

Firms' rents, workers' bargaining power and the union wage premium: Online Appendix

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Appendix A: Description of ESS02 and REPONSE04 variables and basic robustness checks

Description of ESS02 and REPONSE04 variables

Tables 1 and 2 show that there are more women, older workers and workers with a longer tenure in unionised establishments. The education and occupation profiles of workers in unionised and non-unionised establishments are close with only slightly less clerks in unionised establishments. Unionised workplaces are a lot larger. They are also older and more intensive in ICT (table 2). Finally, they have more innovative managerial practices and belong less often to a family.

Table 1: *Means of individual and establishment-level variables in ESS02*

Individual variables:	Whole Sample (97,751 individuals)		Unionised Estab. (57,435 individuals)		Non-Unionised Estab. (43,316 individuals)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Gross hourly wage (€)	15.09	9.26	16.14	9.56	13.75	8.67
Women	0.35	0.48	0.33	0.47	0.37	0.48
Age	39.15	10.51	40.21	10.32	37.79	10.60
Tenure	11.32	10.25	13.48	10.89	8.53	8.59
Long-term contract	0.93	0.25	0.94	0.24	0.93	0.26
<i>Education:</i>						
Less than high school	0.59	0.49	0.58	0.49	0.61	0.49
High school degree	0.17	0.37	0.16	0.37	0.17	0.38
Some College	0.13	0.34	0.13	0.34	0.13	0.34
College or Univ. Degree	0.11	0.31	0.12	0.33	0.09	0.28
<i>Occupation:</i>						
Blue Collar	0.40	0.49	0.39	0.49	0.40	0.49
Clerk	0.20	0.40	0.17	0.38	0.24	0.43
Supervisor or Technician	0.24	0.43	0.25	0.43	0.22	0.41
Manager	0.17	0.37	0.18	0.39	0.14	0.35
Establishment variables:	Whole Sample (10,741 estab.)		Unionised Estab. (5,659 estab.)		Non-Unionised Estab. (5,082 estab.)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Union recognition	0.22	0.41	1.00	0.00	0.00	0.00
Size	59.07	1496.43	179.57	3047.14	25.84	540.11

Notes: Individual (resp. establishment) variables are weighted by ESS02 workers (resp. establishments) sampling weights.

Table 2: *Means of individual and establishment-level variables in REPOSE04*

Individual variables:	Whole Sample (6,629 individuals)		Unionised Estab. (4,459 individuals)		Non-Unionised Estab. (2,152 individuals)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Net hourly wage (€)	12.60	8.23	13.36	8.01	11.18	8.47
Women	0.38	0.49	0.37	0.48	0.41	0.49
Age	39.95	9.80	40.65	9.73	38.65	9.83
Tenure	11.77	10.17	13.25	10.58	9.01	8.75
Full-time worker	0.90	0.29	0.91	0.29	0.89	0.31
<i>Education:</i>						
Less than high school	0.57	0.50	0.55	0.50	0.60	0.49
High school degree	0.13	0.34	0.13	0.34	0.14	0.35
Some College	0.15	0.35	0.15	0.36	0.14	0.35
College or Univ. Degree	0.15	0.36	0.17	0.37	0.12	0.32
<i>Occupation:</i>						
Blue Collar	0.36	0.48	0.36	0.48	0.36	0.48
Clerk	0.17	0.37	0.14	0.35	0.22	0.41
Supervisor or Technician	0.27	0.45	0.28	0.45	0.26	0.44
Manager	0.20	0.40	0.22	0.42	0.16	0.37
Establishment variables:	Whole Sample (2,451 estab.)		Unionised Estab. (1,612 estab.)		Non-Unionised Estab. (839 estab.)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Union recognition	0.36	0.48	1.00	0.00	0.00	0.00
Size	77.24	172.20	134.16	270.37	45.29	39.37
Establishment Age:						
less than 5 years	0.04	0.20	0.04	0.21	0.04	0.20
5 to 9 years	0.10	0.30	0.08	0.27	0.11	0.31
10 to 19 years	0.28	0.45	0.26	0.44	0.29	0.45
20 to 49 years	0.40	0.49	0.39	0.49	0.41	0.49
50 years or more	0.18	0.38	0.23	0.42	0.15	0.36
ICT use	7.19	3.44	7.65	3.20	6.95	3.55
Managerial practices	4.65	1.60	5.03	1.47	4.43	1.63
Belong to a listed firm	0.02	0.12	0.02	0.15	0.01	0.11
Belong to a family Firm	0.59	0.49	0.42	0.49	0.69	0.46

Notes: Individual (resp. establishment) variables are weighted by ESS02 workers (resp. establishments) sampling weights. ICT use and managerial practices are aggregated indexes (identical to those used by Bassanini et al., 2013).

Appendix B: Estimates from wage equations directly derived from the bargaining model

I present here estimates of the paper’s bargaining model with proxy variables for both quasi-rents and workers’ bargaining power. I estimate equations (8) and (9) of the paper derived from the bargaining model using two sets of proxy variables for quasi-rents and bargaining power. My first approach is to summarise the four-category market share variable in a “High Market Share” dummy variable (HMS) equal to 1 for establishments with a market share higher than 50% and 0 otherwise. I then postulate a linear relationship between quasi-rents and this high market share variable:

$$QR_j = aHMS_j + b + \mu_j \quad (1)$$

with $a > 0$ and $\mathbb{E}[\mu_j | HMS_j] = 0$. The advantage of using a dummy variable rather than the four-category market share variable is that the above linear relationship can be assumed without loss of generality. The drawback is that the market share categories are aggregated somewhat arbitrarily. I have chosen to isolate the establishments with a market share over 50% because the union wage gaps in Figure 2 of the paper are clearly wider among this group.

Similarly, in Figure 2 of the paper, the union wage premium shoots up among the groups of establishments with a unionisation rate of over 10%. I thus approximate the workers’ bargaining power with a High Bargaining Power (HBP) indicator equal to 1 for unionised establishments with more than 10% of unionised workers:

$$\psi_j = cHBP_j + d + \eta_j \quad (2)$$

with $c > 0$ and $\mathbb{E}[\eta_j | HBP_j] = 0$. Using equations (1) and (2), the paper wage equation (9) can be rewritten:

$$w_{ij} = X_i\beta + Z_j\gamma + \alpha_1HMS_j + \alpha_2HBP_j + \alpha_3HMS_jHBP_j + \alpha_4 + \varepsilon'_{ij} \quad (3)$$

with $\alpha_1 = ad, \alpha_2 = bc, \alpha_3 = ac$ and $\alpha_4 = bd$. Equation (3) is estimated in models (1) and

(2) of Table 3 using two different sets of covariates¹. In the most precise specification (Model 2), the estimate of α_3 is statistically significant at the 5% level and equal to 1.78. α_1 is estimated to be significantly negative whereas α_2 is virtually equal to 0. These estimates imply that, among establishments with a large market share, the gains from high bargaining power rather than low bargaining power amount to €1.78, which is about 13% of the mean hourly earnings in the sample (€12.69).

A negative estimate of α_1 would imply that d is negative, which would in turn lead to the assumption from equation (2) that the workers' actual bargaining power ψ_j is negative on average in establishments where HBP_j is equal to 0. Since this bargaining power parameter is derived from a Nash-bargaining model, it should be bounded between 0 and 1. In this respect, the negative estimate of α_1 might appear puzzling. However, it can be explained if the establishment's market share also affects earnings in the absence of collective bargaining. As already mentioned, this occurs if high market share establishments act as monopsonies and hire a specialised workforce that cannot easily find a job in another firm. To control for this phenomenon, the market share should also be introduced into the set of covariates Z_j that affect the market wage directly and α_1 can no longer be identified².

Columns (3) and (4) present the same estimations, but using non-aggregated market share and bargaining power variables (the non-aggregated bargaining power variable is equal to 0 for non-unionised establishments and increases from 1 to 5 with the percentage of unionised workers in establishments in which unions are recognised). The estimated cross-effect of market share and bargaining power is still positive and statistically significant. Lastly, for the sake of completeness, models (1) to (4) have been reproduced using the log of hourly earnings as a dependent variable instead of hourly earnings themselves. In the sixth column for example, the cross-effect on wages of strong bargaining power and a high market share is estimated to be approximately 8%.

¹Note that the dependant variable in Equation (3) is earnings, and not log earnings.

² Likewise, α_4 cannot be identified since it is confused with the constant term.

