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Does monopsony exist in academic labor market?

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Abstract: This study aims to examine empirically the power of monopsony in the academic labor market, particularly in public universities. Upward sloping supply curve is indicative of monopsony and its power supply elasticity is suspected of demand for lecturers. The method used to estimate the supply equation for lecturer at four public universities in Indonesia is OLS model. A stratified sample is determined proportionally as much as 348 lecturers, by academic rank, gender and discipline. It is found that the supply elasticity is inelastic indicating that earnings lecturers are in non-competitive conditions. When employers face an inelastic supply curve, the marginal expenditure and average expenditure is very much different, which gave it the power to set wages, so it implies that the power of monopsony is big.

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1. INTRODUCTION

In recent years, the concept of the power of monopsony has been reincarnated. The most substantial developments of monopsony reincarnation is the work of Alan Manning (2003). The new theory of monopsony does not use the term of labor market with a single employer. However, the term used is to explain some firms that face the upward sloping labor supply curve.

As previously mentioned that the context of academic labor market in this study is university (Ehrenberg, 2003). The assumption of the existence of monopsony in universities especially public universities is related to: firstly, the prevailing constraints. These constraints include the lecturers are not easy to move to another university because of the provisions needed to qualify lecturers. Letters of quality need is the official statement from home university that states the lecturer has resigned from the university. This letter will only be published if there is a request from the new university. Secondly, the moving costs. Lecturers with high moving costs tend to have high seniority especially related to the geographic mobility. Moving costs include the costs of physically relocate the residence and parting costs from family and friends. Therefore, marital status, spouses' occupation and the number of children affect family mobility, which also affects moving costs. Consequently, lecturers choose to not move and remain in the university thus increasing seniority in the university. Seniority itself in turn can affect earnings, which is the base model of monopsony (Ransom, 1993).

Indonesia is geographically a wide nation and there are no more than two public universities in almost every province, which leads to high moving costs. In another words, Indonesia is a good example for monopsonistic evidence in the academic labor market, because the labor market frictions that brought to market forces is tend to occur in developed countries. The traditional basis for monopsonistic behavior is the cost of moving in the labor market. Indonesia has more than

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13,000 islands with diverse geographical and cultural barriers, which make difficult for workers to seek employment in other labor market (Brummund, 2011). Thus, the constraints show monopsony exists in the labor market, which in turn affects the earnings of academic lecturers.

Although with some exceptions, it can be stated that the lecturers' income related to human capital (seniority and education) as well as two other characteristics, namely: research productivity of the faculty/lecturer as part of individual characteristics and monopsony behavior of then university. In other words, the research and the facts show that the issues related to lecturers income can be seen from internal factors inherent in the faculty itself (aspects of human capital and individual characteristics) and can not be released from the execution of duties of lecturers in the Tri Dharma of higher education, as well as the market conditions.

4 Contributions of recent research focuses on the labor market relevance of the empirical monopsonistic behavior (Boal and Ransom, 1997; Manning, 2003; Staiger et.al, 2010) as well as a theoretical explanation for the emergence of such behavior (Bhaskar et.al, 2004; Boal and Ransom, 1997; Manning, 2003). There is something unique about the academic labor market institutions that make monopsony is more important than in other markets (Ransom, 1993).

2. LITERATURE REVIEW

Manning (2003) states that even though the term monopsony is not specifically aimed at the labor market, however, the labor market is the main place for monopsony. There are two assumption related to imperfect labor market, namely: (1) there is a friction in labor market; (2) employers determine the wage.

The implications of these assumptions can be explained simply. The existence of friction indicates that there is a gap in the employment, fore example, if the employer and employee were both forcibly separated then the two parties would be worse-off. This gives the power to the market for the employer more than the employee through wages cut that makes the employees leave the companies. Meanwhile, the assumption that states employer determines the wage shows that employer runs the market forces. However, with these two assumptions, monopsony does not necessarily mean there is a single buyer on the labor but more to the terms of labor supply for the market is inelastic (Ramadhan & Setiadi, 2019).

Ignorance, heterogeneous preferences and mobility costs are a source of friction in the labor market that makes the most sense. The consequence of such friction is that an employer who cut indirect wages will soon lose workers. Workers could be out sooner than before or re⁶quirement to be more difficult but the extreme predictions of the competitive model does not apply. Labor supply curve faced by the firm is not very elastic. There is a friction that gives employers higher potential of market forces beyond their workers. Further assumption states that the firm that determines the wages does indicates that it runs the market power.

