Revisiting the stepping-stone hypothesis: Transitions from temporary to permanent contracts in Peru*

Miguel JARAMILLO BAANANTE** and Daniela CAMPOS UGAZ***

Abstract. *This study seeks to gauge the extent to which temporary contracts function as stepping stones to permanent contracts and to distinguish intrafirm from interfirm contract conversions. Using 2012–2016 data from a Peruvian matched employer–employee database, the authors propose several measures of contract conversion and estimate duration models. Their findings show that only 7 per cent of fixed-term contracts are converted and that about half of the conversions occur in the same firm.*

Keywords: *labour contracts, screening, labour market institutions, duration analysis.*

1. Introduction

The last three decades have seen accelerated growth in the use of fixed-term contracts around the world. The reasons why a firm might decide to hire workers for fixed periods are diverse and include the need to replace an absent worker temporarily, to respond to an increase in transitory demand or to provide a service of limited duration. Also, in a scenario in which the legislation imposes high dismissal costs or short probationary periods for the employer, firms can use such contracts to evaluate new hires. In such cases, it would be expected that the workers concerned either achieve job stability at that point or are dismissed once the fixed-term contract expires. In some instances, however,

* This article draws substantially on the authors' working paper of the same title, published in Spanish ("¿Son los contratos temporales un peldaño hacia un contrato por tiempo indeterminado?" Documentos de Investigación 93, GRADE, 2019). Section 3 draws on Jaramillo (2019). ** Group for the Analysis of Development (GRADE), email: mjaramillo@grade.org.pe. *** Department of Sociology, University of Wisconsin-Madison and GRADE, email: camposugaz@wisc.edu (corresponding author). The research on which this article is based was supported by the Graduate School in the Office of Vice Chancellor for Research and Graduate Education at the University of Wisconsin-Madison, with funding from the Wisconsin Alumni Research Foundation and the University of Wisconsin-Madison, and by the University of Wisconsin Law School and Institute for Legal Studies. It was also funded by a grant from International Development Research Center Canada.

Responsibility for opinions expressed in signed articles rests solely with their authors, and publication does not constitute an endorsement by the ILO.

This article is also available in French, in *Revue internationale du Travail* 162 (2), and Spanish, in *Revista Internacional del Trabajo* 142 (2).

even if the evaluation of the worker–firm match is positive, the firm may prefer to dismiss the worker or not to renew the contract and to hire someone else before assuming the costs of the more durable labour relationship (Blanchard and Landier 2002; Cahuc and Postel-Vinay 2002; Dolado, García-Serrano and Jimeno 2002). A recent meta-analysis of studies conducted in Australia, Europe, Japan, the Republic of Korea and the United States produced mixed evidence that temporary contracts were an intermediate step between unemployment and permanent employment, with only 32 per cent of observations supporting that hypothesis (Filomena and Picchio 2021).

The increased use of temporary contracts – alongside permanent contracts with high dismissal costs – is also widespread in Latin America, where workers find it even more difficult to obtain permanent employment in an extended informal economy in which firms can choose to offer a fixed-term or permanent contract or even – given the low probability of detection – not to register their workers at all. In so doing, they graft a "third arm" onto the dual labour market, making it a three-tier market.

In the case of the Peruvian labour market, almost six out of every ten salaried workers have an informal job. In addition, temporary contracts predominate in the formal sector. According to the National Household Survey, in 2016, 72 per cent of formal private salaried workers had a fixed-term contract, 26 per cent had an open-ended contract, and the rest were hired under other modalities. The increased use of fixed-term contracts was initially associated with reforms adopted in 1992 that expanded the modalities of temporary contracts and made the requirements for their use more flexible (Chacaltana 2001). More recently, starting in 2002, their use increased again, reflecting the higher relative cost of permanent contracts (Jaramillo 2019).

In this study, we address two questions. First, we measure the extent to which fixed-term contracts may be a stepping stone to permanent employment in a context in which probationary periods are limited and the termination costs of permanent contracts high. Second, we evaluate the dynamics of conversions of temporary contracts by distinguishing between intrafirm and interfirm conversions. Although the literature has analysed the transitions between both types of contract in other countries, it has not differentiated between conversions occurring in the same firm or between firms. Our study contributes to this analysis.

To address these questions, we analyse the dynamics of workers with a fixed-term contract between 2012 and 2016. Job transitions from a temporary to a permanent contract are described within and between firms. We then estimate duration models to identify the timing of these transitions and their associated factors. For these purposes, we use the database of Peru's Electronic Payroll (see section 5.1), which is an official register that every firm must update monthly. This matched employer–employee database captures 11.8 million formal private salaried jobs from 2012 to 2016. This information allows us to follow workers monthly and to identify their transitions and the frequencies at which they occur within the formal sector.

The remainder of our article is structured as follows: a literature review (section 2) is followed by descriptions of the institutional (section 3) and theoretical

(section 4) frameworks. We describe the empirical strategy employed in section 5 and the results in section 6, before setting out our conclusions in section 7.

2. Literature review

The factors that influence the decision to hire workers for specific periods are related to labour market supply and demand (Berton and Garibaldi 2012). On the supply side, at a given salary, jobseekers will prefer greater job stability. However, since workers find temporary jobs more quickly, they face a trade-off between a lower ex ante job-finding rate and a longer ex post employment duration. On the demand side, firms experiencing shocks will find it easier to adjust with a workforce engaged on temporary and flexible contracts. However, they also face a trade-off if they offer temporary contracts, between a lower contracting rate and lower termination costs.

In addition to the accidental factors that justify the use of fixed-term contracts, such as the temporary replacement of a worker or seasonal factors, temporary contracts can, in a context of high dismissal costs and imperfect information, work as a means of visualizing worker productivity (screening) and, as such, as an intermediate step towards permanent employment. Pries and Rogerson (2005) produced a general equilibrium model of matching between firms and workers to explain differences in worker turnover between the United States and continental Europe. They note that the degree of selectivity in hiring workers is a major determinant of the level of turnover, which supports the hypothesis that fixed-term contracts allow firms to respond to temporary fluctuations and play a key role in facilitating the screening of workers. Faccini (2014) extends this model by adding the probability that firms will offer temporary contracts based on the rigidity of labour regulations, such as dismissal costs, and that such contracts will allow them to ascertain the quality of the match.

Regarding the empirical evidence in favour of the use of temporary contracts as a step towards a permanent contract, Portugal and Varejão (2009) study two stages of temporary contracts – hiring and promotion – and find, drawing on 1995–2002 Portuguese data, that such contracts are used to screen workers. In addition, they show that transitions are more frequent in firms that invest more in training per worker. Moreover, Autor (2001) shows that firms that hire through agencies that provide training to workers do so, not to obtain the benefit of greater flexibility, but rather to induce self-selection of applicants and as a screening instrument. Similarly, Ichino, Mealli and Nannicini (2008) find that, in two Italian regions, contracts obtained through temporary employment agencies can promote transitions to permanent contracts. Such transitions occur because workers are able to demonstrate their skills and acquire human capital, contacts and information about permanent vacancies, although they may become trapped in temporary employment if they are stigmatized as lacking alternatives.

Van den Berg, Holm and Van Ours (2002) also find positive evidence of such transitions in the case of the medical career path in the Netherlands. They show that temporary employment as a medical assistant increases the worker's

probability of obtaining a job as a medical specialist, since employers perceive such employment as a positive signal of the applicant's interest in pursuing a medical career. In the case of Great Britain in the 1990s, Booth, Francesconi and Frank (2002) note that, while temporary jobs are less desirable than permanent ones in terms of satisfaction, training and wages, they can function as stepping stones towards a permanent job.

