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Recent trends in the use of temporary contracts in Spain

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RESUMEN (NON TECHNICAL SUMMARY)

Durante las tres últimas décadas, España ha liderado el ranking europeo de los indicadores del empleo temporal. Como consecuencia de la reforma laboral aprobada a mediados de los años 80, la tasa de temporalidad explotó, alcanzando un máximo con la burbuja inmobiliaria. Ninguna de las numerosas reformas aprobada desde entonces consiguió aliviar este problema de forma significativa. Durante la Gran Recesión, sin embargo, este indicador experimentó una mejoría notable, aunque no suficiente para dejar las posiciones más altas del ranking europeo. En este documento, mostramos que dicha evolución de las tasas de temporalidad no muestra una mejoría real de la precariedad laboral en el mercado de trabajo español.

La duración media de los contratos es cada vez más corta. En especial, el uso de los contratos de muy corta duración (de unas horas, hasta menos de una semana) tienen hoy en día un mayor peso que en el período pre-crisis. No obstante, este fenómeno no es totalmente captado por indicadores como la tasa de temporalidad cuando se calcula con datos procedentes de la Encuesta de Población Activa, ocultando parte de la precariedad laboral real. Indicadores y fuentes de datos alternativas que si permiten captarlo, muestran todo lo contrario.

Una forma de evaluar si el mayor uso de contratos de corta duración y el aumento del número de contratos por persona está afectando a las trayectorias de empleo es analizar si los cambios en la contratación temporal han empeorado el de por sí muy limitado acceso al empleo indefinido.

Nuestro análisis se centra en los jóvenes menores de treinta años. En un primer ejercicio demostramos que la acumulación de contratos favorece la consecución de primeros empleos con contratos temporales. Sin embargo, la duración esperada de estos contratos es menor para jóvenes que han acumulado más contratos y a partir de unos 7 a 8 contratos se reduce la probabilidad de acceder a un contrato indefinido. Esta evidencia apunta al riesgo para determinados colectivos de quedar atrapados en ciclos de contratos de (muy) corta duración.

El segundo, y mas llamativo ejercicio, estima directamente el tiempo que los jóvenes necesitan para encontrar su primer empleo indefinido desde su entrada en el mercado laboral. Los datos muestra claramente que el acceso al empleo indefinido se ha hecho más difícil en comparación con el período previo a la Gran Recesión, tanto en términos del tiempo transcurrido hasta el primer contrato indefinido como en el número de contratos temporales previos. Además en términos relativos el deterioro ha sido mayor para las personas menos cualificadas.

Las diferencias persisten cuando controlamos por las características individuales y del primer empleo. En concreto, mostramos que la probabilidad que un individuo con características medias continúe sin haber encontrado un empleo indefinido es significativamente mayor a partir del año 2008. Sin embargo, las diferencias desaparecen casi por completo si eliminamos también el efecto del ciclo económico. Por tanto, los resultados parecen indicar que el deterioro en el acceso al empleo indefinido se debe principalmente al aumento en la tasa de paro y no a los cambios en la contratación temporal o las reformas laborales de 2010 y 2012. Pero, y esto es clave, estas mismas reformas tampoco han servido para mejorar el acceso al empleo indefinido.

Palabras clave: Empleos temporales, Gran Recesión, Mercados de trabajo duales,
Códigos JEL: D92, G33, J23.

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Abstract

This paper documents recent trends in the use of temporary contracts in Spain. Until the outbreak of the recent economic and financial crisis, Spain was leading the ranking of countries with the largest share of temporary employees. During the crisis this share has fallen to its lowest level in decades, but in the recovery the share of temporary employees is on the rise again. Indeed, last year Spanish employers formalised more contracts than ever before. A particularly striking feature is the steep rise in fixed-duration contracts lasting less than a week. We document these trends and discuss the relevance of institutional factors for the high incidence of temporary employment in Spain. In addition, we perform various econometric exercises to assess whether the surge of short-duration contracts has led to a further deterioration in the access to permanent employment.

KEYWORDS: Temporary jobs, Great Recession, dual labour markets constraints.
JEL CODES: D92, G33, J23.

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1 Introduction

Since the late eighties, Spain is struggling with the consequences of an exceptionally high share of temporary employees. In the recent crisis this share has fallen to its lowest level in almost thirty years, but in the recovery the share of temporary employees is on the rise again. Indeed, in 2016 more employment contracts were formalised than ever before in Spanish history, while aggregate employment continues well below its pre-crisis peak. A particularly striking phenomenon is the strong rise in the number of fixed-duration contracts that last less than a week. The objective of this paper is to document these recent trends and to offer a tentative assessment of the implications of the rising importance of short-duration jobs for the access to stable regular jobs.

The recent crisis has revived the debate about the determinants and the consequences of the high incidence of temporary employment in Spain. The origin of the problem can be traced back to a reform in the eighties that temporarily liberalised the use of temporary contracts. The reform was intended to spur job creation, but ended up causing a structural shift in the composition of contracts. Despite various countervailing reforms, the share of temporary employment stabilised at levels above 30 percent and remained there until 2008.

The excessive use of temporary contracts comes at a high cost. At a macroeconomic level it is associated with high unemployment volatility and low productivity growth. According to research by the IMF, Spanish employment is more sensitive to changes in the growth rate of GDP than employment in any other industrialised country (IMF, 2010). Moreover, temporary employees receive less training than permanent employees, which negatively affects productivity growth. At the individual level, the main victims are youth. A large body of research has established that temporary contracts fail to act as stepping-stones to regular employment for many entrants in Spain (e.g. Amuedo-Dorantes (2000), Guell and Petrongolo (2007) or García-Pérez and Muñoz-Bullón (2011)). Moreover, recent research by García-Pérez, Marinescu and Vall Castello (2016) suggests that the 1984 reform imposed lifetime losses on low-educated entrants in the form of lower earnings and fewer days of work.

In this paper we update some of this evidence with the use of data from adminis-

trative sources and the Spanish Labour Force Survey (LFS). The analysis is divided in four parts and pays particular attention to the recent rise in the number of short-duration contracts.

The first part of the analysis offers an account of the institutional factors that contribute to the high incidence of temporary employment in Spain. The discussion highlights the key role of the dual nature of Spain's employment protection legislation (EPL). Historically, the Spanish legislation offered comparatively high levels of protection for employees with permanent jobs, while the use of temporary contracts is *de facto* almost liberalised since 1984. This large gap in the stringency of EPL provides a strong incentive for the creation of temporary jobs and induces a high degree of rotation since firms are reluctant to upgrade temporary workers to a permanent job. Recent reforms have reduced the size of the gap, but these measures have not resolved the problem.

The second part of the analysis offers basic comparative evidence on the use of temporary contracts. A prime objective of this part is to show that the comparatively high incidence of temporary contracts in Spain cannot be attributed to economic fundamentals such as the sectoral composition of GDP or employment. Seasonal activities make up a larger share of employment than in most other European countries, but a straightforward decomposition of the international differences in the share of temporary employment indicates that this feature explains less than 20% of the observed differences. The remaining 80% is due to within-sector differences in the share of temporary contracts, with Spain heading the ranking in most sectors and occupations.

After this first exploration of the data, we proceed with a detailed analysis of the recent rise in the share of short-duration contracts. Using official administrative data we document a strong rise in the number of contracts that last less than a week. Nowadays, these contracts make up more than 25% of all employment contracts, and in parallel we observe a decline in the number of temporary contracts with an unknown termination date or a planned duration of more than three months. Average contract length is therefore diminishing which explains why the total number of contracts is breaking historical records while total employment is still well below its pre-crisis peak.

Interestingly, the Spanish LFS fails to capture this trend. Due to its quarterly

frequency, the LFS captures only a fraction of the short-duration employment spells. This feature generates a time-aggregation bias that seems to have become stronger in recent years. It is important to stress that the rise in short-duration contracts is unrelated to the reforms adopted during the crisis. The growth in short-duration jobs started well before the crisis and is concentrated among low-educated workers and in sectors like accommodation and food service activities. To some extent, short-duration contracts may therefore act as an alternative for the zero-hour contracts that are increasingly used in countries like the Netherlands or the UK. Furthermore, outsourcing and recent technological advances may have made it easier for firms to hire workers for the exact duration of specific tasks. The latter might explain why 11% of the shortest contracts are formalised by firms in the manufacturing sector, which is a sector that tends to offer high levels of employment stability.

Our data do not allow us to distinguish between these potential explanations. Instead, we use discrete-time duration models to analyse the implications of the rise in the number of short-duration jobs for the already poor access to permanent employment. The analysis focuses on young workers below 30. Our results indicate that the exit rate from unemployment to temporary employment is monotonically increasing in the number of previous employment spells. By contrast, the exit to permanent employment follows an inverted-U pattern, suggesting that the accumulation of a large number of employment spells penalises job seekers. Finally, in an extension we directly estimate the time it takes entrants to find their first permanent job. The results confirm the deterioration in the access to permanent employment, but the bulk of the effect is due to the deterioration in the aggregate labour market conditions.

2 Institutional background

As mentioned in the Introduction, the Spanish labour market is characterised by marked differences in the stringency of employment protection for permanent and temporary jobs. The dual nature of EPL can be traced back to reforms in the early eighties.

At the time, the first democratic governments were struggling to find viable ways to dismantle the rigid system of industrial relations prevailing under the Franco regime.

The 1980 Workers' Statute had introduced a system of collective bargaining and more generous unemployment insurance, but it had preserved the existing EPL provisions and imposed strong limits on the use of temporary contracts. However, the deterioration of the labour market in the aftermath of the oil crises forced the authorities to implement further reforms. In 1984, this resulted in the far-reaching decision to liberalise the use of fixed-term contracts, a classic example of a partial reform that introduces flexibility at the margin and preserves the rights of incumbents.

The liberalisation was achieved through the introduction a new temporary contract (*contrato temporal de fomento de empleo*) with low levels of protection that could be used for any kind of activity, while the stringency of employment protection on permanent contracts was left unchanged. Besides stringent judicial control, the Law entitled permanent employees to generous redundancy payments that amounted to 45 days of salary per year of service with a maximum of 42 monthly wages in case of an unfair dismissal. The Law also contained provisions for fair dismissals with lower severance pay — 20 days of salary and a maximum of one year of salary — but access to the fair dismissal procedure was only granted on rare occasions. It is therefore no surprise that soon after the reform almost all hires were channeled via fixed-term contracts.

Faced with this unforeseen explosion in the number of temporary contracts, the Spanish authorities have adopted a string of countervailing reforms[1], but none of them were a success. The first mayor reform, in 1994, added economic distress of the firm to the objective causes for dismissal and suppressed the *contrato temporal de fomento de empleo* — which was originally conceived to be in place for three years. *De jure,* the reform once again restricted the use of temporary contracts to seasonal and fixed-duration activities, including training, but *de facto* these causality conditions have hardly been enforced since 1984. All later reforms adopted similar measures to reduce the gap in EPL between permanent and temporary jobs and the most recent reforms increased the degree of internal flexibility in order to offer firms alternative channels of adjustments (hours adjustments, geographic and functional mobility etc.).

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[1]For a detailed description of the reforms in the period between 1980 and 2006, see Bentolila et al. 2008.

The 1997 reform introduced a new open-ended contract (*contrato de fomento de la contratación indefinida*) with reduced redundancy pay provisions for unfair dismissal — 33 days of wages per year of service with a maximum of two years of salary — for targeted groups. At the same time, the reform strengthened the causality principle for temporary contracts. Four years later the coverage of the new permanent contract was extended and a 2002 reform introduced a fast-track dismissal procedure for permanent employees. Law 45/2002 allowed firms to bypass judicial control and the need to pay interim wages by acknowledging the unfair nature of the dismissal and by paying the worker the corresponding severance payment. Finally, in 2006 the coverage of the new permanent contract was once again extended to include more groups and this measure was combined with the introduction of generous social security rebates to promote the creation of permanent jobs.

The above system was in place at the start of the recent economic and financial crisis. Since that time, Spain has enacted three more reforms. The 2012 reform is doubtlessly the most profound one. Insofar as EPL is concerned, the reform generalised the permanent contract with reduced severance pay (33 days) and redefined the economic causes for fair dismissals. Under the current rules dismissals are deemed fair if a firm suffers a persistent drop in the value of its ordinary sales or revenues during three consecutive quarters. Moreover, strictly speaking, the 2012 reform limits the intervention of judges to the verification of the existence of the objective causes for dismissal and the compliance with the procedural rules.[2] The new definition of the objective causes applies to all layoffs and in the case of collective dismissals the reform suppressed the need for prior administrative approval. Finally, the reform reinstated a maximum limit of two years for temporary contracts — which had been suppressed under the pressure of the Troika — while the 2010 introduced a minor and gradual increase in the level of redundancy pay on temporary contracts from 8 to 12 days of salary.

