The Impact of Foreign Direct Investment, Capital Formation, Inflation, Money Supply and Trade Openness on Economic growth of Asian Countries

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ABSTRACT

Economic growth is currently an essential phenomenon for emerging countries worldwide and has gained the researchers' intentions. Thus, the current study aims to examine the role of foreign direct investment (FDI), capital formation, inflation, money supply, and trade openness on the economic growth of Asian countries. The data has been extracted from the twenty emerging Asian countries from 2007 to 2018 using the most popular database named World Development Indicators (WDI). The fixed-effects model, along with the robust standard error, has been used for checking the impact of predictors on the economic growth of Asian countries. The results revealed that the predictors such as FDI, capital formation, money supply, and trade openness have positive association with economic growth, while inflation has a negative association with the economic growth of Asian countries. These findings are suitable for the new arrivals who want to examine this area in the future and for the regular traders who want to develop policies related to economic growth.

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1. Introduction

The country's current economic conditions decide the country's future (Nawaz, Azam, & Bhatti, 2019). Any country's economy gets support from several factors for its survival and growth like FDI, inflation, trade, import, export, tax revenue, etc. The combination of these factors decides whether the economy is in the right direction or not. In the recent decades, the South East Asian and South Asian regions have encountered international private capital flows, in general, they have become less appealing to FDI, as a consequence of institutional bottlenecks, following a greater degree of penetration into the world economy: weak standard of infrastructure and inadequate domestic savings. In the other countries of these regions, macroeconomic turbulence was observed, apart from Malaysia, Pakistan, Indonesia, Bangladesh, Thailand, and India: uneven economic development, high inflation, and elevated fiscal deficits (Crowley & Lee, 2003).
FDI is a positive indicator to contribute to economic growth. FDI is the investment inflow from one country to any of the other countries of the world. Several reasons stand behind the investment of one country in another country, i.e., cost of production, quality products, reduce the lead time. As internationalization theory states that one of the prime reasons behind the FDI of any country is the economy of scale, which results in a reduction of production cost (Siddique, Ansar, Naeem, & Yaqoob, 2017). Another influential factor towards the country’s economic growth is tax revenue. Tax is the obligatory charge imposed by the government on the people. The tax is levied on the people's income, properties, and other related factors (Ojong, Anthony, & Arikpo, 2016). The payment of tax is the transfer of resources towards public sector to support the economy.

There is an association between money supply (MS) and inflation. On the one hand, both money supply and inflation collectively affect the country's economic growth (Van, 2019). An increase in money supply continually results in inflation but the long run. On the other hand, the continuous increase in the money supply does not affect inflation in the short run. This concludes that money supply and inflation are directly associated with each other, money supply affects the economic growth of the country.

Several factors impact the country's economy, especially Asian countries, i.e., inflation, FDI, Money supply, etc. Capital formation is also one of the core factors which impacts the economic growth of the country. The study proposed an association between any country's capital formation and its economic growth (Shahbaz, Tang, & Shabbir, 2011). This relation's nature stated as positive (Sa'di & Hammami, 2015; Noor & Siddiqi, 2010). On the other hand, a study conducted in china proposes that there is no association between capital formation and country economic growth (Shahbaz & Lean, 2012).

Trade openness (TO) means open border trade. There is vast literature available on the relationship between trade and economic growth. Mostly studies proposed that trade openness is positively impacted the economic growth of the country (Awokuse, 2008; Yanikkaya, 2003; Menyah, Nazlioglu, & Wolde-Rufael, 2014; Soukhakian, 2007; Ulaşan, 2015).

In recent decades, the association between inflation and economic growth has been one of the most significant economic scandals among analysts, policymakers, and financial institutions (Nawaz, Hussain, Riaz, & Ahmad, 2019). The focus point is, in particular, that either inflation necessarily leads to trade or hurts economic growth (Khan & Nawaz, 2010). While the link between inflation and economic growth has been extensively explored and analyzed over the years, the economic literature link is being addressed. Empirical and theoretical data essentially offers three forms of ties; robust, negative, and zero, between inflation and economic growth. Inflation was not seen as an issue at the beginning of the twentieth century, where Keynesian politics predominated, and it had a positive impact on economic growth. Simultaneously, the Phillips Curve to further focuses, forecasting that high inflation would positively affect economic activity by having a low unemployment rate. Subsequently, several experiments did not reveal definitive scientific proof that inflation and economic growth were either optimistic or pessimistic. Thus, the present study investigates
the impact of FDI, capital formation, inflation, trade openness, and money supply on the economic growth of emerging Asian countries.

