

EFFECTS OF GROSS DOMESTIC PRODUCT OF TEXTILE AND TEXTILE PRODUCT TO RESERVE FOR FOREIGN EXCHANGE AND LABOR ABSORPTION OF TEXTILE AND PRODUCT TEXTILE

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<u>Submitted:</u> May 23th 2023 <u>Revised</u>: June 02th 2023 <u>Accepted</u>: May 09th 2023 **Abstract:** The textile and textile products industry have an important role in the country's economy. In various data it is revealed that the contribution of the textile and textile products industry to Gross Domestic Product is significant, which in turn will have an impact on the State's Foreign Exchange Reserves. On the other hand, this industry also usually deploys a large workforce, so it can be said that the growth of this industry will affect the number of workers absorbed. This study aims to determine and analyze the effect of the Gross Domestic Product (GDP) of the Textile and Textile Products Industry in 12 countries in the period 2012 – 2021 and analyze its effects on Foreign Exchange Reserves and Labor Absorption. This study uses ECM panel data regression with the integration order level of Third Difference. The results of the study show that the GDP of TTP has a significant effect on the Foreign Exchange Reserves and the Absorption of TTP Labor with a unidirectional relationship.

Keyword: Gross Domestic Product, Reserve for Foreign Exchange, Labor Absoprtion, Third Difference

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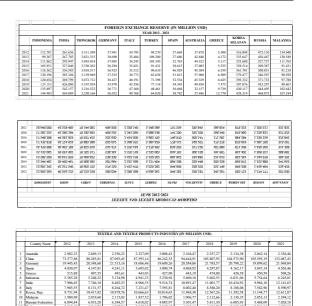
INTRODUCTION

It is undeniable that the important role of the textile and textile products (TTP) industry is a factor capable of supporting economic development and economic growth of a country. Fundamentally, textiles and textile products are basic needs as well as food needs. Therefore, the growth and development of the textile and textile products industry will affect the need for clothing (Yunus, M., & Yamagata, T. 2012).

Thus, the industry of textile and textile products have contributed to increasing state revenues through export and domestic transactions (Kee, H. L., & Tang, H. 2016). What is no less important is that this industry is a labor-intensive industry, so it is able to absorb a large number of workers, from upstream to downstream. Absorption of labor in turn will revive the economy through spending activities by industrial workers.

The volume of textile and textile product business transactions on an international scale or between countries will determine the position of each country's balance of payments, trade balance and foreign exchange reserves (Kindleberger, C. P. 2019). Each country must have an interest in a sustainable increase in export transactions in order to increase the growth rate of the domestic economy.

The data reported by the World Bank for foreign exchange reserves, the number of workers in the textile and textile products industry and gross domestic product for 12 countries in the period 2012 - 2021 are as follows:



METHOD Research Model

The population in this study is all research variable data from the existence of the textile industry and textile products until 2021. The samples selected as research variable data are from 2012 to 2021. The study uses panel data related to 12 countries, namely Indonesia, India, China, Germany, Italy, Turkey, Spain, Australia, Greece, South Korea, Russia Federation and Malaysia.

The selection of the countries sampled was carried out purposively, namely the assumption that these countries have significant links with the textile industry and textile products. Indonesia was chosen because it will be used as the main research destination. In more technical language, the approach used in selecting samples (sampling) is a non-probability side approach, namely selecting samples based on the researchers' considerations own (purposive) by deliberately using secondary data collection that is relevant to the object of research.

This study used cross-sectional data from 12 (twelve) countries with time series data for 10 (ten) years of research from 2012 to 2021, so that the research sample totaled 120 (one hundred and twenty) samples.

Foreign Exchange Reserves = Z1, the function of the dependent variable and is a function of Y1estimation, then the format of the model is as follows: $Z1 = f(\hat{Y})$

Labor Absorption = Z2, the function of the dependent variable and is a function of Y2estimation, then the format of the model is as follows: $Z2 = f(\hat{Y})$

Simple Linear Regression Equation (Simple Regression Linear) is as follows:

(a) Model I Z1 = $\beta o + \beta \hat{Y} + \epsilon t$ (c) Model II Z2 = $\beta o + \beta \hat{Y} + \epsilon t$

For panel data regression model using cross section and time series data for this research use Fixed Effect Model. It is result of test of F (chow test) and Hausmen test.

