interfered with changes in industrial relations during the sampled period (2019-2021). All the other control variables related to company, management, and employee characteristics, already discussed in descriptive statistics (table 1), have been included in this regression, besides industry and region-fixed effects. To make table 2 readable, we have just omitted all these controls that remain available upon request.
Concerning our key explanatory variable, table 2 (column 1) informs us that introducing green investments (0/1) significantly increases the probability of offering welfare services by 3 percentage points (p.p.). The estimated coefficient remains stable around 3 p.p. after performing diff-in-diff estimates with fixed effects (table 2, column 2) and augmenting the diff-in-diff with a common trend test in a 3-year panel data model (table 2, column 3). Interestingly, this result emerges after controlling for many potential confounding factors, of which investments in digital technologies are particularly relevant. For example, investing in at least one I4.0 technology (*digital tech*) significantly increases the probability of adopting FW. As found in the related literature, the successful implementation of digital technologies requires increased participation from workers. This can be achieved by offering welfare services, which are likely to impact the quality of the job. (Berg *et al.* 2022; Lévesque and Stephan 2020). Thus, digital methods potentially concur with green technologies in triggering skills sorting

[9] We use the command psmatch2 in Stata 15. The results obtained with other PSM procedures (i.e., *nearest neighbour matching without replacement*) do not differ significantly and are available upon request. We also impose a common support condition where the rule is dropping treatment observations whose *propensity score* is higher than the maximum or less than the minimum *propensity score* of the controls.
[10] Since we performed the logit estimation for the pooled sample and our weights are time-invariant, all the diff-in-diff with PSM regressions rely on the pooled OLS estimator. It is possible to observe missing weights for those observations not used for matching. This was the case for many control firms in our sample. For this reason, the number of observations decreases substantially.

strategies based on improving the welfare of firms and workplaces, as discussed in the background section. Controlling this factor is crucial to obtaining an unbiased coefficient for the green investments, our variable of interest. From table 2, we have, therefore, the first preliminary sign that our conjecture H1 is confirmed. In other words, environment-friendly behaviour across businesses seems to be associated with changes in management practices, including those related to firm welfare schemes.

Table 2. Firm provided welfare services (FW) and green investments as a binary variable (linear probability model)

	OLS	**Diff-in-diff**	**Diff-in-diff**
	[1]	**[2]**	**[3]**
Green technologies	0.030*** [0.005]		
Green technologies*2021		0.028*** [0.010]	0.033** [0.014]
Green technologies*2018			0,001 [0.013]
Year 2021		0.011** [0.005]	-0.004 [0.007]
Year 2018			-0.015** [0.006]
Digital technologies	0.040*** [0.007	0.017* [0.010]	0.023** [0.011]
ln(sales per employee)	0.002 [0.002]	-0.003 [0.003]	0.001 [0.003]
Employers' membership	0.012*** [0.003]	0.003 [0.007]	0.007 [0.008]
Tax PRP Reform	0.083*** [0.013]	0.030 [0.021]	0.018 [0.017]
Other controls	Yes	Yes	Yes
Constant	-0.033 [0.039]	0.094 [0.123]	0.037 [0.142]
N of Obs	17013	13576	11429
N of firms	17013	6788	4188
R2	0.087	0.249	0.234

Note: other controls include management individual characteristics by education and gender, family ownership; workforce composition by professional status, gender, and contractual arrangements, firms' characteristics such as the share of sales from international markets, product innovation, process innovations (log of)2-digit sector average financial aids Covid-19, public procurement, firms age (in years) (log of) the number of employees. All regressions include fixed effects for the NUTS 2 regions and 13 NACE sectors (OECD classification). Robust standard errors – clustered at the firm level – in parentheses. Statistical significance: *** at 1%, ** at 5% and * at 10%.
Source: Authors' elaborations on RIL 2021-2018-2015 data

The probability of introducing welfare services is also proportional to the intensity of investments in green technologies, as table 3 shows. In the panel data specifications (table 3, columns 2 and 3), one log point increase in expenditure in green technologies raises the probability of FW by 0.4 p.p. If we consider the large variability of green investments per capita in our sample, we also observe that an

increase of one standard deviation of these investments[11] boosts the FW probability by 3 p.p., that is, an increase very close to 3.3 p.p., the result we obtain for the specification with the binary regressor in table 2. The specification in which we use the expenditure intensity also passes the common trend test (table 3, column 3), as between 2015 and 2018 the probability of introducing welfare services in green firms did not perceptibly change compared to control firms.

