

Laboratoire d'Economie de Dauphine



WP n°6/2019

Document de travail

Labor Market Concentration and Stayers' Wages: Evidence from France

Andrea Bassanini
Cyprien Batut
Eve Caroli

Labor Market Concentration and Stayers' Wages: Evidence from France*

November 8, 2019

Andrea Bassanini
(OECD and IZA)

Cyprien Batut
(PSE)

Eve Caroli
(Paris-Dauphine Université, PSL and IZA)

Abstract

We investigate the impact of labor market concentration on stayers' wages, where stayers are defined as individuals who remain employed in the same establishment for at least two years. Using administrative data for France, we show that the elasticity of stayers' wages to labor market concentration is about -0.05, after controlling for labor productivity, product market competition and match-specific heterogeneity. Given the strong wage rigidities characterizing the French labor market, this estimate can be considered a lower bound of the effect of labor market concentration on stayers' wages in an international perspective.

JEL Codes: J31, J42, L41

Keywords: *labor market concentration, monopsony, wages, stayers, match-specific heterogeneity*

*The views expressed here do not represent those of the OECD or its member countries. Cyprien Batut acknowledges support from the PSE Labor Chair. This research has also been supported by a public grant overseen by the French National Research Agency (ANR) as part of the 'Investissements d'avenir' program (reference: ANR-10-EQPX-17, Centre d'accès sécurisé aux données, CASD). Usual disclaimers apply.

1 Introduction

How labor market concentration affects wages has been the subject of a burgeoning literature in recent years. Many papers have shown that a substantial proportion of individuals are employed in labor markets that are at least moderately concentrated according to the thresholds defined by the US Horizontal Merger Guidelines and that this has a depressing effect on average wages, consistent with a monopsony model (Azar et al., 2018; Martins, 2018; Abel et al., 2018; Rinz, 2018; Benmelech et al., 2018). Beyond average wages, there is evidence that concentration affects posted wages for new vacancies (Azar et al., 2017) and actual wages of new hires (Marinescu et al., 2019).

In this paper we investigate the impact of labor market concentration on stayers' wages, where stayers are defined as individuals who remain employed in the same establishment for at least two years. Looking at stayers is important since they represent a large share of all employees in any given year in all OECD countries (OECD, 2010). Stayers' wages have also been shown to be the largest contributor to aggregate wage growth, at least in recent years (Hahn et al., 2017, 2018). However, so far, no systematic evidence has been provided on how labor market concentration affects them. Aggregate effects found in the literature could in principle be driven by new hires only or by both new hires and incumbent workers. In the former case though, this would imply that labor market concentration only affects wages at the margin, i.e. for individuals who change jobs. In this paper, we use French data and show that the elasticity of stayers' wages to labor market concentration is about -0.05, i.e. half of that estimated by Marinescu et al. (2019) for new hires in the same country. France is particularly interesting in this respect since, due to automatic extension of collective agreements, almost all employees are covered by them and wage rigidities are strong (Babecký et al., 2010). So, one could think that the impact on stayers' wages would be particularly small and hence represent a lower bound from an international perspective. The elasticity we find points to a significant degree of employers' monopsony power, on average. It may also be taken as suggesting that firms in concentrated labor markets are able to advantageously renegotiate (and/or unilaterally adjust) wages of stayers who face few outside options.

Estimating the elasticity of wages to labor market concentration on stayers only also has the advantage of cancelling out any potential confounding effects of changes in the composition of the workforce and/or assortative matching between workers and firms. Qiu and Sojourner (2019) find that labor market concentration tends to reduce the average level of education of employees, so that part of the decrease in wages associated with higher concentration could be due to a reduction in the quality of the workforce. Moreover, Macaluso et al. (2019) show that the greater the labor market concentration, the higher the skill requirements imposed by firms,

conditional on workers’ education. This suggests that firms in concentrated labor markets are more selective in choosing workers who best fit their specific needs. The effects we estimate in the current paper are net of any composition and/or sorting effect since not only do we account for time-invariant workers’ characteristics but also for match-specific heterogeneity.

To our knowledge, the only other paper estimating the impact of labor market concentration on stayers’ wages is [Arnold \(2019\)](#). It shows that mergers and acquisitions that lead to higher concentration have a negative effect on the wages of employees who stay in the firms that have merged. We identify the effect of labor market concentration on non-merged companies and show that when labor market concentration changes independently of changes in the firms boundaries due to mergers, stayers’ wages fall. This suggests that employers may be able to take advantage of the reduction in outside options induced by greater concentration to reduce stayers’ wages.

The remainder of the paper is structured as follows. Section 2 lays out our empirical strategy. Section 3 describes the data that we use and presents summary statistics. Section 4 presents the results and Section 5 concludes.

2 Empirical specification

2.1 Labor market concentration

As is standard in the literature ([Azar et al., 2017](#); [Martins, 2018](#); [Marinescu et al., 2019](#)), we measure employer concentration using the Herfindhal-Hirschman Index (HHI) computed either on employment or on hirings:

$$HHI_{o,z,t} = \sum_{f=1}^{N_{o,z,t}} s_{f,o,z,t}^2 \quad (1)$$

where $HHI_{o,z,t}$ is the HHI for occupation o in commuting zone z (which define the local labor market $l = (o, z)$) at year t . $N_{o,z,t}$ is the number of firms that have positive employment (resp. hirings) in local labor market l at time t and $s_{f,o,z,t}$ is the share of firm f in employment (resp. hirings) in local labor market l at time t . With this definition, HHI ranges from 0 (no concentration) to 1 (one firm in the market).

We use HHI based on employment since in a standard Cournot model of oligopsony, wages are inversely related to the HHI measured in terms of employment ([Boal and Ransom, 1997](#)). An HHI based on employment also seems to be a reasonable approximation of the index of labor market concentration that is relevant for wage determination in a stationary search and matching model with granular search, where concentration affects wages by affecting workers’ outside options ([Jarosch](#)

et al., 2019). However, in a non-stationary environment, downsizing firms may have a positive share of the stock of employment in a local labor market, whereas their hirings are zero so that they do not contribute to creating outside options for workers in that labor market. In this case, as emphasized by Marinescu et al. (2019), a measure based on hirings better captures the fact that labor market concentration may negatively affect wages by reducing workers' outside options. This is why we use an HHI based on hirings as an alternative measure of labor market concentration.