The literature identified the mixed impact of mentioned variables on Economic growth (Ojong et al., 2016; Saidi & Hammami, 2015; Shahbaz & Lean, 2012; Siddique et al., 2017; Soukhakian, 2007; Van, 2019). Moreover, every country has different circumstances that influence particular variables, which further affect the countries' economic growth. The present study aims to check whether the country's economic growth accepts the impact of FDI, capital formation, money supply, trade openness, and inflation in Asian countries. This paper will address the following questions: Either all the mentioned variables (FDI, capital formation, money supply, trade openness, and inflation) have a significant impact on economic growth? Which variable has a comparatively more significant impact on economic growth?

2. Literature Review

Developing economies are attracting foreign direct investment (FDI). In order to explain this trend, there are three critical instances. Firstly, most FDI outflows come from developed countries, but their share of overall FDI outflows has declined over time. Although FDI's outflows in developing and emerging economies grew gradually in 2003, FDI's share of industrialized countries declined to seventy-five percent in 2011. Secondly, most businesses spend in their countries with similar development levels. Approximately seventy percent of foreign direct investment is coming from established and emerging countries to other developing and emerging countries, fifty percent of it goes to economic countries. In contrast, additional money is being invested in other developing nations. Thirdly, developed countries can change their operations than evolving and emerging economies. Around forty-five percent of FDI has flown to non-developed developing and emerging countries. Furthermore, developed countries are the primary source of FDI for developing and emerging countries. (Muhammad & Khan, 2019).

The linkage between foreign direct investment and economic growth can be established by tracing the theories of modernization and dependency. Theories of modernization indicate that FDI stimulates economic growth (Adams, 2009). The role of technology which transfers through FDI is underlined in the modern growth theories. However, the shortage of infrastructure, lack of education, poorly liberalized capital markets, socio-economic and political instability in developing countries (Calvo & Sanchez-Robles, 2002). The relationship between FDI and the economic growth from 1980 to 2008 was tested by Iqbal, Shaikh, and Shar (2010) in Pakistan.

Bakhsh, Rose, Ali, Ahmad, and Shahbaz (2017) conducted a study to find the impact of foreign direct investment, CO₂ emission, and renewable waste on economics growth from 1980 to 2014 in case of Pakistan. To test the relationship between variables, the data collection source of the study was the Economic Survey of Pakistan. The results obtained from panel cointegration analysis proposed that there is a significant association between foreign direct investment and the economic growth of Pakistan. The study results further proposed that the increase in the economic growth of Pakistan leads to increase the industrial and
environmental pollution. Further, capital formation has a positive impact on economic growth whereas the pollution harms the economic growth in case of Pakistan.

The relationship between foreign direct investment, energy consumption, capital formation, and economic growth was tested by Muhammad and Khan (2019). The data selected for the study ranged from 2001 to 2012 for 34 Asian countries. The Generalized method of moments (GMM) was employed to check the relationship between the variables in the study. The study results proposed that all the selected variables, i.e., foreign direct investment, energy consumption, and capital formation, have played a vital role in the country’s economic growth. The study also proposed some suggestions to the use of advanced technology in order to attract foreign direct investment in Asia, this will result in the betterment of the Asian economies.

The linkage between trade openness and economic growth is not new to literature. Though, for this interaction, many pieces of research have been carried out. Still, the findings are inconclusive. The studies found a favorable association between trade openness and economic growth; however, studies have struggled to find a nexus between these variables (Duong & Hultberg, 2018; Lu, 2018). Trade openness plays a vital role in the economic growth of the country. Trade openness is the open trade policy of the country. There are mixed results reported in the literature regarding trade openness and economic growth of the country. The nexus between trade openness, economic growth, and degradation in the Asian countries were tested by Muhammad and Khan (2019). The study used panel data from 1986 to 2013. The data set belongs to the Asian Developing Countries. The results of the study proposed that trade openness impact the economic growth of a country.

