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Rigidity of Nominal Wages of Non-Production Workers in Industrial Sector

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Abstract

Excess supply of workers leads to the low level of nominal wages received by the workers. The amount of minimum wage rate exceeds the market wage rate. The determination of minimum wage is a factor manifested in the institutional and regulatory Provincial Minimum Wage or a Regency Minimum Wage. Unfortunately, it has made the nominal wages difficult to decline below the minimum wage level. High or low level of nominal wages is associated with the workers' productivity. Further, nominal wages are rigid to decline. If they have increased, they cannot be declined in the future although the company's performance is declined. Knowing that condition, in designing the remuneration system, an entrepreuner should pay attention to the rigidity of declining nominal wages, so that when company's performance declines, the company will not be interfered because of the wages burden. Furthermore, the unions and government should consider the rigidity impact of nominal wages that decline. Thus, when the macroeconomic conditions deteriorate and the company's performance declines, the company will not go bankrupt due to the high worker costs. If the company goes bankrupt, the workers will loose their jobs as a result of employment termination, while the government will face the unemployment problem.

Keywords: Rigidity of nominal wages, non-production workers

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INTRODUCTION

Determining the level of wages is a dilemma. For the entrepreneurs wage is a component of cost while for the workers it is an income. The entrepreneurs are trying to minimize the costs in order to gain the maximum profit. Meanwhile, the workers want to earn high wages in order to increase their utility. The demands of wage increases often lead to disputes between the workers and entrepreuner, which will lead to the disruption in the company's activities. The entrepreuners will be lost because the production process is not running so there is no reception, while the workers will be lost because they cannot work so they have no revenues.

The government is trying to resolve this dispute by the enforcement of the minimum wage in order to improve the welfare of workers (Suryahadi et al, 2003: 31). Most wage issues occur in the manufacturing industry. Manufacturing industry group that is susceptible to changes in the side of macro economy such as inflation and exchange rate changes is the manufacturing industry that contains the high raw materials imports (import content). The inflation and exchange rate changes affect the cost of raw materials. For the manufacturing industry, raw material costs are the largest cost component. Furthermore, inflation and exchange rate changes also resulte in a decrease in the scale of production and productivity of workers.

The labor productivity is closely related to the level of wages. For the entrepreneur, wage is a cost. Labor costs continues to increase due to the increase of Provincial Minimum Wage (UMP). If the labor costs cannot be controlled, it will reduce the efficiency and the subsequent will impact on the performance (profit) of relevant industry.

Many industries in the region is a potential that can be used as a means of increasing the region's economy. Industry is a sector that has a lot to do with other sectors (Fafurida 2012). This results in an increase in the number of workers used in the industry.

The workers of manufacturing industry consist of workers in the factory (production workers) and those who are not in the factory (non-production workers). In terms of number of workers, the majority of workers in the manufacturing industry are production workers. Most of the researches on wages discuss the wage of production workers.

Few researches have discussed the wages of non-production workers, while the presence of non-production workers is crucial for the development of the manufacturing industry. Non-production workers are instrumental in organizing activities of the company and determine the reciprocation of the company. Their presence is still needed to maintain and improve the company's performance.

One indicator of the company's performance is the labor productivity (Pernia and Salas, 2006). High and low level of nominal wages is related to the labor productivity (Manning, 2000). If the labor productivity has decreased, then it can lead to difficulties in determining the level of nominal wages. The nominal wage rate is determined among other things based on the labor productivity that reflects the ability of workers to produce the output in a given time. Reductions in labor productivity show a drop in donations (contributions) of the workers in the production process. The decline in labor productivity will be a reason for the entrepreuner to lower the wages (Orbaiceta, 2013).

For workers, including non-prouction workers, wages are a means to improve the welfare of workers and their families directly.

High or low wages give direct effect on the welfare of workers. The decline in nominal wages will reduce the consumption level of workers. The amount of goods and services that can be purchased by the workers are declining so that the utility of workers and their families go down. Workers in the manufacturing industry will make efforts so that when the labor productivity declines, the nominal wages they receive will not go down.

Meanwhile, inflation causes the increase in production costs and the output prices will also be increased. The increase in output prices shows an increase of the value of marginal product of workers that the labor demand also get increased. Furthermore, the increase in labor demand leads to higher wages. Thus the increase in output price of manufacturing industry will deter the entrepreuner's desire to lower the wages. In addition, non-production workers are significantly instrumental to the reciprocation of the company. The company will seek to meet the demands of the workers so that the nominal wages of non-production workers are rigid to go down.

