THE EFFECTS OF AGGREGATE DEMAND MANAGEMENT AND AGGREGATE SUPPLY POLICY ON SACRIFICE RATIO IN INDONESIA (2006-2014)

by *amanus Khalifah Fil'ardy Yunus, Made Benyamin, Marsuki, Sanusi Fattah

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***Amanus Khalifah Fil'ardy Yunus, **Made Benyamin, Marsuki, Sanusi Fattah**

Hasanuddin University, Economic Department, Faculty of Economics & Business,Box 9024 , South Sulawesi, Makassar, Indonesia

*For correspondence; Tel. + (60) 1137131203, E-mail: evan_tarq@yahoo.com

**For correspondence; Tel. + (60) 1112403548, E-mail: mokaram_76@yahoo.com

ABSTRACT: *This research is intended to know: (1) How much the influence of government expenditure, spending on education and health, bank credit, regional minimum wage and property price index on the sacrifice ratio, both directly and indirectly through manufacturing productivity, trade opennes, economic growth and educated unemployment in Indonesia; (2) How much the influence of manufacturing productivity on the sacrifice ratio, both directly and indirectly through trade opennes, economic growth and educated unemployment in Indonesia; (3) How much the influence of trade opennes on the sacrifice ratio, both directly and indirectly through economic growth and educated unemployment in Indonesia; (4) How much the influence of economic growth on the sacrifice ratio, both directly and indirectly through educated unemployment in Indonesia. The data used are secondary data that obtained from Central Bureau of Statistics and Bank of Indonesia. The unit of analysis are the panel data from 31 provinces in Indonesia (2006-2014). The method of analysis employed is the estimation method of simultaneous equation. The research findings indicate that government expenditure, manufacturing productivity and educated unemployment have a negative impact on the sacrifice ratio in Indonesia. Meanwhile, bank credit, regional minimum wage, property price index and trade opennes have a positive impact on the sacrifice ratio in Indonesia. Finally, spending on education and health and economic growth have no impact on the sacrifice ratio in Indonesia.*

Keywords: sacrifice ratio, manufacturing productivity, trade opennes, economic growth, educated unemployment and macroeconomic policy

1. INTRODUCTION

Disinflation will always require the sacrifice of excess unemployment from the natural rate. The magnitude of such excess is then known as the sacrifice ratio. The natural rate here is defined as the non-accelerating inflation rate of unemployment/NAIRU [1-7].

Monetary policy authorities to curb inflation by reducing money growth would lead to economic growth fell away from its natural level. This then led to rising unemployment and the sacrifice ratio [8]. Purchasing power, aggregate demand and inflation then falls [9].

Furthermore, while maintaining and controlling the sacrifice ratio at a certain period until inflation fell more than the decline in money growth, purchasing power and aggregate demand then gradually increased. This opens up a space revival of economic growth. The ultimate effect of these cases, the unemployment rate fell and unemployment due to the sacrifice of disinflation can be covered [10].

Again, disinflation will lead to costs in the form of rising unemployment. However, with a good control on the sacrifice ratio for a certain period, the disinflation costs can be covered. The problem that then needs to be examined is how much and for how long the duration of the sacrifice ratio to be borne? How did the influence of macroeconomic policy on this scale?

2. MATERIAL AND METHODS

The data used in this research is secondary data obtained from Bank Indonesia and the Central Bureau of Statistics (BPS), in which the financial data obtained from Bank Indonesia. Estimation, analysis and research carried out using panel data that is combined time series (yearly from 2006 through 2014) and the cross-section (31 provinces in Indonesia) with the location of the research is the Indonesian territory as a whole.