Other authors documenting these transitions are more nuanced. De Graaf-Zijl, van den Berg and Heyma (2011), writing about the Netherlands, show that temporary jobs reduce the duration of unemployment and that there are more transitions to permanent from temporary employment than from unemployment only after one and a half years of steady temporary employment. In other words, the duration of temporary contracts matters. Moreover, permanent jobs found through temporary work are better paid than those found directly from unemployment. Additional factors to consider in terms of transitions to permanent jobs are periods of inactivity and the reasons why the workers concerned were unemployed or inactive. In this respect, Gagliarducci (2005), using a survey with retrospective data obtained from work histories, finds that the probability of moving from temporary to permanent work rises with the duration of the contract but falls after several temporary jobs or, significantly, if the worker experiences employment interruptions. This research suggests that the obstacle is not the temporary contracts themselves, but the interruptions – or the lack of continuity – with which they are associated.

The evidence does not always show that temporary contracts are intermediate steps towards permanent employment. In Spain, for example, researchers have documented a low probability of transition. After analysing the dynamics of changes from and towards temporary employment of workers of different ages, Amuedo-Dorantes (2000) shows that much of the temporary employment in Spain between 1995 and 1996 was "involuntary". The workers concerned had few opportunities to obtain permanent employment. Similarly, Güell and Petrongolo (2007) find that only 10 per cent of Spanish workers with temporary contracts obtain a permanent contract, and therefore reject the hypothesis of temporary contracts as steps towards greater job stability (see also Bover and Gómez 2004 and Arranz, García-Serrano and Toharia 2010).

The finding that temporary contracts are not a stepping stone to a permanent contract aligns with the stylized fact that the probability of obtaining a temporary contract (instead of a permanent one) has been rising, partly owing to partial labour reforms in segmented labour markets. Accordingly, Blanchard and Landier (2002) argue that partial labour reforms are problematic because they can increase the use of fixed-term contracts and the exit rate of workers without prompting a substantial reduction in the duration of unemployment. Such reforms may destroy more jobs than they create and thus increase unemployment (Cahuc and Postel-Vinay 2002). More generally, Boeri (2011), after reviewing the studies evaluating the effect of partial labour reforms in Europe, concludes that a key factor in the probability of transition is the asymmetrical protection of permanent workers with respect to temporary workers: as this asymmetry intensifies, fewer workers transition from temporary to permanent contracts. In particular, Boeri calculates that the correlation between the probability of

obtaining a conversion and the rigidity of employment protection is negative and high (–0.72).

Few studies have focused on contract conversions in Latin America, despite the striking similarities between European and Latin American labour regulations. In fact, to our knowledge, the only study on mobility between different contractual modalities in Latin America was conducted by Trajtemberg and Varela (2015), who focused on temporary work agencies. As reviewed in the literature, in dual labour markets in which permanent and temporary contractual arrangements coexist, the increase in the relative costs of permanent contracts makes it more likely that fixed-term contracts will be used. This reduces employment duration, increases turnover rates and has a pernicious effect on worker welfare. These effects could be limited if temporary contracts led to long-term relationships via a permanent contract.

Because a firm may have various reasons for using fixed-term contracts, finding out whether such contracts serve as stepping stones to permanent employment requires an empirical analysis. The international evidence for European countries is mixed. The findings for Spain are strongly supportive of the dead-end hypothesis, while those for the Netherlands support the stepping-stone hypothesis. For Italy, Germany and France, there is no clear answer (Filomena and Picchio 2021). In all those cases, we know little of the conversion dynamics because there is no indication whether the conversion occurred in the same firm or as a result of the worker transitioning to a new job with a permanent contract.

3. The institutional framework

Peruvian legislation has covered fixed-term contracts since 1970. At the time, such contracts entailed employment benefits established by law but not the employment security afforded by permanent contracts. Pursuant to Decree-Law 18138 of 2 July 1970,[1] fixed-term contracts could be used only if the accidental or temporary nature of the service so required and for a maximum duration of two years. Initially, such contracts were not widely used, due to the restrictions imposed on their application: they were subject to approval by the Ministry of Labour, which had to verify that the firm in question was in fact using them for the purposes stipulated by law. The first significant legislative reform of such contracts was introduced in the early 1990s, when Ministerial Resolution 430-90-TR eliminated the need for approval from the Ministry of Labour. Subsequently, Decree-Law 728 of 8 November 1991[2] expanded the list of situations in which fixed-term employment was possible, established new contract types, extended their maximum duration to three years (further extended to five years in 1995) and did away with the limit on the number of contract renewals. Currently, labour contracts in the private sector are regulated by the consolidated version of Decree-Law 728, which was approved in 1997. Article 4 establishes that the employment contract is, by default, indefinite, but that it can also be "subject to

[1] Peru, Decree-Law 18138 of 2 July 1970, governing the terms and conditions of individual fixed-term contracts or contracts for a specific task.

[2] Peru, Decree-Law 728 of 8 November 1991, on the promotion of employment.

modality", i.e. take the form of a temporary contract, on the conditions stipulated by law. Those conditions are broad: market needs, increased production, or the temporary or accidental nature of the services hired (art. 53).

3.1. Termination of the employment contract and employment protection

Decree-Law 728 also regulates the termination of employment contracts. On the general legal principle that dismissal requires a cause, it establishes penalties for termination "without cause". The cost of terminating an employment relationship in the case of temporary contracts is zero if the contract reaches its end date; it is 1.5 salaries per month not worked if the contract is prematurely terminated by the employer. In other words, even if the employer does not require the worker to report for duty, the contract term is binding since the cost of allowing it to expire is lower than the cost of terminating it before term. In the case of an indefinite contract, Decree-Law 728 establishes financial compensation "as the only reparation for the harm suffered" by the worker in the case of a dismissal without cause (art. 34). The amount of the compensation depends on the worker's years of service with the firm (1.5 salaries per year of service, capped at 12 salaries). Peruvian law also stipulates a three-month probationary period for indefinite contracts. After this period, it protects the worker against dismissal without cause.[3]

Until 2001, the position of Peru's Constitutional Court regarding dismissals without cause was that there was no room for reinstatement since the Decree-Law was clear: the only avenue of redress was compensation. The Court changed its position in its ruling on an appeal in the case of *Huasco v. Telefónica del Perú SAA*.[4] The ruling establishes an additional, procedural reparation regime for dismissal without cause, in the form of *amparo*, a constitutional procedure to "restore things to the state prior to the violation or threatened violation of a constitutional right",[5] that is, to reinstate the employee. Article 34 of Decree-Law 728 was thus invalidated. In 2002, the Constitutional Court developed its argument further and addressed criticisms of its earlier ruling. Both rulings determine a breaking point beyond which dismissals without cause are considered unconstitutional. Depending on the characteristics of the case, the worker can apply to a labour court for substantive redress in the form of financial compensation or to the Constitutional Court for reinstatement to the post.

4. The theoretical framework

This section delineates the principal mechanisms by which a conversion from a temporary to a permanent contract appears to occur in a context in which the worker's productivity is not known at the start of the employment relationship.

[3] The worker and the firm can agree on a longer probationary period (up to six months in the case of skilled or trusted workers and one year in the case of management personnel) "if the job requires a training or adaptation period or if, because of its nature or degree of responsibility, such extension may be justified" (Decree-Law 728, art. 10).

[4] Constitutional Court, *Eusebio Llanos Huasco*, Huanuco, Case No. O 976-2001-AA/TC, 13 March 2003.

[5] Peru, Law No. 23506 of 23 December 1982, on *habeas corpus* and *amparo*.