2.2 Labor market concentration and wages

We estimate the impact of labor market concentration on individual wages. Our baseline specification is as follows:

$$\log(w_{i,j,f,o,z,t}) = \beta \log(HHI_{o,z,t}) + \mathbf{X}_{i,j,f,o,z,t} \gamma + \mu_{z,t} + \mu_{o,z} + \mu_i + \mu_j + \epsilon_{i,j,f,o,z,t} \quad (2)$$

where i indices the individual, j the establishment and f the firm. w denotes the individual wage, \mathbf{X} is a vector of age dummies - one for each year of age - and μ are fixed effects. In this baseline specification, we control for individual and establishment fixed effects along with local-labor-market and commuting-zone-by-time fixed effects. Standard errors are clustered at the commuting zone level.

However, as emphasized by Qiu and Sojourner (2019), labor market concentration and wages may be affected by workforce composition. In turn, this may generate assortative matching between workers and firms. For example, firms with buyer power on the labor market may become more selective and retain only those workers that better match their idiosyncratic needs. To control for match-specific heterogeneity, we augment the above specification by including individual-by-establishment fixed effects ($\mu_{i,j}$). When doing so, $\hat{\beta}$ is identified on stayers only. Should we find a negative effect of labor market concentration on stayers' wages, this would suggest that monopsony power is a particularly strong factor of downward pressure on wages. France is indeed characterized by strong wage rigidity (Babeckỳ et al., 2010) due to extensive coverage of collective agreements (OECD, 2017), so that one could conjecture that the effect would be sizable only for new hires (Marinescu et al., 2019).

Arguably, when estimating the impact of labor market concentration on wages, labor productivity and product market competition are key potential confounders. To control for the former we introduce establishment-by-year fixed effects in our specification. This allows controlling for establishment-level labor productivity better than any measure of value added per worker that can only be computed at the firm level (since establishments are not profit centers in France). This also allows controlling for product market competition. If local firms produce for the national or international market - and not only for the local one -, product mar-

ket competition is firm specific and firm-by-year fixed effects would control for it. However, if establishments in a given geographical area produce for the local market, a simple way to control for product market competition would be to include firm-by-commuting-zone-by-year fixed effects. Since establishments of a given firm do not change location, controlling for establishment-by-year fixed effects does the same job. Our most complete specification therefore writes:

$$\log(w_{i,j,f,o,z,t}) = \beta \log(HHI_{o,z,t}) + \mathbf{X}_{i,j,f,o,z,t} \gamma + \mu_{z,t} + \mu_{o,z} + \mu_{i,j} + \mu_{j,t} + \nu_{i,j,f,o,z,t} \quad (3)$$

Note that since $\mu_{i,j}$ absorbs μ_i and μ_j , equation (2) is nested in equation (3).

As an alternative, we use a less demanding specification in which we substitute $\mu_{i,f}$ for $\mu_{i,j}$ and $\mu_{f,t}$ for $\mu_{j,t}$ in equation (3). Thus doing, we identify the impact of labor market concentration on wages on stayers within firms (rather than establishments), i.e. on individuals staying within the same establishment across years and individuals moving across establishments of the same firm.

A key threat to identification in this set-up is that an omitted time-varying variable could be correlated with HHI and determine wages. This is the case, for example, if a negative shock on the supply of labor takes place in a local labor market $l = (o, z)$. This shock is likely to raise wages. If productivity stays unchanged, unit labor costs go up thereby likely reducing the number of local firms which find it profitable to employ this type of labor. As a consequence, labor market concentration would increase thus giving rise to a positive correlation between HHI and wages that would, in fact, be due to reverse causality. To deal with this endogeneity problem, we rely on an instrumental variable strategy building upon [Azar et al. \(2017\)](#), [Martins \(2018\)](#) and [Qiu and Sojourner \(2019\)](#). These scholars suggest instrumenting $\log(HHI)$ with the average of $\log(1/N_{o,z',t})$ in all other commuting zones z' for the same occupation and time period - where $N_{o,z',t}$ is the number of firms with positive employment (resp. hirings). $1/N_{o,z',t}$ corresponds to the value of the HHI in local labor market $l' = (o, z')$ when all firms have the same employment (resp. hirings) share in that market. This instrument provides a source of variation of labor market concentration relying on national rather than local changes in the occupation we consider.¹ However, since individuals living close to the border of a commuting zone may be working either in this zone or in the bordering one, any shock on the local labor supply in a given occupation taking place in the periphery of a commuting zone is likely to affect the bordering commuting zone too. To deal with this issue, when building our instrument, we not only remove the commuting zone we consider but also all the zones that have a common border with it. Thus doing, we considerably reduce the risk that spillovers across local labor markets may

¹Instrumenting a variable in one zone using the average of this variable in other zones (Hausman instruments) is standard in international economics and industrial organization - see e.g. [Hausman et al. \(1994\)](#), [Autor et al. \(2013\)](#), [Bai et al. \(2017\)](#) and [Azar et al. \(2019a\)](#)

threaten the orthogonality of our instrument.

3 Data

We use two datasets extracted from the French Social Security records (DADS). The first dataset (DADS-Postes) covers the universe of workers and establishments in all industries except agriculture, part of the food-processing industry, rural financial institutions (e.g. Crédit Agricole) and public administrations. This contains information on establishment location (municipality) and the firm to which the establishment belongs. Moreover it provides information on gross wages, hours worked and workers' age, gender and 4-digit occupation for all employees with non-zero hours worked in a given year. Establishments have a unique identifier which is invariant over time, except when the establishment changes location or is sold out to another company, in which case it is assigned a new identifier. By contrast, for the sake of anonymity, workers' identifiers are changed every year. However, for any given year, we know in which establishments employees were working the year before. We use data starting in 2009 since information on occupations was not systematically reported before that date. We match each municipality contained in the DADS-postes with the 2010 commuting zones using a mapping provided by the French Statistical Institute (INSEE).

For the subset of workers in the DADS-Postes who are born in October of each year, there exists a panel which maintains the same identifier over time for each worker and hence allows following workers across various employers and years. This panel (DADS-Panel) is available only until 2012. For this reason, we limit our analysis to 2009-2012.