The overall result is a significant reduction in the stringency of employment pro-

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[2]The reform also suppressed the fast-track dismissal procedure, but this measure is of little practical importance because the reform also eliminated the need to pay interim wages to workers in case of an unfair dismissal. Nowadays firms only have to pay interim wages in case a dismissal is declared null due to a violation of a worker's fundamental rights.

tection on regular (permanent) jobs. The current value of the OECD indicator for the strictness of EPL on regular jobs is close to the OECD average and substantially lower than the corresponding indicator for the Netherlands (see Figure 1). By contrast, the EPL indicator for temporary jobs is still far above the OECD average, but it is important to take into account that the indicator measures the *de jure* strictness of EPL. Hence, the lack of enforcement of the causality of temporary jobs is not reflected in the indicator (*e.g.* Bentolila *et al.* 2012). Similarly, the indicator for regular jobs overstates the impact of the 2012 reform as it does not reflect various posterior rulings of Spanish courts that reintroduced key conditions for fair dismissals that had been eliminated by the 2012 reform.[3]

Figure 1: OECD indicators for the strictness of employment protection on regular and temporary jobs, 2008 vs. 2013

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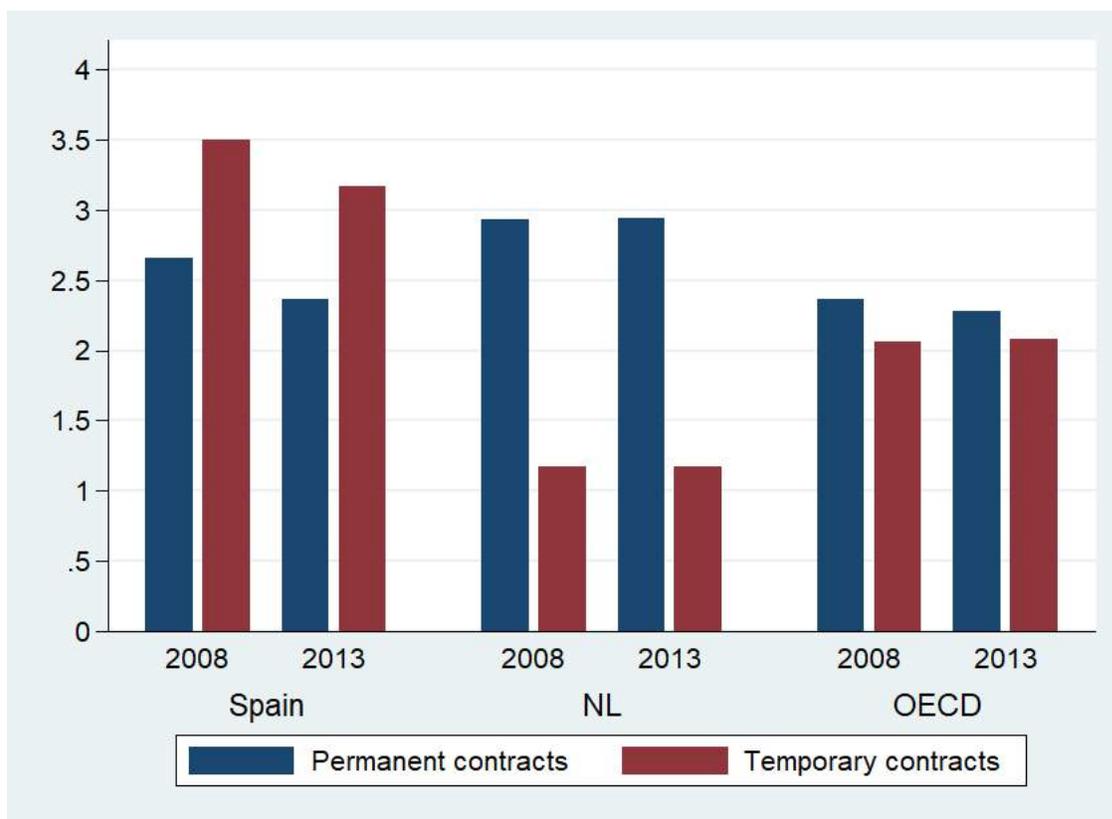
[3]Two examples are the principles of proportionality and the "reasonableness" of dismissals. Both conditions were removed from the Law by the 2012 reform. The new regulation of the economic reasons for dismissal simply require a drop in the firm's results without any reference to the size of the drop or the need of a proportional response.

3   Comparative evidence

In this section we report elementary data to illustrate the comparatively strong use of temporary contracts in Spain.

As a starting point for the analysis, Figure 2 illustrates the evolution of the share of temporary jobs in a selected group of countries. In the case of Spain, we observe a strong rise in the share of temporary jobs in the aftermath of their liberalisation in 1984. In the early nineties, the share of temporary jobs stabilised at a level of around one-third of total salaried employment and, despite the numerous reforms, it remained at this level until the start of the recent crisis. During the crisis we observe a marked decrease in the share of temporary jobs to levels below that of Poland, but this drop is driven by the disproportionate destruction of temporary jobs during the crisis. From peak to through the drop in temporary jobs accounted for almost two-thirds of the drop in employment while they only accounted for one-third of total employment at the onset of the crisis. Moreover, since the start of the recovery in 2014, the share of temporary jobs is on the rise again and nowadays Spain is creating more temporary jobs than ever (See Section 4). These strong cyclical movements in the share of temporary jobs contrast with the gradual increase in the weight of temporary jobs in Netherlands and the rather stable share in Portugal and the rest of Europe. Spanish employers clearly use temporary jobs as a buffer stock against shifts in their demand.

Figure 2: Percentage of temporary employees in selected European countries, 1987-2016 (%)
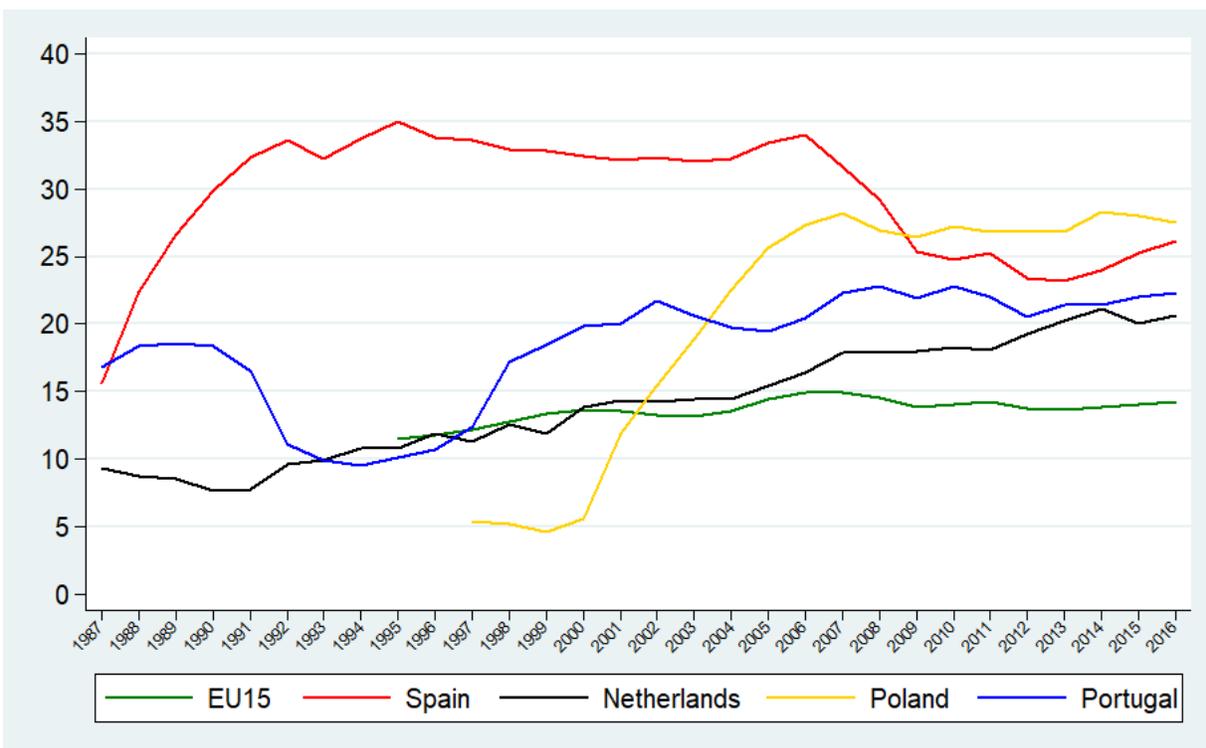
Besides the marked movements in the share of temporary jobs, there are no noticeable trends in non-standard employment in Spain, as illustrated by Figure 3. The share of self-employed is high by international standards, but relatively stable for more than a decade, while part-time jobs are under-utilised compared to most European countries. The overall implication is that full-time open-ended positions made up only 50% of total employment in 2005. Nowadays, this figure is somewhat higher due to the drop in the number of temporary positions, but even so the share of standard jobs still lies below 54 or 58%, depending on whether or not voluntary part-time positions are considered to be part of standard employment.

Figure 3: Non-standard employment in Spain, 2005-2017 (% of total employment)
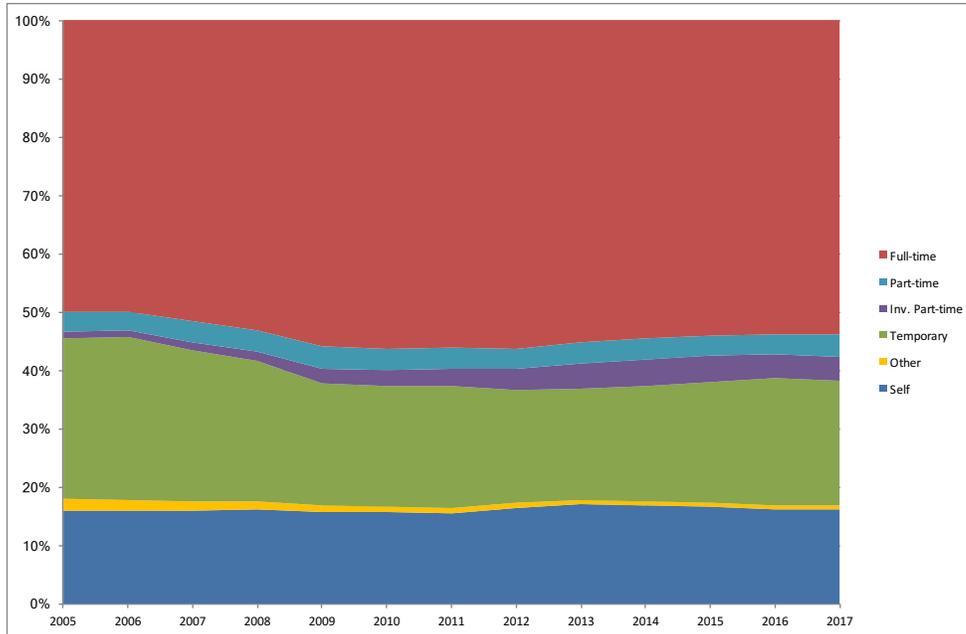
Source: Own elaboration with micro data from the Spanish Labour Force Survey (EPA). Annual averages. Full-time and part-time jobs are permanent positions. The abbrevation "inv" refers to involuntary, "self" refers to self-employment with or without personnel and the category "others" includes members of co-operatives and persons providing informal assistance in a family business.

Closer inspection of the data reveals the widespread nature of temporary employment in Spain. Table 1 reports a detailed breakdown of the incidence of temporary employment by worker characteristics and the main reason for their creation. To control for differences in the cyclical volatility of employment of different population groups we report data for 2008 and 2016. Inspection of the Table shows that the pre-crisis shares of temporary employment more than double the EU average for all population groups except for the youngest age cohort (15-24) and the least-educated workers.

Table 1: Percentage of temporary employees by gender, age, educational attainment and main reason, 2008 vs. 2016 (%)

	2008			2016		
	Spain	EU15	NL	Spain	EU15	NL
Gender						
Male	27.5	13.5	16.1	25.8	13.7	19.1
Female	31.5	15.6	19.6	26.5	14.7	21.8
Age						
15-24	59.2	41.4	44.1	72.9	43.8	53.8
25-49	28.7	12.4	14.1	27.4	13.0	16.4
50-64	14.1	6.3	6.8	13.7	6.5	7.8
Education						
Low	33.3	20.6	24.7	32.0	21.3	29.8
Medium	30.1	12.4	17.0	26.3	12.9	20.0
High	23.8	12.4	12.8	21.6	12.0	15.2
Main reason						
Involuntary	87.2	57.5	35.5	91.4	60.7	48.2
Voluntary	6.8	12.7	18.2	2.7	11.6	15.2
Training	4.4	20.7	3.3	5.1	18.9	4.0
Probation	1.6	9.1	42.9	0.7	8.8	32.6

Source: Own elaboration with European Labour Force Data from Eurostat. The categories for educational attainments correspond to ISCED codes 0-2 (Low), 3-4 (Medium) and 5-8 (High). The labels involuntary and voluntary temporary employment correspond, respectively, to the categories "could not find a permanent job" and "did not want a permanent job".

Table 1 also reveals a number of other striking features. First, between 2008 and 2016, the share of temporary jobs went down for all population groups except youth. For the youngest age cohort, the share of temporary contracts went up by 13.7 percentage points (pp) while the aggregate share of temporary jobs fell by 6 pp during the same time period. Second, among prime age employees the share of temporary contracts is still close to 30%. This feature is a reflection of the low transition rates between temporary and permanent employment. On average, only one out of five workers with a temporary job in 2008 held a permanent job in 2011 (OECD Employment Outlook, 2014).[4] Finally, the third striking feature is the large proportion of involuntary temporary employment. In some countries temporary contracts play a useful rol to cover

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[4]Interestingly enough, the Netherlands fares even worse on this score with a three-year transition rate of 16.55%.

training periods (e.g. Germany) or probation periods (e.g. the Netherlands) and there may also be population groups which prefer temporary over permanent jobs. However, none of these alternative purposes play a significant role in Spain. In 2016, more than 91% of temporary employment in Spain was involuntary compared to 48.2% in the Netherlands and an EU-average of 60.7%.