Based on the above background, the problem in this paper is that the nominal wages of non-production workers in manufacturing industries are rigid to go down, which means that the increase in labor productivity is followed by the nominal wage increase, but the decline in labor productivity is not followed by the decline in the nominal wages.

The purpose of this paper is to analyze the rigidity of declining nominal wages of non-production workers so that the wage system enables a reduction in the labor costs when their productivity declines so that the production costs can be controlled in the manufacturing industry in Indonesia.

Wage determination in Indonesia is different from that in Western countries. In Indonesia there is no social benefits for the unemployers or unemployment benefits (Islam, 2001; 320). When there is a failure in wage bargaining between the workers and entrepreuner, the workers will be unemployed. The workers have no income at all, whereas workers in Western countries still get social benefits for the unemployers. This affects the bargaining power of workers in the determination of the nominal wage rate. Thus the rigidity of declining nominal wages in Indonesia is different from the that in Western countries.

Holden and Wulfsberg (2007) said that the increase in the intensity of the union of workers make the nominal wages increasingly rigid to decline. The existence of labor legislation makes the nominal wages increasingly rigid to decline. Meanwhile, the increase in the unemployment rate weakens the rigidity of declining nominal wages. Susanto (2009) stated about the rigidity of declining nominal wages whether for the wages of production workers or non-production. The reduction of labor productivity does not lead to the reduction in nominal wages of production workers. Decline in wages will reduce the workers' morale and have a negative impact on the performance.

The mechanism of the labor market through the interaction between demand and supply of labors will determine the level of wages and the level of employment (McConnell, et al., 2003: 169). Labor market equilibrium is reached when the labor demand curve DL intersects with the labor supply curve SL.

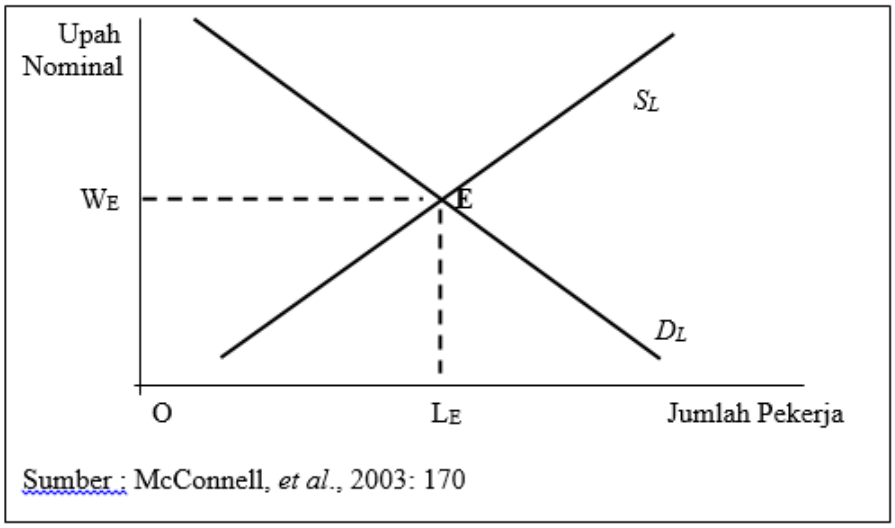

Figure 1. Labor Market Balance

The amount of labor demanded is equal to the number of workers willing to work. Labor market equilibrium occurs at point E with a nominal wage rate as high as OW_E and the employment level as many as OL_E. The high wage level as high as OW_E is known as the market wage rate. If there is no intervention from the outside, there is no tendency for the wage rate and employment to change (see Figure 1).

Both workers and entrepreneurs are concerned with the survival of the company. But in some ways, they have different interests. The entrepreneurs want to maximize the profits, while the workers want to maximize the utility. This leads to the principal agent problem. Workers as an agent may perform different actions with what the entrepreneurs want (Nicholson, 1995: 433). Workers may increase leisure time by getting lazy to work. Therefore, the company should be able to find a way to maximize the profits by eliminating the agent problem (McConnell, 2003: 219).

At some companies, especially those that employ the skilled workers, frequently the wage received by the worker exceeds the minimum wage level and at the same time exceeds the market wage rate. The wage rate is called an efficient wage (Bosworth et al., 1996: 306). The basic thought for the efficient wage model is that the benefit for the company is by providing higher wages to their workers. High wages make high cost of losing a job for a worker. This makes the workers work harder. High wages can reduce the number of lazy workers (Romer, 1991; 411) and can improve the workers' efforts and capabilities so that their productivity will get increased. Increase in workers' productivity will lower the cost of labor per unit of output (McConnell et al., 2003: 232).