Table 3: *Estimation of earnings and log-earnings equations derived from the model with proxy variables for quasi-rents and bargaining power (REPOSE04)*

<i>Dependent variable:</i>	<i>Hourly earnings</i>				<i>Log of hourly earnings</i>			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
High Market Share (HMS)	-0.570** (0.244)	-0.732*** (0.257)			-0.031** (0.015)	-0.039*** (0.015)		
High Bargaining Power (HBP)	-0.022 (0.252)	-0.028 (0.224)			0.023 (0.014)	0.013 (0.013)		
HMS*HBP	1.422* (0.847)	1.782** (0.871)			0.067* (0.039)	0.083** (0.037)		
Market Share (MS, 4 groups)			-0.364** (0.173)	-0.478*** (0.185)			-0.019** (0.008)	-0.022*** (0.008)
Bargaining Power (BP, 5 groups)			-0.303 (0.242)	-0.426* (0.250)			-0.004 (0.009)	-0.009 (0.009)
MS*BP			0.133* (0.070)	0.176** (0.078)			0.007** (0.003)	0.007** (0.003)
<i>Workers controls:</i>								
Gender educ. age occup. full time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Detailed age and tenure	No	Yes	No	Yes	No	Yes	No	Yes
Establishment controls: Size Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Establishment controls: Age	No	Yes	No	Yes	No	Yes	No	Yes
Industries	1 digit	3 digits	1 digit	3 digits	1 digit	3 digits	1 digit	3 digits
Observations	4430	4386	4430	4386	4430	4386	4430	4386
R-squared	0.393	0.425	0.393	0.425	0.633	0.684	0.633	0.684

Notes: In all models, standard errors are calculated with clustering by establishments. The high market share variable is a dummy equal to 1 for establishments declaring a market share larger than 50%. The high bargaining power variable is a dummy equal to 1 for establishments where unions are recognised and with more than 10% unionised workers. The bargaining power variable is equal to 0 for establishments in which unions are not recognised and varies from 1 to 5 according to the proportion of union members for establishments in which they are recognised. *: significant at the 10% level. **: significant at the 5% level. ***: significant at the 1% level.

Appendix C: The union wage premium per union and market share in 1998 and 2004

The union wage premium per union and market share in 1998

In the paper, we have studied the relationship between the union wage premium and the establishments' market share using the REPONSE04 data. As a robustness check, we reproduce our principal specifications using the REPONSE data for the year 1998.

The main drawback of the version of the REPONSE data we have in 1998 is that it does not include workers' wages. We thus work at the establishment level. Since we could not obtain wage data at the establishment level either, we had to merge the REPONSE dataset to the EAE dataset. This dataset contains the annual accounting of each French firm in the major sectors of the economy. In particular, we get the yearly compensation for workers within the firm and the labour productivity (value added per employee).

In the absence of workers' data, we try to take advantage of the extensive information contained in the REPONSE data to control as much as possible by establishments' characteristics. Our control variables are presented in table 4.

Table 5 gives the results of a first OLS regression of the logarithm of the annual wage bill per worker of firms on the union status of one corresponding establishment. This regression is run using all the control variables presented in table 4.

In column (1) we observe a 5.4% difference in wages between unionised and non-unionised firms. In column (2) we run the regression on the 737 mono-establishment firms only, so that the firm-level wage variable we use is defined at the same level than our controls and union variable. Doing so, we get a lower and less significant coefficient. CGC is the only union concerning white collars workers. Even if we control these regressions for the workforce composition, we can still suspect that these controls will not be sufficient to get rid of the workers' ability bias. Thus we have added a specific control for the presence of CGC in column (3) to check if the result for the presence of unions overall could be driven by the presence of this particular union which is associated with the presence of more qualified workers. The lower coefficient obtained in column (3) as compared with column (1) indicates that this is indeed the case. Column (4) shows that controlling for the presence of CGC and restricting to the small sample of mono-establishment firms do not give a significant relationship between unions and wages anymore. Column (5)

Table 4: *Control variables used in REPONSE 98*

1) Sector of activity : - 16 dummies for the different sectors (NAF 16)
2) Size of the establishment : - 4 size groups: 20 to 49 employees, 50 to 99 employees, 100 to 500 employees, more than 500 employees
3) Age of the establishment : - 5 age groups: 0 to 4 years, 5 to 9 years, 10 to 19 years, 20 to 49 years, more than 50 years
4) Workforce composition : - 4 dummies for the presence of blue collars, employees, technicians and managers - 4 variables giving the percentage of blue collars, employees, technicians and managers, and 4 variables giving the square of these percentages
5) Establishment status : - one dummy equal to one for mono establishments
6) Environment of the establishment : - 3 groups: evolution of the activity in the sector easy to anticipate, slightly difficult to anticipate, or difficult to anticipate
7) Financing and remuneration practices : - firm present on the stock market - employees own stocks of the firm
8) New Technologies : - proportion of workers who have access to a computer (5 different groups) - proportion of workers who have access to an internet network (5 different groups)
9) Organizational practices : a) Innovative practices : - total quality management - workers solve their problems by themselves - just in time used with suppliers and clients - diminution of the number of hierarchical levels in the past 3 years - a majority of workers participate to « groups of quality » - a majority of workers participate to « groups of expression » b) Traditional practices : - controls are frequent - fixation of global goals

indicates that additional controls for the working conditions and the conflicts in the establishments do not seem to affect the results.

Table 5: *Estimated Proportionate Effects of the Presence of Unions on Wages in 1998 (REPNSE98+EAE98)*

	Dependant variable : log of wage per worker (firm-level)				
	(1)	(2)	(3)	(4)	(5)
Union Representative	0.054*** (0.015)	0.040* (0.022)	0.039*** (0.015)	0.022 (0.022)	0.053*** (0.015)
Union Representative CGC	-	-	0.084*** (0.015)	0.12*** (0.029)	-
Mono-establishments only	NO	YES	NO	YES	NO
Controls :					
Controls detailed in table 4	YES	YES	YES	YES	YES
Presence DS CGC	NO	NO	YES	YES	NO
Working conditions+conflicts	NO	NO	NO	NO	YES
Observations	1824	737	1824	737	1797
R2	0.57	0.57	0.58	0.58	0.58

Notes: The dependant variable is the total wage bill divided by the number of workers (in log). A set of establishment level control variables is included in all regressions (see table 4). *: significant at the 10% level. **: significant at the 5% level. ***: significant at the 1% level.

Table 6 reproduces our identification strategy based on the use of the market share. More specifically, we present the results of the estimation of the following wage equation:

$$\ln(\bar{w}_j) = \alpha [UR * (1 - HMS)] + \beta [(1 - UR) * HMS] + \gamma [UR * HMS] + Z_j\delta + \epsilon_j$$

where UD is a dummy variable equal to one for the presence of the union indicated in the column title.

In the first column UR is a dummy variable equal to one for unionised establishments, unless the only union present in the establishment is CGC. In the next columns, UR is dummy variable equal to one if the union indicated on top of the column is present in the establishment. All the coefficients on the third row are very close to 0. In sharp contrast with our results for 2004, this shows that working in a high market share firm alone does not bring higher wages. We thus do not find any monopsony effect of having a high market share from our specifications in 1998. This could be due to the worse quality of the data used here, and to the fact that our wage variable is available at the firm level whereas the control variables are defined at the establishment level. In the second row, the coefficients for the effect of unions on wages in low market share establishments are non-significant for CFDT, FO and CFTC, and are significant for all unions except CGC

together (column 1), for CGT and for CGC (last column). CGC appears as obtaining the highest wage premium in low market share establishments. Two explanations are possible for this particular pattern. On one hand, one can conceive that CGC is powerful enough to obtain wage raises even in a low market share establishment. But CGC is only the fourth largest union in France and, according to the sociological literature on French unions, the fact that only CGC manages to get wage raises among low market share establishments seems very unlikely. On the other hand, CGC is the only one of the five unions studied representing more specifically white-collar workers and its presence is associated with better quality workers. As we already suspected in our comments of the proportionate union wage effect, the control variables for the workforce composition (see table 4) are probably not good enough to tackle the workers' quality biases. In this case, the 7.4% difference in wages associated with the presence of CGC in low market share establishments would be essentially due to a workforce composition effect. The fourth row highlights a significant relationship between the presence of any of the five largest French unions in a high market share firm and the average compensation received by workers. If we except CGC, CGT is associated with a 10.4% gain and seems to be the union performing the best. CFTC and CFDT are coming second and third respectively with gains roughly equal to 8%. The effect of unions in high market share firms is significantly higher than the one in low market share firms for all unions except for the CGC (row 5). Even if it is non-significant, the 3.2% difference obtained when subtracting the coefficients in the second and third rows to the one in the fourth row in column 5 is probably a better estimate of the real effect of CGC on wages.

