Labor market power measure: The degree of market power in labor markets in Greece and its effects on wages

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Abstract

The aim of this study is to examine the impact of monopsony power on wages. Having labor market data from the Hellenic Statistical Authority, Structure of Earnings Survey (2018) and product market data from ICAP (2018) with information about employees, plants, firms and firms' performance respectively, we were able to construct market power measures with respect to labor and product market concentration. We implemented an ordinary least squares model which estimates the impact of market power on wages and then used a fixed effects model in order to absorb the unobserved heterogeneity of firms and plants. These two models were examined in different wage groups, with two quantile regressions. This thesis' findings are confirmed by the economic literature, we find that labor market power is negatively correlated with workers' hourly wages. The estimations of labor market power are consistent and robust throughout the implementations, whereas the overall positive effect of product market power on hourly wages, turned out to be negative in specifications with sector dummies included. Lastly, the impact of monopsony power affect highly paid workers to a greater extent.

Keywords: Labor market concentration; Monopsony; Market power

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was submitted by **Andreas Moustakas, SID 1067656**, in partial fulfillment of the requirements for the degree of Master of Science in «*Applied Economics & Data Analysis*» at the University of Patras and was approved by the Dissertation Committee Members.

I would like to dedicate this thesis to my family and my dear friend Christina for supporting me in this venture, as well as my colleague Andreas, with whom we shared the same concerns and helped each other out.

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Περίληψη

Σκοπός της παρούσας μελέτης είναι να εξετάσει την επίδραση της μονοψωνιακής δύναμης στους μισθούς. Έχοντας στοιχεία για την αγορά εργασίας από την Ελληνική Στατιστική Αρχή, στα πλαίσια της Έρευνας Διάρθρωσης των Αποδοχών (2018) και στοιχεία για την αγορά προϊόντων από την *ICAP* (2018) με πληροφορίες για τους εργαζόμενους, τις εγκαταστάσεις, τις επιχειρήσεις και τις επιδόσεις των επιχειρήσεων αντίστοιχα, κατασκευάσαμε μέτρο που υπολογίζει την δύναμη αγοράς σε σχέση με τη συγκέντρωση στην αγορά εργασίας και στην αγορά προϊόντων. Εφαρμόσαμε ένα υπόδειγμα ελαχίστων τετραγώνων το οποίο εκτιμά τον αντίκτυπο της δύναμης της αγοράς εργασίας στους μισθούς, στη συνέχεια χρησιμοποιήσαμε ένα υπόδειγμα σταθερών επιδράσεων προκειμένου να απορροφήσουμε τη μη παρατηρούμενη ετερογένεια των επιχειρήσεων και εγκαταστάσεων. Τα δύο αυτά υποδείγματα εξετάστηκαν σε διαφορετικές ομάδες μισθών, με δύο παλινδρομήσεις ποσσοστού. Τα ευρήματα της παρούσας διατριβής επιβεβαιώνονται από την βιβλιογραφία, διαπιστώνουμε ότι η δύναμη της αγοράς εργασίας συσχετίζεται αρνητικά με τα ωρομίσθια των εργαζομένων. Οι εκτιμήσεις της ισχύος στην αγορά εργασίας είναι συνεπείς σε όλες τις εφαρμογές, ενώ η συνολική θετική επίδραση της ισχύος στην αγορά προϊόντων στα ωρομίσθια, αποδείχθηκε αρνητική στις προδιαγραφές με την προσθήκη των ψευδοδεικτών του κλάδου. Τέλος, οι επιπτώσεις της μονοψωνιακής ισχύος επηρεάζουν σε μεγαλύτερο βαθμό τους υψηλά αμειβόμενους εργαζόμενους.

Λέξεις κλειδιά: Συγκέντρωση αγοράς εργασίας, Μονοψώνιο, Δύναμη αγοράς

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1 Introduction

This thesis engages the matter of monopsony power and its impact on wages. Monopsony power or labor market power outlines the ability of employers in setting wages, they pay employees less than their marginal productivity, as suggested by Manning (2013). We expect to notice significant impact of labor market power on wages, as highly concentrated labor markets have the ability to exploit workers (Berger, Herkenhoff and Mongey, 2022). Labor market power could derive from various sources, such as labor market concentration, search frictions and moving costs. In this thesis, we examine labor market power with respect to labor market concentration. We also examine the impact of product market concentration on wages, i.e. the effect of firms' performance on wages.

We used two data sources in order to include both labor market and product market information. The Hellenic Statistical Authority's Structure of Earnings Survey (2018) provided the labor market data, and ICAP (2018) provided the product market data. With these two datasets combined, we implemented two market power measures for both labor and product market concentration. These measurements were computed with the Herfindahl-Hirschman index, as it is commonly used in measuring concentration (Popp, 2021; Hannan, 1997). With market power computed, we were able to structure an empirical model, which would examine the impact of labor market concentration on wages. Our empirical strategy is as follows, the baseline ordinary least squares model, which includes the market power measurements, employee-level data, firm-specific and plant-specific information as well as additional dummies of occupation, sector of economic activity and region. We further transform the baseline model into its fixed effects variation, in which firm-specific information is omitted in order to absorb any political or operational issue of each company. Lastly, we implemented two quantile regression models based on the baseline and fixed effects models, so as to capture the effect of market power on different wage groups.

This study's findings indicate that labor market concentration has a detrimental effect on employees' salaries. Companies with high labor market concentration appear to underpay their employees. Based on their market power, firms exploit their workforce by paying them lower salaries than they deserve. Moreover, it turned out that the concentration of product market affects wages positively, however, when sector of economic activity is included in the fourth specification of the baseline model, the effect of product market concentration becomes negative. In addition, fixed effects results also confirm the aforementioned, there is a negative correlation between labor market power and wages. The results of control variables throughout these methods, are also confirmed by economic literature as they were estimated as expected. Quantile's regression results, suggest that market power effects have greater extent to employees with higher hourly wages, they face more wage losses than those with lower hourly wages. With such an approach, we are able to analyze monopsony power extensively, as we estimate our models with various robustness tests regarding employee, plant and firm level clustered standard errors. With unobserved heterogeneity also absorbed, this analysis concludes to its findings with respect to possible operational links among workers, firms, plants and regions.

The importance in understanding market power in the labor market have been clarified many times by monopsony literature. Card (2022) states that, since wages are determined by the market, it is difficult

to believe that they could be high. The notion that firms exploit workers, is an issue with great significance that affects an extensive amount of people. Employees welfare and quality of life are directly related with their receiving wages (Ferrer-i Carbonell, 2005). Thus, it is crucial that employees wages should be set accordingly with their marginal product and not be affected by the potential labor market power of their working establishment. There could be numerous implementation regarding monopsony on wages, such as minimum wage, unions, job frictions etc. Examining monopsony power could raise significant suggestion for relevant policies, as it tackles many issues.

This thesis could be consider as an empirical study which grasps monopsony power effects on workers' wages and offer insights which are confirmed by economic literature. Recognizing the vital role of Manning (2013) in laying the foundations for monopsony dynamics and its implications on wages, we contribute by offering a market power measure based on Popp (2021) and by examining labor market power on wages as well as product market power, as we were inspired by Nickell (1999). Additionally, the results of this thesis align with literature's findings examining labor market power on wages (Berger, Herkenhoff and Mongey, 2022; Azar, Marinescu and Steinbaum, 2022; Guanziroli, 2022; Ransom, 2022; Boal and Ransom, 1997). The discussions of Card (2022) indicated that wage formation should be addressed by labor economists, if employers set wages, it should be hard to believe that they could be high, which acted as a stimulant for our investigation.

The structure of this work is the following. In the next Section 2 we examine the literature, in 3 we present the data, provide summary statistics and define the market power measure. The adopted empirical strategy is presented in Section 4 and in 5 we present and discuss the results of the econometric models. Finally, Section 6 summarizes and concludes.

2 Literature

2.1 Definitions

In this section, we attempt to define monopsony power and examine its effects on wages. We next quickly examine any potential links to the product market before identifying which of the labor and product markets has the ability to affect wages.

Monopsony power, also known as labor market power, is the state where a company has the ability to exploit workers by controlling wages and paying them below their productivity levels, as defined by Berger, Herkenhoff and Mongey (2022). Berger et al. (2023) explained that one of the reasons why this phenomenon occurs is due to the fact that many local labor markets are dominated by a small number of companies, as a result, workers have limited alternatives and tend to compromise with the given wages. Ashenfelter et al. (2022) stated that in firm's wage-setting power discussions, many people instinctively include the matter of how many employers correspond to employees. Examining monopsony power with respect to labor market concentration and workers' wages has been a highly assessed topic which has been rekindled in recent literature. However, the notion of monopsony power derive from numerous sources, like moving costs and labor market frictions. Ransom (2022) has examined market power with

these aspects through a dynamic structural model, with which it was found that moving costs and search frictions are indeed determinants of mononpsony power that raise hurdles on workers.

2.2 Labor market power on wages

As it has also been suggested by Berger, Herkenhoff and Mongey (2022), labor market power stands up for a company's potential ability to exploit workers and result in significant welfare losses. The power imbalance between employers and employees in the labor market has recently attracted attention, without a doubt, there are significant monopsony power components in labor markets (Manning, 2021). As it was first presented by Robinson (1969), monopsony is referred to as a one buyer's market. Undergraduate textbooks have highlighted Robinson's investigation of monopsony in the labor market. However, in conventional presentations of the notion, the assumption of a single customer has frequently been regarded with scepticism. Card (2022) believes that Robinson (1933)'s framework, which focused on extreme market imperfections such as "perfect" monopolies and "perfect" monopsonies, may have contributed to why the idea for a company with a combination of price-setting and wage-setting authority did not take off. The depths of the Great Depression were the period Robinson put forth the monopsony model, and the economic climate did not favour the adoption of her views. As the concept of labor-starved companies, in contrast, has grown in popularity and relevance in the modern economy, the idea of monopsonistic enterprises actively seeking labor becomes more tempting and applicable as labor markets become tighter and unemployment rates fall. Monopsony is now understood to include situations when there is more than one buyer. Nowadays, the term labor monopsony is used to refer to models in which different businesses have to deal with upward-sloping labor supply curves (Boal and Ransom, 1997). Firms are defined by their ability to determine wages in the labor market in simple monopsony models. Instead of accepting the wage as given in a perfectly competitive labor market, a monopsonistic firm has the ability to choose the given wages.