Figure 4: The percentage of temporary employees by sector of activity, 2016 (%)
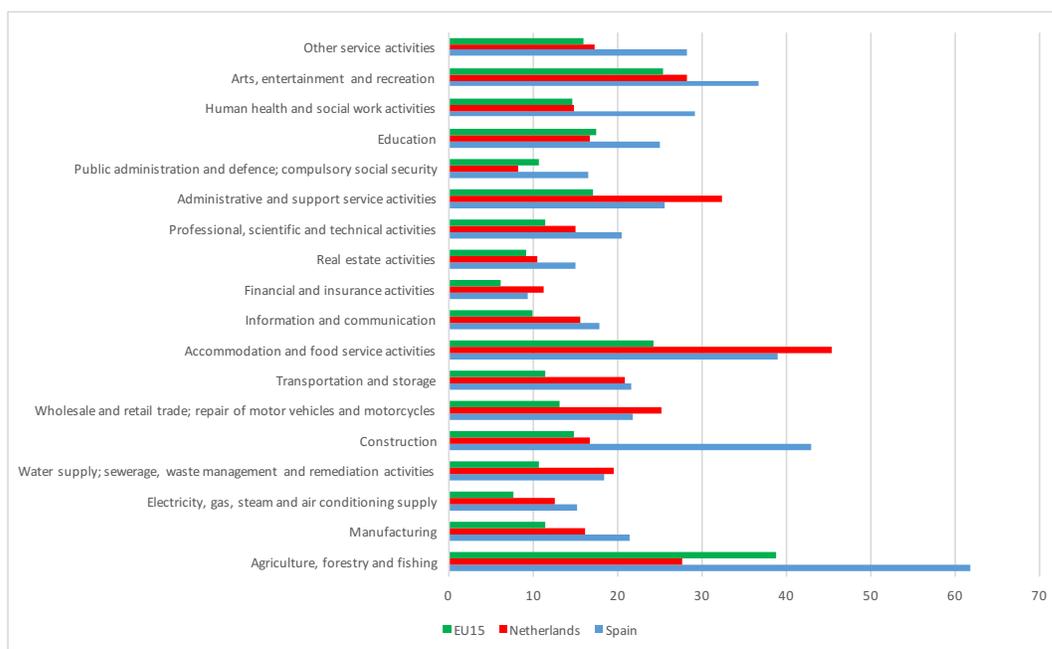
Source: Own elaboration with European Labour Force Survey data from Eurostat. NACE Rev. 2 classification of sectors.

The differences are not restricted to worker characteristics. Similar patterns are observed when we consider a breakdown by firm or job characteristics. Due to space limitations, we restrict attention to the sector of activity.[5] Inspection of Figure 4 shows that Spain has substantially higher shares of temporary jobs in all sectors when

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[5]Eurostat offers comparative data on the share of temporary jobs by occupation. Among the EU15 countries, Spain ranks first in six out of nine occupations. Moreover, in relative terms the differences are largest for skilled occupations like managers, professionals and craft workers. Eurostat does not offer comparative data on the share of temporary employment by firm size, but the data of the *Encuesta de Coyuntura Laboral* reveal that the shares of temporary employees converged to levels above 30% for firms of all sizes in the years prior to the crisis. This convergence arose through a strong rise in the share of temporary jobs in large firms with more than 250 employees, from a level of 20% in 1993 to levels above 30% in 2006. By contrast, the share of temporary employees in small firms with less than 10 employees dropped by 15 pp between its peak in 1997 and the start of the

compared to the average shares for the EU15 Member States. Traditionally, Spanish employment is also more concentrated in seasonal activities, like construction or accommodation and foodservice activities, than employment elsewhere in Europe. However, the differences in the sectoral composition of employment contribute much less to the cross-country differences in the aggregate shares of temporary employment than the within-sector differences in the shares of temporary jobs. In other words, Spain does not have a higher share of temporary jobs because construction or the foodservice industry make up a larger share of total employment than elsewhere in Europe, but because employers in these sectors make a more intensive use of temporary contracts than their counterparts in the rest of Europe.

To formalise this point, one can perform a simple shift-share analysis. In particular, let T^j and T_i^j denote the aggregate and sector-specific shares of temporary employment in a given country j and let ω_i^j denote the share of employment in sector i in total salaried employment in country j. This allows us to decompose the pairwise difference between the share of temporary jobs in Spain and some other country j as follows:

$$T^{sp} - T^j = \sum_i T_i^{sp}(\omega_i^{sp} - \omega_i^j) + \sum_i \omega_i^j(T_i^{sp} - T_i^j)$$

The first term on the right-hand side measures the contribution of the differences in the sectoral weights of employment while the second term measures the contribution of the within-sector differences in the share of temporary employment to the overall differences in the shares of temporary employment. The results are reported in Table 7 in the Appendix. Inspection of the Table confirms that the differences in the composition of employment play at best a modest role. For seven out of fourteen countries, they account for less than 10% of the observed differences in the aggregate shares of temporary jobs and for all but two countries they contribute less than 20%. Once more, the case of the Netherlands is a noteworthy exception. Besides being the country with the second-largest share of temporary jobs behind Spain, the Netherlands

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crisis in 2008 and this is followed by another 10 pp drop in the period between 2008 and 2012. Hence, the stable share of temporary employees in the pre-crisis periods hides important changes in the use of temporary employees by firms of different sizes. Another striking change in the composition of temporary employment that is not reflected here is the strong rise in the use of temporary jobs in the public sector.

is also the only country for which the differences in the sectoral composition of jobs explain more than half (59.01%) of the observed differences in the shares of temporary jobs.

Finally, the relatively stable share of temporary employment in the pre-crisis periods hides a number of relevant shifts, such as the convergence in the shares of temporary employees of large and small firms, or the increasing share of temporary employment in the public sector (see footnote 5). But in the next sections we will focus our attention on the recent surge in short-duration jobs.

4 The recent rise in short-duration contracts

The evidence presented so far allowed us to show that Spain is an outlier regarding the use of temporary contracts, but the labour force survey data offer an incomplete picture. The survey data indicate that the share of temporary employees is lower than before the crisis. Total employment is also lower than before the crisis, but as shown below, the total number of new contracts is breaking all-time records. To understand this apparent contradiction, we need to rely on official contract data and social security records. These administrative data sources capture all employment spells, while the LFS data underestimates the number of short-duration spells due to a time aggregation bias that seems to have aggravated in recent times.

Figure 5 illustrates the apparent paradox. The dashed line in the left panel reproduces the evolution of the share of temporary employees. At the start of 2016, this indicator was still around 7 percentage points below its pre-crisis peak. By contrast, the number of temporary contracts has reached a record level in 2016 and we observe no significant changes in the share of temporary contracts. For the last 20 years or so, the annual share of temporary contracts has been constant at around 91.5%.[6]

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[6]The transitory reduction in the period 2006-2008 is a reflection of a reform in that introduced temporary incentives for the creation of permanent jobs.

Figure 5: Total number of employees and new contracts by contract type, 1985-2016

The explanation for the apparent contradiction presented above is a reduction in the average duration of contracts. This is illustrated in Figure 6. During the last ten years, both the fixed-term contracts with the longest durations (above 3 months) and the temporary contracts without a specified termination date (contratos de obra and servicio) have lost weight and, in parallel, we observe a steep increase in the number of fixed-duration contracts that last less than a week. At current, more than one out of four new contracts in Spain lasts between one and seven days.

Figure 6: The distribution of temporary contracts by duration, administrative data, 2007-2016
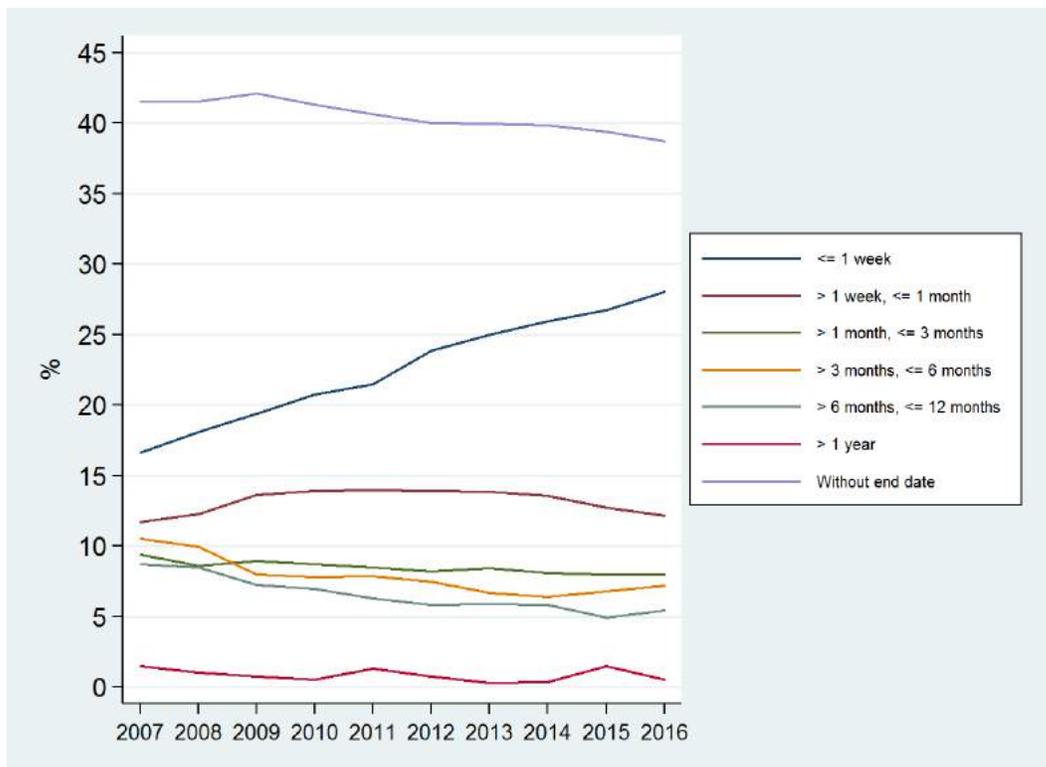
Note: The data exclude household staff. Source: Estadística de contratos (SEPE).

Interestingly, the Spanish LFS fails to capture this rather dramatic shift in the composition and duration of temporary contracts. Indeed, compared to the administrative data on contracts, we observe that the LFS overestimates the weight of temporary contracts with relatively long durations. The conditional probability that these spells fall within the reference week of the LFS is much larger than in the case of a spells that last less than a week.

Figure 7: The distribution of temporary contracts by duration, LFS data, 2007-2016
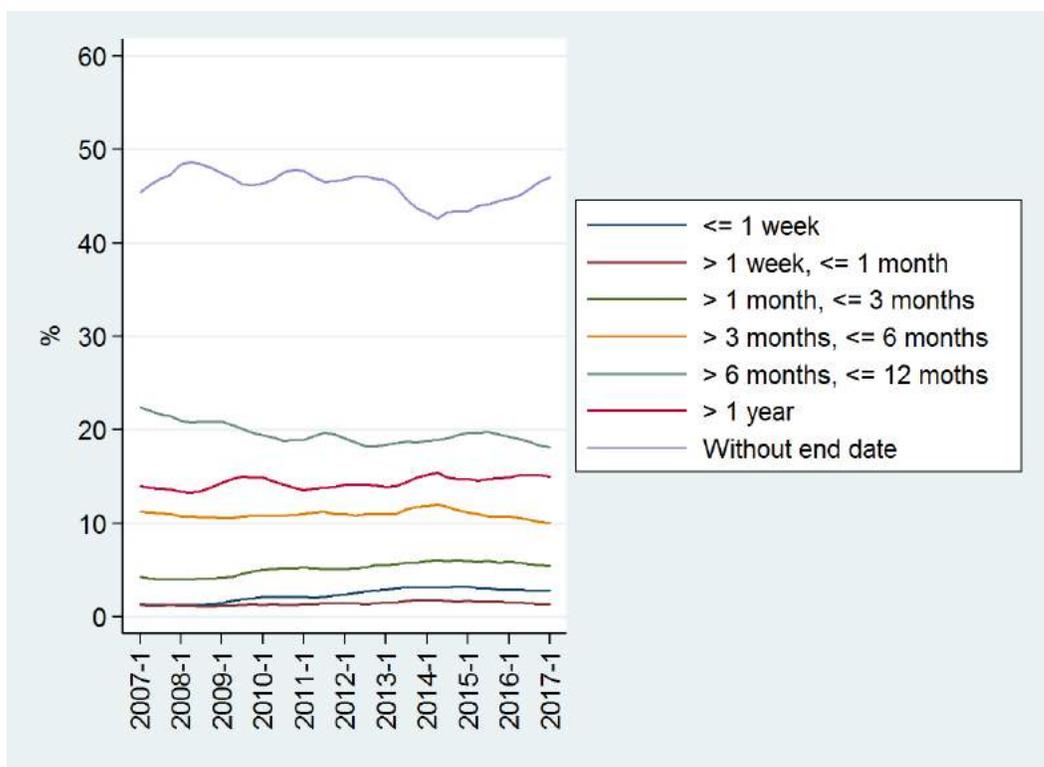
Similarly, a casual observation of the LFS data would suggest that on an annual basis less than 30% of employees is working on a temporary contract. However, the actual figure is much bigger as shown in Figure 8. The blue line represents the share of workers who appear as employed at some point during a year and who have had least one temporary contract. This alternative indicator follows the same pattern as the annual average of the share of temporary employees constructed with LFS data, but the difference between the two indicators is almost 15 percentage points. Moreover, the share of individuals who have only worked on temporary contracts during a given year (red line) also dropped during the crisis, but this indicator has already recovered its pre-crisis values in contrast to the two previous indicators.

