APPENDIX A: DATA

The European Quality Index (EQI) constructed by Charron et al. (2014) is a survey-based index of the quality of government at the regional level for European member states. The index is based on a survey of European citizens' perceptions about the quality of institutions. EQI specifically measures the levels of quality of government among 172 EU regions based on the experiences and perception of citizens. Sixteen survey questions are asked, in accordance with the four 'pillars' of the World Bank's WGI: rule of law, government effectiveness, voice and accountability, and control of corruption.[1] Questions are centred on three public services that are often funded or administered at subnational levels: education, healthcare and law enforcement. The survey asks respondents to rate the provision of these three categories of public services with respect to three related concepts of institutional quality, i.e., quality, impartiality and level of corruption. Data are aggregated using different weighting schemes to obtain a robust indicator of EQI and its single components. Full details are given in Charron et al. (2014).

For firms' micro-data, we resort to the EU-EFIGE Bruegel-UniCredit dataset provided by the Belgian non-profit international association Bruegel. This dataset contains both survey and balance-sheet data (the latter drawn from the BvD Amadeus database) on a representative sample of approximately 15,000 manufacturing firms with at least ten employees operating in seven European countries: Austria, France, Germany, Hungary, Italy, Spain and the United Kingdom. Details on the criteria, the sampling design and the weighting schemes employed to ensure standard statistical representativeness of the collected data (ex-ante and ex-post for each country) are too technical to be reported here – and we refer to the extensive discussions in Altomonte et al. (2012). From the EFIGE dataset, we draw a measure of firms' TFP for each year in the 2010-2014 period. To compute this measure – overcoming endogeneity problems and allowing for industry-specific production functions – observations have been assigned to sectors (at NACE 2 digit levels), and then, the Levinsohn and Petrin model has been applied to each sector, con-

trolling for country and year fixed effects.[2] It must be highlighted that because TFP can be retrieved only after matching information from the EFIGE and AMADEUS databases and data from AMADEUS are available for approximately 50% of the EFIGE sample, TFP is defined for a smaller number of firms. Nevertheless, "the resulting restricted sample does not show any particular bias in terms of representation by category of firm" (Altomonte et al., 2012, p. 21). Finally, potential issues of country representativeness are addressed in endnote 2 of the main text.

REFERENCES

Altomonte, C., Aquilante, T., & Ottaviano, G. I. P. (2012). *The triggers of competitiveness: The EFIGE cross-country report*. Brussels: Bruegel Blueprint 17.

Charron, N., Dijkstra, L., & Lapuente, V. (2014). Regional governance matters: Quality of government within European Union member states. *Regional Studies*, *48*(1), 68–90. doi:10.1080/00343404.2013.770141

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[1]. The survey questions are the following:

· How would you rate the quality of the police force in your area?

· The police force gives special advantages to certain people in my area.

· All citizens are treated equally by the police force in my area.

· Corruption is prevalent in the police force in my area.

· How would you rate the quality of public education in your area?

· How would you rate the quality of the public healthcare system in your area?

· Certain people are given special advantages in the public education system in my area.

· All citizens are treated equally in the public education system in my area.

· In your opinion, if corruption by a public employee or politician were to occur in your area, how likely is it that such corruption would be exposed by the local mass media?

· Please respond to the following: elections in my area are honest and clean from corruption.

· Corruption is prevalent in my area's local public school system.

· Corruption is prevalent in the public healthcare system in my area.

· In the past 12 months, have you or anyone living in your household paid a bribe in any form to health or medical services?

· In your opinion, how often do you think other citizens in your area use bribery to obtain public services?

2. "Output is proxied by added value, deflated using industry-specific (NACE rev 1.1) price indices retrieved from Eurostat (estimates using revenues as a proxy are fully comparable). The labour input is measured by the number of employees, while capital is proxied by the value of tangible fixed assets deflated using the GDP deflator. Material costs are instead deflated by average industry-specific PPIs (producer price indexes) weighted by input-output table coefficients" (Altomonte et al., 2012, page 20).

