

## **Educated Unemployment in Indonesia: The Effects of Monetary Policy and Trade Openness**

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**Abstract:** *This research is intended to know how much the influence of bank credit on educated unemployment both directly and indirectly through trade openness in Indonesia. This research also examine whether the overlapping generation models prevail in Indonesia, especially in the period in which the monetary authorities apply a disinflation policy. The data used are secondary data that obtained from Central Bureau of Statistics. 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 bank credit has not contributed to absorb educated labor and only enhance the international trade which also not optimal in absorbing educated labor. In addition, overlapping generation models has not yet prevail in Indonesia.*

**Keywords:** *educated unemployment, trade openness, monetary policy, overlapping generation models, disinflation*

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### **I. Introduction**

Overlapping generation models state that an individual's decision to finish tertiary education before work would make the supply of labor, in the future, will be filled by a productive labor [1]. Meanwhile, the disinflation policy by the monetary authority is known can interfere the production process in this case the use of labor [2]. However, this is certainly not prevail for productive labor which is the characteristic of educated workers [3]. This is in line with the views of new classical economists which state that shock policy in the form of a massive disinflationary policy by monetary authorities can give a positive impact on output and employment [4].

However, in general, educated workers have a high wage expectations. Educated workers also have a tendency to pick a jobs. As a result, not all sectors can absorb the educated unemployment. This indicates that the more educated a worker is not necessarily a guarantee not to be sacrificed as unemployed, especially during a recession [5,6].

This also really happened in Indonesia. Based on the data released by the Central Bureau of Statistics, the decline in inflation in the amount of 8.75 percent in the period of 2006-2014 followed by a significant increase at the ratio of educated unemployment to the overall unemployment in the end of period (2013-2014). Here, this ratio, increase from 5.86 percent to 6.83 percent. Important to note, ratio in 2014 is the highest ratio in the period of 2011-2014.

Therefore is very important to reviewing some of the factors affecting the level of educated unemployment in Indonesia, especially in the period of disinflation (2006-2014). Previous works states that trade openness can reduce a costs due to lower inflation in the form of sacrifices unemployment [7], especially the educated unemployment [8,9]. Other monetary policy such as an increase in bank credit would also reduce educated unemployment [3]. This is in line with the efficiency wage concept by new keynesian economists namely related by high wage characteristics by educated workers [4]. In addition, bank credit will also increase trade openness [10].

Overall, this research is intended to know how much the influence of bank credit on educated unemployment both directly and indirectly through trade openness in Indonesia. This research also examine whether the overlapping generation models prevail in Indonesia, especially in the period in which the monetary authorities apply a disinflation policy. It is expected to be useful as an input for the monetary authorities, particularly related to its role in driving the development of the real sector and absorption of educated workers. In addition, this research will also be useful as an evaluation for the government, especially related to the quality of education in Indonesia.

## II. Literature Review

Overlapping generation models assume that an individual's life is divided into two periods. The first period, when young, individuals would be faced with the choice to go to school or work. Then in the second period, when adult, they work either as skilled workers (if in the first period they choose to go to school) or unskilled workers (if in the first period they choose to work). Here, an individual's productivity in the second period will be very dependent on educational attainment in the first period and will affect an individual's ability to get a job [1,11].

Meanwhile, indeed, it is realized that disinflation policy would reduce economic growth and further would require the sacrifice of unemployment. However, when inflation fell more than the decline in money growth, purchasing power, and aggregate demand then gradually increase and opens up a space of an increase in economic growth. The ultimate effect of these cases, the unemployment rate fell and the sacrifice of unemployment can be covered [4].

However, the unemployed, especially among the educated in general came from upper middle class, which allow to survive although not have a job [12,13]. Here, an increase in economic growth does not automatically reduce the number of educated unemployment. In addition, educated unemployment can also be caused by a mismatch between planning educational development and job's developments that do not correspond to their majors [14,15]. Unemployment among educated population also may be caused by the adjustment of labor (transition) for the people who had just graduated. At the transition like this, educated workers in general wait for a job that provides a decent wage rather than fill the time by accepting low-wage job [5,6,16].

