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Internship contracts in Spain: a stepping stone or a hurdle towards job stability?

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Abstract

Internship contracts (ICs) were designed as a stepping stone for educated young workers to develop their professional skills upon graduation. Such contracts incentivise employment creation, as firms benefit from lower wages and tax reductions, but at the same time, firms are expected to develop training programmes to improve the professional skills of youth. This paper assesses whether such subsidies help improve the labour market trajectories of the beneficiaries of ICs. To do so, we focus on entrants into the labour market and compare those who start through an IC with a matched control group whose first employment episode is through a nonsubsidised temporary contract. We look at short, medium and long-term effects on job stability and wages. We find that in the short run, labour market performance, in terms of wages and job stability, is poorer for the beneficiaries of the IC, unless they leave the firm right after the IC experience. In the medium and long run, however, the negative impact on wages is mitigated, and its impact on job stability is positive. A possible interpretation is that firms, in the short run, use ICs to lower hiring costs, but beneficiaries send a positive signal to the market that is rewarded in the medium and long terms.

Keywords Internship contract · Active labour market policies · Evaluation · Subsidies · Employment · Youth

JEL Classification D04 · J08 · J13

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1 Introduction

Spain faces two structural weaknesses in the labour market that have been hindering its proper functioning for more than three decades: abnormally high unemployment rates, which reach 25% in times of recession and do not fall below 8% even in strongly expansive times; and the so-called contractual duality, which, through the instrumentalisation of high firing costs, protects approximately 70% of the working population from unemployment—those who have a permanent/indefinite contract. In contrast, the rest of the working population is forced to hold temporary contracts, of increasingly shorter duration, with frequent entries and exits from unemployment, which leads to high labour instability. This unstable situation mainly affects young people, women and immigrants, regardless of their level of education (Dolado et al. 2000, 2002).¹

Young people in Spain are particularly affected by these two labour market problems since their unemployment rate is more than twice that of the general population,² reaching over 50% in times of recession. In addition, temporary employment among workers under 30 years of age also exceeds 50%. These anomalies have consequences not only in terms of job instability/precariousness but also affect other areas of the lives of those who suffer such instability, such as a delay in emancipation and, hence, in the formation of a family, which significantly affects other societal outcomes, such as population ageing. Furthermore, there is empirical evidence that this precariousness at the beginning of their working lives has negative consequences for their long-term working lives, as shown by García Pérez and Vall Castelló (2015).

Since the mid-1990s, successive governments have tried to address both problems; unfortunately, the initiatives implemented have generally not been successful. From the public authorities, the measures aimed at limiting the youth unemployment rate and mitigating their labour instability include (1) facilitating their access to employment and (2) promoting or encouraging stable hiring. These measures are part of the so-called active labour market policies (ALMP), and in Spain, both access to employment and incentives for stable hiring have been mainly addressed by means of subsidies, either for hiring in general or for stable hiring.³

The internship contract (IC), which is the subject of this study, is an example of an ALMP whose purpose is to promote employment insertion as well as theoretical and practical training for young people who have attained secondary or higher education to reach stable and decent jobs. The internship contract law itself establishes that “the fundamental objective of this instrument is to increase labour stability for youth in the

¹ Contractual duality and its negative consequences in the labour market have been extensively addressed in Spain by, among others, Güell and Petrongolo (2007), García Perez and Rebollo Sanz (2009a, b), García Pérez and Muñoz-Bullón (2011), Rebollo (2011), and García Perez et al. (2018). Additionally, other effects of the contractual duality in Spain have also been addressed on household wealth (by Barceló and Villanueva 2016) and on the educational attainment on children (Ruiz-Valenzuela 2020).

² The youth unemployment rate is about twice that of the total population in most European countries, but the problem in Spain is greater because the unemployment rate of the general population is abnormally high compared to neighbouring countries.

³ Kluve et al. (2007), Card et al. (2010), Kluve (2010) and more recently, Card et al. (2018) address international comparisons of the types of Active Employment Policies and show that Spain is the country where hiring subsidies have reached the highest proportion of all Active Employment Policies, reaching 40% of the whole expenditure.

chosen area of study by developing professional internships related to the level and field of study, as well as to provide incentives to companies to retain young people in their companies once the internship period is over”. These contracts are subsidised, as will be detailed in the following section, first to encourage the hiring of young people and second to help companies pay for the monitoring of the internship. The specific question we seek to address in this study is whether the internship contract instrument has been an effective ALMP to achieve more stable employment trajectories for its beneficiaries.

Beyond the objective of achieving stable employment trajectories, an interesting potential effect of the internship contract, given that it is subsidised, is to facilitate the hiring of young people who would otherwise be unemployed. The subsidy lowers labour costs and, therefore, in principle, should encourage job creation. This is undoubtedly an interesting question, but it is not addressed in this paper due to a lack of adequate information. In particular, we would need individualised and detailed information on the trajectories of unemployed young people, who would be the comparison group; unfortunately, this information is not available. Consequently, we compare the employment trajectories of young people who begin their employment stage through this type of contract, which is subsidised, with similar young people whose entry is also through a temporary contract but not subsidised. We try to address whether the expenditure incurred in subsidising temporary hiring through an IC has any subsequent impact on the trajectories of those who benefit from it compared to those who do not. Unfortunately, the paper cannot address the analysis of whether the IC promotes the hiring of otherwise unemployed youth, a question that is undoubtedly also relevant.⁴

To our knowledge, no one has attempted to assess the analysis of IC to date. Indeed, the empirical literature is very scarce regarding the study of the impact of an internship contract versus an unsubsidised temporary contract. The studies closest to ours address the impact of a paid versus an unpaid internship contract. In particular, O’Higgins and Pinedo (2018), through a survey on European data, analyse the disparities between a paid versus an unpaid internship contract and find positive differences for the subsequent employment path of the paid internship contract. This result seems to be consistent with previous studies, such as Saniter and Siedler (2014), which attempt to assess the impact of paid versus unpaid internship contracts for Germany through the methodology of causal inference. Kopečná (2016) evaluates an internship programme implemented in the Czech Republic as part of a Youth Guarantee programme and finds a positive effect on the income of those who enjoyed it 1 year after its use. On empirical evidence in Spain, the closest study is Jansen and Troncoso-Ponce (2018), who evaluate the impact of apprenticeship contracts, which, unlike internship contracts, are directed to young people whose educational stage has not finished. Jansen and Troncoso-Ponce (2018) find that apprenticeship contracts do not reduce labour precariousness compared to the experience of young people whose labour entry is through unsubsidised temporary contracts.

Our study focuses on the group of new entrants into the labour market without any previous professional experience, as previous experience would undoubtedly affect the

⁴ Indeed, this interesting question is addressed in De la Rica et al. (2022) for a similar subsidized contract in the Basque Country. This paper shows that this subsidy helps unemployed young Basque workers to get into the labour market.

subsequent labour market trajectory. It is also for this group of new entrants that this instrument was originally created since its objective was to offer a dignified transition from the educational stage to the labour stage. The evidence shows, as seen later, that many young people start an internship contract after several years of previous work experience. However, we focus on the group of new entrants to the labour market, as it helps to better identify the impact of this instrument on the subsequent labour market trajectory.

The analysis is approached from two temporal perspectives. The first and most relevant is the short-term context, i.e., after the end of the first contract (either an internship or a nonsubsidised temporary contract). We compare young entrants into the labour market who held an internship contract as their first labour market experience (treated) with a control group of potential IC signers but whose first employment episode is through a nonsubsidised temporary contract. For this time scope, we measure the impact of the internship contract on the following employment outcomes: (1) the probability of firm retention after the end of the contract and (2) the probability of signing a stable contract after the end of the contract, whether in the same company (stayer) or in another company (mover). Finally, we examine whether there are wage differences between the two groups after the end of the first contract, again differentiating between stayers and movers. Second, we analyse possible differences between both groups 2 and 5 years after the finalisation of the first contract. We denote these two points of time as medium and long run. For this time frame, we contrast possible differences between both groups in (1) the probability of having a job, (2) the probability of having a stable contract, and (3) wage differentials.

To create a control group, we use the exact matching methodology, i.e., among the potential signers, we select a specific group of individuals identical to the treated group on main observable characteristics and pair each treated individual to one nontreated young worker with the same characteristics. For the sake of brevity, we will refer to these control units as twins. The comparison between the results with and without the exact matching technique allows us to capture the importance of the applied methodology in reducing the heterogeneity between treated and control individuals. As a result, we get as close as we can to identifying the causal effect of the subsidised contracts, although we are aware of the possibility of further unconfounded differences that might be behind the results.

The presentation of the results is separated by the short-, medium- and long-term effects. In the short run, the internship contract leads to greater subsequent job instability of the IC beneficiaries compared with their twins, unless the IC beneficiaries leave for another company. In that case, it does appear that IC beneficiaries are ahead of their counterparts in terms of employment stability, understood as the holding of permanent contracts. With respect to wages, the IC has a negative impact in their second employment episode, either for those who stay in the company (stayers) or for those who move to another company (leavers). However, in the medium and long run, the main disadvantages found in the short-term vanish. In particular, the negative impact found earlier on wages disappears, while the employment stability of the beneficiaries of the internship contract is greater. One interpretation is that, although in the short-run firms use these contracts to lower hiring costs, the beneficiaries might send a positive signal to the market that benefits them in the future.

In terms of methodology, the exact matching technique clearly reduces the heterogeneity between the treated and control individuals. While the sign of the impacts is generally the same with and without the matching technique, the magnitude of the effect differs greatly. These differences corroborate the need to use an appropriate methodology to achieve robust results.

The paper is structured as follows. Section 2 describes the legislative aspects of the internship contract. Section 3 explains the dataset and develops a descriptive analysis. Section 4 describes the empirical strategy used in the analysis, and the results are presented. The last section provides some final conclusions.

2 Internship contract: legislative background

Both the internship and the apprenticeship contracts were established in Spain in 1998 as part of Royal Decree 488/98.⁵ However, the legislation was later modified on several occasions, most fundamentally with the Organic Law 5/2002.⁶ The following major changes were enacted with the reform of 2015.⁷ The most recent reform took place in 2018, when the reductions in social security contributions for internship contracts were eliminated.^{8, 9} In this section, we will delve into the details of the reform of the Workers' Statute of 2015 with respect to the internship contract and will outline the legal changes in the IC that have occurred since that time.

The aim of the IC is to enable young people who have finished their university or professional training education to obtain the professional experience they need to start their professional careers. This professional experience must be accompanied by investments in training by the hiring firm. More precisely, the employer is, in principle, obliged to provide the worker with training and effective work appropriate to the purpose of the contract. In addition, employers must supervise the development of the training process.

The eligibility restrictions depend on workers' education level and age: to qualify, the worker must have completed a bachelor's degree or a vocational training degree in the previous 5 years or be under the age of 30. The IC has a minimum duration of 6 months and a maximum duration of 2 years. Furthermore, the law permits up to two extensions of the IC, which should last at least six months each within this period of 2 years. The position can be either full or part time. After a worker has been employed under an IC, she or he cannot be hired under an IC at the same or at a different company for a total period longer than 2 years.

⁵ Royal Decree 488/98, of March 27, 1998, implementing Article 11 of the Workers' Statute regarding training contracts.

⁶ Organic Law on Qualifications and Vocational Training (Organic Law 5/2002, of June 19).

⁷ Article 11.1 of Royal Legislative Decree 2/2015 of October 23, which approves the revised text of the Workers' Statute. The main intermediate reforms are Royal Decree 170/2004, of January 30 and Law 43/2006, of December 29.

⁸ Royal Decree-Law 28/2018, of December 28.

⁹ The analysis is developed until 2017. Therefore, this reform is not considered. This reform undoubtedly represents a change from the point of view of the cost–benefit analysis of this type of subsidy, by reducing its benefits. Precisely for this reason, we do not take into account the period after this reform.