The economic theory assumes that a central bank’s freedom from political authority implies a break between political and monetary control. This separation is inevitable if market inflation is managed without affecting other macroeconomic factors. The investigation’s prime aim was to assess the relevance of an anti-inflationary strategy to tackle inflation in freeing the central bank of political control. To this end, the samples from the industrialized (20) and emerging (37) countries were taken from 1997-2006 and 2007-2016 respectively. The study found that both inflation and variability have skewed the findings in high inflation and atypical countries. The results remain similar and significant with the addition of several political and economic factors (Higgins, Zha, & Zhong, 2016; Lopes da Veiga, Ferreira-Lopes, & Sequeira, 2016).

Mallik and Chowdhury (2001) investigated the linkage between economic growth (GDP) and inflation in four countries of South Asia (Bangladesh, India, Pakistan, and Sri Lanka). The cointegration and error correction methods were used to explore the relationship between inflation and economic growth. The data was collected from International Financial Statistics. The empirical results indicated that there is a long-term association occurs between economic growth and inflation in all four countries. Finally, the analysis assessed that inflation and economic growth are linked positively, and the inflation response to growth rate adjustments are more significant than that of inflation rate adjustments.
Behera (2016) analyzed cross-country analyses in 170 emerging and industrialized countries. The research used the annual frequency data series from 1960-1992. To evaluate the relation between Inflation and economic growth, a simple regression technique is used for the analysis. Empirical results obtained were economically and statistically relevant and robust. Moreover, Valdovinos (2003) used yearly data from 1970-2000 for the eight Latin American countries to investigate spectral inflation rate by utilizing spectral analysis. The study's empirical findings indicated that the average long-term inflation rate in a country is adversely related to long-term economic growth.

3. Data and Methodology

The present study investigates the impact of foreign direct investment, capital formation, inflation, money supply, and trade openness on the economic growth of Asian countries. The data is extracted from the twenty emerging Asian countries named Malaysia, Indonesia, Oman, Pakistan, Bangladesh, India, Saudi Arabia, United Arab Emirates (UAE), Iran, Qatar, Turkey, Kuwait, Nepal, Japan, Thailand, Singapore, Yemen, Bahrain, Maldives, and China from 2007 to 2018 by using World Development Indicators (WDI, 2019). Economic growth (EG) is a dependent variable which is measured as GDP growth (annual percentage). In contrast, the predictors such as foreign direct investment (FDI) has been measured as the "foreign direct investment, net inflow (GDP percentage)," capital formation (CAPF) is measured as the gross capital formation (percentage of GDP), inflation (INF) is measured as the consumer prices (annual percentage), money supply (money) is measured as the broad money (percentage of GDP) and trade openness (TRADE) is measured as the merchandise trade (percentage of GDP). Table 1 indicates the measurement of variables used for the recent analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic growth</td>
<td>GDP growth (annual percentage)</td>
<td>(WDI, 2019)</td>
</tr>
<tr>
<td>Foreign Direct Investment</td>
<td>FDI, net inflow (GDP percentage)</td>
<td>(WDI, 2019)</td>
</tr>
<tr>
<td>Capital Formation</td>
<td>Gross capital formation (percentage of GDP)</td>
<td>(WDI, 2019)</td>
</tr>
<tr>
<td>Inflation</td>
<td>Consumer prices (annual percentage)</td>
<td>(WDI, 2019)</td>
</tr>
<tr>
<td>Money Supply</td>
<td>Broad money (percentage of GDP)</td>
<td>(WDI, 2019)</td>
</tr>
<tr>
<td>Trade Openness</td>
<td>Merchandise trade (percentage of GDP)</td>
<td>(WDI, 2019)</td>
</tr>
</tbody>
</table>

Relationship between independent variables and dependent variable can be written as:

\[
Economic\ growth = f(FDI + CAPF + INF + MS + TO)
\]  \hspace{1cm} (1)

