Influence of Real Interest Rate on Growth of East Asian Pacific Middle Income States: A Panel Data Analysis

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Abstract

This study aims to investigate the influence of real interest rate on growth of East Asian Pacific middle income states. In developing economies, interest rates play a critical role in shaping financial stability and growth. This study has used panel data of East Asian Pacific middle income countries by applying Random Effect (RE) and Generalized Methods of Moments (GMM) model for the period 2000 to 2024. The outcomes indicate that the interest rate exerts negative impact on growth of these states. The study suggests that the authorities of East Asian middle income countries should control interest rate so that economic development of these countries could be upstretched.

Keywords: Real Interest Rate, Economic Development, and GMM

Introduction

In developing economies, the role of real interest rates is considered as a critical factor in determining financial stability and growth. Lower interest rates can enhance access to credit for businesses and individuals, encouraging entrepreneurship and consumer spending. High rates, on the other hand, can limit borrowing, stifling economic growth. Developing economies often rely on foreign direct investment (FDI). Stable or lower interest rates can make a country more attractive to investors seeking favorable borrowing conditions. Interest rates in developing economies are a powerful tool for promoting growth, attracting investment, and managing inflation, but they must be carefully calibrated to avoid negative consequences. The financial global crises has led the economists and financial structuralizes to emphasize the role of real interest rates in growth of developing economies (Badiea, 2019). Fluctuating interest rate during the 1980's has diverted a remarkable research on such an extraordinary upsurge in real interest rates and its influence on the growth (Blanchard and Summers, 1984). After 2000s, the whole scenario has shifted the attention the economists towards causes which are responsible of these fluctuations Barro (1990).

King and Levine (1993) professed that the influence of real interest rate is vanished in a larger cross section of countries that included mature industrialized nations, although the explanatory power of other financial variables remained significant. De Gregorio and Guidotti (1995) claimed non monotonic association amongst interest rate and the growth, similar findings were reported by Fry (1997). There are many cases where high interest rates culminate the crisis in banking sector which finally precipitates the sluggish growth (Hellman et al., 1994). During the early 1980's, such an inspirational experience was observed by the Southern Cone economies (McKinnon, 1982). This study sought to address the question that what is the influence of interest rate on growth in East Asian Pacific middle income states? The objectives of study are to empirically examine the influence of interest rate on growth and to suggest the policy recommendations for East Asian Pacific states. This study focused on the effects of Interest rate, Gross National expenditure, Inflation and Foreign direct investment on economic growth. This study used panel data covering the period of (1998 to 2022) in Philippines, Solomon, Viet Nam, Mongolia, Malaysia, China, Fiji, Indonesia). The study constructs the following hypothesis:

H_0: There is no influence of interest rate on growth in East Asian Pacific states.
H_1: There is influence of interest rate on growth in East Asian Pacific states.

Review of Literature

Saba and Danish (2016) estimated the association amongst interest rate and growth by applying random effect (RE) and System GMM in seventeen Non-Islamic and seventeen Islamic economies during the period 2005-2013. Findings of the study indicated that the people in Islamic states were not responsive to interest rates, however, in Non-Islamic states have reflected the converse situation. It was suggested that the authorities of Islamic economies should not impersonate the economic strategies of non-Islamic economies.

Hariz and Hamza (2017) scrutinized the influence of interest rate on growth in 20 Asian economies by using panel data from 2006-2015. The study has employed GMM to estimate the influence of interest rate on growth. The findings of the study have revealed that interest rate was negatively influencing the growth and inflation. It was suggested that

government must have to develop policies that could be used to stabilize the economy and facilitate the achievement of growth.

Badiea et al. (2019) examined the process in which real interest rate has exerted a negative influence on growth in 38 transitory economies. This study has applied dynamic panel data method which was based on GMM for the period of 1996–2015. The outcomes have shown the converse connection among real interest rate and growth. It was recommended that these economies should lower the interest rate which may be helpful to tolerate the transition and achieve higher growth.