Table 3. Firm-provided welfare services (FW) and per capita green investments (linear probability model)

	OLS	Diff-in-diff	Diff-in-diff
	[1]	[2]	[3]
Ln(green expenditures pc)	0.007***		
	[0.001]		
Ln(green expenditures pc)*2021		0.004*	0.004**
		[0.002]	[0.001]
Ln(green expenditures pc)*2018			-0.001
			[0.001]
Year 2021		0.016***	0.002
		[0.005]	[0.006]
Year 2018			-0.014**
			[0.004]
Digital technologies	0.042***	0.018*	0.025**
	[0.007]	[0.010]	[0.005]
ln(sales per employee)	0.002	-0.003	0.001
	[0.002]	[0.003]	[0.001]
Employers' membership	0.012***	0.003	0.007
	[0.003]	[0.007]	[0.009]
Tax PRP Reform	0.082***	0.030	0.020
	[0.013]	[0.021]	[0.020]
Other controls	Yes	Yes	Yes
Constant	-0.028	0.082	0.026
	[0.039]	[0.123]	[0.136]
N of Obs.	17013	13576	11429
N of firms	17013	6788	4188
R2	0.088	0.248	0.234

Note: other controls include management individual characteristics by education and gender, family ownership; workforce composition by professional status, gender, and contractual arrangements, firms' characteristics such as the share of sales from international markets, product innovation, process innovations (log of)2-digit sector average financial aids Covid-19, public procurement, firms age (in years) (log of) the number of employees. All regressions include fixed effects for the NUTS 2 regions and 13 NACE sectors (OECD classification). Robust standard errors – clustered at the firm level – in parentheses. Statistical significance: *** at 1%, ** at 5% and * at 10%.
Source: Authors' elaborations on RIL 2021-2018-2015 data

4.2 Robustness checks: diff-in-diff with propensity score matching (PSM)

As described in section 4, using a diff-in-diff with panel data (fixed effects) specification may not be sufficient to address the self-selection bias if there are systematic differences in company, managerial,

[11] The standard deviation of green investments per capita is 7.48 log points, i.e., 1,773 euros per capita, in the 3-year panel data sample, see table 1.

and employee characteristics between firms that adopt green investments and those that do not. For example, if innovation, new investments in digital technologies, and tertiary education of managers are characteristics highly correlated with both introducing green technologies and welfare services, the estimated coefficient for green technologies may still be biased. Through the PSM preliminary analysis, we select companies without green technologies with characteristics very similar to the green firms.

Even though the trimming required by the PSM procedure is severe and the observations retained in the econometric estimations shown in table 4 are less than half those used in the previous models, the results we obtained are still highly significant and in line with the previous ones. It is important to mention that when the PSM technique is combined with the diff-in-diff and common trend test in the 3-year panel data model (table 4, column 3), we obtain that the introduction of green technologies increased the probability of providing welfare services by 7.9 percentage points and with a significance level of 1.

Table 4. Firm-provided welfare services (FW) and green investments as a binary variable. PSM robustness check (linear probability model)

	OLS	**Diff-in-diff**	**Diff-in-diff**
	[1]	**[2]**	**[3]**
Green technologies	0.028***		
	[0.009]		
Green technologies*2021		0.041**	0.079***
		[0.020]	[0.029]
Green technologies*2018			0.038
			[0.026]
Year 2021		-0.001	-0.036
		[0.019]	[0.023]
Year 2018			-0.044*
			[0.024]
Digital technologies	0.055***	0.016	0.032*
	[0.012]	[0.017]	[0.019]
ln(sales per employee)	-0.001	-0.004	-0.003
	[0.004]	[0.005]	[0.005]
Employers' membership	0.009	0.003	0.000
	[0.009]	[0.018]	[0.020]
Tax PRP Reform	0.070***	0.005	-0.011
	[0.019]	[0.034]	[0.028]
Other controls	Yes	Yes	Yes
Constant	-0.014	0.172	0.342
	[0.095]	[0.278]	[0.435]
N of firms	7205	2515	1819
R2	0.111	0.272	0.279

