


INVESTIGATING THE ROLE OF EDUCATION IN STABILITY OF WORK PARTICIPATION IN ECONOMIC SHOCKS FROM THE ASIAN FINANCIAL CRISIS TO THE COVID 19 PANDEMIC IN INDONESIA

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 14 November 2022</p> <p>Accepted 16 January 2023</p>	<p>Purpose: The objective of this study was to investigate some connection between population, education, and work participation in Indonesia on the economic shock of the world monetary disaster, Asian financial crisis, Europe's budget deficit, and COVID-19.</p>
<p>Keywords:</p> <p>Labor; Employment; Human Capital.</p> <div data-bbox="172 925 480 1171" style="text-align: center;">  </div>	<p>Theoretical framework: In the theory of modern economic growth which was developed from the classical economic theory of Adam Smith, it is explained that education is one of the determinants of economic growth that increases human work performance and increases employment (Ucak, 2015). Research from Adirosa (2021) states that classical theory is still relevant as a basis for understanding economic phenomena.</p> <p>Design/methodology/approach: To see the role of education in employment and in this study is work participation in times of economic shock, an autoregression behavior analysis was used.</p> <p>Findings: We found that the COVID-19 pandemic-related economic shocks on work participation in Indonesia were greater than the economic shocks in the previous period. Education was able to anticipate work participation shocks due to economic shocks.</p> <p>Research, Practical & Social implications: Our findings affirms that economic shocks affect work participation and behavior changes of the educational-population-growth connection on work participation.</p> <p>Originality/value: The results indicate that education is a key component in dealing with future economic shocks, particularly those of a major reduction in labor participation.</p> <p>Doi: https://doi.org/10.26668/businessreview/2023.v8i1.811</p>

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INVESTIGANDO O PAPEL DA EDUCAÇÃO NA ESTABILIDADE DA PARTICIPAÇÃO NO TRABALHO EM CHOQUES ECONÔMICOS DESDE A CRISE FINANCEIRA ASIÁTICA ATÉ A PANDEMIA DA COVID 19 NA INDONÉSIA

Objetivo: O objetivo deste estudo era investigar alguma conexão entre população, educação e participação no trabalho na Indonésia sobre o choque econômico do desastre monetário mundial, a crise financeira asiática, o déficit orçamentário da Europa e a COVID-19.

Estrutura teórica: Na teoria do crescimento econômico moderno que foi desenvolvida a partir da teoria econômica clássica de Adam Smith, explica-se que a educação é um dos determinantes do crescimento econômico que aumenta o desempenho do trabalho humano e aumenta o emprego (Ucak, 2015). Pesquisas de Adirosa (2021) afirmam que a teoria clássica ainda é relevante como base para a compreensão dos fenômenos econômicos.

Design/metodologia/abordagem: Para ver o papel da educação no emprego e neste estudo é a participação no trabalho em tempos de choque econômico, foi utilizada uma análise de comportamento de autoregressão.

Conclusões: Constatamos que os choques econômicos relacionados à pandemia COVID-19 sobre a participação no trabalho na Indonésia foram maiores do que os choques econômicos do período anterior. A educação foi capaz de antecipar os choques de participação no trabalho devido aos choques econômicos.

Pesquisa, implicações práticas e sociais: Nossas descobertas afirmam que os choques econômicos afetam a participação no trabalho e as mudanças de comportamento da conexão educação-população-crescimento na participação no trabalho.

Originalidade/valor: Os resultados indicam que a educação é um componente chave para lidar com futuros choques econômicos, particularmente aqueles de uma grande redução na participação no trabalho.

Palavras-chave: Trabalho, Emprego, Capital Humano.

INVESTIGACIÓN DEL PAPEL DE LA EDUCACIÓN EN LA ESTABILIDAD DE LA PARTICIPACIÓN LABORAL EN LAS CRISIS ECONÓMICAS, DESDE LA CRISIS FINANCIERA ASIÁTICA HASTA LA PANDEMIA DE COVID 19 EN INDONESIA

Propósito: El objetivo de este estudio fue investigar alguna conexión entre la población, la educación y la participación laboral en Indonesia sobre el choque económico del desastre monetario mundial, la crisis financiera asiática, el déficit presupuestario de Europa y COVID-19.