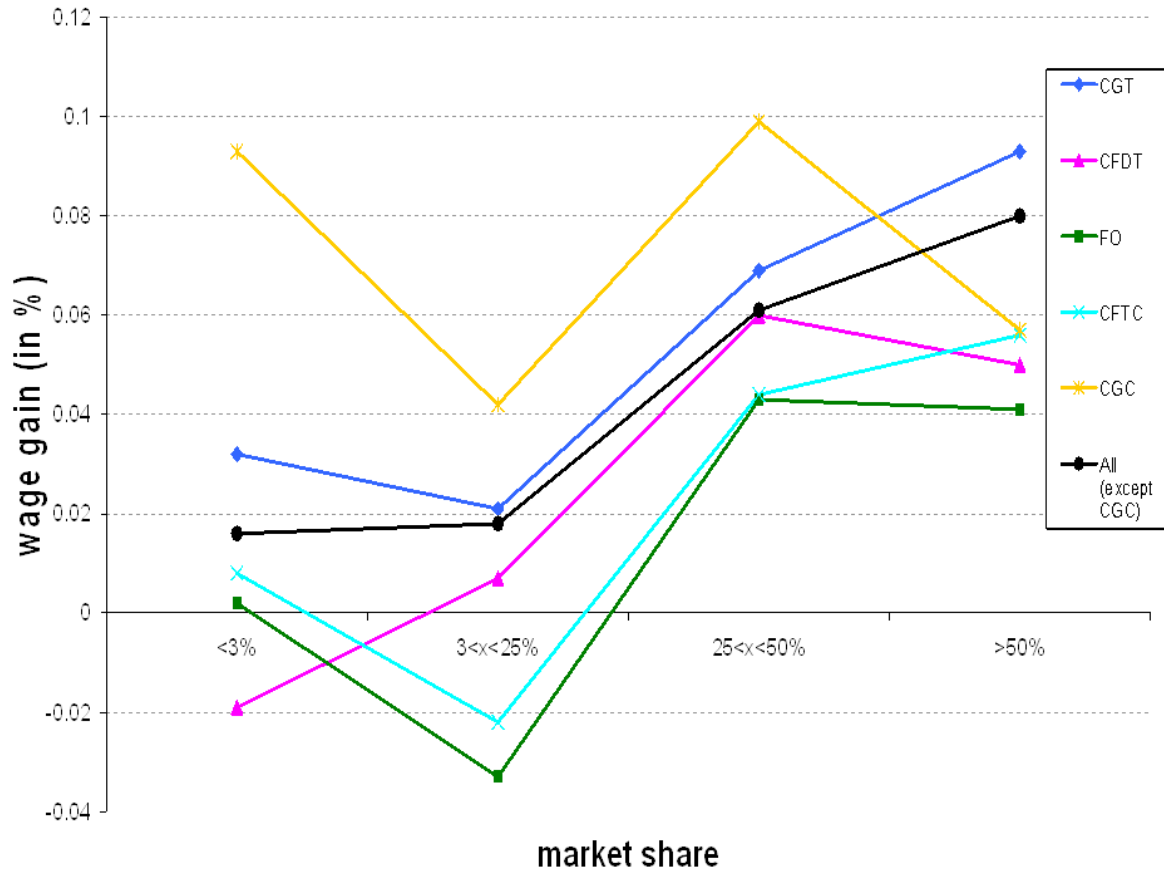
Table 6: *Union recognition, market share and firms' wages (establishment level regression, REPOSE98+EAE98)*

<i>Union concerned</i>	Dependant variable : wage per worker (in log)					
	1: All (except CGC)	2: CGT	3: CFDT	4: FO	5: CFTC	6: CGC
$(1 - UR) * LMS$	REF	REF	REF	REF	REF	REF
$UR * LMS (\alpha)$	0.036** (0.018)	0.047*** (0.018)	0.026 (0.018)	-0.005 (0.019)	0.017 (0.025)	0.074*** (0.021)
$(1 - UR) * HMS (\beta)$	-0.013 (0.19)	-0.002 (0.015)	0.003 (0.015)	-0.002 (0.014)	0.011 (0.013)	0.011 (0.014)
$UR * HMS (\gamma)$	0.078*** (0.019)	0.104*** (0.020)	0.081*** (0.020)	0.068*** (0.020)	0.087*** (0.026)	0.117*** (0.022)
Observations	1435	1435	1435	1435	1435	1435
R2	0.57	0.57	0.56	0.56	0.56	0.57
Test of " $\gamma - \beta - \alpha = 0$ " (p value)	0.023	0.013	0.032	0.004	0.08	0.24
Controls detailed in table 4	YES	YES	YES	YES	YES	YES
Control for organization	YES	YES	YES	YES	YES	YES

Notes: The dependant variable is the total wage bill divided by the number of workers (in log). A set of establishment level control variables is included in all regressions (see table 4). *: significant at the 10% level. **: significant at the 5% level. ***: significant at the 1% level.

Figure 1 plots union wage differentials for each union and each market share category in 1998. For each union, results are obtained through an OLS regression of the firm log wage per capital with all the control variables in table 4 included and 4 additional controls for the presence of the other unions. This is a way to tackle a potential pitfall when trying to evaluate separately the effect of each union: as many unions can be present at the same time in an establishment, it is possible that the coefficients found for a specific union are in fact driven by the joint presence of other unions. The profile of the relationship between the wage premium and market share is globally increasing for all unions except CGC. This abnormal pattern for CGC which is the only white collar union suggests that our establishment-level controls in 1998 are probably not sufficient to get rid off the baisses induced by the workforce composition when the CGC union is present. Among other unions, CGT seems to perform the best, with a union wage premium close to 10% among establishments having a market share higher than 50%. By contrast, the presence of FO does not seem to be associated with high wage premia. However, note that the differences between the wage premia obtained for each union in each market share group are not statistically significant at conventional levels.

Figure 1: *The union wage gap in each market share group for different unions in 1998 (controlling for other observable characteristics)*



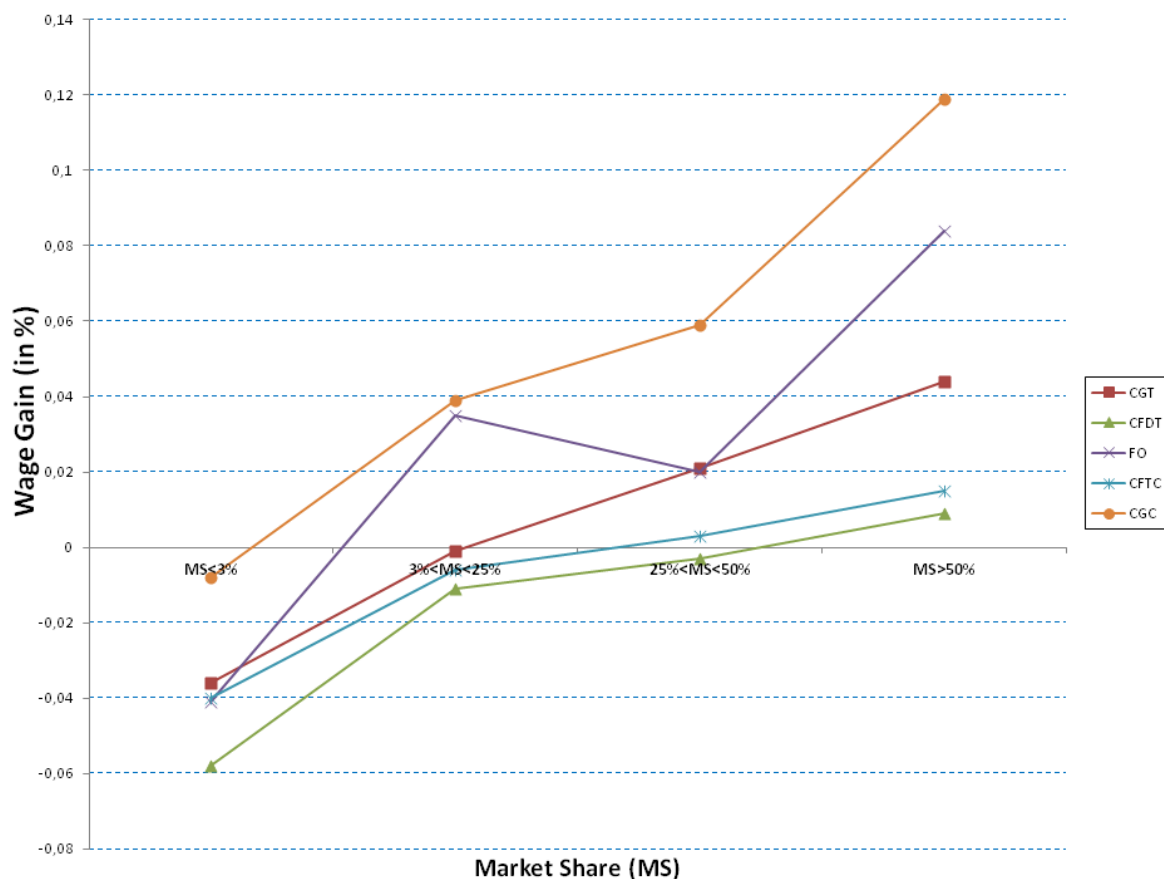
Notes: The curve for the CGT union is obtained by running a regression of the log wage per capita from EAE98 on detailed observable establishment characteristics (see table 4), a set of indicators for the presence of each large union other than CGT, and a set of 4 indicators for market share groups as well as the interaction of these indicators with a dummy equal to one when the CGT is present. The dots on the curve are the estimates obtained for these interactions. The point estimates should be interpreted as the union wage premium obtained by the CGT union within each market share or unionisation rate group, conditional on other observable workers and establishment characteristics (including the presence of other unions). The other curves are constructed similarly for the other unions.