RESULT AND DISCUSSIONS Result of Model

On the chart of Foreign Exchange Reserves, Indonesia, India, Italy, Spain, Greece and South Korea have an increasing trend. Turkey has a downward trend. China, Germany, Australia, Russia and Malaysia do not seem to have a trend. Of the 12 countries, there are 7 countries that have a trend, so it can be predicted that the Foreign Exchange Reserves variable is nonstationary at the level level (Ray. S, 2012). On the Labor Absorption chart, Indonesia, China, Turkey and Malaysia have an increasing trend. The countries of Germany, Spain, Australia and Greece have a downward trend (Van Liemt, G. 2001). India, Italy, South Korea and Russia do not seem to have a trend. Of the 12 countries, there are 8 countries that seem to have a trend, so it can be predicted that the variable of Labor Absorption is nonstationary at the level level.

Variabel	Level Intercept	1 st - difference Intercept	Integration Orde				
CIPS Order							
Model 1							
Foreign Exchange Reserve	-1,8485	-2,0902	I(2)				
Model 2							
Labor Absorption	-2,1007	-9,4940*	l(1)				

From the results of testing the unit root with the CIPS test, it was found that foreign exchange reserves and labor absorption variables are non-stationary at the level. The Foreign Exchange Reserve variable is a non-stationary variable at the level and 1st-difference level, but stationary at the 2nd-difference level. Labor Absorption of TTP is a non-stationary variable at the level level, but stationary at the 1st-difference level.

Preliminary Hypothesis Testing

Initial test results of the regression model in model 1 shows:

	Model 1											
Variabel		Koefisien		Dependen Variabel: <u>Un Eoreign</u> Exchange Reser			erve t- <mark>Statistic</mark>			Erob.		
	C.E.	F.E.	R.E.	C.E.	F.E.	R.E.	C.E.	F.E.	R.E.	C.E.	F.E.	R.E.
c	0.664156	0.088269	0.251330	0.062225	0.131912	0.111838	10.67347	0.669156	2.247269	0.0000	0.5048	0.0265
Ln GDP TTP	5.502257	10.79883	9.299121	0.581177	1.213353	1.083912	9.467440	8.899990	8.579221	0.0000	0.0000	0.0000

Initial test statistics of the regression model in model 1 shows:

Model 1							
Statistics	Common Effect	Fixed Effect	Random Effect				
R-squared	0.491211	0.985695	0.039614				
Adjusted R-							
squared	0.486899	0.984091	0.031476				
S.E. of							
regression	1.108620	0.195210	0.198844				
Sum							
squared							
resid	145.0266	4.077447	4.665594				
Log							
likelihood	-181.6381	32.64861	-				
F-statistic	113.9231	614.4214	4.867320				
Prob(F-							
statistic)	0.000000	0.000000	0.029307				
Mean							
dependent							
var	11.61066	11.61066	0.605282				
S.D.							
dependent							
var	1.547680	1.547680	0.202049				
Akaike info							
criterion	3.060635	-0.327477	-				
Schwarz	a 40700 i						
criterion	3.107094	-0.025499	-				
Hannan-							
Quinn	2 070502	0.00.40.40	-				
criter.	3.079502	-0.204842					
Durbin-			0.389685				
Watson stat	0.014119	0.458295					

Based on the comparison of the calculation results above, using the adjusted r-square and Durbin-Watson stat as the main reference, it can be concluded that for model 2, the Fixed Effect is the model that is determined to be used compared to other models, namely Common Effect and Random Effect. The adjusted r-square value for Fixed Effect is 0.984091, higher than Common Effect

(0.486899) and Random Effect (0.031476). The Durbin-Watson stat value for Fixed Effect is 0.458295, closer to the value 2 or the highest compared to Common Effect (0.014119) and Random Effect (0.389685).

