The hidden side of temporary employment: fixed-term contracts as a screening device

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Motivation

- FTC, especially their consequences, attract much attention from labor economists.
  - Studies using aggregate data have found that FTC have little effect on macro adjustment.
  - Theory predicts ambiguous consequences for workers and the economy
    - stepping stones or dead-end jobs?
    - increased or reduced productivity?
- Actual implications of fixed-term contracts depend on the reasons why employers use them – this is an empirical issue.

Temporary employment

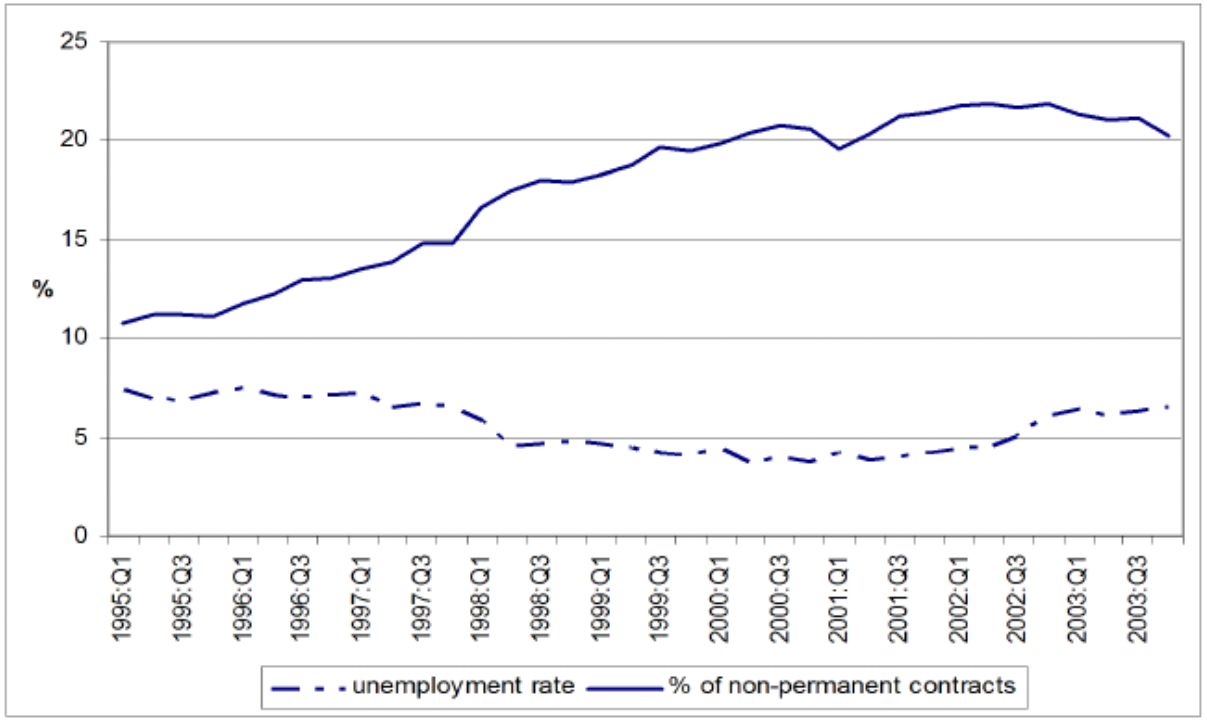


Figure 1: Incidence of Temporary Employment - Source: Employment Survey

Job and Worker Turnover

	Job and Worker Turnover					
	Job Creation	Job Destruction	Job Turnover	Hiring Rate	Separation Rate	Worker Turnover
All Workers	2.3	3.1	5.4	4.0	4.8	8.9
Permanent	1.9	2.6	4.6	1.9	3.2	5.1
Temporary	9.8	12.0	21.7	16.4	14.2	30.6

Table 1: Job Turnover and Worker Turnover, by Type of Contract. Source: Employer Employment Survey (1991-95). All job and worker turnover measures were computed using the methodology of Davis et al. (1996).