Note: other controls include management individual characteristics by education and gender, family ownership; workforce composition by professional status, gender, and contractual arrangements, firms' characteristics such as the share of sales from international markets, product innovation, process innovations (log of)2-digit sector average financial aids Covid-19, public procurement, firms age (in years) (log of) the number of employees. All regressions include fixed effects for the NUTS 2 regions and 13 NACE sectors (OECD classification). Robust standard errors – clustered at the firm level – in parentheses. Statistical significance: *** at 1%, ** at 5% and * at 10%.
Source: Authors' elaborations on RIL 2021-2018-2015 data

After selecting companies that did not introduce green investments through PSM, a one log point increase in expenditure on green technologies raises the probability of FW by 0.6 percentage points (table 5, column 3). By extending the same rationale already used in table 3, it means that one standard deviation increase boosts the probability of implementing FW by 4.49 p.p.

Table 5. Firm-provided welfare services (FW) and per capita green investments. PSM robustness check (linear probability model)

	OLS	Diff-in-diff	Diff-in-diff
	[1]	[2]	[3]
Ln(green expenditures pc)	0.006***		
	[0.001]		
Ln(green expenditures pc)*2021		0.002	0.006*
		[0.002]	[0.003]
Ln(green expenditures pc)*2018			0.001
			[0.003]
Year 2021		0.024**	0.007
		[0.011]	[0.016]
Year 2018			-0.021
			[0.015]
Digital technologies	0.055***	0.019	0.033*
	[0.012]	[0.017]	[0.019]
ln(sales per employee)	-0.002	-0.004	-0.003
	[0.004]	[0.005]	[0.005]
Employers' membership	0.008	0.003	-0.001
	[0.009]	[0.018]	[0.020]
Tax PRP Reform	0.069***	0.006	-0.013
	[0.019]	[0.034]	[0.028]
Other controls	Yes	Yes	Yes
Constant	0.005	0.185	0.361
	[0.095]	[0.280]	[0.444]
N of firms	7205	2515	1819
R2	0.113	0.271	0.277

Note: other controls include management individual characteristics by education and gender, family ownership; workforce composition by professional status, gender, and contractual arrangements, firms' characteristics such as the share of sales from international markets, product innovation, process innovations (log of)2-digit sector average financial aids Covid-19, public procurement, firms age (in years) (log of) number of employees. All regressions include fixed effects for the NUTS 2 regions and 13 NACE sectors (OECD classification). Robust standard errors – clustered at the firm level – in parentheses. Statistical significance: *** at 1%, ** at 5% and * at 10%.
Source: Authors' elaborations on RIL 2021-2018-2015 data

4.3 The role of different welfare schemes

Among the broad variety of FW schemes, pension welfare services represent one of the most important policy areas that has grown in recent years in several EU countries (Natali and Pavolini 2018). For the Italian case study, it is also relevant to underline the welfare state retrenchment. The 'Social Welfare and Pensions Act' of June 2011 increased the standard retirement age to 66 years for all in 2014 and further raised it to 67 (2021) and 68 (2028) years (Natali and Stamati 2013). In this context, for firms involved in environmental transition processes, welfare pension schemes may be an efficient strategy to contain social risks perceived by their employees and a management strategy to

encourage long-term relations (see Hypothesis 2 above). This strategy may mitigate the adverse impacts on firm productivity of the ageing workforce (Croce *et al.* 2019).
Our results reported in table 6 confirm our conjectures. Pension funds, in addition to fringe benefits, are the significant components of FW offered by Italian firms.