If a worker has reached the 2-year maximum duration of the internship contract and the company does not notify the worker that the employment relationship is being terminated, it automatically turns into an indefinite contractual relationship. Thus, if the company wants to terminate the employment relationship or if it wants to turn the contract into a temporary one, the employer must notify the employee of its intent when the contract expires. The worker has no right to compensation upon termination of the contract.¹⁰ The incentives for firms to use this type of contract instead of any other type of temporary contract include reductions in wages (for both the firm and the worker) and reductions in social security contributions, although the latter was eliminated in 2018. The wage reductions can be as high as 40% of the ordinary wage during the first year and 25% during the second year, relative to the salary established in the collective agreement for a worker who performs the same or an equivalent job. The intent of this wage reduction is to provide the employer with an incentive to invest in specific human capital, the cost of which should, according to standard economic theory, be shared between the employee and the employer. Finally, there are bonuses for the conversion to an indefinite contract of €500 per year for males and €700 for females for the first 3 years after the end of the IC.

Another motivation for firms to undertake this type of contract, in addition to wage reduction, concerns an increase in workforce flexibility; according to Spanish labour law, the maximum period a worker can be employed under a temporary contract at a given firm is 2 years, but this does not include the duration of the IC. This means that after a young worker has been employed at a firm for 2 years under an IC, she or he can be hired for two more years under other temporary contracts. Thus, employing workers under an IC can enhance a firm's workforce flexibility if the firm does not want to increase the number of permanent contracts.

The main disincentive for firms to hire young workers under ICs is that the duration of the temporary contract cannot be less than six months. For context, in Spain, less than 20% of young individuals enter the labour market with a contract of such duration (De la Rica and Gorjón 2021). It is thus a common practise in Spain for younger workers to sign several consecutive temporary contracts that last less than six months each, rather than signing one longer temporary or indefinite contract.

¹⁰ However, if the contract has a duration of more than one year, a 15 days' advance notification to the other party is compulsory in the event of termination. There is no such obligation for internship contracts with a duration of one year or less. Failure to give this notice will result in an indemnity equivalent to the corresponding salary. This obligation applies to both the employer and the employee, i.e., if the employee does not wish to renew the contract, she or he must notify the employer and give notice if the contract is for more than one year.

3 Dataset and descriptive analysis

3.1 Dataset

3.1.1 Continuous Sample of Work Histories

The dataset we use is called the Continuous Sample of Work Histories (CSWH). This longitudinal panel contains the complete labour market histories of a representative 4% sample of the Spanish population affiliated with social security (either working or as unemployed as long as they receive contributory benefits). We use the 2017 wave (and thus refers to the period prior to the last legislative reform in 2018), which is representative of all individuals who have a relationship with social security in that year, either in their status as employed or unemployed (as long as they receive unemployment benefits). The longitudinal database is very rich, as it includes information on each individual's employment and unemployment episode from their first contract through 2017.¹¹ Information on the individuals' demographic characteristics, such as gender, age, residence and nationality, are also included. Moreover, the dataset includes information on labour market variables related to the individuals' complete working lives, such as sectors of activity and the size of the hiring firms. Of particular interest for our purposes is that the database contains detailed information on the types and durations of contracts that each person included in the sample has had in each of his or her work episodes.^{12, 13}

3.1.2 Construction of the dataset

To develop the analysis, we focus on all individuals who started working between 2002 (the first main legislative reform) and 2017 (prior to the last legislative reform). Given that the IC is a contract directed at younger individuals, we drop from the dataset all individuals who are older than 30 years old when they start working, mainly because they are not potential beneficiaries of the internship contract.¹⁴ For the same reason, we restrict our analysis to individuals with higher educational levels.¹⁵ Since we want to measure the impact of the IC on the workers' future work careers, individuals who

¹¹ As mentioned, this dataset is representative of all workers who are registered in Social Security in 2017, either working or unemployed (if they receive unemployment benefits). For these workers, we can construct their whole working history, whether they work or not and regardless of whether they receive benefits or not. However, in this analysis, individuals with a work experience prior to 2017 are not included if in that year they do not appear in social security as workers or as unemployed persons receiving unemployment benefits.

¹² For a detailed description of this dataset, see Durán (2007) and García-Perez (2008).

¹³ Unfortunately, this dataset only includes Spanish Social Security records. For this reason, impact of the IC on migration cannot be studied.

¹⁴ Information on graduation date is not available, so we cannot include in the analysis those potential signers older than 30 who finished their studies in the last five years.

¹⁵ Unfortunately, the educational level information in the CSWH is obtained from the census. This means that, only if the individuals changed their residence in the last ten years, this information is refreshed. In any other case, educational attainment refers to 2011, the last update. This implies that there is a selection bias in our dataset; however, this bias is not different for those who signed the IC and those who do not.

had signed only one contract are removed from the dataset. Individuals who are self-employed at any point are also dropped from our dataset. Consequently, we end up with a longitudinal dataset of a representative sample of young people with at least two employment episodes who are potential users of the IC over the 15-year study period (from 2002 to 2017).

3.1.3 Definition of treatment and control groups

To evaluate the effectiveness of the internship contract, we compare the subsequent trajectories of the IC signers (treatment group) to those of the workers with similar educational backgrounds and ages, i.e., potential IC signers who never sign an IC (control group). This section defines these two interest groups used to carry out the analysis.

The treatment group consists of young workers who sign an internship contract in the studied period and meet the requirements specified above. Since the aim of the IC is to enable the worker to obtain professional practise appropriate to her or his completed level of vocational training or university education, they are expected to seek employment under an IC immediately following graduation. However, the dataset does not provide information on the workers' date of graduation. In addition, as will be shown later, many young workers sign an IC after having been previously employed, usually under another type of temporary contract. Unfortunately, we are unable to distinguish whether the previous experience was carried out before or after finishing their studies. For this reason, we distinguish between those individuals who start their labour market career with an IC (entrants) and those who sign an IC after having previous work experience (nonentrants). In this paper, we focus only on entrants and compare them to entrants who start their labour market career with a regular nonsubsidised temporary contract.¹⁶ Therefore, our *treatment group includes all young individuals whose first contract is an IC*. They account for 4463 individuals in our dataset, for whom we observe their complete job trajectories up to 2017.¹⁷

To compare the job trajectories of this treatment group, we selected a control group with potential IC signers (who fulfil educational and age requisites) but whose first work experience was under a nonsubsidised temporary contract and who never signed an IC in their subsequent labour market experience.¹⁸ Specifically, we restrict the minimum duration of the first temporary contract to three months and do not limit its maximum duration. We require at least a temporary contract of three months to ensure greater comparability between the treatment and control groups. We end up with a control group of 17,487 individuals.

¹⁶ As proven by De la Rica and Gorjón (2021), having worked before an IC experience does not affect the results, since when comparing IC signers with and without previous work experience the results are not statistically significant. Therefore, for simplicity of exposition, this paper focuses only on entrants into the labour market.

¹⁷ To reduce the unobserved heterogeneity, we restrict our analysis to those individuals who signed a single IC.

¹⁸ All types of temporary contracts are included except the apprenticeship contracts and, of course, the internship contracts. In addition, some of the temporary contracts in Spain can be open-ended; these are also included.

It could be argued that entrants hired under a nonsubsidised temporary contract (control group) might have higher expected productivity than those hired under the IC, which is subsidised. We address this potential selection bias by matching the treated and control groups in the most relevant observable characteristics, in addition to the required educational and age requisites. We do so by pairing each treated worker with a twin among the set of control individuals—a detailed explanation of the matching procedure is provided in the empirical strategy section. It could also be argued that, given that the minimum length of the IC is six months, the control group should be composed of workers whose first temporary contract is also six months. However, there are two reasons for not imposing this condition: first, less than 20% of young workers with a high level of education entered their first job with a temporary contract of more than six months, which could lead us to suspect a high selection bias when using this group as a control group; and second, as will be shown in the next subsection, one out of four ICs does not reach its minimum six-month duration. At any rate, although not displayed in this paper for brevity of exposition, the results are robust to this change in the duration of the contract of the control group, as shown in De la Rica and Gorjón (2021).

3.2 Descriptive analysis

3.2.1 Initial descriptions

We now describe the use of the internship contract in Spain. Although our analysis is restricted to those individuals whose first job experience involves an IC contract, as this is naturally the group to which an IC should be devoted, it is worth offering some evidence on the different job spells of IC signers. Two facts must be stressed. The first is that between 2002 and 2017, *73% of those young workers who signed an internship contract in Spain had worked previously*. This means that the treatment group of our analysis focuses on the remaining 27%, although as shown in De la Rica and Gorjón (2021), the results found for this group can be extrapolated to the whole population of IC signers. Second, *20% of the young workers had signed several internship contracts. In addition, 10.5% had previously signed an indefinite contract, and another 10% had worked at the same company before signing the internship contract*.

Regarding the duration of the internship contracts, the database (Continuous Sample of Work Histories) includes information on the *actual* duration of each contract but not on the duration that was originally established at the time of signing it. Consequently, we are able to observe the total duration of the contract but not any potential extensions. With this information, we categorise two groups of people: (1) those who finish their contract at the expected date (which might include extensions), i.e., with a final duration of *exactly* six, 12, 18, or 24 months, and (2) those who finish their contract before the expected date (any other duration). In total, over the period 2002–2017, *almost 52% of the ICs were terminated earlier than expected*. In other words, less than half of the ICs are actually completed. In particular, 27% do not reach the minimum six-month

Table 1 Descriptives on sociodemographic characteristics

Year	2002	2002	2007	2007	2012	2012	2017	2017
Group	T	C	T	C	T	C	T	C
Gender								
Female	51.5	51.5	49.9	49.1	44.7	52.2	44.2	48.8
Male	48.5	48.5	50.1	50.9	55.3	47.8	55.8	51.2
Age								
< 20	23.1	25.0	29.9	28.1	22.3	15.8	22.8	8.0
20–24	48.1	37.8	41.7	37.0	51.5	43.3	56.1	44.8
≥ 25	28.7	37.2	28.4	34.8	26.2	40.9	21.1	47.2
Duration								
< 3 months	19.0	0.0	16.0	0.0	13.1	0.0	13.7	0.0
3–6 months	15.1	41.0	10.1	40.3	18.0	31.7	10.7	33.1
6–12 months	20.9	28.6	24.4	26.7	26.7	20.8	16.9	19.1
≥ 12 months	45.0	30.4	49.4	33.0	42.2	47.5	58.6	47.9
Contribution group								
Low	50.7	28.9	48.4	30.6	46.6	45.6	36.0	45.1
Medium	24.6	31.9	25.4	30.4	29.1	21.6	35.2	28.7
High	24.6	39.2	26.2	39.0	24.3	32.8	28.8	26.2

duration. Additionally, only 15% of IC signers reach the maximum duration allowed by law of 2 years within the firm.¹⁹

Once we have some preliminary figures of the IC, Table 1 displays the basic demographic and labour market characteristics of the treated and control groups for some example years. The first point to note is that, in the absence of the matching exercise, the two groups differ systematically on some key variables, such as age at which the contract was signed (controls are older), as well as contract duration and Social Security contribution.²⁰ Moreover, these differences in composition change over time. These significant differences corroborate the importance of using a matching strategy that facilitates the identification of the causal effect at a later stage.

3.2.2 Labour market trajectories

Next, we compare the labour market trajectories of the treatment group and two control groups: (1) one formed by all potential IC signers who enter into employment with a

¹⁹ The same figures for the group of young people who signed an IC who have previously worked are 50.5, 28.5 and 15.0%, respectively. Therefore, it can be seen that having worked before does not affect the use of the IC.

²⁰ The contribution group is a numerical code that identifies different groups of professional categories for employees, which may be related to the qualification that the employer recognizes the worker or to the worker's age.

nonsubsidised contract longer than three months, i.e., the unmatched control group, and (2) the matched control group, i.e., the so-called twins of the treated individuals.