Fixed-term-contracts

Because of their characteristics Fixed-Term Contracts

- They are temporary in nature, and
- Imply lower firing costs

There are three major reasons to use FTC:

- Flexibility
  - Fill temporary, or temporarily vacant, positions (Abraham, 1988);
  - Facilitate employment adjustment (Hunt, 2000);
- Screening (Autor, 2000);
- Churning (Burgess, Lane and Stevens, 2000)

Flexibility

- Lower firing costs facilitate employment adjustment in cases of fluctuations in product demand or labor supply.
- But, conversion clauses:
  - make fixed-term contracts less flexible (Hunt, 2000), and
  - create an incentive for unproductive churning (Blanchard and Landier, 2001)

Screening

- High firing costs originate increased demand for screening.
- Employers overcome their informational disadvantage offering up-front training to newly-hired workers (Autor, 2000).
- Fixed-term contracts are appropriate for this kind of screening.

Churning

Churning is a structural component of some firms' personnel policies (Burgess, Lane, and Stevens, 2000).

Why should we care about Portugal?

- FTC introduced in 1977
- Extreme employment protection
  - Low unemployment inflows and long unemployment duration, low worker flows for continuing firms, specially at a quarterly frequency. (Blanchard and Portugal, AER, 2001).
  - On average, 75 percent of all establishments do not change employment, hire any worker or separate from any of its workers over the entire quarter. (Varejão and Portugal, JOLE, 2007)
- Information at the firm level on conversions from fixed-term contracts into open-ended contracts

Navigation

- The main resesearch questions
- Legislation
- The estimation strategy
- The data
- The Main empirical results
- Conclusions

Legislation

- Fixed-term contracts are permitted in a limited number of cases.
- Contracts have a maximum duration of three years – conversion clauses apply.
- The worker is entitled to a terminal bonus (2 days pay per month of contract).
- Workers with temporary contract are given priority over other applicants if a permanent position becomes vacant.

Data

- Social Audit (Balanço Social)
  - Annual survey run by the Ministry of Employment;
  - Mandatory to all firms with at least 100 employees;
  - Comprehensive data on the firm, the workforce, and worker flows.
  - Eight waves of the survey are used: 1995-2002.
  - 16789 firm/year over the 8-year period, and 787 000 workers per year.

Data

- Matched employer-employee survey (Quadros de Pessoal)
  - Covering ALL establishments with at least one wage earner.
  - Detailed information on workers, firms, and collective agreements.
  - Ability to merge with the Social Audir dataset.
  - Two waves were used: 2002 and 2003.
- Two datasets were extracted and merged with the Social Audit dataset
  - New-hires dataset
  - Fixed-term contract dataset

Four empirical questions

- Which employers use temporary contracts?
- Which employees are hired with temporary contracts?
- Which employers convert temporary contracts to permanent?
- Which employees get promoted from temporary to permanent positions?