In order to comprehend the role of labor market power, Card et al. (2018) underline the need for a method that takes into account choice heterogeneity, search-and-matching frictions, and job ladders. Berger et al. (2023) propose a theory of monopsony that takes into account the firm granularity, search frictions, and worker-firm specific preference heterogeneity. They make use of Norwegian worker-firm data to quantify their theory about wages, job flows, and welfare. The wage markdown—the difference between a worker's salary and their marginal product—is also examined, as are interactions among the three monopsony sources that affect these variables. They also examine how monopsony power affects pay inequality and how local labor market concentration and factors like wages, less wage variation, and job flows are related. Their findings suggest that various sections of the wage markdown can be attributed to amenities, duopsonistic wage bargaining, and search frictions. They found negative correlation between labor market concentration and wages. They also came up that labor market concentration leads to smaller variations in wages, fewer job shifts within organizations, and decreased job searching.

A broad review of the economic literature's growth on labor market monopsony has also been given by Manning (2021), starting with significant contributions like Manning (2013) and Boal and Ransom

(1997) indicating that labor market frictions are difficult and expensive for workers. The employment-share weighted averages of the pay elasticity are related to the Herfindahl-Hirschman Index, this work follows a widely used indicator of market concentration in antitrust analysis. Bunting (1962) first presented the idea of calculating labor market concentration ratios, however, Azar, Marinescu and Steinbaum (2022) brought it back. They discovered that most labor markets displayed high concentration levels, as indicated by HHIs surpassing the threshold set by the Department of Justice/Federal Trade Commission. They defined labor markets as a mix of 6-digit occupations and commuting zones within a quarter. Larger labor markets, however, were shown to have lower levels of concentration. This pattern was confirmed by another study by Azar et al. (2020), which utilized a different dataset.

Significant labor mobility exists across sectors, occupations, and international borders. Bohne and Nimczik (2018) asserts that businesses are seen as being a part of the same labor market if there are sizable worker flows between them. This innovative method of calculating labor market concentration is based on patterns of worker mobility that can be seen. Another helpful strategy is provided by Danieli and Caldwell (2018), who look at the kinds of tasks that observationally equivalent workers conduct. Consumers can typically purchase the majority of things anytime they want due to inventory availability, which is one main contrast between the product and labor markets. Jobs, on the other hand, are not as readily available. A vacancy-based measure may more accurately depict the opportunities accessible to workers at given time if vacancies are hard to come by. However, as the majority of employees do not need to obtain employment right once, problems about the ideal time frame during which vacancy concentration should be evaluated are raised.

For a very long time, the minimum wage was the main area in which the effects of the concept of monopsony in labor markets were seen. Monopsony served as a strong justification in empirical study, which was first conducted in the early 1990s by Card and Krueger (1995), who found that raising the minimum wage does not necessarily result in job losses. The idea that minimum wage increases may not have negative employment consequences was further supported by meta-studies like Belman and Wolfson (2014) as well as more recent US research like Cengiz et al. (2019). There are limitations on how high minimum wages can be raised before negative employment impacts could occur, despite the monopsony theory's prediction that raising them within a specific range wouldn't result in a large loss of jobs. For instance, Kreiner, Reck and Skov (2020) discovered significant negative effects linked to high teenage minimum wages in Denmark.

Although there are similarities between the literature on industrial organization and labor monopsony, there are also some significant differences. The labor market, dynamics are of greater significance since workers shift employers less frequently than customers switch product brands (Boal and Ransom, 1997). Instead of focusing on the product market, wage formation should be analyzed in relation to the labor market, and wage setting talks should involve labor economists (Card, 2022).

2.3 Measuring labor market concentration

In order to examine the dynamic relation involving labor market power and wages, it is essential to represent this phenomenon with an accurate measurement. Economic literature typically uses the labor supply elasticity as a key proximate for monopsony in order to quantify labor market power; an elasticity below infinity is a signal that employers have wage-setting power and can pay employees less than their marginal productivity (Manning, 2013). However, there is a strong belief that monopsony power derive from the concentration of occupations in an establishment, thus, it is also suggested that the measurements of the Herfindahl index can represent monospony power (Popp, 2021). We expect to notice significant impact of "labor market power" on wages, as highly concentrated labor markets have the ability to exploit workers (Berger, Herkenhoff and Mongey, 2022). As Manning (2021) proposes, labor supply elasticity is considered to compose a more direct way in order to assess the importance of monopsony. Whereas, Herfindahl-Hirshman index is a common Implementation which is known for its effectiveness and ease (Popp, 2021).

Elasticity of labor supply in wage functions has been utilized in numerous works. Azar, Berry and Marinescu (2022) used data from a job posting site and estimated the wage elasticity of applications. Having the labor market defined by a SOC-6 occupation and a commuting zone, their nested logit model suggested that workers would not apply to jobs that are far away within their commuting zone and considerably less outside their commuting zone. Having the relationship between vacancy elasticities and worker supply elasticities examined, they also found out that the median wage markdown is .21, which means that workers' productivity is 21% greater than their wages, which is an example of employer's substantial market power.

Another significant implementation using wage elasticity of labor supply to represent firms' monopsony power has been done by Bachmann, Demir and Frings (2022), where they examine the monopsony impact on workers with different tasks. The structured empirical model was inspired by Burdett and Mortensen (1998) in which they involved the monopsony power measurement created by Manning (2013). Their analysis' results suggest that workers with high routine tasks are exposed to higher wage elasticity of labor supply than those employed in non routine jobs, thus, non routine workers face greater monopsony effects and get more decreased wages.

Another measurement of labor market concentration has been utilised by the recent work of Popp (2021), in which he computed labor market concentration with the Herfindahl-Hirshman index in order to examine wage dynamics. The measurement takes into account the number of a firms' employees in relation to the total number of employees in the corresponding market. Higher levels indicate greater concentration, with HHI values ranging from zero to one. This work uses social security data from Germany to determine measures of employee concentration on companies, which is a crucial component of monopsony power. The analysis identifies labor markets as pairings of industries and commuting zones for the period between 1999 and 2017. Having this measurement computed, the author is able to examine whether businesses in concentrated labor markets use their monopsony power by lowering both wages and employment prior to the adoption of these minimum wages. The main subject of this

paper is the argument over the proposed rise in the federal minimum wage from $7.25 to $15 per hour. While skeptics argue that it reduces employment, proponents believe that raising the minimum wage benefits low-paid workers. Economists have traditionally argued that firms respond to higher minimum wages by reducing employment based on the idea of competitive labor markets. However, there is conflicting empirical evidence regarding how minimum wages affect employment. While some research find negative employment consequences, others report minimal or no employment effects. The idea of corporations' monopsony power is referenced in several studies that find little employment impact. Monopsony power occurs when workers have limited alternatives and firms can push wages below their productivity levels. In this case, a reasonable minimum wage can prevent monopsonistic exploitation without having a negative effect on employment. The monopsony argument, however, receives little empirical evidence.The study comes to the following conclusions after examining the effects of sectoral wage floors. First, minimum wages have a detrimental impact on employment in slightly competitive or concentrated labor markets. Second, when labor market concentration rises, the adverse effect becomes less pronounced. And lastly, establishing minimum salaries near to equilibrium rates can even have a positive impact on employment in highly concentrated or monopsonistic sectors. This Herfindahl-Hirschman index of the labor market concentration reveals that 51.8% of all labor markets show high concentration, which is indicative of significant monopsony power as well as that 12.9% of workers are impacted by this concentration. The degrees of concentration vary significantly between various businesses and commuter zones. With an average HHI of roughly 0.35 over the previous 20 years, Germany's labor market concentration has still remained very constant.

(Azar, Marinescu and Steinbaum, 2022) also intended to measure the degree of labor market concentration in the United States across a range of occupations and commuter regions. They used Herfindahl-Hirschman index which, is a classic metric, so as to assess labor market concentration. Although concentration analysis can be used to analyze both buyer and seller power, it is acknowledged that labor markets have particular characteristics that call for adjustments to the conventional merger rules. Labor markets are different from product markets in that job seekers must receive an offer of employment, whereas buyers can freely choose which things they want to buy. The authors estimate market shares in regional and occupational labor markets using data from CareerBuilder.com, one of the largest online job boards in the United States. According to the research, labor markets are often very concentrated, with the degree of concentration varies among industries and regions. Examining the potential confounding effect of labor productivity, the negative association between labor market concentration and average posted salaries is examined. The relationship between concentration and wages is estimated using a variety of regression models, including ordinary least squares and instrumental variables regressions. The findings consistently show that lower wages are connected with more labor market concentration, demonstrating the existence of labor market power as well as the decreasing impact on wages.The study conducts robustness tests to support the conclusions and addresses potential endogeneity concerns. The significant impact of concentration on salaries still exists after accounting for the tight labor market and the number of jobs. Alternative indicators of labor market concentration also produce consequences on posted salaries. By offering a complete measure of labor market concentration for several markets in

the US, this research considerably contributes to the economic literature. While earlier research examined the connection between product market concentration and the labor share, this study focuses on labor market concentration and how it relates to posted wages. The analysis differs from conventional monopsony literature, which mainly focuses on the elasticity of the labor supply for specific enterprises. Instead, this research emphasizes market-level concentration in labor markets and its implications on wages.

2.4 Product market power on wages

Numerous works in economic literature investigate wage formation in relation to factors within the product market. Arai (2003) focuses on how wages could be affected by product market performance. With worker-level and firm-level data from Sweden, this work examines among others the connection between wages and profits. It is found that profits per employee have a favorable impact on hourly wages in the Swedish market. This suggests that businesses that are more profitable typically give their employees larger wages. In addition, factors such as firm size and the capital-labor ratio are also positively correlated with workers' wages. However, with worker-level data added to the analysis the effect of the aforementioned factors seems to decrease. Workers' level of education and experience adds valuable information to the analysis, for example, the impact of product market factors fades from .096 to .044 for profits/employee coefficient. This work contributes significantly on the wage formation topic by providing insightful information on the interaction between product market characteristics and wages.