As explained before, given that entering into an IC entails, at least theoretically, that the firm will invest in training, one would expect to observe that individuals starting their labour trajectories through an IC enjoy higher levels of job stability thereafter in the firm compared to those who enter the labour market through a nonsubsidised temporary contract longer than 3 months. For this reason, our first variable is the *staying rate*, i.e., the proportion of individuals who stay at the firm after the end of their first contract. Additionally, we look at the type of contract the individual signs after being employed under the IC (for the treatment group) or under a nonsubsidised temporary contract (for the two control groups) to determine whether the individual achieved stability in the firm (by signing an indefinite contract) or not (by signing another temporary contract or moving to unemployment). To complement this analysis and to ensure comparability, we also present the distribution of the contracts signed by those individuals who did not stay at the firm after their first contract was terminated. In addition, in the case of the treatment group, we differentiate between those who end at or before the expected date.²¹ As some of the contracts could be active by the end of 2017 (which is the last observational period), we separate them into a different category. In this context, Fig. 1 shows the dynamics of the labour trajectories of the treatment and control groups in any period between 2002 and 2017.

Starting with the treatment group, we examine the type of contracts young individuals sign after being employed under the IC. We find that, of those who stick to the expected duration of the contract—which account for 40% of the total workers under ICs—one-third change firms, and another third stay in the company. Only 23% of stayers sign an indefinite contract after being employed under the IC. However, most of these stayers (77%) continue working at the same firm with a temporary contract after finishing the IC. Turning to those individuals who change companies upon completion of the IC, we find that 27% of them sign indefinite contracts. This is four percentage points higher than the corresponding rate for stayers.

For those individuals who did not finish the IC at the expected date (approximately 52%), the vast majority (73%) change firms, whereas only 16% stay at the same firm. A remarkable conclusion to be drawn from this description is that a high percentage of young individuals move to another firm before the IC was completed, which, at least for us, is an unexpected stylised fact. Within those stayers, 18% sign an indefinite contract. On the other hand, among those individuals who move to another firm, the incidence of indefinite contracts is the highest, amounting to 29% of all those who left.

With respect to the control group, Fig. 1 shows that the proportion of individuals who stay at the firm after being employed under a standard temporary contract (of at least three months) is 30% for the nonmatched and 32% for the matched group, a share that is twice as large as the proportion for those who sign an IC that ends before expected. In addition, when looking at the type of contract, we see that the proportion of individuals who sign an indefinite contract is very similar to that for both treatment

²¹ For the control groups, information on the end date is not presented, given that the dataset does not include the expected end date, but rather the real end date.

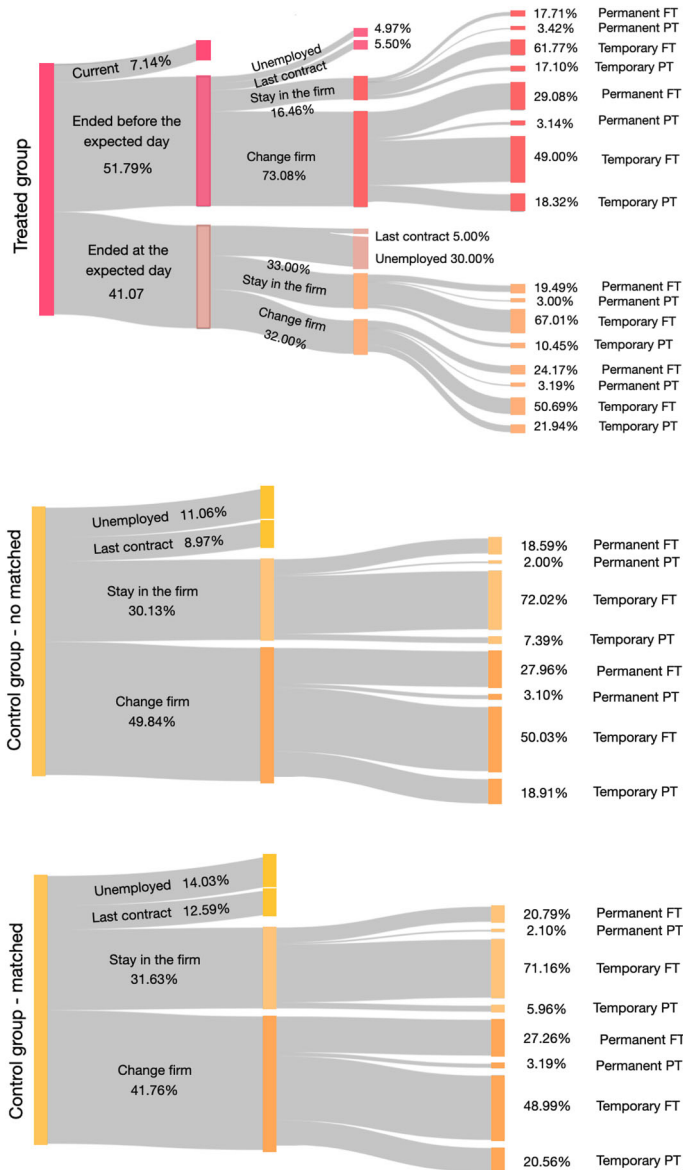


Fig. 1 Labour trajectories of the treatment and control groups

groups, regardless of whether they stay or change firms. Comparing the matched and unmatched control groups, it can be seen that the matched group moves more to unemployment and changes relatively less to another firm. In addition, stayers sign more indefinite contracts when they are twins relative to the unmatched group. These facts highlight the importance of the matching method to capture causality effects.

4 Empirical strategy

As stated in the introduction, the aim of our empirical strategy is to test the impact of a subsidised type of temporary employment, the IC, on different labour market outcomes relative to similar but nonsubsidised employment. To capture the causality of the policy, we use the *exact matching* methodology, which addresses the observed heterogeneity presented in the previous section. This methodology pairs treated and control individuals on the main variables of interest and, therefore, allows us to compare identical workers in the selected variables, avoiding potential covariate imbalance between treated and control workers (Burden et al. 2017). In particular, we match individuals by gender, age (three age groups (under 20, 20–24, and older than 24), contract duration (categorised into three groups (under 6 months, 6–12 months, more than 12 months) and three social security contribution groups (low, medium and high). Table 1 previously revealed the existence of substantial differences in these variables between the treated and control groups. These differences must be eliminated for causal identification of the impact of IC to be possible.

As a robustness check, among all the potential twins in the control group, for each treated individual, we find two twins randomly selected, and we repeat the analysis (Cunningham 2021). We denote them by Twin 1 and Twin 2.²² All estimation results will be presented for the two control groups. Additionally, to capture the effect of the matching exercise, we also present the results for the unmatched control group.

The first output we focus on is *the probability of staying at the firm after the IC has expired* to determine whether signing an IC increases the probability of staying at the firm, which is, as stated in the spirit of the IC law, one of the purposes of the measure. Obviously, this is only estimated for the short-run impact. To do so, we develop three estimations. First, we compare the probability of remaining at the same firm for young entrants into the labour market under an IC (treatment group) and for young entrants whose first employment episode involves a nonsubsidised temporary contract longer than three months (nonmatched control group). Second, we repeated the exercise, including in the control group only those twins of the treated individuals obtained in the first random selection (Twin 1). The third estimation includes as controls those twins of the second random selection (Twin 2).

The dependent variable in the first evaluation takes three different values: (1) remain at the firm, (2) move to another firm and (3) transition to unemployment (here, we include those individuals who are not observed upon completion of the IC).²³ Methodologically, we estimate a multinomial logit regression with these three different potential outcome variables. Formally, we assume a multinomial logit model in which the log-odds of each response follow the linear model:

$$\eta_{ij} = \log \frac{\pi_{ij}}{\pi_{ik}} = \alpha_j + \delta_j IC_i + x'_i \beta_j. \quad (1)$$

²² Descriptive analysis presented in Sect. 3 corresponds to Twin 1.

²³ For obvious reasons, we delete individuals whose contract is still active by the end of 2017.

The probabilities would, therefore, be:

$$\pi_{ij} = \frac{e^{\eta_{ij}}}{\sum_{k=2}^3 e^{\eta_{ik}}}; j = 1, 2, 3,$$

where j takes a value of 1 if the worker remains in the firm, a value of 2 if she or he moves to another firm and 3 if she or he goes to unemployment; k refers to the alternative choices in each case; and IC is a dummy variable that takes a value of 1 if the worker signs an IC and 0 otherwise. Finally, x includes a set of control variables related to the individuals' demographic and labour market characteristics. In particular, we use the variables used for the matching (gender, age group when the contract is signed, duration of the IC or temporary contract,²⁴ and contribution group (low, medium, or high)). Second, the size of the firm, sector of activity and regional, monthly and yearly fixed effects are also included as additional explanatory variables.²⁵

The second output addresses the impact of IC on subsequent labour market trajectories. We measure this for the short run (next labour market episode) and for the medium and long run (2 and 5 years after). To do so, we compare the type of contract signed after the IC ended (for the treatment group) with the type of contract signed after a nonsubsidised temporary contract (longer than three months) ended for the three potential control groups—Twin 1, Twin 2 and the unmatched control group. For this purpose, using a logit regression, we separately estimate the probability of signing an indefinite contract (as compared to a temporary contract). For the short-run analysis, we distinguish between those who remain at the firm (stayers) or move to another firm (movers) and exclude members of the treated and control groups who are unemployed after their first contract ends.²⁶ Therefore, $j = 1, 2$ in the previous equation, where 1 is indefinite and 2 is a temporary contract. For the medium- and long-term exercise, such a distinction between movers and stayers is not considered.

The third issue we address is the impact of IC on subsequent wage differentials. To do so, we compare wages between the treated and the control groups. To measure the impact of the IC on wages of their future employment experience (the subsequent one for the short-run analysis and 2 and 5 years after the first experience for the medium- and long-run study, respectively), we estimate an OLS wage estimation (Eq. 2). The dependent variable is the logarithm of the *monthly wage from the corresponding future employment episode*. To do so, both in the short and in the medium/long run, we restrict our analysis to individuals working full-time and with employment episodes longer than one month. This restriction implies a reduction in the sample size, which is not

²⁴ Groups for temporary contract are more disaggregated than the categories used for the matching. In particular the regression includes five categories: 3 months or less, between 3 and 6 months (included), between 6 and 12 months (included), between 12 and 24 months (not included), 24 months or more. Note that only control individuals could have a contract duration longer than 24 months.

²⁵ There is a trade-off between the number matching variables and the number of pairs. Although increasing the number of matching variables improves its precision, it decreases the number of matched workers. For this reason, this second set of variables has not been used for the matching strategy but has been included in the regression as explanatory variables.

²⁶ The random selection of the twins is developed including those who move to unemployment (otherwise, the first analysis could not have been performed). For this reason, the number of observations in the estimations varies from Twin 1 and Twin 2.

random but which we understand affects the treated and control groups in the same way. In any case, due to the group of workers on which the wage differentials are measured, the results obtained are only applicable to people with a full-time salary whose contract lasts at least one month. For the rest of the workers, the results obtained in this section on the impact of IC on wages would not be applicable.^{27,28}

As previously, in the short run, we distinguish between those who remain in the same firm and those who change firms. The vector of control variables remains the same:

$$\ln(\text{wage}) = \alpha_j + \delta_j \text{IC}_i + x_i' \beta_j a. \quad (2)$$

5 Results

This section presents the short-, medium- and long-run effects of the impact of the IC on the labour market outcomes. For conciseness, only the coefficient of the variable of interest is provided in each table, even though all estimations control for all the observable variables mentioned previously. The completed tables can be found in the annex. Marginal effects of the coefficients are presented to facilitate the interpretation of the results. All tables present the differences between the treated and (1) Twin 1—a first random match of control group; (2) Twin 2—a second random match of the control group; and (3) no-match—the before-match control group.