Incidence of FTC

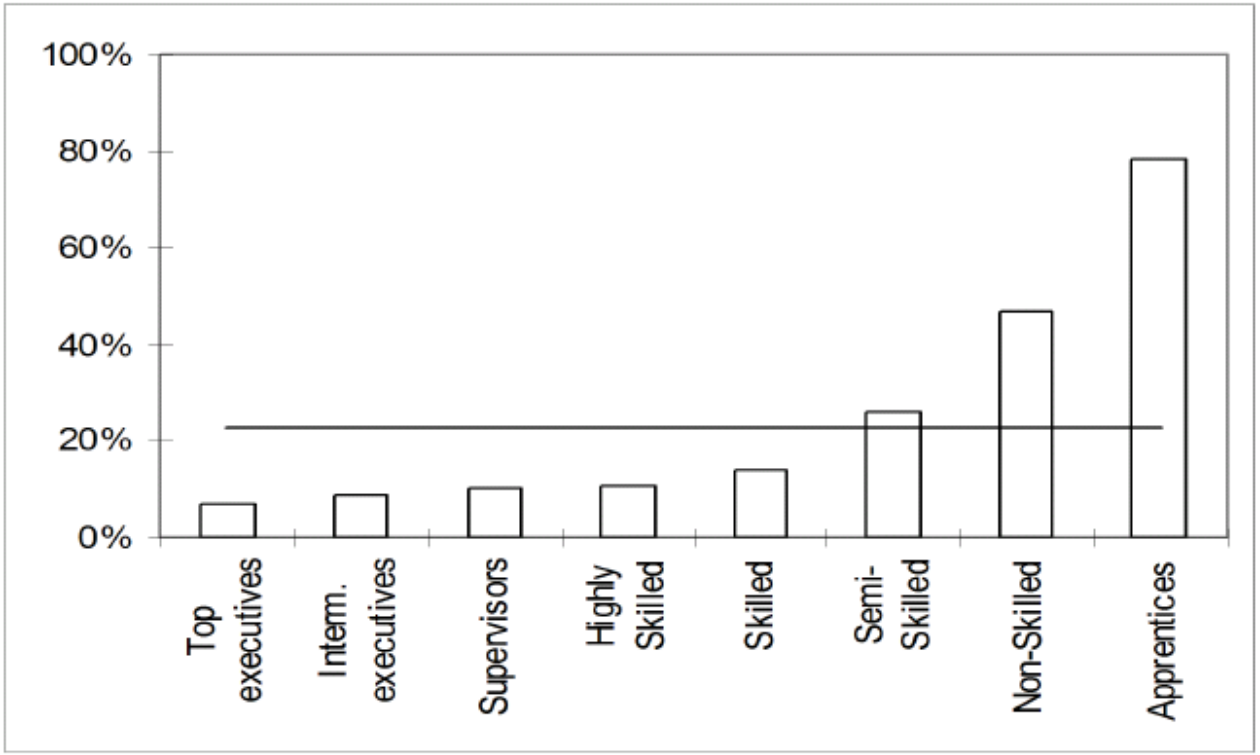
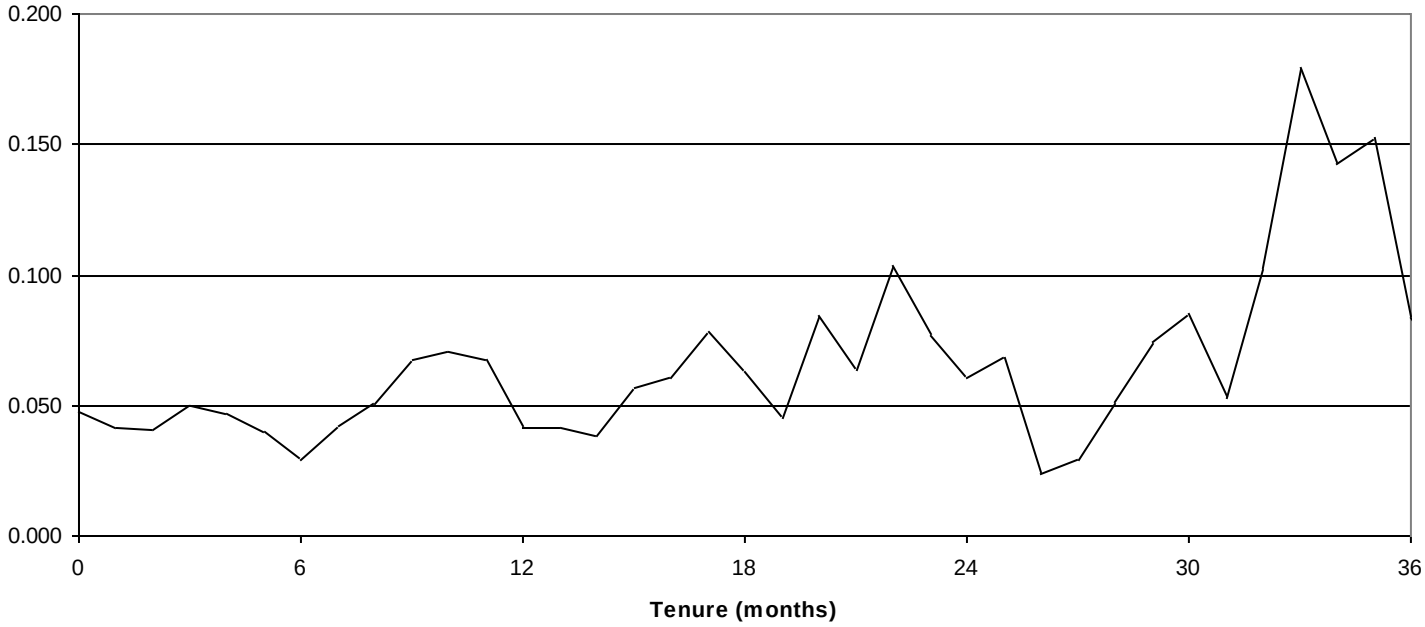