Implementation of efficient wages is shown in Figure 2 where the initial equilibrium occurs at a point that is at the intersection of the curve S_L of labor supply and D_{L1} of labor demand with the wage levels as high as OW_1 and the number of workers of OL_1. In this condition, all workers who want to work can find a job sought, thus there is no unemployment. In order to lower the cost of labor per unit of output, the company raises the wage levels of OW_1 become OW_2 by shifting the labor demand curve of D_{L2} to the right into D_{L1}. The wage rate of OW_2 is an equilibrium wage rate because the company

does not intend to lower or raise the level of wages (McConnell et al., 2003: 235). The number of workers employed remains at OL_1. One implication of efficient wage is the unemployment as many as *bc* in the equilibrium of labor market.

One reason for the rigid declining nominal wages during the recession is the existing contract between workers and entrepreneurs. Through the contract it is agreed that the company will maintain its nominal wages unless there are things that are out of control, for example the company goes bankrupt (McConnell, 2003: 572). Consideration of the companies to build a contract is because it will be more expensive if the company's workers often change. The company should bear the cost of recruiting and training the new workers. Companies prefer to hire workers for a certain time in order to avoid the transaction costs of negotiating wage (Dobrusin, 2013).

The existence of a contract between workers and entrepreneurs determines a certain nominal wage rate and makes the wage negotiations difficult to do. Efforts to nominal wage adjustment requires transaction costs. The more frequent the nominal wage adjustment is conducted, the greater the transaction costs are required. The existence of transaction costs encourages the workers and entrepreneus to use a long-term contract. Both workers and entrepreneurs tend to maintain the contract that has been made. The decline in nominal wages is a violation of an agreement between workers and entrepreneurs.

The theory of contracts gives more emphasis on the stable nominal wage rate than the stable employment. It is based on the idea that workers prefer stable nominal wage than stable employment. Workers feel that it is pointless if the nominal wage is lowered, while those who are unemplyed will receive unemployment benefits, find a new job, or enjoy the leisure time (non-work activities).

Most of the industrial relation problems are related to wages. To reduce the discontent of workers, entrepreneurs design the remuneration system that allows the workers to earn incomes exceeding UMP by providing various allowances.

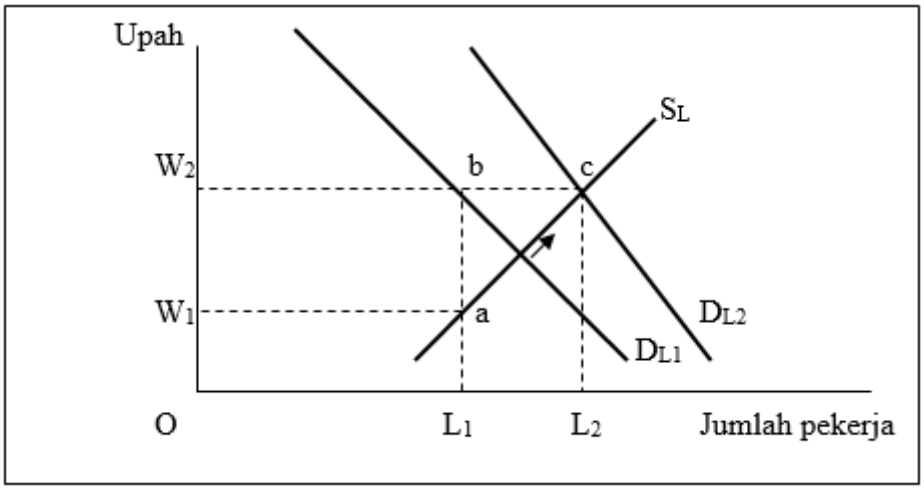

Figure 2. Enactment of Efficient Wage Rate

Table 1. Types of Wage Components of Non-Production Workers

No.	Components of Income	Non-Production Workers
1.	Main Wage	Main Wage
2.	Fixed Allowances	Allowance of Wife-Children Health Allowance Extra-Work Allowance
3.	Variable Allowances	Premi of Presence Transport Allowance Food Expense Health Expense Insurance

Source: SMERU, 2001.

Nominal wage of non-production workers consist of nominal basic salary and various allowances nominal. Allowances of non-production workers consist of fixed and variable allowances. The variable allowances vary according to the company's performance (Table 1).