Figure 8: Alternative indicators of temporary employment
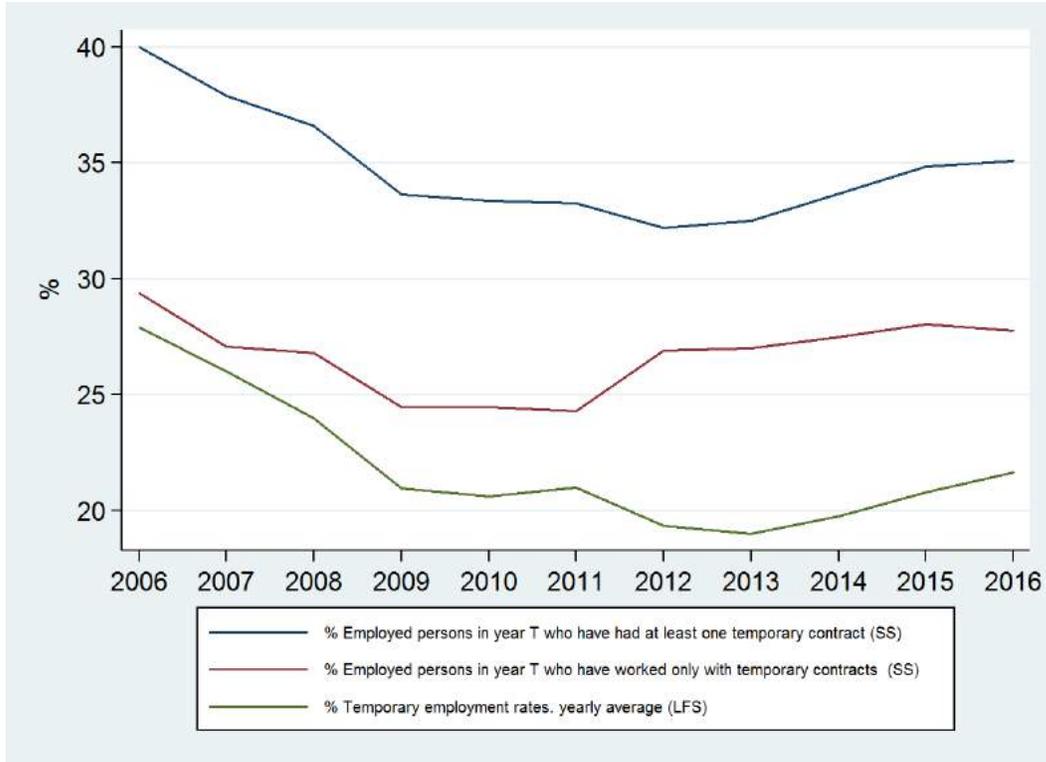
Sources: The Spanish Labour Force Survey (EPA, INE) and social security records (MCVL).

This last feature clearly seems related to the increase in the degree of rotation on the Spanish labour market due to the increase in the number of short-duration contracts. To corroborate this claim, Figure 9 reports the distribution of the number of contracts per individual who signed a new contract in any given year. Inspection of the Figure shows a trend decrease in the share of individuals who signed one contract per year and a rise in the average number of contracts per person starting in 2010. Almost one-third of the workers who were hired in 2016 signed three or more contracts during that calendar year.

Figure 9: The distribution of number of contracts per new employee, yearly averages. 2009-2016
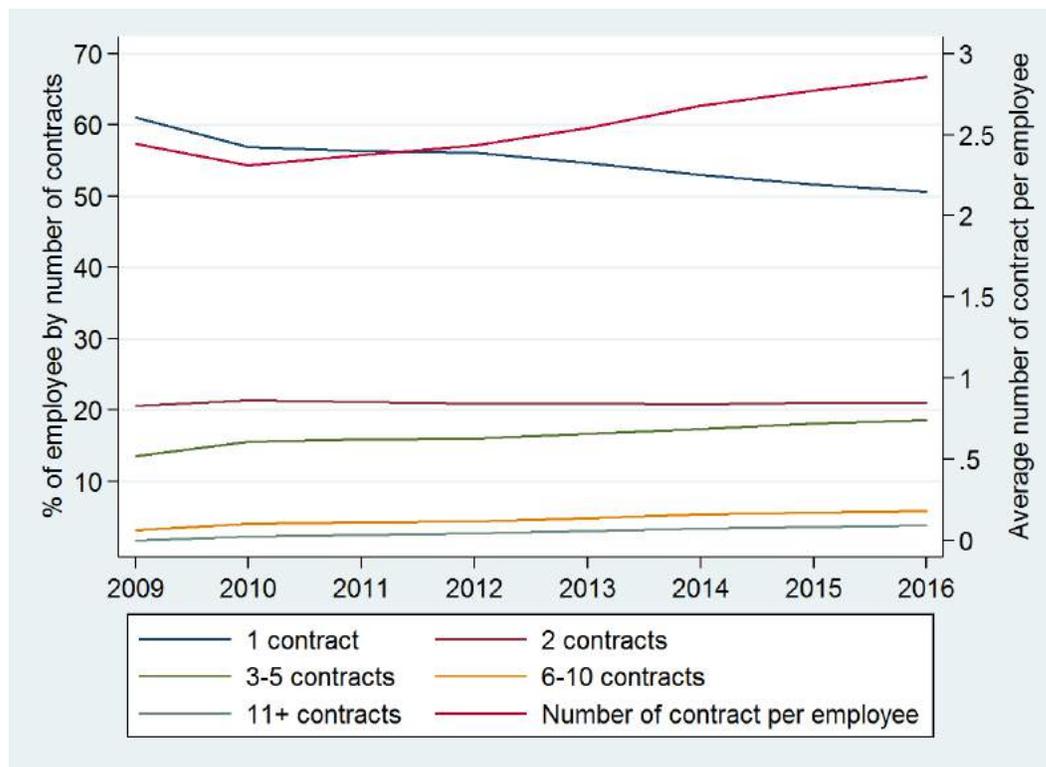
Next, in Table 6 (Appendix) we report the distribution of contract length by worker characteristics and sector of activity. Inspection of the Table shows that the short-duration contracts of less than a week are concentrated among low-educated workers and employees in the accommodation and foodservice sector. This sector has experienced relatively strong growth in recent years, but even so it accounts for less than 9% of total employment, while the employers in this sector have formalised more than one-third of all the contracts that lasted less than a week in 2016. Moreover, in many cases the workers repeatedly sign short-duration contracts with the same employer. Nonetheless, it would be a mistake to conclude that that the surge in short-duration contract simply reflects a boom in the tourism sector. Almost twelve percent of the fixed-term contracts of less than a week are formalised in the manufacturing sector, which is a sector that typically offers a relatively high level of employment stability to

its employees.

Finally, so far, we have not made a distinction between regular employment contracts and contracts with Temporary Work Agencies. The data, presented in Figure 10 reveal that the former explain the bulk of the increase in the number of short-duration contracts. By contrast, the short-duration contracts offered by Temporary Work Agencies only experienced a modest increase over the last eight years, and nowadays they make up a much smaller fraction of the short-duration contracts in Spain than before the outbreak of the crisis.

Figure 10: Short-duration contracts by type of employer, firms vs. temporary work agencies. 2008-2016
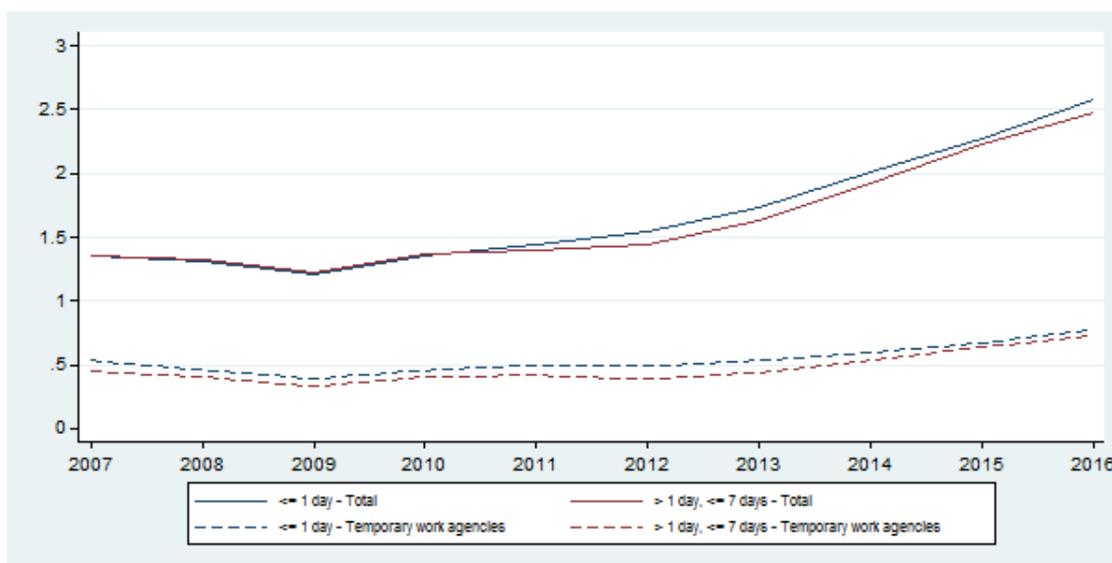
Source: Estadística de contratos (SEPE).

The evidence presented in this Section documented a clear increase in the extent of precarious temporary contracts. The average duration of temporary contracts has decreased and a growing number of individuals rotate on short-duration contracts, mostly against their will. This has important implications for income inequality, because temporary contracts offer worse conditions than permanent contracts and these differences have widened during the crisis due to the sharp decrease in hiring wages. Moreover, it is important to stress that the deterioration in the stability of temporary contracts started before the crisis. Hence, it would be a mistake to attribute this phe-

nomenon to the labour market reforms adopted in the crisis, although these reforms neither managed to mitigate the deterioration.

The answer therefore has to be sought in changes in the employment policies of firms. In particular, the digital revolution not only facilitates the matching process between firms and job seekers, it also facilitates the increasing use of work on demand. Call or zero-hour contracts are not permitted in Spain, but firms can achieve virtually the same flexibility through the use of short-duration contracts. But this has the drawback that the workers do not benefit from the protection of a contract between one task and the next. We leave the analysis of this issue for later work. In the rest of the analysis we want to assess how the rise in the number of short-duration contracts has affected the transition from temporary to permanent employment.

5   Empirical analysis

This section presents our empirical results on the impact of temporary contracts on the transition to permanent employment. Previous research for Spain (Guell and Petrongolo (2007), García-Pérez and Muñoz-Bulón (2011)) has shown that temporary contracts fail to act as stepping stones to permanent jobs for broad categories of labour market entrants. The key objective of this section is to assess whether the recent surge in short-duration contracts has widened the gap between temporary and permanent jobs even further. We begin this section by explaining our empirical approach, we then move on to describe the key characteristics of the sample, and we end the section with a discussion of our main results.

5.1   Estimation strategy

We assume that individuals move between three mutually exclusive states, unemployment (or, more rigorously, nonemployment), temporary employment and permanent employment. Since we are interested in analysing the transitions between these labor states, our empirical model will consider the joint estimation of the exit or hazard rates out of both employment and unemployment.

We specify these hazard rates, denoted by $h(t)$, using a discrete-time duration model

(Jenkins 1995):

$$h(t) = \Pr(T = t \mid T \geq t),$$

where T is a discrete random variable denoting either employment or unemployment duration. The hazard $h(t)$ therefore measures the conditional probability of a transition for a person who has remained in the same state for exactly t periods. We allow multiple destinations from each state, *i.e.* we employ a competing risks model for each state and throughout the analysis we control for unobserved heterogeneity using the approach of Heckman and Singer (1984).

Our framework is similar to the one used in Bentolila, García-Pérez and Jansen (2017) which, in turn, builds on Carrasco and García-Pérez (2015) and Rebollo and García-Pérez (2015). The main difference with these studies is that our expressions for the hazard rates include controls for the entire employment history of the young individuals in our sample. This is captured by a set of dummies for the number of previous employment spells since a person's entrance into the labour market. The inclusion of these dummies allows us to verify how the recurrence of temporary contracts affects the job finding probability of the unemployed, the subsequent length of a spell of temporary employment and, last but not least, the likelihood of a transition to permanent employment.

Besides these controls for the previous employment history, the hazard rate of unemployed individuals depends on unemployment duration, t, and on a vector of variables $x(t)$ that includes a set of individual, sectoral, and aggregate variables described below. It also depends on the person's unemployment benefit entitlement, which is captured by two variables. The first one is a dummy variable, $b(t)$, that takes the value one when the worker is receiving an unemployment subsidy in period t. The second one is a discrete variable $e(t)$ that captures the remaining months of entitlement for persons who are eligible to contribution-based unemployment benefits and who exercised this right.[7] These two benefits variables and some variables in $x(t)$ are allowed to have heterogeneous effects over the unemployment spell through their time-varying coefficients, $\alpha_i(t)$, which feature an interaction with log duration. In the case of $e(t)$ this

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[7]Individuals may optimally decide not to exercise their right to unemployment benefits or may be unaware of their entitlements. In both cases we are treating the individuals as if they are not entitled.

is modelled by allowing $\alpha_3(t)$ to be a cubic polynomial in log duration.[8] Accordingly, the unemployment hazard rate has the following structure:

$$h_u^j(t) = \Pr(T_u = t \mid T_u \geq t, x(t), b(t), e(t), \eta^u) = F(\alpha_0^j(t) + \alpha_1^j(t)x(t) + \alpha_2^j(t)b(t) + \alpha_3^j(t)e(t) + \eta^u)$$

where $j = e_T, e_P$ denotes, respectively, the two alternative exits from unemployment, *i.e.* employment with a temporary contract and with a permanent contract. The last term in the formula captures time-invariant unobserved heterogeneity and is discussed below.

The exit from employment is also estimated using a competing risks model and all coefficients in these hazard rates are allowed to differ between temporary and permanent employees. The two competing risks for employed workers are moving to a permanent job, e_p and moving to unemployment, u. Direct transitions between temporary contracts, without an intervening spell of unemployment, are treated as continued employment. This assumption allows us to focus on the role of temporary contracts as stepping stones to permanent jobs.

Accordingly, the employment hazard rate has the following specification:

$$h_e^k(t) = \Pr(T_e = t \mid T_e \geq t, x(t), \eta^e) = F(\beta_0^k(t) + \beta_1^k(t)x(t) + \eta^e)$$

where $k = e_p, u$ and $e = e_T, e_P$. The vector $x(t)$ is the same as in the unemployment hazard except that it also includes a set of dummies to control for the length of the last unemployment spell.

Following Bover *et al.* (2002) and García-Pérez and Muñoz-Bulón (2011), we use a logistic distribution to model all hazard rates.[9] Moreover, as we are considering competing risks models for both employment and unemployment, exit from a given state needs to be specified as a multinomial logit model with two alternative risks for each state:

$$h_u(t) = h_u^{e_T}(t) + h_u^{e_P}(t)$$

---

[8]This is a departure from Rebollo and García-Pérez (2015), who assume linearity.