Simultaneous Equation Model (SEM) in this research can be seen in the following functional equation:

$$y_1 = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4 + \alpha_5 x_5 + \mu_1 \quad (1)$$

$$y_2 = \beta_0 + \beta_1 y_1 + \beta_2 x_1 + \beta_3 x_2 + \beta_4 x_3 + \beta_5 x_4 + \beta_6 x_5 + \mu_2 \quad (2)$$

$$y_3 = \gamma_0 + \gamma_1 y_1 + \gamma_2 y_2 + \gamma_3 x_1 + \gamma_4 x_2 + \gamma_5 x_3 + \gamma_6 x_4 + \gamma_7 x_5 + \mu_3 \quad (3)$$

$$y_4 = \delta_0 + \delta_1 y_1 + \delta_2 y_2 + \delta_3 y_3 + \delta_4 x_1 + \delta_5 x_2 + \delta_6 x_3 + \delta_7 x_4 + \delta_8 x_5 + \mu_4 \quad (4)$$

$$y_5 = \varepsilon_0 + \varepsilon_1 y_1 + \varepsilon_2 y_2 + \varepsilon_3 y_3 + \varepsilon_4 y_4 + \varepsilon_5 x_1 + \varepsilon_6 x_2 + \varepsilon_7 x_3 + \varepsilon_8 x_4 + \varepsilon_9 x_5 + \mu_5 \quad (5)$$

Where, y_5 is sacrifice ratio, measured in ratio; y_4 is educated unemployment rate, measured in percent; y_3 is economic growth, measured in percent; y_2 is trade opennes, measured in ratio; y_1 is manufacturing productivity, measured in rupiah/person; x_1 is government spending, measured in rupiah; x_2 is education and health spending, measured in rupiah; x_3 is bank credit, measured in rupiah; x_4 is provincial minimum wage, measured in rupiah; x_5 is property price index, measured in ratio; α_0, β_0, γ_0, δ_0 and ε_0 are constants; α_1, ... α_n, β_1 ... β_n, γ_1 ... γ_n, δ_1, ... δ_n and ε_1 ... ε_n are each as parameters to be estimated; μ_1, μ_2, μ_3, μ_4 and μ_5 are random error terms.

The reduced form based on Equation 1-5 can be presented in the following equation:

$$y_1 = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4 + \alpha_5 x_5 + \mu_1 \quad (6)$$

$$y_2 = \zeta_0 + \zeta_1 x_1 + \zeta_2 x_2 + \zeta_3 x_3 + \zeta_4 x_4 + \zeta_5 x_5 + \mu_{12} \quad (7)$$

$$y_3 = \eta_0 + \eta_1 x_1 + \eta_2 x_2 + \eta_3 x_3 + \eta_4 x_4 + \eta_5 x_5 + \mu_{123} \quad (8)$$

$$y_4 = \theta_0 + \theta_1 x_1 + \theta_2 x_2 + \theta_3 x_3 + \theta_4 x_4 + \theta_5 x_5 + \mu_{1234} \quad (9)$$

$$y_5 = \iota_0 + \iota_1 x_1 + \iota_2 x_2 + \iota_3 x_3 + \iota_4 x_4 + \iota_5 x_5 + \mu_{12345} \quad (10)$$

Where, α_0, ζ_0, η_0, θ_0 and ι_0 are constants; α_1, ... α_n, ζ_1 ... ζ_n, η_1 ... η_n, θ_1, ... θ_n and ι_1 ... ι_n are the total effects of variable $x_1,\ldots,x_n$ to variable $y_1,\ldots,y_n$; μ_{12}, μ_{123}, μ_{1234} and μ_{12345} are composites random error.

3. RESULTS AND DISCUSSION

The estimate results of the research can be seen in Table 1:

Table 1. The Estimate Results

Directions of Effect	Regression Coefficients	t-Statistic	Prob.
$x_1 \Rightarrow y_1$	1.175*	22.449	0.000
$x_2 \Rightarrow y_1$	-0.681*	-15.019	0.000
$x_3 \Rightarrow y_1$	0.186*	5.256	0.000
$x_4 \Rightarrow y_1$	0.463*	3.268	0.001
$x_5 \Rightarrow y_1$	-0.006*	-4.571	0.000
$y_1 \Rightarrow y_2$	0.439*	6.441	0.000
$x_1 \Rightarrow y_2$	-0.156	-1.569	0.117
$x_2 \Rightarrow y_2$	0.507*	7.324	0.000
$x_3 \Rightarrow y_2$	-0.272*	-6.477	0.000
$x_4 \Rightarrow y_2$	1.113*	6.797	0.000
$x_5 \Rightarrow y_2$	-0.008*	-5.224	0.000
$y_1 \Rightarrow y_3$	0.214	1.032	0.302
$y_2 \Rightarrow y_3$	-0.031	-0.180	0.857
$x_1 \Rightarrow y_3$	-1.533*	-5.378	0.000
$x_2 \Rightarrow y_3$	-0.539*	-2.504	0.012
$x_3 \Rightarrow y_3$	1.007*	7.836	0.000
$x_4 \Rightarrow y_3$	1.234*	2.450	0.014
$x_5 \Rightarrow y_3$	-0.003	-0.695	0.487
$y_1 \Rightarrow y_4$	0.010	0.441	0.659
$y_2 \Rightarrow y_4$	-0.061*	-3.262	0.001
$y_3 \Rightarrow y_4$	0.001	0.191	0.849
$x_1 \Rightarrow y_4$	-0.061	-1.868	0.062
$x_2 \Rightarrow y_4$	0.120*	5.064	0.000
$x_3 \Rightarrow y_4$	-0.022	-1.405	0.160
$x_4 \Rightarrow y_4$	0.370*	6.657	0.000
$x_5 \Rightarrow y_4$	-0.004*	-6.948	0.000
$y_1 \Rightarrow y_5$	0.254*	2.942	0.003
$y_2 \Rightarrow y_5$	-0.256*	-3.553	0.000
$y_3 \Rightarrow y_5$	-0.037	-1.472	0.141
$y_4 \Rightarrow y_5$	0.876*	3.844	0.000
$x_1 \Rightarrow y_5$	0.677*	5.417	0.000
$x_2 \Rightarrow y_5$	-0.040	-0.419	0.675
$x_3 \Rightarrow y_5$	-0.491*	-8.308	0.000
$x_4 \Rightarrow y_5$	-2.705*	-11.907	0.000
$x_5 \Rightarrow y_5$	-0.010*	-4.610	0.000
*) Significant at $\alpha = 5\%$ $R^2y_1 = 0.739$; $R^2y_2 = 0.459$; $R^2y_3 = 0.387$; $R^2y_4 = 0.336$; $R^2y_5 = 0.654$; N = 279			

The direct effect of government spending on the sacrifice ratio shows a positive and significant effects. This means that increase in government spending will increase unemployment sacrifice ratio, vice versa. These results are not in accordance with the initial hypothesis which states that government spending negatively impact directly and significantly to the sacrifice ratio unemployment. Moreover, this result is also not in accordance with the theory [11] which states that government spending is negatively correlated with the sacrifice ratio.

The direct effect of government spending on the manufacturing productivity showed a significant and positive effect. This means that increase in government spending will increase manufacturing productivity. These results are also consistent with the theory [12] which states that government spending is positively correlated with the manufacturing productivity.

The direct effect of government spending on the trade opennes shown a insignificant effect. This means that change in government spending will not affect the trade opennes. These result is not consistent with the theory [13] which states that government spending is positively correlated with the trade opennes.

The direct effect of government spending on the economic growth showed a significant and negative effect. This means that increase in government spending will decrease economic growth. These result inconsistent with the theory [14] which states that government spending is positively correlated with the economic growth.

The direct effect of government spending on the educated unemployment shown a insignificant effect. This means that change in government spending will not affect the educated unemployment. These result is not consistent with the theory [15] which states that government spending is negatively correlated with the educated unemployment.

The direct effect of education and health spending on the sacrifice ratio shown a insignificant effects. This means that change in education and health spending will not affect unemployment sacrifice ratio. These results are not in accordance with the initial hypothesis which states that the kind of spending negatively impact directly and significantly to the sacrifice ratio unemployment. Moreover, this result is also not in accordance with the theory [11] which states that education and health spending is negatively correlated with the sacrifice ratio.

The direct effect of education and health spending on the manufacturing productivity showed a significant and negative effect. This means that increase in education and health spending will decrease manufacturing productivity. These results inconsistent with the theory [16] which states that education and health spending is positively correlated with the manufacturing productivity.

The direct effect of education and health spending on the trade opennes shown a significant and positive effect. This means that increase in education and health spending will increase the trade opennes. These result consistent with the theory [13] which states that education and health spending is positively correlated with the trade opennes.