Non-production workers continue to receive allowances for wife-children, health and extra work in a certain amount. This is because these allowances are fixed. Meanwhile, health and extra work allowances for the production workers are variable according to the performance of the company (SMERU, 2001: 21).

RESEARCH METHODS

This research uses the secondary data published by the Central Bureau of Statistics (BPS) in 1998-2011. The data used is the data panel that includes non-production workers' wages, workers' productivity and the Provincial Minimum Wage. While the industry group as the object of research is industries with high import content of raw materials including large and medium industries of textile, leather, paper, printing, and chemical.

The followings describe the operational definition of each variable. (1) The nominal wages of non-production workers (W) is the overall wage expenditure for non-production workers in large and medium industries divided by the number of non-production workers in the industry. The units used are thousand rupiah per worker; (2) Labor productivity (Y) is the real value of goods produced by large and medium industries divided by the number of workers in the industry. The unit of labor productivity is thousand rupiahs per worker. (3) The Provincial Sectoral Minimum Wage (UPMIN) is the average minimum wage of sectoral regional (provincial) applicable in the province where the company is located.

Variables of wages are stated in nominal value, while the variables of labor productivity are the real value. Imposition of the nominal value is on the variable of wage because this research examines the rigidity of nominal wages. Meanwhile, labor productivity is a measure of the amount of output that can be produced per worker. The use of real value in the variable productivity of workers is more appropriate because it can show the amount of real output produced per worker.

This research uses panel data cointegration testing referring to the testing of the null hypothesis, which states that each

member of the panel is not cointegrated. Meanwhile, the alternative hypothesis states that for every member of the panel there is a vector of cointegration although it is possibly different among the panel members, so that the variables in the model are cointegrated.

Pedroni (1999) discusses the development of seven panel cointegration statistics that are divided into two categories: based on the *pooling within dimension* and *between dimension*. The first category consists of four tests, while the second category consists of three tests. In the first category, three of four tests include the use of non-parametric correction of Philips-Perron (1988), while the fourth model uses the ADF test. In the second category, two of three tests use non-parametric correction, while the third model uses ADF test.

In economics, the dependence of a variable depends on the free variables that are rarely instantaneous. Frequently the dependent variable reacts to the independent variables with a time interval. The time interval is called lag (Gujarati, 2003: 657). Liew research results (2004: 1-9) suggested that in establishing criteria of lag length in the autoregressive model, then the criterion AIC (Akaike Information Criterion) and FPE (Final Establishment of dynamic model is conducted by inserting the lag on the variables both on the right side and the left side of the equation. The estimation of short-term nominal of wage rigidity model of non-production workers can be written in the following equation:

$$dW_{it} = \alpha_i + \sum_{j=1}^{k} \omega_{ij} W_{it-j} + \sum_{j=0}^{k} \beta_{ij} dY_{it-j} + \sum_{j=1}^{k} \gamma_{ij} dY_{it-j} * DUM_{i+t} + \sum_{j=1}^{k} \eta_{ij} UPMIN_{it} + \lambda_{ij} ECT_{t-1} + e_{i,t}$$

Explanations :

W =the nominal wage of non-production workers
Y = labor productivity
UPMIN = the provincial minimum wage
DUM = a dummy variable. DUM values 1 if the labor productivity has decreased and DUM is 0 for other conditions.

Reduction in labor productivity in the short term makes an increase in the nominal wages of (β + γ). Rigidity of declining nominal wages (the sum of the coefficients β and γ) is tested using the Wald test and following the rules of distribution t. If the Wald test results show that t is not significant, the sum of the coefficients (β + γ) is equal to zero. This means that the reduction in labor productivity is not responded by the decline in nominal wages so the rigid declining nominal wage is not rejected.

The conditions will otherwise apply when $t_{account}$ is significant.

RESULTS AND DISCUSSION

The results or the impact of any economic policy does not happen instantly but it takes time or inaction (lag). The operational of an economic policy will take for example one year, two years or more. Determining the optimal length of inaction in this research uses the criteria of Akaike Information Criteria (AIC), which has the smallest absolute value that can be described in the table below:

Table 2. Summary of AIC value for variables of W, Y and UPMin

	p(lag) = 1	**p(lag) = 2**
Akaike Information Criteria (AIC)	37.18547	37.06264

Source: Processing data from Attachment 1.