[9]We could have alternatively used the extreme value distribution. As explained in van den Berg (2001), this distribution allows the model to verify the mixed proportional hazard assumption. Our approach departs from the proportionality assumption, at the cost of imposing more structure, because we want to allow the potential impact of duration and of both observed and unobserved heterogeneity on the exit from employment and unemployment not to be proportional.

$$h_e(t) = h_e^{e_p}(t) + h_e^u(t)$$

Lastly, as mentioned before, we control for unobserved heterogeneity affecting the flows both to and from unemployment. This is captured by the terms η^u and η^e in the expressions for the hazards. In particular, we allow a four-mass-point distribution function, namely two different points for each state, η_1^u and η_2^u for unemployment, and η_1^e and η_2^e for employment, so that four different types may emerge with joint probabilities, namely: (η_1^u, η_1^e), (η_1^u, η_2^e), (η_2^u, η_1^e), and (η_2^u, η_2^e). Standard errors for the estimated coefficients are computed using the delta method.

5.2 Data, sample selection and control variables

Our initial data set is a 20% random sample of young males aged 16 to 30 whose records appear in the nine waves of the Continuous Sample of Working Lives (Muestra Continua de Vidas Laborales or MCVL) corresponding to the period 2006-2016. The MCVL is an administrative dataset with longitudinal social security records that cover the entire working history of a random sample of 4% of the persons who pay Social Security contributions. This includes the employed and the non-employed who receive unemployment benefits or subsidies. The MCVL does not provide information about job search activity, and so we cannot distinguish between unemployment and inactivity. Moreover, nonemployed individuals drop out of the records if they stop receiving benefits. This is however not a problem, since the length of completed spells of nonemployment can be reconstructed using the information on the subsequent job. Finally, to exclude persistent nonparticipation, we limit nonemployment duration to three years, after which spells are treated as censored. With this caveat in mind, we take the license of referring to individuals without employment as unemployed rather than as nonemployed.

Against this potential drawback, the MCVL data have crucial advantages vis-á-vis the flow data from the labour force survey. They allow us to follow workers since the start of their working careers –whereas the LFS only follows individuals for six quarters– and they have a daily frequency, which permits the observation of all employment spells –while many labor market transitions are missed in the LFS due to its quarterly frequency.

In order to avoid problems concerning attrition, we only analyze employment spells in the general Social Security regime, thus excluding special regimes such as agriculture or public employment and treat exits from unemployment to these states as right-censored (García-Pérez 2008). Moreover, in the case of workers who are recalled to the same firm, a feature which has become increasingly important in Spain (Arranz and García-Serrano 2014), we only consider intervening unemployment spells lasting more than 30 days.[10] Lastly, to maximise the probability of observing the individual's complete work history, we exclude foreign-born individuals.

Our set of control variables includes both individual characteristics and aggregate variables. The former comprise: (a) Age (measured in months) (c) Skill, divided into high, medium-high, medium-low and low, and proxied by grouped Social Security tax categories.[11] (d) Actual experience, measured by the number of months employed divided by the number of months of potential experience (*i.e.* those elapsed since the person entered the labor market). (e) A dummy variable that captures whether the worker was fired from his previous job. (f) A dummy variable that captures whether the worker was working for a Temporary Help Agency (THA) in his previous job or not. (g) Our controls for benefit entitlement.[12] (g) Two sets of dummies for the number of previous employment spells and the length of the last unemployment spell. The aggregate variables included in the model are as follows: (i) Employment growth, defined as the monthly growth rate of the number of employees by province. (ii) 17 region dummies. (iii) 6 industry dummies. (iv) 12 monthly dummies. And (v) two step dummy variables for the labor reforms in June 2010 and February 2012, that take the value one from those dates onwards.

Finally, the following variables are interacted with log duration: age, education, skill,

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[10]Accordingly, two employment spells with the same firm which have an intervening unemployment spell lasting less than 30 days are treated as a single employment spell.

[11]High skill includes college and junior college graduates (groups 1 to 3 in the Social Security classification), medium-high skill includes top and middle managers (groups 4 to 6), medium-low skill includes administrative assistants and so-called first- and second-level officers (groups 7 and 8), and low skill includes third-level officers and unskilled workers (groups 9 and 10), see García-Pérez (1997).

[12]As explained before, contributory benefits are measured by the remaining months of entitlement in each month. The latter is computed from each individual's employment and insurance claim history (since residual benefits not claimed in one unemployment spell can be claimed in a later spell). Workers having access to two different sets of benefit entitlements must choose between them. We assume that they choose the one with the higher length. For more information see Rebollo and García-Pérez (2015).

the THA dummy, unemployment benefits (linear and quadratic), unemployment subsidies, employment growth, national unemployment rate, and industry.

5.3   Descriptive statistics

Table 2 shows the main characteristics of the individuals in our sample when they enter unemployment. We separately report statistics for the expansion (2001-2007) and the recession (2008-2016).[13]

Inspection of the Table shows the prevalence of individuals with low levels of educational attainments and skills. In the expansion, 63.2% of the individuals had no more than mandatory education and three out of four held a job in the lowest two occupational categories. As the reported data refer to worker inflows rather than stocks, we are over-sampling low-skill workers as they move in and out of unemployment more frequently than high-skill workers. On average, the individuals are employed around 65% of the time and this number only changes marginally in the recession. The majority of the individuals in the sample have accumulated up to four employment spells, but 22.5% of the individuals had accumulated more than 7 spells in the expansion and in the recession this number increased to 29.5%, in part due to the increase in the age of the unemployed. Furthermore, we observe a marked shift in the distribution by sector of activity. The most notable change is the drop in the percentage of unemployed from the construction sector, but we also observe a decline in the share of manufacturing and a strong increase in the share of service sectors. Finally, the vast majority of the unemployed are not entitled to benefits.

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[13]The period "2008-2016" includes the double-dip recession (2008-2013) and the start of the recovery (2014-2016). However, for the sake of brevity we refer to this period as recession.

Table 2: Descriptive statistics of worker characteristics, Males (%)

	Expansion		Recession	
	Mean	St. dev.	Mean	St. dev.
Age				
16-20 years old	27.3	(44.6)	17.4	(37.9)
21-25 years old	40.3	(49.0)	40.2	(49.0)
26-30 years old	32.4	(46.8)	42.3	(49.4)
Education				
Primary or less	13.7	(34.4)	20.3	(40.3)
Secondary, 1st stage	48.0	(50.0)	44.8	(49.7)
Secondary, 2nd stage	23.3	(42.2)	21.5	(41.1)
College	15.0	(35.7)	13.3	(33.9)
Skill				
Low	47.1	(49.9)	42.3	(49.4)
Medium-low	31.2	(46.3)	30.2	(45.9)
Medium-high	16.8	(37.4)	20.6	(40.4)
High	4.9	(21.5)	6.9	(25.4)
Experience				
Fraction of potential	64.7	(28.9)	63.3	(30.0)
Number of Temp. Contracts				
1-2	39.9	(49.0)	34.1	(47.4)
3-4	23.0	(42.1)	21.4	(41.0)
5-6	14.6	(35.3)	15.0	(35.7)
7-8	9.2	(28.8)	10.3	(30.4)
9-10	5.3	(22.3)	6.9	(25.4)
11+	8.0	(27.2)	12.3	(32.8)
Industry of previous job				
Manufacturing	14.1	(34.8)	10.8	(31.0)
Construction	27.4	(44.6)	17.8	(38.2)
Non-market services	5.6	(23.0)	8.8	(28.3)
Trade	13.5	(34.2)	14.5	(35.3)
Hospitality	10.1	(30.1)	14.0	(34.7)
Other services	29.3	(45.5)	34.1	(47.4)
Unemployment benefits				
Contributory	13.7	(36.9)	19.3	(39.5)
Assistance	9.9	(34.8)	19.2	(39.4)
No benefits	76.4	(46.0)	61.5	(48.6)
Previous job contract type				
Permanent	8.7	(28.2)	12.9	(33.5)
Temporary	91.3	(28.2)	87.1	(33.5)
Number of spells	73,480		60,255	

Note: The sample is made up of unemployed workers aged 16-30 years old. The expansion corresponds to the period 2001-2007 and the recession to 2008-2016. The reported data correspond to the situation of individuals in their first month in unemployment. Columns add up to 100 by characteristic.

Next, Table 3 presents some descriptive statistics of spells. The vast majority of non-censored exits from unemployment are to temporary jobs (93% in the expansion and 89% in the recession). Completed spells are quite lengthy, around six months in the expansion and almost eight months in the recession, and similar for spells ending in temporary or permanent employment. Moreover, the recession is characterised by a strong rise in the share of censored spells. Employment spells, by contrast, are very short as shown in panel B. The median duration of any employment spell is three months. As expected, in the expansion we observe a dramatic drop in the exit rates out of unemployment to temporary employment. The exit rates out of unemployment to permanent employment are more stable, but their magnitude is much smaller. Finally, the data reported in panel C indicate that benefit entitlements are associated with substantially lower job finding probabilities.

Table 3: Unemployment duration, benefit duration, and raw hazard rates (Males)

	Expansion	Recession
A. Unemployment duration (months)		
Exit to a temporary job		
Median	3.0	4.0
Third quartile	7.0	10.0
Mean	5.6	7.8
Share of spells (%)	82.1	76.0
Exit to a permanent job		
Median	3.0	4.0
Third quartile	7.0	9.0
Mean	6.3	7.9
Share of spells (%)	6.1	7.3
Censored spells		
Median	5.0	13.0
Third quartile	15.0	34.0
Mean	12.0	20.8
Share of spells (%)	11.9	16.7
B. Previous Employment duration (months)		
All		
Median	3.0	3.0
Mean	7.3	8.8
Temporary contract		
Median	3.0	3.0
Mean	6.3	6.8
Permanent contract:		
Median	11.0	13.0
Mean	17.7	21.9
C. Hazard rates out of unemployment (%)		
Exit to a temporary job		
No benefits	15.3	8.7
Contributory benefits	8.3	5.5
Assistance benefits	7.8	5.3
Exit to a permanent job		
No benefits	1.1	0.8
Contributory benefits	0.7	0.6
Assistance benefits	0.7	0.5
Number of spells	73,480	64,475

Note: The sample is made up of males aged 16-30 years old. The expansion corresponds to the period 2001-2007 and the recession to 2008-2016. Shares of spells add to 100 by column.

5.4 Baseline empirical results

We now proceed with a discussion of our estimation results. The coefficient estimates are reported in Tables 8-11 which offer the results for the two possible exits from unemployment and temporary employment.[14] Once again we offer separate results for the expansion and the recession. This is important because the role of co-variates like educational attainment has changed significantly since the outbreak of the crisis. In particular, for many years the boom in the construction sector generated a strong demand for low-educated workers. This feature helps to explain the negative coefficients of post-mandatory secondary and tertiary education in the exit rates from unemployment during the period 2001-2007. In the recession these coefficients have a positive change sign and for the exit from unemployment to permanent employment (Table 9) we obtain the standard monotonic relationship between the exit rate and education. This feature is illustrated in Figure 11. The reported hazard rates are derived by setting all co-variates except education and duration at their average value during the sample period. Inspection of the Figure shows that the monthly hazards start at levels below 2% and quickly decay with duration.

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[14]Results for permanent employment are available from the authors upon request.
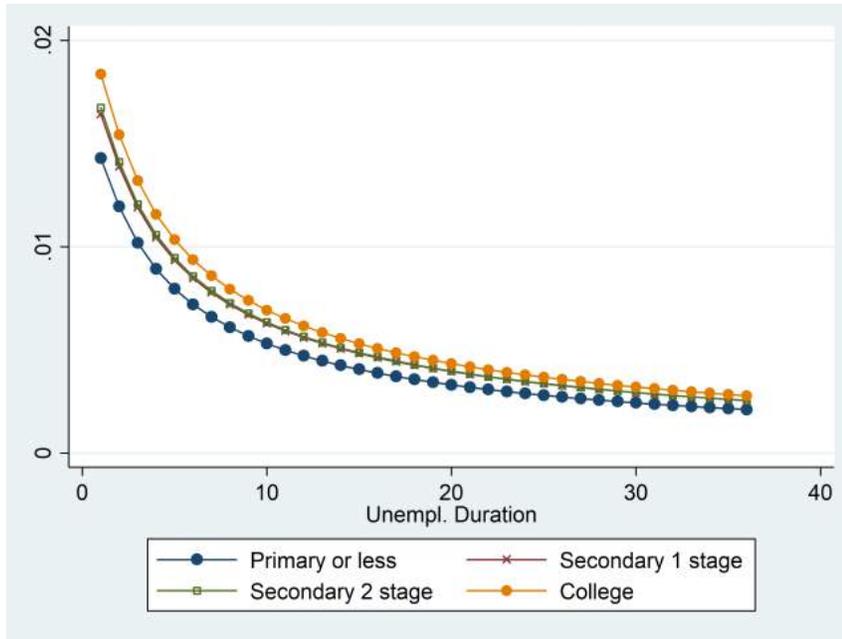
Figure 11: Exit from unemployment to permanent employment by level of educational attainment and duration, monthly hazard rates, 2008-2016 (%)

Source: own computations.

The rest of the co-variates has the expected sign. The exit rates out of unemployment increase with the skill level and experience of the workers and decrease with duration. Moreover, unemployment benefits delay the exit to both types of jobs, while stronger employment growth fosters quicker exits from unemployment, especially in the recession. Finally, the interactions between unemployment duration and local employment growth and remaining unemployment benefit entitlement are highly significant.