TABLE A1 - Description of the variables used in the estimations and main summary statistics

VARIABLE	DESCRIPTION	Mean	Std. Dev.	Obs
TFP	Total Factor Productivity (average 2010-2014)	-0.730	0.536	6,442
EQI	Region-level index of Institutional Quality (average of 2010 and 2013)	0.110	0.658	6,442
RUL	Region-level index of Rule of Law (average of 2010 and 2013)	0.195	0.523	6,442
GOV	Region-level index of Government Effectiveness (average of 2010 and 2013)	0.144	0.572	6,442
HMTI	Dummy = 1 for high and medium-high technology industries (based on the Eurostat classification at NACE Rev 2, 2-digit level)	0.246	0.430	6,442
SIZE	Total assets in 2009 (thousands of euro)	6,806	13,393	6,442
AGE	2009 minus firm's year of establishment	31	24.154	6,442
TRAIN	Share of employees involved in formal training programs in 2008	21.216	28.362	6,442
FOREGROUP	Dummy = 1 if firm belongs to a foreign group (in 2008)	0.077	0.267	6,442
FORECOMP	Dummy = 1 if the firm's main competitors are located abroad (in 2008)	0.129	0.336	6,442
EXP	Dummy = 1 if in 2008 a firm sold abroad some or all of its own products/services	0.692	0.461	6,442
R&D	Dummy = 1 if a firm undertook R&D activity in the three years 2007-2009	0.523	0.500	6,442
INNO	Dummy = 1 if a firm carried out (in the three years 2007-2009) product or process innovation	0.667	0.471	6,442
GDP	Regional gross domestic product per capita (average of annual growth rates 2010-2014)	0.005	0.016	6,442
DENS	Regional population over regional surface in sq. km (average 2010-2014)	256.2	364.1	6,442
EDU	Population aged 25-64 with tertiary education (average 2010-2014)	26.09	8.97	6,442
CONNE	Households with access to the internet at home to total households (average 2010-2014)	72.80	8.96	6,442
JACOB	Jacob index: number of sectors at 2-digit level with more than 10 firms in 2008 (regional-level)	7.76	5.61	6,442
DSIZE	Dummy = 1 if a firm has 50 or more employees	0.181	0.385	6,442
DAGE	Dummy = 1 if a firm is older than 15 years (critical value first quartile of AGE distribution)	0.754	0.430	6,442
HK	Dummy (for human capital) = 1 if a firm has a higher share of graduate employees with respect to the national average share of graduates	0.302	0.459	6,442
DGDP	Dummy = 1 if GDP exceeds its median value	0.262	0.440	6,442

Summary statistics are computed on the estimation sample (benchmark equation). The dependent variable TFP has been estimated by the EFIGE team applying the Levinsohn and Petrin (2003) algorithm to each sector, controlling for country and year fixed-effects. In this estimation output is proxied by added value and deflated using industry-specific price indices; the labour input is measured by the number of employees; capital is proxied by the value of tangible fixed assets deflated using the GDP deflator; material costs are deflated by average industry-specific PPIs (Producers Price Index) weighted by input-output table coefficients. The variables EQI, RUL, GOV and GDP are drawn from Charron et al. (2014 and 2015), while DENS, EDU and CONNE come from EUROSTAT. The other variables are based on data coming from EFIGE (European Firms in a Global Economy) dataset. High-technology industries include: aircraft and spacecraft; pharmaceuticals; office, accounting and computing machinery; radio, TV and communications equipment; medical, precision and optical instruments. Medium-high-technology sectors are: electrical machinery and apparatus; motor vehicles, trailers and semi-trailers; chemicals excluding pharmaceuticals; railroad equipment and transport equipment; machinery and equipment. It is worth noticing that, while the OECD taxonomy relies on four-digit sectors, our HMTI dummy is defined considering industries at the two-digit level, as our data are available only at such level of disaggregation.