Initial test results of the regression model in model 2 shows:

	Model 2											
				Variabel D	ependen Va	riable: Ln L	abor Absory	ption				
		Koefisien		s	tandard Err	or	t-Statistic			Prob.		
Variabel	C.E.	F.E.	R.E.	C.E.	F.E.	R.E.	C.E.	F.E.	R.E.	C.E.	F.E.	R.E.
с	1.048349	0.383470	0.439305	0.049044	0.050546	0.048393	21.37574	7.586490	9.077894	0.0000	0.0000	0.0000
Ln GDP TTP	4.894661	11.00971	10.49618	0.458067	0.464938	0.521405	10.68548	23.67992	20.13058	0.0000	0.0000	0.0000

Initial test statistics of the regression model in model 2 shows:

Model 2						
Statistics	Common	Fixed	Random			
Statistics	Effect	Effect	Effect			
R-squared	0.491211	0.985695	0.039614			
Adjusted						
R-squared	0.486899	0.984091	0.031476			
S.E. of						
regression	1.108620	0.195210	0.198844			
Sum						
squared						
resid	145.0266	4.077447	4.665594			
Log	-					
likelihood	181.6381	32.64861	-			
F-statistic	113.9231	614.4214	4.867320			
Prob(F-						
statistic)	0.000000	0.000000	0.029307			
Mean	11.61066	11.61066	0.605282			

dependent			
var			
S.D.			
dependent			
var	1.547680	1.547680	0.202049
Akaike			
info		-	
criterion	3.060635	0.327477	-
Schwarz		-	
criterion	3.107094	0.025499	-
Hannan-			
Quinn		-	-
criter.	3.079502	0.204842	
Durbin-			
Watson			
stat	0.014119	0.458295	0.389685

Based on the comparison of the calculation results above, using the adjusted r-square and Durbin-Watson stat as the main reference, it can be concluded that for model 3, the Fixed Effect is the model that is determined to be used compared to other models, namely Common Effect and Random Effect. The adjusted r-square value for the Fixed Effect is 0.998483, higher than the Common Effect (0.793015) and Random Effect (0.379803). The Durbin-Watson stat value for Fixed Effect is 0.618576, closer to the value 2 or the highest compared to Common Effect (0.016319) and Random Effect (0.558814).

Model Selection

Model 1 - Foreign Exchange Reserve = f(GDP_TTP) F test (Chow Test)

Uji Chow Model 2.

Effects Test	Statistic	d.f.	Prob.
	336.25214		
Cross-section F	9	(11,107)	0.0000
Cross-section	Chi-428.57348		
square	8	11	0.0000

H0: Common Effect Model H1: Fixed Effect Model Prob value 0,00 < 0,05. H1 accepted (model Fixed Effect)

Hausman Test

Uji Hausman Model 1.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.434090	1	0.0197

H0: Random Effect Model

H1: Fixed Effect Model

Prob Value 0,0197 < 0,05. H1 accepted (model **Fixed Effect**)

Model 2 - Labor Absorption TTP = f(GDP_TTP)

F test (Chow Test)

Chow Test Model 2.

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1454.046744	(11,107)	0.0000
Cross-section Chi-square	601.660771	11	0.0000

H0: Common Effect Model H1: Fixed Effect Model Prob value 0,0000 < 0,05. H1 accepted (Fixed Effect model)

Uji Hausman

Hausman Test Model 1.

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Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	14.630947	1	0.0001

H0: Random Effect Model H1: Fixed Effect Model Prob value 0,0001 < 0,05. H1 accepted (**Fixed Effect** model)