Turning now to the role of temporary contracts, we obtain a number of suggestive results. First, the exit rate from unemployment to temporary employment is monotonically increasing in the number of previous employment spells. Hence, other things equal, the unemployed are more likely to exit to a temporary job if they have accumulated a larger number of employment spells. This pattern is observed in both the expansion and the recession and the coefficient estimates are highly significant. By contrast, the exit rate from unemployment to permanent employment exhibits an inverted U-pattern. It reaches a maximum when a worker has accumulated, respectively, 5 to 6 employment spells in the expansion and 7 to 8 spells in the recession. In other words, beyond a certain number of spells, further spells of temporary employment pe-
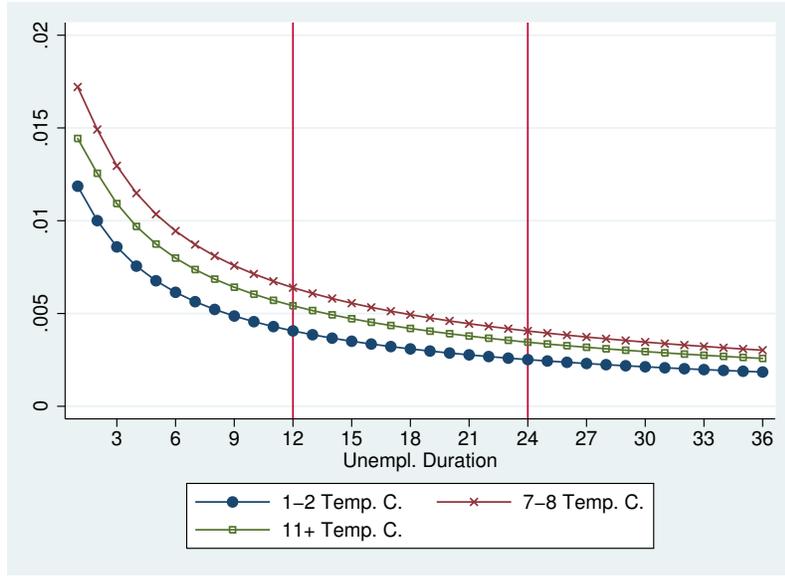
Figure 12: Exit from unemployment to permanent employment by duration and number of previous temporary contracts, monthly hazard rates, 2008-2016 (%)

Source: own computations.

nalise the unemployed. This feature is illustrated in Figure 12. It shows that the exit rate from unemployment to permanent employment is lower for individuals with 11 spells of temporary employment than for similar individuals with at most 8 previous employment spells.

The apparently negative effects of the accumulation of a large number of contracts also show up in the transitions from temporary unemployment to unemployment. The results reported in Table 10 indicate a negative relationship between the duration of a temporary contract and the number of previous employment spells. The latter suggests that individuals who have signed many short-duration contracts in the recent past are also more likely to be engaged in short-duration temporary contracts in the future. However, it is important to stress that our estimations do not allow a causal interpretation. Some individuals may have a preference for temporary jobs and the causality between the number of employment spells and the expected duration of temporary contracts may even go in the opposite direction. In particular, the fact that short-duration contracts are prevalent in specific sectors or occupations may explain that the workers in these sectors tend to accumulate a large number of employment spells. We intend to control for these features through the introduction of sector and

occupation fixed effects and controls for differences in observable and unobservable characteristics. But this does not solve the fundamental problem that the number and the length of employment spells is an endogenous choice variable.[15]

Last but not least, the number of previous employment spells seems to play less of a role in the direct transitions from temporary to permanent contracts (see Table 11). Most of the coefficients for the variable that captures the number of previous employment spells are insignificant in the expansion and at best border-line significant in the recession.

Survival rates

To finish our discussion of the baseline results, Table 4 reports the survival rates in unemployment at 12 months.[16] These survival rates are a convenient way to asses the marginal impact of individual characteristics and to quantify the risk of long-term unemployment for individuals with different employment histories. Long-term unemployment increased strongly during the crisis in Spain and our results indicate that the risk of entering long-term unemployment is substantially reduced by the accumulation of work experience in temporary contracts. In the expansion the risk of long-term unemployment is four times bigger for entrants with no more than two contracts previous than for individuals who have accumulated 9 to 10 contracts. In the recession the differences are smaller in relative terms but in absolute terms, the effects are bigger than during the expansion. In this respect it is important to recall that we are comparing individuals of the same age and with similar work experience. On average, the individuals with fewer contracts have spent more time in unemployment and this exerts a negative impact on their exit rate from unemployment due to duration dependence. In other words, the accumulation of a large number of temporary contracts may harm an individual's chances on a permanent job, but at the same time temporary contracts seem to provide an effective way to reduce the risk of long-term unemployment in the aftermath of the crisis.

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[15]We think the proper way to deal with this issue could be the time-to-event approach as developed in de Graaf-Zijl et al. (2011).

[16]Apart from the average survival rates reported in the top row, the survival rates are constructed by varying one characteristic at a time and fixing all other variables at their average value.

Table 4: Survival rates in unemployment at 12 months (%)

	Expansion	Recession
Overall	14.2	26.3
Age		
18 years old	18.2	30.1
23 years old	14.2	27.0
28 years old	10.4	23.5
Education		
Primary or less	10.2	31.8
Secondary, 1st stage	9.6	23.1
Secondary, 2nd stage	15.2	25.9
College	26.6	27.3
Skill		
High	11.3	22.6
Medium-high	13.2	25.3
Medium-low	12.9	24.8
Low	15.5	28.0
Experience		
P75	12.0	23.3
P50	13.9	25.8
P25	16.1	28.9
Number of Temp. Contracts		
1-2	21.2	36.6
5-6	6.9	17.1
9-10	5.5	15.2
Industry		
Manufacturing	12.0	22.3
Construction	12.1	22.0
Non-market services	15.8	32.1
Trade	15.6	28.6
Hospitality	16.5	26.3
Other services	14.6	27.0
Unemployment insurance		
No benefits	8.3	16.6
6 months	21.4	31.6
12 months	56.7	64.2

Note: The sample is made up of males aged 16-30 years old. The expansion corresponds to the period 2001-2007 and the recession to 2008-2016.

5.5 Time elapsed until first permanent contract

So far, we have analysed the determinants of individual transitions between unemployment and fixed-term and permanent employment. But our ultimate interest is to understand the pathways to permanent employment, which often involve multiple transitions between unemployment and temporary employment. Moreover, we would like to assess whether these pathways have changed due to the recent growth in the use of short-duration contracts.

To achieve these goals, we proceed by estimating the time it takes an entrant to find his or her first permanent job. We use the same sample as before, but now we restrict attention to the initial stages of each individual's working career, starting with the first contract and ending with the first permanent contract. In this second exercise the unemployed and the employed on temporary contracts are grouped together, allowing us to estimate a unique hazard for the transitions to permanent employment conditional on the same list of personal and aggregate characteristics as before plus the characteristics of the person's entry job.[17]

Table 5 provides the raw data. Before the crisis, entrants signed on average 6.2 temporary contracts spread over a period of almost five years before they encountered their first permanent job, compared to 9 contracts over a time period of 94 months during the recession. These numbers clearly indicate that entrants face substantially more difficulties than before to access a permanent job.

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[17]To avoid problems of endogeneity we do not include any control related to intermediate spells. Furthermore, the model is estimated without controls for unobserved heterogeneity.

Table 5: Time elapsed and number of temporary contracts until first permanent job (%)

	Expansion	Recession
Number of contracts		
p25	3.0	4.0
p50	5.0	7.0
p75	8.0	12.0
mean	6.2	9.0
Duration		
p25	25.0	43.0
p50	47.0	85.0
p75	79.0	132.0
mean	56.9	94.3
By qualification (means)		
Number of contracts		
High	4.7	5.7
Med-High	5.7	6.8
Med-Low	5.3	7.2
Low	6.5	9.9
Duration		
High	40.4	63.1
Med-High	50.5	72.3
Med-Low	48.2	74.2
Low	59.4	103

Note: The sample is made up of males aged 16-30 years old. The expansion corresponds to the period 2001-2007 and the recession to 2008-2016.

The same differences also show up in the predicted survival rates in either unemployment or temporary employment for the two sub-periods. This is illustrated in Figure 13.[18] The reported survival rates are constructed by fixing the value of all independent variables at their mean value during the two sample periods. This procedure filters out any changes in the composition of the pool of unemployed and non-permanent employees.

In the next step, we also filter out changes in the composition of the sample and in the aggregate labour market conditions across the two sub-periods. To achieve this, we fix all co-variates at their mean value during the entire sample period 2001-2016.

[18]The coefficient estimates are reported in Table 13.
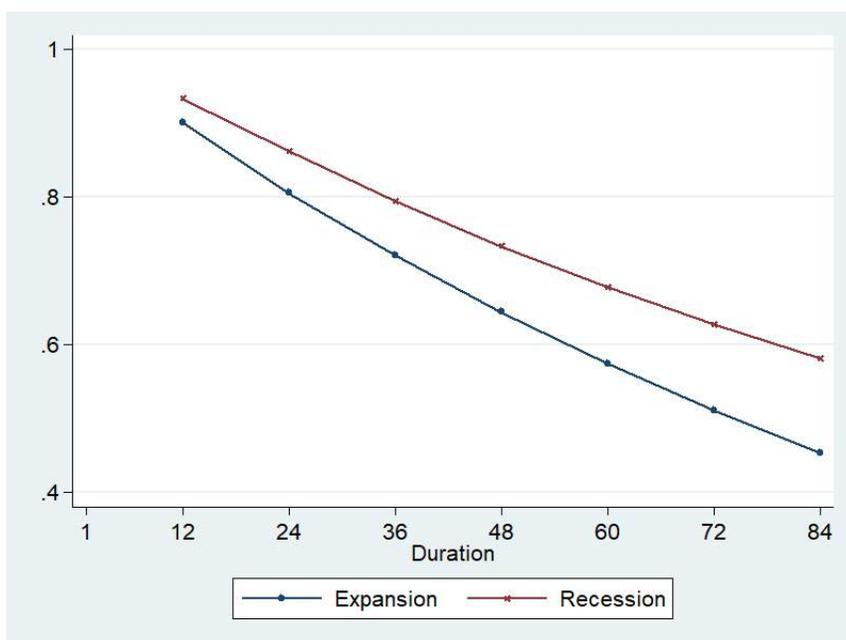
Figure 13: Survival rate until first permanent contract, mean characteristics during expansion and recession (%)

Source: own computations.

In this last exercise the differences between the survival rates for the sub-periods are driven exclusively by changes in the coefficient estimates. The results are reported in Figure 14. As expected, the predicted survival rates are larger in the recession, but the differences with the corresponding rates for the expansion are tiny compared to the differences in Figure 13. This suggests that the rise in the mean number of temporary contracts and mean time period until the first permanent contract is mainly driven by the deterioration in the state of the labour market and the pool of unemployed and temporary employees. By contrast, the changes in the rules for the use of temporary contracts and the rising share of short-duration contracts appear to have had an almost negligible effect on the transitions to permanent employment.

Finally, the evidence reported in Figures 15 and 16 in the Appendix indicates that our findings do not change if we repeat our exercise for specific cohorts of entrants defined by the level of education or initial qualification.

36
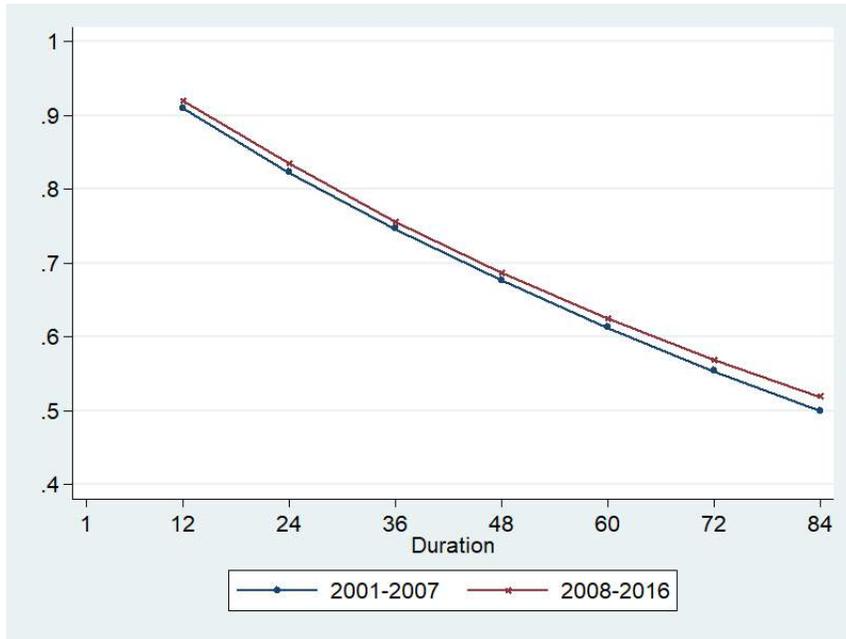
Figure 14: Survival rate until first permanent contract, mean characteristics 2001-2015 (%)

Source: own computations.

6 Concluding remarks

This paper has presented novel evidence on the use of temporary contracts in Spain. Despite recent attempts to curtail the use of temporary contracts, the data reveal a surprising surge in the use of short-duration contracts. More research is needed to establish the exact causes of this shift. The concentration of these contracts in the accommodation and food-service industry suggests that they may act as substitutes for the widespread use of zero-hour contracts in the Netherlands and the UK. The economic downturn may also have played a role as it forced many firms to reduce labour costs. The latter would explain why we observe such a dramatic steep increase in precarious contracts without any regulatory change that facilitated their use. Nonetheless, any future research in this field should also consider alternative hypotheses such as the impact of the digitalisation of the economy on the recruitment strategies of firms. Furthermore, our analysis reveals the importance of adequate data sources that capture shifts like the one documented here as well as the increased use of non-standard employment relationships in what is popularly known as the gig economy.