5.1 Short-term effects

5.1.1 Probability of staying at the firm after an IC

The results regarding the impact of employment under the internship contract on the probability of staying at the firm after the IC ends are presented in Table 2. We estimate Eq. (1), whose output can take three values, i.e., the probability of moving to another firm, staying at the same firm, or transitioning to unemployment after employment under either an IC or a nonsubsidised temporary contract.

From the methodological point of view, both Twin 1 and Twin 2 present barely identical results. However, the nonmatching methodology shows differences. While the sign of the effect is the same, the absolute value of the magnitude of the impact decreases. Therefore, the exact matching technique seems to refine the results. For these two reasons, when explaining the results, we will focus on the impact for Twin 1.

The first remarkable finding is that, all other things being equal, the probability of staying at the same firm after employment under an IC is approximately 10–11

²⁷ This selection affects slightly differently control individuals in the two random selection processes. Again, this entails a different number of observations in the estimations.

²⁸ CSWH does not register civil servant employment. This implies that, particularly in the medium and in the long run, young individuals who obtain a job in the public sector disappear from the dataset. However, there is no reason to think that the bias differently affects treated and control individuals.

Table 2 Probability of staying at the firm vs. moving to another firm vs. moving to unemployment

	Twin 1			Twin 2			No matching		
	Move	Stay	Unemp	Move	Stay	Unemp	Move	Stay	Unemp
IC	0.080*** (0.010)	– 0.109*** (0.009)	0.029*** (0.008)	0.084*** (0.010)	– 0.097*** (0.009)	0.013 (0.008)	0.049*** (0.008)	– 0.061 *** (0.007)	0.011** (0.005)
Observ	8926	8926	8926	8926	8926	8926	21,950	21,950	21,950

Note: Standard errors in brackets; ***, ** and * denote significant coefficients at 1%, 5% and 10%, respectively

Table 3 Probability of signing an indefinite contract vs. temporary contract

	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
IC	– 0.035 (0.139)	0.482*** (0.083)	0.005 (0.134)	0.426*** (0.082)	– 0.203** (0.094)	0.149** (0.059)
Observ	2187	4168	2277	4064	6255	10,728

Note: Stay at the firm and move to another firm. Standard errors in brackets; *** and ** denote significant coefficients at 1 and 5%, respectively

percentage points lower than after employment under a nonsubsidised temporary contract. According to Fig. 1, 31.6% of matched control individuals stay in the firm. Therefore, the IC reduces the probability of staying by approximately one-third. In addition, the probability of moving to another firm is eight percentage points higher after employment under IC. Since 41.8% of matched control individuals move to other firms, this increase amounts to approximately 19%. Unfortunately, the results regarding the probability of transitioning to unemployment differ between the two randomly matched control groups—Twins 1 and 2—which prevents us from giving a precise result. In any case, the impact would be very small.²⁹

Summing up, this section concludes that (1) the impact of entering employment under an IC on staying at the same firm is negative when compared to a nonsubsidised temporary contract and (2) the impact of entering employment under an IC on moving to another firm is positive when compared to entering employment under a nonsubsidised temporary contract.

5.1.2 Probability of signing an indefinite contract after the IC

Second, we test whether employment under an IC leads to greater job stability than employment under a nonsubsidised temporary contract in the subsequent job episode, either at the same firm or at another firm. A priori, given that an IC entails, at least in theory, on-the-job training investment, we might expect that individuals who signed an IC would benefit from job stability at the same firm.

To test this assumption, we first analyse whether individuals who stay at the same firm after the IC are more likely to remain under an indefinite contract than their twins—identical workers whose first job experience is under a nonsubsidised temporary contract. Second, for those workers who left the firm after their first employment, i.e., movers, we estimate the probability of signing an indefinite contract versus a temporary one. Table 3 presents both results, again for the three different control groups previously explained.

From the comparison of the treated with either Twin 1 or Twin 2, the results indicate that for stayers in the same firm after the first contract, the impact of entering employment under an IC is null with regard to the probability of signing an indefinite contract

²⁹ Unfortunately, we cannot know whether workers of the control group finish their contract at the signed time or before and we cannot control for that in the estimations.

after the first contract. However, *conditional on moving to another firm, the probability of signing an indefinite contract afterwards is substantially higher for those who sign an IC* (48 p.p.), related to the 30% rate of matched control movers signing a permanent contract. From a methodological point of view, the matching strategy makes a key difference, as the results differ when the treated are compared to the nonmatched control group, particularly for stayers, as the last column of Table 3 reveals. Given that the exact match strategy clearly diminishes observed differences between the treated and comparison groups, we rely on the results displayed in Columns 1 and 2 of Table 3.³⁰

If we interpret the increase in the probability for movers as a supply-driven result (as a worker initiative), this may indicate that for some young workers, signing an IC provides them with temporary employment while they look for a more stable job, not at the same firm but at another one. In that way, the IC might be acting as a stepping stone for those young workers who search for better opportunities at another firm.

In summary, let us recover the literal text of the motives under the creation of the IC to see whether the outcomes are consistent with the spirit of the law. According to the text, “the fundamental objective of this instrument is to increase labour stability for youth in the chosen area of study by developing professional internships related to the level and field of study, as well as to provide incentives to companies to retain young people in their companies once the internship period is over”. For now, the results of this study allow us to conclude that IC does not seem to achieve greater job stability for entrants into employment if they remain in the firm; however, if they move to another place of employment after their first work experience through an IC, greater job stability is achieved. Additionally, the results indicate that the incentives that the IC provides to companies to retain young workers do not seem to work, as retention is lower for those whose first experience is an IC compared to a first experience through a nonsubsidised temporary contract.

5.1.3 Wages

The next labour market outcome we focus on is the potential differences in wages in the subsequent employment episode after the first experience through an IC compared to a nonsubsidised temporary contract. As explained in the methodology section, we do it separately for two groups of workers: those who stay in the same firm for the next labour market episode (stayers) and those who move to another firm. Recall that, as we refer to monthly wage, our sample is restricted to full-time workers with employment episodes longer than one month, which is reflected in the lower number of observations in the estimation. The reported coefficient is the estimated differential (in %) in wages of the treated with respect to the control group.

³⁰ Note that in this particular case, the results from the comparison between the treated and the nonmatched control group would lead us to conclude that for stayers at the firm, IC would diminish their subsequent job stability (through an indefinite contract). This contrasts with the absence of impact found for stayers with regards to their stability of their subsequent contract. This contradictory result would be consistent with the idea that IC signers present lower levels of productivity than the unmatched control group and for that reason, the matching technique shows more robust results.

Table 4 Regression on wages in the next employment episode

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
IC	− 0.048*** (0.019)	− 0.035** (0.017)	− 0.053*** (0.019)	− 0.020 (0.017)	− 0.059*** (0.017)	− 0.025 (0.015)
Observ	1711	2370	1694	2415	3387	4475

Note: Stay at the firm and move to another firm. Standard errors in brackets; *** denotes a significant coefficient at 1%

Table 4 displays the wage differential in the second employment episode between the treated group, i.e., those entering employment through an IC, and the two matched control groups, Twin 1 and Twin 2. The results from the comparison with the unmatched control group are also reported.

The results indicate that, especially for stayers, *wages in the second employment episode of the treated group are lower than those of the control group*. In particular, if they do not change to another firm, the decrease in the wage reaches 5%. However, for the movers, the result seems not to be robust enough. It is not statistically significant when compared to the second twin or even before the matching exercise. It should be taken into account that the sample size notably decreases when restricted to full-time workers with an employment episode longer than one month.

Focussing on stayers, given that wages are a clear labour market performance indicator, this evidence indicates that ICs do worse in their second employment episode in terms of wages than their identical counterparts who start their labour trajectory through a nonsubsidised contract. One potential explanation for this lies in the wage differential between the treated group and their twins in the first employment episode. IC workers could earn between 60 and 75% of the ordinary wage, whereas nonsubsidised workers do not suffer any wage reduction. Their “starting point” clearly differs. Hence, for the treated and controls who remain at the firm, at a similar wage increase in their subsequent contract, wages of the treated might be expected to be lower than those of the controls. This is, in our view, another indirect evidence that the IC does not seem to serve as an instrument to increase human capital through the first labour market experience.

As a summary of the short-term impact of the IC, the results indicate that for entrants to the labour market, this instrument does not seem to promote the stability of workers in the same company. With respect to the impact on their immediate subsequent employment, it seems to promote greater employment stability only for those who move to another company but not for those who stay in the same company where they have completed their internship contract.

5.2 Long-term effects

Thus far, we have focussed on studying the impact of IC on employment trajectories or labour market outcomes immediately following the internship experience. We have found that the effort incurred by subsidising this type of contract, as opposed to not

subsidising it, does not result in higher wages immediately after the work experience; nor does it positively affect subsequent employment stability, unless the intern moves to another company. In the short term, therefore, subsidising these contracts does not seem to achieve clear positive results.

The question we now ask ourselves is whether these results are maintained in the long term or whether the impact differs from that observed in the short term. To address this question, we must look beyond the time of termination of the internship. Given that we have the entire working life of those who have entered the labour market through the internship contract, as well as that of their twins who started with a nonsubsidised temporary contract, we observe them in the medium term (2 years later), as well as in the longer term (5 years later). We thus obtain a "snapshot" of what their situation is at a given date, 2 and 5 years later, respectively, after the end of the first work experience. Consequently, the analysis of the medium (long) term can only include people whose first work experience ended before 2015 (2012). This results in a reduction in the number of observations in the medium- and long-term estimates, as will be reflected in the tables. As stated in the methodology section, we obtain for these two moments in time two labour indicators: (1) whether they work or not and for those who work, (2) whether they hold a stable contract, and (3) the level of wages they obtain. We estimate the differentials between the treated and the control groups to assess the extent to which IC affects labour market outcomes differently in the short run compared to the medium and long run.

5.2.1 Probability of being employed

The first exercise is to estimate the probability of being employed (1) 2 years after having finished their first contract and (2) 5 years later. Table 5 reports, through the coefficient of IC, the differential probability of being employed between the treated and the three control groups used before.

The results indicate that after either 2 or 5 years, the probability of being employed for the treated—IC users—is not statistically significant at the 5% level (or at any level for Twin 2 and the nonmatching control). Thus, the *IC has no impact on employment status in either the medium or the long run.*

Table 5 Probability of being employed vs. not being employed

Variables	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
IC	0.101* (0.058)	0.068 (0.062)	0.072 (0.058)	0.001 (0.062)	0.080 (0.050)	0.058 (0.054)
Observations	7025	5906	7079	5972	13,894	12,033

Note: Medium run (2 years after) and long run (5 years after). Standard errors in brackets; * denotes a significant coefficient at 10%

5.2.2 Probability of having a stable contract

The second result to be tested is whether in the medium and long run, IC users show more stable trajectories than similar workers who entered into the labour market through nonsubsidised temporary jobs. In the short run, we only find a more stable trajectory for those who leave the firm where the first contract was issued. For the medium and long run, it does not make sense to separate movers from stayers, as at a medium and long term, barely all are movers, as they work in different firms from where they started their career. Hence, all we look at is whether they hold a stable contract (indefinite). To do so, we compute the indicator of the type of work at the two time intervals and estimate the differentials between the two groups. Table 6 displays the results.

In the medium and long run, *the beneficiaries of an IC at the start of their career show a higher probability of holding an indefinite contract*. This result holds irrespective of the control group used. The magnitude differs somewhat depending on the control group used, even when comparing the two randomly matched control groups, but this may be a result of increased heterogeneity as time elapses. The result to highlight is not that much the precise magnitude but rather that the impact of IC is strong and consistently positive.

This result is consistent with what we found in the short term for those who left the firm after their first job experience. Hence, this result confirms that the advantage found for IC users in their first employment experience when compared to their twins with respect to labour stability remains in the medium and long run.