The main idea is that, beyond their use for accidental or seasonal reasons, temporary contracts can serve to visualize the skills of workers before they are hired permanently (screening function). This is particularly relevant when (i) the probationary period may be insufficient to gauge the worker's productivity and (ii) the costs of dismissing a worker hired for an indefinite period are very high. In a scenario in which (ii) is irrelevant, one might expect that once the worker's skills are known and there is a positive match with what the firm is looking for, the worker's contract will be open-ended. However, the presence of (ii) may impose such a high barrier on the expected productivity of the firm–worker match that contract conversions are limited.

In other words, a conversion will occur if the discounted value of the difference between productivity gains from hiring someone for an indefinite period and keeping them in a fixed-term contract exceeds the costs of doing so. These costs comprise the pay difference between a permanent and a temporary contract plus the discounted value of the dismissal cost, multiplied by the probability of a shock occurring and the employment relationship ending. This implies that where the wage gap is fixed, the higher the dismissal costs, the higher the expected productivity required to make a conversion. Based on this, we propose the following hypotheses:

- Higher dismissal costs will decrease the likelihood of conversion from a fixed-term to a permanent contract.
- The most productive workers will benefit from contract conversions more frequently.
- In a firm that screens workers, the duration of employment on a temporary contract before a contract conversion will be longer than the probationary period.
- Beyond the probationary period, the duration of the temporary contract may be extended up to the legal limit of successive contract renewals and will follow a distribution that is a function of the screening process and the cost of termination.

In the case of a country with an extended informal labour market, the discussion should encompass a prior stage, namely whether to use a contract or not. Only 57 per cent of Peru's salaried workers have a contract. The informal option, which results in a three-tier labour market, can be interpreted as having a dampening effect on workers' bargaining power. The fact that only a little more than half of workers can access a contract makes it harder to negotiate the type of contract to use, which becomes a secondary consideration in such cases. In this sense, the conversion rate of contracts in Peru should be lower than in other countries with more formal labour markets. In principle, temporary contracts are superior to informal jobs, which do not entail any labour rights. Termination costs are relatively high for permanent contracts and low for the other forms of hiring labour. If the risk of detection is significant, which is the case for medium and large-sized firms, fixed-term contracts may be a good substitute vis-à-vis no contract at all (informal hiring). They also shield the firm from bad matches. For micro and small firms facing a low risk of detection, dispensing with a contract may be a good option.

The available limited empirical evidence on these decision margins is not robust enough to provide credible results (Lehmann and Muravyev 2014; see Di Porto, Elia and Tealdi 2017 for a calibration model for France, Italy and Spain). In the case of Peru, the data show that, after the drastic changes in labour market institutions in the 1990s, Peru not only maintained one of the higher informality rates in the region, those rates continued to rise until the early 2000s. Chong, Galdo and Saavedra (2008) argue that one potential explanation is the sharp increase in non-wage labour costs since the early 1990s, in a context in which average productivity fell. Another explanation is that job creation during this period was driven by traditionally "informal" sectors such as retail trade, transportation, financial and business services, while employment in manufacturing and the public sector fell.

5. Empirical strategy

5.1 Data

For our study, we used the Electronic Payroll (*Planilla Electrónica*) database. The Electronic Payroll is an electronic registration system implemented by the Ministry of Labour and Employment Promotion and developed by the National Superintendency of Customs and Tax Administration. It comprises data on employers, workers, pensioners, service providers, personnel in training, consultants and others. It compiles personal information, such as sex, date of birth and level of education. It also compiles labour data, such as type of contract, employment start and end date, pension regime and health system. The worker's occupational category, wages and hours are listed.[6] However, the version of the database to which we had access did not contain all these variables (see section 5.2 for a description of the variables we used).

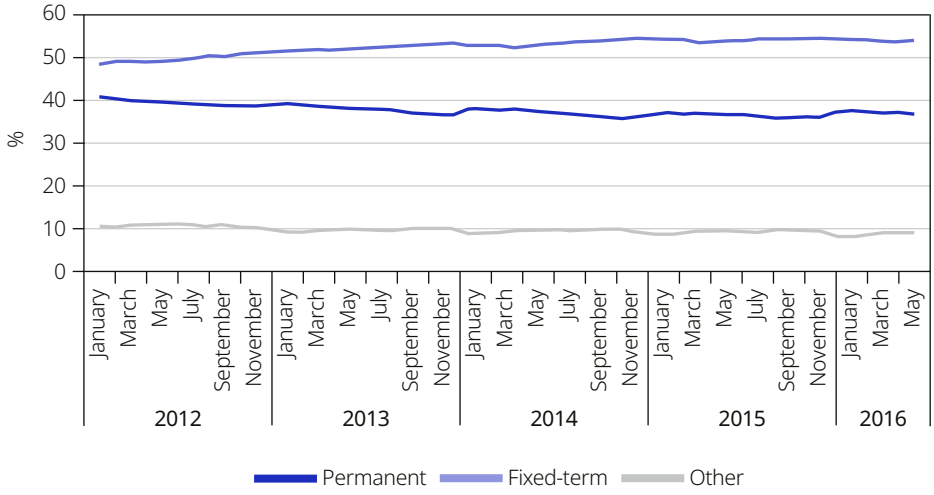
Although the Electronic Payroll was introduced in 2008, its use did not become mandatory for firms of all sizes until 2011. For this reason, this study draws on the database for the period from January 2012 to June 2016. We used 2012 as the initial year, since that was when firms completed the process of adapting to the Electronic Payroll and we were thus able to minimize errors in the calculation of flows resulting from the incorporation of firms into the new system.

For this study, we used only data on salaried workers, specifically the labour information for all formal, salaried private sector workers on the payroll at some point during the 54 months of the period covered. Figure 1 shows changes in employment by type of contract during that period. In 2016, fixed-term and permanent contracts represented 54 and 37 per cent of registered employment, respectively.

As shown in table 1, between January 2012 and June 2016, 11,833,155 worker–job combinations were registered in total, for an average of 3,098,233

[6] Since each firm inputs the information, the margin of error is greater than for survey data. We tried to validate the demographic information, for example by checking inconsistencies over the years or identifying apparent errors such as unreasonable birth dates. The estimates should be interpreted as being at the lower bounds of actual results.

Figure 1. Employment, by type of contract (2012–2016)



Source: Electronic Payroll, 2012–2016.

Table 1. Jobs registered in the Electronic Payroll, by type of contract (2012–2016)

Contract type	Jobs	Percentage
Fixed-term	**7 818 842**	**66.1**
Other type of contract	3 863 895	32.6
Permanent	2 868 741	24.2
Other (special regimes)	995 154	8.4
Inconsistent information	129 568	1.1
Type of contract not reported	20 850	0.2
Total	11 833 155	100.0

Source: Electronic Payroll, 2012–2016.

worker–jobs per month over the entire period.[7] Of these, a tiny fraction (0.2 per cent) did not report information about the type of contract, while 1.1 per cent reported conflicting information. In roughly one third of cases (32.6 per cent), the hiring modality was not fixed-term, leaving a sample of 7,818,842 jobs (equivalent to 4,324,554 workers) registered in at least one month with a fixed-term contract.

5.2. Methodology

We used two methods to determine whether temporary contracts are stepping stones to a permanent contract, which factors play a role in such transitions and their dynamics over time. The first identifies the frequency of transitions from

[7] Some workers had simultaneous jobs during the same period. This was the case for around 7 per cent of all workers with a fixed-term contract. These cases were kept in the analysis to avoid having to come up with an arbitrary definition of the main occupation. Furthermore, the study focuses on job dynamics, that is, the relationship between employer and worker.

a fixed-term to a permanent contract, distinguishing between contract changes that occurred in the same firm and those that occurred when the worker moved to another firm. The second seeks to identify the factors facilitating the transition to permanent employment. We estimate duration models that explicitly incorporate the temporal dimension of contractual transitions.