Another work examining this matter, also suggests that product market outputs have a significant impact on workers' wages (Nickell, Vainiomaki and Wadhwani, 1994). The authors set out to determine if companies with greater product market power pay employees more than those with less power. The primary data source includes an imbalanced panel of 814 UK manufacturing enterprises from the years 1972 to 1986, extending the very modest sample size utilized by Nickell and Wadhwani (1990). This work examines the possible product market power impact on wages, as well as, the extent of this effect on larger firms. The measurement of product market power has been conducted by market shares. It was found that product market power does indeed have a positive impact on wages and that large firms face this effect in greater extent.

Nickell (1999) has also examined whether monopoly power in the product market impacts labor market factors, such as performance and wages. The idea behind possible links of product market performance and wages derives from the fact that a portion of the generated profits of a monopoly market could be translated in higher wages. Two approaches have been used in economic literature for wage analysis in respect to product market, they investigate wages with related variables in employee-level, such as profits and added-value, and there are many works which relate wages with firm-level performance and structure, such as market share and level of competition. Bentolila and Dolado (1994) found a positive correlation between wages and market share, as it was also suggested by Van Reenen (1996). Collective bargaining will result in employees sharing in monopoly rents in the form of increased salaries, as it was suggested. In the absence of unions, this rent sharing would probably be less likely

to happen. The findings also point to a negative correlation between product market dominance and productivity levels.

3 Data and summary statistics

3.1 Data sources

The data used for this analysis come from the Hellenic Statistical Authority, which were created in the context of Structure of Earnings Survey (2018). Information about employees working in Greece as well as data from firms were gathered in order to examine the impact of labor market power of Greek establishments on employees' hourly wages. Also, a dataset from ICAP (2018) which includes product's market performance was used, the data structure will be presented in detail in the next paragraphs. As mentioned,the Hellenic Statistical Authority provided the data for this analysis, which were generated as part of a labor force survey. Data from businesses and information about employees working in Greece were collected and formed the labor's market dataset. Additionally, information about markets performance were obtained by ICAP and represent the product's market dataset. These two datasets contain information for the 2018 time frame and include 25.417 observations. We combined the two datasets with the sector of economic activities in a 2-digit format (Nace Rev.2).

In this paragraph we present the datasets, the variables as well as the control variables which will be considered throughout the analysis.The dependent variable of the analysis which we are trying to examine is the hourly wage of the workers and its being used in accordance with some key independent variables and control variables. The sample is consisted by 25.417 workers within the age group 18-64 of both genders. There is information on whether the worker was born in Greece or outside Greece, the educational level of the worker, a factor of major importance in terms of wage formation, which we have divided in three levels, Primary, Secondary and Tertiary. The dataset also includes the type of contract between plants and worker, National contract, Sectoral contract, Firm contract and No contract. There is also a variable which divides the part time workers as well as those with temportary contract, which indicates short-term agreements. The occupation for each worker is also included, which are as follows, Managers Professionals, Technicians and Associate Professionals, Clerical Support Workers, Services and Sales Workers, Craft and Related Trades Workers, Plant and Machine Operators and Assemblers and Elementary Occupations. Another control variable is the sector of economics activity the worker is involved, which are as follows, Mining and quarrying, Manufacturing, Electricity, gas, steam and air conditioning supply, Water supply: sewerage, waste management and remediation activities, Construction, Wholesale and retail trade: repair of motor vehicles and motorcycles, Transportation and storage, Accommodation and food service activities, Information and communication, Financial and insurance activities, Real estate activities, Professional, scientific and technical activities, Administrative and support service activities, Education, Human health and social work activities, Arts, entertainment and recreation and Other service activities. And lastly, the dataset include the Regions of the workers, Eastern Macedonia & Thrace, Central Macedonia, Western Macedonia, Thessaly, Epiruss, Ionian Islands,

Western Greece, Central Greece, Peloponnese, Attica, Northern Aegean, Southern Aegean and Crete.

3.2 Market power measurements

In order to include labor market power into the analysis, we calculated the Herfindahl-Hirschman index of occupations for each firm in comparison to the overall number of employees in a market. This index was utilized due to its effectiveness and simplicity of implementation (Rhoades, 1993). Herfindahl-Hirschman index constitutes standard practice for both labor market (Popp, 2021) and product market concentration as it is widely used. Having this index computed we are able to structure an empirical model that gives us an insight of labor market concentration's impact on wages.

The HHI for the labor market is calculated as follows:

$$HHI^{L}_{jor} = \left(\frac{L_{jor}}{\sum_{1}^{j} L_{or}} \right)^{2} \tag{1}$$

where HHI^{L}_{jor} is the concentration of labor market computed with the Herfindahl-Hirschman index for the firm j, occupation o in region r. L_{jor} is the number of employees in firm j with the occupation o in the region r. $\sum_{1}^{j} L_{or}$ refers to the total number of employees with the occupation o in the region r.

As far as the product market measurement is concerned, the same practice is followed, we computed the Herfindahl-Hirschman index of net sales for each firm in comparison with the overall net sales of the corresponding market.

The HHI for the product market is calculated as follows:

$$HHI^{P}_{js} = \left(\frac{S_{js}}{\sum_{1}^{j} S_{s}} \right)^{2} \tag{2}$$

where HHI^{P}_{js} is the concentration of product market computed with the Herfindahl-Hirschman index for the firm j in sector s. S_{js} is the net sales of the firm j which is in the sector s. $\sum_{1}^{j} S_{s}$ refers to the total number of net sales of all firms in sector s.

Having the equation 1 and equation 2 computed, we are able to comprehend some key insights about both labor and product market effects on wages.

3.3 Summary statistics

The summary statistics of the variables implemented in the analysis are presented in Table 1. The mean hourly wage of the workers is 8.944 euros, while the standard deviation is 10.662, indicating that there is a substantial wage disparity between them. There is a wide range of wage levels, with the smallest observed wage being the minimum hourly wage of 3.52 euros and the highest reported wage being

935.48 euros. The next variable measures the level of labor market concentration. With a standard deviation of .022, the mean concentration is incredibly low at .003. The values range from 0 to .5. Whereas, the product market seems to be more concentrated than the labor market. The mean product market concentration is found to be .114 with a standard deviation of .227, the values vary from .002 to 1, where .002 is almost a fully competitive market and the value 1 is a monopoly, a fully concentrated market.

As far as the employee-level data are concerned, we can see that the workers' age distribution takes values from 18 to 64, the mean age is 40.988 years, with a standard deviation of 9.816. About the gender of the workers, the 58% correspond to male workers, whereas the 41.9% to women, indicating that there is a fairly equal number of men and women in the workforce. Those who were born in Greece make up 92.4% of the labor force, while those who were born abroad make up the remaining 7.5%. The dynamics of the labor market are significantly influenced by education levels as well. In our dataset, 4.2% of people have obtained an elementary education, 54.4% have completed secondary education, and 41.2% have university degree. In addition, 11.8% of employees work in part time jobs and the 11.1% have a temporary contract.

Number of employees, which is a firm-specific variable, indicates that the mean number of employees in a firm is 906.434 with a standard deviation of 2734.042, the minimum and maximum number of employees is 8 and 21,874 workers, respectively. The plant-specific variable, is the type of workers' contract, which is the agreement made between worker and the plant. With a percentage of 53.5%, "National contract" is the most frequent type of contract, "Sectoral contract" at 20.5%, "Firm contract" at 22.0%, and "No contract" at .38%. Part time workers consist the 11.8% of the human capital and 11.1% of the total workers have a temporary contract.

Some other additional dummy variables used in the analysis is the distribution of occupations, the sector of economic activity and the region. The labor market's distribution of occupations offers significant information for wage formation. "Managers" consist the 3.3% of the workers, "Professionals" 12.1%, "Technicians and Associate Professionals" 7.4%, "Clerical Support Workers" 27.9%, "Services and Sales Workers" 17.7%, "Craft and Related Trades Workers" 6.4%, "Plant and Machine Operators and Assemblers" 9.5% and "Elementary Occupations" the rest 15.4% of the total workforce. The industry of economic activity distribution is as follows, "Manufacturing" 26.5%, "Electricity, gas, steam and air conditioning supply" .4%, "Water supply: sewerage, waste management and remediation activities" .9%, "Construction" 3.9%, "Wholesale and retail trade: repair of motor vehicles and motorcycles" 17.4%, "Transportation and storage" 8.2%, "Accommodation and food service activities" 6%, "Information and communication" 6.3%, "Financial and insurance activities" 6.1%, "Real estate activities" 1.2%, "Professional, scientific and technical activities" 5%, "Administrative and support service activities" 8.2%, "Education" .5%, "Human health and social work activities" 5.2%, "Arts, entertainment and recreation" 1.7% and "Other service activities" 1.6%. The regions in which the workers are located are as follows, "Eastern Macedonia & Thrace" 3.3%, "Central Macedonia" 11.8%, "Western Macedonia" .7%, "Thessaly" 4.3%, "Epirus" .9%, "Ionian Islands" .7%, "Western Greece" 2.4%, "Central Greece" 2.6%, "Peloponnese" 2.1%, "Attica" 63.4%, "Northern Aegean" .6%, "South Aegean" .4% and "Crete" 6%.

3.4 Market power and wages

In order to get an additional understanding in the dynamic relation between product/labor market concentration and wages, we clustered the labor and product market concentration measurements in three groups, low concentration, average concentration and high concentration. The labor market's low concentration group denotes complete lack of concentration, medium concentration refers to levels up to the top 25% and high concentration denotes the remaining values. The groups of product market concentration were divided in accordance with the E.U. Commission (2004) guidelines, low (.0-.1), medium (.1-.2) and high levels of concentration (.2-1.0). We then used key statistical measures of wages in each group so as to examine if there is a possible relation between labor and product market concentration with wages. Table 2 suggest that the higher the labor market concentration the lower the wages, as the mean hourly wage decrease throughout the labor market concentration levels. The hourly mean wages for each level are as follows, 9.665 in low labor market concentration, 9.127 in average labor market concentration and 7.872 in high labor market concentration. Whereas, the case for the product market seems to be the opposite. The mean earnings increase throughout the product market concentration levels. The hourly mean wages for each level are as follows, 8.278 in low product market concentration, 9.733 in average product market concentration and 12.736 in high product market concentration. Out of table 2, we get the understanding that higher labor market concentration is related with lower wages and higher product market concentration is related with higher wages, on average. As recent labor market literature suggest, the wage formation should be analyzed in relation to the labor market rather than the product market and that labor economists should participate in wage setting discussions (Card, 2022). Whereas, it is also found that firms with bigger size tend to provide higher wages (Pull, 2003).