Matarr and Momodou (2021) have inspected the influence of interest rate on growth in Gambia for the period 1993-2017. The study has used VECM for checking the connections amid growth and real interest rate and exchange rate in short run and long run in Gambian economy. The results indicated that short-run link was absent, whereas, long run association was found from real interest rate and real exchange rate to growth. It was recommended that Ministry of Finance and Economic Affairs should sensibly cope the Gambia's budget by dropping undue expenses that were causing to budget deficits.

In view of all above, it can be summarized that there is dearth of literature on exploring the influence of interest rate on growth for the case of panel data analysis. None of the earlier studies have explored this relationship for the case of East Asia Pacific middle income states. Current research aims to bridge this gap.

Methodology

The study has to apply the Random Effect (RE) and GMM model by utilizing time series panel data from 2000 to 2024 collected from World Development Indicators (WDI) for the East Asian Pacific middle income countries. For this purpose, following model is specified:

$$EGR = f\,(RIR, GNE, FDI, INF)....................(1)$$

Econometrics transformation of model given for panel analysis can be written as:

$$EGR_{it} = \beta_0 + \beta_1\,RIR_{it} + \beta_2 GNE_{it} + \beta_3 FDI_{it} + \beta_4 INF_{it} + \mu_{it} \quad \text{---------------- (2)}$$

Where, β_0 is intercept form of the model, β_1, β_2, β_3, and β_4 are the coefficients of the model and μ_{it} is the error term.

Table 1:   *Measurement and Sources of Variables*

Variables	Full Name	Measurement	Source of Data
EGR	Economic Growth	Annual % of GDP	WDI
RIR	Real Interest Rate	Current %	WDI
INF	Inflation	Consumer price annual %	WDI
GNE	Gross national expenditure	% of Gdp growth	WDI
FDI	Foreign Direct Investment	Net inflows %	WDI

Result and Discussion

Estimates of the descriptive statistics are shown in the table given below:

Table 2:   *Estimates of Descriptive Statistics*

	GDP	RIR	INF	FDI	GNE
Mean	4.484450	4.474590	4.772728	4.136975	4.606526
Median	5.3000000	3.974548	3.597823	3.039855	4.608710

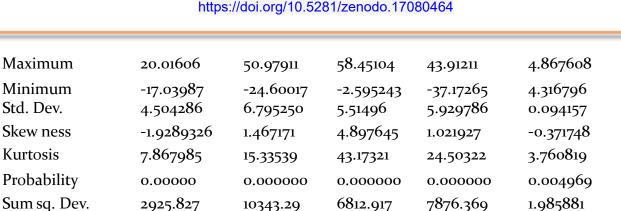|					
Maximum	20.01606	50.97911	58.45104	43.91211	4.867608
Minimum	-17.03987	-24.60017	-2.595243	-37.17265	4.316796
Std. Dev.	4.504286	6.795250	5.51496	5.929786	0.094157
Skew ness	-1.9289326	1.467171	4.897645	1.021927	-0.371748
Kurtosis	7.867985	15.33539	43.17321	24.50322	3.760819
Probability	0.00000	0.000000	0.000000	0.000000	0.004969
Sum sq. Dev.	2925.827	10343.29	6812.917	7876.369	1.985881
Observations	255	255	255	255	255

Table 2 represents the results of the descriptive statistics of the variables which are included in the study. The results of unit root test appear in Table 3.

Table 3:   *Unit Root Test*

Variables	LLC	IPS	Prob.
EGR	I(0)	I(0)	0.0000
RIR	I(0)	I(0)	0.00000
REER	I(0)	I(0)	0.00000
INF	I(0)	I(0)	0.00000
FDI	I(0)	I(0)	0.00000

Econometrics analysis starts from checking the stationary of the data by applying LLC and IPS tests. This result indicates that all the variable are stationary at I(0).