The union wage premium per union and market share in 2004

Figure 2 plots union wage differentials for each union and each market share category in 2004. It is similar in structure to Figure 1, except that we could take advantage of the employer-employee structure of the REPONSE04 data to work with individual log hourly wages and to add workers' controls in the regressions. For each union, results are obtained through an OLS regression with detailed establishments' and workers' controls and 4 additional controls for the presence of the other unions. The profile of the relationship between the wage premium and market share is globally increasing for all unions, even for CGC. This suggests that our better control in 2004 are now probably sufficient to get rid off the baisses induced by the workforce composition when the CGC union is present. Among other unions, FO seems this time to perform the best, followed by CGT, CFTC and finally CFDT. However, the differences between the wage premia obtained for each union in each market share group are not statistically significant at conventional levels. The results should thus be considered cautiously.

Additional investigations would be necessary to assess more precisely the effectiveness of each union. The first one would be to look specifically at the types of workers that each union is supposed to represent the most (e.g. white-collar workers for the CGC union and blue-collar workers for the CGT union).

Figure 2: *The union wage gap in each market share group for different unions in 2004 (controlling for other observable characteristics)*



Notes: The curve for the CGT union is obtained by running a regression of the individual log hourly wage from DADS03 on detailed observable individual characteristics (gender, age tenure, education, occupation, full-time job), establishment characteristics (size, region, firm age, 3-digit industries), a set of indicators for the presence of each large union other than CGT, and a set of 4 indicators for market share groups as well as the interaction of these indicators with a dummy equal to one when the CGT is present. The dots on the curve are the estimates obtained for these interactions. The point estimates should be interpreted as the union wage premium obtained by the CGT union within each market share or unionisation rate group, conditional on other observable workers and establishment characteristics (including the presence of other unions). The other curves are constructed similarly for the other unions.

Appendix D: The role of industry-level bargaining

It has been argued in the paper that industry-level bargaining does not play a crucial role in shaping the structure of wages in France which leaves some space for additional firm-level bargaining. This section tests this affirmation. A unique dataset gathering information on both industry-level minimum wages and firm-level union recognition is used to assess: (i) the robustness of the firm-level union wage premium estimated in the paper to controlling for industry-level minimum wages, (ii) the relationship between industry-level minimum wages and the structure of wages *per se*.

The work presented in this appendix was conducted in the context of a larger project undertaken in collaboration with the *Direction de l'Animation de la Recherche, des Etudes et des Statistiques* (DARES). Some elements are common to a joint publication in French with Claire André (André and Breda, 2011).

Data description

The dataset used here comes from a broader dataset called “base DGT Dares”. The “base DGT Dares” is a retrieval from the *Base de Données des Conventions Collectives* (BDCC) managed by the *Direction Générale du Travail* (DGT). It has been improved and completed by the DARES for study purposes. At the time at which this research was done, this dataset could only be used at DARES. This explains why it has not been used elsewhere in the paper. The two data sources that we used to create the final dataset are presented below successively:

a) Industry-level minimum wages

Our first and core source of data has been created by the DGT. It covers all branches that have more than 5,000 employees or have been more than 5,000 employees in the past few years³. The final sample contains 276 national or infra-national branch agreements⁴ for the year 2006. For each agreement, we know the industry-level minimum wage for four categories of occupations: blue-collars, clerks, “intermediate occupations”

³ There are a few exceptions such as the collective agreement for journalists which is too complex and specific to be followed by DGT. For more information, see Base des accords salariaux de branche, note Dares réf. DARES/STRP/SCS/CA/007/2011, mimeo.

⁴ The negotiations occur at a regional level in only 4 branches : Construction, Public works, Metallurgy and Architecture.

(which comprises mostly technicians and salesmen) and managers. Industry-level wage bargaining often leads to an agreement on a complete pay scale that has to be respected. The pay scale specifies not only the minimum wage for each category of worker but also their wage depending on their qualifications and seniority. The data do not include the complete pay scale. However, in addition to the minimum wage, we have access to the highest bargained wage for each category of worker in each branch, that is the minimum wage that has to be paid to the workers within the highest seniority and/or qualification group. From herein, we will refer to “the lowest minimum wage” and to the “highest minimum wage” to qualify the lowest and the highest bargained wage for a given branch and in a given occupation group.

When no agreement was signed in 2006 in a given branch, the minimum wage for each category of worker has been retrieved from the previous valid agreement covering the branch. When more than one agreement were signed in 2006, we have computed an annual minimum wage by taking an average of the different minimum wages valid during 2006, weighted by the time during which each agreement was valid. Some computations have been necessary to get annual minimum wages that are comparable across branches. Indeed, some branches negotiate monthly minimum wages whereas other ones negotiate annual minimum wages. Annual minimum wages bargained during 2006 are retroactive: they apply to the whole 2006 year even if they have been signed late in the year. However, monthly minimum wages only cover workers from the date of the agreement. In some branches, agreements include both annual and monthly minimum wages. There are also branches that have negotiated two or three times during the year 2006, with different types of minimum wages bargained during each negotiation (for example, a monthly minimum wage bargained during a first negotiation and an annual one during a second). Finally, the negotiations on wages sometimes include only the base wage whereas they can also include bonuses. We have computed annual minimum wages in each occupation-industry group by keeping systematically the most favorable case to the workers. This means that when different types of minimum wages were covering the workers or when many negotiations occurred during the year 2006, we computed different annual minimum wages, based on the different possible combinations of negotiated wages, and kept the highest one.

b) ECMOSS 2006

To get information on real wages and union recognition at the firm level, we matched the DGT data on industry-level minimum wages to the *Enquête sur le Coût de la Main d’Oeuvre et la Structure des Salaires* (ECMOSS) dataset for the year 2006. ECMOSS is an employer-employee dataset covering 118,158 employees in 13,915 establishments of 11,046 firms with more than 10 employees. Detailed information on the different components of workers’ compensation is available as well as the usual observable individual characteristics: age, tenure, occupation, education, gender, etc. In addition, a branch identification number is also available and enables to obtain for each type of worker the corresponding industry-level minimum wage.

c) Merge and data cleaning

We have been able to retrieve a branch minimum wage for 61,228 workers in the ECMOSS dataset. We have then removed from the data sample branches in which the proportion of firms with less than 10 employees was higher than 50%, workers under 17 or above 66 years old, workers with particular job contracts (such as internships), those who have less than 30 paid days during the year or more than 300 days of declared absence (for vacations, illness, strike, etc), those with less than 20 hours of work declared and those with a hourly gross wage higher than 2000 Euros. This leaves us with a final sample of 58,847 individual observations.