5.2.1. Identification of conversions

The moment at which a fixed-term contract is converted into a permanent contract (conversion) can be identified in different ways. A first point to note is that the literature analyses contract changes at two points without considering the firm of origin, which is a crucial aspect for evaluating the process underlying the conversions. In fact, it is important to distinguish between contract conversions within the same firm and permanent hires by a firm at time t of workers who had a temporary contract with another firm at t–1. Given that we are mainly interested in the employment relationship between firm and worker, we evaluate intrafirm transitions in greater detail. However, we also want to determine contract changes introduced by new employers and therefore note new permanent contracts and identify the type of contract in the firm of origin.

One way to identify intrafirm transitions is to calculate the change from one month to the next. If the worker had a temporary contract in month t but a permanent contract in month t+1, a first transition has taken place.

This method has the disadvantage that not all changes occur in consecutive months; there may be an intermediate period of "unemployment" or "waiting" before the change occurs. Another way to identify the transition is to observe the changes that occur from one year to the next. A worker who had a fixed-term contract in year t can have one of three employment relationships in the period t+1: unchanged (fixed-term contract with the same firm); converted (to a permanent contract with the same firm); or terminated.

A third way to calculate intrafirm conversions is to follow workers with fixed-term contracts until the employer converts them to permanent contracts. This method has the advantage of allowing us to observe the dynamism between periods more closely and to know the precise moment at which the change occurred.

For the purpose of this study, we analyse only the first transition observed in a job, calculating the duration of employment up to that point and bearing in mind that the duration can be interrupted or continuous. Since we want to know the total time that the employee has worked in the same firm, we use the total duration in the firm. In other words, we add up all observable periods. This duration is incomplete ("incomplete duration") since it does not include the moment at which the employment relationship began. It is nevertheless calculated from the first moment that the worker is observed in the database (left censoring). To correct for this, we use the reported start date of employment and add the months before the moment at which the worker is observed in the database for the first time, on the assumption that the worker was employed under the same contractual modality throughout that preceding period ("complete duration").

5.2.2. Duration models

The duration analysis exploits the time dimension of the database. This is important, as the probability of obtaining a contract conversion can change over time, not only because of the time it takes to evaluate workers (screening), but also because the worker's preferences may change (e.g. reservation wages, other employment options, preference for a permanent contract), which in turn is associated with the perception of the bargaining power of workers and employers, as suggested by Güell and Petrongolo (2007). Furthermore, it is important to identify and understand the time patterns in these processes. To this end, duration models are used that analyse how much time the worker remains in a given state until he or she transitions to another state, or his or her observation is censored (e.g. it is no longer possible to observe the worker).

The Kaplan-Meier estimator is based on a non-parametric estimate that shows the unconditional probability of "surviving" (staying on with a temporary contract) each month against exposure to a particular risk or, in other words, the unconditional probability of "failing" or moving to a permanent contract after that month. In the terminology of our study, the results show the probability of obtaining a conversion after each month. We present the estimates of this function for the total number of workers and for workers disaggregated by sex, age group and level of education. The qualitative and visual comparison of these variables allows us to select the explanatory variables of a semi-parametric model.

In this way, we estimate a duration model using a maximum likelihood process. A continuous time model is estimated, since the precise moment at which the employment relationship started is known, and this allows us to know the time elapsed until the conversion. It is preferable to use a semi-parametric instead of a parametric specification, since the latter can bias the effects, especially the estimation of base risks (baseline hazard) or the variables that change over time if used (Narendranathan and Stewart 1993). We will focus first on single risks; that is, we consider all temporary contracts that have not been converted to permanent as censored. The explanatory variables used in the models are sex, age, level of education, occupational category (executive, white-collar, blue-collar and others), firm size and age, economic sector and year. We considered them as invariable over time, given the relatively short analysis period, and therefore measured all of them at the beginning of the period analysed. We present robust standard errors and clustered standard errors at the firm level.

We then make three extensions to the econometric model outlined. First, we adjust the standard errors to consider unobservable heterogeneity by incorporating a shared frailty term. The frailties are shared within each firm and are assumed to follow a gamma distribution. Given the large amount of data, we opted for a parametric specification. We fit a lognormal, Weibull and piecewise exponential model (with a grid of nine intervals: up to 180 days, 181–360 days, 361–540 days, 541–720 days, 721–900 days, 901–1,080 days, 1,081–1,800 days, 1,801–2,520 days and more than 2,520 days). Since the three models showed a significant frailty effect (results available from the authors on request), we

present the results for the more flexible piecewise exponential model.[8] Second, we fit the Cox model with time-varying variables.

Third, we consider a competing risk model; that is to say, the potential exit of the worker is not only the conversion but also exit from the formal sector (unemployment, inactivity or employment in the informal or public sector) or formal employment elsewhere. This may be relevant if, for example, a worker prefers to accept a higher wage in another firm than to wait for or accept an open-ended contract. Statistically, the difference is that if we do not consider competing risks, any other exit of the worker that is not the conversion is considered censored. On the other hand, once such risks are considered, a conversion's likelihood is affected by the probability that the worker will leave the formal sector or his or her job to work in another formal job, which automatically excludes the possibility of a conversion in the same firm. Additionally, a group of workers may remain employed in the same position, but we stopped observing in June 2016. In the competing risks model, the risk function is the sum of the intensities of transition towards the destination states (Lancaster 1990).

Estimating competing risks involves calculating weights of the probability of censoring an observation, causing the base to expand each time the likelihood is estimated. This generates a demanding computational process, especially considering that the database has more than 7 million observations. For this reason, we decided to take a random sample that makes the information more manageable. This base, made up of 10 per cent of the observations, is at the level of the worker and not of the job, since, previously, a worker could appear more than once in different jobs with fixed-term contracts. Now we evaluate the first destination of each worker. The sample then consists of 428,533 observations that are distributed as follows: conversion (5.6 per cent), outside the formal sector (30.1 per cent), change to other formal job (47.1 per cent) and censored (17.1 per cent).

6. Results

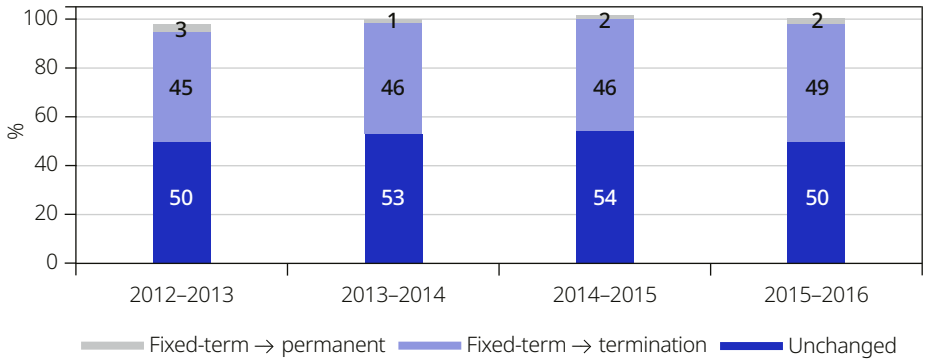
6.1. Rates and conversion patterns

We propose to identify the contractual transitions over one year and between years. Unless stated otherwise, transitions or conversions are intrafirm; transitions from other firms are explicitly identified as such. Figure 2 shows the transitions from one year to the next from a job with a fixed-term contract to three possible employment situations: permanent contract, termination, or no change. In about half of all cases, the worker remained in the same job with the same fixed-term contract for one year. Approximately 46 per cent of workers were terminated within the year. Only 1 to 3 per cent of the fixed-term contracts were converted to permanent contracts during the year.