5.2.3 Wages

Finally, we estimate wage differentials 2 and 5 years after their first job experience. As explained in the methodology section, we restrict this analysis to full-time workers with contracts of at least one month, which, as Table 7 depicts, reduces the sample size. Remember that in the short term, i.e., in their second job episode, we found that IC users who were stayers obtained lower wages than their twins. In this section, the aim is to test whether such a disadvantage remains after 2 and 5 years. Table 7 displays the results.

Table 6 Probability of having an indefinite contract vs. temporary contract

Variables	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
IC	0.223*** (0.079)	0.369*** (0.094)	0.311*** (0.078)	0.241*** (0.091)	0.346*** (0.067)	0.278*** (0.081)
Observations	4034	2967	4111	3054	8015	6000

Note: Medium run (2 years after) and long run (5 years after). Standard errors in brackets; *** denotes a significant coefficient at 1%

Table 7 Regression on wages

Variables	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
IC	– 0.012 (0.015)	– 0.036* (0.019)	– 0.005 (0.015)	– 0.055*** (0.019)	– 0.018 (0.013)	– 0.043*** (0.016)
Observations	2671	2028	2744	2097	5134	3962

Note: Medium run (2 years after) and long run (5 years after). Standard errors in brackets; *** and * denote significant coefficients at 1 and 10%, respectively

The impact of IC on medium- and long-term wages is modest. While the impact seems to be negative, it is not significant after 2 years and marginally so after 5 years. The magnitude is, nevertheless, very small.

To summarise the most important results of the medium- and long-term analysis, it can be concluded that a job starting through an IC, compared to a job starting with a nonsubsidised temporary contract, leads to greater job stability and slightly lower wages. Consequently, the disadvantage regarding job instability observed in the short term is mitigated in the medium and long term.

6 Conclusions

Spain is one of the European countries with the highest unemployment and temporary employment rates. In response to the labour market precariousness that young individuals in Spain have faced for the last 35 years, one initiative that aimed to alleviate this issue was the introduction of internship contracts, aimed at educated young workers. Internship contracts (first implemented in 1998) were designed to provide young workers—who have already completed their university or vocational training education—with the opportunity to develop their professional skills at the start of their career. This professional experience must be related to the level and field of studies, and firms must complement this experience by investing in young workers' training. In particular, the spirit of the law underpinning IC is that it entails investment in human capital by offering practical training and, in return, benefits by paying lower wages and taxes.

The specific question we seek to address in this study is whether this instrument—the internship contract—has been an effective active policy to achieve more stable and better employment trajectories for its beneficiaries. Consequently, we compare the employment trajectories of young people who begin their employment stage through this type of contract, which is subsidised, with similar young people whose entry is also through a temporary contract but not subsidised. Somehow, we try to address whether the expenditure incurred in subsidising temporary hiring through an IC has any subsequent impact on the trajectories of those who benefit from it compared to those who do not. These impacts are differentiated according to whether they are

assessed immediately after the measure (short run), 2 years ahead (medium run) and 5 years ahead (long run).

To carry out this analysis, we use the Continuous Sample of Working Lives and choose all those young people who, between 2002 and 2017, start their working life with an internship contract. This is the treatment group. As a comparison, another group is chosen, consisting of potential signers of the IC who are identical in observable characteristics, such as gender, age, contract duration and contribution group, but who differ from the former in that their first work experience is an unsubsidised temporary contract of at least three months.

The most noteworthy results of the study are as follows: In the short term, the internship contract leads to greater subsequent job instability than an unsubsidised temporary contract, unless the person who benefits from it leaves for another company. In that case, it does appear that IC beneficiaries are ahead of their counterparts in terms of employment stability, understood as the holding of permanent contracts. With respect to wages, the IC seems to have a negative impact, either for those who stay in the company (stayers) or for those who move to another company (leavers).

To measure the medium- and long-term effects, we choose the employment situation of the two groups, in particular their contractual situation and their wages, after 2 and after 5 years. When comparing the situation of the two groups, the main disadvantages found in the short term are mitigated. In particular, the negative impact found earlier on wages disappears, while the employment stability of the beneficiaries of the internship contract is greater in terms of having achieved permanent contracts.

Although in the short term, the internship contract does not have particularly advantageous effects in terms of labour market outcomes for their beneficiaries who enter the labour market, its impact becomes more positive 2 and 5 years ahead, especially in terms of job stability. One possible interpretation of this result is that although companies that hire young people through internship contracts do so to reduce costs, this group nevertheless sends a signal of high productivity to the market that allows them to subsequently achieve greater job stability.

7 Annex: Complete estimation results

In this annex, we present the results of the estimations explained throughout the report. In all the following regressions, we additionally use as control fixed effects the Autonomous Community, month and year. However, for practical reasons, we do not include the estimated results in the tables. Their exclusion does not alter the principal conclusions that we extract from the estimations (Tables 8, 9, 10, 11, 12, 13).

Table 8 Probability of staying at the firm vs. moving to other firm vs. moving to unemployment

Variables	Twin 1			Twin 2			No matching		
	Move	Stay	Unemp	Move	Stay	Unemp	Move	Stay	Unemp
IC	0.0802165*** (0.0101479)	–	0.0288086*** (0.0082355)	0.0842815*** (0.0103047)	–	0.0126495 (0.0083341)	0.0499*** (0.00787)	–	0.0106** (0.00511)
Duration of the contract									
<i>Ref. ≤ 3 months</i>									
3–6 months	–	0.1647991*** (0.0194408)	0.0201568*** (0.0070603)	–	0.1675189*** (0.0190363)	0.0205381*** (0.0075119)	–	0.141*** (0.0159)	0.0223*** (0.00545)
6–12 months	–	0.1151249*** (0.0238283***)	0.1187034*** (0.0199659)	–	0.1212943*** (0.02501153***)	0.128821*** (0.0340961***)	–	0.0947*** (0.0208***)	0.113*** (0.00630)
1–2 years	–	0.0187645 (0.0196191)	0.0085836 (0.0183377***)	0.01916 (0.04336351***)	0.0181607 (0.099539***)	0.0092901 (0.0340961***)	0.0161 (0.381***)	0.0156 (0.0933***)	0.00630 (0.287***)
≥ 2 years	–	0.0184419 (0.5531095***)	0.0101067 (0.3327662***)	0.0189031 (0.5564941***)	0.017785 (0.2299585***)	0.0104459 (0.3265355***)	0.0163 (0.510***)	0.0157 (0.180***)	0.00780 (0.329***)
Gender	0.0197511	0.0199539	0.0118434	0.0193317	0.0196837	0.0119779	0.0169	0.0167	0.00956
<i>Ref. woman</i>									

Table 8 (continued)

Variables	Twin 1			Twin 2			No matching		
	Move	Stay	Unemp	Move	Stay	Unemp	Move	Stay	Unemp
Gender	– 0.0426506*** 0.0099139	0.0043125 0.0093711	0.0383381*** 0.0080035	– 0.0491579*** 0.0098967	0.0153085 0.0095048	0.0338494*** 0.0083028	– 0.0361*** 0.00642	0.00988 0.00618	0.0262*** 0.00462
Age									
Ref. < 20									
20–24	– 0.0262454**	0.0142834	0.0111962	– 0.0200992	0.0110399	0.0090593	– 0.0250***	0.00671	0.0183***
25–29	0.0123309 – 0.0272255*	0.0118204 0.0278764*	0.0101572 – 0.0006509	0.0125694 – 0.0271501*	0.011879 0.0336483**	0.0107196 – 0.0064982	0.00863 – 0.0293***	0.00835 0.0222**	0.00660 0.00706
Contribution group									
Ref. Low									
Medium	– 0.0346532*** 0.0125928 – 0.0215139	– 0.0070049 0.0119986 0.000467	0.0416581*** 0.0102772 0.0210469*	– 0.0236042* 0.0124982 – 0.0340098**	– 0.0181511 0.0119212 0.0097979	0.0417552*** 0.0106317 0.0242119*	– 0.0327*** 0.00841 – 0.0143	0.00570 0.00831 0.00128	0.0270*** 0.00611 0.0130*
High	0.0151889	0.0149897	0.0124959	0.0155468	0.0150896	0.0134563	0.00941	0.00927	0.00686
Activity sector CNAE									
Ref. Primary sector; mining, energy and water									
Manufacture	– 0.1492328***	0.1138948***	0.0353379	– 0.191568***	0.0946671***	0.0969008***	– 0.204***	0.130***	0.0747***

Table 8 (continued)

Variables	Twin 1			Twin 2			No matching		
	Move	Stay	Unemp	Move	Stay	Unemp	Move	Stay	Unemp
Construction	0.0394073	0.0310085	0.035055	0.0417216	0.033588	0.0324945	0.0209	0.0182	0.0167
	–	0.1389792***	0.0566661	–	0.098458***	0.1110448***	–	0.130***	0.0978***
	0.1956453***			0.2095028***			0.227***		
Wholesale trade	0.0394395	0.0316583	0.0357068	0.0417152	0.0335557	0.033082	0.0205	0.0179	0.0169
	–	0.064592**	0.0687192*	–	0.0701069**	0.1101652***	–	0.0839***	0.0814***
	0.1333112***			0.1802721***			0.165***		
Transport	0.0387824	0.0302265	0.0354099	0.0409026	0.0326011	0.032101	0.0199	0.0171	0.0163
	–	0.1762438***	0.0482228	–	0.139774***	0.0837667*	–	0.160***	0.0564**
	0.2244666***			0.2235407***			0.216***		
Hospitality	0.0355524	0.0479802	0.050074	0.0560583	0.051823	0.0446094	0.0311	0.0293	0.0233
	–	0.0787986**	0.0313502	–	0.0695619**	0.0798332**	–	0.0868***	0.0748***
	0.1101489***			0.1493951***			0.162***		
Communication, finances and real estate	0.0394156	0.031177	0.0356025	0.0415332	0.0332141	0.0323511	0.0201	0.0172	0.0164
	–	0.1086453***	0.024404	–	0.0941578***	0.0792266**	–	0.0971***	0.0678***
	0.1330493***			0.1733845***			0.165***		
Professionals and scientists	0.0390123	0.0308807	0.0352283	0.0416502	0.0334005	0.0321304	0.0207	0.0179	0.0164
	–	0.04803	0.115808***	–	0.0404594	0.1617386***	–	0.0828***	0.132***
	0.163838***			0.202198***			0.214***		
Auxiliary services	0.0397429	0.030882	0.0363589	0.041735	0.0330547	0.0328129	0.0205	0.0176	0.0170
	–	0.1544256***	– 0.0057418	–	0.1480583***	0.0504892*	–	0.215***	0.0362**
	0.1486838***			0.2045474***			0.251***		

Table 8 (continued)

Variables	Twin 1			Twin 2			No matching		
	Move	Stay	Unemp	Move	Stay	Unemp	Move	Stay	Unemp
Education and health	0.0392882	0.0308977	0.035086	0.0415241	0.0334311	0.0316041	0.0209	0.0181	0.0160
	–	0.0590824*	0.0528656	–	0.0481893	0.0756547**	–	0.0943***	0.0940***
	0.11119481***			0.123844***			0.188***		
Size of the business n. workers	0.0410653	0.0327817	0.0373153	0.0437718	0.0354924	0.0338384	0.0226	0.0201	0.0183
<i>Ref. 0 workers</i>									
Between 1 and 4	– 0.04931***	0.007546	0.0417639***	– 0.034942**	0.0117153	0.0232267	–	– 0.00177	0.0405***
							0.0387***		
Between 5 and 9	0.0168356	0.0161461	0.0140575	0.0170508	0.0159177	0.0142003	0.0117	0.0111	0.00858
	– 0.048473**	0.0408065**	0.0076666	–	0.0645144***	0.0013588	–	0.0588***	0.0208**
				0.0658732***			0.0796***		
Between 10 and 24	0.0199156	0.0194368	0.0166126	0.0203693	0.0195381	0.0166381	0.0140	0.0136	0.00995
	–	0.0247893	0.050347***	–	0.0715712***	0.0425816***	–	0.0767***	0.0379***
	0.0751363***			0.1141528***			0.1115***		
Between 25 and 49	0.0185215	0.0173969	0.0156114	0.0180504	0.0174465	0.015627	0.0118	0.0116	0.00864
	–	0.0546587***	0.0612772***	–	0.051307***	0.0455776***	–	0.101***	0.0194**
	0.11159359***			0.0968845***			0.121***		
Between 50 and 99	0.0203194	0.0188223	0.0170045	0.0209414	0.0184551	0.017566	0.0127	0.0124	0.00884
	–	0.1043197***	0.0244967	–	0.1066365***	0.0435912***	–	0.0976***	0.0321***
	0.1288164***			0.1502276***			0.130***		
	0.0212083	0.0198638	0.0160904	0.0208484	0.0201252	0.0165676	0.0140	0.0137	0.00983