We use the whole DADS-Postes to construct HHIs based on employment and hirings. We only consider business companies, and exclude workers on training contracts or on occasional jobs.² Employment is defined in full-time equivalent terms. A new hire in a given year is defined as a worker who did not work for any establishment of the firm the year before. We only keep local labor markets with at least 10 employees in each year of our time window.

Descriptive statistics of concentration in French local labor markets are reported in Appendix Table A1 and Figures A1 and A2. When measured with reference to employment, mean concentration weighted by employment is relatively low and stable over time around 0.09, which is below the threshold for moderate concentration (0.15) defined by the US antitrust authorities. Unsurprisingly, it is slightly higher when measured on the basis of hiring: about 0.11. However, mean values of HHIs turn out to be much larger than median values, suggesting that a number of local labor markets are highly concentrated. As a matter of fact, although 83.6% of work-

²The so-called *emplois annexes*.

ers are employed in a market where HHI based on employment is lower than 0.15 (resp. 78.5% for HHI based on hirings), 9.3% (resp. 12%) are employed in local labor markets where HHI based on employment (resp. hirings) is higher than 0.25, which corresponds to high concentration - see Appendix Table A2. Moreover, the (unweighted) proportion of local labor markets with HHI above 0.25 is non negligible, at least when labor market concentration is defined on the basis of hirings - see Figures A3 and A4. In the latter case, 6.6% of labor markets even have $HHI = 1$ in 2009. This is consistent with the rather low shares of individuals facing highly concentrated labor markets since large markets tend to be less concentrated than smaller ones.

As in most countries - see Abel et al. (2018), Rinz (2018) and Azar et al. (2019b) - local labor markets are more concentrated in mostly rural than in mostly urban commuting zones in France - see Figures A5 and A6. This will be accounted for in our regressions by including occupation-by-commuting zone fixed effects.

We estimate our wage regressions on the subset of workers employed in business companies and for whom we dispose of a panel. We keep workers aged 15 to 74 and drop the top and bottom 1% wages each year. Descriptive statistics for this sample are presented in Appendix Table A3. Our observations are individual-by-establishment-by-year triples. Stayers represent 79.8% of this sample. As for movers, the average age of stayers is 38, but men are over-represented in this group - 51.3% as compared to 49.6% in the whole sample.

4 Results

We first estimate the impact of labor market concentration on individual wages using a measure of the HHI based on employment. As evidenced in Table 1, OLS estimates are negative although insignificant at conventional levels, no matter which set of fixed effects we include. Given that stayers account for a vast majority of our sample in col (1) and that they are the only source of variation in cols (2) to (4), these results could suggest that labor market concentration has little impact on their wages, as one could expect in a country with high wage rigidity. However, this could also be due to reverse causality if local labor supply shocks simultaneously drive wages and the number of firms in the local labor market - see Section 2.2.

In order to disentangle between these explanations, we run IV estimates in which $\text{Log}(HHI_{o,z,t})$ is instrumented by the average of $\log(1/N_{o,z',t})$, where $N_{o,z',t}$ is the number of firms with positive employment in all commuting zones z' excluding z and all commuting zones that have a border with z . This instrument is strongly correlated with labor market concentration, as evidenced by the first-stage F-statistics reported at the bottom of Table 2. When estimated in this way, the impact of HHI on individual wages turns out to be negative and significant, whatever the

specification we consider. This suggests that, despite wage rigidities, labor market concentration has a depressing effect on stayers' wages in France. Controlling for individual and establishment fixed effects or for individual-by-establishment fixed effects yield very similar results - see col. (1) and (2). When controlling for labor productivity and product market competition by adding establishment-by-year fixed effects, our estimates become three times larger - see col. (3). A similar point estimate is found when identifying the effect on stayers within the firm rather than within each establishment - see col (4).

As a second step, we estimate the impact of labor market concentration on individual wages using a measure of the HHI based on hirings. OLS estimates yield a small but negative and significant effect in all specifications - see Table 3. IV estimates are larger and close in magnitude to those obtained when using a HHI based on employment - see Table 4. Whatever measure of HHI we use, our results suggest that a 10% increase in labor market concentration decreases stayers' wages by 0.5% - see col (3) of Tables 2 and 4, corresponding to an elasticity of -0.05. This can be compared to what [Marinescu et al. \(2019\)](#) obtain for new hires in France insofar as they control for firm-level labor productivity and concentration in the product market, along with individual and establishment fixed-effects. Their preferred estimate corresponds to an elasticity of -0.09, which suggests that the impact of labor market concentration on stayers' wages is about half of that estimated on new hires.

One limitation of our instrument is that it is the average of $\log(1/N_{oz't})$, where $N_{oz't}$ is the number of firms with positive employment (resp. hirings). This average is computed over all local labor markets $l' = (o, z')$ where N is not zero. In other words, it artificially excludes all local labor markets with no active firms. Thus doing, it yields a value of the instrument that is artificially low since local labor markets where $1/N_{oz't} = \infty$ are not taken account in its construction. To address this issue, we build an alternative instrument defined as the log of the inverse of the average number of firms ($N_{oz't}$) in all commuting zones z' excluding z and all commuting zones that have a border with z . In this case, the local labor markets in which $N_{oz't} = 0$ are included in the average that we compute and hence contribute to the value of the instrument. The results obtained with this alternative instrument are provided in Table 5. The elasticities of wages to local labor market concentration are very similar to those estimated with our baseline instrument. In our preferred specification which includes establishment-by-time fixed effects - see col. (3) -, a 10% increase in concentration generates a reduction in stayers' wages by 0.6%, no matter whether the HHI is computed based on employment or on hirings.

5 Conclusion

Using French administrative data, we have shown that when labor market concentration increases by 10%, stayers' wages decrease by 0.5%. Our estimates control for labor productivity, product market competition and match-specific heterogeneity. Due to the automatic extension of collective agreements, almost all employees in France are covered by them and, as a result, wage rigidities are strong. So the effect on stayers' wages that we find could be considered as a lower bound from an international perspective.

Our results complement those of [Marinescu et al. \(2019\)](#) who find that labor market concentration reduces the wages of new hires in France with an elasticity of -0.09. The effect that we find on stayers is thus about half of that on new hires. Our findings also complement those of [Arnold \(2019\)](#) who finds that mergers that increase labor market concentration reduce stayers' wages in merged companies. We find that concentration affects stayers' wages in non-merged companies too.