Furthermore, the greater the international trade activity, the more it will encourage the opening of new jobs [7,17]. International trade is also known not only in the form of exchange of goods and services, but also in the form of exchange of technologies, ideas and ideologies that can improve the quality of human resources. This makes the need for educated workers increased [8,9,18]. Meanwhile, high money growth will reflect the economic activities are at a high levels [19]. Thus, businessmen will require a qualified workers (educated) in the process of production [3]. Although the educated workers have a high wage expectations, a high productivity of educated workers can make an educated workers demand will continue to increase [4,20,21]. In addition, the increase in bank credit will also improve the ability of businessmen to increase the production capacity which will further increase the company's revenue. Increased revenue will encourage the development of business, especially in conducting international trade [10,21].

## III. Conceptual Framework

Simultaneous model and the hypothesis of this research can be seen in Fig. 1. Here, bank credit is positioned as an exogenous variable. While trade openness acts as an intervening endogenous variable. Last, an endogenous variable which also the target of study is the educated unemployment.

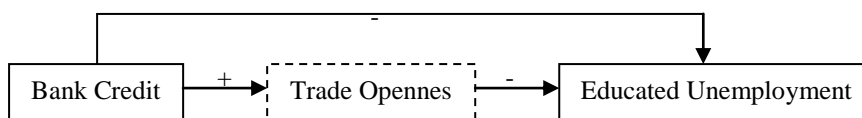


Figure 1. Conceptual framework

## IV. Methodology

The data used in this research are secondary data that obtained from Central Bureau of Statistics. Estimation, analysis and research carried out using panel data that is combine time series data (2006-2014) and cross-sectional data (31 provinces in Indonesia).

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

$$y_1 = \alpha_0 + \alpha_1 x + \mu_1 \quad (1)$$

$$y_2 = \beta_0 + \beta_1 y_1 + \beta_2 x + \mu_2 \quad (2)$$

Where,  $y_2$  is educated unemployment (graduated from university), measured in percent;  $y_1$  is trade openness (exports plus imports divided by gross domestic product), measured in ratio;  $x$  is bank credit, measured in rupiah;  $\alpha_0$  and  $\beta_0$  are constants;  $\alpha_1$ ,  $\beta_1$  and  $\beta_2$  are each as parameters to be estimated;  $\mu_1$  and  $\mu_2$  are random error terms.

The reduced form based on Equation 1 and 2 can be presented in the following equation:

$$y_1 = \alpha_0 + \alpha_1 x + \mu_1 \quad (3)$$

$$y_2 = \gamma_0 + \gamma_1 x + \mu_{12} \quad (4)$$

Where,  $\alpha_0$  and  $\gamma_0$  ( $\beta_0 + \alpha_0 \beta_1$ ) are constants;  $\alpha_1$  and  $\gamma_1$  ( $\beta_2 + \alpha_1 \beta_1$ ) are the total effects of variable  $x$  on variable  $y_1$  and  $y_2$ ;  $\mu_{12}$  ( $\mu_2 + \mu_1 \beta_1$ ) are composites random error.

**V. Results and Discussion**

The estimate results of the research can be seen in Table 1. The R square value of the educated unemployment which is very low, indicates that there are still some variables other than monetary policy and international trade affecting educated unemployment. To that end, the following researchers could try to analyze other factors such as fiscal policy in analyzing educated unemployment rate in Indonesia. Nevertheless, this research is still very useful to analyze the role of the monetary authorities on the real sector and educated unemployment which still very rare.

**Table 1.** The Estimate Results

Directions of Effect	Regression Coefficients	t-Statistic	Probability
$x \rightarrow y_1$	0.155*	3.102	0.002
$y_1 \rightarrow y_2$	-0.009	-0.534	0.593
$x \rightarrow y_2$	0.033*	2.409	0.016
*) Significant at $\alpha = 5\%$ $R^2_{y_1} = 0.033$ ; $R^2_{y_2} = 0.02$ ; $N = 279$			

Source: Appendix

Meanwhile, the direct effect, indirect, and total effect of the exogenous variable (x) in this research, can be seen in Table 2. The direct effect of bank credit on educated unemployment shows a significant and positive relationship. The indirect effect of bank credit on educated unemployment through trade openness shows an insignificant relationship. The insignificant relationship is derived from a positive relationship between bank credit and trade openness which is then forwarded to the insignificant relationship between trade openness and educated unemployment. Overall, total effect of bank credit on educated unemployment shows an insignificant relationship.

