LABOR LITERACY RATE AND ECONOMIC DEVELOPMENT IN THE MEKONG DELTA, VIETNAM

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Abstract: *Education is always an important issue mentioned in each country's development policy, especially basic education. The article aims to analyze the impact of the labor literacy rate on the economic development in the Mekong Delta region, Vietnam. The authors used the generalized least squares (GLS) estimation method to process data from 13 provinces/cities in the Mekong Delta in the period 2010 - 2021. Research results show that the literacy labor rate has a positive impact on economic development in the Mekong Delta, Vietnam at the 1% significance level. The government and local authorities need to focus on educational policies to improve qualifications and skills for workers, thereby increasing labor productivity and promoting economic development.*

1. Introduction

Labor is one of the important factors that determines the fluctuation of production output, thereby affecting the economic growth and development of a country (Smith, 1776). In order to evaluate the quality of labor resources, two main factors that were selected include health and qualifications (Lim et al., 2018). According to the current trend of sustainable development, countries in general and Vietnam in particular pay the most attention to education levels. There are many different measures of educational attainment, from the most basic method like literacy rate to primary, secondary, and university enrollment rates (Mak & Chung, 1997; Mehmood et al., 2014). To be able to achieve higher levels, workers need to reach the most basic level. This proves that the literacy rate is the key to helping workers improve their qualifications, thereby increasing output and promoting economic development.

Reality also shows that Africa has a very high illiteracy rate (40%) and 22/25 of the world's poorest countries are in Africa. From affirming the importance of educational level to the economic development of a country, many authors provided empirical evidences through researching the relationship between human capital and economic growth. Khan and Chaudhry (2019) studied the

impact of human capital on unemployment rate and economic growth in developing countries. In which variables representing human capital included spending on education and life expectancy. Also approaching the relationship between human capital and economic growth, Ali et al. (2018) again used the variable average years of schooling to represent human capital. In addition, spending on education and health was also mentioned when considering the impact of human capital on economic growth (Keji, 2021).

However, in almost studies evaluating the impact of education on economic growth, the education variable was mainly measured through investment in education (public spending on education) or enrollment rate (primary school, high school, university). Only a few studies used the literacy rate as a proxy for the level of human capital when examining this relationship. Typically, there was research by Mehmood et al. (2014) when studying the relationship between health spending, literacy rate and economic growth in Asian countries. The result confirmed that a long-term and positive relationship exists between literacy rate and per capita income (economic growth). Juliannisa and Siswantini (2020) pointed out that the human development index depends on the aspects of average life expectancy, literacy rate, average years of

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schooling and purchasing power parity. In addition, within the limits of the research, the authors had not found empirical evidence in Vietnam on studying the impact of literacy rate on economic growth, especially in key economic regions. Through reviewing previous studies and identifying research gaps, the authors decided to choose the research topic: "Labor literacy rate and economic development in the Mekong Delta, Vietnam".

2. Research summary

Keji (2021) empirically examined the relationship between human capital and economic growth in Nigeria from 1981 to 2017. The author used an observed variable representing human capital related to education, which was the student enrollment rate. Research results show that human capital (education) has a lasting and significant impact on economic growth in Nigeria.

Juliannisa and Siswantini (2020) studied literacy to improve the Human Development Index (HDI) in Cibadak Village. Research shows that local authorities have to pay more attention to supporting reading and writing training of leaders because human resources are the driving force to promote economic development.

Khan and Chaudhry (2019) analyzed the impact of human capital (life expectancy and education expenditure) on GDP and employment growth in developing countries using panel data for the period 1996 -2018. Empirical results show that human capital variables (life expectancy and education expenditure) are drivers of growth and employment opportunities in developing countries.

Ali et al. (2018) used data from 132 countries over 15 years to study the relationship between human capital (average years of schooling) and economic growth. Empirical results show that human capital only plays a positive role in GDP per capita growth when there are better economic opportunities and high-quality legal institutions. Mehmood et al. (2014) examined the relationship between health spending, literacy rate, and economic growth in a sample of 26 Asian countries with data from 1990 to 2012. The results show the presence of long-term relationships between per capita income, health expenditure and literacy rate.

3. Research data and models

3.1. Data

The article uses balanced panel data including 156 observations compiled from the statistical yearbook of Vietnam's provinces. The data set includes data from 13 provinces and cities in the Mekong Delta over a 12-year period (2010 - 2021).