Descriptive statistics on branch minimum wages

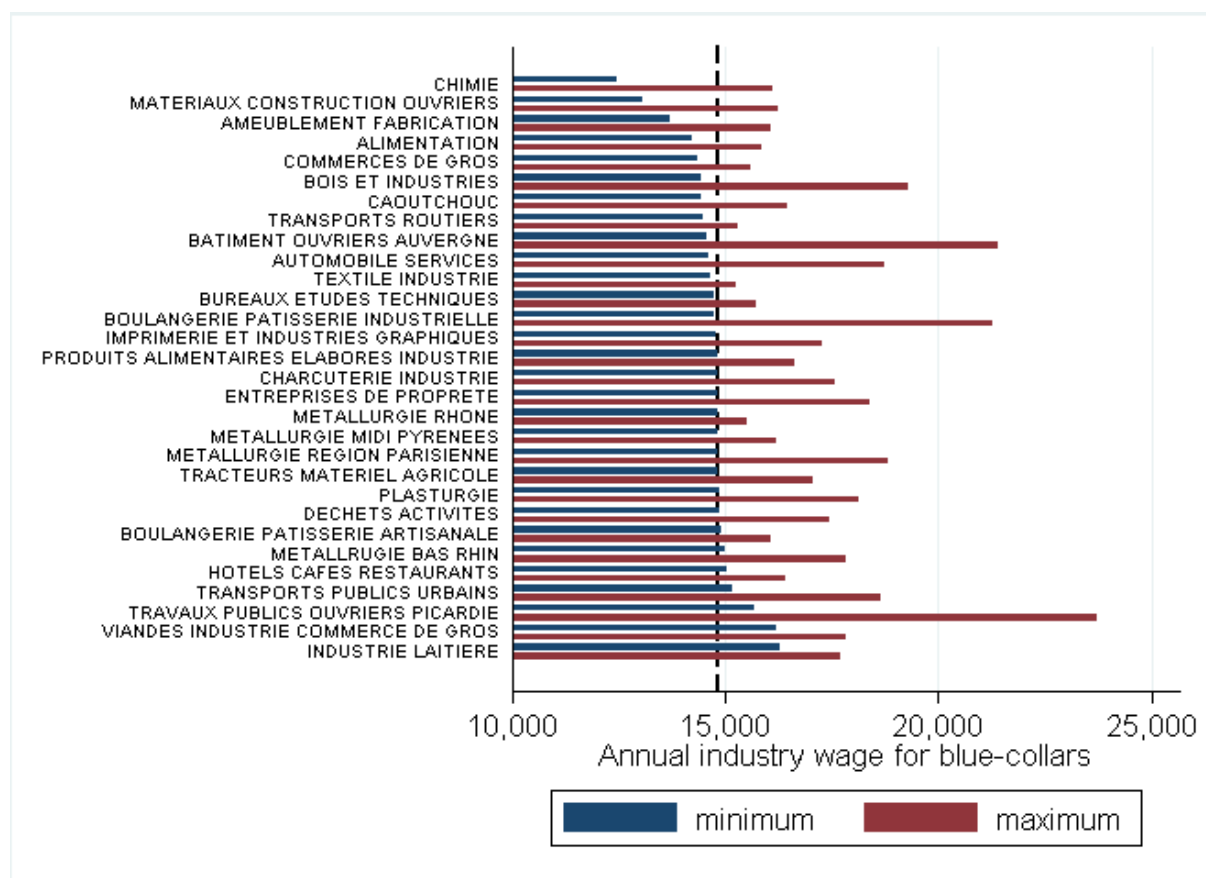
Negotiations within branches might appear as the “black box” of French labour relations. From a statistical point of view, very little is known on industry-level bargaining in France. It is well known that virtually all workers are covered by collective agreements at the industry-level. However nobody really knows what is really achieved, on average, in these agreements. The new data collected by the DGT is used to highlight some descriptive elements on industry-level bargaining⁵.

Figure 3 gives the lowest and highest minimum wages negotiated for blue-collar workers in the 30 branches covering the highest number of blue-collar workers. The annual national minimum wage in year 2006 is given as a comparison. Two stylized facts emerge from figure 3. First, most branches have their lowest minimum wage close to the national

⁵A more detailed study about branch minimum wages will be published soon in collaboration with the Dares

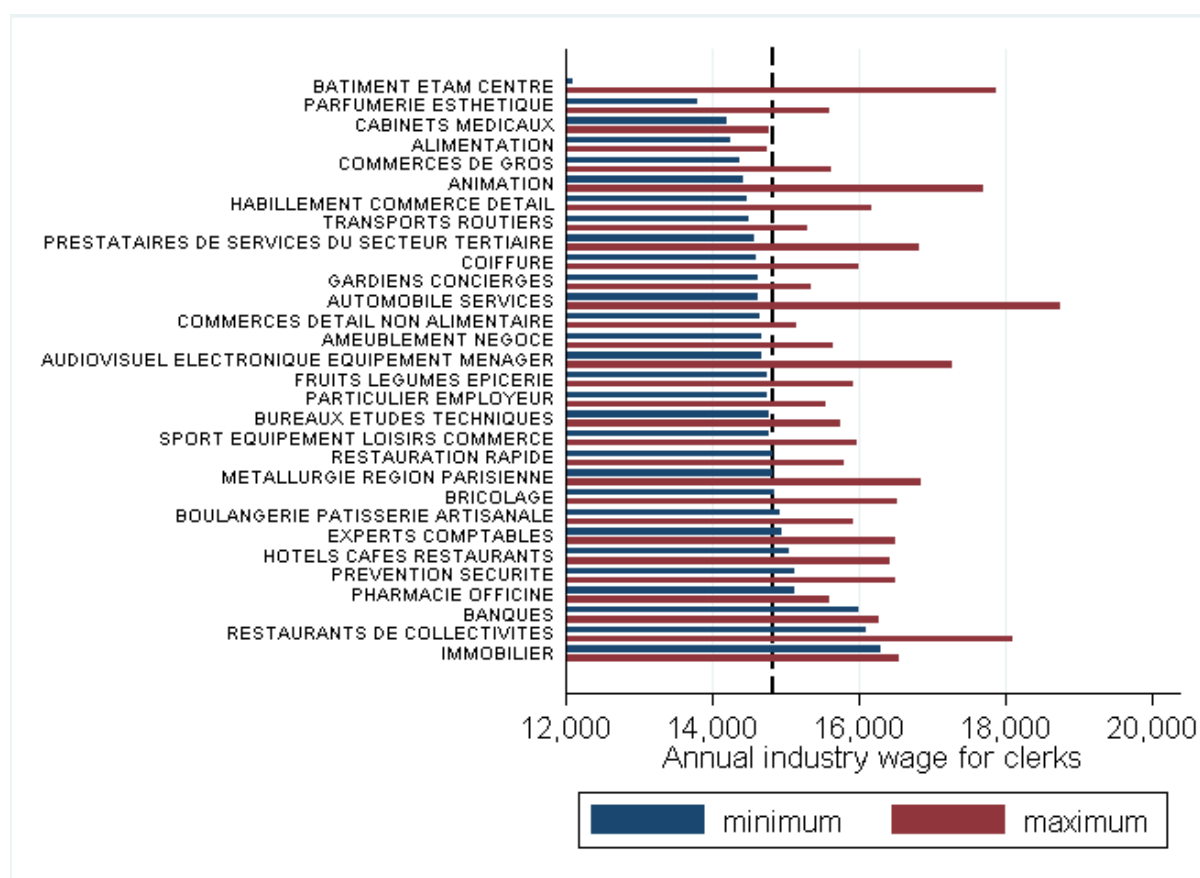
minimum wage. Only 3 branches have their minimum wage standing substantially above the national minimum wage: the milk industry, the meat industry and the public works in the Picardie region. We can also identify 3 branches with their minimum wage substantially under the national minimum wage: chemicals, construction materials and the furniture industry. Second salient fact: the highest minimum wages bargained vary a lot from an industry to another one. In some industries such as metallurgy in the Rhône region, the highest minimum wage is only slightly higher than the lowest one. In contrast, the construction industry in the Auvergne region or the industrial bakery industry have their lowest minimum wage under the national one but their highest one well above it. These very heterogeneous situations probably reflect the different bargaining traditions: in some cases, a complete pay-scale is bargained, whereas in some others the bargaining focuses on the wage of workers with the lowest qualification.

