

Online Appendix

The Effect of Product Market Competition on Job Security

[NOT INTENDED FOR PUBLICATION]

1 Construction of variables

Duration dummies

In the main specification, a set of dummies is constructed to account for fixed-term contract duration. In particular, three dummies account for one-, two- and three-year fixed-term contract durations. Contract durations of less than one year are taken as the reference category.

In general, individuals enter the sample at any point in their fixed-term contract. Individuals may be first observed when they have had a fixed-term contract for less than one, one, two or three years. Therefore, I need to rely on the reported duration of the employment relationship to identify how much time the worker has been with a fixed-term contract in the same firm. Similarly, in the estimations for sector switching and transitions to unemployment, I rely on the reported duration of the employment relationship to identify how much time the individual has been working in the same firm.

There appears to be some measurement error because some contracts exceed the maximum legal duration of three years. I treat those observations as censored at the legal limit, a solution also adopted by Güell and Petrongolo (2007). This censoring leaves the estimation results arguably unchanged with respect to the estimations in which observations with longer contract duration are also included.

Price-cost margin

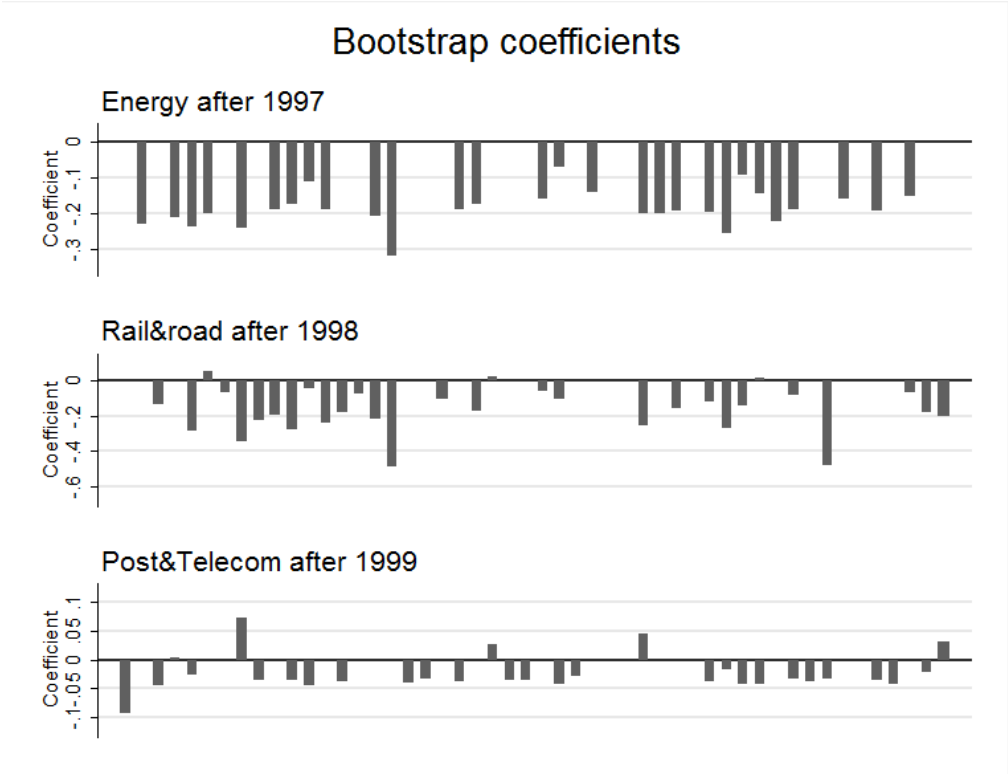
The price-cost margin equals price over marginal cost divided by price. However, in practice there are no data on marginal costs. The standard solution is to proxy the marginal cost using unit cost. In particular, the price-cost margin is computed as production revenue (price by quantity) minus production costs (unit cost by quantity) divided

by production revenue. As quantity appears as a common factor in the numerator and denominator, this is equivalent to price minus unit cost divided by price.