3.2. Research models

Based on the research model of Mehmood et al. (2014) the authors proposed the following research model:

$$PTKT_{i,t} = \beta_0 + \beta_1 * TLBC_{i,t} + \beta_x * Z_{i,t} + \varepsilon_{i,t}$$

In which: i represents the province and t represents the time.

$PTKT_{i,t}$ - GRDP per capita of province i in year t

$TLBC_{i,t}$ is the literacy rate of province i in year t

Z is the set of control variables including TTLD - labor force growth rate, VNN - foreign direct investment, LP - inflation rate, TM - trade openness

β_0 is the intercept coefficient

β_1 và β_x are regression coefficients

ε: is the corresponding error.

3.3. Variables

- Dependent variable: Economic development (PTKT) is measured by gross national product per capita. This indicator reflects the efficiency of the economy of a region, province or country. This measurement method has also been used in many previous research (Amna Intisar et al., 2020; Hanushek & Woessmann, 2020; Muhammad & Khan, 2019)

- Explanatory variable: The working-age literacy rate (TLBC) is measured by the number of literate working-age people compared to the total population. Mehmood et al. (2014) affirmed that a high literacy rate is the desire of any country when it wants to promote economic development.

- Control variables: Control variables include labor force growth rate (TTLD), foreign direct investment capital (VNN), inflation rate (LP), and trade openness (TM). These variables are also used by many studies such as Khan and Chaudhry (2019); Mehmood et al. (2014).

4. Results and discussion

4.1. Research results

Table 1: Descriptive statistics of variables

Các biến	Số quan sát	Giá trị trung bình	Độ lệch chuẩn	Giá trị nhỏ nhất	Giá trị lớn nhất
PTKT	156	6,463536	0,225776	5,934041	7,741665
TLBC	156	1,969061	0,012722	1,929419	1,985426
VNN	156	-0,14851	0,780409	-2,8394	1,308038
LP	156	0,630492	0,339167	-1,22185	1,465977
TM	156	19,34207	0,24303	18,46981	20,01633
TTLD	156	0,093479	0,454574	-2,64344	0,954259

Source: Authors compiled from STATA results

Table 2: Correlation coefficient

	PTKT	TLBC	VNN	LP	TM	TTLD
PTKT	1					
TLBC	0,3131***	1				
VNN	0,3007***	0,2665***	1			
LP	-0,2095***	-0,0411	-0,0021	1		
TM	0,0262	0,4324***	0,2405***	-0,0693	1	
TTLD	0,0088	-0,1533*	-0,1797**	-0,0314	0,1855**	1

Source: Authors compiled from STATA results

Table 3: VIF and mean VIF values

Biến	VIF	1/VIF
TM	1,39	0,717742
TLBC	1,35	0,743075
TTLD	1,16	0,863465
VNN	1,14	0,874406
LP	1,01	0,994347
Mean VIF	1,21	

Source: Authors compiled from STATA results

Table 4. Summary of regression results

	OLS	FEM	REM	GLS
TLBC	6,287***	12,00***	10,30***	5,193***
	-4,28	-4,27	-4,34	-4,35
VNN	0,0842***	0,0555	0,0598	0,0544**
	-3,82	-1,5	-1,81	-3,07
LP	-0,137**	-0,127***	-0,127***	-0,0461
	(-2,88)	(-3,72)	(-3,78)	(-1,89)
TM	-0,223**	-0,273***	-0,273***	-0,195***
	(-2,85)	(-3,80)	(-3,94)	(-3,74)
TTLD	0,0762*	-0,00078	0,00672	0,0465
	-2	(-0,02)	-0,19	-1,71
Constant	-1,516	-11,80*	-8,436	0,00719
	(-0,58)	(-2,06)	(-1,76)	0
No, of obs	156	156	156	156
No, of groups	13	13	13	13
Prob>F/Prob> chi2	0,000	0,000	0,000	0,000
R-squared	0,2367	0,1855	0,1976	
White's test	Prob > chi2 = 0,0000			
Wooldridge's test	Prob > F = 0,0005		Prob > F = 0,0005	
Hausman test	Prob>chi2 = 0,8332			
Modified Wald's test	Prob>chi2 = 0,0000			

*Note : t statistics in parentheses * p<0,1; ** p<0,05; *** p<0,01*

Source: Authors compiled from STATA results

4.2. Discussion

Table 1 describes the statistics of variables related to economic development, literacy rate and other control variables. The authors took samples from 13 provinces and cities in the Mekong Delta in the period from 2010 to 2021. Through the descriptive statistics table, it can be seen that the number of observations is 156, the maximum value and the minimum value as well as the variation of the data through the Coefficient of Variation of the data (Coefficient of Variation). Most of the data fluctuates at an average level with CV coefficients less than 1, except for foreign direct investment data (VNN) and labor force growth rate (TTLD) which have CV fluctuation coefficients >1.