Figure 2: Incidence of Fixed-Term Contracts, by skill categories

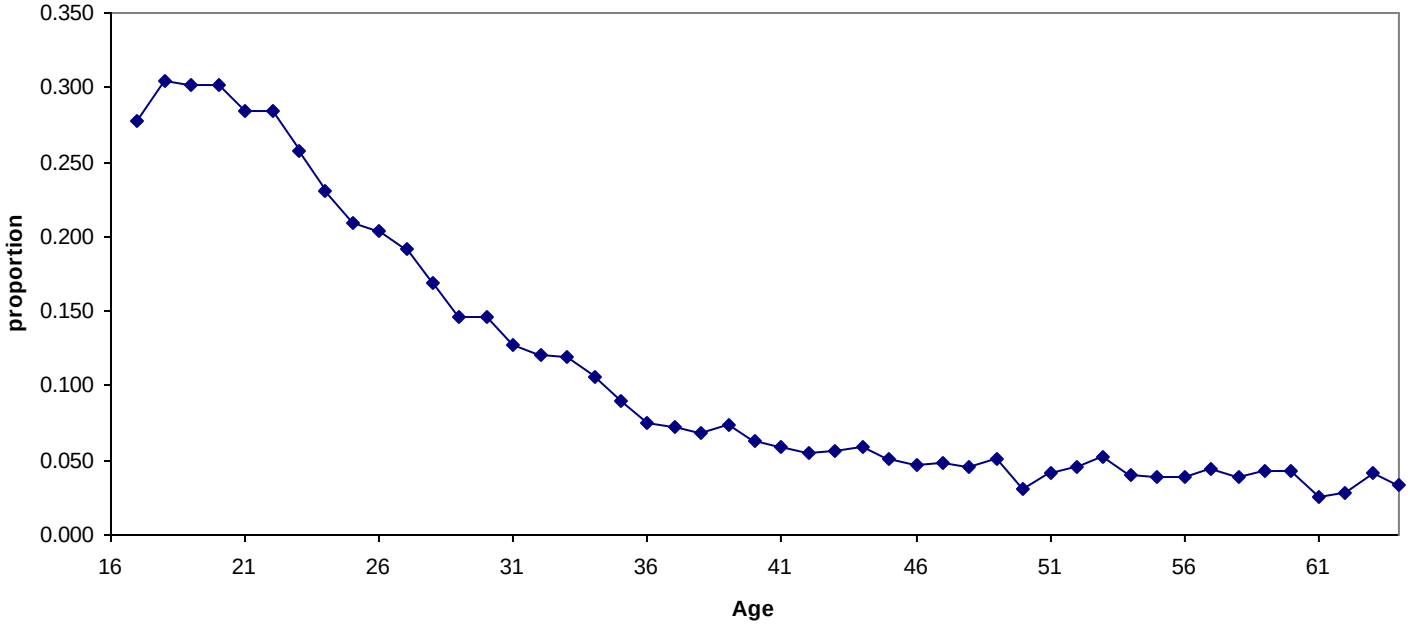
Transitions rates from FTC into Open-ended Contracts