This subsection expands our understandings about the relation between labor market concentration with wages and product market concentration with wages, as it is important to investigate what factor best explains wage formation. Figure 1 presents the linear fit of labor market concentration (HHI) with the raw data of hourly wages. Clearly, it seems that the line of HHI for labor market substantially aligns with wages, as it captures the trend of the raw data. Throughout the whole range of values, both the HHI curve and wages have a decreasing trend. Regarding the concentration of the product market, figure 2 represents the linear fit of product market concentration with the raw data of hourly wages. The HHI line for the product market has an increasing trend, and does not accurately capture the direction of hourly wages raw data. These figures, (1 and 2) have given us a heads-up for the analysis regarding the connections between labor/product market concentration and wages. The takeaways of this subsection is that labor market concentration can explain wage formation accurately, unlike product market concentration, where wages do not have a connection with it.

3.5 Market power and minimum wage

As the topic of labor market power and product market power with minimum wage has been highly linked in the economic literature (Azar et al., 2019; Cengiz et al., 2019; Belman and Wolfson, 2014), we implemented a minimum wage ratio measure, in which the hourly wage of a worker is divided by

the minimum wage. If a worker's ratio is equal to 1, this means that the worker earns the minimum hourly wage, higher values imply higher hourly wage. With this ratio, we are able to examine minimum wage distance by market power levels. Table 3 demonstrates the number of workers by each market power level, low, average and high. These groups were created in the above mentioned subsection. It is observed that the greater amount of minimum wage workers is employed in labor markets with high concentration, corresponding to a percentage of 6.04% , 4.97% in average and 5.03% in low concentration. Moreover, it seems that more workers in low concentration labor markets earn the highest hourly wage (42.01%), on the contrary, in high concentrated labor market lesser amount of workers earn high wage rates (32.24%). Having this table (3) we comprehend that labor markets with high concentration are related with lower hourly wages, as was previously suggested in table 2.

In regard to the product market, in low concentration markets the minimum wage workers correspond to the 5.76%, 5.01% in average and 1.98% in highly concentrated product markets. The 71.74% of workers in a highly concentrated product market earn the highest wage rate, 43.41% in average concentration and 31.51% in low concentrated product markets. More highly paid workers work in firms with high market shares, on the other hand, more low paid workers work in firms with low market shares.

With table 3 taken in mind, we conclude that labor market concentration could have a negative impact on wages, and that product market could have a positive impact on wages. These dynamics are confirmed by the economic literature (Azar, Marinescu and Steinbaum, 2022; Nickell, 1999). In the next section (4) we will structure our empirical strategy in order to examine and possibly confirm these dynamics.

4 Empirical strategy

In order to examine the interactions between labor market concentration and wages we estimate the following ordinary least squares regression models as well as the fixed effects formats. We also utilise two quantile regression model, so as to examine the effects of monopsony on wage groups. Having the labor market concentration computed with equation 1 and product market concentration computed with equation 2, we are able to examine the extent of firms' market power on wages.

4.1 Baseline model

The baseline model consists of five specifications. The first one is based on the well known equation of Mincer (1974), as it only includes the labor and product market concentration indices with some basic employee-level variables, age, tenure and education. Subsequently, the second specification adds more employee-level information, such as the gender and whether they are native or not. The third specification adds the part time and temporary contract controls, which express workers with part time jobs and workers with indefinite contracts, the occupation of the workers is also included. The fourth specification adds firm-specific variables, number of employees and plant-specific variable, contract type. It also make use of additional dummies, the sector of economic activity and region. Finally, in the fifth spec-

ification the sector of economic activity is excluded, in order to comprehend the interesting dynamics between product market concentration and wages.

This model was developed with the notion that certain control variables, based on the literature, contribute to wage determination. Our key variable in which we aim to comprehend its effects on wages is labor market concentration. Economic literature suggest that the higher the labor market concentration the lower the wages (Manning, 2013). We also want to examine the product market concentration effects on wages and its capability in wage setting, as its effectiveness is extensively discussed in economic literature, as examined by Nickell (1999) monopoly power impacts wages.

As mentioned employee-level variables have been included in the model, such as, age, tenure and education have been included based on the equation of Mincer (1974). The age of the workers is linked with their earnings (Van Ours and Stoeldraijer, 2010). People working for the same employer could possibly get higher wages as the years past Altonji and Shakotko (1987). The educational level of the worker is also widely used in wage's understanding as it determines it significantly. Compared to those with less education, highly educated individuals earn greater wage and are less likely to be unemployed (Card, 1999). As far as the gender variable is concerned, it is proved that the male labor supply that each firm faces is more elastic than the female labor supply (Barth and Dale-Olsen, 2009). Moreover, the native variable is included since is a significant control for a wage estimation model, labor economics literature have thoroughly examined the substantive issue of immigrant wage discrimination in various cases (Butcher and Card, 1991). The part time and temporary contract variables are included as they express circumstances that are linked with wages. The firm-specific variables, number of employees and type of contract have been added into the model since information about firm and plant contribute in wage formation. Larger firms tend to pay their workers higher (Oi and Idson, 1999), big businesses set high performance standard that raises labor productivity. The type of contract could be considered useful information for our model, as it is examined in many wage functions(De la Rica, 2004). Finally, some additional dummy variables have been taken into consideration, such as occupation, sector of economic activity and region have been involved, as they offer great significance into the analysis. Wages are highly affected by the occupation of individuals (De Beyer and Knight, 1989), sectors and regions (Roback, 1988). This model will be tested with clustered standard errors in employee-level, firm-level and plant level.

The baseline model is structured as follows:

$$w_{ijorp} = b_0 + b_1 C_{jor} + b_2 P_{js} + b_3 E_{ijor} + b_4 F_{jr} + b_5 PL_{ip} + b_6 O_o + b_7 R_r + e_{ijor} \tag{3}$$

where, w_{ijorp} is the hourly wage rate of worker i in firm j in occupation o in region r in plant p, C_{jor} is the concentration index as measured by the Herfindahl-Hirschman index for firm j in occupation o in region r. P_s refers to the product's market concentration measured with the Herfindahl-Hirschman index for firm j which is in sector s, E_{ijor} is the matrix which contains employee's i information in j firm conducting the occupation o in the region r, information such as age, gender, native-born, education,

occupation, sector and region . Matrix F_{jr} represents the firm's data i.e. the number of employees for the firm j in region r. Matrix PL_{ip} represents plant-specific information i.e. type of contract for worker i in plant p. Whereas matrix O_o includes data for the occupations o and lastly R_r is the matrix which contains the region r.

4.2 Fixed effects model

As far as the fixed effect specifications are concerned, they follow a structure similar to that of ordinary least squares model 3. Their purpose is to carry out an analysis which will distinguish the effects of the firms from the effects of the independent variables. Labor market concentration 1 and employee level control variables are included in the fixed effects analysis. Fixed effects estimation allows additive, unobserved heterogeneity that can freely correlate with time-varying covariates (Wooldridge, 2005). Thus, any political or operational issue of each company that can have an impact on the analysis are subtracted.

We used two specifications for this model, the first specification absorbs the unobserved heterogeneity among firms and the second one among firms and plants. The first specification uses employer-level data for the age, tenure, education, gender, nationality,whether they work part time and whether they have temporary contract. As for the plant-specific information, the type of contract is only included as it is represents plant level information. The occupation of the worker is also included in the fixed effects model. The aforementioned variables have been utilized based on the baseline model. The variables that have been omitted from this model are the product market concentration, the number of employees, the sector of economic activity and the region, which refer to information of firm and plant level. As the second specification absorbs the unobserved heterogeneity of plants, the type of contract variable is omitted, apart from this the two specifications are identical. This model will be tested with clustered standard errors in employee-level, firm-level and plant level.

$$w_{iop} = b_0 + b_1 C_o + b_2 E_{io} + b_3 PL_{ip} + b_4 O_o + e_{io} \tag{4}$$

where, w_{iop} is the hourly wage rate of worker i in occupation o in plant p, C_o is the concentration index as measured by the Herfindahl-Hirschman index for occupation o. E_{io} is the matrix which contains information about employee i conducting the occupation o, information such as age, gender, native-born, education, occupation, sector and region. Matrix PL_{ip} represents plant-specific information i.e. type of contract for worker i in plant p. Whereas matrix O_o includes data for the occupations o.

4.3 Quantile regression model

We subsequently utilize two quantile regression models so as to examine possible differences of labor market power's impact on wage groups. Koenker and Bassett Jr (1978) introduced this method, with witch more information is provided than the average treatment effect, as it allows to examine the impact of the treatment on different groups.

The first quantile regression model is based on the baseline model 3 and it is used in order to examine

the impact of product and labor market concentration in different wage quantile groups (10%, 20%, 30%, 40%, 50%, 60%, 70%, 80% and 90%) with various information taken into account. This quantile regression includes the labor and product market concentration indices, employee-level variables, firm-level variables, plant-level variables as well as the additional dummies for occupation and region.

The next quantile regression model, based in the fixed effects model 4, include only employee-level variables as well as the occupation dummy variable. Thus, the product market concentration, firm-level variables, plant-level variables as well as the dummy variables of sector and region are excluded. With this model, we aim to examine the impact of labor market concentration in wage quantile groups (10%, 20%, 30%, 40%, 50%, 60%, 70%, 80% and 90%) in employee-level format.

5 Estimation results

5.1 Baseline model

Having the ordinary least squares model (3) estimated, we observe that the results confirm the expectations of that labor market concentration reduces employees' wages. Firms exploit the monopsony power they hold as workers receive lower wages than they are entitled to, based on their marginal product. The parameters of the models take into consideration a variety of other wage-setting variables, including the product market concentration, age, tenure, educational level, gender, nationality, whether they work part time, whether they have temporary contract, the number of employees in each firm and the type of contract. Information about occupation, sector of economic activity and region have been taken into account through model's specifications.