Table 2 shows the correlation coefficient between the dependent variable and the independent variables and the correlation coefficient between the independent variables. The results show that the dependent variable economic development (PTKT) has a strong correlation with the variable that needs to be explained, the literacy rate (literacy rate) at the 1% significance level. Besides, there is no multicollinearity phenomenon because the correlation coefficient between independent variables is less than 0.7. At the same time, the VIF and Mean VIF coefficients are both less than 2 (Table 3). Table 4 summarizes the regression results of the model with the following methods: least squares (Pool OLS), fixed effects model (FEM), random effects model (REM) and estimated squares method. minimum quantity (GLS). The tests performed by the authors include: White's test/ Modified Wald's test/ Breusch and Pagan test for heteroscedasticity, Wooldridge's test for autocorrelation and Hausman test for FEM and REM models. With the Pool OLS least squares method: White's test results in p-value = 0.0000 < 0.05, so the model has problems with heteroscedasticity at the 95% confidence level; Wooldridge's test tested for autocorrelation and resulted in p-value = 0.0005 < 0.05, showing that the model has autocorrelation with a confidence level of 95%. These two tests show that the model suffers from autocorrelation and heteroskedasticity problems, so using Pool OLS is almost meaningless. The authors continued to use the fixed effects model (FEM) and random effects model (REM) based

on the Hausman test. When using the Hausman test, the result was p-value = 0.8332 > 0.05, so the authors chose the REM fixed effects model. With the REM model, the authors used Modified Wald's test to test for heteroskedasticity with the result p-value = 0.0000 < 0.05, showing that the model suffers from heteroskedasticity with a 95% confidence level. At the same time, the model cannot overcome the autocorrelation phenomenon when the Wooldridge's test results show that p-value = 0.0000 < 0.05. Finally, the authors used General Least Square (GLS) which can overcome the problem of heteroscedasticity and autocorrelation. And after using the estimated least squares (GLS) method, we have overcome two problems of the model and produced regression results with significance levels of 1% and 5%.

Regression results using the GLS method in table 4 show that the literacy rate has a positive impact on economic development when the TLBC has a positive sign with regression coefficient = 5.193, with a significance level of 0.01. This result provides further empirical evidence that the labor literacy rate increases per capita gross domestic product, promoting economic development. When the rate of literate workers increases, workers have basic qualifications and have the conditions to improve their own knowledge, have the ability to learn and improve their expertise, thereby increasing labor productivity and promoting economic development (Mehmood et al., 2014).

The impact of foreign direct investment (VNN) variables on economic development is positive with a regression coefficient of 0.0544 and a significance level of 0.05. Meanwhile, trade openness (TM) inhibits economic development with a regression coefficient of - 0.195 and a significance level of 0.01.

5. Conclusion and policy implications

The authors used the least squares (GLS) estimation method on data from 13 provinces and cities in the Mekong Delta, Vietnam in the period from 2010 to 2021 in order to examine the impact of labor literacy rate on economic development. Research results show that: (i) The rate of literate labor has an impact on promoting economic development. The rate of literate workers increases, workers have improved qualifications and are able to apply technical advances in production to increase output and increase economic efficiency. (ii) Foreign direct investment has a positive impact on economic development. This means that policies to encourage foreign investors into Vietnam will help have more capital to invest in economic development. (iii) On the contrary, trade openness (TM) has a negative impact on economic growth. This can be explained because fluctuations in import and export can affect the prices of domestic goods, thereby affecting the ability to consume domestic goods and reduce economic efficiency.

The national government and local authorities need to focus on policies to support workers in studying to improve their qualifications, improve their skills, and improve their expertise to promote economic development and learn practical experiences from abroad as well as apply them to our country.

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