Figure 3: *Lowest and Highest minimum wages for blue-collar workers in the 30 largest branches, in 2006*



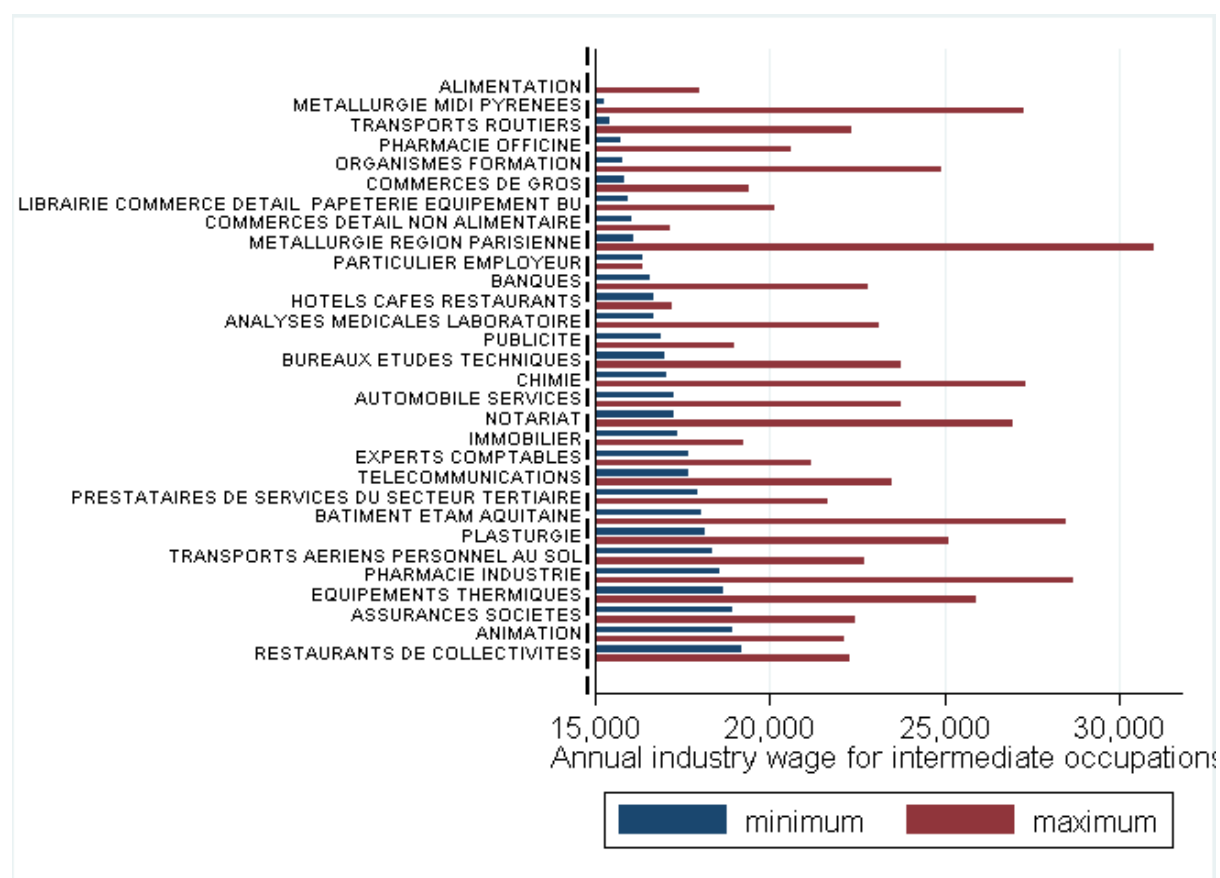
Notes: The dashed line represents the annual national minimum wage that applied in 2006 (average of the annualized national minimum wages of the 1st of July in 2005 and 2006).

Figure 4: *Lowest and Highest minimum wages for clerks in the 30 largest branches, in 2006*



Notes: The dashed line represents the annual national minimum wage that applied in 2006 (average of the annualized national minimum wages of the 1st of July in 2005 and 2006).

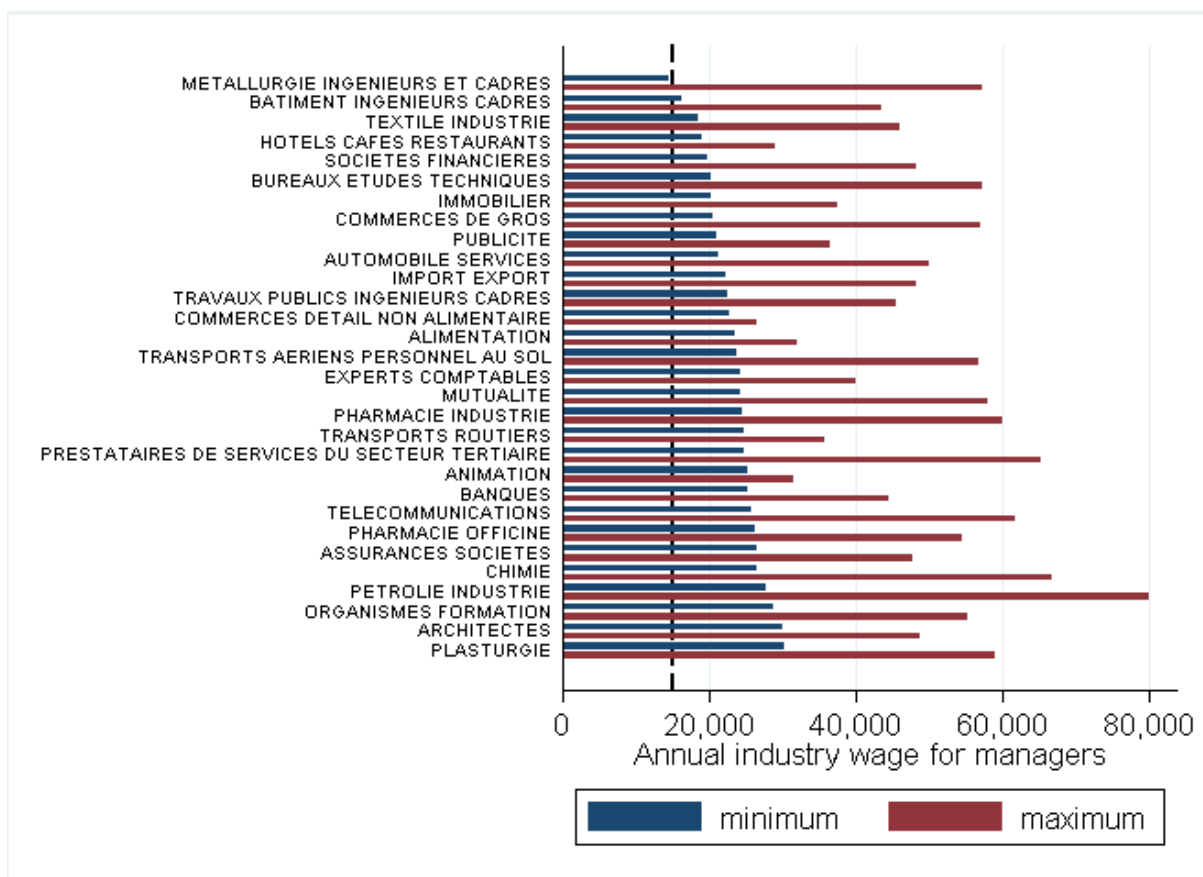
Figure 5: *Lowest and Highest minimum wages for intermediate occupations in the 30 largest branches, in 2006*



Notes: The dashed line represents the annual national minimum wage that applied in 2006 (average of the annualized national minimum wages of the 1st of July in 2005 and 2006).

Figures 4, 5 and 6 present similar statistics for clerks, workers in intermediate occupations, and supervisors/managers. The results for clerks are very similar to those for blue-collars (figure 4). The picture is different for workers in intermediate occupations (essentially technicians and commercials). In most branches, they have their lowest minimum wage above the national one and industry-level bargaining, in large branches at least, can be said to bring them a real protection (figure 6). The highest annual minimum wages are also highly variable from a branch to another one, ranging from 17,000 Euros for “individual employers” to 31,000 Euros in metallurgy in the Paris region.

Figure 6: *Lowest and Highest minimum wages for intermediate occupations in the 30 largest branches, in 2006*



Notes: The dashed line represent the annual national minimum wage that applied in 2006 (average of the annualized national minimum wages of the 1st of July in 2005 and 2006).

Industry-level minimum wages for managers are also very different from a branch to another one (figure 6). In the construction and metallurgy branches, the lowest minimum wage is close to the national one. In contrast, the lowest minimum wage for architects and

in the plastics industry peak at roughly 30,000 Euros per year⁶. The highest minimum wage is above 30,000 Euros in all branches and reaches 80,000 Euros in the oil industry.

To give a more complete picture of industry-level bargaining in the 276 branches with more than 5,000 employees, figures 7 and 8 plot the distribution of the lowest and highest minimum wages across all branches for each occupation group. The distributions of the lowest minimum wages for blue-collars and clerks are very tight and centered on the national minimum wage. It confirms that industry-level bargaining does not offer much guaranties in terms of wages for workers in these occupations. The distribution for intermediate occupations is much more skewed, with a mode slightly above the national minimum wage. For managers, the distribution is more symmetric with a mode around 25,000 Euros. Consistent with the observations made from figures 3 to 6, the distributions of the highest minimum wages (figure 8) appear to have a higher variance for all occupation groups (and especially for managers).