Our findings also suggests why labor market concentration may reduce the labor share, as evidenced by [Jarosch et al. \(2019\)](#). To the extent that stayers' wage have been found to be a key determinant of the latter ([Hahn et al., 2018](#)), the negative effect of labor market concentration on stayers' wages that we find stands as a potential mechanism by which increasing concentration on the labor market may reduce the labor share.

References

- W. Abel, S. Tenreyro, and G. Thwaites. Monopsony in the UK. *CEPR Discussion Paper*, No. DP13265, 2018.
- D. Arnold. Merger and acquisitions, labor market concentration and worker outcomes. *Mimeo*, Princeton University: <https://scholar.princeton.edu/sites/default/files/dharnold/files/jmp.pdf>, 2019.
- D. H. Autor, D. Dorn, and G. H. Hanson. The China syndrome: Local labor market effects of import competition in the United States. *American Economic Review*, 103(6):2121–68, 2013.
- J. Azar, I. Marinescu, and M. I. Steinbaum. Labor market concentration. *NBER Working Paper*, No. 24147, 2017.
- J. Azar, S. Berry, and I. E. Marinescu. Estimating labor market power. *Available at SSRN 3456277*, 2019a.
- J. Azar, I. Marinescu, and M. Steinbaum. Measuring labor market power two ways. *AEA Papers and Proceedings*, 109(5):317–21, 2019b.
- J. A. Azar, I. Marinescu, M. I. Steinbaum, and B. Taska. Concentration in US labor markets: Evidence from online vacancy data. *NBER Working Paper*, No. 24395, 2018.
- J. Babecký, P. Du Caju, T. Kosma, M. Lawless, J. Messina, and T. Rõõm. Downward nominal and real wage rigidity: Survey evidence from European firms. *The Scandinavian Journal of Economics*, 4(112):884–910, 2010.
- J. Bai, S. Jayachandran, E. J. Malesky, and B. A. Olken. Firm growth and corruption: Empirical evidence from Vietnam. *The Economic Journal*, 129(618):651–677, 2017.
- E. Benmelech, N. Bergman, and H. Kim. Strong employers and weak employees: How does employer concentration affect wages? *NBER Working Paper*, No. 24307, 2018.
- W. M. Boal and M. R. Ransom. Monopsony in the labor market. *Journal of economic literature*, 35(1):86–112, 1997.
- J. K. Hahn, H. R. Hyatt, H. P. Janicki, and S. R. Tibbets. Job-to-job flows and earnings growth. *AEA Papers and Proceedings*, 107(5):358–63, 2017.
- J. K. Hahn, H. R. Hyatt, and H. P. Janicki. Job ladders and growth in earnings, hours, and wages. *Society for Economic Dynamics Meeting Papers*, No. 908, 2018.

- J. Hausman, G. Leonard, and J. D. Zona. Competitive analysis with differentiated products. *Annales d'Economie et de Statistique*, pages 159–180, 1994.
- G. Jarosch, J. S. Nimczik, and I. Sorkin. Granular search, market structure, and wages. *NBER Working Paper*, No. 26239, 2019.
- C. Macaluso, B. Hershbein, and C. Yeh. Concentration in US local labor markets: Evidence from vacancy and employment data. *Society for Economic Dynamics Meeting Papers*, No. 1336, 2019.
- I. E. Marinescu, I. Ouss, and L.-D. Pape. Wages, hires, and labor market concentration. *SSRN*, No. 3453855, 2019.
- P. Martins. Making their own weather? Estimating employer labour-market power and its wage effects. *QMUL Working Papers*, No. 95, 2018.
- OECD. *Employment Outlook*. Organisation for Economic Co-operation and Development, 2010.
- OECD. *Employment Outlook*. Organisation for Economic Co-operation and Development, 2017.
- Y. Qiu and A. Sojourner. Labor-market concentration and labor compensation. *SSRN*, No. 3312197, 2019.
- K. Rinz. Labor market concentration, earnings inequality, and earnings mobility. *Center for Administrative Records Research and Applications Working Paper*, 10, 2018.

Table 1: HHI based on Employment - OLS

	(1)	(2)	(3)	(4)
	Log(Wage)	Log(Wage)	Log(Wage)	Log(Wage)
$Log(HHI_{o,z,t})$	-.00341 (.00285)	-.00271 (.00341)	-.00085 (.00415)	-.00020 (.00286)
Individual FE	Yes	No	No	No
Establishment FE	Yes	No	No	No
Individual*Establishment FE	No	Yes	Yes	No
Establishment*Year FE	No	No	Yes	No
Individual*Firm FE	No	No	No	Yes
Firm*Year FE	No	No	No	Yes
Age FE	Yes	Yes	Yes	Yes
Commuting zone*Occupation FE	Yes	Yes	Yes	Yes
Commuting zone*Year FE	Yes	Yes	No	Yes
Observations	10,184,944	10,184,944	10,184,944	10,184,944
R^2	0.986	0.986	0.993	0.991

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the commuting zone level. Age fixed-effects include one dummy for each year of age of the individual.

Table 2: HHI based on Employment - IV

	(1)	(2)	(3)	(4)
	Log(Wage)	Log(Wage)	Log(Wage)	Log(Wage)
$Log(HHI_{o,z,t})$	-.01999** (.00765)	-.01536* (.008233)	-.04839*** (.00656)	-.05657*** (.00781)
Individual FE	Yes	No	No	No
Establishment FE	Yes	No	No	No
Individual*Establishment FE	No	Yes	Yes	No
Establishment*Year FE	No	No	Yes	No
Individual*Firm FE	No	No	No	Yes
Firm*Year FE	No	No	No	Yes
Age FE	Yes	Yes	Yes	Yes
Commuting zone*Occupation FE	Yes	Yes	Yes	Yes
Commuting zone*Year FE	Yes	Yes	No	Yes
1st Stage	0.7223***	0.7269***	0.6354***	0.6083***
F-Stat	67.8	56.6	364.2	437.6
Observations	10,184,944	10,184,944	10,184,944	10,184,944

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the commuting zone level. Age fixed-effects include one dummy for each year of age of the individual. $Log(HHI_{o,z,t})$ is instrumented by the average of $log(1/N_{o,z',t})$ in all commuting zones z' excluding z and all commuting zones that have a border with z .

