

## Briefing on labour shortages

This note is based on the ETUI policy brief (<https://www.etui.org/publications/labour-shortages-turning-away-bad-jobs>) on Labour shortages – turning away from bad jobs, and uses more recent data from Eurostat on job vacancy rates (JVS-Q-NACE2). The change from 2019 to 2022 Q4 is taken to indicate a rise in labour shortages, reflecting both structural factors – greening and digital transition, skills shortages – and cyclical factors with high demand and changing preferences due to the pandemic. To link this to wages this change is linked to micro-data from the European Structure of Earnings Survey 2018, a large survey covering employees in workplaces with at least 10 employees who are not in agriculture or public administration.

The aim of this brief is to show the link between wages in 2018 and the following increase in labour shortages (rise in the rate of job vacancies over all jobs). By using micro-data it is possible to account as much as possible for the fact that industries and countries also differ in their composition of workers – we include information on gender, age, qualifications, type of contract, main occupation (1-digit), years with the firm, whether the workplace is majority public or private owned, and size of the firm.

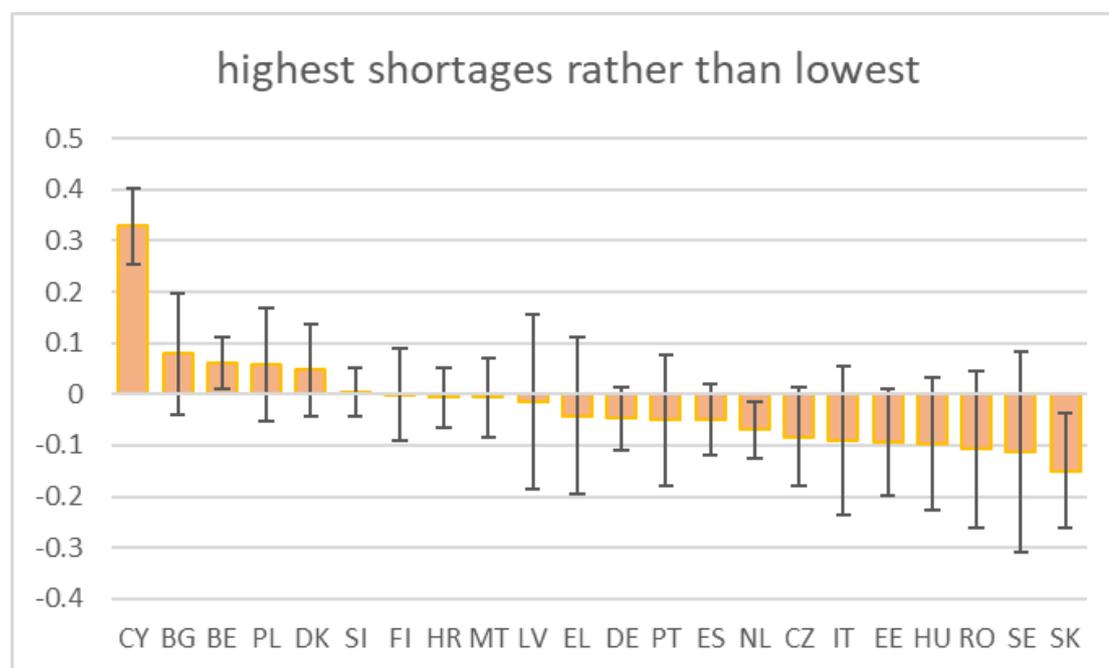
First, I show overall results for the relation between hourly wages in 2018 and the increase in labour shortages 2019-2022. I divide industries into three groups per country: the third of workers in industries where shortages grew the least, the middle third, and the third of workers in industries where shortages grew the most.

Figure 1 below shows that on average, those workers who are in sectors where the shortages will increase the most within a country (3<sup>rd</sup> tertile) earn around 9% less in 2018 than those who are in sectors where shortages increase the least, while those who are in the middle group earned around 6% less than those where shortages would increase least. Partly this is to do with the profile of workers – the sectors where shortages increase most tend to hire more vulnerable workers (younger, lower educated, on temporary contracts). When accounting for this the sectors where shortages increase most paid 4% less than those where they increased least. Finally (M2), even when accounting for the fact that some industries pay less to otherwise similar workers and that this low pay is common across countries, as for instance in accommodation, the pay was still around 3% lower than would be expected for those sectors where shortages increased most.