Finally, the results of our econometric exercise suggest that the rise in short-duration contracts has hardly affected the access to regular employment, at least once we control for composition effects and changes in aggregate labour market conditions. Future research should explore whether the stability of the average hazard rate reported in Section 5.5 hides relevant changes at a more disaggregated level. Nonetheless, even if our results hold true for most types of workers, the Spanish authorities should carefully monitor the use of short-duration contracts as they reduce job stability and increase income volatility as employers increasingly shift the burden of uncertainty on the shoulders of workers.
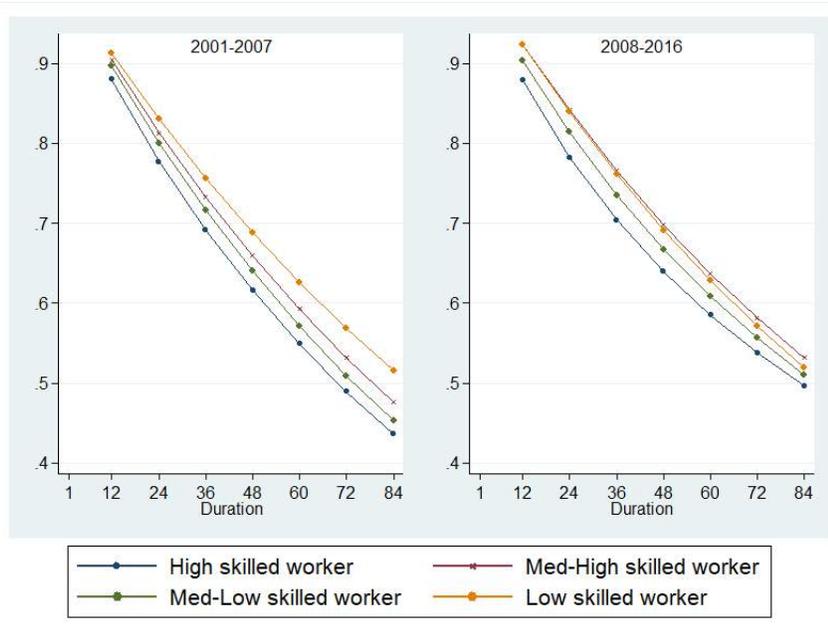
Figure 15: Survival rate until first permanent contract by level of qualification, mean characteristics 2001-2015 (%)

Source: own computations.

A   Appendix

Figures and tables
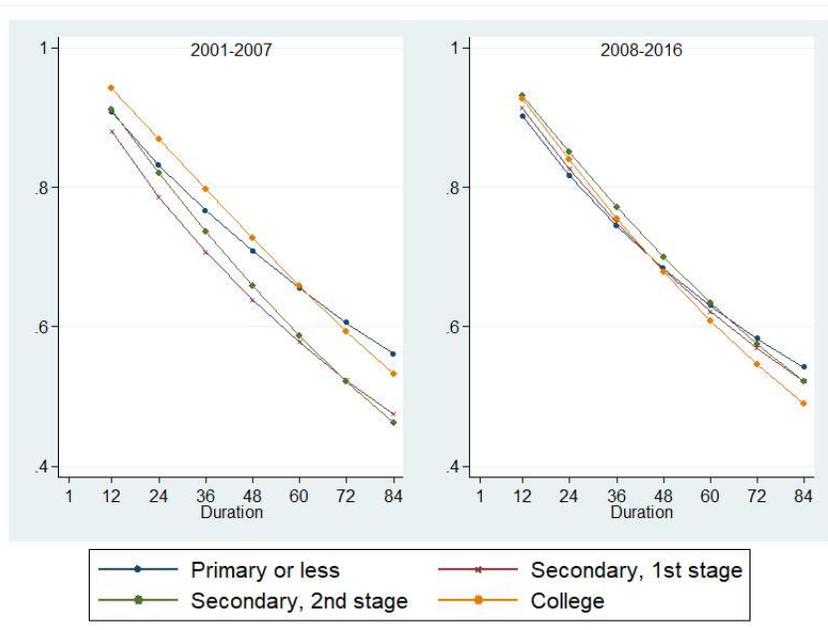
Figure 16: Survival rate until first permanent contract by level of education, mean characteristics 2001-2015 (%)

Source: own computations.

Table 6: The distribution of contracts by worker characteristics and sector of activity

	No end date	<1week	1 week - 1 month	1-3 months	3-6 months	6-12 months	>1 year	permanent contracts
Education								
Lower-secondary	72.7	61.8	67.9	70.6	67.1	62.0	53.1	56.5
Upper-secondary	17.8	26.4	22.1	20.1	22.5	21.4	21.1	20.8
Tertiary	9.5	11.8	10.0	9.3	10.5	16.5	25.8	22.7
Gender								
Male	63.6	53.6	53.6	51.8	49.5	50.7	51.3	55.8
Female	36.4	46.4	46.4	48.2	50.5	49.3	48.7	44.2
Age								
16-29	30.8	38.3	34.4	34.9	40.2	40.8	40.9	32.2
30-54	63.2	57.1	59.9	58.9	55.4	55.0	52.7	61.1
55+	6.0	4.6	5.7	6.1	4.4	4.2	6.4	6.7
Sector								
Agriculture, forestry and fishing	25.9	3.8	16.9	20.2	4.1	2.3	1.6	3.9
Mining and quarrying	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Manufacturing	8.7	11.4	11.9	9.4	8.9	9.1	10.9	9.7
Electricity, gas, steam and air conditioning supply	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Water and remediation activities	0.3	0.3	0.7	1.1	1.0	0.7	0.7	0.5
Construction	11.9	0.9	2.4	3.5	3.1	3.3	3.5	5.7
Wholesale and retail trade	6.9	5.5	7.2	13.1	20.8	21.2	20.1	19.9
Transportation and storage	5.8	6.1	6.1	6.1	6.2	5.3	4.9	5.4
Accommodation and foodservice activities	8.9	34.9	22.4	16.2	27.1	25.5	16.5	18.4
Information and communication	2.3	2.6	1.4	0.8	0.9	1.3	1.9	4.0
Financial and insurance activities	0.3	0.4	0.6	0.7	0.6	0.7	0.9	1.0
Real estate activities	0.1	0.1	0.1	0.2	0.4	0.6	0.6	1.0
Professional, scientific and technical activities	3.4	2.6	2.0	1.7	1.9	3.1	4.9	5.5
Administrative and support service activities	10.7	12.1	10.1	8.6	7.4	5.7	5.3	6.1
Public administration	1.4	1.0	3.4	5.2	3.7	4.8	7.2	1.0
Education	3.5	1.9	1.8	2.1	2.3	4.6	8.2	4.2
Human health and social activities	4.8	7.1	7.1	7.1	6.4	6.2	7.0	7.0
Arts, entertainment and recreation	3.3	7.9	4.4	2.3	2.5	2.4	2.3	3.4
Other service activities	1.6	1.3	1.2	1.6	2.4	3.0	3.2	2.7

Table 7: Pairwise decomposition of the differences between temporary employment rates, 2016

Country	Total difference	Sectoral composition	Temporary employment shares
Austria	17.39	0.90 (5.17%))	16.49 (94.83%)
Belgium	17.27	2.00 (11.58%))	15.27 (88.42%)
Denmark	12.99	0.92 (7.08%)	12.07 (92.92%)
Finland	10.76	0.72 (6.66%)	10.05 (93.34%)
France	10.04	1.85 (18.39%)	8.20 (81.61%)
Germany	13.07	1.66 (12.72%)	11.41 (87.28%)
Greece	15.04	1.39 (9.22%)	13.65 (90.78%)
Ireland	18.28	0.86 (4.71%)	17.42 (95.29%)
Italy	12.10	0.82 (6.92%)	11.26 (93.08%)
Luxembourg	22.23	7.11 (31.97%))	15.12 (68.03%)
Netherlands	5.71	3.37 (59.01%)	2.34 (40.99%)
Portugal	4.30	0.69 (16.12%)	3.61 (83.88%)
Sweden	10.10	1.23 (12.15%)	8.87 (87.85%)
UK	20.29	1.48 (7.31%)	18.81 (92.69%)

Note: The decomposition is performed using percentages of temporary employment at NACE Rev. 2 level. The difference in the share of temporary jobs in Spain and any country j can be written as $T^{sp} - T^j = \sum_i T_i^{sp}(\omega_i^{sp} - \omega_i^j) + \sum_i \omega_i^j(T_i^{sp} - T_i^j)$, where T^j measures the aggregate and sector-specific shares of temporary jobs in country j while ω_i^j measures the share of employment in sector i in total salaried employment in country j. The value of the first term is reported in Column 2 which measures the contribution of the differences in the sectoral composition of employment to the pair-wise differences in the share of temporary jobs. Alternatively, the third column reports the

contribution of the differences in the shares of temporary jobs at the sectoral level to the pairwise differences in the overall shares of temporary jobs.

Table 8: Exit from Unemployment to a Temporary Contract

	2001-2007		2008-2016	
	Coef.	S.E.	Coef.	S.E.
Age	0,0428***	(0,0025)	0,0228***	(0,0031)
Age×log Dur	0,0235***	(0,0013)	0,0089***	(0,0014)
Secondary education, 1 st.	-0,0974**	(0,0192)	0,2003***	(0,0184)
Secondary education, 2 st.	-0,2565***	(0,0220)	0,198***	(0,0222)
College education	-0,6814***	(0,0256)	0,2813***	(0,0260)
High skill	0,5717***	(0,0305)	0,4632***	(0,0297)
Medium-High skill	0,1654***	(0,0184)	0,0832***	(0,0188)
Medium-Low skill	0,0599***	(0,0142)	0,099***	(0,0154)
Dismissal	0,0721***	(0,0131)	0,0132***	(0,0180)
Experience	0,2871***	(0,0210)	0,3191***	(0,0224)
ΔEmployment	-3,5609***	(0,4817)	5,2995***	(0,2377)
ΔEmployment×log Dur	0,9931***	(0,2650)	-1,0727**	(0,1221)
log Dur	-1,1995***	(0,0465)	-0,5367***	(0,0479)
$(\log \text{Dur})^2$	0,0576***	(0,0224)	-0,1152***	(0,0225)
$(\log \text{Dur})^3$	-0,011***	(0,0044)	0,0061***	(0,0042)
Unemployment insurance	-0,5738***	(0,0151)	-0,5446***	(0,0147)
Unemployment insurance^2	0,0542***	(0,0024)	0,0508***	(0,0022)
Unemployment insurance^3	-0,0015***	(0,0001)	-0,0014***	(0,0001)
U. insurance×log Dur	-0,0325***	(0,0040)	-0,0411***	(0,0033)
U. assistance	-1,4846***	(0,0352)	-1,6638***	(0,0317)
U. assistance×log Dur	-0,0107	(0,0303)	0,0433***	(0,0242)
Prev. in a Perm. Contract	1,1464**	(0,0215)	1,3628	(0,0196)
No. Empl. spells 3-4	0,2331***	(0,0148)	0,3481***	(0,0167)
No. Empl. spells 5-6	0,3330***	(0,0182)	0,4317***	(0,0197)
No. Empl. spells 7-8	0,1463***	(0,0223)	0,5243***	(0,0231)
No. Empl. spells 9-10	0,2978***	(0,0279)	0,4555***	(0,0272)
No. Empl. spells 11+	0,1388***	(0,0280)	0,3705***	(0,0263)
No. of observations	1,757,943		1,670,006	
Likelihood Function	-385,222.31		-364,075.86	

Note: Also included controls for sector and regime in the previous employment spell. monthly and region dummies.

Table 9: Exit from Unemployment to a Permanent Contract

	2001-2007		2008-2016	
	Coef.	S.E.	Coef.	S.E.
Age	0,0428***	(0,0046)	0,0228 ***	(0,0048)
Age×log Dur	0,0235***	(0,0033)	0,0089 **	(0,0030)
Secondary education, 1 st.	-0,0974*	(0,0515)	0,2003 ***	(0,0456)
Secondary education, 2 st.	-0,2565***	(0,0566)	0,198 ***	(0,0514)
College education	-0,6814***	(0,0629)	0,2813 ***	(0,0582)
High skill	0,5717***	(0,0658)	0,4632 ***	(0,0613)
Medium-High skill	0,1654***	(0,0462)	0,0832 *	(0,0450)
Medium-Low skill	0,0599	(0,0402)	0,099 **	(0,0402)
Dismissal	0,0721**	(0,0357)	0,0132	(0,0388)
Experience	0,2871***	(0,0548)	0,3191 ***	(0,0552)
ΔEmployment	-3,5609**	(1,3749)	5,2995 ***	(0,6393)
ΔEmployment×log Dur	0,9931	(0,8140)	-1,0727 ***	(0,3540)
log Dur	-1,1995***	(0,1150)	-0,5367 ***	(0,1109)
$(\log \text{Dur})^2$	0,0576	(0,0662)	-0,1152 *	(0,0633)
$(\log \text{Dur})^3$	-0,011	(0,0129)	0,0061	(0,0120)
Unemployment insurance	-0,5738***	(0,0449)	-0,5446 ***	(0,0400)
Unemployment insurance^2	0,0542***	(0,0071)	0,0508 ***	(0,0060)
Unemployment insurance^3	-0,0015***	(0,0003)	-0,0014 ***	(0,0002)
U. insurance×log Dur	-0,0325**	(0,0113)	-0,0411 ***	(0,0093)
U. assistance	-1,4846***	(0,1120)	-1,6638 ***	(0,1011)
U. assistance×log Dur	-0,0107	(0,0892)	0,0433	(0,0710)
Prev. in a Perm. Contract	1,1464***	(0,0406)	1,3628 ***	(0,0376)
No. Empl. spells 3-4	0,2331***	(0,0416)	0,3481 ***	(0,0430)
No. Empl. spells 5-6	0,333***	(0,0508)	0,4317 ***	(0,0507)
No. Empl. spells 7-8	0,1463**	(0,0680)	0,5243 ***	(0,0588)
No. Empl. spells 9-10	0,2978***	(0,0839)	0,4555 ***	(0,0723)
No. Empl. spells 11+	0,1388*	(0,0816)	0,3705 ***	(0,0663)
No. of observations	1,757,943		1,670,006	
Likelihood Function	-385,222.31		-364,075.86	

Note: Also included controls for sector and regime in the previous employment spell. monthly and region dummies.