Table 4 provides the regressions results in detail. Each of the five specifications are suggesting the aforementioned insight about workers' wages that have been decreased due to the monopsony power of the firms. More specifically, the first specification, which is based on Mincer's wage function present us that a one unit increase of labor market concentration index causes a .8% decrease in hourly wages. This evidence confirms the monoposony literature (Card, 2022), since greater labor market concentration is related to lower wages. On the contrary, a one unit increase of product market concentration index results in 4.7% increase in hourly wages. As for the employee-level variables, a one year increase in the age of the worker increases the earned hourly wage by 3.2%. Correspondingly, worker's tenure increase wages, a one year of tenure increase results in 2.7% increase in hourly wages, this is consistent with the idea of experience and human capital accumulation (Van Ours and Stoeldraijer, 2010). However, it is important to note that age and tenure squared have negative coefficients, which implies that, although salaries typically increase with age and tenure, the rate of increase slows over time. As far as the effect of education on workers' salaries is concerned, workers with higher education receive higher salary, especially those with university degrees. The estimated coefficient for secondary and tertiary education is .088 and .452, meaning that those workers who have completed secondary education earn 8.8% higher hourly wages, and those who have an academic degree earn 45.2% greater hourly wages than those

without. These results were expected since education adds significant information in wage formation (Card, 1999).

Continuing with the second specification, where more employee-level variables are included, worker's gender and nationality, it is suggested that labor market concentration decreases wages and product market concentration increases them. A unit increase in labor market concentration results in .9% decrease in hourly wages, whereas, a unit increase in product market concentration results in 4.6% hourly wage increase. The employee-level control variables that were used in the first specification remain with almost identical coefficients, statistical significance and standard errors. This model's added variables suggest that women generally earn lesser salary than men do as the coefficient of female variable is negative, female workers earn 14.7% lower hourly wages than male workers, which confirms a lot of cases examined by the economic literature (Barth and Dale-Olsen, 2009). As for the nationality variable, it is found that workers who are born abroad typically earn substantially lower hourly salaries than native workers, decreased by 4.7%. Language hurdles, qualifications discrepancies and discrimination are a few possible causes of this (Canal-Domínguez and Rodríguez-Gutiérrez, 2008).

The third specification adds more employee-level variables that include workers' job-related information, such as their occupation as well as whether they work part time and have a temporary contract. With these additions, a unit increase of labor market concentration decreases hourly wages by .7% and a unit increase of product market concentration increases them by 4.1%. As for the employee-level variables, a one year increase in the age of the worker increases the earned wage by 2.9% and a a one year increase in tenure increases the salary by 2.7%. Secondary and tertiary education still contribute to hourly wage, 3.7% increase by secondary education and 28.1% by tertiary. In this specification female workers also earn lower earnings than men by 13.1%, but the born abroad variable's coefficient has been reduced and lost its statistical significance, suggesting that individuals who were born in another country now earn .7% lesser hourly wage than native workers. Coefficients of part time variable unveil negative relation between part time workers and wages, part time workers earn decreased wages by 12%. On the other hand, workers with temporary contract get higher wages by 6.9%. These coefficients were estimated with the dummy occupation included in the model.

Firm-specific variables have been incorporated in the fourth specification. All employee-level variables have also been utilised combined with information about firm's number of employees, type of contract as well as sector of economic activity and region. A unit increase in labor market concentration results to .9% decrease in wages. In addition, the coefficient of product market concentration index unveil an interesting contradiction, its effect seems to have been reversed as it is found to be -.131. Apart from the temporary contract, which now has negative effect on wages by 13.1%, the rest of the employee-level variables remain as they were. As far as the firm-specific and plant-specific variables are concerned, the number of employees in a firm as well as the contract types seems to have a positive relation with workers wages, which confirms the literature (Pull, 2003). A unit increase in firm's number of employee increases workers hourly wages by 3.5%. An individual with sectoral contract, firm contract and no contract gets increased wages by 6.8%, 2.9% and 6.4% respectively. In this model the dummies of occupation, sector of economic activity and region have been included in the analysis.

In order to comprehend the dynamics between labor and product market concentration with wages, we utilized a fifth specification, which is the same as specification four but with the sector of economic activity excluded. As it turns out, the impact of labor market concentration remain in the expected levels, with a coefficient of -.009, suggesting that a unit increase in labor market concentration resulting in a .9% decrease in hourly wages. However, by excluding the sector of economic activity out of the analysis, the effect of product market concentration on wages turns positive again, with a coefficient of .029, indicating that a unit increase in product market concentration results in a 2.9% increase in hourly wages. It is clear that, there is a trigger effect between product market concentration and sector of economic activity dummy variable, as its impact on wages is reversed from positive to negative. The employee-level variables have not changed much except from the temporary contract, in which workers with short-term agreements earn greater hourly earnings by 3.8% than those without a temporary contract. Coefficients of plant-specific variables such as type of contract did not fluctuate much, whereas the firm-specific variable, suggests that a 1% increase in the number of employees is translated in 2.3% increase in workers hourly wages. This specification has also included the occupation and region dummies.

The key take-aways from the baseline model results is that our findings are in line with the previous analysis and show that greater concentration in the labor market reduces the bargaining power of workers, which in turn leads to lower wages (Azar, Marinescu and Steinbaum, 2022). And that since product market concentration is directly related to the sector of economic activity, the results are not consistent. This conclusion supports the arguments made in recent literature that wage formation should be examined in relation to the labor market rather than the state of the product market and that labor economists should be involved in wage setting discussions (Card, 2022).

5.2 Fixed effects model

With the fixed effects model (4) the insights we obtained are the corresponding ones with the ordinary least squares method. Table 5 presents the results in detail which are significant and robust in each one of the three model's specifications that were utilized. The negative effect of labor market concentration on hourly wages is clear as the estimated coefficients of the Herfindahl-Hirschman indices are negative, this indicates that higher labor market concentration relates to lower wages.

More specifically, there are two specifications regarding the fixed effects model.The first one has been structured so as to absorb the firm-to-firm heterogeneity and the second one to absorb the plant-level heterogeneity. The first specification suggests that a unit increase of labor market concentration index leads to 1.4% decrease in workers wages. As the age of the worker increases, his/hers hourly wage increases also, a one year increase results in 2.6% increase in workers age. The worker's tenure also has the ability to increase wages by 2.1%. The positive effects of age/tenure and wages diminishes over time, as the squared variables are negative. Education also favors wages since workers with secondary and tertiary education earn higher hourly wages by 3.9% and 17.4% correspondingly. In addition, female workers earn decreased hourly wages compared with male workers by 9.2%. As for workers who were born abroad, it is suggested that they earn 1.1% higher wages than native workers, however, the

estimated coefficient is not statistically significant. The estimated coefficient of part time isn't statistically significant, but it suggests that Individuals who work part time get .7% lower wages. Those with a temporary contract also get decreased hourly wages by 5.2%. Lastly, the plant-level variables about the type of contract, sectoral, firm and no contract, all have positive effect regarding workers wages. Employees with sectoral contract earn 21,3% higher hourly wages than those with national type of contract, those with firm contract get 12.9% higher than those with national and those with no contract get higher wages by 11.4%. In this analysis the occupation dummy has been used in estimating the above mentioned coefficients.

The second specification, which has been analyzed in order to absorb plant-level heterogeneity, suggest the same conclusions. Labor market concentration is negatively correlated with wages. The employee-level variables are also in accordance with the first specifications. Workers wage increases with age and tenure, higher educated workers earn greater hourly wages than those with less education. Female workers get lower hourly wages than male workers, although it has been slightly increased, the coefficient of born abroad variable as well as part time variable isn't statistically significant. As for the temporary contract, the negative impact on wages remains still. This model also takes into account the occupation as additional dummy variable.

As it turns out by taking into account firm-to-firm and plant-to-plant changes, the fixed effects method offers a comprehensive analysis on the impact of monopsony power. These findings support the literature (2) that established the foundation for this study.

5.3 Quantile regression model

Having the quantile regression model estimated we came up with some interesting understandings. The results of the first model are presented in table 6. Across all quantiles (10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, and 90%), the coefficients of labor market concentration are negative and those of the product market are positive. This indicates that across all wage groups monopsony power reduces workers' wages and that firms' greater shares translate into higher wages. It is observed that for both labor and product market power the top 10% wage group have the greater impact on hourly wages. This analysis also takes into account the employee-level factors that has been analyzed in previous models. Workers' age seems to have higher hourly wage returns as the coefficients are getting higher,a one year increase in workers' age on the bottom 10% of wage groups results in 1.6% increase in hourly wage, whereas, a one year increase in workers' age on the top 10% of wage groups results in 3.5% higher hourly wage. Tenure variable had some minor fluctuations throughout wage groups. The rest of employee-level variables, such as, secondary and tertiary education, female, born abroad, part time and temporary contract have increased impact in higher wage groups. As far as the firm specific and plant specific variables, its is examined that number of employees effect evaporates in higher wage groups, sectoral and firm contracts have increasing impact, whereas, the impact of no contract decreases throughout wage quantiles. Figure 3 presents the impact of labor market concentration on different hourly wage quntiles, with product market concentration, firm-specific and plant-specific variables included. The

negative effect of monopsony power on wages is clear, it is also shown that labor market concentration has stronger impact in higher wage quantiles.

The second model, which only examines employee-level factors, has been designed to account for the impact of monopsony on employees' hourly wage groups. In terms of the results, as shown in table 7, the aforementioned results are confirmed. Having only employee-level variables included, the relation between labor market power and hourly wages has greater effect. The bottom 70% seems to have decreased effects compared to the previous model. However the top 10% has the highest coefficient, implying that workers with top 10% hourly wages experience the highest impact of monopsony power. Apart of tenure which fluctuates over the quantiles, regardless of whether being positive or not all other employee-level variable have stronger impact on wages throughout wage groups. In figure 4 the impact of labor market concentration on hourly wage quantiles is depicted, showing that by only using employee-level variables the estimation suggests that labor market concentration and wages are negatively correlated and that higher hourly wage groups face greater decreases due to monopsony power.

6 Conclusions

In order to sum up everything that has been stated in this thesis regarding the research question, of which is the impact of labor market power on wages, we conclude with some insightful understandings.