Firms that are in monopsony structure faces market⁶ supply curve for all its input and has positive slope. However, in monopsony market structure, the labor supply curve faced by the firm is not identical to the marginal expenditure curve. The supply curve of labor market shows the number of labours that need to be paid by the firm per unit as a function of the total labors that are bought by the firm. In another words, labor supply is the average expenditure curve of the firm. Since the average expenditure curve has positive slope so the marginal costs curve is placed above the supply curve. The decision to buy additional unit of labor increases the wage that need to be paid for all the additional unit, not just for one additional unit of labor.

Ashenfelter, et.al., (2010) explains that in the competitive market, employer is the wage taker and choose the employment utilization that maximizes its profit; $\pi = R(L) - W(L)$, in which $R(L)$ refers to the acceptance function of the firm, W refers to the wage level and L refers to the number of labors. An employer with monopsony has the power to maximize their profit through marginal costs but also through marginal costs that come from labor that is higher than the wage. The supply function th⁵ has upward sloping indicates that wage is a rising function from the employment (inverse of supply curve). In this case:

The first-order conditions for maximum profit:

$$R'(L) = W \quad (1)$$

The first order condition for monopsonistic employer can also be shown by the equation;

$$\frac{R'(L) - W}{W} = \frac{1}{\epsilon_{Nw}} \quad (2)$$

In which ϵ_{Nw} refers to the elasticity of labor supply faced by the monopsony firm. This equation demonstrates that an inverse relationship from the gap between marginal revenue and the wage level as well as the elasticity of labor supply. This gap is called the level of exploitation.

If the university is monopsonist, lecturers that are less mobile will receive lower wage. Ransom (1988) tests the effect of mobility costs on the earnings of university lecturer. This is examined by looking at the effect of marital status and the spouse's occupation on their earnings. Spouse's occupation determines significantly lecturer earnings for both male and female. Furthermore, among female lecturers, the effect of different occupation goes well with the allegation concerning less mobile occupation and therefore supports the monopsony model.

Ehrenberg (2003) states that the earnings of lecturers in public universities are lower than those in private universities due to the differences in the tuition fee. This leads to public university losing 75 of their lecturers due to the transfer to other university. This dispersion develops in private university due to the dispersion of student's contribution, while in public university it is caused by the government contribution per student. The increase in research provision in the field of science lead to the decrease in internal funds to support teaching in the field of social and humanities. The university that has monopsony power in senior professor market also proves this.

Income decreased by 0.5 percent for each additional year of seniority based on the data collected from the three major universities in the US and decreased by about 1 percent if the data came from universities individually. Professor with seniority, on average, can increase their income by 5-10 percent if they move to another institution. This is dramatically different from the 25 percent decline estimated by Topel (1991) on American workers.

Hallock (1995), retest study conducted by Ransom (1993) and found that the effect of income on seniority at the University of Massachusetts (UMASS) is positive at least at the level of the low seniority. Thus it is contrary to the results of Ransom. It probably caused by the labor union on the faculty at the UMASS; lecturers that are hired from outside the university earn more than those that promoted from the internal university (support Ransom's hypothesis on the existence of monopsony); gender discrimination coefficient is 3 percent, which is lower than that described by Hoffman (in Hallock, 1995)

3. MATERIALS AND METHODS

This study was conducted at four universities in the Southern Sumatra, Indonesia namely Sriwijaya University (Unsri), Lampung University (Unila), Jambi University (Unja) and Bengkulu University (Unib). Population is the number of lecturers from four public universities, amounted to 3740 people. The heterogeneous population condition is characteristic of varying population, or consists of stratified groups. Determining the level based on certain characteristics (academic rank, discipline, and gender) then stratified sampling technique is used with a sample size proportional to the number of population (proportional).

Quantitative approach analysis is used in this study to analyse the elasticity of lecturer supply curve. This elasticity is important to see monopsonistic behavior that leads to monopsony power. Parameter estimation technique used is *Ordinary Least Square* (OLS) with the equation as follows:

$$SL = d_0 + d_1W + d_2V + d_3SD + \mu_3 \quad (3)$$

The estimated expected parameters are:

$$d_1, d_3 > 0 \quad ; \quad d_2 < 0$$

The source of monopsony power in the labor market is caused by the behavior of workers instead of the level of competition on the company (Hotchkiss and Agnoli, 2005). Recent studies have focused on more direct evidence, which is the elasticity of labor supply (Staiger, Spetz and Phibbs 2010; Ransom and Sims, 2010). Equation (2) is a standard measure of the power of monopsony called "Pigouvian Exploitation", (Ransom and Sims, 2010).