Regulatory Impact indicator

The Regulatory Impact indicator is constructed in two steps: First, information on barriers to entry, public ownership, vertical integration, market structure and price is collected for each service sector. Second, the information is aggregated at the manufacturing sector level by using the intensity of use of each service sector as weights. A more detailed description of this indicator can be found in Conway and Nicoletti (2006). See Tables 1-2 for descriptive statistics on the Regulatory Impact.

Figure 1: Bootstrap estimated coefficients for the impact of deregulation on job security



This graph represents the estimated coefficients resulting from 50 random drawings from the sample of clusters in the quasi-experimental estimation. The dependent variable is equal to 1 if the individual makes the transition from fixed-term to open-ended contract, and 0 otherwise. The measures of competition are a dummy for working in the energy sector in 1997 or after, a dummy for working in the rail & road sector in 1998 or after, and a dummy for working in the post & telecom sector in 1999 or after. The regression includes year fixed effects, quarter indicators, sector binary variables, fixed-term contract duration dummies, individual characteristics (age, marital status, household head, dummies for region of residence, high-school graduate, and university graduate), and individual fixed-effects. Individuals are weighted according to the ratio between the number of workers in their industry one year before the date of the interview and the number of workers in their industry at the time of the interview. The industries included are energy, rail & road, post & telecom, airlines and retail. Errors are clustered by sector-year.

Table 1: List of industries included in the IV estimation

Industries included in the instrumental variables specification	
1	Food products and beverages
2	Tobacco
3	Textile
4	Textile elaborated products and leather
5	Leather elaborated products and footwear
6	Wood except furniture
7	Pulp, paper and paper elaborated products
8	Printing and publishing
9	Coke, refined petroleum products
10	Chemicals
11	Rubber and plastics products
12	Other non-metallic mineral products
13	Basic metals
14	Fabricated metal products, except machinery and equipment
15	Machinery and equipment
16	Office, accounting and computing machinery
17	Electrical machinery and apparatus
18	Radio, television and communication equipment
19	Medical, precision & optical instruments, watches and clocks
20	Motor vehicles
21	Other transport equipment
22	Furniture
23	Recycling
24	Electricity and gas
25	Water supply

This is the list of industries for which there is information on the price-cost margin and on the Regulatory Impact so that they can be included in the instrumental variables estimation.

Table 2: The impact of competition on job security. Marginal effects from Probit duration model

Dep var: Switch to open-ended	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Competition	-0.213	0.179	0.186	-6.735	-6,401	-6,011
(-Price-cost margin)	(0.122)*	(0.215)	(0.221)	(2.306)***	(2.327)***	(2.18)***
Number of observations	31,084	31,084	31,084	31,084	31,084	31,084
R^2	0.025	0.058	0.058	0.043	0.056	0.056
Individual characteristics	No	Yes	Yes	No	Yes	Yes
Weights	No	No	Yes	No	No	Yes

The dependent variable is equal to 1 if a worker moves from a fixed-term to an open-ended contract, and 0 otherwise. The measure of competition is the price-cost margin multiplied by -1. *Significant at 10%, **5%, ***1%. All regressions include year fixed effects, quarter indicators, sector fixed effects, and fixed-term contract duration dummies. The individual characteristics are gender, age, marital status, household head, dummies for region of residence, high-school graduate, and university graduate. Errors are clustered by sector-year.

Table 3: The impact of competition measured by the inverse of the number of firms on job security

	OLS			IV		
Dep var: Switch to open-ended	(1)	(2)	(3)	(4)	(5)	(6)
- Inverse of number of firms	-0.758	-1.464	-1.062	-158.897	-150.014	-147.231
	(0.785)	(4.716)	(5.334)	(68.044)**	(63.107)**	(64.269)**
Number of observations	31,084	31,084	31,084	31,084	31,084	31,084
R^2	0.025	0.058	0.058	0.004	0.008	0.008
Individual characteristics	No	Yes	Yes	No	Yes	Yes
Weights	No	No	Yes	No	No	Yes

The dependent variable is equal to 1 if the individual moves from a fixed-term to an open-ended contract, and 0 otherwise. The measure of competition is the inverse of the number of firms in the sector multiplied by -1. *Significant at 10%, **5%, ***1%. All regressions include year fixed effects, quarter indicators, sector binary variables, and fixed-term contract duration dummies. The individual characteristics are gender, age, marital status, household head, dummies for region of residence, high-school graduate, and university graduate. Errors are clustered by sector-year.