The direct effect of education and health spending on the economic growth showed a significant and negative effect. This means that increase in education and health spending will decrease economic growth. These result inconsistent with the theory [14] which states that education and health spending is positively correlated with the economic growth.

The direct effect of education and health spending on the educated unemployment shown a significant and positive effect. This means that increase in education and health spending will increase the educated unemployment. These result is not consistent with the theory [15] which states that education and health spending is negatively correlated with the educated unemployment.

The direct effect of bank credit on the sacrifice ratio shown a significant and negative effects. This means that increase in bank credit will decrease unemployment sacrifice ratio. These results accordance with the initial hypothesis which states that bank credit negatively impact directly and significantly

to the sacrifice ratio unemployment. Moreover, this result is also accordance with the theory [17] which states that bank credit is negatively correlated with the sacrifice ratio.

The direct effect of bank credit on the manufacturing productivity showed a significant and positive effect. This means that increase in bank credit will increase manufacturing productivity. These results consistent with the theory [18] which states that bank credit is positively correlated with the manufacturing productivity.

The direct effect of bank credit on the trade opennes shown a significant and negative effect. This means that increase in bank credit will decrease the trade opennes. These result inconsistent with the theory [13] which states that bank credit positively correlated with the trade opennes.

The direct effect of bank credit on the economic growth showed a significant and positive effect. This means that increase in bank credit will increase economic growth. These result consistent with the theory [13] which states that bank credit is positively correlated with the economic growth.

The direct effect of bank credit on the educated unemployment shown a insignificant effect. This means that change in bank credit will not affect the educated unemployment. These result is not consistent with the theory [19] which states that bank credit is negatively correlated with the educated unemployment.

The direct effect of minimum wage on the sacrifice ratio shown a significant and negative effects. This means that increase in minimum wage will decrease unemployment sacrifice ratio. These results accordance with the initial hypothesis which states that minimum wage negatively impact directly and significantly to the sacrifice ratio unemployment. Moreover, this result is also accordance with the theory [20] which states that minimum wage is negatively correlated with the sacrifice ratio.

The direct effect of minimum wage on the manufacturing productivity showed a significant and positive effect. This means that increase in minimum wage will increase manufacturing productivity. These results consistent with the theory [21] which states that minimum wage is positively correlated with the manufacturing productivity.

The direct effect of minimum wage on the trade opennes shown a significant and positive effect. This means that increase in minimum wage will increase the trade opennes. These result inconsistent with the theory [22] which states that minimum wage is negatively correlated with the trade opennes.

The direct effect of minimum wage on the economic growth showed a significant and positive effect. This means that increase in minimum wage will increase economic growth. These result consistent with the theory [23] which states that minimum wage is positively correlated with the economic growth.

The direct effect of minimum wage on the educated unemployment shown a significant and positive effect. This means that increase in minimum wage will increase the educated unemployment. These result is not consistent with the theory [24] which states that minimum wage is negatively correlated with the educated unemployment.

The direct effect of property price index on the sacrifice ratio shown a significant and negative effects. This means that increase in property price index will decrease unemployment sacrifice ratio. These results accordance with the initial hypothesis which states that property price index negatively impact directly and significantly to the sacrifice ratio unemployment. Moreover, this result is also accordance with the theory [25] which states that property price index is negatively correlated with the sacrifice ratio.

The direct effect of property price index on the manufacturing productivity showed a significant and negative effect. This means that increase in property price index will decrease manufacturing productivity. These results consistent with the theory [25] which states that property price index is negatively correlated with the manufacturing productivity.

The direct effect of property price index on the trade opennes shown a significant and negative effect. This means that increase in property price index will decrease the trade opennes. These result inconsistent with the theory [26] which states that property price index is positively correlated with the trade opennes.

The direct effect of property price index on the economic growth showed a insignificant effect. This means that change in minimum wage will not affect economic growth. These result inconsistent with the theory [27] which states that property price index is positively correlated with the economic growth.

The direct effect of property price index on the educated unemployment shown a significant and negative effect. This means that increase in property price index will decrease the educated unemployment. These result consistent with the theory [25] which states that property price index is negatively correlated with the educated unemployment.