To use a variable of nominal wages of non-production workers (W), labor productivity (Y) and the Provincial Sectoral Minimum Wage (UPMin), it shows that the minimum AIC value lies in the inaction p (lag) = 2 that is (37.06264), which means that the impact of labor productivity variable (Y) and the Provincial Sectoral Minimum Wage (UPMin) above does not occur instantly at the same time but it takes two additional years, and after that it gives impact on the variable of nominal wages of non-production workers (W).

To determine the rigidity of nominal wages of non-production workers in manufacturing industries in Indonesia due to the changes in labor productivity and sectoral minimum wage at provincial level is started by estimating VAR at the level of inaction (lag) 2 as shown in Table 3.

From Table 3, it can be explained that when at the level of inaction (lag) 2 there is an increase in the productivity of workers by 1 percent, the change in nominal wages of non-production workers only is increased by 0.074955 percent and rise changes Sectoral Minimum Wage Province of 1 percent will decrease changes in nominal wages of non-production workers amounted to only 0.322628 percent. On one side when the level of nominal wages of non-production workers for the previous 2 years changes at 1 percent, the nominal wages of non-production workers in question will be changed by 1.253021 percent. This indicates that there is a rigidity of nominal wages of non-production workers (when the other matters beyond these variables are considered constant). Frequently the level of wages that are produced through the market mechanism is deemed too low. Therefore, the government imposes a minimum wage provisions higher than the market wage rate so that the welfare of workers can be increased. Minimum wage regulations have made the rigidity of declining nominal wages and subsequently resulted in an imbalance in the labor market (Hillier, 1991: 21).

To see the rigidity of nominal wages of non-production workers in manufacturing industries to decline can be seen with a dummy variable analysis.

With the addition of a dummy variable where DUM valued 1 if the workers' productivity decreased and DUM valued 0 for other conditions, it can be said that there is a significant effect (probability value of Dumdy 0.0373 is smaller than $\alpha = 0.05$ so that the null hypothesis is rejected), which is there is the effect of decreasing of the labor productivity against the regression results of the nominal minimum wages of non-production workers in manufacturing industries, which means that the increase in the productivity of workers is followed by the nominal wage increase but a decline in labor productivity is not followed by a decline in nominal wages.

Table 3. Estimation of VAR based on p(lag) = 2

	W	**Y**	**UPMIN**
W(-2)	1.253021	-0.132187	-0.006229
	(0.08456)	(0.12501)	(0.02671)
	[14.8177]	[-1.05739]	[-0.23321]
Y(-2)	0.074955	0.938608	0.001114
	(0.02878)	(0.04255)	(0.00909)
	[2.60429]	[22.0597]	[0.12254]
UPMIN(-2)	-0.322628	0.189688	1.237131
	(0.14754)	(0.21811)	(0.04660)
	[-2.18676]	[0.86969]	[26.5461]
C	-64.83540	408.3191	20.47152
	(84.1203)	(124.359)	(26.5715)
	[-0.77075]	[3.28339]	[0.77043]
R-squared	0.839811	0.916460	0.948689
Adj. R-squared	0.831933	0.912351	0.946166
Sum sq. resids	2148827.	4696273.	214403.2
S.E. equation	187.6877	277.4673	59.28581
F-statistic	106.5999	223.0622	375.9467
Log likelihood	-430.4275	-455.8375	-355.5209
Akaike AIC	13.36700	14.14885	11.06218
Schwarz SC	13.50081	14.28265	11.19599
Mean dependent	420.6172	3382.523	581.0154
S.D. dependent	457.8193	937.2139	255.5186
Determinant resid covariance (dof adj.)		9.46E+12	
Determinant resid covariance		7.82E+12	
Log likelihood		-1241.530	
Akaike information criterion		38.57016	
Schwarz criterion		38.97159	

Source: data processed.

When using Gift-Exchange model where the workers look at the higher wages as a gift from the entrepreneur that make them work harder as a reward for the kindness of the entrepreneur (Akerlof, 1984: 79-83), the provision of high wages can be justified if it can make the workers motivated for the hard work that ultimately will provide benefits in profits for the workers. Low wages, besides often make the workers resign also are related to the low working motivation, which means there is the motivation of reciprocity. Workers who receive higher wages will think that the entrepreneur has good manner so they will respond it with a willingness and motivation to work harder.