Table 6. Typologies of firm-provided welfare services (FW) and green investments (linear probability model)

	OLS	**Diff-in-diff (t=2)**	**Diff-in-diff (t=3)**
	[1]	**[2]**	**[3]**
		Panel A: child care expenditures	
green technologies	0.001		
	[0.001]		
green technologies*2021		-0.013***	-0.007
		[0.004]	[0.005]
green technologies*2018			0.005
			[0.005]
		Panel B: health care expenditures	
green technologies	0.003		
	[0.002]		
green technologies*2021		-0.001	-0.008
		[0.004]	[0.007]
green technologies*2018			-0.009
			[0.007]
		Panel C: current family expenditures	
green technologies	0.003		
	[0.002]		
green technologies*2021		0.009**	0.003
		[0.004]	[0.005]
green technologies*2018			-0.001
			[0.005]
		Panel D: Pension plans	
green technologies	0.005*		
	[0.003]		
green technologies*2021		0.017***	0.016**
		[0.005]	[0.007]
green technologies*2018			-0.002
			[0.006]
		Panel E: others (fringe benefits)	
green technologies	0.016***		
	[0.004]		
green technologies2021		0.009	0.025***
		[0.007]	[0.009]
green technologies2018			0.009
			[0.008]
N of Obs	16942	13510	11409
N of firms		6755	4185

Note: other controls include management individual characteristics by education and gender, family ownership; workforce composition by professional status, gender, and contractual arrangements, firms' characteristics such as the share of sales from international markets, product innovation, process innovations (log of)2-digit sector average financial aids Covid-19, public procurement, firms age (in years) (logs of) number of employees. All regressions include fixed effects for the nuts 2 regions and 13 NACE sectors (OECD classification). Robust standard errors – clustered at the firm level – in parentheses. Statistical significance: *** at 1%, ** at 5% and * at 10%.
Source: Authors' elaborations on RIL 2021-2018-2015 data

5. Conclusions

Both the adoption of green technologies and the intensity of their investments increase the probability of introducing voluntary firm-provided welfare services out of the bargaining setting.

One conclusive explanation for the main result of our analysis is that the adoption of occupational welfare analysed may positively influence the firm's ability to attract and retain highly skilled employees endowed with general skills in cleaner technologies. These concerns may be more relevant for those industries and occupations where the transferable skills cannot be easily reallocated from brown to green jobs (Vona *et al.* 2018). Hence in green firms, occupational welfare may reveal a concrete measure to conjugate corporate social responsibility towards employees and firm strategies to implement climate-friendly technologies.

One key message for the success of the green transition is the need to implement significant changes in workers' knowledge and skills that are complementary to green investments (Vona *et al.* 2018; OECD 2023). The same green fiscal incentive programs are more effective in activating green jobs in contexts featuring higher green skills (Tyros *et al.* 2023).

However, some critical concerns are core arguments of the literature on welfare on industrial relations and its framing of competing interests of employers and employees (Heery 2016; Gasparri 2021).

The first observation is related to inequality, based on factors such as company size and business sector that influence the adoption of welfare services. Thus, the tax-exempt benefits are limited to those workplaces adopting welfare schemes, such as medium and large firms, while these schemes impose a financial burden on the public budget on all taxpayers (Iudicone 2016).

A second remark is that firm welfare may be set to prompt cooperation and a less confrontational climate at the company level, but a side effect may be the cost of dismantling the universalistic welfare system. Thus, the diffusion of FW schemes may be recorded in the context of retrenchment of state welfare benefits.

Far from offering definitive conclusions on these issues, we limit to suggest the need to explore this line of research further, strictly focusing on the potential impact of firm welfare also as a substitute for collective agreements (usually mediated by workers' representatives) and thus a threat that may reduce workers' bargaining power. Furthermore, a related observation is that FW benefits might contribute to increasing the dualization of the labour market, offering "overprotection for old age at the expense of other risks such as youth unemployment", thus increasing "inequalities between insiders and outsiders and between geographical areas (Gasparri 2021, 243). FW schemes provide new welfare coverage to employees who work on open-ended contracts but do not offer protection to unemployed or workers with temporary contracts and differ greatly across sectors, as evident in the Italian case, where FW provisions are limited and not particularly generous in some industries. Hence, the diffusion of welfare schemes offered at the firm level calls to the forefront the solution of structural problems to mitigate serious concerns, such as an increasing dualization in the coverage of social risks between sectors and types of employment.