Marco teórico: En la teoría del crecimiento económico moderno que se desarrolló a partir de la teoría económica clásica de Adam Smith, se explica que la educación es uno de los determinantes del crecimiento económico que aumenta el rendimiento del trabajo humano y aumenta el empleo (Ucak, 2015). La investigación de Adirosa (2021) afirma que la teoría clásica sigue siendo relevante como base para comprender los fenómenos económicos.

Diseño/metodología/enfoque: Para ver el papel de la educación en el empleo y en este estudio es la participación laboral en tiempos de choque económico, se utilizó un análisis de comportamiento de autoregresión.

Resultados: Encontramos que los choques económicos relacionados con la pandemia COVID-19 sobre la participación laboral en Indonesia fueron mayores que los choques económicos del periodo anterior. La educación fue capaz de anticipar los choques de participación laboral debidos a los choques económicos.

Investigación, implicaciones prácticas y sociales: Nuestros resultados confirman que las crisis económicas afectan a la participación laboral y a los cambios de comportamiento de la conexión educación-población-crecimiento en la participación laboral.

Originalidad/valor: Los resultados indican que la educación es un componente clave para hacer frente a futuros choques económicos, en particular los de una reducción importante de la participación laboral.

Palabras clave: Trabajo, Empleo, Capital Humano.

INTRODUCTION

The economic crisis and economic shocks have an impact on employment, including work participation. The labor market continues to change and develop rapidly (Kalucza et al, 2021; Widarni, Febiyana, and Bawono, 2022). Research by Wang et al. (2021) concludes that

labor market changes can occur as a result of technological developments that require humans to develop human capital, and education are factors that determine a person can get a job from the expertise and ability to master technology (Human capital) obtained through the education mechanism.

Education contributes to skill development's workforce so that they can work efficiently according to economic conditions and the needs of the business sector (Harnani et al., 2022). Education has an impact on increasing a person's adaptability. Education increases one's comparative advantage and increases one's ability to master technology. Education increases the ability of individuals to adapt (Afriani, 2021). Blasques et al. (2021) concludes that workers who lost their jobs with higher levels of education were more likely to find other jobs. Person's level of education reduces the duration of unemployment and is quicker to acquire education than other people with lower levels of education. Alam and Parvin (2021) also obtained a positive and significant correlation among the level of education with speed which the person gets a job.

The correlation between the level of education and employment is positively significant, which means that the higher the education level of the average population, The sooner an area or country absorbs workers, the better. There is an evident link between education, employment, and economic engagement. Education has a significant impact upon abilities for the human adaptation to economic shocks that impact on labor market shocks. Education gives humans the ability to adapt and work well to earn a better income (Widarni & Bawono, 2021).

The research of Choi et al. (2020) concluded as Asian monetary disaster at 1996-1997 had an impact on labor market shocks and people's work participation. Where engagement in the workforce has an influence on unemployment and communal well-being. When labor participation decreases due to the economic crisis, unemployment will increase and have a negative impact on the economy. Huang et al. (2011) determined that the global financial crisis of 2008 had an influence on labor market participation and shocks. The research of Pompili et al. (2021) confirms that economic shocks have an impact on work participation where work participation is also affected because the financial repercussions caused by the covid-19 epidemic. This study aims to investigate connection among population, work participation and education at Indonesia's economic shock from 1997 Asian monetary problem, 2008 global monetary problem, with 2013 European debt problem, and COVID-19 pandemic in 2020. This study complements the research of Choi et al. (2020), Huang et al. (2011), and Pompili et al. (2021). Where the three studies focused on each cause of the economic shock. In this study, we look comprehensively to understand how to anticipate future economic shocks so that this study

focuses on the role of education in anticipating future economic shocks by taking the combined research period of Choi et al. (2020), Huang et al. (2011), and Pompili et al. (2021).

LITERATURE REVIEW

Many past research has looked into the financial consequences shock on work participation (Choi et al, 2020; Huang et al, 2011; Pompili et al, 2021). Ahmed and Cassou (2021) found asymmetries in the effects on unemployment and economic conditions. Liotti's research (2020) confirms that the economic crisis has an impact on work participation. Blasque et al. (2021) explain that education allows humans to adapt to economic shocks including employment and work participation. Where education plays a role in increasing the stability of community work participation.