Fixed Effect for Model 1

Dependent Variable: LN_FO		E DECEDIVE 2		
Method: Pooled Least Squa		DE_RESERVE_!		
Date: 02/09/23 Time: 10:41				
Sample: 2012 2021				
Included observations: 10				
Cross-sections included: 12				
Total pool (balanced) obser	vations: 120			
10.00 BOOST (000000000 40000				
Variable.	Coefficient	Std. Error	t-Statistic	Prob
LN_GDP_?	0.088269	0.131912	0.669156	0.5048
С	10.79883	1.213353	8.899990	0.0000
Eixed Effects (Cross)				
AUSTRALIAC	-0.816694			
GERMANYC	-1.084870			
GREECEC	-2.570158			
INDIAC	1.097440			
INDONESIAC	0.006312			
ITALYC	-1.124688			
KOREASELATANC	1.195976			
MALAYSIAC	0.130196			
RUSSIAC	1.346810			
SPAINC	-0.883627			
TIONGKOKC	3.084735			
TURKIYEC	-0.381432			
	Effects Sp	ecification		
Cross-section fixed (dummy	variables)			
P. cauarad	0.985695	Mean depende	antvar	11.610 66
R-squared	0.983093	wearr depende	ent var	1.5476
Adjusted R-squared	0.984091	S.D. dependen	t var	1.5470
najusteu n'squareu	0.501051	5.5. dependen	· · · ·	
				0.3274
S.E. of regression	0.195210	Akaike info crit	terion	77
				0.0254
Sum squared resid	4.077447	Schwarz criteri	on	99
Log likelihood	32.64861	Hannan Origin	critor	0.2048
Log likelihood	32.04861	Hannan-Quinr	r criter.	42 0.4582
F-statistic	614.4214	Durbin-Watso	n stat	0.4582
Prob(F-statistic)	0.000000	Darbin-Watso	- stat	95
	0.000000			

Fixed Effect for Model 2

Dependent Variable: LN	LABOR ABSO	RPTION 2		
Method: Pooled Least So				
Date: 02/09/23 Time: 10				
Sample: 2012 2021	/.40			
Included observations: 10				
Cross-sections included:				
Total pool (balanced) obs				
I OTAL POOR (PARAUSARI) ANS				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_GDP_?	0.383470	0.050546	7.586490	0.0000
С	11.00971	0.464938	23.67992	0.0000
Eixed Effects (Cross)				
AUSTRALIAC	-1.286289			
GERMANYC	-1.321201			
GREECEC	-1.320156			
INDIAC	2.566795			
INDONESIAC	1.669366			
ITALYC	-0.242738			
KOREASELATANC	-0.928332			
MALAYSIAC	-1.238360			
RUSSIAC	-0.084981			
SPAINC	-0.666994			
TIONGKOKC	2.288831			
TURKIYEC	0.564060			
	Effects Sp	ecification		
Cross-section fixed (dum	my variables)			
R-squared	0.998636	Mean depen		14.53658
Adjusted R-squared	0.998483	S.D. depend	1.920587	
S.E. of regression	0.074802	Akaike info o	riterion	-2.245952
Sum squared resid	0.598694	Schwarz crit	erion	-1.943974
Log likelihood	147.7571	Hannan-Qui	nn criter.	-2.123317
F-statistic	6528.594	Durbin-Wats	on stat	0.618576
Prob(F-statistic)	0.000000			

Interpretation of Panel Data Regression

Panel data processing uses the **third difference model**. The third difference model, also known as the difference in difference in difference.

Model 1 - Foreign Exchange Reserves = f(GDP_TTP)

(Ln_Foreign_Exchange_Reserve) = 0.003283 + 0.519001 (Ln_GDP_TTP) - 1.398781 (ECT(-1))

Constant Value = 0.003283. Regression Coefficient Value B1 = 0.519001. Changes from changes in changes in GDP TTP are inelastic to Foreign Exchange Reserves. Regression Coefficient Value B2 = -1.398781. This is a model error correction.

According to Simultaneous F Test, the significance value is 0.0000 <0.05 which means that all variables simultaneously have a significant effect on GDP. According to Partial t test, changes from changes in

changes in GDP TTP (Y) have a t-statistic value of 7.234002 with a p-value of 0.0000. smaller than the 5% significance level, so that H0 (not significant effect) is rejected, and H1 (significant effect) is accepted. Positive t-statistic values indicate a unidirectional relationship. The Error Correction Value (ECT) has a t-statistic value of -12.00433 with a p-value of 0.0000, which is smaller than the 5% significance level, so the error correction coefficient has good significance for the model.