Using the second method described above, we propose to observe the labour trajectory (spell) of a worker with a fixed-term contract until the first transition to a permanent contract occurs. Thus, in the 54 months analysed,

[8] Rodríguez (2007) also points out that the Cox model and the piecewise exponential model are remarkably similar, providing further support for this choice of parametric model.

Figure 2. Transitions from a fixed-term contract (2012–2016)



Note: The sum of the percentages can exceed 100 because the worker can have more than one status during a year. Termination of the contract can include any of the following arrival states: unemployment, change to another formal job, exit from the formal private sector or exit from the labour force. The Electronic Payroll lists only workers in formal employment, and it is therefore not possible to know to which status the worker has transitioned.

Source: Electronic Payroll, 2012–2016.

we observed a total of 245,265 conversions. In other words, between 2012 and 2016, 245,265 workers benefited from a contract conversion, which is equivalent to 3.13 per cent of all fixed-term jobs registered in those four and a half years. Regardless of the calculation method used, the conversion rates are much lower in Peru than in other countries. During the three years between 2008 and 2011, the conversion rates in countries of the Organisation for Economic Co-operation and Development (OECD) fluctuated between 16 and 58 per cent. Even countries known to have labour markets with stringent worker protection legislation, such as Spain and Italy, had much higher conversion rates (21 and 26 per cent, respectively) (OECD 2014).

The low conversion rates observed in Peru are sufficient evidence to conclude that fixed-term contracts are not functioning as stepping stones to open-ended contracts. While such contracts may enable employers to obtain information for evaluating their workers, a positive evaluation does not appear to be sufficient reason to offer them a permanent contract. Within our conceptual framework, what is apparently happening is that, given the high termination costs of the contract, the observed productivity of the match is not above the firm's minimum threshold for offering a contract conversion. An additional factor may be the lack of formal employment alternatives: labour demand may be such that there is little competition for workers (Güell and Petrongolo 2007; Cao, Shao and Silos 2010). These factors may reflect the absence of generalized worker retention policies or the fact that fixed-term contracts are used mainly as a flexible means of adjusting the level of employment rather than to visualize worker skills (Dolado, García-Serrano and Jimeno 2002; Cahuc, Charlot and Malherbet 2016).

Table 2 shows the average duration of employment for all workers who benefited from a conversion and for different groups of workers. The averages are similar when the workers are grouped by gender and level of education: 31 and 33 months for women and men, respectively; and 32 and 33 months for those

Table 2. Duration of employment before contract conversion (in months) and conversion rates, by group

	Duration of employment (in months)	Conversion rate (percentage)
Total	32	3.1
Sex		
Women	31	3.2
Men	33	3.1
Educational level		
Secondary	32	2.1
Post-secondary	33	4.9
Age		
Up to 30	20	2.0
31–45	35	4.1
Over 45	47	4.8

Source: Electronic Payroll, 2012–2016.

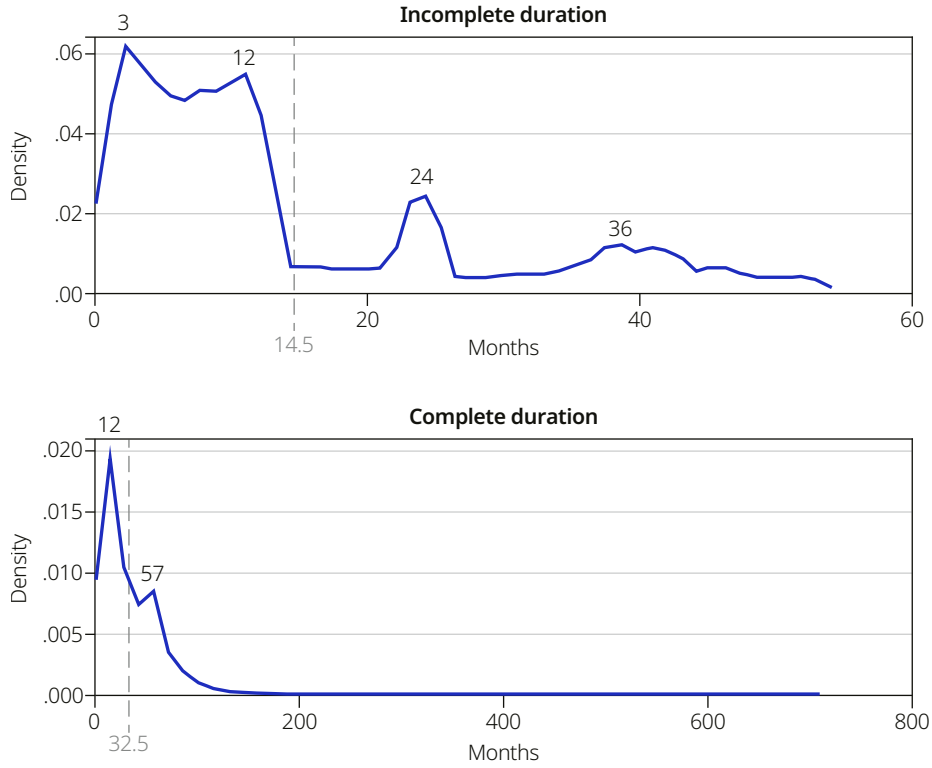
with secondary or post-secondary education, respectively. When the workers are grouped by age, however, the differences are important, with the duration of employment tending to rise with age. The conversion rates are similar for men and women but much higher for those with a higher level of education; they also tend to increase with age. Finally, although the youngest have the lowest conversion rate compared to the total number of workers in other age groups (2 per cent compared to 4.1 per cent of those who are 31 to 45 years old and 4.8 per cent of those who are over 45 years old), when they did benefit from a conversion, they did so sooner than the others.[9]

How do these results compare with those of other countries? Booth, Francesconi and Frank (2002) estimate that the median time that it takes to transition to a permanent contract in Great Britain is between 18 (men) and 26 (women) months for those engaged in seasonal employment and 36 (men) and 42 (women) months for those with fixed-term contracts. In the case of Spain, Güell and Petrongolo (2007) note conversion peaks at around 1, 2 and 3 years, associated with legal limits, with the median being around 18 months. Blanchard and Landier (2002) did a similar calculation for young people in France aged between 20 and 24 and found that, between 1983 and 1999, it took them three to five years to obtain a conversion. Thus, the duration of temporary contracts before conversion in Peru (if such a conversion occurs) does not seem to differ substantially from that of the European countries for which we have data.

Figure 3 shows the distribution of the incomplete and complete duration of employment in months until the first transition occurred in the 245,265 cases in which there was a conversion. The incomplete average is 14.5 months and the complete average 32.5 months, indicating that a firm takes, on average, almost three years to convert a temporary contract into a permanent one, when such a conversion occurs. In the incomplete duration panel of figure 3, where the beginning of the employment relationship for a set of observations is unknown, we noticed four peaks, at 3, 12, 24 and 36 months. In the complete duration

[9] Mean test is t=124.34.

Figure 3. Incomplete and complete duration of fixed-term contracts before the first transition to a permanent contract (in months)



Source: Electronic Payroll, 2012–2016.

panel, where we complete the spells with the start date reported, a first peak occurs at 12 months and another at 57 months. This suggests that there is something systematic about the timing of conversions: on the one hand, there is a group whose employment duration before the conversion is about one year; on the other, the last value is very close to the maximum statutory duration of temporary contracts, which is five years.