Note: figure shows the estimated difference in wages in 2018 depending on whether the increase in labour shortages 2019-2022 was in the middle third rather than lower third, or highest third rather than lowest third. M0 compares all people within the same country; M1 further compares similar people in terms of age, gender, education, occupation, tenure with the firm, ownership and size of firm, and type of contract; and M2 compares those same people, but also accounting for industry-specific differences that are common across countries. The models are weighted, and standard errors clustered at country-industry level. 95% C.I. are shown to express uncertainty around the estimates.

The second question is then whether this holds across countries. There is variation, but for most countries the sectors where shortages grew most also had lower wages in 2018 (excepting Cyprus, and to a lesser extent Bulgaria, Belgium, Poland, Denmark).



Note: figure shows the estimated difference in wages in 2018 depending on whether the increase in labour shortages 2019-2022 was in the highest third rather than lower third, or highest third rather than lowest third. It compares similar people in terms of age, gender, education, occupation, tenure with the firm, ownership and size of firm, and type of contract. The models are weighted, and standard errors clustered at country-industry level. 95% C.I. are shown to express uncertainty around the estimates.

Finally, the table below shows for each country which industries are in the top third (so the industries where job shortages increased most), and then aggregates the workers in the highest third, and the lowest third as a comparison, showing the average hourly wage in euros in 2018, and the change in the job vacancy rate from 2019 to 2022. The list with industry codes is below. For instance, in Belgium, the industry where shortages increased most (by 1.5 percentage point) over time was 'administrative and support service activities' [N]. The average wage there was 17.13 euros per hour in 2018, while for comparison's sake it was 18.01 euros in the sectors where shortages increased least (by 0.64 on average). In Bulgaria the average wage in sectors with highest shortage [D, G, I, M, R] increase was 3.03 euros, and by contrast it was 3.48 euros per hour in the sectors with less increases. In Germany shortages increased most in mining and quarrying, construction, accommodation, professional services, administrative services, and human health and social work. These sectors were paid 16.65 euros per hour on average which is substantially below the 19.91 euros paid for sectors where shortages increased less. In Greece shortages increased by far most in construction, but also accommodation, financial services, and more. On average wages were 8.25 euros for sectors with larger increases and 9.8 where shortages would not increase as much. Also the case for Spain, Croatia, Italy (highest increases in construction, and professional services), LT (slightly), Luxembourg, Malta, the Netherlands, Portugal, Romania,

In Cyprus the wage was higher in the sectors with largest increases (15.59) – which were public administration and defense, and education. In Czechia as well public sectors, as well as arts, and energy saw largest increases, and on average these sectors were more highly paid than the ones with least increases. In Denmark the wage is higher for sectors with greater increases (38 euros) vs those with less increases (35.5). This is the case in Estonia as well, as well as Finland, Hungary, Latvia, Poland, Sweden, Slovenia, Slovakia.

Country	Industry	Hourly_wage18	Change_JVR19_22	Country	Industry	Hourly_wage18	Change_JVR19_22
BE	N	17.13	1.50	LT	D	5.53	1.10
BE	highest_third	17.13	1.50	LT	H	4.38	1.30
BE	lowest_third	18.01	0.64	LT	I	3.37	1.00
BG	D	4.46	0.30	LT	O	5.66	1.50
BG	G	2.71	0.20	LT	highest_third	4.74	1.22