As a start, two data sources have been used for this analysis which derive from Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018). The first dataset contains information on employee-level, firm-specific and plant-specific and the second one information about firms' performance. We combined them using the sector of economic activity in a 2-digit format (Nace Rev.2). As we needed a market power measure, in order to examine the monopsony effects, we structured a labor market measurement with the Herfindahl-Hirschman index, as well as a product market concentration measure with equation 1 and 2 correspondingly. We then implemented one ordinary least squares model (3) with hourly wages as the dependent variable and the employee-level, firm-specific, plant-specific and additional dummies as the independent variables. With this model we used five specifications of different levels. Thereafter, we used a fixed effects model (4) with the aim of absorbing firms' unobserved heterogeneity. The first specification of the fixed effects model used plant-specific variables, whereas, the second specification excluded them. As the economic literature suggest that monopsony dynamics with wages differ by factors such tasks of occupation and wage groups (Bachmann, Demir and Frings, 2022), we applied two quantile regression models so as to capture that information of different monopsony impact on wage groups.

The main findings of the models we put forth are confirmed by the economic literature as it is suggested that monopsony power leads to reduced wages (Manning, 2013).

The results of the baseline model, which are shown in table 4 in detail, imply that there is a negative correlation between labor market concentration and wages. We find that a unit increase of labor market concentration reduces workers' hourly wages by .8%. On the other hand, product market concentra-

tion is found to have positive correlation with wages, a unit increase of product market concentration increases hourly wages by 4.7%. This finding is also confirmed by economic literature as Van Reenen (1996) found a positive correlation between wages and market share. The results of the employee-level variables are also confirmed by economic literature, as it is found that age, tenure, education and temporary contract increase hourly wages, whereas, female and born abroad variables reduces them. The firm-specific variable, number of employees as well as the plant-specific, type of contract variables have been estimated with positive coefficient. While the estimated coefficients of labor market concentration are consistent and robust in all specification cases, it is observed that with the sector of economic activity included in the model, the product market concentration has negative effects on hourly wages.

As far as the fixed effects results are concerned, it is suggested that there is negative impact of labor market concentration on hourly wages, as shown in detail in table 5. Having plant-specific variables included, a unit increase of labor market concentration results in 1.4% reduced hourly wages, where without them, wages would be reduced by 1.1%. The employee-level variables suggest the same results with the ordinary least square model, except that born abroad, and temporary contract variables have been estimated to have reversed relation with hourly wages compared to the ordinary least squares method.

Regarding the quantile regression models' results, we found that labor market concentration have greater impact on hourly wages in higher wage groups. The first quantile regression, included both firm-specific and plant-specific, while the second was estimated by only using employee-level factors. Both models suggested the same results that higher labor market concentration reduces hourly wages. By using both firm-specific and plant-specific in the first model, the estimated coefficients are higher than the second model, which uses employee-level variables only. However for both model, higher wage groups experience higher monopsony power, whereas in the bottom quantiles, the effect is not that substantial. Especially, the second model estimations present a wider distribution, as the bottom 10% wage group gets .1% reduced hourly wages by a unit increase of the labor market concentration, and that the top 10% wage group gets 1.8% decreased hourly wages by a unit increase of the labor market concentration. In addition, workers age is factor that increases hourly wages, the higher the wage group the greater the increase in hourly wages, as the bottom 10% gets 1.4% in wages by a year increase in age, while the top 10% gets 3.8% higher hourly wages. These results as well as the rest wage setting factors are presented thoroughly in table 6.

Monopsony power on wages constitute a timelessly relevant issue which has direct effect in workers' quality of life. This topic has been examined for several years now, but recently, its interest has been rekindled as it adapts to methods of research and application in the evolving labor markets. Comprehensive examinations that has been done regarding labor market power are derived from real-life conditions and thus their results can be directly applied to reality. For instance, this issue has been associated with minimum wage applications and competition, suggesting practices and bargaining solutions (Popp, 2021; Card, 2022). Thus more comprehensive research in labor market power would be valuable not only for the literature expansion but also for possible implementations in wage setting discussions.

In terms of this thesis' contribution to the literature, this thesis examines the monopsony power on

wages, uses standard practices in measuring market power and suggests wage functions models in order to estimate the impact of market power on wages. This thesis also presents robust results that have been tested in many levels regarding the standard errors as well as unobserved heterogeneity. These results are confirmed by economic literature as it captures the negative effect of monopsony power on wages. Overall, this thesis provides a market power measure, empirically examines the highly discussed topic of monopsony and concludes in key understandings that economic literature suggests.

Possible limitations of this analysis derive from the fact that the examination of this matter has been conducted in a multi-level format, including employees, occupations, firms, plants, sectors and regions. Due to the nature of market power, it is needed to use firm-specific and plant-specific information and translate it into employee-level output. However, we tested the results' standard errors in employee,firm and plant and used fixed effects models in order to absorb unobserved heterogeneity of possible firm decisions and links among workers. Engagement with further research in monopsony power would be really interesting and useful, there are many ways in expressing market power, thus, another market power measure could possibly offer notable insights.

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TABLES

Table 1: Summary statistics.

Variables	Mean	SD	Min	Max
Hourly wage	8.944	10.662	3.52	935.48
Labor market concentration	.003	.022	0	.5
Product market concentration	.114	.227	.002	1
Age	40.988	9.816	18	64
Tenure	7.226	8.060	0	45
Male	.580	.580	0	1
Female	.419	.493	0	1
Native-born	.924	.264	0	1
Foreign-born	.075	.264	0	1
Primary education	.042	.201	0	1
Secondary education	.544	.498	0	1
Tertiary education	.412	.492	0	1
National contract	.535	.498	0	1
Sectoral contract	.205	.404	0	1
Firm contract	.220	.414	0	1
No contract	.038	.191	0	1
Part time	.118	.323	0	1
Temporary contract	.111	.315	0	1
Managers	.032	.177	0	1
Professionals	.121	.326	0	1
Technicians and Associate Professionals	.074	.263	0	1
Clerical Support Workers	.279	.448	0	1
Services and Sales Workers	.177	.381	0	1
Craft and Related Trades Workers	.064	.245	0	1
Plant and Machine Operators and Assemblers	.095	.293	0	1
Elementary Occupations	.154	.361	0	1
Manufacturing	.265	.441	0	1
Electricity, gas, steam and air conditioning supply	.004	.070	0	1
Water supply: sewerage, waste management and remediation activities	.009	.098	0	1
Construction	.039	.194	0	1
Wholesale and retail trade: repair of motor vehicles and motorcycles	.174	.379	0	1
Transportation and storage	.082	.275	0	1
Accommodation and food service activities	.060	.239	0	1
Information and communication	.063	.243	0	1
Financial and insurance activities	.061	.239	0	1
Real estate activities	.012	.113	0	1
Professional, scientific and technical activities	.050	.218	0	1
Administrative and support service activities	.082	.274	0	1
Education	.005	.074	0	1
Human health and social work activities	.052	.223	0	1
Arts, entertainment and recreation	.017	.131	0	1
Other service activities	.016	.127	0	1
Eastern Macedonia & Thrace	.033	.178	0	1
Central Macedonia	.118	.323	0	1
Western Macedonia	.007	.088	0	1
Thessaly	.043	.203	0	1
Epiruss	.009	.096	0	1
Ionian Islands	.007	.087	0	1
Western Greece	.024	.153	0	1
Central Greece	.026	.161	0	1
Peloponnese	.021	.146	0	1
Attica	.634	.481	0	1
Northen Aegean	.006	.081	0	1
South Aegean	.004	.063	0	1
Crete	.060	.239	0	1
Observations	25,417			

Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Notes: Occupation of agricultural and fishing activities (no.6) as well as the corresponding sector (no1) as well as security activities (no15), households as employers (no20) and extraterritorial activities (no21) are not included in the sample of the analysis, as there are no observations for these occupations.

Table 2: Summary statistics of hourly wages by market power

	Mean	SD	min	max
Labor market concentration:				
Low concentration	9.665	8.756	3.520	263.250
Average concentration	9.127	13.471	3.520	935.480
High concentration	7.872	5.500	3.520	149.700
Product market concentration:				
Low concentration	8.278	11.058	3.520	935.480
Average concentration	9.733	8.710	3.520	194.010
High concentration	12.736	9.046	3.520	175.390

Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Notes: The groups of labor market concentration were divided into three categories, no concentration, up to the top 25% and high concentration containing all other values. The groups of product market concentration were divided in accordance with the Commission (2004) guidelines, low (0.0-0.1), medium (0.1-0.2) and high levels of concentration (0.2-1.0).

Table 3: Descriptive statistics of minimum hourly wage ratio by market power

Conentration:	Low	Average	High	Total
Labor market				
1	5.03	4.97	6.04	5.26
1.2	11.26	13.99	15.17	13.56
1.4	10.41	10.60	11.44	10.77
1.6	9.01	9.42	10.54	9.60
1.8	9.26	9.39	10.45	9.63
2	7.05	7.83	8.02	7.66
2.2	5.98	6.29	6.10	6.15
2.4	42.01	37.52	32.24	37.36
Total	100.00	100.00	100.00	100.00
Product market				
1	5.76	5.01	1.98	5.26
1.2	15.53	9.77	4.22	13.56
1.4	11.95	9.21	4.22	10.77
1.6	10.64	8.43	3.66	9.60
1.8	10.37	9.21	4.85	9.63
2	7.98	8.54	4.26	7.66
2.2	6.26	6.41	5.08	6.15
2.4	31.51	43.41	71.74	37.36
Total	100.00	100.00	100.00	100.00

Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Notes: The groups of product market concentration were divided in accordance with the Commission (2004) guidelines, low (0.0-0.1), medium (0.1-0.2) and high levels of concentration (0.2-1.0).