At this point, it is worth discussing whether the short probationary period of permanent contracts is why workers are hired on fixed-term contracts. Cahuc, Charlot and Malherbet (2016) suggest that employers may use such contracts to screen workers' skills if the contracts are longer than the probationary period. To test this hypothesis, we took the contracts that started in 2012 and calculated the duration of employment according to the type of contract. Since the last date on which we can observe the workers is June 2016, the maximum duration of a contract is 54 months. In Peru, fixed-term contracts represented around 90 per cent of new contracts and lasted an average of 8.5 months, which is less than the maximum duration of this type of contract (60 months) and longer than the probationary period.

The fact that the duration of temporary contracts is longer than the probationary period is nevertheless not sufficient evidence to conclude that such contracts serve as stepping stones to permanent employment. In Peru, some fixed-term contracts (about 2.8 per cent) exceed the legal limit. More to the point, the conversion rates to permanent contracts are very low. In other words, the "insufficient probationary period" argument would be valid if we observed simultaneously that the duration of fixed-term contracts was longer than the probationary period and that conversion rates were high. We observed the first, but not the second.

So far, we have tested and rejected the hypothesis that fixed-term contracts function as stepping stones to a permanent contract. That is no reason, however, not to consider the role of screening in transitions to permanent contracts. Studies conducted of European countries have brought to light evidence of mobility between contracts while observing high transition rates. Some of those who support the hypothesis of temporary contracts as instruments for screening have done so based on theoretical models (Faccini 2014; Pries and Rogerson 2005). Among the empirical studies, Portugal and Varejão (2009) point out that screening occurs because the proportion of job exits is positively associated with the ratio of temporary contracts and the proportion of conversions. They analyse these proportions simultaneously, however, thus eliminating the sequentiality that should underpin the transitions. Gagliarducci (2005) uses retrospective data from workers to infer that there is screening because successful matches benefit from conversions more quickly and the probability of conversion decreases over time. We use an alternative identification strategy based on the comparison of transitions in the same firm and between firms.

Temporary contracts in other previous jobs may function as a signal for new employers, who may evaluate, not the specific experience in the firm, but the more general level of experience. To measure this practice, we took all permanent contracts starting in 2012 and ascertained whether the workers concerned had had a fixed-term contract with another firm. The results are summarized in table 3.[10] We find that, in addition to the new permanent contracts that resulted from conversions in the same firm, around 1.7 million permanent contracts were originated in the period analysed; in 38 per cent of those cases, the workers came from a previous job in another firm. Of those 38 per cent, 52 per cent had had a permanent contract with the other firm and the rest had had a temporary contract.[11] Consequently, at least 29 per cent of the new permanent contracts originated in a job with a fixed-term contract (either in the same firm or with another firm); in other words, given that 245,265 of the 7,818,842 fixed-term jobs registered in the four and a half years analysed were converted, and that 309,555 employees benefited from a conversion on arrival from another firm,

[10] The number of jobs shown in the table represents gross job creation. The Peruvian labour market is known to be very dynamic, as reflected in high rates of worker entry and exit (see Jaramillo and Campos 2020).

[11] These results represent the lower bound of the transitions, since many of the permanent jobs started after 2012 and may also have originated in other previous formal jobs that we could not observe.

Table 3. Permanent contracts started between 2012–2016, according to contract origin

	Jobs	Percentage
New permanent contracts	1 942 386	100
Conversion in the same firm	**245 265**	**13**
Other origin	1 697 121	87
Unidentifiable origin*	**1 052 215**	**54**
From another job	644 906	33
With a permanent contract	335 351	17
With a fixed-term contract	**309 555**	**16**

* Workers who could not be observed in a previous job for various reasons: they were previously registered in the Electronic Payroll but could not be observed because the study starts in 2012; they were hired as service providers or under an agreement of apprenticeship; or they transitioned from inactivity, informality or unemployment.

Source: Electronic Payroll, 2012–2016.

7.1 per cent of fixed-term contracts led to permanent contracts during the period analysed, and 44 per cent of those conversions were in the same firm.

The evidence presented sheds new light on how fixed-term contracts may indirectly influence the probability of obtaining a permanent contract, either because of the worker's accumulated experience, for example, or the reference to previous employers as a signal for new hires. We can also compare this route with that by which temporary contracts are converted to permanent ones after screening in the same firm. About half (44 per cent) of the transitions related to workers who had initially had a temporary contract in the same firm and were presumably being evaluated with a view to long-term employment.

6.2. Results for the duration models

The Kaplan-Meier estimates of the conversion function for the total number of workers and its disaggregation by sex, age group and level of education show that the overall probability of conversion differs for the three comparison groups (log-rank tests: $Pr > Chi2 = 0.01$ for sex, $Pr > Chi2 = 0.00$ for age and level of education) (figures available from the authors on request). Results for the semi-parametric and parametric estimates of the duration models are presented in the form of hazard ratios; that is, we present the risk ratio of each explanatory variable relative to its base values.

Table 4 presents the estimated results for the single-risk duration models. Column (a) presents the results with robust standard errors and column (b) with clustered standard errors at the firm level; column (c) incorporates the frailty term. The results for the three models are very similar. Being a man increases the probability of obtaining a conversion. The likelihood of obtaining a conversion decreases with age and increases with educational level. In terms of the occupational category, executives (Other) have the highest probability of obtaining a conversion, followed by white-collar and blue-collar workers.

A conversion is more likely to occur in larger firms. Findings from the first two models show that the larger the firm, the higher the probability of

Table 4. Maximum likelihood estimates of the single-risk duration models for the conversion of fixed-term to permanent contracts

	(a)	(b)	(c)
Women	0.924*** (0.004)	0.924* (0.031)	0.949*** (0.004)
Age			
31–45	0.942*** (0.004)	0.942 (0.031)	1.412*** (0.007)
45 or more	0.779*** (0.005)	0.779*** (0.036)	1.562*** (0.010)
Educational level			
Secondary	1.199*** (0.013)	1.199* (0.102)	1.101*** (0.013)
Tertiary	1.437*** (0.017)	1.437*** (0.126)	1.267*** (0.016)
Post-graduate	1.302*** (0.028)	1.302* (0.170)	1.396*** (0.030)
Occupation			
Blue-collar	0.647*** (0.017)	0.647*** (0.059)	0.649*** (0.018)
White-collar	0.928** (0.025)	0.928 (0.070)	0.915** (0.025)
Other	0.096*** (0.048)	0.096*** (0.061)	0.256* (0.134)
Firm size			
11–100 workers	1.064*** (0.009)	1.064* (0.029)	1.071*** (0.017)
More than 100 workers	1.146*** (0.010)	1.146* (0.077)	1.032 (0.033)
Firm age	1.004*** (0.001)	1.004 (0.004)	1.030*** (0.001)
Year			
2013	1.730*** (0.010)	1.730*** (0.070)	6.202*** (0.043)
2014	0.895*** (0.005)	0.895*** (0.023)	1.665*** (0.011)
2015	0.936*** (0.005)	0.936* (0.030)	1.809*** (0.013)
2016	1.360*** (0.007)	1.360*** (0.046)	2.190*** (0.014)
Sector			
Agriculture and fishing	0.696*** (0.008)	0.696*** (0.129)	0.969 (0.043)
Mining	1.544*** (0.018)	1.544* (0.267)	1.401*** (0.084)
Manufacturing	1.358*** (0.011)	1.358** (0.157)	1.175*** (0.034)
Construction	0.965** (0.011)	0.965 (0.153)	1.091** (0.035)
Commerce	1.433*** (0.012)	1.433** (0.152)	1.155*** (0.029)
Hotels	1.106*** (0.014)	1.106 (0.128)	0.895** (0.030)
Transport	1.359*** (0.013)	1.359** (0.165)	1.101** (0.032)
Finance/real estate/business	0.978*** (0.007)	0.978 (0.109)	1.085** (0.028)
Education	0.917*** (0.011)	0.917 (0.172)	1.157*** (0.045)
Intervals			
[0,180]			0.455*** (0.003)
[181,360]			0.250*** (0.002)
[361,540]			0.125*** (0.001)
[541,720]			0.094*** (0.001)
[721,900]			0.053*** (0.001)
[901,1080]			0.036*** (0.001)
[1081,2520]			0.034*** (0.001)
[2521,∞(			0.022*** (0.001)
Log pseudolikelihood	–3365510.1	–3365510.1	–706199.07
No. of observations	7 733 830	7 733 830	7 733 830

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors in parentheses.