Adejumo et al. (2021) concluded that education promotes human capital and the efficiency of human resources. Research by Naval et al. (2020), concluded that employee training and education can improve human capital which is characterized by increased work efficiency and employee performance in the workplace. Baerlocher et al. (2021) conclude that Population growth through increased demand increases people's work participation.

Alfalih and Hadj (2021) concluded that human capital can increase employment. This is because every job has a minimum standard of human capital requirements that must be owned by employees. When employees have sufficient human capital, they will get a job and be able to work well. On the other hand, when the human capital is not sufficient, the results of the work do not match the expectations of the employer and in the end, the worker loses his job. Research by Harnani and Afriani (2021) concludes that education plays an important role in improving employee performance which has an impact on the ability of employees to adapt to employment shocks and increase employees' ability to get new jobs when they lose their old jobs.

According to Hu et al. (2021) employment and population growth have a favorable or positive association. Klinger and Weber (2020) concludes that economic growth as indicated by GDP growth has a significant positive effect on employment as indicated by growth in community work participation. In the theory of modern economic growth which was developed from the classical economic theory of Adam Smith, it is explained that education is one of the determinants of economic growth that increases human work performance and increases employment (Ucak, 2015). Research from Adirosa (2021) states that classical theory is still relevant as a basis for understanding economic phenomena.

Spalding et al. (2012), Andersen et al. (2019), and Zuo et al.(2019) suggested that

population growth through increased demand for products in the consumer market have an impact on work participation. Where is the product alluded to by Spalding et al. (2012), Andersen et al. (2019), and Zuo et al.(2019) are goods and services available in the consumer market.

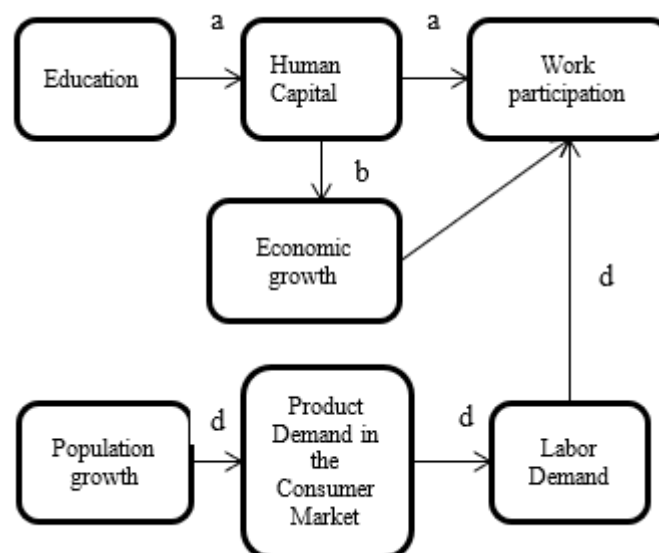
The following hypothesis may be developed based on the theory and prior research, that is:

H1. Education may promote community work involvement by developing human capital.

H2. Population growth through increased product demand in the consumer market increases people's work participation.

METHOD

This study aims to investigate the relationship between population, education, and work participation in Indonesia on the economic shock of the 1997 Asian financial crisis, a worldwide monetary disaster of 2008, Europe's budget deficit of 2013, and the COVID-19 pandemic of 2020. The research objectives have been specified for the years 1995 to 2020. The World Bank provided all statistics. The research model is formulated as follows in the research model:



Description:

a : (H1) arrows based on research by Ucak (2015), Widarni and Bawono (2021), Alfalih and Hadj (2021), Wang et al. (2021), Alam and Parvin (2021), Blasques et al. (2021), Adejumo et al. (2021), and Naval et al. (2020)

b : arrows based on research by Ucak (2015), Harnani amd Afriani (2021), Baerlocher et al. (2021), Widarni and Bawono (2021)

c : arrows based on research by Hu et al. (2021), Klinger and Weber (2020)

d : (H2) arrows based on research Adirosa (2021), Spalding et al. (2012), Andersen et al. (2019), and Zuo et al.(2019)

