THE SOCIAL WELFARE COST OF THE REGIONAL MINIMUM WAGE INCREASE POLICY

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Abstract

Sejauh ini belum banyak studi yang secara intensif meneliti dampak negatif suatu kebijakan pemerintah, khususnya pada sektor industri pegolahan. Studi yang pernah dilakukan sebelumnya umumnya masih sebatas pada saat terjadi gejolak perekonomian, setelah diumumkannya kebijakan pemerintah. Akibatnya, terjadi kesenjangan antara kebijakan makro pemerintah dengan penyesuaian-penyesuaian strategi di tingkat makro. Hal semacam ini pada akhirnya merugikan pelaku bisnis dan masyarakat.

Makalah ini menghitung kerugian masyarakat akibat kebijakan pemerintah menaikkan Upah Minimum Regional (UMR) dengan studi kasus sektor industri tekstil di DIY. Hasil studi memperlihatkan suatu dilema yang harus dihadapi antara kepentingan tenaga kerja dengan kesejahteraan masyarakat luas. Akhirnya, studi ini merekomendasikan perlunya modifikasi sistem UMR untuk mengurangi kerugian yang harus ditanggung masyarakat.

INTRODUCTION

In line with the International Labor Organization convention No. 131/1970 the Indonesian government has been introducing the regional minimum Wage (RMW) policy and revises it periodically. In 1996, for example, the Indonesian government increased it about 13-15 percent and 10.07 percent in 1997. However, there are many people argue that the policy very controversial. This is because the RMW policy is not effective to increase labor productivity. Kuncara and Wibowo (1997) proved it empirically. Their study found that 1 percent increase in wage rate on the average rises the labor productivity 0.84 percent only. Meanwhile, others state that the policy is needed to maintain labor prosperity and to alleviate exploitation of unorganized labors for example, ... The RMW policy also can avoid a dispute between employers and employees and reduce unfair competition between powerless labors and powerful employers.

In conducting the policy, especially in increasing the RMW every year, the government has a lot of considerations. The reasons can be described as follow: *firs,* the government tries to increase labor productivity as well as labor property in relation to the inflation rate under to maintain their real wage. It is not secret anymore that labor wage rate in Indonesia is still very low compared with the other Asian countries. In 1992, for example, the labor wage in Indonesia was al half less than that in People's Republic of China. Table 1 describes clearly the situation. *Second,* the government would like to increase efficiency in Indonesia industry. The low RMW is intended to encourage the national industrialists improving their competitive and comparative advantages in the world market. And *third,* the government aims to accommodate international economic changes in line with globalization and free trade era. The low RMW is also aimed to attract the foreign direct in

investment as much as possible.

Whichever the consideration is the most reasonable, we hope that the RMW increase policy will not worsen to our economic situation. This study is designed to analyze the social welfare cost that are generated by the policy and more specifically is to provide them quantitatively. Furthermore, our study is concentrated on the textile industry in Yogyakarta Special Region. This is because the RMW increase in Yogyakarta is the lowest in Indonesia. In that industry the workers got a minimum wage of about RP. 96,000.00 in 1996 and got about Rp. 106,500.00 in 1997. Those regional minimum wages actually are below the basic minimum needs corresponding to the years. As a result, the RMW increase in that industry is very low.

To analyze those objectives of the research, we organize our discussion as follows. In the first section, we will talk about the theoretical considerations as basis of model specification. In the next section, we will sketch the methodology of the empirical analysis. This is followed by describing the data. In the fourth section, we report the empirical results. Finally, some concluding remarks are drawn.

THEORETICAL BACKGROUND

The calculation of the loss effectively lumps together all the consumers and producers and generates an estimate of the "cost" of a social policy only for some mythical "representative consumer". In many cases, it is desirable to know not only the average cost across the population but also who bears the cost. In short, the political success or failure of policy often depends more on the distribution of gains and losses than on the average gain or loss (Varian, 1993).

Theoretically, the losses that are generated by the RMW increase policy and be identified by using several measures. The first measure is the compensating variation (CV). The CV measures how much money we would have to give the employer after the wage increase to make him/her just

Table 1
The Wage Rate of Labor in Manufacturing Industry
In Selected Asian Countries,
1991-1992 (US $ per hour)

Country	1991	1992
Japan	13.23	16.91
Taiwan	4.35	5.46
Singapore	4.39	5.12
Republic of Korea	4.13	4.93
Hong Kong	3.47	4.21
Malaysia	1.69	1.80
Philippines	0.64	0.68
Thailand	0.60	-
People's Republic of China	0.27	0.54
Indonesia	0.22	0.28

Source: Edy S. Hamid (1995), *Business Times* (1995), *Kompas* August 28, 1995.

as well off as he/she was before the wage change.