The relationship between lowest and highest minimum wages is illustrated in figure 9 which plots the distribution of the differences (in %) between the branches' lowest and highest minimum wages by occupation group. The 4 distributions exhibit a high variance (especially the distribution for intermediate occupations), which confirms that there is no systematic correlation between the lowest and the highest bargained minimum wages. An interesting point is also confirmed by figure 9: the career perspectives negotiated for the different categories of workers are quite different. The difference between the contractual wages for the most qualified blue-collar workers or clerks and the least qualified does not exceed 30% to 40%, whereas the corresponding difference can reach 50% for intermediate occupations and 75% for managers.

The interaction between industry-level and firm-level bargaining

One concern about the study of the firm-level union wage premium presented in the paper is its robustness to controlling for the role of industry-level bargaining. The estimates produced in the paper derive from empirical specifications that systematically include dummy variables for industries (1, 2 or 4-digit dummies). The objective was to make comparisons within industries and to get rid of any industry-specific effect. Thus,

⁶ As a matter of comparison, the hiring wage of students from Ecole Polytechnique in the private sector was 41,720 €/per year in 2006.

Figure 7: *Distribution of the branches' **lowest** minimum wages in the different occupation groups in 2006*

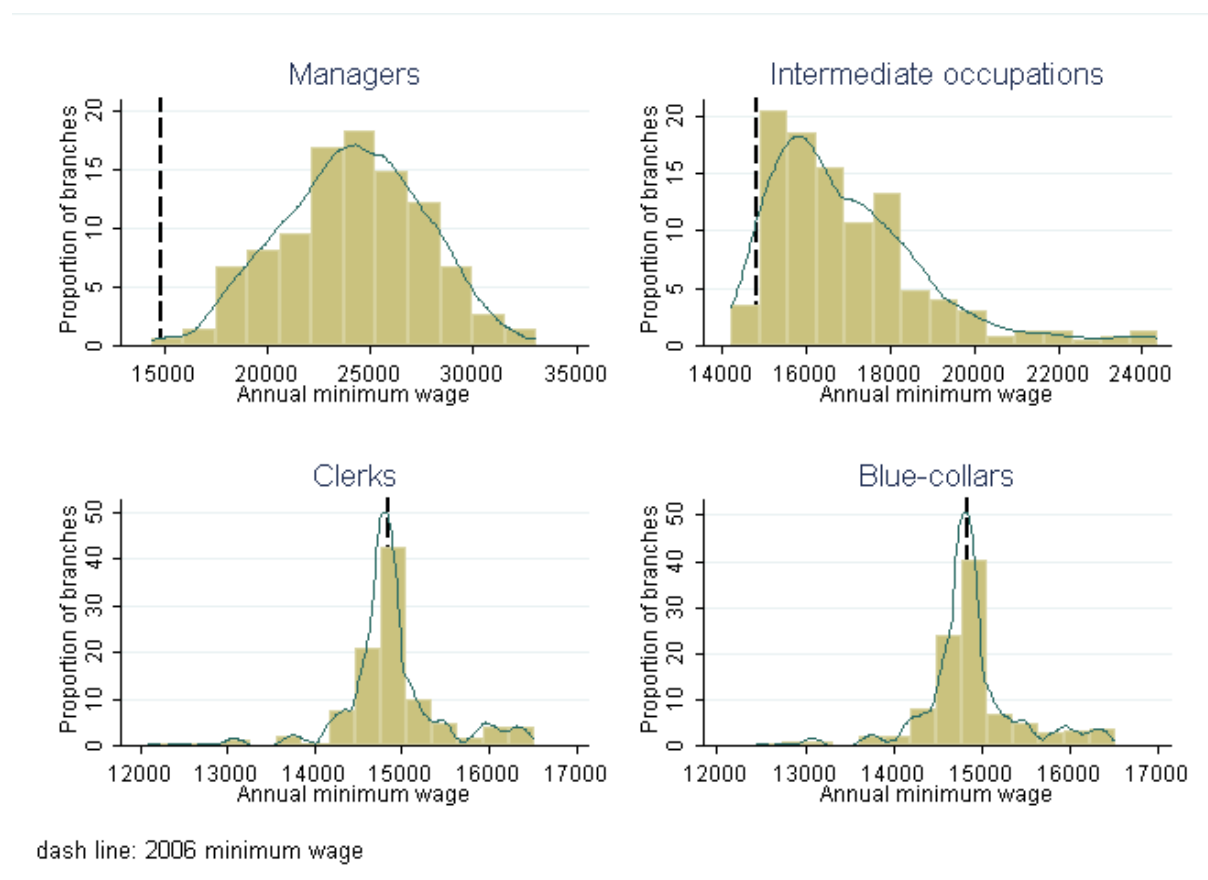


Figure 8: *Distribution of the branches' **highest** minimum wages in the different occupation groups in 2006*

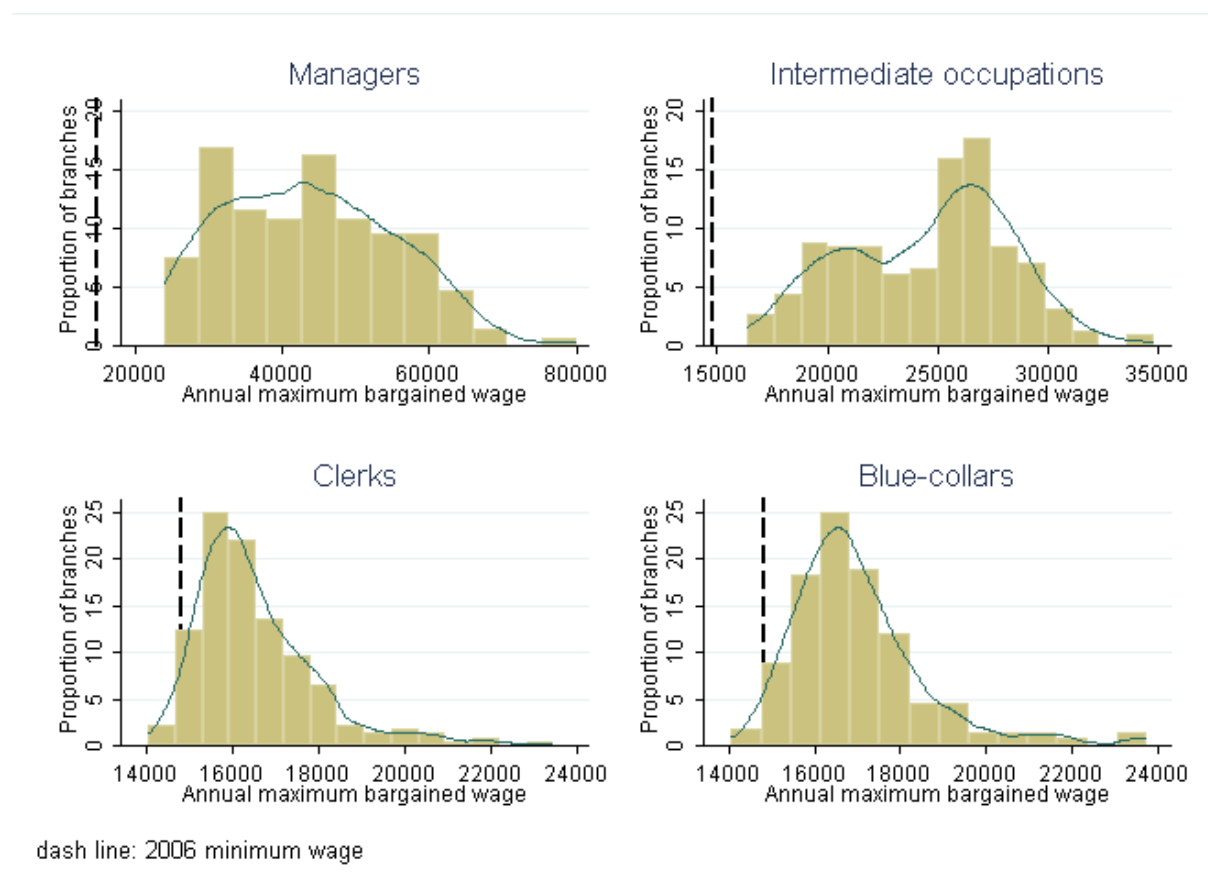
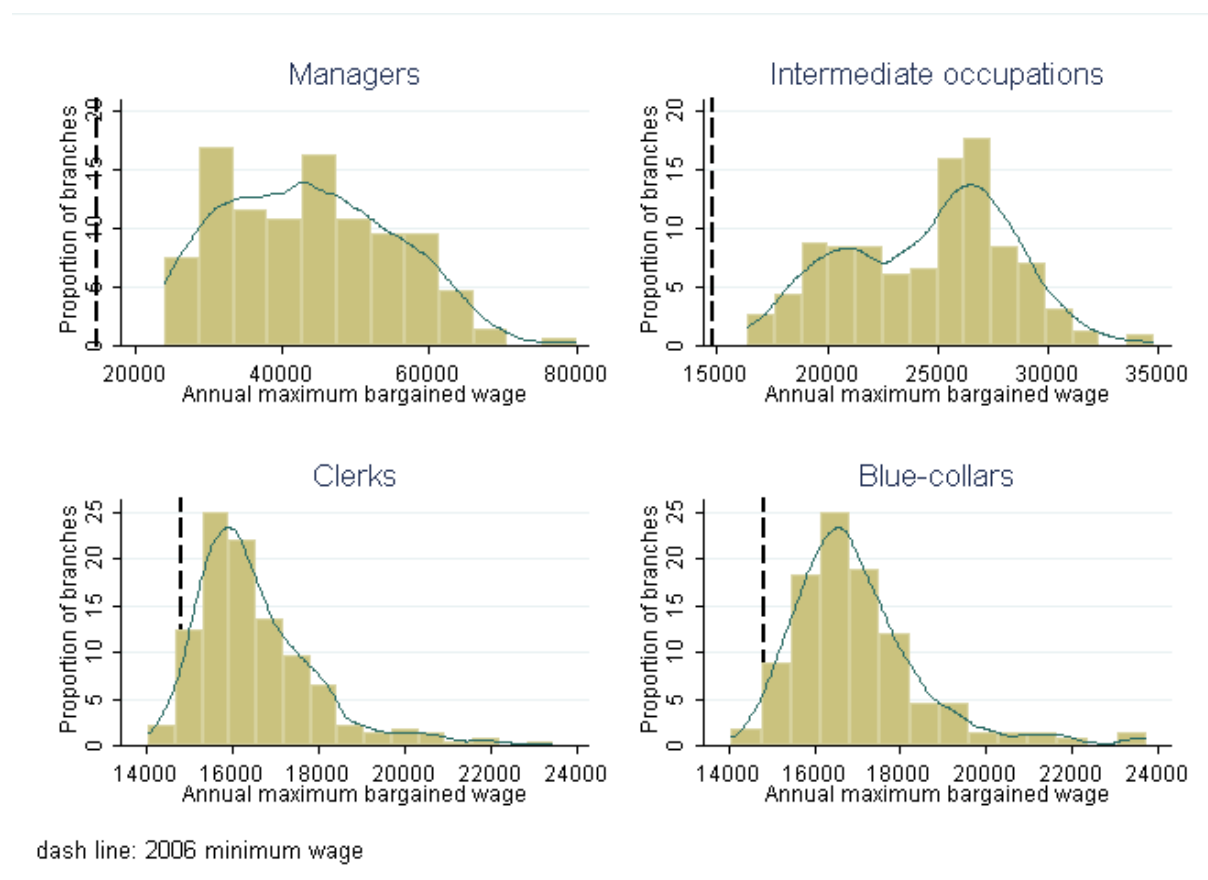