AutocorrelationTest(Durbin-Watson).TheDurbin-Watsonvalueobtained in the regression results on GDPis 2.418.The dL value is 1.571 and the dUvalue is 1.780, so 4-dU (2.220) < Durbin</td>Watson (2.418) < 4-dL (2.429), meaning</td>that there is no autocorrelation.

Coefficient of Determination (R-Squared). The magnitude of the effect of the variables simultaneously on the regression results on Foreign Exchange Reserves is adjusted R-squared = 0.627744. The TTP GDP variable can explain 62.77 percent of changes in Foreign Exchange Reserves, where the rest is influenced by other factors outside the model studied.

Model 2 - Labor Absorption TTP = f(GDP_TTP)

(Ln_Labor_Absorption_TTP) = -0.001317 + 0.485380 (Ln_GDP_TTP)- 0.741352 (ECT(-1))

Constant Value = -0.001317. Regression Coefficient Value B1 = 0.485380. Changes from changes in changes in GDP of TTP are inelastic to TTP Labor Absorption. Regression Coefficient Value B2 = -0.741352. This is a model error correction.

According to Simultaneous F Test,

the significance value is 0.0000 < 0.05 which means that all variables simultaneously have a significant effect on GDP. According to **Partial t test**, changes in TTP GDP (Y) have a t-statistic value of 9.549771 with a p-value of 0.0000. smaller than the 5% significance level, so that H0 (not significant effect) is rejected, and H1 (significant effect) is accepted. Positive t-statistic values indicate a unidirectional relationship. The Error Correction Value (ECT) has a t-statistic value of -7.828928 with a p-value of 0.0000, which is smaller than the 5% significance level, so the error correction coefficient has good significance for the model.

AutocorrelationTest(Durbin-Watson).TheDurbin-Watsonvalueobtained on the regression results on GDPis 2.630.The dL value is 1.571 and the dUvalueis 1.780, so 4-dU (2.220) < 4-dL</td>(2.429) < Durbin Watson (2.630), meaning</td>that there is a negative autocorrelation.

Coefficient of Determination (R-Squared). The magnitude of the effect of the variables simultaneously on the regression results on Foreign Exchange Reserves is adjusted R-squared = 0.528375. The TTP GDP variable can explain 52.83 percent of changes in TTP Labor Absorption, where the rest is influenced by other factors outside the model studied.

Test Results Feasibility Model Theoretical Plausibility

		-	
Variable	Pra Estimation	Pasca Estimation	Description
Model 1			
Effect of			
Gross			
Domestic	Positive		
Product		Positive	
ofTTP to		Positive	as expected
Foreign			
Exchange			
Reserve			

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Model 2			
Effect of			
Gross			
Domestic			
Product of	Positive	Positive	as expected
TTP To			
Labor			
Absorption			

Accuracy of the Estimates of the Parameters

Variable	Accuracy	Description
Model 1		
Effect of Gross	0,0000 <	as expected
Domestic	0,05	
Product of TTP		
to Foreign		
Exchange		
Reserve		
Model 2		
Effect of Gross	0,0000 <	as expected
Domestic	0,05	
Product of TTP		
To Labor		
Absorption		

Explanatory Ability

Variabl e	Coefisi en	Stand ard Error	½ Beta	Descript ion
Model 1				
Effect of Gross Domesti c Product TTP to Foreign Exchang e Reserve	0,5190 01	0,0717 45	0,2595 00	as expected
Model 2				
Effect of Gross Domesti c Product	0,4853 80	0,0508 26	0,2426 90	as expected

TTP To	
Labor	
Absorpt	
ion	

Forecasting Ability

Variable	R-Squared Coefficien of Determination	Keterangan
Model 1		
Effect of Gross		
Domestic		
Product TTP	62,77 % > 50 %	as expected
to Foreign		•
Exchange		
Reserve		
Model 2		
Effect of		
Gross		
Domestic	52,83 % > 50 %	as expected
Product TTP	JZ, UZ /0 / JU /0	as expected
To Labor		
Absorption		

CONCLUSION

The GDP of TTP variable has a significant effect on Foreign Exchange Reserves with a unidirectional relationship and also has a significant effect on Labor Absorption of TTP with a unidirectional relationship.

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