According to previous research, that is possible to assume if knowledge has an impact on increasing human capital so as to increase human performance which in aggregate has an impact on increasing production so as to encourage economic growth (Ucak, 2015; Harnani & Afriani, 2021; Baerlocher et al., 2021; Widarni & Bawono, 2021). Furthermore, the rise in human capital as a result of the educational system has an effect on the rising of number of quality human resources so that there is an increase in work participation (Ucak, 2015; Alfalih & Hadj, 2021; Alam & Parvin, 2021; Blasques et al., 2021; Adejumo et al., 2021; Naval et al., 2020; Wang et al., 2021; Widarni & Bawono, 2021). Population growth increases demand in the consumer market because an increase in population means more consumers in the consumer market (Hu et al, 2021; Klinger & Weber, 2020) so that demand increases and stimulates demand for labor which provides opportunities for the population to work thereby encouraging work participation (Adirosa, 2021; Spalding et al., 2012; Andersen et al., 2019; Zuo et al., 2019).

According to this research model, it can be formulated mathematically that labor participation (W_p) and this is human capital's function(HC), this function is for economic grth (GDP), labor demand (LD). And in the mathematical equation is as follows:

$$W_p = f(HC, GDP, LD) \quad (\text{equation 1})$$

Where human capital is influenced by education (Ed), And labor demand (LD) is influenced by product demand in the consumption market (DC) which is influenced by population growth (P). As a result, the mathematical equation may be done like a

$$HC = Ed \quad (\text{equation 2})$$

$$LD = DC = P \quad (\text{equation 3})$$

The new equation may be written as follows when utilizing equations 1,2, and 3

$$W_p = f(Ed, P) \quad (\text{equation 4})$$

To understand the mathematical equations in equation 4 and economic phenomena, economic, mathematical, and statistical equations (Econometric) are carried out with the

following equations:

$$Wp_t = \beta_0 + \beta_1 Ed_{t1} + \beta_2 P_{t2} + e_t \quad (\text{equation 5})$$

Where β is a constant and t is the time period. To see the role of education in employment and in this study is work participation in times of economic shock, an autoregression equation is needed. The autoregression behavior equation used is as follows:

$$y_t = \beta_1 (\sum_{j=1}^n w_{ij} y_j) 1(q_t \leq \gamma) + \beta_2 (\sum_{j=1}^n w_{ij} y_j) 1(q_t > \gamma) + X'_{t1} \delta_1 + X'_{t2} \delta_2 + \varepsilon_t \quad (\text{equation 6})$$

The time series of the time period is represented by the subscript t . for $t = 1, 2, \dots, n$. y_t is the dependent variable's observation scalar. The spatial weight w_{ij} is the (t, j) the W , an exogenous observed covariance vector with row leveling with size $n \times n$. $\sum_{j=1}^n w_{ij} y_j$ the geographically weighted average of the y values in the adjoining time series of t is sometimes referred to as the spatial lag of y_t . Spatial autoregressive coefficients β_1 and β_2 are scalar. Based on equations 5 and 6, an behavior equation threshold autoregressive was developed as follows:

$$Wp = \beta_1 + \beta_2 PT_{t2} + \beta_3 P_{t3} + ((\beta_4 + \beta_5 PT_{t5} + \beta_6 P_{t6}) * @LOGIT(\beta_7 W_{t8} - \beta_8) + e_t \quad (\text{equation 7})$$

All data sourced from the world bank adapted to research needs with variable descriptions in table 1.