BG	I	1.93	0.70	LT	lowest_third	4.99	-0.30
BG	M	3.81	0.30	LU	C	21.25	0.50
BG	R	2.27	0.40	LU	H	21.81	0.50
BG	highest_third	3.03	0.38	LU	J	26.80	0.90
BG	lowest_third	3.48	-0.45	LU	K	31.98	0.50
CY	O	12.81	2.10	LU	M	26.62	3.60
CY	P	18.38	2.10	LU	N	18.75	1.70
CY	highest_third	15.59	2.10	LU	S	29.37	0.60
CY	lowest_third	9.79	-0.12	LU	highest_third	25.23	1.19
CZ	D	8.27	-0.10	LU	lowest_third	29.39	-0.18
CZ	O	7.26	-0.30	LV	J	9.32	0.60
CZ	P	6.36	-0.10	LV	N	6.49	1.30
CZ	R	5.47	-0.20	LV	O	6.11	2.90
CZ	highest_third	6.84	-0.17	LV	R	4.63	0.90
CZ	lowest_third	5.80	-3.61	LV	highest_third	6.64	1.42
DE	B	21.70	1.30	LV	lowest_third	6.00	-0.44
DE	F	15.53	1.50	MT	E	12.40	2.30
DE	I	10.70	1.80	MT	G	10.10	0.20
DE	M	21.27	1.30	MT	J	12.91	3.30
DE	N	13.11	1.70	MT	K	12.72	1.30
DE	Q	17.59	1.40	MT	N	9.95	0.40
DE	highest_third	16.65	1.50	MT	S	9.19	1.20
DE	lowest_third	19.91	0.77	MT	highest_third	11.21	1.45
DK	C	38.93	1.40	MT	lowest_third	11.94	-1.80
DK	D	48.14	2.40	NL	D	26.03	2.70
DK	H	39.03	1.50	NL	E	18.91	2.00
DK	I	25.63	1.60	NL	G	13.95	2.00
DK	highest_third	37.93	1.73	NL	I	10.24	1.70
DK	lowest_third	35.53	0.47	NL	M	20.28	1.90
EE	D	8.22	0.90	NL	highest_third	17.88	2.06
EE	E	6.30	0.50	NL	lowest_third	20.37	1.07
EE	K	8.29	1.00	PL	D	7.59	0.20
EE	M	5.88	1.10	PL	J	9.19	0.70
EE	O	7.78	1.30	PL	O	6.12	0.10
EE	P	6.56	1.10	PL	P	7.51	0.20
EE	S	6.37	0.30	PL	R	4.68	0.20
EE	highest_third	7.06	0.89	PL	highest_third	7.02	0.28
EE	lowest_third	6.40	-0.73	PL	lowest_third	5.70	-0.37
EL	F	7.63	6.30	PT	G	6.41	1.20
EL	I	5.78	0.70	PT	I	5.03	1.00
EL	J	10.23	0.70	PT	J	10.91	0.80
EL	K	11.19	1.20	PT	M	8.86	1.80
EL	N	7.88	1.30	PT	N	5.85	1.60
EL	R	6.35	3.10	PT	highest_third	7.41	1.28
EL	S	8.70	1.00	PT	lowest_third	8.20	0.08
EL	highest_third	8.25	2.04	RO	D	6.43	0.70
EL	lowest_third	9.76	-0.26	RO	E	3.81	0.00
ES	E	11.53	0.30	RO	G	4.67	-0.10
ES	N	9.56	0.30	RO	K	5.26	0.20
ES	O	13.32	1.80	RO	M	6.27	0.30
ES	Q	12.87	0.30	RO	N	5.95	0.10
ES	R	9.03	0.30	RO	highest_third	5.40	0.20
ES	highest_third	11.26	0.60	RO	lowest_third	6.50	-1.23
ES	lowest_third	12.44	0.00	SE	D	23.45	3.70
FI	C	21.38	0.90	SE	M	21.57	0.60
FI	J	24.17	1.30	SE	O	20.16	3.00
FI	S	18.54	1.70	SE	highest_third	21.73	2.43
FI	highest_third	21.36	1.30	SE	lowest_third	19.52	-0.13
FI	lowest_third	19.44	-0.50	SI	D	11.76	1.90
HR	E	5.51	0.40	SI	E	8.49	0.50
HR	F	5.39	0.20	SI	I	6.31	2.10
HR	O	6.77	0.30	SI	K	10.66	0.60
HR	Q	6.53	0.60	SI	M	10.97	1.10

HR	S	6.24	2.60	SI	N	8.05	1.00
HR	highest_third	6.09	0.82	SI	highest_third	9.37	1.20
HR	lowest_third	6.86	-0.18	SI	lowest_third	8.72	-0.27
HU	D	6.31	0.50	SK	D	7.56	0.20
HU	E	4.28	0.80	SK	O	6.46	0.10
HU	P	5.18	0.50	SK	P	5.83	0.10
HU	highest_third	5.26	0.60	SK	Q	6.33	0.10
HU	lowest_third	4.89	-0.28	SK	highest_third	6.54	0.12
IT	F	12.67	1.50	SK	lowest_third	5.42	-1.05
IT	G	12.43	0.70				
IT	I	9.85	0.80				
IT	J	14.33	1.00				
IT	M	15.60	1.20				
IT	R	15.36	0.70				
IT	S	19.88	0.90				
IT	highest_third	14.30	0.97				
IT	lowest_third	18.47	0.10				

Industry code	Industry	Times in the top third of increase 2019-2022
b	mining and quarrying	1
c	manufacturing	3
d	electricity, gas, steam and air conditioning	12
e	water supply, sewerage, waste	8
f	construction	4
g	wholesale and retail trade, repair of motor vehicles and motorcycles	6
h	transportation and storage	3
i	accommodation and food service activities	9
j	information and communication	8
k	financial and insurance	6
m	professional, scientific and technical	10
n	administrative and support service activities	10
o	public administration and defence	10
p	education	6
q	human health and social work	4
r	arts, entertainment and recreation	7
s	other service	7

Note: number of times an industry is in the top third of increases in job vacancy rates.