From figure 1, we can identify how far up the employer would have to shift the new isocost to make it tangent to the isoquant curve (IQ_0) that passes through the original input consumption point K_0, L_0 (see figure 1(a)). The CV, therefore, measures how much extra money the government would have to give the employers if the government wanted to exactly compensate the employer for the input price change.

Another way to measure the impact of an input price change is to identify how much money would have to be taken away from the employer before the price change to leave his/her as well off as he/she would be after the price change. This is called the equivalent variation (EV) in income since it is the income change that is equivalent to the price change in term of the change in output. In figure 1 (b) we can identify how far down we must shift the original budget line to just touch the isoquant curve (IQ_1) which passes through the input consumption bundles. The EV, therefore, measures the maximum amount of income that the employer would be willing to pay to avoid the input price change.

In general, the amount of money that the producer would be willing to pay to avoid an input price change would be different from the amount of money that the producer would have to be paid to compensate him/her for an input price change. After all, at different sets of price a rupiah is worth a different amount to a consumer since it will purchase different amounts of production. In geometric term, the CV and EV are just two different ways to measure "how far apart" two isoquant curves are. In each case we are measuring the distance between two isoquant curves (IQ_0 and IQ_1) by seeing how far apart their tangent lines are. In general, this measure of distance will depend on the slope of the tangent line (IC_0 and IC_1) – that is, on the price that we choose to determine the budget (isocost) line.

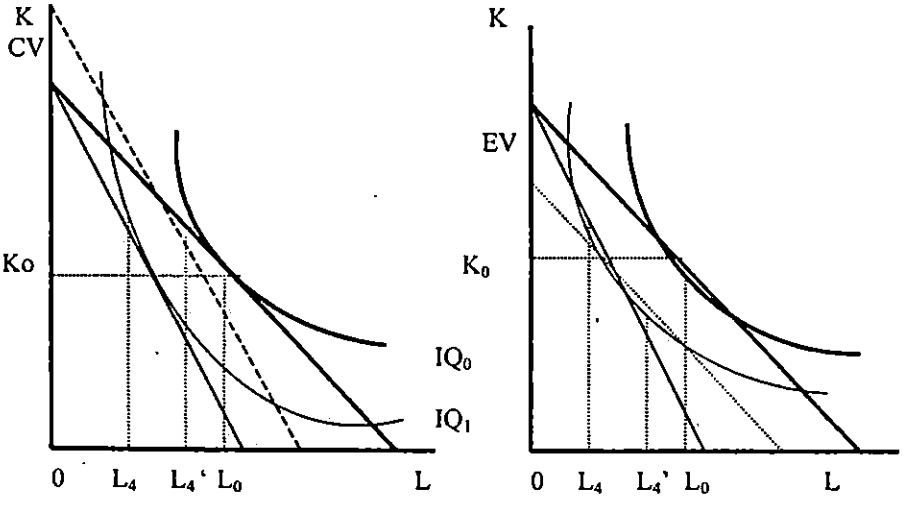

Figure 1: Compensating Variation and Equivalent Variation

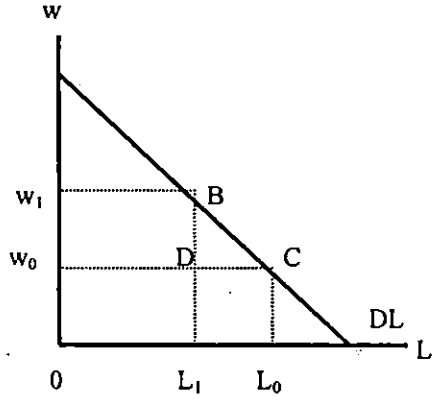

Figure 2: Demand for Labor

The third measure in identifying the loss that is caused by the input price change is the change in consumer's surplus (CS). The CS can be shown by the area under the demand for labor curve between two wage levels (see: the are w_0w_1 BC in figure 2). The demand for labor curve is derived from producer's equilibrium points that were shown by figure 1. The value of CS lies between the CV and EV and that the difference between the three numbers is relatively small (Willig, 1976). The change in CS may serve as a good approximation of ht impact of the price change. This is because the change in CS does not depend on whether there is an expenditure effect or not (Hausman, 1981).