Table 1. Variable Description

Variable	Variable Description	Unit Analysis
Education (Ed)	Investment in education like the investment in human capital nationally and in aggregate (total investment in education) is based on the total unit of calculation of % of GDP. Where GDP is used as the basis for the calculation of the basic unit of analysis is real GDP based on the current USD value (2021).	% (Percent)
Population Growth (P)	The current year's total population minus the previous year's total population is divided by the previous year's total population multiplied by 100 percent to compute population growth. or may be computed mathematically as follows: $((PT_{t0} - PT_{t-1}) / PT_{t-1}) \times 100\%$ Where PT is Population Total. t is the time period. An example of population growth in 2019 is calculated by means of the total population in 2019 minus the total population in 2018 divided by the total population in 2018 multiplied by 100%	% (Percent)
Work Participation (Wp)	The total working population, including male and female, is divided by the total population in the same year and multiplied by 100%. With the following mathematical formula	% (Percent)

$$(PW/PT) \times 100\%$$

Where PW is the total working population. And PT is the population total

RESULTS AND DISCUSSION

The autoregressive equation requires the existence of stationary data (Widarni & Drean, 2021). For this reason, a stationary test was carried out. The ADF Fisher Chi-square test is used to test the data for stationarity, and the results are shown in table 2.

Table 2. ADF stationary test

Method	Statistic			Prob.**	
ADF - Fisher Chi-square	5.72775			0.4544	
ADF - Choi Z-stat	0.10802			0.543	
Series	Prob.	Lag	Max Lag	Obs	
ED	0.4556	1	5	24	
P	0.9186	3	5	22	
W	0.1363	0	5	25	

** Fisher test probabilities are calculated using an Chi-square distribution asymptotically. Many other examinations are based from assumption's asymptotic normality.

The probability value surpasses 0.05, indicating that all data is steady, according to the findings of the ADF test. Table 3 shows the results of the threshold autoregressive equation estimation.

Table 3. Estimation Results of The Threshold Autoregressive

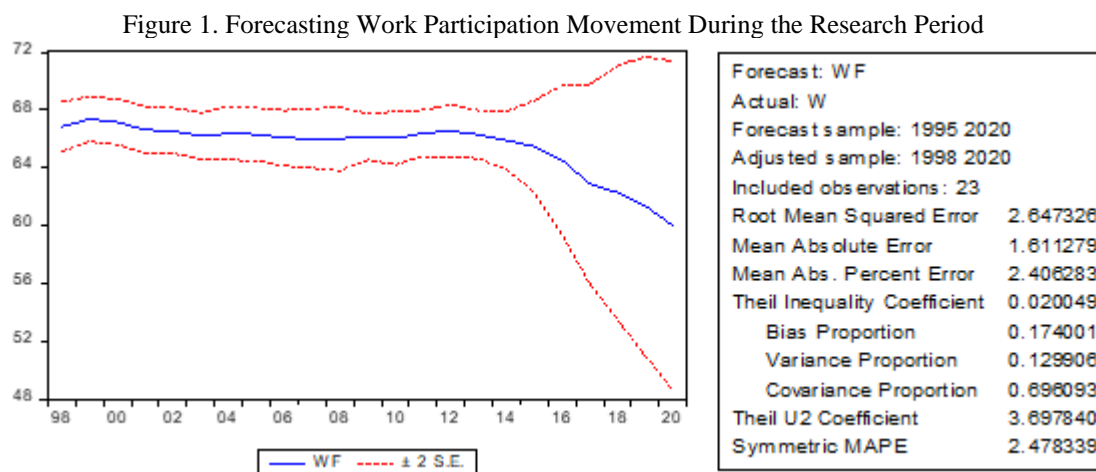
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Variables at the Threshold (linear part)				
ED	1.252719	0.833797	1.502426	0.1537
P	40.7731	19.65011	2.074955	0.0556
Threshold Variables (nonlinear part)				
ED	-2.090804	0.954502	-2.190465	0.0447
P	-48.43257	19.96631	-2.425715	0.0284
THRESHOLD	66.2118	962.1674	0.068815	0.946

Based upon that calculation findings, as may be seen, a linear part Ed or education investment having substantial beneficial impact on the workplace participation with a value for such Coefficient of 1.252719 also there is probability greater than (0.005) which confirms that the relationship between education investment and work participation is significant. Population Growth having some big positive impact for workplace participation with a coefficient value of 40.7731 and a probability of 0.00556 which is greater than (0.005) which confirms the relationship between population growth and work participation is significant.