Table 4: Two dimensional cluster*Estimation by instrumental variables*

Dep var: Switch to open-ended	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
-Price-cost margin	-.205 (0.128)	0.2 (0.203)	0.207 (0.217)	-1.529 (0.636)**	-1.441 (0.624)**	-1.352 (0.538)**
Number of observations	31084	31084	31084	31084	31084	31084
R^2	0.025	0.058	0.058	0.043	0.056	0.056
Individual characteristics	No	Yes	Yes	No	Yes	Yes
Weights	No	No	Yes	No	No	Yes

Quasi-experiment

Dep var: Switch to open-ended	(1)	(2)	(3)	(4)
Barriers reduction	-.040 (0.012)***	-.038 (0.012)***	-.039 (0.012)***	-.089 (0.03)***
Number of observations	19877	19877	19474	15663
R^2	0.134	0.136	0.139	0.24
Individual characteristics	No	Yes	Yes	Yes
Weights	No	No	Yes	Yes
Individual fixed effects	No	No	No	Yes

This table is equivalent to tables 3 and 5 in the paper with the exception that standard errors are clustered in two dimensions. One dimension is the sector by time cell, and the other is the individual.

Table 5: The impact of competition on job security for expired fixed-term contracts

Dep var: Switch to open-ended	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
- Price-cost margin	0.047 (0.347)	0.047 (0.347)	-0.057 (0.353)	-2.160 (0.822)***	-2.160 (0.822)***	-2.424 (0.886)***
Expired		-0.0004 (0.009)	0.019 (0.016)		-0.00008 (0.009)	0.093 (0.032)***
- Price-cost margin*Expired			0.293 (0.217)			1.410 (0.465)***
Number of observations	15879	15879	15879	15879	15879	15879
R^2	0.051	0.051	0.051	0.048	0.048	0.047

The dependent variable is equal to 1 if the individual moves from a fixed-term to an open-ended contract, and 0 otherwise. The measure of competition is the price-cost margin multiplied by -1. *Significant at 10%, **5%, ***1%. All regressions include year fixed effects, quarter indicators, sector binary variables, and fixed-term contract duration dummies. Errors are clustered by sector-year.

Table 6: The impact of competition on job security for sector switchers

Dep var: Switch to open-ended	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
- Price-cost margin	0.144	0.157	0.159	-1.452	-1.475	-1.426
	(0.21)	(0.208)	(0.211)	(0.5)***	(0.52)***	(0.511)***
Switcher		-0.167	-0.169		-0.167	-0.204
		(0.005)***	(0.011)***		(0.005)***	(0.017)***
- Price-cost margin*Switcher			-0.030			-0.556
			(0.13)			(0.228)**
Number of observations	31681	31681	31681	31681	31681	31681
R^2	0.056	0.066	0.066	0.054	0.063	0.063

The dependent variable is equal to 1 if the individual moves from a fixed-term to an open-ended contract, and 0 otherwise. The measure of competition is the price-cost margin multiplied by -1. *Significant at 10%, **5%, ***1%. All regressions include year fixed effects, quarter indicators, sector binary variables, and fixed-term contract duration dummies. Errors are clustered by sector-year.

Table 7: The impact of competition measured by the concentration ratio on the proportion of open-ended contracts

Dep var: Proportion of open-ended	OLS		IV	
	(1)	(2)	(3)	(4)
- Concentration ratio	-0.0003	-0.0002	-0.017	-0.015
	(0.0003)	(0.0003)	(0.009)*	(0.007)**
Number of observations	18370	16147	18370	16147
R^2	0.089	0.089	.	0.005
Weights	No	Yes	No	Yes

The dependent variable is the proportion workers with open-ended contracts over total contracted workers. The measure of competition is the average concentration ratio in the industry multiplied by -1. This is instrumented using the Regulatory Impact. *Significant at 10%, **5%, ***1%. All regressions include year fixed effects and sector dummies. Errors are clustered by sector-year.