Table 4: The impact of labor market concentration on hourly wages (Baseline model)

	[1]	[2]	[3]	[4]	[5]
Labor market concentration	-.008***	-.009***	-.007***	-.009***	-.009***
	(.006)	(.001)	(.006)	(.001)	(.001)
	[.001]	[.001]	[.001]	[.002]	[.003]
	{.001}	{.001}	{.001}	{.002}	{.003}
Product market concentration	.047***	.046***	.041***	-.131***	.029***
	(.002)	(.002)	(.001)	(.015)	(.001)
	[.007]	[.007]	[.007]	[.030]	[.006]
	{.006}	{.006}	{.006}	{.030}	{.005}
Employee-level					
Age	.032***	.033***	.029***	.026***	.028***
	(.002)	(.002)	(.001)	(.001)	(.001)
	[.002]	[.002]	[.002]	[.002]	[.002]
	{.002}	{.002}	{.002}	{.002}	{.002}
Age-squared	-.001***	-.001***	-.001***	-.001***	-.001***
	(.001)	(.001)	(.001)	(.001)	(.001)
	[.001]	[.001]	[.001]	[.001]	[.001]
	{.001}	{.001}	{.001}	{.001}	{.001}
Tenure	.027***	.027***	.027***	.023***	.023***
	(.001)	(.001)	(.001)	(.001)	(.001)
	[.001]	[.001]	[.001]	[.001]	[.001]
	{.001}	{.001}	{.001}	{.001}	{.001}
Tenure-squared	-.001***	-.001***	-.001***	-.001***	-.001***
	(.001)	(.001)	(.001)	(.001)	(.001)
	[.001]	[.001]	[.001]	[.001]	[.001]
	{.001}	{.001}	{.001}	{.001}	{.001}
Secondary education	.088***	.089***	.037***	.042***	.050***
	(.010)	(.010)	(.010)	(.009)	(.009)
	[.018]	[.017]	[.017]	[.015]	[.015]
	{.016}	{.016}	{.015}	{.015}	{.015}
Tertiary education	.452***	.455***	.281***	.238***	.281***
	(.011)	(.011)	(.011)	(.010)	(.011)
	[.023]	[.022]	[.020]	[.018]	[.019]
	{.021}	{.020}	{.018}	{.017}	{.018}
Female	-	-.147***	-.131***	-.105***	-.136***
	-	(.005)	(.005)	(.005)	(.005)
	-	[.009]	[.008]	[.007]	[.008]
	-	{.008}	{.007}	{.007}	{.007}
Born abroad	-	-.047***	-.007	-.005	-.002
	-	(.009)	(.009)	(.009)	(.009)
	-	[.013]	[.012]	[.011]	[.012]
	-	{.013}	{.012}	{.011}	{.011}
Part-time	-	-	-.120***	-.059***	-115***
	-	-	(.007)	(.007)	(.006)
	-	-	[.013]	[.012]	[.013]
	-	-	{.011}	{.011}	{.011}
Temportary contract	-	-	.069***	-.013	.038
	-	-	(.008)	(.008)	(.008)
	-	-	[.023]	[.020]	[.024]
	-	-	{.022}	{.019}	{.023}
Firm-specific					
Number of employees	-	-	-	.035***	.023***
	-	-	-	(.003)	(.003)
	-	-	-	[.006]	[.008]
	-	-	-	{.005}	{.007}
Plant-specific					
Sectoral contract	-	-	-	.068***	.092***
	-	-	-	(.006)	(.007)
	-	-	-	[.019]	[.023]
	-	-	-	{.016}	{.019}
Firm contract	-	-	-	.029**	.030***
	-	-	-	(.005)	(.006)
	-	-	-	[.014]	[.018]
	-	-	-	{.012}	{.016}
No contract	-	-	-	.064**	.064**
	-	-	-	(.012)	(.012)
	-	-	-	[.028]	[.027]
	-	-	-	{.024}	{.023}
Additional dummies					
Occupation (1-digit)	No	No	Yes	Yes	Yes
Sector of economic activity	No	No	No	Yes	No
Region	No	No	No	Yes	Yes
R-squared	0.351	0.370	0.442	0.548	0.470
Number of observations	25,417	25,417	25,417	25,417	25,417

Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Notes: The dependent variable is the logarithm of the hourly wage. The reference group for 'Female' is 'Male', for 'Born abroad' is 'Native born' for education is the 'Primary education' and for contracts is'National contract'. Sector of economic activity is expressed in a 2-digit format (Nace Rev.2). Region corresponds to the NUTS-2 classification. () corresponds for employee level standard errors, [] for firm-level standard errors test, {} for plant-level standard errors test.

Statistical significance: *** at 1%, ** at 5%, * at 10%.

Table 5: The impact of labor market concentration on hourly wages (Fixed effects model)

	[1]	[2]
Labor market concentration	-.014***	-.011***
	(.001)	(.001)
	[.002]	[.002]
	{.002}	{.002}
Employee-level		
Age	.026***	.026***
	(.001)	(.001)
	[.002]	[.002]
	{.002}	{.002}
Age-squared	-.001***	-.001***
	(.001)	(.001)
	[.001]	[.001]
	{.001}	{.001}
Tenure	.021***	.022***
	(.001)	(.001)
	[.001]	[.001]
	{.001}	{.001}
Tenure-squared	-.001***	-.001***
	(.001)	(.001)
	[.001]	[.001]
	{.001}	{.001}
Secondary education	.039***	.032***
	(.009)	(.009)
	[.010]	[.010]
	{.009}	{.009}
Tertiary education	.174***	.164***
	(.010)	(.010)
	[.013]	[.013]
	{.012}	{.012}
Female	-.092***	-.093***
	(.004)	(.005)
	[.005]	[.005]
	{.005}	{ .005}
Born abroad	.011	.005
	(.008)	(.008)
	[.009]	[.009]
	{.009}	{.010}
Part-time	-.007	-.005
	(.008)	(.008)
	[.011]	[.011]
	{.010}	{.018}
Temportary contract	-.052***	-.057***
	(.011)	(.012)
	[.017]	[.018]
	{.017}	{.018}
Plant-specific		
Sectoral contract	.213***	-
	(.044)	-
	[.060]	-
	{.049}	-
Firm contract	.129**	-
	(.050)	-
	[.042]	-
	{.045}	-
No contract	.114	-
	(.073)	-
	[.057]	-
	{.076}	-
Additional dummies		
Occupation (1-digit)	Yes	Yes
R-squared	0.719	0.740
Number of observations	25,417	25,417

Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Notes: The dependent variable is the logarithm of the hourly wage. The reference group for 'Female' is 'Male', for 'Born abroad' is 'Native born' for education is the 'Primary education' and for contracts is'National contract'. () corresponds for employee level standard errors, [] for firm-level standard errors test, {} for plant-level standard errors test.

Statistical significance: *** at 1%, ** at 5%, * at 10%.

Table 6: The impact of labor market concentration on hourly wages (Quantile regression)

Quantile	10%	20%	30%	40%	50%	60%	70%	80%	90%
Labor market concentration	-.012***	-.009***	-.010***	-.009***	-.010***	-.011***	-.011***	-.012***	-.013***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.002)	(.002)	(.003)
Product market concentration	.017***	.026***	.028***	.027***	.029***	.026***	.027***	.030***	.032***
	(.002)	(.0002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.004)
Employee-level									
Age	.016***	.019***	.019***	.020***	.023***	.025***	.027***	.029***	.035***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.002)	(.002)	(.002)	(.003)
Age-squared	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Tenure	.023***	.024***	.025***	.025***	.025***	.024***	.022***	.022***	.019***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Tenure-squared	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001**
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Secondary education	.005	.016	.020**	.034***	.022**	.028***	.050***	.064***	.080***
	(.009)	(.009)	(.009)	(.010)	(.011)	(.010)	(.011)	(.014)	(.017)
Tertiary education	.105***	.147***	.173***	.214***	.226***	.262***	.306***	.339***	.393***
	(.010)	(.011)	(.011)	(.012)	(.013)	(.013)	(.013)	(.017)	(.022)
Female	-.043***	-.065***	-.085***	-.103***	-.117***	-.130***	-.150***	-.171***	-.200***
	(.004)	(.005)	(.005)	(.005)	(.005)	(.006)	(.006)	(.007)	(.011)
Born abroad	.005	-.001	-.004	-.011	-.016*	-.019**	-.019*	-.006	.021
	(.007)	(.007)	(.008)	(.008)	(.008)	(.009)	(.011)	(.013)	(.016)
Part-time	-.045***	-.068***	-.084***	-.091***	-.096***	-.104***	-.115***	-.125***	-.128***
	(.006)	(.006)	(.006)	(.006)	(.007)	(.007)	(.008)	(.010)	(.013)
Temportary contract	-.012**	-.002	-.001	.008	.022***	.037***	.050***	.088***	.107***
	(.006)	(.007)	(.008)	(.008)	(.009)	(.010)	(.011)	(.014)	(.017)
Firm-specific									
Number of employees	.045***	.037***	.036***	.034***	.034***	.029***	-.021***	-.013***	-.001
	(.003)	(.003)	(.003)	(.003)	(.001)	(.003)	(.004)	(.005)	(.006)
Plant-specific									
Sectoral contract	.061***	.084***	.098***	.102***	.102***	.101***	.109***	.107***	.108***
	(.007)	(.007)	(.007)	(.007)	(.007)	(.008)	(.009)	(.010)	(.013)
Firm contract	.040***	.045***	.042***	.034***	.028***	.020***	.022***	.007	.012
	(.006)	(.006)	(.006)	(.006)	(.006)	(.007)	(.007)	(.008)	(.012)
No contract	.121***	.115***	.110***	.097***	.086***	.075***	.060***	.046***	.038*
	(.013)	(.012)	(.012)	(.012)	(.012)	(.013)	(.014)	(.016)	(.022)
Additional dummies									
Occupation (1-digit)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	25,417	25,417	25,417	25,417	25,417	25,417	25,417	25,417	25,417

Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Notes: The dependent variable is the logarithm of the hourly wage rate. The reference group for 'Female' is 'Male', for 'Born-abroad' is 'Native-born' for education is the 'Primary education' and for the 'Contract' is 'National'.

Statistical significance: *** at 1%, ** at 5%, * at 10%.