The direct effect of manufacturing productivity on the sacrifice ratio shown a significant and positive effects. This means that increase in manufacturing productivity will increase unemployment sacrifice ratio. These results is not accordance with the initial hypothesis which states that manufacturing productivity negatively impact directly and significantly to the sacrifice ratio unemployment. Moreover, this result is also not accordance with the theory [28] which states that manufacturing productivity is negatively correlated with the sacrifice ratio.

The direct effect of manufacturing productivity on the trade opennes shown a significant and positive effect. This means that increase in manufacturing productivity will increase the trade opennes. These result consistent with the theory [22] which states that manufacturing productivity is positively correlated with the trade opennes.

The direct effect of manufacturing productivity on the economic growth showed a insignificant effect. This means that change in manufacturing productivity will not affect economic growth. These result inconsistent with the theory [29] which states that manufacturing productivity is positively correlated with the economic growth.

The direct effect of manufacturing productivity on the educated unemployment shown a insignificant effect. This means that change in manufacturing productivity will not affect the educated unemployment. These result inconsistent

with the theory [21] which states that manufacturing productivity is negatively correlated with the educated unemployment.

The direct effect of trade opennes on the sacrifice ratio shown a significant and negative effects. This means that increase in trade opennes will decrease unemployment sacrifice ratio. These results is accordance with the initial hypothesis which states that trade opennes negatively impact directly and significantly to the sacrifice ratio unemployment. Moreover, this result is also accordance with the theory [26] which states that trade opennes is negatively correlated with the sacrifice ratio.

The direct effect of trade opennes on the economic growth showed a insignificant effect. This means that change in trade opennes will not affect economic growth. These result inconsistent with the theory [30] which states that trade opennes is positively correlated with the economic growth.

The direct effect of trade opennes on the educated unemployment shown a significant and negative effect. This means that increase in trade opennes will decrease the educated unemployment. These result consistent with the theory [31] which states that trade opennes is negatively correlated with the educated unemployment.

The direct effect of economic growth on the sacrifice ratio shown a insignificant effects. This means that change in economic growth will not affect unemployment sacrifice ratio. These results is not accordance with the initial hypothesis which states that economic growth negatively impact directly and significantly to the sacrifice ratio unemployment. Moreover, this result is also not accordance with the theory [8] which states that economic growth is negatively correlated with the sacrifice ratio.

The direct effect of economic growth on the educated unemployment shown a insignificant effect. This means that change in economic growth will not affect the educated unemployment. These result inconsistent with the theory [32] which states that economic growth is negatively correlated with the educated unemployment.

4. CONCLUSION

The conclusion of the research as follows:

- Government spending policy has not been effective in reducing the sacrifice ratio and boost economic growth in Indonesia. However, government spending policies still need to be encouraged to remember its role in improving manufacturing productivity.
- Policies expenditures on education and health has not been effective in reducing the sacrifice ratio and boost economic growth in Indonesia. Besides the role of education and health spending in improving manufacturing productivity also needs to be reexamined. Similarly, the role of the absorption of skilled manpower. However, spending on education and health policies still need to be encouraged in view of its role in improving trade opennes.
- The central bank's policy in the form of credit disbursement is very effective in stimulating the real sector in Indonesia and was instrumental in reducing the sacrifice ratio.
- The minimum wage policy is also very effective in reducing the sacrifice ratio and also serve to encourage the real sector in Indonesia.
- The price stabilization policy also successfully reduce the sacrifice ratio in Indonesia. However the role of this policy still needs to be improved, particularly in boosting the real sector.
- The role of the manufacturing sector in reducing the sacrifice ratio is still low. Similarly, the role of the real sector in Indonesia.
- The international trade have a positive impact on workers in Indonesia, particularly of skilled manpower. However, the role of international trade on the domestic economy is still low.
- Economic growth in Indonesia has not been qualified. Proven with no effect to employment.

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*For correspondence; Tel. + (60) 1137131203, E-mail:evan_tarq@yahoo.com

*For correspondence; Tel. + (60) 1112403548, E-mail:mokaram_76@yahoo.com

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