Figure 9: *Distribution of the differences (in %) between the branches' lowest and highest minimum wages in the different occupation groups in 2006*



our earlier estimates should not be biased too much by the role of industry-level bargaining. However, it is possible to check this point directly using the ECMOSS06 dataset matched with the industry-level minimum wages by occupation group. Such a robustness check is necessary for two reasons: first, the bargaining units (called “branches”) do not coincide perfectly with the usual classification of the industries, implying that the dummy variables for industries that was used in the paper did not fully control for the effect of bargaining at the branch/industry level. Second, the industry minimum wages are given by occupation, which allows a better control for their potential effects.

Industry-level bargaining would bias our estimates of the firm-level union wage premium if and only if the presence of unions within firms is correlated with the strength of unions at the industry-level. Put it shortly, when unions are strong at the industry-level, they might also be strong at the firm level or present in many firms. I have first used the ECMOSS2006 dataset to test the relationship between the branches’ minimum wages and the probability for a worker to have a union in her working establishment. To do so, I have fitted, at the individual level, logit, probit and linear models of the probability to have a union in the worker’s establishment, using as covariates the branch minimum wage corresponding to the worker’s occupation and a set of individual and establishment characteristics⁷. The estimates of the relationship between the industry-level minimum wage and the probability to have a union at the firm-level are never significant (results not reported), suggesting that union presence at the firm level is not correlated to industry-level wage bargaining. As a consequence, our earlier analysis should not be biased by the role played by industry-level bargaining. A direct test is nonetheless presented in table 7. Models (1) to (3) first reproduce the main specifications of Table 3 of the paper using the ECMOSS2006 dataset which is similar to the ESS2002 dataset used in paper. The establishment-level union wage premium found in these specifications is close to what has been found with ESS2002 and are even a bit smaller. In models (4) to (6), an additional control for the log of the branch lowest minimum wage (computed for each category of workers) is introduced as an additional control. The point is to test if the estimate of the establishment-level union wage premium is related to industry-level bargaining. As could be expected, the branch minimum wage per occupation group is strongly related to

⁷Individual control variables are a gender dummy, 10 dummies for age, 4 dummies for tenure, 4 dummies for occupation and 4 dummies for education. Establishment-level control variables include 5 size dummies and 10 region dummies. Dummies for industries are also included in some specifications and their inclusion does not affect the results.

the real wage. However, the estimated effect of union recognition remains virtually unchanged, confirming that industry-level bargaining and firm-level union recognition affect the level of real wages independently. I have also estimated models equivalent to model (6) with a third-order polynomial in the branch minimum hourly wage (instead of just using the logarithm) and with additional controls for the highest branch minimum hourly wage (either a third-order polynomial or the logarithm of the variable). In all cases, the establishment-level union wage premium remains unchanged.

Table 7: *Log Hourly Wage Regressions (ECMOS06): the union wage premium when controlling for the branches' minimum wages*

	<i>Dependent variable: log of gross hourly wage (from ECMOS06)</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
Workplace Union Recognition	0.117 (0.010)	0.023 (0.007)	0.017 (0.007)	0.112 (0.008)	0.023 (0.007)	0.017 (0.007)
Log of branch hourly minimum wage				1.135 (0.020)	0.091 (0.024)	0.052 (0.023)
<i>Worker's characteristics</i>						
Women		-0.131 (0.005)	-0.128 (0.005)		-0.131 (0.005)	-0.128 (0.005)
High School		0.0839 (0.006)	0.0851 (0.006)		0.0845 (0.006)	0.0854 (0.006)
Some College		0.110 (0.006)	0.111 (0.006)		0.110 (0.006)	0.112 (0.006)
College or University Degree		0.202 (0.010)	0.213 (0.010)		0.204 (0.009)	0.214 (0.010)
Age		0.009 (0.000)	Detailed		0.009 (0.000)	detailed
Fixed Term Contract		-0.008 (0.015)	0.032 (0.016)		-0.008 (0.015)	0.033 (0.016)
<i>Firm's characteristics (reference:workplaces with 10 to 20 workers)</i>						
20-50 Workers		0.008 (0.008)	0.009 (0.009)		0.009 (0.008)	0.009 (0.009)
51-100 Workers		0.022 (0.010)	0.023 (0.010)		0.023 (0.010)	0.023 (0.010)
101-200 Workers		0.026 (0.010)	0.024 (0.010)		0.026 (0.010)	0.023 (0.010)
Over 200 Workers		0.078 (0.010)	0.066 (0.010)		0.077 (0.010)	0.066 (0.010)
Intercept	2.67 (0.007)	2.81 (0.024)	3.02 (0.027)	0.16 (0.043)	2.58 (0.065)	2.89 (0.062)
Industries	-	1 digit	2 digits	No	1 digit	2 digits
Observations	27,389	25,488	23,986	27,389	25,488	23,986
R-squared	0.019	0.585	0.609	0.293	0.586	0.609

Notes: The branch minimum wage is defined by occupation groups. All models except (1) and (4) also include 8 indicators for region and 4 indicators for occupation. Standard errors are calculated with clustering by establishments in all models. Models (2) and (5) include 9 indicators for industry. Models (3) and (6) include 50 indicators for industry as well as 10 indicators for worker's age and 4 indicators for worker tenure.