Table 7: The impact of labor market concentration on hourly wages (Quantile regression, employee-level)

	10%	20%	30%	40%	50%	60%	70%	80%	90%
Labor market concentration	-.001	-.001	-.001	-.001*	-.002***	-.003***	-.006***	-.010***	-.018***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Employee-level									
Age	.014***	.018***	.020***	.023***	.024***	.027***	.030***	.033***	.038***
	(.001)	(.001)	(.001)	(.001)	(.002)	(.002)	(.002)	(.003)	(.003)
Age-squared	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Tenure	.025***	.030***	.031***	.031***	.031***	.030***	.028***	.027***	.024***
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.002)
Tenure-squared	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001**
	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)	(.001)
Secondary education	.001	.002	.009	.020**	.027**	.027**	.030**	.046***	.048**
	(.010)	(.009)	(.009)	(.009)	(.011)	(.012)	(.013)	(.015)	(.019)
Tertiary education	.105***	.137***	.182***	.226***	.264***	.293***	.328***	.366***	.391***
	(.012)	(.011)	(.011)	(.012)	(.013)	(.014)	(.015)	(.018)	(.025)
Female	-.048***	-.066***	-.085***	-.102***	-.120***	-.131***	-.144***	-.168***	-.191***
	(.005)	(.004)	(.005)	(.005)	(.005)	(.006)	(.007)	(.008)	(.011)
Born abroad	.001	-.011	-.009	-.010	-.016*	-.024**	-.028**	-.016	.014
	(.007)	(.007)	(.006)	(.008)	(.005)	(.009)	(.011)	(.014)	(.019)
Part-time	-.055***	-.069***	-.073***	-.089***	-.100***	-.105***	-.111***	-.130***	-.134***
	(.006)	(.006)	(.006)	(.006)	(.007)	(.008)	(.008)	(.009)	(.015)
Temportary contract	.005	.019***	.022***	.024***	.041***	.055***	.065***	.093***	.129***
	(.006)	(.007)	(.007)	(.008)	(.009)	(.010)	(.011)	(.014)	(.018)
Additional dummies									
Occupation (1-digit)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	25,417	25,417	25,417	25,417	25,417	25,417	25,417	25,417	25,417

Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Notes: The dependent variable is the logarithm of the hourly wage rate. The reference group for 'Female' is 'Male', for 'Born-abroad' is 'Native-born' for education is the 'Primary education'.

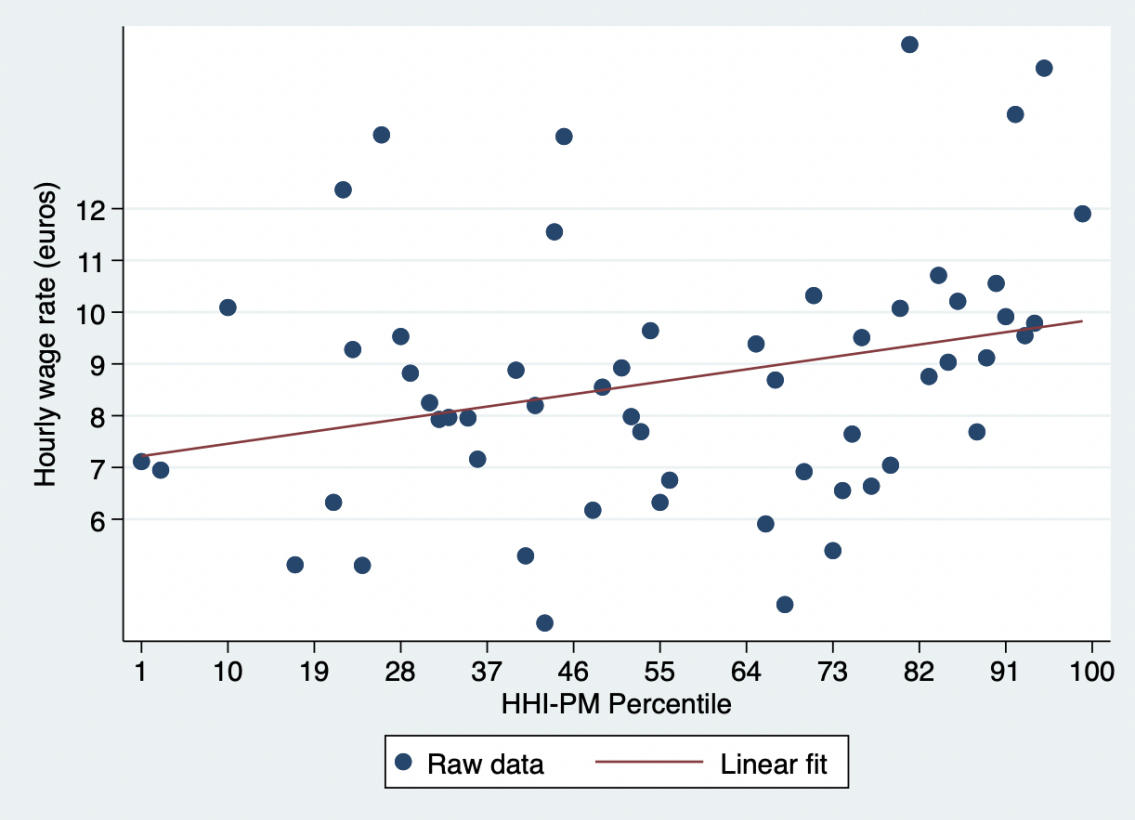
Statistical significance: *** at 1%, ** at 5%, * at 10%.

FIGURES

Figure 1: Labor market concentration percentiles (HHI) - Hourly wages

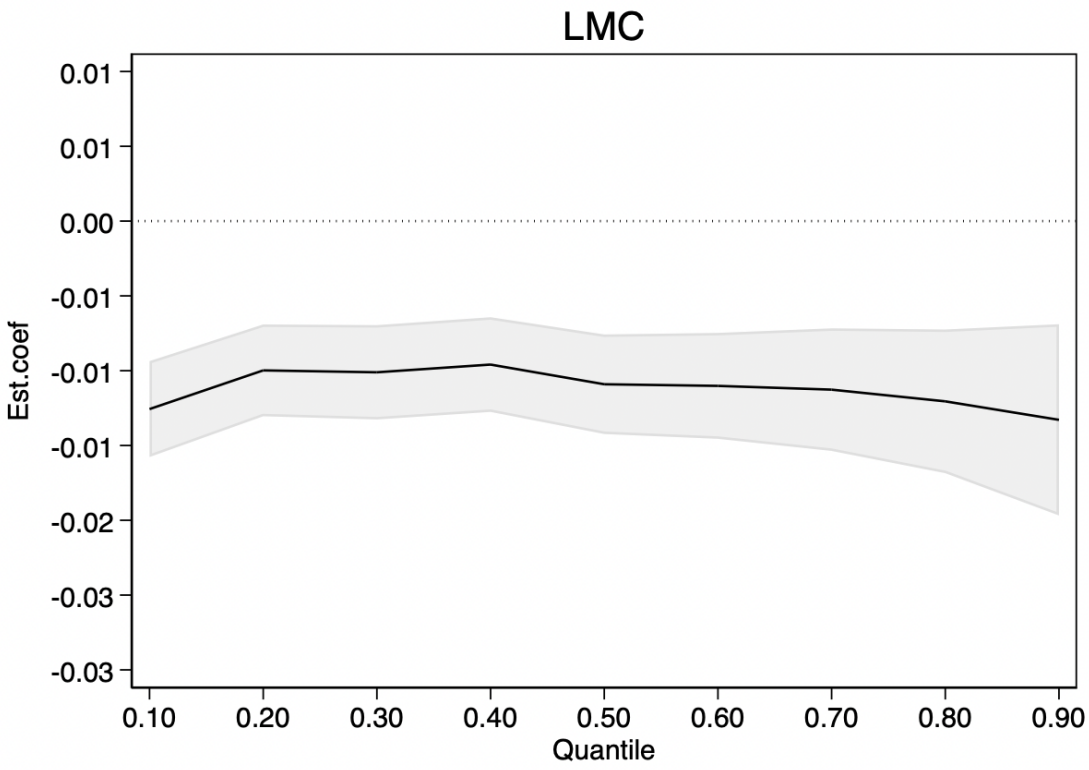
Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Figure 2: Product market concentration percentiles (HHI) - Hourly wages



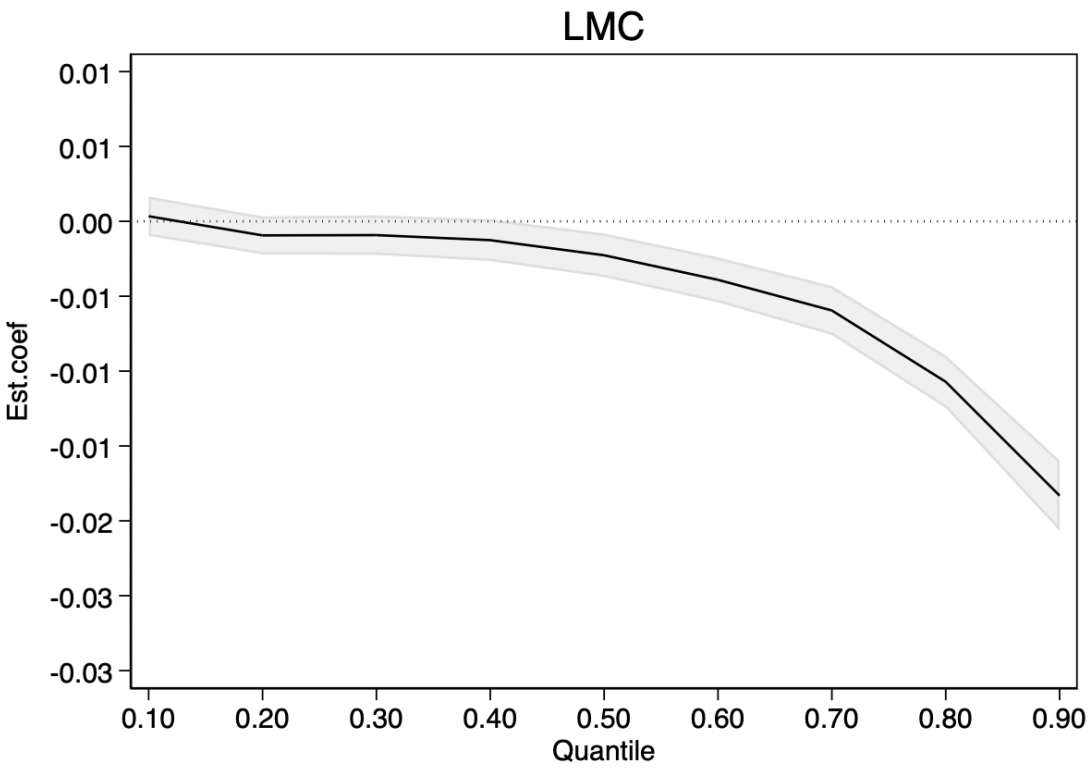
Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Figure 3: Labor market concentration effect on wage quantiles



Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).

Figure 4: Labor market concentration effect on wage quantiles (employee-level)



Source: Structure of Earnings Survey, 2018 (Hellenic Statistical Authority) and ICAP (2018).