Table 1. Operational Variable Definition

Variable	Definition	Measurement
Lecturer Earnings (W)	The average amount of revenue per year received by the lecturer through their Tri Dharma activities in the form of salaries, lecturer certification and other income.	Rasio
Lecturer Supply (S _L)	Number of hours / week for activities in the classroom, outside the classroom and research	Rasio
Non Labor Income (V)	The average income per year obtained through working outside university or not working	Rasio
Source of Lecturer (SD)	Perception of junior faculty lecturers, senior lecturers and guest lecturers. Source lecturer is measured by three indicators, namely SD1, SD2 and SD3	Interval
Junior Lecturer (SD1)	Lecturer perception on the contracted lecturer	Interval
Guest Lecturer (SD2)	Lecturer perception on guest lecturer from outside university	Interval
Lecturer Program (SD3)	Lecturer perception on the lecturer that are hired for study program instead of institution	Interval

4. RESULT AND DISCUSSION

4.1. Supply model

In accordance with the theory of labor supply, the working hours (supply) of a lecturer is influenced by the level of income and non-labor income. The results of the estimation are presented in Table 2. The coefficient sign for income (W) is significant, but the sign for non-labor income and the source of lecturer is found to be insignificant. Non-labor income coefficient implies when there is an increase in non-labor income, lecturers will devote more time to working hours outside the classroom e.g, preparing for teaching materials, updating references, following support activities such as seminars, workshops or create community service activities. This also implies that the break is not normal for lecturers.

There is a positive relation between the number of working hours (supply) and the source of lecturer (faculty). The implication is that lecturers do not consider their young lecturer, or lecturer who come from outside the university as the cause of working hours to be reduced. The existence of the faculty resources can increase the chances of improving lecturers' working hours individually, for instance by doing more research, or service activities and other support. According to Table 3, it can be seen that for every 1 percent increase in the value perception of lecturers on faculty resources it will increase the number of working hours of lecturers by 2.2575 percent.

The coefficient of income is relevant to the pattern of upward slopping labor supply curve. The upward sloping curve is a sufficient evidence for the power of monopsony (Manning, 2003).

Monopsony led to the assumption that the upward slopping of labor supply curve implies a low wage rate. This also reinforces the notion that the academic labor market is monopsonistic.

Table 2. The estimation results of supply model

Equation	Variable	Parameter Estimation	Probability	Significance Level
SL	Constant	966,5775	0,0000	1
	W	1,325968	0,0009	1
	V	0,242067	0,7706	
	SD	2,257528	0,9242	
	N	348		
$R^2 = 0,426406$	F-statistik	3,925423	DW-statistik	1,870712

Note: The number in coloumn on significant level: 1= is different compared to 0 in significant level at 5%

Source: data processed

4.2. Power measurement of monopsony

Given the scope of this research is a public university that can also be called the public sector, which means that there is potential for market forces as an important feature in the public sector. It arises from its role as the dominant employer in a particular occupation and the elasticity of worker supply in this occupation is inelastic. The coefficient of elasticity of 0.1222 indicating the supply elasticity of lecturers, it is then calculated using the equation (2) to measure the power of monopsony:

$$E = \frac{1}{\eta} = 8.1833 \tag{4}$$

The value of $E = 8.1833$ means that monopsony power in the academic labor market in Southern Sumatra is considered high as it is more than 1 (one). Therefore, since the power is high, there is a need of high increase in the earnings for a certain number of working hours. Furthermore, the academic labor market in Southern Sumatra as the scope of this study have more than one public university, although the actual university is only 1 (one) or at most 2 (two) and the nature of the specialties of the univeristy. If the univeristy "buys" the labor that is not purchased by other universities, the universities tend to be monopsonist.

The existence of regulation regarding to the determination of income linked to the empirical findings of lecturer average income ranges from Rp7.5 million - 12.5 million per month, which reinforces the fact that the average income received by lecturers are considered low. Based on these results, the regulations governing the income of lecturers with various elements imply the low income received and monopsonistic behavior in the academic labor market. The comparison of income shows that the amount of income received by lecturers is relatively low when compared to the same profession in another country (Jalal, in Elfindri et al, 2014).

5. CONCLUSIONS

The key point in the context of the decomposition of income and substitution effects is that the supply elasticity is positive indicatinga dominant substitution effect. The dominance of the substitution effect shows that an increase in working hours, the breaks become more expensive and creates an incentive for lecturers to change their breaks into other activities.

The power of monopsony on the academic labor market in the Southern Sumatra is considered high, as it is more than 1. Therefore, supply elasticity is inelastic indicating the earnings of lecturers is approaching non-competitive condition. This implies that the existence of the monopsonist power is so high. Therefore, with that monopsony power, the university can "buy" a lecturer with the

"price" below the marginal value. The magnitude of the declining "price" depends on the elasticity of supply faced by the university.

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