

# **Labour market concentration and within-firm inequality: first evidence from firm-level longitudinal data**

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The relationship between local labour market concentration, that is when a few firms control the hiring process in the market, and wages, at the firm level, has been only recently investigated in the empirical literature showing that monopsony power of firms in the labour market is generally related to a lower remuneration of employees (Azar et al., 2020; Benmelech et al., 2020).

It is noteworthy, however, that the empirical evidence provided so far focused on the US labour market only and has not investigated yet the effect of labour market concentration in the hiring process on within-firm wage inequality. In other terms, the intensity of the link between local labour market concentration and wages may vary along the within-firm wage distribution since it can be related to monopsony power in the hiring process of specific categories of employees (i.e., white collars or blue collars), who are generally placed at different points of the within-firm distribution. Moreover, as previously suggested in other works which analyses the relationship between market concentration and the labour share of income, in high-concentrated labour markets, average wage is lower and, consequently, the capital share of income may be higher (Autor et al., 2020; Barkai, 2020).

Therefore, this paper aims at empirically investigating, using Italian administrative employer-employee microdata, the effect of market concentration on within-firm inequality, an issue which, to the best of our knowledge, has not been directly analysed in the empirical literature so far. To this end, by exploiting the richness of the datasets available in the Visitinps project, we aim at combining longitudinal microdata at the firm level with information on the remuneration of employees working in each firm, thus developing a very rich longitudinal employer-employee dataset. We will use administrative INPS archives about private employees (UNIEMENS) linked with the firm's archive to compute within firm's earnings inequality and then, we will merge this

employer-employee dataset with balance-sheet information provided by the commercial archive CERVED, available in VISITINPS from 2004 to 2018.

The advantages of combining these archives are various. First, the INPS archives provide information on the universe of employees working in the private sector so that it is possible to completely estimate within-firm inequality without being forced to focus only on specific subgroups of the workforce or firms. Second, by using administrative archives, rather than survey data, it is possible to substantially reduce measurement errors in workers' earnings. Third, earnings in the INPS archives are not top coded so that, beside estimating earnings dispersion using a summary measure of inequality which takes into account the whole within-firm earnings distribution, it is possible to provide additional estimations of within-firms inequality focusing both on the bottom and the top of the earnings distribution. Furthermore, the employer-employee dataset built by merging INPS and CERVED archives will provide information about specific workers' and firms' characteristics (e.g., type of contract, occupation, gender, firm's location by region or province, industry, firm's size, contractual arrangements) than can be exploited to analyse all potential factors behind the association between labour market concentration and within firm inequality.

Consistently with previous works (Azar et al., 2020; Benmelech et al., 2020), we capture local employer concentration by using the Herfindahl-Hirschman Index (HHI) of firm employment in a given industry and at a local labour market, under the assumption that employees' mobility costs limit their job searches to a given industry and local labour market (Manning and Petrongolo, 2017; Benmelech et al., 2020)

Then, similarly to Friedrich (2020), we summarize overall wage inequality at the firm using the standard deviation of log wages, which can be easily decomposed in within and between components. Furthermore, we also take, in additional analyses, the average wage of different categories of workers to capture between occupation inequality within a firm. Finally, we capture the functional distribution of income, as a further measure of inequality between capital owners and employees, by calculating the wage share at the firm-level as the ratio between the cost of employees and the value added as reported in the balance sheets (Autor et al., 2020). To obtain a measure of the labour cost, we use information taken from the CERVED archive, to estimate the overall labour share within a firm. Given that at firm-level total labour cost can exceed the amount of total value added which can be negative especially during an economic crisis, we will use all available methods to take into account those cases in which the labour share is negative.

In our first estimates, we estimate the effect of labour market concentration on within-firm inequality by either regressing the standard deviation of log wages, the average wage of different categories of employees, or the labour share on the HHI index using OLS and fixed effects estimators.

Then, in order to mitigate potential endogeneity issues due to omitted variable bias, we estimate the effect of market concentration on within-firm inequality, by using two alternative identification strategies. First, consistently with previous works (Azar et al., 2020), we instrument the HHI index with the average of  $\log(1/N)$  in other local labour markets for the same occupation and time period (where  $N$  is the number of firms in the labour market). As suggested by Azar et al. (2020) the use of  $\log(1/N)$  instead of HHI as the instrument should reduce endogeneity problems as  $\log(1/N)$  does not depend on market shares. Specifically, this instrument should capture the variation in market concentration that is not driven by any change in the occupation in the specific local labour market.

As a second identification strategy to reduce endogeneity issues due to potential confounding factors and functional form misspecification, we use a double machine learning approach (Double ML) recently proposed by Chernozhukov et al. (2018). Double ML allows to control for an extremely large number of covariates (i.e., firm level characteristics, firm fixed effects, year fixed effects, high-grade polynomials, and interactions between regressors, firm-specific linear, quadratic and cubic trends<sup>1</sup>) for identifying causal effects, by comparing the out-of-sample prediction performance of different ML algorithms. Double ML method has been recently exploited to estimate the effect of monopsony on online labour markets (Dube et al., 2020).

## References

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<sup>1</sup> For those unfamiliar with ML algorithms, note that in the high-dimension case these algorithms allow to include a number of control variables which is higher than the number of observations in the sample.

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