Table 3: HHI based on Hirings - OLS

	(1)	(2)	(3)	(4)
	Log(Wage)	Log(Wage)	Log(Wage)	Log(Wage)
$Log(HHI_{o,z,t})$	-.00456** (.00141)	-.00430** (.00188)	-.00398*** (.00133)	-.00391*** (.00090)
Individual FE	Yes	No	No	No
Establishment FE	Yes	No	No	No
Individual*Establishment FE	No	Yes	Yes	No
Establishment*Year FE	No	No	Yes	No
Individual*Firm FE	No	No	No	Yes
Firm*Year FE	No	No	No	Yes
Age FE	Yes	Yes	Yes	Yes
Commuting zone*Occupation FE	Yes	Yes	Yes	Yes
Commuting zone*Year FE	Yes	Yes	No	Yes
Observations	10,170,457	10,170,457	10,170,457	10,170,457
R^2	0.986	0.986	0.993	0.991

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the commuting zone level. Age fixed-effects include one dummy for each year of age of the individual.

Table 4: HHI based on Hirings - IV

	(1)	(2)	(3)	(4)
	Log(Wage)	Log(Wage)	Log(Wage)	Log(Wage)
$Log(HHI_{o,z,t})$	-.02899** (.01241)	-.02368* (.01270)	-.05339*** (.01564)	-.05594*** (.01447)
Individual FE	Yes	No	No	No
Establishment FE	Yes	No	No	No
Individual*Establishment FE	No	Yes	Yes	No
Establishment*Year FE	No	No	Yes	No
Individual*Firm FE	No	No	No	Yes
Firm*Year FE	No	No	No	Yes
Age FE	Yes	Yes	Yes	Yes
Commuting zone*Occupation FE	Yes	Yes	Yes	Yes
Commuting zone*Year FE	Yes	Yes	No	Yes
1st Stage	0.6466***	0.6458***	0.6419***	0.6426***
F-Stat	49.6	37.6	108.9	154.1
Observations	10,170,457	10,170,457	10,170,457	10,170,457

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the commuting zone level. Age fixed-effects include one dummy for each year of age of the individual. $Log(HHI_{o,z,t})$ is instrumented by the average of $log(1/N_{o,z',t})$ in all commuting zones z' excluding z and all commuting zones that have a border with z .

Table 5: IV: Alternative Instrument

	(1)	(2)	(3)	(4)
	Log(Wage)	Log(Wage)	Log(Wage)	Log(Wage)
$\text{Log}(HHI_{o,z,t})$ based on Employment	-.01972** (.00778)	-.01508* (.00831)	-.06016*** (.00737)	-.05258*** (.00608)
$\text{Log}(HHI_{o,z,t})$ based on Hirings	-.02886* (.01240)	-.02341* (.01269)	-.05893*** (.01518)	-.06035*** (.01378)
Individual FE	Yes	No	No	No
Establishment FE	Yes	No	No	No
Individual*Establishment FE	No	Yes	Yes	No
Establishment*Year FE	No	No	Yes	No
Individual*Firm FE	No	No	No	Yes
Firm*Year FE	No	No	No	Yes
Age FE	Yes	Yes	Yes	Yes
Commuting zone*Occupation FE	Yes	Yes	Yes	Yes
Commuting zone*Year FE	Yes	Yes	No	Yes

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors are clustered at the commuting zone level. Age fixed-effects include one dummy for each year of age of the individual. $\text{Log}(HHI_{o,z,t})$ is instrumented by the log of the inverse of the average number of firms ($N_{o,z',t}$) in all commuting zones z' excluding z and all commuting zones that have a border with z .

A Appendix

Table A1: Descriptive statistics - Local labor markets

(1) Year	(2) Mean	(3) SD	(4) Median	(5) Obs.	(6) % HHI=1
HHI based on Employment					
2009	0.0855	0.1430	0.0318	59,066	0.4
2010	0.0923	0.1506	0.0345	59,066	0.6
2011	0.0870	0.1433	0.0336	59,066	0.4
2012	0.0903	0.1484	0.0346	59,066	0.6
HHI based on Hiring					
2009	0.1109	0.1669	0.0473	59,066	6.6
2010	0.1123	0.1657	0.0501	59,066	5.5
2011	0.1072	0.1586	0.0481	59,066	5.1
2012	0.1118	0.1645	0.0495	59,066	5.7

Note: The mean, standard deviation and median value of HHIs reported in cols (2) to (4) are weighted by employment in each local labor market.

Table A2: Monopsony in Local Labor Markets in France

	Unconcentrated (HHI<0.15)	Mildly-concentrated (0.15<HHI<0.25)	Highly-concentrated (HHI>0.25)
HHI based on Employment	83.6	7.1	9.3
HHI based on Hirings	78.5	9.5	12.0