Table 4. Analysis Result of Dummy Variables

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	71.59171	15.75860	4.543024	0.0000
DW1	0.175053	0.080283	2.180439	0.0341
DW2	-0.037972	0.070035	-0.542184	0.5901
DY	0.299806	0.090718	3.304804	0.0018
DUMDY	-0.254374	0.118857	-2.140171	0.0373
DUPMIN	-0.098987	0.126913	-0.779956	0.4392
ECT1	-0.103880	0.054039	-1.922292	0.0604
Cross-section fixed (dummy variables)				
	Weighted Statistics			
R-squared	0.489832	Mean dependent var		103.6502
Adjusted R-squared	0.385716	S.D. dependent var		89.17295
S.E. of regression	75.83332	Sum squared resid		281783.9
F-statistic	4.704681	Durbin-Watson stat		2.145799
Prob(F-statistic)	0.000104			

Source: data processed

Economic actors with a variety of reasons prefer a nominal wage determination than the real wages. The workers respond differently to the decline in real wages caused by the price increase and the decline in nominal wages. The decline in real wages that occurs when inflation exceeds the nominal wage increases is considered fair. Conversely, a decline in real wages due to the decline in nominal wages is not considered fair. The workers will resist nominal wage decrease because it will lower the real wage relative to the general level of wages.

For example, the increase in the exchange rate of the US dollar against the rupiah causes the output supply curve shift to the left (Figure 4). This shift indicates that the output supply is reduced so that the demand for labor is also reduced. The decline in output demand will shift the labor demand curve to the left (see McConnell et al., 2003: 149). If the labor supply is fixed, the labor demand curve shift to the left leads to a decrease in wages and employment levels. The decline in the level of wages is not favored not only by the workers but also by the entrepreneurs. For the entrepreneurs who apply the principles of efficiency wages (as in the chemical industry), it is pointless when they lower the nominal wages. Low wages make the workers lazy and further negatively affect the performance of the company. Thus, it will be more profitable for the entrepreneurs to maintain the level of nominal wages. The level of nominal wages is rigid to decline.

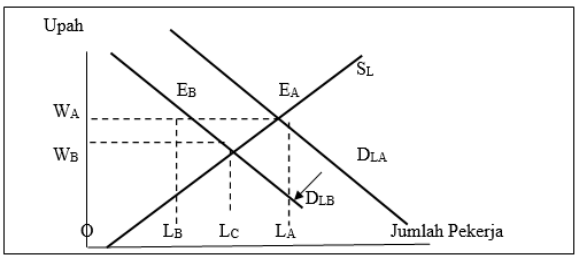

Figure 3. Rigidity of Nominal Wages to Go Down

The decline in output demand shifts the labor demand curve to the left into D_{LB}

D_{LA}. The new equilibrium occurs at point E_B, with nominal wage rate remains as high as OW_A, but the number of workers is reduced to OL_B. The decline in the productivity of workers is responded by the entrepreneurs by reducing the number of workers and not by lowering the nominal wage. At the OW_A wage levels there are a number of OL_A workers who are willing to work, but only a limited number of workers OL_B who can work so a number of L_BL_A workers are involuntarily unemployed. Position of E_B is also a balance because there is no tendency for change although there are a number of workers unemployed.

The entrepreneurs need to look at the aspects of the rigidity of declining nominal wages in the policy of wages. Therefore, the entrepreneurs need to take into account the role of workers in producing the value added. The entrepreneurs need to take into account the labor shared and compare it with the wages of workers. Furthermore, it can be calculated increase (growth) of the non-production workers wages annually and compared the rate of increase in the labor productivity. Based on this comparison it can be determined the wage policy, including wages for non-production workers.

Furthermore, the entrepreneurs should determine the scheme of non-production workers' wages by determining the ideal weight combination between wages and benefits remain with variable allowances. The company can give greater weight to the variable performance-based benefits (profits) of the company. Thus, when the scale of production and labor productivity has decreased, the labor costs can be reduced without having to perform the Termination of Employment (PHK).

CONCLUSION

By conducting the VAR estimation of nominal wage level of non-production workers, it can be concluded that for previous years it indicates a rigidity of nominal wages of non-production workers (if other things outside the variables are considered constant).

With the addition of dummy variables where DUM value is 1, if the labor productivity has decreased and DUM value is 0 for other conditions, it turns out that there is the effect of reductions in labor productivity on the level of nominal minimum wages of non-production workers of the manufacturing industry.

It is expected that the management of company must strive to repair the fair wage system that allows the reduction of labor costs at the time of labor productivity goes down so that the production cost is controlled. However, if the productivity of workers has increased so it is reasonable if the wage is increased in order to encourage the workers to work harder.

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