Table 10: Exit from Temporary Employment to Unemployment

	2001-2007		2008-2016	
	Coef.	S.E.	Coef.	S.E.
log Dur	0,2149**	(0,1048)	0,2821**	(0,0980)
$(\log \text{Dur})^2$	-0,4029***	(0,0503)	-0,4550***	(0,0432)
$(\log \text{Dur})^3$	0,0341***	(0,0077)	0,0528***	(0,0062)
Dur = 1 month	0,2284***	(0,0550)	0,3621***	(0,0534)
Dur = 6 months	0,6964***	(0,0196)	0,6519***	(0,0217)
Dur = 12 months	1,3122***	(0,0278)	1,3800***	(0,0286)
Dur = 24 months	0,9313***	(0,0637)	1,2297***	(0,0560)
Dur = 36 months	1,0155***	(0,0960)	1,0628***	(0,0899)
Age	-0,0400***	(0,0026)	-0,0354***	(0,0029)
Age×log Dur	0,0079***	(0,0016)	0,0042**	(0,0016)
High skill	-0,5854***	(0,0446)	-0,6085***	(0,0409)
Medium-High skill	-0,0368	(0,0259)	-0,0197	(0,0256)
Medium-Low skill	-0,0301	(0,0208)	0,0367*	(0,0221)
High skill×log Dur	0,0022	(0,0244)	0,0567**	(0,0216)
Medium-High skill×log Dur	-0,0601***	(0,0156)	-0,0352**	(0,0144)
Medium-Low skill×log Dur	-0,0132	(0,0122)	-0,0403***	(0,0122)
Secondary education, 1 st.	-0,1100***	(0,0177)	-0,1043***	(0,0166)
Secondary education, 2 st.	-0,1053***	(0,0204)	-0,1519***	(0,0196)
College education	0,0991***	(0,0239)	-0,2219***	(0,0244)
THA work	0,1863***	(0,0276)	0,1239***	(0,0288)
THA work×log Dur	-0,1324***	(0,0177)	-0,0576***	(0,0164)
Experience	-0,9959***	(0,0251)	-0,5469***	(0,0247)
ΔEmployment	-1,4664**	(0,5039)	-2,0241***	(0,2149)
ΔEmployment×log Dur	-0,4396	(0,2873)	0,3320**	(0,1207)
No. Empl. spells 3-4	-0,1676***	(0,0147)	-0,1044***	(0,0164)
No. Empl. spells 5-6	-0,1196***	(0,0174)	-0,0282	(0,0188)
No. Empl. spells 7-8	-0,0188	(0,0204)	0,0126	(0,0217)
No. Empl. spells 9-10	0,0006	(0,0200)	0,0797***	(0,0255)
No. Empl. spells 11+	0,1719***	(0,0240)	0,2494***	(0,0240)
Prev. Unempl 1-6 months	0,1516***	(0,0126)	0,1573***	(0,0142)
Prev. Unempl 7-12 months	0,1839***	(0,0190)	0,2701***	(0,0182)
Prev. Unempl 13-24 months	-0,0347	(0,0278)	0,1024***	(0,0243)
Prev. Unempl ¿24 months	-0,2200***	(0,0367)	0,0220	(0,0289)
No. of observations	1,757,943		1,670,006	
Likelihood Function	-385,222.31		-364,075.86	

Note: Also included controls for sector and regime in the previous employment spell. monthly and region dummies.

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Table 11: Exit from Temporary to Permanent Employment

	2001-2007		2008-2016	
	Coef.	S.E.	Coef.	S.E.
log Dur	-3,3958***	0,2455	-4,8779***	(0,3176)
$(\log \text{Dur})^2$	1,2532***	(0,1275)	1,8383***	(0,1625)
$(\log \text{Dur})^3$	-0,1732***	(0,0176)	-0,2451***	(0,0220)
Dur = 1 month	-1,8615***	(0,1766)	-2,5319***	(0,2245)
Dur = 6 months	0,7194***	(0,0833)	0,6879***	(0,1235)
Dur = 12 months	0,8515***	(0,0958)	1,1429***	(0,1250)
Dur = 24 months	1,804***	(0,0841)	1,709***	(0,1263)
Dur = 36 months	1,0872***	(0,1410)	1,7294***	(0,1619)
Age	-0,0662***	(0,0089)	-0,0482***	(0,0110)
Age×log Dur	0,0252***	(0,0042)	0,0312***	(0,0053)
High skill	0,4591**	(0,1530)	0,3735**	(0,1754)
Medium-High skill	0,331**	(0,1085)	0,2472*	(0,1358)
Medium-Low skill	0,0423	(0,0984)	0,0965	(0,1322)
High skill×log Dur	-0,0891	(0,0614)	-0,1722**	(0,0727)
Medium-High skill×log Dur	-0,1421***	(0,0448)	-0,1546**	(0,0560)
Medium-Low skill×log Dur	-0,0521	(0,0386)	-0,1469**	(0,0528)
Secondary education, 1 st.	-0,0058	(0,0644)	-0,2201**	(0,0770)
Secondary education, 2 st.	0,0061	(0,0763)	-0,1544*	(0,0863)
College education	0,1456*	(0,0837)	-0,0473	(0,1006)
THA work	0,881***	(0,1010)	0,7263***	(0,1333)
THA work×log Dur	-0,2616***	(0,0460)	-0,1483**	(0,0570)
Experience	-0,0479	(0,0855)	-0,0124	(0,1033)
ΔEmployment	-6,8825***	(2,2715)	3,2184**	(1,3030)
ΔEmployment×log Dur	2,9533***	(0,8790)	0,1859	(0,5311)
No. Empl. spells 3-4	-0,0095	(0,0500)	-0,0059	(0,0738)
No. Empl. spells 5-6	0,0563	(0,0605)	0,1081	(0,0851)
No. Empl. spells 7-8	0,0433	(0,0747)	0,1492	(0,0982)
No. Empl. spells 9-10	0,0279	(0,0962)	0,1604	(0,1171)
No. Empl. spells 11+	0,137	(0,0919)	0,1586	(0,1109)
Prev. Unempl 1-6 months	-0,3469***	(0,0440)	-0,219***	(0,0613)
Prev. Unempl 7-12 months	-0,4403***	(0,0785)	-0,3843***	(0,0966)
Prev. Unempl 13-24 months	-0,3059**	(0,1051)	-0,4415***	(0,1276)
Prev. Unempl ¿24 months	-0,3108**	(0,1334)	-0,2159*	(0,1358)
No. of observations	1,757,943		1,670,006	
Likelihood Function	-385,222.31		-364,075.86	

Note: Also included controls for sector and regime in the previous employment spell. monthly and region dummies.

Table 12: Unobserved heterogeneity estimates, 20012016

	2001-2007		2008-2016	
	Coef.	S. E.	Coef.	S. E.
η^u_{low}	-4,2047***	(0,0730)	-5,251***	(0,0841)
η^u_{high}	-3,0827***	(0,0734)	-3,9548***	(0,0858)
η^e_{low}	-1,1690***	(0,0892)	-1,2281***	(0,0890)
η^e_{high}	-0,2888***	(0,0950)	-0,4261***	(0,0966)
$Pr(\eta^u_{low}, \eta^e_{low})$	0,1818***	(0,0199)	0,216***	(0,1403)
$Pr(\eta^u_{low}, \eta^e_{high})$	0,3803***	(0,0411)	0,460***	(0,0502)
$Pr(\eta^u_{high}, \eta^e_{low})$	0,0696		0,0566***	(0,0065)
$Pr(\eta^u_{high}, \eta^e_{high})$	0,3683***	(0,0359)	0,2674	
No. of observations	1,757,943		1,670,006	
Likelihood Function	-385,222.31		-364,075.86	

Note: Also included controls for sector and regime in the previous employment spell. monthly and region dummies.

Table 13: Exit to the first Permanent Contract

	2001-2007		2008-2016	
	Coef.	S.E.	Coef.	S.E.
log Dur	0.773***	(0.1060)	0.947***	(0.1450)
(log Dur)^2	0.0144	(0.0131)	-0.0614***	(0.0179)
Dur = 12 months	0.230**	(0.1010)	0.481***	(0.1310)
Dur = 24 months	0.563***	(0.0826)	0.214	(0.1390)
Dur = 36 months	0.109	(0.1040)	0.233*	(0.1380)
Age	0.169***	(0.0145)	0.150***	(0.0251)
Age×log Dur	-0.0410***	(0.0043)	-0.0264***	(0.0067)
High skill	0.458	(0.2810)	0.935***	(0.3410)
Medium-High Skill	0.0908	(0.1910)	0.0322	(0.2420)
Medium-Low Skill	0.186	(0.1290)	0.462***	(0.1760)
High skill×log Dur	-0.0667	(0.0838)	-0.252***	(0.0947)
Medium-High Skill×log Dur	0.00702	(0.0548)	-0.0190	(0.0632)
Medium-Low Skill×log Dur	-0.00184	(0.0370)	-0.124***	(0.0460)
Secondary education., 1 st.	0.307*	(0.1700)	-0.313	(0.2040)
Secondary education., 2 st.	-0.350*	(0.1810)	-0.822***	(0.2230)
College education	-0.994***	(0.1980)	-0.786***	(0.2490)
Secondary education., 1 st.×log Dur	-0.0153	(0.0492)	0.109**	(0.0534)
Secondary education., 2 st.×log Dur	0.184***	(0.0523)	0.253***	(0.0581)
College education×log Dur	0.307***	(0.0569)	0.269***	(0.0638)
THA work	0.152***	(0.0385)	-0.126**	(0.0489)
ΔEmployment	1.630	(2.849)	5.225***	-18.110
ΔEmployment×log Dur	0.587	(0.7940)	-0.270	(0.4620)
2010 reform			-0.194***	(0.0461)
2012 reform			0.0571	(0.0439)
Constant term	-8.218***	(0.3580)	-8.487***	(0.5410)
No. of Observations	706367		665337	
Likelihood Funcion	-36.823,611		-26.088,329	

Note: Also included controls for sector and regime in the previous employment spell and monthly and region dummies.

References

[1] Amuedo-Dorantes, C. (2000), "Work Transitions into and Out of Involuntary Temporary Employment in a Segmented Market: Evidence from Spain", International Labor Relation Review, 53-2, pp. 309-325.

[2] Arranz JM, Garca-Serrano C (2014), "The interplay of the unemployment compensation system, fixed-term contracts and rehirings: the case of Spain", International Journal of Manpower, 35(8), pp. 1236-1259.

[3] Bentolila, S., J.J. Dolado and J.F. Jimeno (2008), "Two-Tier Employment Protection Reforms: The Spanish Experience", CESifo DICE Report 4/2008.

[4] Bentolila, S., J.J. Dolado and J.F. Jimeno (2012), "Reforming an insider-outsider labour market: the Spanish experience", *IZA Journal of European Labour Studies*, 1:4.

[5] Bentolilla, S., J.I. García-Pérez and M. Jansen (2017), "Are the Spanish Long-Term Unemployed Unemployable?", *SERIEs*, 8, 1-41.

[6] Bover, O., M Arellano and S. Bentolila (2002), "Unemployment duration, benefit duration and the business cycle", *The Economic Journal*, 112, 223-65.

[7] Carrasco, R. J.I. Garca Prez (2015), "Employment Dynamics of Immigrants versus Natives: Evidence from the Boom-Bust period in Spain, 2000-2011", *Economic Inquiry*, 53-2, pp. 10381060.

[8] Dolado, J.J., F. Felgueroso, M. Jansen, A. Fuentes and A. Wolfl (2013), "Youth Labour Market Performance in Spain and its Determinants: A Micro-Level Perspective", *OECD Economic Department Working Paper* No. 1039.

[9] García-Pérez, J.I. (1997), "Las tasas de salida del empleo y el desempleo en Espaa (1978-1993)", *Investigaciones Econmicas*, 21(1), pp. 29-53.

[10] García-Pérez, J.I. (2008), "La Muestra Continua de Vidas Laborales (MCVL): una gua de uso para el anlisis de transiciones", *Revista de Economa Aplicada*, 16(E-1) pp. 5-28.

[11] García-Pérez, J.I., I. Marinescu and J. Vall Castello (2016), "Can Fixed-Term Contracts Put Low Skilled Youth on a Better Career Path? Evidence from Spain", *NBER Working Paper Series*, No. 22048.

[12] García-Pérez, J.I. and F. Muñoz-Bullón (2011), "Transitions into Permanent Employment in Spain: An Empirical Analysis for Young Workers", *British Journal of Industrial Relations*, 49(1), 103–43.

[13] de Graaf-Zijl, M., G. van den Berg and A. 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.

[14] Guell M. and B. Petrongolo (2007), "How binding are legal limits? Transitions from temporary to permanent work in Spain", *Labour Economics*, 14(2), 153–183.

[15] Heckman, J.J. and B. Singer (1984), "A Method for Minimising the Impact of Distributional Assumptions in Econometric Models for Duration Data", *Econometrica*, 52, 272-320.

[16] Jenkins S (1995), "Easy estimation methods for discrete-time duration models", *Oxford Bulletin of Economics and Statistics*, 57(1), 129-138.

[17] IMF (2010), "Unemployment Recoveries during Recessions and Recoveries: Okun's Law and Beyond", World Economic Outlook, Ch. 3.

[18] Rebollo-Sanz Y, Garca-Prez JI (2015), "Are unemployment benefits harmful to the stability of working careers? The case of Spain", *SERIEs - Journal of the Spanish Economic Association* 6(1):1–41

[19] van den Berg GJ (2001), "Duration models: specification, identification, and multiple durations", in: Heckman JJ, Leamer E (eds) Handbook of Econometrics (vol. 5), 3381-3460.