In the nonlinear part, it shows when there is an economic shock or an economic shock. The economic shocks that happened in this study were Asian's monetary problem in 1996-

1998, Financial's Global disaster at 2008, European's disaster debt in 2013, also there is COVID-19 pandemic in 2020. When an economic shock occurs which is described by non-linear parts, education or education investment has a negative effect. with a coefficient value of -2.090804 and a probability smaller than (0.005) of 0.0447 which confirms that the relationship between education and work participation is not significant. In the nonlinear part, population growth has a negative effect with a coefficient of -48.43257 and 0.0556 has a probability less than (0.005) , indicating that the association between population growth and labor force participation is not significant.

According to estimation outcomes, we can know if the hypothesis is accepted and there is a shock to the workforce when an economic shock occurs. To see the forecasting of the movement of work participation in the research period, it is presented in figure 1.



It is clear from the forecasted findings the research participation in Indonesia during economic shocks before the pandemic occurred tends to be stable. It can be seen from the estimation results in table 3 that education has a coefficient of 1.252719 which means that every percent increase in education investment will have an impact on increasing work participation by 1.252719% or 1.25% x growth in work participation in the same year with a 0.1537 chance or a 15% chance of success. . However, when there is a crisis or economic shock, the decrease in work participation is an increase of -2.090804% or 2.09% x the percentage of education investment on GDP x the growth in work participation with a chance of success of less than 5% or 4.4% and a reduction in work participation which means the the amount of individual whose their jobs in times of crisis or economic shocks in terms of population growth of 48% x population growth in the same year x growth in work participation in the same year with the possibility of a decrease or a person's chance of losing their job by 2.84% .

Economic shocks on work participation can be described in the threshold having the 66,2118 amount of coefficient, that means the shocks due to the crisis can shake 66% x growth in work participation in the same year with the opportunity for shocks due to economic shocks of 94.6%. If there is a growth in work participation of 1%, then 1% x 66% or 0.66% of the total working population experience shocks in the form of losing their jobs or losing their jobs and getting new jobs.

In forecasting for the 2020 period, the graph shows a downward trend, which means that during the pandemic period there was a large enough pull, as a result of the Covid-19 pandemics of 0.696093, the workforce has been thrown into a shock. Based on the forecasting results in figure 1. It can be seen that in Indonesia the shocks to work participation in the Covid-19 pandemic are greater than the previous economic shocks. The existence of economic shocks that affect work participation according to the findings of Choi et al. (2020), Huang et al. (2011), and Pompili et al. (2021). Economic shocks have a major influence on labor participation, according to this study. This study complements the research of Choi et al. (2020), Huang et al. (2011), Pompili et al. (2021) which looks comprehensively not only on economic shocks and work participation but also the important factor of education in anticipating work participation shocks due to economic shocks which are in line with research (Ucak, 2015), Alfalih & Hadj (2021), Alam & Parvin (2021), Blasques et al. (2021), Adejumo et al. (2021), Naval et al. (2020), Wang et al. (2021), Widarni & Bawono (2021). Based on the forecasting results, it can be observed that the economic shocks as a result of Covid-19 epidemic have some higher effect to the work participation in Indonesia than the prior period's economic shocks (Monetary's Asia disaster, Financial's Global Problem, Disaster European's debt).

CONCLUSION

The economic disaster due to the Covid-19 pandemic on work participation in Indonesia were greater than the economic shocks in the previous period (Monetary's Asia disaster, Financial's Global Problem, Disaster European's debt). Education was able to anticipate work participation shocks due to economic shocks. Education shows a considerable beneficial influence on labor participation in the linear component, confirming that education may build human capital and make individuals able to have sufficient human capital according to the needs of the business sector. Population growth in the linear part also has a significant positive effect on work participation which confirms that population growth encourages demand in the consumption market so that the business sector responds by increasing production which encourages labor demand so that work participation can increase. However, when an economic

shock occurs, there are economic shocks that affect the work participation shocks due to economic shocks, so that in the non-linear part when changing regimes or education and population shocks, the relationship is negative but not significant. This confirms that economic shocks have an impact on work participation and changes in behavior occur in a tendency of an educational-population-growth connection on work participation. It also demonstrates that education is a key component in dealing with future economic shocks, particularly shocks in the form of a major reduction in labor participation. Unemployment increases as well as struggle to find new ones.

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