Figure 5: Quarterly Transitions from Fixed-Term Contracts into Open-Ended Contracts



Incidence of FTC by age

Figure 4: Incidence of Fixed-Term Contracts



Conversions to open-ended contracts

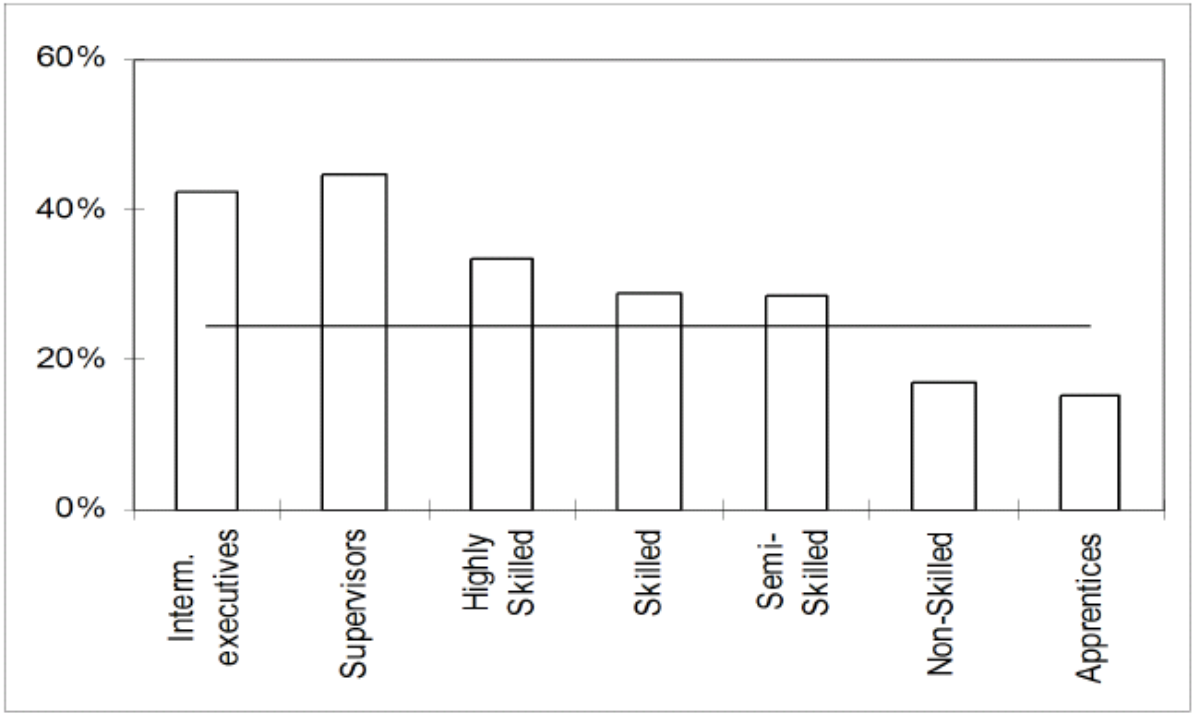


Figure 3: Frequency of Fixed-Term Contracts Promotion, by skill categories

Estimation

- Fractional Regression Model
  - Beta-binomial regression to analyse the proportion of the firm's workforce that has an FTC (stock).
  - Beta-binomial regression to analyse the proportion of the firm's workforce on a FTC that received a permanent contract (transitions).
- Binary choice model (probit) to study the probability of being hired with a temporary contracts.
- Hazard regression model (competing risk) to investigate which employees get promoted from temporary to permanent positions.