Table 8 (continued)

Variables	Twin 1			Twin 2			No matching		
	Move	Stay	Unemp	Move	Stay	Unemp	Move	Stay	Unemp
Between 100 and 249	– 0.1128565***	0.1198856***	– 0.007029	– 0.1318524***	0.0906499***	0.0412025***	– 0.121***	0.0893***	0.0315***
Between 250 and 499	0.0195788	0.0187618	0.0145192	0.0194891	0.018381	0.0154958	0.0131	0.0127	0.00918
	– 0.1484301***	0.1276584***	0.0207717	– 0.157899***	0.1223554***	0.0355437*	– 0.169***	0.131***	0.0383***
Between 500 and 1499	0.0237412	0.0241641	0.0186732	0.0235606	0.0232975	0.0181772	0.0155	0.0154	0.0108
	– 0.135252***	0.1065799***	0.0286721	– 0.1403732***	0.130399***	0.0099742	– 0.129***	0.101***	0.0282***
1500 or more	0.0224901	0.0223756	0.0176079	0.0221423	0.0223328	0.0169936	0.0153	0.0150	0.0104
	– 0.1209293***	0.0595232***	0.0614061***	– 0.1051089***	0.0179326***	0.0871763***	– 0.105***	0.0580***	0.0469***
Observations	8926	8926	8926	8926	8926	8926	21,950	21,950	21,950

Table 9 Probability of signing an indefinite contract vs. temporary contract

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
IC	– 0.0350265 0.1389054	0.4816055*** 0.0829022	0.0052701 0.1342791	0.4256338*** 0.0817247	– 0.203** 0.0943	0.149** 0.0594
Duration of the contract						
<i>Ref. ≤ 3 months</i>						
3–6 months	– 0.1587662*** 0.3943794	0.2753638** 0.1349868	– 1.543526*** 0.3623945	0.2390771* 0.1355146	– 0.721*** 0.264	0.329*** 0.113
6–12 months	– 0.6025395 0.3664656	0.4454081*** 0.1303512	– 0.6860801* 0.3534323	0.4705389*** 0.1297202	0.123 0.262	0.564*** 0.112
1–2 years	– 0.2963799 0.3651383	0.6710956*** 0.134557	– 0.3108 0.3469562	0.743304*** 0.1340712	0.553** 0.262	0.787*** 0.115
≥ 2 years	– 0.3509469 0.353139	0.2650717 0.1674532	– 0.264428 0.3360624	0.2467546 0.1644324	0.901*** 0.258	0.370*** 0.138
Gender						
<i>Ref. woman</i>						
Gender	0.2480473** 0.120704	– 0.1709859** 0.0761347	0.2029052* 0.1150739	– 0.2357385*** 0.0778191	0.215*** 0.0736	– 0.129*** 0.0476
Age						
<i>Ref. < 20</i>						
20–24	– 0.1457043 0.1519004	0.4661317*** 0.0963033	– 0.0994501 0.1512515	0.4603567*** 0.0952522	– 0.0525 0.101	0.484*** 0.0667

Table 9 (continued)

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
25–29	– 0.3251775 0.202765	0.4150136*** 0.1178673	– 0.3592697* 0.1892839	0.5245632*** 0.1209851	– 0.0351 0.108	0.575*** 0.0701
Contribution group						
<i>Ref. Low</i>						
Medium	– 0.2193341 0.1682565	– 0.3509629*** 0.094075	– 0.1055173 0.1550133	– 0.3470898*** 0.096318	0.114 0.102	– 0.192*** 0.0610
High	– 0.2344972 0.1943123	– 0.6493139*** 0.1169628	0.0300045 0.1873138	– 0.4687627*** 0.1151622	0.0280 0.113	– 0.515*** 0.0701
Activity sector CNAE						
<i>Ref. Primary sector, mining, energy and water</i>						
Manufacture	0.7429598 0.4670544	– 0.2124611*** 0.2922133	0.2653178 0.4513388	– 1.53185*** 0.2757067	0.740** 0.321	– 2.609*** 0.142
Construction	– 0.4820453 0.4698362	– 0.2450857*** 0.2919377	– 0.6431548 0.4570168	– 1.879843*** 0.27887	– 0.232 0.325	– 3.003*** 0.141
Wholesale trade	0.6824435 0.4680802	– 0.2156075*** 0.2841141	0.1987731 0.4499055	– 1.503392*** 0.2708795	0.854*** 0.318	– 2.585*** 0.133
Transports	– 0.073495 0.6007037	– 0.1990283*** 0.4174268	– 0.2391715 0.5932194	– 1.11806*** 0.4098366	0.139 0.406	– 2.521*** 0.219
Hospitality	0.4020101	– 0.1936497***	0.4177183	– 1.244498***	0.723**	– 2.302***

Table 9 (continued)

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
Communication, finances and real estate	0.4694562 0.4010792 0.462489 – 0.2894471 0.4761027 – 0.1133521** 0.4728852 – 0.4080275 0.5082521	0.2863891 – 0.1904952*** 0.2916345 – 0.1994321*** 0.290954 – 0.3020842*** 0.2963497 – 0.2432032*** 0.3056867	0.4571465 0.0711489 0.4539673 – 0.7168162 0.4721084 – 1.39247*** 0.4602503 – 0.5605174 0.4995134	0.2727364 – 1.193385*** 0.2781156 – 1.477276*** 0.2779766 – 2.245128*** 0.2823891 – 1.720441*** 0.2924889	0.319 0.525 0.321 – 0.339 0.331 – 1.095*** 0.330 0.135 0.345	0.133 – 2.417*** 0.139 – 2.526*** 0.138 – 3.302*** 0.146 – 2.716*** 0.158
Professionals and scientists						
Auxiliary services						
Education and health						
Size of the business n. workers						
<i>Ref. 0 workers</i>						
Between 1 and 4	0.2857404 0.2180328	0.0061388 0.130049	0.2098739 0.2091672	0.0048181 0.1263188	0.240* 0.134	0.0476 0.0851
Between 5 and 9	0.0801815 0.2372773	– 0.1579893 0.1568803	– 0.0758442 0.2415782	– 0.2896978* 0.1595388	0.0117 0.152	– 0.00416 0.104
Between 10 and 24	0.6159629*** 0.2307571	– 0.2726818** 0.136052	0.4153306** 0.2082489	– 0.0629099 0.1410237	0.224* 0.131	0.0691 0.0893
Between 25 and 49	0.3009043 0.2325827	– 0.1468895 0.1594547	0.2299528 0.2376911	– 0.2791754* 0.162259	– 0.0805 0.146	– 0.109 0.101

Table 9 (continued)

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
Between 50 and 99	0.3840655*** 0.2317825	– 0.2848358 0.1777001	0.034365 0.2269999	– 0.4752454*** 0.1788568	– 0.00946 0.150	– 0.0856 0.110
Between 100 and 249	– 0.2070866 0.2212353	– 0.3943939** 0.165473	– 0.1036004 0.213251	– 0.4484913*** 0.1635534	– 0.0543 0.140	– 0.118 0.103
Between 250 and 499	– 0.151663 0.2430342	0.1563457 0.1939032	– 0.3064344 0.2453565	0.0767951 0.1860325	– 0.404** 0.164	0.202* 0.121
Between 500 and 1499	– 0.3599662 0.2403418	0.3198165* 0.1638967	– 0.11148979 0.2449503	0.4522677*** 0.1770227	0.0520 0.160	0.421*** 0.111
1500 or more	– 0.5722732*** 0.2574536	– 0.0996769 0.174627	– 0.2405459 0.2357801	0.0239996 0.1731948	– 0.386** 0.168	0.180* 0.109
Observations	2187	4168	2277	4064	6255	10,728

Stay at the firm and move to another firm

Table 10 Regression on wages in the next employment episode

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
IC	– 0.0480331*** 0.0186436	– 0.0351477** 0.0170529	– 0.0531608*** 0.0187577	– 0.0201417 0.0168728	– 0.0588123*** 0.0166518	– 0.0254761 0.0147064
Duration of the contract						
<i>Ref. ≤ 3 months</i>						
3–6 months	– 0.0511664 0.0671516	– 0.02237 0.0281823	– 0.0918331 0.0648166	– 0.0277787 0.0283676	– 0.0734395 0.0557388	– 0.0178026 0.0269588
6–12 months	– 0.0517476 0.0667235	0.0200488 0.0273498	– 0.0474922 0.0636573	0.0035073 0.0275174	– 0.0664026 0.0557591	0.0118035 0.0267602
1–2 years	0.0525791 0.0664948	0.1111133*** 0.0267493	0.0434286 0.0631221	0.1208193*** 0.0271607	0.0317348 0.0558837	0.1023396*** 0.0272696
≥ 2 years	0.1841659*** 0.0650159	0.2707514*** 0.034418	0.1868129*** 0.0616574	0.2696035*** 0.033645	0.1833291*** 0.0548892	0.2725896*** 0.0318173
Gender						
<i>Ref. woman</i>						
Gender	– 0.051807*** 0.0166634	– 0.1132405*** 0.0168841	– 0.0623932*** 0.0162358	– 0.1284765*** 0.0164166	– 0.0532141*** 0.0116939	– 0.114998*** 0.0118615
Age						
<i>Ref. < 20</i>						
20–24	0.112441*** 0.0226546	0.1701152*** 0.0249622	0.1293729*** 0.023965	0.1818766*** 0.0228317	0.1025178*** 0.0164686	0.1600091*** 0.0161464

Table 10 (continued)

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
25–29	0.1808578***	0.2822893***	0.1979986***	0.2875279***	0.1590781***	0.2226765***
	0.0284513	0.0283531	0.0282132	0.0265368	0.0170861	0.0166719
Contribution group						
<i>Ref. Low</i>						
Medium	– 0.3188113***	– 0.1823631***	– 0.3138483***	– 0.1456745***	– 0.3278599***	– 0.2015441***
	0.023812	0.020934	0.0235527	0.0207251	0.0167668	0.0156787
High	– 0.3900842***	– 0.2506931***	– 0.3815897***	– 0.2515762***	– 0.4438025***	– 0.3426661***
	0.0282091	0.0271988	0.028773	0.0260651	0.0186434	0.0178837
Activity sector CNAE						
<i>Ref. Primary sector, mining, energy and water</i>						
Manufacture	0.117502	0.1020791	0.041839	0.0695082	0.1921642***	0.1343299***
	0.0930942	0.0833918	0.0899558	0.0520667	0.0428402	0.0518019
Construction	0.1023558	0.098744	0.0365986	0.0952422*	0.1734859***	0.1313083***
	0.0916048	0.0848632	0.0893378	0.0522837	0.0429116	0.0511965
Wholesale trade	– 0.0300198	0.0549368	– 0.11164785	0.0276137	0.0197197	0.0552865
	0.0938058	0.0834721	0.0906023	0.0503898	0.0425309	0.0508579
Transports	0.0864135	– 0.0240244	0.0833319	– 0.0500194	0.1428706**	0.0113436
	0.1240237	0.093831	0.1195279	0.0709989	0.0574108	0.0669692
Hospitality	0.0708157	0.031234	– 0.0009878	– 0.0005087	0.1617504***	0.0715346