Note: (a) single-risk semi-parametric model with fixed covariates and robust standard errors; (b) single-risk semi-parametric model with fixed covariates and clustered standard errors at the firm level; (c) piecewise exponential shared frailty model with fixed covariates.

Source: Electronic Payroll, 2012–2016.

conversion. The third model only shows a significant result for mid-sized firms (11–100 workers). Firms with more than 100 workers accounted for 72 per cent of conversions, but those conversions represented only 3.3 per cent of the jobs registered between 2012 and 2016. Working in the mining, manufacturing, commerce and transportation sectors increased the probability of obtaining a conversion. The sectors with a lower probability of conversion (agriculture and fishing, construction, and finance/real estate/business activities) generated more than half of all jobs during that period; they were the sectors that made the most use of fixed-term contracts relative to other types of contract. As seen in section 4, sectors characterized by high levels of informality provided tentative support for the hypothesis that workers in industries featuring high degrees of informality have limited power to negotiate more favourable labour contracts. The other aspect of interest in our results is that the estimated covariate effects are remarkably stable in the shared frailty model. The one change worth mentioning is the coefficient for age, which changes sign.

Table 5 presents the single-risk models with time-varying covariates in columns (a) and (b), while column (c) contains the competing-risks model results. The results are consistent with the findings presented in table 4: being a woman or over 30, having no higher education, being a blue-collar worker, working in a small and relatively new firm, or being employed in agriculture, construction or financial/real estate/business reduced the probability of obtaining a conversion. The coefficient signs and ordering of the results are the same in the model of competing risks, except for age, suggesting that the effect of the other variables analysed does not differ much if the estimate includes the probabilities of exit to other destinations.

7. Conclusions

The use of fixed-term contracts has grown in recent decades, a phenomenon that has gone hand in hand with reductions in the probability of obtaining a permanent contract. This is to some extent a result of partial labour market reform aimed at maintaining or even raising the cost of dismissal under permanent contracts while at the same time facilitating the hiring of workers on temporary contracts with low or no termination costs. The Peruvian context is notably different from most countries in Europe, where there has been more discussion, since the extended informal economy allows firms to opt for fixed-term or permanent contracts, or not registering its workers, making the duality of the labour market obtain an additional arm (three-tier labour market). In the present study, we have sought to determine how fixed-term contracts in the formal sector function as stepping stones towards permanent employment in Peru.

Using a longitudinal database from a system that registers all formal private salaried workers, and considering the years 2012 to 2016, we show that fixed-term contracts are not a stepping stone towards a permanent contract. Between January 2012 and June 2016, only 245,265 contracts were converted from fixed-term to permanent, equivalent to 3 per cent of all fixed-term jobs registered in those four and a half years. If we include new permanent contracts obtained

Table 5. Maximum likelihood estimates of the single-risk with time-varying covariates and competing-risks duration models for the conversion of fixed-term to permanent contracts

	(a)	(b)	(c)
Women	0.936*** (0.004)	0.936* (0.031)	0.827*** (0.011)
Age			
31–45	0.876*** (0.004)	0.876*** (0.028)	1.202*** (0.018)
45 or more	0.715*** (0.004)	0.715*** (0.032)	1.114*** (0.022)
Educational level			
Secondary	1.110*** (0.010)	1.110 (0.097)	1.275*** (0.046)
Tertiary	1.252*** (0.012)	1.252** (0.117)	1.693*** (0.063)
Post-graduate	1.088** (0.026)	1.088 (0.133)	1.386*** (0.091)
Occupation			
Blue-collar	0.398*** (0.008)	0.398*** (0.033)	0.573*** (0.047)
White-collar	0.537*** (0.011)	0.537*** (0.037)	0.900 (0.073)
Other	0.061*** (0.017)	0.061*** (0.021)	0.001*** (0.001)
Firm size			
11–100 workers	1.038*** (0.008)	1.038 (0.029)	1.141*** (0.032)
More than 100 workers	1.132*** (0.009)	1.132 (0.075)	1.245*** (0.034)
Firm age	1.003*** (0.001)	1.003 (0.005)	1.012*** (0.001)
Year			
2013	0.537*** (0.003)	0.537*** (0.040)	2.702*** (0.051)
2014	0.519*** (0.003)	0.519*** (0.039)	1.455*** (0.027)
2015	0.790*** (0.004)	0.790*** (0.061)	1.432*** (0.029)
2016	0.557*** (0.004)	0.557*** (0.042)	2.764*** (0.051)
Sector			
Agriculture and fishing	0.659*** (0.008)	0.659* (0.124)	0.741*** (0.028)
Mining	1.511*** (0.017)	1.511* (0.266)	1.642*** (0.059)
Manufacturing	1.341*** (0.011)	1.341* (0.157)	1.475*** (0.040)
Construction	0.982 (0.012)	0.982 (0.157)	0.791*** (0.031)
Commerce	1.449*** (0.012)	1.449** (0.157)	1.482*** (0.039)
Hotels	1.106*** (0.014)	1.106 (0.126)	1.162*** (0.048)
Transport	1.403*** (0.013)	1.403** (0.172)	1.395*** (0.043)
Finance/real estate/business	0.995 (0.008)	0.995 (0.111)	1.027 (0.026)
Education	1.001 (0.012)	1.001 (0.202)	0.872*** (0.032)
Log pseudolikelihood	–3380028.1	–3380028.1	–292144.1
No. of observations	13 877 726	13 877 726	428 533

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Standard errors in parentheses.

Note: (a) single-risk semi-parametric model with time-varying covariates and robust standard errors; (b) single-risk semi-parametric model with time-varying covariates and clustered standard errors at the firm level; (c) competing-risks model.

Source: Electronic Payroll, 2012–2016.

during previous formal employment on fixed-term contracts, the rate rises to 7 per cent (i.e. about half the conversions occur in the same firm), which is much lower than the rates of between 16 and 58 per cent observed in other countries.

The average duration of employment before the contract conversion is 32 months, with some differences between groups, most significantly between groups of different educational levels and between age groups, with the youngest benefiting from faster (albeit less frequent) conversions than adults. The

duration models show that being a man or up to 30 years old, benefiting from higher education, being an executive and working in a medium or large-sized firm or in the mining, manufacturing, commerce or transport sectors are factors associated with greater probabilities of obtaining a conversion.