Table 4:   *Results of Pair wise Correlation*

	GDP	RIR	INF	FDI	GNE
GDP	1				
RIR	-0.069141	1			
INF	-0.107976	-0.225543	1		
FDI	0.202986	-0.050968	0.173411	1	
GNE	-0.068375	0.222474	0.239391	0.330060	1

Table 3 indicates the estimates of pair-wise correlation matrix for the overall five variables which describes the summary variables for panel data. The EGR correlates negatively With Real Interest rate and the value of the correlation is -0.069141 Real Exchange rate is negatively correlated with EGR and the correlation between them is -0.107976. Finally, we can see that the Foreign Direct Investment is positively related to the EGR the value of the correlation between them is 0.202986.

The Breusch-Pagan test is an extension of the classic Breusch-Pagan test for heteroscedasticity in cross-sectional data. The LM version of the test is suitable for panel data settings, where observations are made on multiple entities (cross-sections) over multiple time periods. It examines whether there is heteroscedasticity across entities, across time periods, or both. This test tells that which model is more appropriate Pooled OLS model or Random/Fixed effect model.

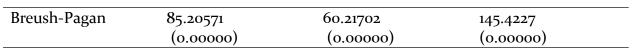| Test	Cross section	Time	Both

| Breush-Pagan | 85.20571 | 60.21702 | 145.4227 |
| | (0.00000) | (0.00000) | (0.00000) |

Since, p-value is less than 0.05 then reject null hypothesis and go for random effect model.

Table 4:   Estimates of Fixed Effect

Variable	Coefficient	Std. Error	t- statistics	Probability
C	32.51267	23.47750	1.384844	0.1676***
RIR	-0.102082	0.050735	-0.2012071	0.0455**
INF	-0.189261	0.060831	-3.470335	0.0021**
FDI	-0.186004	0.053598	3.470335	0.0006**
GNE	-5.956225	5.127620	-1.161602	0.2467***
F –statistics	6.894993			
Probability	0.000000			
Sum square resid	3268.864			
R- Squared	0.280722			
D-W test	1.395972			
Schwarz–criteria	5.826905			

Result given in table 4 reveals that interest rate has negative influence on economic growth of East Asian Pacific states, which means that rise in interest rate will shrink down economic growth and vice versa. When interest rates are high, borrowing costs for businesses rise. This makesfinancing for new projects, expansion, and capital investments more expensive. As a result, businesses may delay or scale back their investment plans, which cause to sluggish productivity growth. Inflation has negative effect on growth which means as inflation increases, the value of money decreases and hence, purchasing power of consumers falls down. This decrease in purchasing power leads to reduction in consumption, which is a significant component of aggregate demand. Lower consumer spending can slow down economic growth.

FDI has negative impact on economic growth. High levels of FDI can lead to economic dependence on foreign companies. This dependence may cause the foreign investors vulnerable to external shocks, such as relocating operations to other countries with more favorable conditions. Such relocations can lead to job losses and economic instability.

Table 5:   Results of Random Effect

Variable	Coefficient	Std. Error	t- statistics	Probability
RIR	-0.094377	0.049683	-1.899597	0.0588**
INF	-0.180136	0.059770	-3.013819	0.0029**
FDI	0.187769	0.052972	3.544651	0.0005**
GNE	-5.549231	4.817299	-1.151938	0.2506***
C	4.136085	1.312489	3.151328	0.1674
Effect	S.D	Rho		
Specification				
Cross–section	2.76430	0.3311		

random Idiosyncratic random	2.926725	0.6689

Results indicate that real interest rate has negative influence on growth of East Asian Pacific states, which means that rise in real interest rate will decrease the growth and reduction in interest rate will increase in growth. When interest rates rises, it leads to rise in the borrowing cost of money increases. This applies to individuals, businesses, and governments. For individuals, rising interest rates lead to rising cost of mortgages, which can reduce consumer spending. For businesses, higher borrowing costs can lead to reduced investment in expansion, new projects, and hiring, as the return on investment must be higher to justify the borrowing cost.