Table 10 (continued)

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
Communication, finances and real estate	0.0930522 – 0.0564329 0.0923073	0.0829599 0.0841412 0.0826882	0.0900317 – 0.1417575 0.0911027	0.0502547 0.066636 0.0491314	0.0426732 0.0032851 0.0438891	0.0506556 0.107734** 0.0516302
Professionals and scientists	0.0250875 0.0948834	0.0389036 0.0844917	– 0.0385174 0.0922481	– 0.0114154 0.0520731	0.0623387 0.0428432	0.0643473 0.0515143
Auxiliary services	0.0237244 0.0924467	0.052945 0.0842941	– 0.0528645 0.0898368	0.0359446 0.0530551	0.07429* 0.0430472	0.1032419** 0.0525411
Education and health	– 0.1821407* 0.0968009	– 0.0597823 0.0962549	– 0.2327569** 0.0971953	– 0.0493613 0.0615743	– 0.1095121** 0.047784	0.0250408 0.0551343
Size of the business n. workers						
<i>Ref. 0 workers</i>						
Between 1 and 4	– 0.0662423** 0.0293518	– 0.0014728 0.0263055	– 0.0366264 0.0335506	– 0.0392503 0.0258815	– 0.0811172*** 0.0240367	– 0.0085306 0.0210009
Between 5 and 9	0.0168487 0.0372302	– 0.0402057 0.0356655	– 0.0159574 0.0392306	– 0.0363458 0.0284524	– 0.0032607 0.0262957	– 0.020578 0.0264765
Between 10 and 24	0.0119592 0.0365278	0.0218166 0.0280834	0.0135909 0.0316736	0.0254158 0.0275381	0.0266573 0.02274	0.0403041* 0.022029
Between 25 and 49	0.0612692* 0.0356928	0.0800772** 0.0338765	0.107776*** 0.0357785	0.0357083 0.0334176	0.0484088*** 0.0238452	0.0555881** 0.0241722

Table 10 (continued)

Variables	Twin 1		Twin 2		No matching	
	Stayers	Movers	Stayers	Movers	Stayers	Movers
Between 50 and 99	0.1530376*** 0.0285664	0.1696693*** 0.0389088	0.1648293*** 0.0302775	0.0889297** 0.0378749	0.1261911*** 0.0226645	0.1143495*** 0.0278259
Between 100 and 249	0.1318732*** 0.0304247	0.1369632*** 0.0368891	0.1487276*** 0.0299147	0.1167918*** 0.0335551	0.1403499*** 0.020687	0.0931224*** 0.0239203
Between 250 and 499	0.1072673*** 0.0327781	0.1207909*** 0.0339085	0.1573592*** 0.0304962	0.0849995** 0.0377473	0.1341552*** 0.0238558	0.1190775*** 0.0292187
Between 500 and 1499	0.1558951*** 0.0301564	0.1367525*** 0.0336712	0.1533363*** 0.0310147	0.10359*** 0.0350521	0.1592959*** 0.0236924	0.1295703*** 0.0280876
1500 or more	0.2099297*** 0.0291866	0.1862562*** 0.031946	0.212884*** 0.0312943	0.2031085*** 0.0341821	0.2228757*** 0.0233934	0.2051236*** 0.0269101
Observations	1711	2370	1694	2415	3387	4475

Stay at the firm and move to another firm

Table 11 Probability of being employed vs. not being employed. Medium-term (2 years after) and long term (5 years after)

Variables	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
IC	0.1011194*	0.0683529	0.071664	0.0007166	0.0797616	0.057539
	0.0582685	0.0623325	0.0577419	0.0617716	0.050367	0.0535161
Duration of the contract						
<i>Ref. ≤ 3 months</i>						
3–6 months	0.0840134	0.1618007	0.1565674	0.0820699	0.1315895	0.1159802
	0.1152517	0.1216838	0.1170473	0.1203766	0.1048652	0.1121534
6–12 months	0.2014549*	0.0745518	0.1936965*	0.0270732	0.1900336*	0.0193632
	0.1098003	0.1178971	0.1110327	0.11170758	0.104398	0.1115942
1–2 years	0.2268975**	– 0.0979157	0.1840454*	– 0.0089536	0.1945083*	– 0.08572
	0.1105916	0.1171912	0.1110247	0.1168127	0.1055945	0.1127323
≥ 2 years	0.253754**	– 0.2711375**	0.1924142*	– 0.3097456**	0.2041566*	– 0.2613241**
	0.1142456	0.1225472	0.1159132	0.1230724	0.109457	0.1173156
Gender						
<i>Ref. woman</i>						
Gender	0.0082594	0.0662202	0.0068832	0.0904097	– 0.0131473	0.0975592**
	0.0550384	0.0593451	0.0554025	0.0596342	0.0386118	0.0406049
Age						
<i>Ref. < 20</i>						
20–24	0.4289011***	0.1421619*	0.431834***	0.1365076*	0.4726101***	0.2290967***
	0.0675925	0.0737391	0.0685191	0.0745132	0.0492426	0.0519321

Table 11 (continued)

Variables	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
25–29	0.5250874***	0.1132507	0.4677495***	0.0438894	0.5630989***	0.1768502***
	0.0863507	0.0915772	0.0868171	0.0923996	0.05266	0.0547931
Contribution group						
<i>Ref. Low</i>						
Medium	– 0.0934011	– 0.0845887	– 0.1358347*	– 0.1830013**	– 0.1480604***	– 0.1961872***
	0.0714694	0.0764158	0.0721861	0.0758127	0.0539474	0.0567063
High	– 0.1486737*	– 0.3363364***	– 0.1941934**	– 0.3578484***	– 0.2082677***	– 0.2176904***
	0.0877585	0.0953948	0.086438	0.09288	0.0596273	0.0633606
Activity sector CNAE						
<i>Ref. Primary sector, mining, energy and water</i>						
Manufacture	– 0.2730239	– 0.6521631***	0.1058025	– 0.5663663**	– 0.0957906	– 0.1462491
	0.2101003	0.2241011	0.2232647	0.2326379	0.1127746	0.1130359
Construction	– 0.3254116	– 0.5347195**	0.0944869	– 0.4883363**	– 0.1173656	– 0.1950096*
	0.2095866	0.2197352	0.2248646	0.2295428	0.1088619	0.1075319
Wholesale trade	– 0.3472952*	– 0.6388866***	– 0.0082526	– 0.5908498***	– 0.1575587	– 0.1751464*
	0.2051986	0.2190737	0.2207062	0.2285294	0.1062689	0.1062801
Transports	0.1103977	– 1.020558***	0.0632568	– 0.6333254*	0.023294	– 0.1491879
	0.2924512	0.3115364	0.3084695	0.3325759	0.1794004	0.1840367
Hospitality	– 0.0764032	– 0.3861369*	0.0991706	– 0.4484265*	0.0395993	– 0.0525477

Table 11 (continued)

Variables	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
Communication, finances and real estate	0.2091301	0.2225228	0.2232062	0.2325982	0.1077673	0.1076606
	– 0.3516689*	– 0.8127928***	– 0.051576	– 0.6604112***	– 0.108264	– 0.2231147*
	0.2083072	0.2225312	0.2234222	0.2326548	0.1150578	0.1157277
Professionals and scientists	– 0.2080904	– 0.7862455***	0.0920178	– 0.6679394***	– 0.1828334*	– 0.2352576**
	0.2122664	0.2247211	0.22582	0.234426	0.1099149	0.1101427
Auxiliary services	0.0930732	– 0.4353013*	0.3775535*	– 0.2963426	0.2203705*	0.126971
	0.2083301	0.2245283	0.223702	0.2317603	0.1140669	0.1151845
Education and health	– 0.3438208	– 0.4495123*	0.2206643	– 0.3674268	– 0.1314469	0.0197067
	0.2210031	0.2371401	0.2360609	0.2483935	0.1231838	0.1270588
Size of the business n. workers						
<i>Ref. 0 workers</i>						
Between 1 and 4	0.0121627	– 0.0823782	– 0.0612847	– 0.0774395	– 0.1251846*	– 0.0772236
	0.0966876	0.1023872	0.0946328	0.1030564	0.0704203	0.0745615
Between 5 and 9	– 0.2730081**	– 0.1576895	– 0.4264342***	– 0.2912356**	– 0.2079865**	– 0.1189539
	0.1124247	0.1169313	0.1127388	0.1185821	0.0837969	0.0889181
Between 10 and 24	– 0.1316404	– 0.1446825	– 0.021812	– 0.0317564	– 0.0288228	– 0.0282763
	0.1011718	0.1043428	0.1005578	0.1040443	0.0732829	0.076844
Between 25 and 49	– 0.1059314	– 0.029879	– 0.0820182	– 0.1492578	– 0.1934666**	– 0.1810146**
	0.1123845	0.1238125	0.1100661	0.1215226	0.0790246	0.0844272

Table 11 (continued)

Variables	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
Between 50 and 99	– 0.3274577*** 0.109955	– 0.2101713* 0.1197455	– 0.3277662*** 0.1095544	– 0.2328957** 0.11179098	– 0.2234219*** 0.081811	– 0.2248165*** 0.0875414
Between 100 and 249	– 0.1952328* 0.1049234	– 0.0903246 0.1123839	– 0.0447988 0.1088053	– 0.0985184 0.1146109	– 0.0839444 0.0777157	– 0.0362513 0.0826456
Between 250 and 499	– 0.3010319** 0.128504	0.0256279 0.1408218	– 0.3919862*** 0.1222643	– 0.2605863* 0.1339184	– 0.1475873 0.0935137	0.0243891 0.1004777
Between 500 and 1499	– 0.2744325** 0.1248107	– 0.1302469 0.1397211	– 0.1824515 0.1269114	– 0.3127968** 0.1372066	– 0.1641274* 0.0921072	– 0.1659835* 0.1000257
1500 or more	– 0.3958215*** 0.1224941	0.2203429 0.1372698	– 0.3684805*** 0.1189543	0.043777 0.1292158	– 0.2240488*** 0.0874128	– 0.0075918 0.0945687
Observations	7025	5906	7079	5972	13,894	12,033

Table 12 Probability of having an indefinite contract vs. temporary contract

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
IC	0.2233523*** 0.0789404	0.3693614*** 0.0942475	0.3114985*** 0.0775631	0.2410539*** 0.0911821	0.3455697*** 0.0674951	0.2777904*** 0.0809714
Duration of the contract						
<i>Ref. ≤ 3 months</i>						
3–6 months	0.1709569 0.1600044	– 0.0624638 0.1840967	0.1088398 0.1580767	– 0.0515101 0.1846542	0.1182993 0.1466473	– 0.0804882 0.172486
6–12 months	0.3012294* 0.1554124	0.0314837 0.1814571	0.2989753* 0.1552586	– 0.0215842 0.1800543	0.2616984* 0.145736	0.0803981 0.1725547
1–2 years	0.2793879* 0.1548236	– 0.2126455 0.1805028	0.3408876** 0.1537853	– 0.1398371 0.1784043	0.228681 0.1474453	– 0.1003625 0.1744536
≥ 2 years	0.1161699 0.1585545	– 0.3578835* 0.1874166	0.0305682 0.1582845	– 0.389178** 0.1857433	0.0560115 0.1512581	– 0.3367134* 0.1802866
Gender						
<i>Ref. woman</i>						
Gender	– 0.0177296 0.0759566	0.0358586 0.0889129	– 0.0110183 0.0753713	0.0077547 0.0871662	0.0006951 0.0519812	– 0.0232276 0.0615399
Age						
<i>Ref. < 20</i>						
20–24	0.2490898** 0.098666	0.0831268 0.1121866	0.1388584 0.0999651	0.1875935* 0.1098658	0.3388546*** 0.0696543	0.1784451** 0.07872