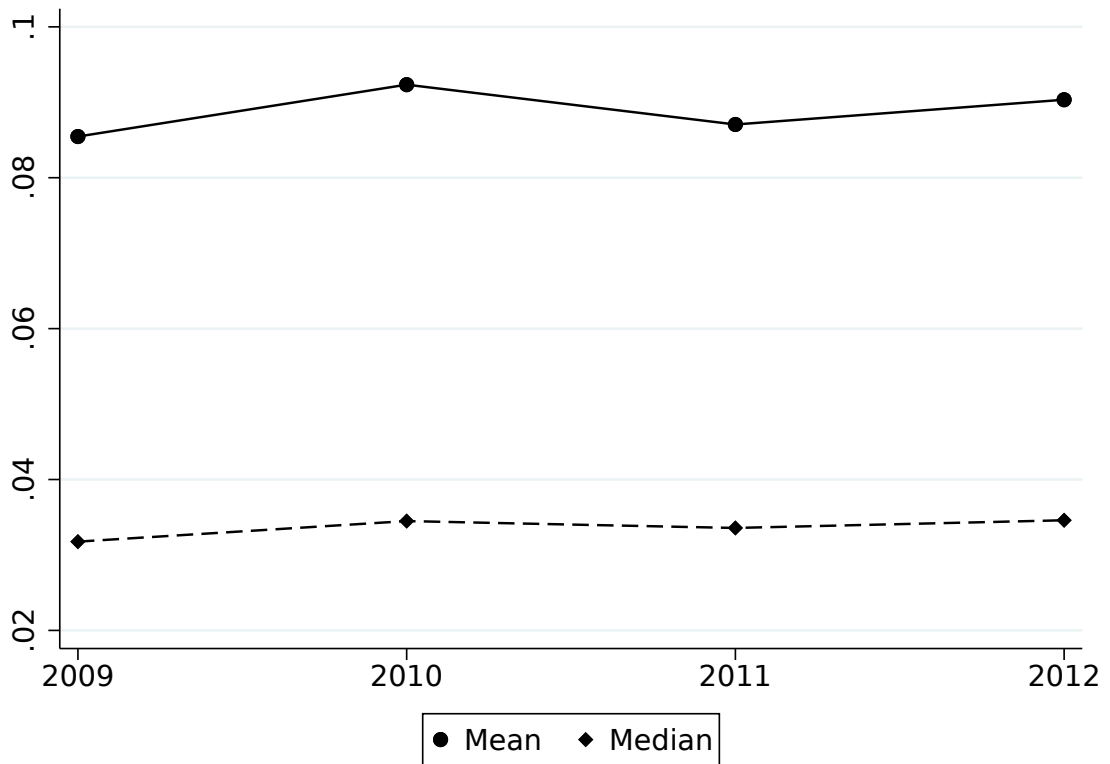
Note: Proportion of local labor markets (weighted by their employment) in the DADS-Postes 2009-2012 according to their level of concentration. Our categorization is similar to the one used by the US Department of Justice.

Table A3: Regression sample - Individual characteristics

Mean	Wage	Men	Age	% Stayers	Observations
All	11.38	49.6	38	79.8	10,184,944
Stayers	11.68	51.3	38	-	8,139,760

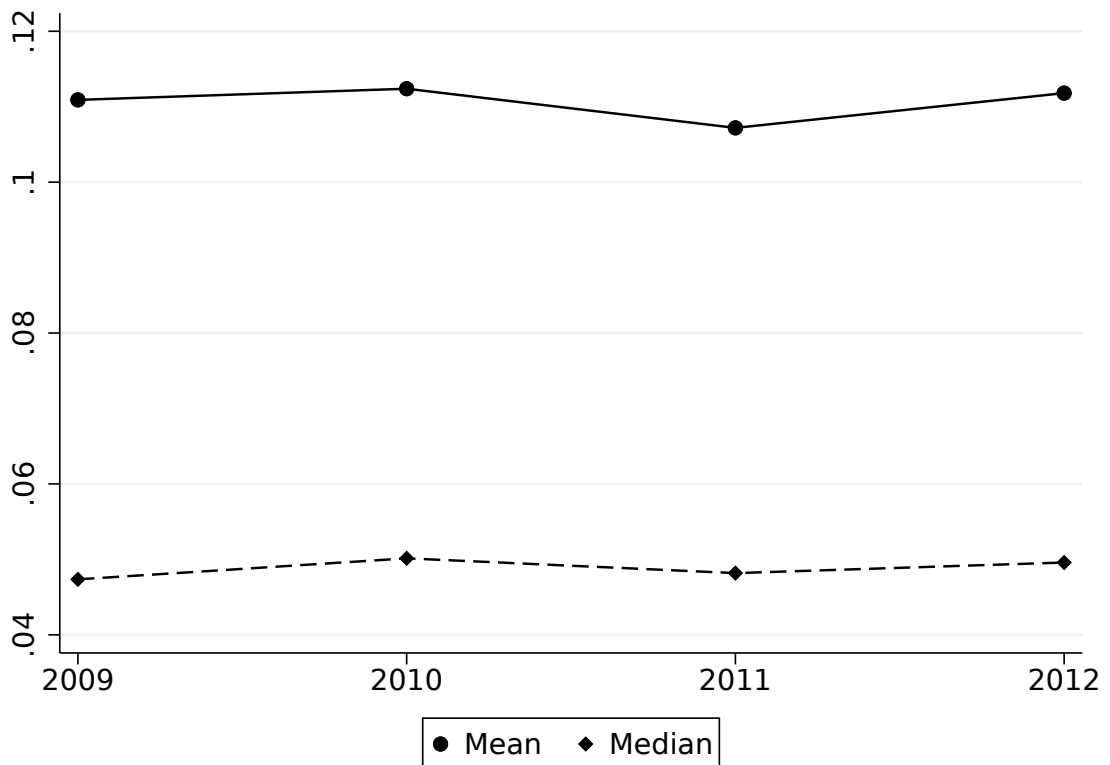
Note: Each observation is an individual-by-establishment-by-year triple. A stayer is a triple observed for at least two years in a given establishment.

Figure A1: Change in labor market concentration 2009-2012: Employment



Note: Average HHI (weighted by employment) by year.

Figure A2: Change in labor market concentration 2009-2012: Hirings



Note: Average HHI (weighted by employment) by year.