TABLE A2 - Regional and national mean values

	Country	Region	EQI Regional	EQI National	RUL Regional	GOV Regional	TFP Regional
1	AUT	Burgenland	1.252	1.041	0.859	0.597	-0.995
2	AUT	Kärnten	1.103	1.041	0.463	0.233	-0.665
3	AUT	Niederöstrerreich	1.134	1.041	0.671	0.486	-0.799
4	AUT	Oberösterreich	1.030	1.041	0.671	0.457	-0.882
5	AUT	Steiermark	1.063	1.041	0.545	0.723	-0.542
6	AUT	Voralberg	0.882	1.041	0.820	0.188	-0.714
7	AUT	Wien	0.824	1.041	0.372	0.013	-0.619
8	FRA	Alsace	0.668	0.647	-0.246	0.745	-0.653
9	FRA	Aquitaine	0.961	0.647	-0.173	0.618	-0.707
10	FRA	Auvergne	0.787	0.647	-0.243	0.722	-0.651
11	FRA	Basse-Normandie	0.752	0.647	-0.168	0.536	-0.670
12	FRA	Bourgogne	0.532	0.647	-0.359	0.518	-0.565
13	FRA	Bretagne	1.182	0.647	-0.170	0.966	-0.648
14	FRA	Centre	0.857	0.647	-0.124	0.549	-0.550
15	FRA	Champagne-Ardenne	0.359	0.647	-0.530	0.349	-0.574
16	FRA	Corse	0.280	0.647	-1.113	0.083	-0.714
17	FRA	Franche-Comte	0.654	0.647	-0.346	0.555	-0.557
18	FRA	Haute-Normandie	0.357	0.647	-0.621	0.585	-0.646
19	FRA	Ile-de-France	0.624	0.647	-0.499	0.444	-0.548
20	FRA	Languedoc-Roussillon	0.601	0.647	-0.432	0.526	-0.663
21	FRA	Limousin	0.795	0.647	-0.197	0.667	-0.610
22	FRA	Lorraine	0.443	0.647	-0.442	0.546	-0.654
23	FRA	Midi-Pyrenees	0.712	0.647	-0.159	0.613	-0.628
24	FRA	Nord - Pas-de-Calais	0.489	0.647	-0.494	0.794	-0.624
25	FRA	Pays de la Loire	0.617	0.647	-0.461	0.752	-0.642
26	FRA	Picardie	0.509	0.647	-0.379	0.569	-0.626
27	FRA	Poitou-Charentes	0.911	0.647	-0.089	0.736	-0.646
28	FRA	Provence-Alpes-Cote d'Azur	0.267	0.647	-0.681	0.417	-0.481
29	FRA	Rhone-Alpes	0.875	0.647	-0.282	0.667	-0.608
30	GER	Baden Wuttemberg	0.995	0.901	0.798	0.031	-0.611
31	GER	Bavaria	0.886	0.901	0.972	0.146	-0.671
32	GER	Berlin	0.740	0.901	0.624	-0.336	-0.622
33	GER	Bremen	0.907	0.901	0.993	-0.424	-0.183
34	GER	Hamburg	0.878	0.901	0.963	-0.043	-0.619
35	GER	Hessen	0.741	0.901	0.815	-0.002	-0.625
36	GER	Lower Saxony	1.013	0.901	0.980	-0.097	-0.668
37	GER	Mecklenburg-Vorpommen	0.904	0.901	0.726	-0.054	-0.952
38	GER	North Rhine Westphalia	0.720	0.901	0.893	-0.213	-0.615
39	GER	Rhineland-Palatinate	0.937	0.901	0.988	0.180	-0.708
40	GER	Saarland	1.052	0.901	0.984	0.016	-0.573
41	GER	Saxony	0.960	0.901	0.696	0.066	-0.787
42	GER	Saxony-Anhalt	0.632	0.901	0.403	-0.523	-0.830
43	GER	Schleswig-Holstein	1.205	0.901	1.068	0.090	-0.395
44	GER	Thuringia	0.936	0.901	0.805	-0.109	-0.810
45	HUN	Dunántúl	-0.272	-0.515	-0.042	-0.333	-0.607
46	HUN	Észak és Alföld	-0.437	-0.515	-0.056	-0.272	-0.595
47	HUN	Közép-Magyarország	-0.835	-0.515	-0.819	-0.465	-0.645
48	ITA	Abruzzo	-0.948	-0.729	0.550	-0.445	-0.864
49	ITA	Basilicata	-1.295	-0.729	0.461	-0.522	-0.911
50	ITA	Calabria	-1.917	-0.729	0.470	-1.530	-0.988