Table 12 (continued)

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
25–29	0.1385628	0.1476727	0.1696015	0.3560047***	0.2872225***	0.2966636***
	0.1202113	0.1376458	0.1198116	0.1378281	0.0726228	0.083618
Contribution group						
<i>Ref. Low</i>						
Medium	0.1809988*	0.3126222***	0.2377619**	0.3651158***	0.2805184***	0.5116563***
	0.0965014	0.111937	0.0943911	0.1123474	0.0703672	0.084189
High	– 0.3114945**	– 0.1647152	– 0.2253221*	0.0187078	– 0.1722837**	– 0.0033126
	0.1219835	0.143771	0.1191092	0.1381713	0.078761	0.0924497
Activity sector CNAE						
<i>Ref. Primary sector, mining, energy and water</i>						
Manufacture	– 0.2150021	0.1761158	– 0.5519457	0.0766101	– 0.2802195*	– 0.0639875
	0.2911561	0.3132761	0.3599594	0.3567026	0.1500522	0.1864587
Construction	– 0.8262695***	– 0.4103481	– 1.186116***	– 0.4760831	– 1.026822***	– 0.8854144***
	0.2879098	0.3037668	0.3579922	0.3475142	0.1440125	0.1770584
Wholesale trade	– 0.0590629	– 0.0449186	– 0.4167801	– 0.311383	– 0.2359112*	– 0.2815737
	0.2873846	0.3048151	0.358065	0.3448067	0.1422459	0.1754173
Transports	– 1.068984***	– 0.4427829	– 1.120896**	0.704039	– 0.8701224***	– 0.5285474*
	0.4101633	0.4894738	0.4676024	0.6190819	0.2308566	0.2919805
Hospitality	– 0.0079061	0.1319447	– 0.3579869	0.0578771	– 0.1834585	– 0.090583

Table 12 (continued)

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
Communication, finances and real estate	0.288776 – 0.1200915 0.2911242 – 0.6742205** 0.2939238 – 1.265551*** 0.2908669 – 0.1283805 0.3080667	0.3050549 0.3547205 0.3131452 – 0.2411722 0.3107368 – 1.072353*** 0.3094301 – 0.2676567 0.3260099	0.3613087 – 0.5271358 0.3622401 – 0.8719372** 0.3613746 – 1.628422*** 0.3614459 – 0.6953317* 0.3701168	0.3545998 0.1086819 0.3571245 – 0.4292517 0.3519226 – 0.9853081*** 0.3496086 – 0.378464 0.3643656	0.1429691 – 0.3063107** 0.1534714 – 0.752352*** 0.1472176 – 1.50415*** 0.1526332 – 0.6201562*** 0.1659319	0.1788895 – 0.0432279 0.1926795 – 0.6540993*** 0.1801506 – 1.298852*** 0.1855864 – 0.6288159*** 0.199129
Professionals and scientists						
Auxiliary services						
Education and health						
Size of the business n. workers						
<i>Ref. 0 workers</i>						
Between 1 and 4	0.0105194 0.1300509 0.0636796 0.1590379 0.1112863 0.1425846 – 0.1779489 0.1534549	0.1866366 0.1599794 0.0777892 0.1867599 0.211803 0.1759097 – 0.1550386 0.1874041	0.2000124 0.1336071 – 0.1541919 0.1621814 0.2381021* 0.1350765 – 0.3919529*** 0.1492304	0.2136984 0.156016 – 0.0913682 0.1837948 0.3227727* 0.1663054 – 0.2484255 0.1809205	0.0300313 0.096323 – 0.2152606* 0.1156508 – 0.0233915 0.0972309 – 0.2993257*** 0.1096449	0.0974034 0.1153339 0.0689654 0.1388971 0.0792972 0.116268 – 0.1483366 0.1305723

Table 12 (continued)

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
Between 50 and 99	– 0.2619853 0.1676372	– 0.1681185 0.1892226	– 0.2912755* 0.1585442	– 0.4648197*** 0.1780509	– 0.3913397*** 0.1154139	– 0.1278187 0.1350493
Between 100 and 249	– 0.4974937*** 0.145148	– 0.2891045* 0.1732994	– 0.6837617*** 0.1430405	– 0.2746357 0.1692567	– 0.3466175*** 0.1043122	– 0.1459292 0.1213495
Between 250 and 499	– 0.4357584** 0.1791638	– 0.4899569** 0.1937654	– 0.3272084* 0.1682836	– 0.4546837*** 0.1910255	– 0.3632828*** 0.1268212	– 0.3515516*** 0.1454418
Between 500 and 1499	– 0.0288362 0.1574172	– 0.0998188 0.1888516	– 0.2147568 0.1604614	– 0.0326646 0.1846556	– 0.1024796 0.1236967	– 0.1010028 0.1483835
1500 or more	– 0.4522306*** 0.1620624	– 0.252698 0.1860546	– 0.2204498 0.1521208	– 0.4591438*** 0.1701942	– 0.4184629*** 0.118165	– 0.4408304*** 0.1338122
Observations	4034	2967	4111	3054	8015	6000
Medium-term (2 years after) and long term (5 years after)						

Table 13 Regression on wages

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
IC	− 0.011975 0.0148071	− 0.036129* 0.0185773	− 0.0052801 0.0151199	− 0.0553317*** 0.0187247	− 0.0184316 0.0130547	− 0.0439554*** 0.0161867
Duration of the contract						
<i>Ref. ≤ 3 months</i>						
3–6 months	0.0232776 0.0323816	0.0003928 0.037177	0.0110772 0.0326178	− 0.0022448 0.036615	0.0106783 0.0290538	− 0.0036539 0.0339882
6–12 months	0.036426 0.0308226	0.00208 0.0353291	0.0181377 0.0314567	− 0.0248255 0.0361081	0.0155817 0.029094	− 0.0145954 0.0339904
1–2 years	0.1072423*** 0.0307601	0.0366931 0.0343353	0.096338*** 0.0309816	0.0341826 0.0340394	0.0771549*** 0.0291459	0.0203737 0.034356
≥ 2 years	0.1497409*** 0.0311732	0.0760701*** 0.0363455	0.1452883*** 0.0313089	0.0915407*** 0.0359273	0.1572861*** 0.0296867	0.0880368** 0.0354525
Gender						
<i>Ref. woman</i>						
Gender	− 0.1215387*** 0.0139334	− 0.1305202*** 0.0178772	− 0.1364483*** 0.0147582	− 0.1192043*** 0.017991	− 0.1203851*** 0.0103653	− 0.1191197*** 0.01262
Age						
<i>Ref. < 20</i>						
20–24	0.1396436*** 0.0200379	0.1225397*** 0.0255388	0.1578039*** 0.0217436	0.1471916*** 0.0244993	0.1346324*** 0.014947	0.1237631*** 0.0174606

Table 13 (continued)

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
25–29	0.2370845***	0.2042496***	0.256993***	0.2130421***	0.2048935***	0.1664056***
	0.024184	0.0303712	0.025326	0.0284639	0.0153852	0.0182714
Contribution group						
<i>Ref. Low</i>						
Medium	– 0.2444797***	– 0.2277405***	– 0.2322014***	– 0.2677286***	– 0.2416705***	– 0.2430815***
	0.0194997	0.0233019	0.0191948	0.0235467	0.014023	0.0169711
High	– 0.3678412***	– 0.3670705***	– 0.3706083***	– 0.377674***	– 0.4319891***	– 0.4330943***
	0.0232845	0.0293869	0.0241466	0.0273735	0.0160007	0.0194241
Activity sector CNAE						
<i>Ref. Primary sector, mining, energy and water</i>						
Manufacture	0.2684479***	0.1440323*	0.3487344***	0.1335378	0.3482836***	0.2932043***
	0.0822666	0.0834611	0.1306169	0.0822248	0.0314153	0.0399229
Construction	0.2217415***	0.0861244	0.3418739***	0.0794134	0.3074263***	0.2185668***
	0.0817913	0.0820917	0.1286581	0.0818295	0.0301348	0.038843
Wholesale trade	0.1261931	0.0375876	0.2545103*	0.0386121	0.2187999***	0.1636947***
	0.0825261	0.0820939	0.130557	0.0813075	0.0302325	0.0386641
Transports	0.195053**	0.2603154**	0.3850493***	0.1784344	0.2691063***	0.2432902***
	0.0967191	0.1019659	0.1399379	0.1152457	0.0514275	0.0617443
Hospitality	0.1866896**	0.1502565*	0.2677361**	0.1595295**	0.2888203***	0.2581687***

Table 13 (continued)

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
Communication, finances and real estate	0.0811646 0.1566453* 0.0813218 0.1186264 0.0836864 0.2161006*** 0.0822142 – 0.0110584 0.0880279	0.0813847 0.1063212 0.0816418 0.039978 0.0861039 0.0961364 0.082557 – 0.0717955 0.0912232	0.1280652 0.2688563** 0.1288241 0.2128616 0.1300301 0.3334265*** 0.1294351 0.1429983 0.1337396	0.0811176 0.1479433* 0.0821166 0.0624052 0.083883 0.1028433 0.0816083 – 0.0127927 0.0910944	0.030007 0.2736957*** 0.0316981 0.2244701*** 0.0313451 0.3254839*** 0.0318481 0.1435073*** 0.0368831	0.0387465 0.2563821*** 0.0404283 0.1961635*** 0.0397904 0.2586539*** 0.0406431 0.1383115*** 0.0447276
Professionals and scientists						
Auxiliary services						
Education and health						
Size of the business n. workers						
<i>Ref. 0 workers</i>						
Between 1 and 4	– 0.0573726** 0.0264496	– 0.0189377 0.0301531	– 0.0673301*** 0.0253456	– 0.0521074* 0.0281411	– 0.0468038** 0.0194991	– 0.015149 0.0236273
Between 5 and 9	– 0.055802 0.0360962	– 0.0762086 0.0509648	– 0.1037582*** 0.0342146	– 0.1049488** 0.0426747	– 0.0620312*** 0.0239763	– 0.1044792*** 0.030099
Between 10 and 24	– 0.0279459 0.0309755	– 0.0264482 0.03267	0.0015237 0.0280616	– 0.0317282 0.0324569	0.018234 0.0198673	– 0.0099558 0.0238276
Between 25 and 49	0.0312616 0.0277501	0.0329071 0.0434375	– 0.0078628 0.0342172	– 0.0516872 0.0617336	0.0186477 0.0224037	0.0093735 0.0274178

Table 13 (continued)

VARIABLES	Twin 1		Twin 2		No matching	
	+ 2 years	+ 5 years	+ 2 years	+ 5 years	+ 2 years	+ 5 years
Between 50 and 99	0.0887531*** 0.0336829	0.05261 0.0372243	0.0638655* 0.0328824	0.0570159 0.0349529	0.0759674*** 0.0237939	0.0629763** 0.0292227
Between 100 and 249	0.1340784*** 0.0282243	0.1107017*** 0.0323715	0.1044246*** 0.0273894	0.0406084 0.0309988	0.0930567*** 0.0202016	0.086006*** 0.0242088
Between 250 and 499	0.0882956*** 0.0322467	0.0810562* 0.0475163	0.036579 0.0322585	0.0940752*** 0.0355549	0.1021568*** 0.0240262	0.1176507*** 0.0292056
Between 500 and 1499	0.1392388*** 0.0272363	0.2071599*** 0.0390253	0.0985493*** 0.0262152	0.1795486*** 0.0334617	0.1403014*** 0.0241984	0.1130984*** 0.0310784
1500 or more	0.1842854*** 0.027054	0.2027601*** 0.0329254	0.1803983*** 0.0245598	0.1223801*** 0.0284966	0.1903931*** 0.0226503	0.1534735*** 0.0269761
Observations	2671	2028	2744	2097	5134	3962
Medium-term (2 years after) and long term (5 years after)						

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