Moreover, a particular pattern was observed in the firms converting contracts from fixed-term to permanent. In the time preceding the conversion, two peaks were identified, at 12 and 57 months, suggesting a group whose screening process takes one year. The latter value is nonetheless close to the maximum statutory duration of successive contracts, which is five years. We therefore conclude that, although fixed-term contracts do not systematically function as an intermediate step between unemployment and a permanent contract, they allow firms to obtain information from workers or to assess their skills directly. Given the productivity threshold imposed by dismissal costs, however, even if the worker evaluation is positive, firms may prefer to dismiss the worker or not renew the contract and to hire a new worker rather than to assume the costs of an indefinite contract. This last finding is consistent with recent evidence. In a large sample of 21 OECD countries, workers in permanent jobs have higher human capital endowments (numerical, reading or technological skills, the degree of discretion in tasks and the level of influence over other workers) than workers with temporary contracts. This gap is even greater in countries with more rigid employment protection (Kahn 2018).

References

Amuedo-Dorantes, Catalina. 2000. "Work Transitions Into and Out of Involuntary Temporary Employment in a Segmented Market: Evidence from Spain". *Industrial and Labor Relations Review* 53 (2): 309–325.

Arranz, José M., Carlos García-Serrano, and Luis Toharia. 2010. "The Influence of Temporary Employment on Unemployment Exits in a Competing Risks Framework". *Journal of Labor Research* 31 (1): 67–90.

Autor, David H. 2001. "Why Do Temporary Help Firms Provide Free General Skills Training?" *Quarterly Journal of Economics* 116 (4): 1409–1448.

Berton, Fabio, and Pietro Garibaldi. 2012. "Workers and Firms Sorting into Temporary Jobs". *Economic Journal* 122 (562): F125–F154.

Blanchard, Olivier, and Augustin Landier. 2002. "The Perverse Effects of Partial Labour Market Reform: Fixed-Term Contracts in France". *Economic Journal* 112 (480): F214–F244.

Boeri, Tito. 2011. "Institutional Reforms and Dualism in European Labor Markets". In *Handbook of Labor Economics*, Vol. 4B, edited by Orley Ashenfelter and David Card, 1173–1236. Amsterdam: Elsevier.

Booth, Alison L., Marco Francesconi, and Jeff Frank, J. 2002. "Temporary Jobs: Stepping Stones or Dead Ends?". *Economic Journal* 112 (480): F189–F213.

Bover, Olympia, and Ramón Gómez. 2004. "Another Look at Unemployment Duration: Exit to a Permanent vs. a Temporary Job". *Investigaciones Económicas* 28 (2): 285–314.

Cahuc, Pierre, Olivier Charlot, and Franck Malherbet. 2016. "Explaining the Spread of Temporary Jobs and Its Impact on Labor Turnover". *International Economic Review* 57 (2): 533–571.

Cahuc, Pierre, and Fabien Postel-Vinay. 2002. "Temporary Jobs, Employment Protection and Labor Market Performance". *Labour Economics* 9 (1): 63–91.

Cao, Shutao, Enchuan Shao, and Pedro Silos. 2010. "Fixed-Term and Permanent Employment Contracts: Theory and Evidence", Working Paper 2010-13. Atlanta, GA: Federal Reserve Bank of Atlanta, https://www.atlantafed.org/-/media/documents/research/publications/wp/2010/wp1013.pdf.

Chacaltana, Juan J. 2001. "Reforma en la contratación y despido en el Perú de los 90: lecciones y perspectivas". *Economía* 24 (48): 133–151.

Chong, Alberto, Jose Galdo, and Jaime Saavedra. 2008. "Informality and Productivity in the Labor Market in Peru". *Journal of Economic Policy Reform* 11 (4): 229–245.

de Graaf-Zijl, Marloes, Gerard J. van den Berg, and Arjan Heyma. 2011. "Stepping Stones for the Unemployed: The Effect of Temporary Jobs on the Duration until (Regular) Work". *Journal of Population Economics* 24 (1): 107–139.

Di Porto, Edoardo, Leandro Elia, and Cristina Tealdi. 2017. "Informal Work in a Flexible Labour Market". *Oxford Economic Papers* 69 (1): 143–164.

Dolado, Juan J., Carlos García-Serrano, and Juan F. Jimeno. 2002. "Drawing Lessons from the Boom of Temporary Jobs in Spain". *Economic Journal* 112 (480): F270–F295.

Faccini, Renato. 2014. "Reassessing Labour Market Reforms: Temporary Contracts as a Screening Device". *Economic Journal* 124 (575): 167–200.

Filomena, Mattia, and Matteo Picchio. 2021. "Are Temporary Jobs Stepping Stones or Dead Ends? A Meta-Analytical Review of the Literature", IZA Discussion Paper No. 14367. Bonn: Institute of Labor Economics.

Gagliarducci, Stefano. 2005. "The Dynamics of Repeated Temporary Jobs". *Labour Economics* 12 (4): 429–448.

Güell, Maia, and Barbara Petrongolo. 2007. "How Binding Are Legal Limits? Transitions from Temporary to Permanent Work in Spain". *Labour Economics* 14 (2): 153–183.

Ichino, Andrea, Fabrizia Mealli, and Tommaso Nannicini. 2008. "From Temporary Help Jobs to Permanent Employment: What Can We Learn from Matching Estimators and Their Sensitivity?" *Journal of Applied Econometrics* 23 (3): 305–327.

Jaramillo, Miguel. 2019. "The Unprotecting Effects of Employment Protection: The Impact of the 2001 Labor Reform in Peru", GLO Discussion Paper Series No. 299. Maastricht: Global Labour Organization.

Jaramillo, Miguel, and Daniela Campos. 2020. *La dinámica del mercado laboral peruano: creación y destrucción de empleos y flujos de trabajadores*. Lima: Grupo de Análisis para el Desarrollo (GRADE).

Kahn, Lawrence M. 2018. "Permanent Jobs, Employment Protection, and Job Content". *Industrial Relations* 57 (3): 469–538.

Lancaster, Tony. 1990. *The Econometric Analysis of Transition Data*. Cambridge: Cambridge University Press.

Lehmann, Hartmut, and Alexander Muravyev. 2014. "Labor Market Institutions and Informality in Transition and Latin American Countries". In *Social Insurance, Informality, and Labor Markets: How to Protect Workers While Creating Good Jobs*, edited by Markus Frölich, David Kaplan, Carmen Pagés, Jamele Rigolini and David Robalino, 375–409. Oxford: Oxford University Press.

Narendranathan, Wiji, and Mark B. Stewart. 1993. "Modelling the Probability of Leaving Unemployment: Competing Risks Models with Flexible Base-Line Hazards". *Journal of the Royal Statistical Society* 42 (1): 63–83.

OECD (Organisation for Economic Co-operation and Development). 2014. *OECD Employment Outlook 2014*. Paris.

Portugal, Pedro, and José Varejão. 2009. "Why Do Firms Use Fixed-Term Contracts?", IZA Discussion Paper No. 4380. Bonn: Institute for the Study of Labor.

Pries, Michael, and Richard Rogerson. 2005. "Hiring Policies, Labor Market Institutions, and Labor Market Flows". *Journal of Political Economy* 113 (4): 811–839.

Rodríguez, Germán. 2007. *Lecture Notes on Generalized Linear Models*. https://grodri.github.io/glms/notes/.

Trajtemberg, David, and Hernan Varela. 2015. "Movilidad laboral de los trabajadores con contratos eventuales: ¿mecanismo de inserción en empleos estables o regularización de la inestabilidad laboral?". *Trabajo y Sociedad* 24: 109–130.

van den Berg, Gerard J., Anders Holm, and Jan C. Van Ours. 2002. "Do Stepping-Stone Jobs Exist? Early Career Paths in the Medical Profession". *Journal of Population Economics* 15 (4): 647–665.