Determinants of the use of fixed-term contracts: beta-binomial regression model (n=12 079 firms)

parameter	estimate	std. error	marg. effect
Skill-composition (%)			
Managers	-4.190*	0.642	-2.733
Top executives	-1.473*	0.178	-0.961
Intermediate executives	-2.273*	0.159	-1.483
Supervisors and team leaders	-0.975*	0.186	-0.636
Highly skilled professionals	-1.222*	0.133	-0.797
Skilled professionals	-0.616*	0.131	-0.401
Semi-skilled professionals	-0.068	0.139	-0.044
Firm size (nr. of workers)			
500-999	0.042	0.035	2.768
1000 and more	-0.165*	0.043	-10.299
Firm Age			
2 - 5 years	-0.230*	0.090	-14.044
5 and more	-0.287*	0.086	-17.232
age unknown	-1.369*	0.351	-58.434
Wage dispersion (t-1)	0.092**	0.004	0.060
Wage dispersion unknown	0.133*	0.027	9.008
Training costs per worker (log)	-0.016*	0.005	-0.875
Age structure of the workforce			
% between 25 and 44	-3.039*	0.118	-1.982
% between 45 and 64	-4.592*	0.102	-2.995
% 65 and over	-0.970	0.794	-0.633
Voluntary quits (%)	0.261*	0.071	0.170
Separations due to demographics (%)	1.113***	0.645	0.726

Results

- Human capital intensity and fixed-term contracts move in opposite directions.
- Firms that invest more in training also employ fewer workers with fixed-term contracts.
- Permanent vacancies have a positive effect on the share of temporary contracts.
- The coefficient of the wage dispersion variable is consistent with unions opposing the use of 'precarious' forms of contract.

Probability of being hired under a fixed-term contract: probit regression model (n=30 963 workers)

	estimate	std. error	mg. effect
Intercept	1.092	0.054	
Schooling			
6 years	0.312*	0.030	0.058
9 years	0.376*	0.029	0.067
12 years	0.186*	0.030	0.037
College	-0.378*	0.036	-0.101
Gender (Male=1)	-0.013	0.020	-0.003
Immigrants	0.104*	0.031	0.022
Workers' Age			
20 - 25	0.051	0.044	0.011
25 - 30	-0.079***	0.044	-0.018
30 - 35	-0.307*	0.045	-0.079
35 - 40	-0.446*	0.047	-0.123
40 - 45	-0.498*	0.049	-0.140
45 - 50	-0.486*	0.052	-0.136
50 - 55	-0.624*	0.058	-0.183
55 - 60	-0.813*	0.071	-0.254
60 and over	-0.744*	0.086	-0.228
Training costs per worker (log)	0.018*	0.005	0.004
Firm size (nr. of workers)			
500-999	0.183*	0.029	0.037
1000 and more	-0.096*	0.022	-0.022
Permanent workers' monthly wage	0.0001*	0.000	0.0000
Overtime hour cost	-0.034*	0.004	-0.008
No overtime firm	-0.165*	0.030	-0.040
N	30,963		
Log likelihood	-13551.85		

Results

- Female workers, immigrants and low-educated workers are all more likely to be hired on a temporary contract than otherwise similar workers by similar firms.
- Workers' age has a decisive effect on the type of contract they are more likely to be offered.
- The higher the wages paid to permanent employees are and the more resources the firm devotes to training its workforce, the more likely it is that fixed-term contracts will be used for new admissions.
- The results also show that the probability of being hired with a fixed-term contract is reduced if the hiring firm did not use overtime work in the past.

Determinants of the conversion of fixed-term contracts into open-ended contracts: beta-binomial regression model

	estimate	std. error	mg. effect
Skill-composition (%)			
Managers	0.167	1.064	0.028
Top Executives	0.089	0.277	0.015
Intermediate Executives	1.305*	0.232	0.218
Supervisors and team leaders	0.846*	0.264	0.142
Highly skilled professionals	0.591*	0.171	0.099
Skilled professionals	0.393**	0.164	0.066
Semi-skilled professionals	0.215	0.169	0.036
Firm size (nr. of workers)			
500-999	0.099**	0.047	1.699
1000 and more	0.521	0.056	9.603
Firm age			
2-5 years	-0.039	0.224	-0.648
5 and more years	-0.209	0.219	-3.327
age unknown	0.633	0.427	11.851
Wage dispersion (t-1)	-0.015*	0.005	-0.266
Wage dispersion unknown	-0.196*	0.040	-3.135
Training costs per worker (log)	0.038*	0.007	0.636
Hourly wage (log)	0.107*	0.029	1.797
Tenure structure (%)			
2 years or less	-0.932*	0.094	-0.156
2-5 years	1.602*	0.136	0.268
Workers' age structure (%)			
25-44 years	-0.008	0.176	-0.001
45-64 years	-0.402**	0.173	-0.067
65 and over	-0.226	1.145	-0.038
Male workers (%)	-0.055	0.064	-0.009
Separations due to demographics (%)	2.137	1.263	0.358
Voluntary quits (%)	0.381**	0.179	0.064
Hours Worked (%)	0.130	0.210	0.022