**Table 2.** Direct, Indirect and Total Effect

Directions of Effect	Regression Coefficients		
	Direct Effect	Indirect Effect	Total Effect
$x \rightarrow y_2 (\gamma_1)$	0.033*		0.032
Through $y_1$		-0.001	
$x \rightarrow y_1$	0.155*		0.155*
*) Significant at $\alpha = 5\%$			

Source: Appendix

Based on the direct effect, an increase in bank credit would increase production capabilities of businessmen. Businessmen income then increased which will further increase aggregate demand but will cause inflation. The production process will be slightly hampered due to wage pressures due to inflation. Here, the characteristics of educated workers who have a high wage expectations making businessmen choose not to involve educated workers in the next production process. As a result, the rate of educated unemployment is increasing.

Meanwhile, based on the indirect effect, an increased in bank credit will increase the international trade. However, international trade, which is also in the form of exchange of ideas and technology which should require skilled workers, in fact, had no effects on the educated unemployment. This indicates that there is a mismatch between the characteristics of university graduates with employment opportunities available.

Overall, total effect of bank credit on educated unemployment shows an insignificant relationship. These results are not consistent with the view (hypothesis) which states that monetary policy such as an increase in bank credit will increase the demand for educated workers [3,4,19-21]. This result is also not consistent with the view (hypothesis) stating that trade openness can reduce the educated unemployment [8,9,18]. Similarly, the view (hypothesis) that educated workers will necessarily be a productive workers in the future [1,11].

This result further supports the assumption that educated workers tend to have higher wage expectations so prone to be sacrificed, especially in times of recession [5,6,16]. Moreover, these results also confirmed the view that the educated unemployment arise due to a mismatch between the characteristics of educated workers and available employment [14,15]. Lastly, these results are consistent with the view (hypothesis) stating that bank credit will increase the ability of businessmen to conduct international trade [10,21].

The implication is, to support the absorption of educated workers, monetary policy in the form of giving a bank credit is still need to be encouraged because its role in increasing the production activities and enhance the ability to conduct international trade. But as a side note, at the same time the workers, especially the educated, should not demand too high a wage. This is because, the businessmen, in conducting production

activity, will not be affected by the high wage demands of workers so the opportunity to get a job basically remain open. High wage demands from educated workers makes businessmen prefer to raise the wages of existing workers rather than add a new worker.

Meanwhile, international trade, though not demonstrate the contribution in reducing educated unemployment, also still needs to be encouraged. The international trade in question here is from the export side. International trade which is dominated by import activity especially the use of high-tech machines, can not be offset by the expertise of educated workers in Indonesia. It also makes the government needs to improve the quality of tertiary education in Indonesia.

## VI. Conclusion

The conclusion of the research as follows:

- Bank credit has not contributed in reducing educated unemployment in Indonesia. This is due to the high wage demands of educated workers. This policy only plays a role in increasing international trade, especially imports of high-tech machinery that is not in accordance with the expertise of educated workers.
- Overlapping generation models has not yet prevail in Indonesia. Educated workers in Indonesia do not necessarily reflect a productive worker and thus susceptible to be sacrificed as unemployed.
- There are still some variables other than monetary policy and international trade affecting educated unemployment. Nevertheless, this research is still very useful to analyze the role of the monetary authorities on the real sector and educated unemployment which still very rare.
- Bank credit still needs to be encouraged because its role in increasing the activity of production and international trade in Indonesia. But as a side note, at the same time the workers, especially the educated, should not demand too high a wage. Meanwhile, international trade in terms of export, should also be encouraged.
- The government needs to improve the quality of tertiary education in Indonesia.
- Following researchers could try to analyze other factors such as fiscal policy in analyzing educated unemployment rate in Indonesia.

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## Appendix

### AMOS Results

#### Estimates (Group number 1 - Default model)

#### Scalar Estimates (Group number 1 - Default model)

#### Maximum Likelihood Estimates

#### Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
y1 <--- e1	.796	.034	23.580	***	par_1
y1 <--- x	.155	.050	3.102	.002	par_3
y2 <--- e2	.214	.009	23.580	***	par_2
y2 <--- y1	-.009	.016	-.534	.593	par_4
y2 <--- X	.033	.014	2.409	.016	par_5

#### Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
y1	.033
y2	.020

#### Matrices (Group number 1 - Default model)

#### Factor Score Weights (Group number 1 - Default model)

#### Total Effects (Group number 1 - Default model)

	x	y1
y1	.155	.000
y2	.032	-.009

#### Direct Effects (Group number 1 - Default model)

	x	y1
y1	.155	.000
y2	.033	-.009

#### Indirect Effects (Group number 1 - Default model)

	x	y1
y1	.000	.000
y2	-.001	.000