As inflation increases, the value of money decreases, meaning that consumers can buy less with the same amount of money. This reduction in purchasing power can lead to decreased consumer spending, which is a significant component of aggregate demand. Lower consumer spending can slow down economic growth.

FDI can generate employment opportunities in host countries. Increased employment levels contribute to higher incomes, consumer spending, and overall economic activity, ultimately, growth level will tend to upsurge.

Table 6: *Estimates of Hausman Test*

Test Summary		Chi-Sq. statistics	Chi-sq. d.f.	Prob.
Cross section random		0.712108	4	0.9498
Variable	Fixed	Random	Var (Diff.)	Probability
RIR	-0.102082	-0.094377	0.000106	0.4535
INF	-0.189261	-0.018136	0.000128	0.4198
FDI	-0.186004	-0.187769	0.000067	0.8289
GNE	-5.956255	-5.549231	3.086125	0.8168
Cross section random effect test				
Variable	Coefficient	Std. Error	t- Statistics	Prob.
C	32.151267	23.47750	1.384844	0.0010
RIR	-0.102082	0.050735	-2.012071	0.0674
INF	-1.089261	0.060831	-3.111258	0.1630
FDI	0.186004	0.053598	3.470335	0.1805
GNE	-5.956255	0.053867	-1.1661602	0.2467

If the Hausman test is insignificant it means that the random effect is better than fixed effect and fixed effect is more appropriate than random effect if the Hausman test is significant.

Table 7: *Results of Generalized Methods of Moments*

Variable	Coefficient	Std. Error	t- statistics	Probability
RIR	-0.290652	0.112253	-2.589272	0.0103**
INF	0.465951	0.164212	2.837507	0.0050**
FDI	0.401726	0.114042	3.522615	0.0005**
GNE	-17.80763	5.136583	-3.466826	0.0006**
J-statistics	115.6508			
Probability				

Sum square resid   0.00000
                          4989.453

Results of GMM entail that rise in the interest rate exerts adverse influence on growth, Businesses often finance new projects and expansion through borrowing. When interest rates are high, the cost of financing these activities increases. This can lead to businesses delaying or canceling plans for expansion, research and development, and other investments that contribute to economic growth. Lower levels of business investment can reduce employment level the decrease in employment level will also decrease the output level when output level is decreased the economic growth will automatically decreased.

When the rate of interest is high, inflation will put forth significant and positive effect on growth, because when there is prosperity in economy then there is more money supply which will increase the investment when investment is increase the employment is increase it will ultimately increase the production level that positively impact on economic growth.

Gross national expenditure exert significant and deleterious effect on growth because High GNE, particularly when driven by government spending, can lead to misallocation of resources. If government expenditures are not efficiently targeted or are directed towards unproductive projects, it can result in inefficient use of resources, reducing overall economic productivity and growth. This result is similar with the results derived by the studies e.g. (Saba and Danish, 2019; Hariz and Hamza, 2017; Matarr and Momodou, 2021).

Conclusion

The study has explored the influence of interest rate on growth in East Asian Pacific states, having the data of variables from WDI for the time period of 2000 to 2024. This study includes the explanatory variables: real interest rate, inflation, gross national expenditure, foreign direct investment and growth. GMM approach is used to investigate the relationship between variables. The study concludes that interest rate is an important factor of growth and it has inverse influence on growth in East Asian Pacific states.

Recommendations

➢ The policy maker should try to control the interest rate so that, growth in East Asian Pacific states could be up lifted.
➢ The Government of these states should try to maintain the healthy inflation which will be helpful for   accelerating the economic growth.
➢ The policy maker should try to increase the foreign direct investment because FDI has positive relationship with economic growth.

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