The negative impact of the RMW increase also can be identified by using the deadweight loss (DWL). It measures the social welfare decrease that cannot be transferred to another. The value of the DWL depends on both how high the wage increases and the tangent of the demand for labor curve. The higher wage increase, the bigger the social welfare loss and the more elastic the demand for labor curve, the bigger the DWL. In term of diagram, the DWL is shown by the triangle BCD (see: figure 2).

And the last measure is unemployment. The unemployment causes potential output loss that should be yielded if the labors that lose their job are reemployed (mincer, 1976) (see: L_0L_1 in figure 2).

METHODOLOGY

This study is quantitative approach. So, we have to develop firs some modes and then analyze them to fulfill the objectives of the research. It is assumed that the Cobb Douglas production function is applicable for the textile industry in Yogyakarta. In mathematical term, we may represent it as follows:

$$(1a)\ Q = A\,K^{\alpha}\,L^{\beta}$$

$$(1b)\ \ln Q = \ln A + \alpha \ln K + \beta \ln L$$

and isocost line is

$$(2)\ IC = rK + wL$$

where Q is output producer. K and L are capital and laborer respectively. r and w are the rate of capital price and wage rate. Meanwhile, A, α, and β are a constant.

From equation (1a) one can derive the demand for each input by taking the first difference with respect to K and L:

$$(3a)\ K = \alpha\, Q / r$$

$$(3b)\ \ln K = \ln\ \alpha - \sigma \ln r + \delta \ln Q$$

$$(4a)\ L = \beta\, Q / w$$

$$(4b)\ \ln L = \ln \beta - \sigma \ln w + \delta \ln Q$$

where σ and δ are the elasticity of substitution between capital and laboer and that of output respectively.

At given original input prices, let say r_0 and w_0, one can obtain both the quantity of initial capital (K_0) and Labor (L_0) demanded. And then the initial isocost line

and output produced are denoted by IC_0 and Q_0. Now the wage rate increases from w_0 to w_1 and r_0 remains unchanged. Substituting w_1 into equation (4a) and then into (1a),

$$(5)\ A\,(\alpha Q/r_0)^{\alpha}(\beta Q/w_1)^{\beta} = A\,K_0^{\alpha}\,L_0^{\beta}$$

Solving for Q we get Q_1 as well as IC_1. The CV can be calculated by subtracting IC_1 to the original isocost (IC_0):

$$(6)\ CV = IC_1 - IC_0$$

Furthermore, the wage increase from w_0 to w_1 will change the labor employment in the opposite direction, say from L_0 to L_1. Substituting L_1 into equation (4a) and then into (1a) yields the following equation:

$$(7)\ A\,(\alpha Q/r_0)^{\alpha}(\beta Q/w_0)^{\beta} = A\,K_0^{\alpha}\,L_1^{\beta}$$

Solving for Q, one can get Q_2 and IC_2 automatically. Similarly, the EV can be obtained by taking the distance between IC_0 and the latter isocost line:

$$(8)\ EV = IC_0 - IC_2$$

In addition, the potential output loss as a result of the labor employment decrease can be found as follow:

$$(9)\ Q_{pi} = Q_0 - Q_2$$

As mentioned above, the change in consumer's surplus is shown by the area under the demand for labor curve between the two wage rates. It can be measured mathematically by taking integration to equation (4a):

$$(10a)\ CS = \int_{w_0}^{w_1} \beta\,Q/w\,dw$$

$$(10b)\ CS = \beta\,Q\,[\ln w_1 - \ln w_0]$$

To estimate the economic parameters such as α, β, and σ in calculating the CV, EV, CS, employment reduction, and output potential loss, we run OLS (*ordinary least squares*) to equations (1b), (3b), and (4b) by assuming all properties of the OLS estimation method are satisfied.

DATA AND VARIABLES

Before executing the models above, a word about data and variables is in order. The data that will be employed in this study are secondary data from the Central Bureau of Statistics of Yogyakarta, which are published annually. The study covers data from 1982-1996 for the medium and large textile manufacturing establishments. Because the range is less than 30 years, I disaggregate the industry into 4 subindustries according to the international standard of industrial classification (ISIC) by pooling data to get sufficient observation.

Our variables that we are paying attention to are specified as follows. The output is presented by the value added. The labor is performed by the number of persons engaged by each subindustry. Meanwhile, the capital is specified by the net value of transaction in fixed capital formation. The wage is approximated by dividing the total employment cost by total laborer. And the capital price is displayed by dividing quasi-rent by the capital. All of those variables are transformed into real terms in order to avoid money illusion.