Figure A3: Distribution of labor market concentration in 2009: Employment

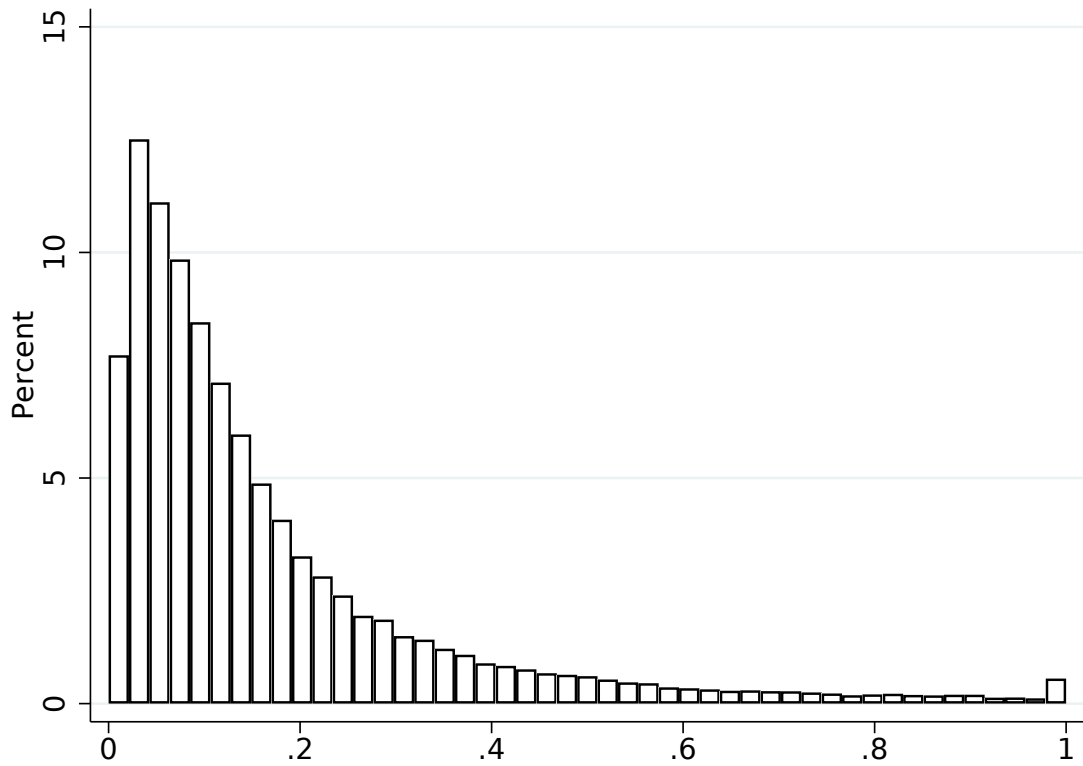


Figure A4: Distribution of labor market concentration in 2009: Hirings

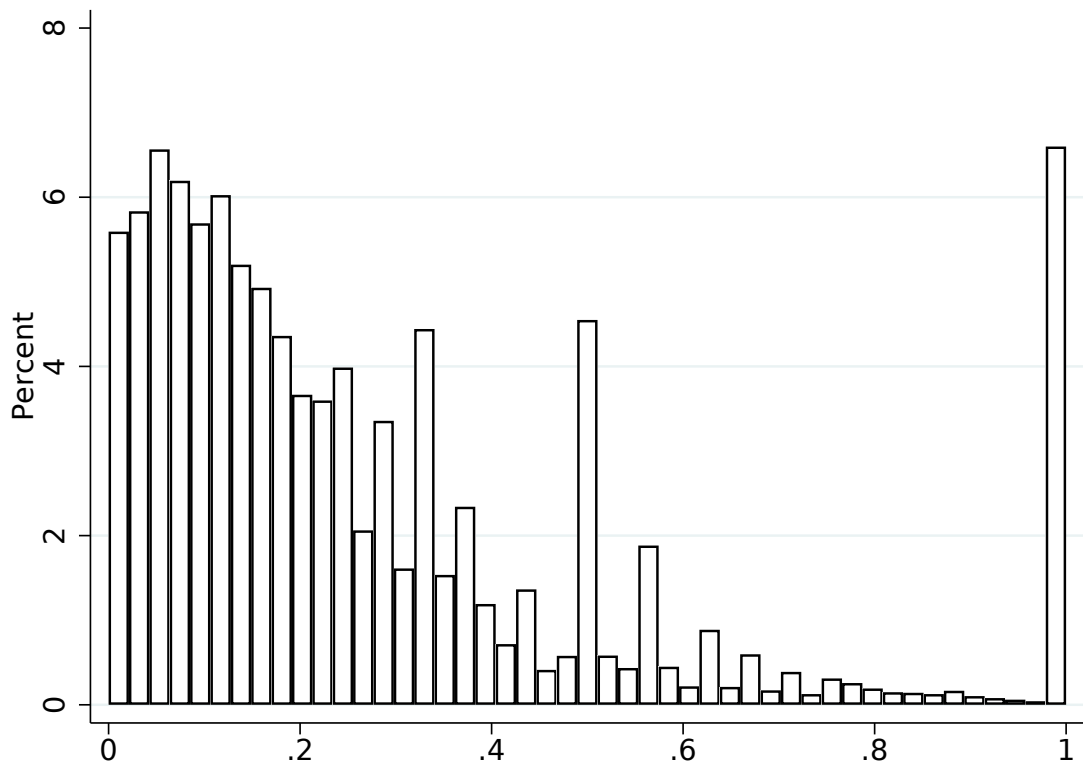
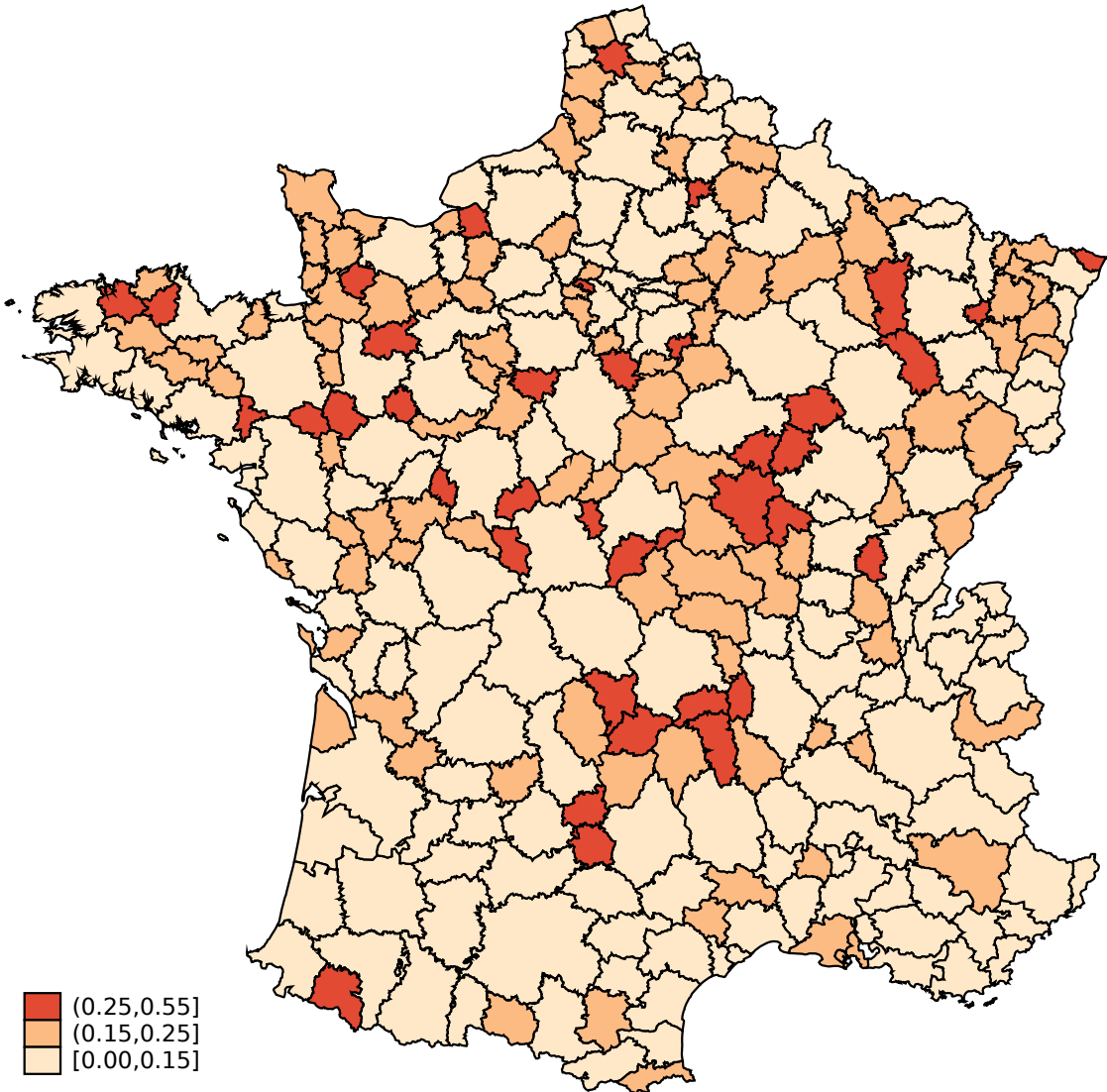
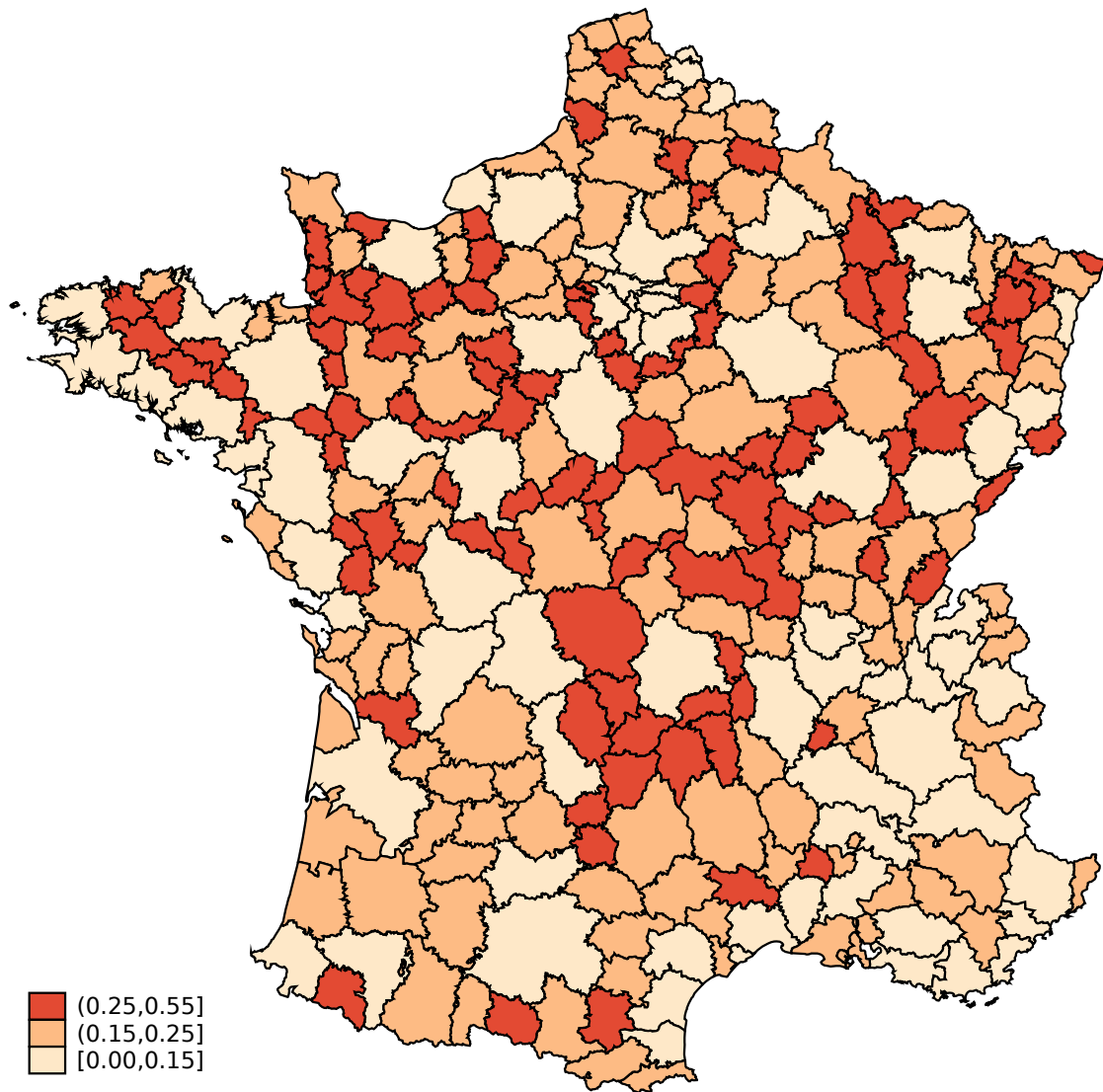


Figure A5: Labor market concentration in French commuting zones in 2009: Employment



Note: Average HHI (weighted by employment) by commuting zone.

Figure A6: Labor market concentration in French commuting zones in 2009: Hirings



Note: Average HHI (weighted by employment) by commuting zone.