51	ITA	Campania	-2.263	-0.729	-0.524	-1.269	-0.953
52	ITA	Emilia-Romagna	-0.209	-0.729	0.891	0.540	-0.713
53	ITA	Friuli-Venezia Giulia	0.371	-0.729	1.251	0.780	-0.816
54	ITA	Lazio	-1.344	-0.729	0.064	-0.948	-0.819
55	ITA	Ligura	-0.612	-0.729	0.739	-0.222	-0.712
56	ITA	Lombardia	-0.527	-0.729	0.583	0.360	-0.725
57	ITA	Marche	-0.431	-0.729	0.755	0.046	-1.045
58	ITA	Molise	-1.402	-0.729	0.257	-0.712	-0.686
59	ITA	Piemonte	-0.309	-0.729	0.800	0.358	-0.672
60	ITA	Puglia	-1.637	-0.729	-0.097	-0.872	-1.015
61	ITA	Sardegna	-1.042	-0.729	0.520	-0.750	-0.901
62	ITA	Sicilia	-1.678	-0.729	-0.160	-1.127	-0.801
63	ITA	Toscana	-0.477	-0.729	0.738	0.073	-1.095
64	ITA	Provincia autonoma di Trento	0.884	-0.729	1.590	1.763	-0.429
65	ITA	Umbria	-0.268	-0.729	0.858	0.318	-0.781
66	ITA	Valle d'Acosta	0.772	-0.729	1.726	1.737	-0.673
67	ITA	Veneto	-0.257	-0.729	0.866	0.495	-0.820
68	SPA	Andalucia	-0.064	0.240	-0.231	-0.370	-0.884
69	SPA	Aragón	0.331	0.240	0.121	-0.196	-0.811
70	SPA	Canarias (ES)	0.071	0.240	-0.069	-0.645	-0.928
71	SPA	Cantabria	0.393	0.240	-0.014	-0.323	-0.662
72	SPA	Castilla y León	0.203	0.240	0.063	-0.382	-0.747
73	SPA	Castilla-La Mancha	0.094	0.240	-0.020	-0.601	-0.901
74	SPA	Cataluña	-0.238	0.240	-0.477	-0.941	-0.639
75	SPA	Comunidad de Madrid	0.189	0.240	0.074	-0.391	-0.744
76	SPA	Comunidad Foral de Navarra	0.333	0.240	-0.112	0.129	-0.603
77	SPA	Comunidad Valenciana	0.037	0.240	-0.058	-0.359	-0.896
78	SPA	Extremadura	0.399	0.240	0.246	-0.068	-0.734
79	SPA	Galicia	0.132	0.240	-0.255	-0.495	-0.818
80	SPA	Illes Balears	0.144	0.240	0.012	-0.448	-0.811
81	SPA	La Rioja	0.427	0.240	0.133	-0.192	-0.881
82	SPA	Pais Vasco	0.604	0.240	-0.085	0.394	-0.529
83	SPA	Principado de Asturias	0.599	0.240	0.496	0.171	-0.707
84	SPA	Región de Murcia	0.426	0.240	0.062	0.022	-0.787
85	UK	East Midland England	0.958	0.822	0.312	1.264	-0.646
86	UK	East of England	0.813	0.822	0.383	1.042	-0.756

TABLE A2 (continued) - Regional and national mean values

	Country	Region	EQI Regional	EQI National	RUL Regional	GOV Regional	TFP Regional
87	UK	London	0.714	0.822	0.469	0.763	-0.711
88	UK	N. Ireland	0.814	0.822	0.216	1.080	-0.834
89	UK	Northeast England	0.794	0.822	0.326	0.999	-1.150
90	UK	Northwest England	0.932	0.822	0.406	0.983	-0.775
91	UK	Scotland	0.938	0.822	0.269	1.035	-0.874
92	UK	South East England	1.058	0.822	0.311	0.943	-0.838
93	UK	South West England	0.793	0.822	0.269	1.005	-0.668
94	UK	Wales	0.577	0.822	-0.424	0.754	-0.823
95	UK	West Midland England	0.706	0.822	0.309	0.744	-0.839
96	UK	Yorkshire-Humber	0.768	0.822	0.237	1.107	-0.850
		Max	1.252	1.041	1.726	1.763	-0.183
		Min	-2.263	-0.729	-1.113	-1.530	-1.150

For the description of the variables see Table A1.