Results

- Human capital intensive firms are those that promote temporary workers to permanent positions more often.
- Fixed-term contracts are also more likely to end with a conversion to an open-ended contract among firms that invest more in training.
- Conversion rates increas with tenure.
- The number of permanent positions opened also increase the expected conversion of temporary contracts into open-ended contracts in line with Nagypál's (2001) and Autor's (2001) stories.

Transitions from a fixed-term contract to an open-ended contract: complementary log-log model (n=70 594)

	estimate.	std. error	mg. effect
Gender (Male=1)	-0.005	0.018	-0.001
Schooling			
6 years	0.013	0.029	0.002
9 years	0.017	0.029	0.002
12 years	0.070**	0.029	0.010
College	0.271*	0.036	0.043
Immigrant Status	-0.346*	0.032	-0.045
Workers' age			
20 - 25	0.255*	0.040	0.039
25 - 30	0.354*	0.041	0.056
30 - 35	0.308*	0.043	0.049
35 - 40	0.195*	0.047	0.030
40 - 45	0.185*	0.051	0.029
45 - 50	0.071*	0.058	0.011
50 - 55	-0.031	0.070	-0.004
55 - 60	-0.146	0.094	-0.020
60 and over	-0.602*	0.162	-0.069
Tenure (in quarters)			
Tenure=2	0.576*	0.041	0.100
Tenure=3	1.098*	0.039	0.224
Tenure=4	1.605*	0.037	0.383
Tenure=5	1.866*	0.035	0.466
Tenure=6	1.766*	0.037	0.439
Tenure=7	1.710*	0.038	0.423
Tenure=8	2.124*	0.039	0.581
Tenure=9	0.714*	0.100	0.139
Tenure=10	0.719*	0.114	0.140
Tenure=11	1.131*	0.097	0.255
Tenure=12	0.366***	0.221	0.062
Firm size (nr. of workers)			
500-999	-0.007	0.025	-0.001
1000 and more	-0.022	0.027	-0.003
Training costs per worker (log)	0.086*	0.005	0.013
Permanent workers' pay	-0.001*	0.000	-0.0001
Overtime hour cost	0.018*	0.003	0.003
No-overtime firm	-0.128*	0.029	-0.018
Nr. of Fixed-term contracts	0.0002*	0.000	0.000
Fixed-term contracts residual	-0.0001**	0.000	-0.0001

Results

- Schooling and age are two important determinants of the employment prospects of temporary workers.
- Conversion of temporary contracts has a marked spike at their legal maximum duration (as in Güell and Petrongolo, 2003)
- Immigrant workers are significantly less likely than natives to make a transition from a temporary to an open-ended contract.
- Human capital intensive firms are more likely to offer open-ended contracts to those workers that they hire with fixed-term contracts. This is an indication of temporary contracts being used for screening workers to temporary positions.

Conclusions

- We consider two crucial moments of the (temporary) employment relationship: the hiring stage and the promotion stage.
- We find that human capital intensity and the firm-level fraction of temporary contracts move in opposite directions.
- We also find that the workers' age has a decisive effect on the type of contract that they are offered
- The profile of employers that make the most intense use of fixed-term contracts matches the profile of those employers that offer a permanent position to their temporary workers more often.
- When a permanent position opens up, employers often respond by offering temporary contracts to new-hires convert them into open-ended contracts.