RESULTS AND DISCUSSION

Production Function

The main empirical issue of this study is how to estimate the type of production function in textile manufacturing industry in Yogyakarta. The estimated result, therefore, determines convexity of the isoquant curve. The non-convex isoquant curve, for example quasi-linear, implies that

the value of the CV, EV, and CS will be close to each other's. Consequently, the distribution of losses dose not perfectly represent the change in social welfare. This research tries to estimate the production function based on "let data talk" spirit.

The result of the production function estimation is summarized in table 2. It is notable that the result is consistent with the theory of production. The coefficients of both capital and laborer are positive. A one-percent increases in capital and laborer on the average leads to rise 0.18 and 0.87 percent increase of output respectively. the two inputs can explain the variation of output about 90.59 percent indicated by the coefficient of determination (R^2) in the fifth column. The rest of them are explained by another variables, which are not involved in the model. The influence of both capital and laborer as whole is highly significant indicated by F statistics.

Our question then is whether the production function has a constant return to scale or not. Since the summation of those coefficients is not equal to unity (constant return to scale), the model is reestimated by imposing a constraint ($\alpha+\beta = 1$). Table 3 presents the result. The association between Q/L and K/L becomes weaker, that is 21.40, compared with the result of the previous model. This is a common situation due to a costraint that has been imposed. Ilowever, the coefficients of regression obtained are still significant at 95 percent confidence level. The standard error of estimate (SEE) also is relatively indifferent from the unrestricted model. These imply that the constraint imposed is tolerable. The coefficient of estimate of 0.2173 is the output elasticity of capital (α).

The output elasticity of labor (β), therefore, can be calculated directly, that is 0.7827. All of the figures mean that 1 percent increase in capital would rise 0.22 percent of output and 0.78 percent increase of output relates to 1 percent increase in laborer. These findings present that the production function in the textile industry in Yogyakarta shows a constant return to scale. This implies that the increase of output has the same proportion with increase of capital and labor combination.

Demand for Input

We have already proved that the Cobb-Douglas production function is valid for the textile industry in Yogyakarta. This, therefore, provides indirectly the demand for input equations (see: equation (3.a) and (4.a)):

$$K = (0.2173\ Q) / r$$

$$L = (0.7827\ Q / w$$

Table 2
The Estimated Cobb-Douglas Production Function

Constant	Ln K	Ln L	SEE	R^2	F	DW
2.4152	0.1839	0.8655	0.5288	0.9059	173.3097	1.7187
(4.5211)	(2.1133)	(5.8307)				

Note: the figures in parentheses are t statistics

The demand for inputs (i.e. capital and laborer) is always associated with the quantity of output. This concept is recognized well as derived demand. The greater output produced, the greater demand for both capital labors. Since the influence of output on input is positive, the industry produces output in an expansion path. In such case, when the input price falls – meanwhile the output price varies – any increase of output will increase capital laborer utilization.

However, the impact of input price change cannot be analyzed partially. It is unreasonable to assume that a particular input price – let say capital price – is unchanged and the other input price is variable. The increase of the capital price implies that the laborer price becomes cheaper and vice versa. This, in turn, causes an increase in the laborer (capital) demanded. Therefore, the relative input price has a positive influence on the demand for input.

Table 4 presents the result of the integrated demand for input regression (K/L). The elasticity of substitution between capital and laborer is positive, that is 0.8558. It means that 1 percent increase in relative input price will increase capital per laborer 0.86 percent. However, the elasticity of substitution is not different statistically from unity. This result, once again, proves that the Cobb-Douglas production function is appropriate for the textile industry in Yogyakarta. As we know that the elasticity of substitution in the Cobb-Douglas production function is always equal to unity, and that in the Constant Elasticity of Substitution (CES) production function is a constant but not always equal to unity, and that in the Leontief production function is zero.

The elasticity of substitution that is not different statistically from unity implies that wage change will not influence significantly on labor absorption. Furthermore, increasing labor prosperity is feasible to carry out. However, it also depends on the structure of labor market whether monopoly or monopsony (see: Mincer, 1976; Welch, 1978; and Arshenfelter and Smith, 1979). In that case, labor absorption can be conducted by increasing capital intensity and other complementary inputs without reducing the wage level (see also: Kuncara and Wibowo, 1977).

Social Welfare Loss

In calculating the social welfare loss due to the RMW increase policy, we need some additional information as follow. The average real wage rate in Rp 53,668 a moth; the capital price is Rp 68,787; and the real value added is Rp 93.159 million. Now, the RMW is increased arbitrary 15 percent. Table 5 presents the result of the social welfare loss.