Given the important role played by the characteristics of firm in decisions relating to the welfare services offered to employees, we find it of great relevance to analyse if and how our results change according to the size of firm. In this sense, the results reported in appendix represent the basis for possible future work.

Appendix

Table A.1 Linear estimates. Dep var: firm provided welfare services

	Small firms			No small firms		
	OLS	**Diff-in-diff**	**Diff-in-diff**	**OLS**	**Diff-in-diff**	**Diff-in-diff**
	[1]	**[2]**	**[3]**	**[1]**	**[2]**	**[3]**
Green technologies	0.025***			0.040***		
	[0.006]			[0.010]		
Green technologies*2021		0.036***	0.035*		0.007	0.035
		[0.013]	[0.019]		[0.016]	[0.023]
Green technologies*2018			-0.005		0.025**	0.026
			[0.017]		[0.011]	[0.021]
Year 2021		0.004	-0.008			0.000
		[0.005]	[0.008]			[0.015]
Year 2018			-0.013*			-0.024*
			[0.007]			[0.013]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.02	-0.062	-0.069	-0.078	0.184	0.063
	[0.039]	[0.150]	[0.174]	[0.089]	[0.232]	[0.259]
Obs	12151	7522	6497	4862	5292	4478
R2	0.029	0.127	0.107	0.118	0.293	0.291

Note: other controls include management individual characteristics by education and gender, family ownership; workforce composition by professional status, gender, and contractual arrangements, firms' characteristics such as the share of sales from international markets, product innovation, process innovations (log of)2-digit sector average financial aids Covid-19, public procurement, firms age (in years) (log of) the number of employees. All regressions include fixed effects for the NUTS 2 regions and 13 NACE sectors (OCSE classification). Robust standard errors – clustered at the firm level – in parentheses. Statistical significance: *** at 1%, ** at 5% and * at 10%.
Source: Authors' elaborations on RIL 2021-2018-2015 data

Table A.2 Linear estimates. Dep var: firm provided welfare services

	Small firms			No small firms		
	OLS	**Diff-in-diff**	**Diff-in-diff**	**OLS**	**Diff-in-diff**	**Diff-in-diff**
	[1]	**[2]**	**[3]**	**[1]**	**[2]**	**[3]**
Ln(green expenditures pc)	0.006***			0.008***		
	[0.001]			[0.002]		
Ln(green expenditures pc)*2021		0.006*	0.006*		0.000	0.002
		[0.003]	[0.004]		[0.003]	[0.004]
Ln(green expenditures pc)*2018			0.001		0.027***	0.000
			[0.003]		[0.010]	[0.004]
Year 2021		0.008	-0.004			0.011
		[0.005]	[0.008]			[0.014]
Year 2018			-0.015**			-0.014
			[0.007]			[0.012]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.024	-0.066	-0.068	-0.072	0.176	0.049
	[0.039]	[0.150]	[0.175]	[0.089]	[0.232]	[0.259]
Obs	12151	7522	6497	4862	5292	4478
R2	0.03	0.126	0.106	0.119	0.293	0.29

Note: other controls include management individual characteristics by education and gender, family ownership; workforce composition by professional status, gender, and contractual arrangements, firms' characteristics such as the share of sales from international markets, product innovation, process innovations (log of)2-digit sector average financial aids Covid-19, public procurement, firms age (in years) (log of) the number of employees. All regressions include fixed effects for the NUTS 2 regions and 13 NACE sectors (OECD classification). Robust standard errors – clustered at the firm level – in parentheses. Statistical significance: *** at 1%, ** at 5% and * at 10%.
Source: Authors' elaborations on RIL 2021-2018-2015 data

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INAPP
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