It is notable that the increase of RMW about 15 percent causes the government has to pay the CV to producers about Rp 10.8 million so that they are able to produce the same output when the RMW is not yet increased. While the budget reduction (the VE) is about Rp 9.7 million to avoid the wage increase.

Table 3
The Estimated Cobb-Douglas Production Function
(Restricted)

Constant	Ln K/L	SEE	R	F	DW
2.7436	0.2173	0.5245	0.2140	10.0732	1.7676
(23.6397)	(3.1738)				

Note: see table 2

Also, the CS falls Rp 10.2 million (10.94 percent). The three numbers are losses not only for the government and producers but also for the society. The amounts of CV, EV, and CS should be spent to increase labor employment, output sold. Public facilities provision, and so on. Moreover, they are excluded the untransferable welfare loss (DWL) reaching around Rp 0.68 million (0.73 percent). These imply that the society is affected by the increase of RMW in terms of decreasing their prosperity.

The values of the CV, EV, and CS are not very close to each other's. These proved that our isoquant is convex. However, it is perhaps coincidence. To make sure that the isoquant curve is really convex, one may use several methods. Ilausman (1981) and Varian (1992, and earlier editions), for example, suggested using the integrability method to achieve that objective. In addition, Wibowo and Karseno (1995) has successfully used the method to analyze the welfare cost of cement pricing in Indonesia.

The increase of RMW also tends to reduce labor employment, that is about 1,476 people who loss their job. This "employment cost" in macroeconomy is a potential aoutput loss which should be yielded if they are reemploy. The potential output loss is estimated Rp 13.6 million (10.94 percent). This is, of course, too valuable when it accumulates in the long term. As comparation, at the unemployment rate in Britain in 1982, the potential output loss was equal to one year of gross domestic product during one decade (Hughes and Perlman, 1984: 220-221).

Looking at both the absolute and relative terms in the table 5, we note that the RMW increase policy is not good enough

Table 4
The Estimated Demand For Input
(Integrated)

Constant	Ln w/r	SEE	R^2	F	DW
3.0158	0.8558	0.5889	0.7758	108.3131	1.6647
(15.5723)	(10.4074)				

Note: see table 2

Table 5
The Estimated Social Welfare Loss

Social Welfare Loss	Absolute Term in million rupiah, 1983 = 100)	Relative Term
Compensating Variation	10.736	11.56 %
Equivalent Variation	9.653	10.36 %
Consumer's Surplus	10.190	10.94 %
Deadweight Loss	0.680	0.73 %
Unemployment (people)	1.476	13.04 %
Potential Output Loss	13.606	10.36 %

for the social welfare. The RMW increase policy will worsen our economy rather than improve it. Increasing wages is only one way to rise labor productivity and to keep labor prosperity. There are still a lot of ways to do it.

CONCLUDING REMARKS

Our study has applied some concepts of welfare economics to evaluate the social welfare loss due to the RMW increase policy in the textile industry in Yogyakarta Special Region. The study is motivated by the fact that the RMW policy is very controversial. Many people argue that the policy is feasible but another does not.

Based on our discussion, we conclude that the RMW increase policy is too costly for the Indonesian government to conduct. However, increasing either the RMW or not, of course, depends on the government political will considering the labor prosperity and labor productivity as well. In short, there are many dilemmas/conflicting goals between increasing the labor prosperity and maintaining the social welfare. Indeed, the RMW increasing is more political that economical.

Some policies implied from those findings are (1). To modify the RMW policy into incentive system. In such case, the laborers will do their job as productive as possible in order to get the higher wage rate. On the contrary, the less productive laborers will get the lower wage rate as many as the RMW. (2). To transform the unpaid family workers into the paid workers. All of the workers should be paid as many as their contribution, no matter who the workers are (i.e. whether the family workers or not). And (3). All of the workers should improve/strengthen their bargaining power through labor union (i.e. SPSI) in making work contracts especially in determining wage. The Three strategies are strongly required to compensate the social welfare loss in term of labor productivity increase.

At the end of this paper I would like to emphasize that our study is merely based on economic aspects. They are also concentrated on the quantitative factors only. In fact, there are still a lot of feasible non-economic factors, which should be involved to support the validity of the study. Unfortunately, they cannot be entirely measured numerically. So, I have to declare that our study is still indicative. However, further investigation can be conducted by considering non-economic aspects to recheck our findings above.

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