Above mentioned variables can be written in panel form equation given below:

\[
EG_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 CAPF_{it} + \beta_3 INF_{it} + \beta_4 MS_{it} + \beta_5 TO_{it} + e_{it}
\]  \hspace{1cm} (2)

Where, \( i = \text{Country}, \ t = \text{Time Period}, \ EG = \text{Economic growth}, \ FDI = \text{Foreign Direct Investment}, \ CAPF = \text{Capital Formation}, \ INF = \text{Inflation}, \ MS = \text{Money Supply}, \) and \( \text{TRADE} = \text{Trade Openness}. \)
The fixed-effect model is used for the current analysis that takes each cross-section unit's "individuality" into account. "The slope of the coefficients was assumed to be constant across the countries even though it allowed the intercept to vary with each country in this model."

Also, a robust standard error has been used for checking the impact of predictors on the economic growth of Asian countries because of cross-sectional dependence (countries are more than the years), and data have not full fill the assumption of homoscedasticity and auto-correlation (Hoechle, 2007).

4. Results

In this section, the study reports the empirical results based on the panel data for twenty emerging Asian countries over the period 2007 to 2018. Before moving towards estimation, the current study provides some diagnostic tests. The study results first deal with the regression's multicollinearity assumption. The values exposed that no issue of multicollinearity because the values of VIF are less than five that is the indication of variables are not positively correlated with each other. These values have been shown in Table 2.

Table 2  
Variance Inflation Factors

<table>
<thead>
<tr>
<th></th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRADE</td>
<td>3.159</td>
<td>.317</td>
</tr>
<tr>
<td>CAPF</td>
<td>2.986</td>
<td>.335</td>
</tr>
<tr>
<td>MS</td>
<td>1.929</td>
<td>.518</td>
</tr>
<tr>
<td>INF</td>
<td>1.588</td>
<td>.63</td>
</tr>
<tr>
<td>FDI</td>
<td>1.235</td>
<td>.81</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>2.179</td>
<td></td>
</tr>
</tbody>
</table>

Table 3 indicates the correlation matrix that shows the relationship between the variables and the values indicate that all the predictors except inflation have a positive association with economic growth. This correlation matrix also shows the nexus among other variables used for the current analysis.

Table 3  
Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>EG</th>
<th>FDI</th>
<th>INF</th>
<th>CAPF</th>
<th>MS</th>
<th>TRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>0.264</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INF</td>
<td>-0.316</td>
<td>-0.264</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPF</td>
<td>0.420</td>
<td>0.070</td>
<td>-0.144</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>0.145</td>
<td>-0.312</td>
<td>0.537</td>
<td>0.236</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>TRADE</td>
<td>0.540</td>
<td>0.185</td>
<td>-0.021</td>
<td>0.752</td>
<td>0.344</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The findings also show the Hausman test necessary to check the appropriate model between fixed and random effects model, and the values suggest that the fixed effects model is appropriate because the probability value is less than 0.05 percent. These values are highlighted in Table 4.
Table 4

**Hausman Test**

<table>
<thead>
<tr>
<th>Coef.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square test value</td>
<td>25.695</td>
</tr>
<tr>
<td>P-value</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The fixed-effects model results reveal that predictors such as foreign direct investment (FDI), capital formation, money supply, and trade openness are positively associated with economic growth. At the same time, inflation is negatively associated with economic growth of Asian countries because the t-statistics are higher than 1.64 while probability values are also less than 0.05. These values are shown in Table 5.

Table 5

**Fixed Effects Model (Dependent Variable: Economic Growth)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>S.D.</th>
<th>t-value</th>
<th>p-value</th>
<th>L.L.</th>
<th>U.L.</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>1.119</td>
<td>.181</td>
<td>6.20</td>
<td>.000</td>
<td>.763</td>
<td>1.475</td>
<td>***</td>
</tr>
<tr>
<td>INF</td>
<td>-.695</td>
<td>.088</td>
<td>-7.86</td>
<td>.000</td>
<td>-.869</td>
<td>-.521</td>
<td>***</td>
</tr>
<tr>
<td>CAPF</td>
<td>.047</td>
<td>.025</td>
<td>1.83</td>
<td>.068</td>
<td>.003</td>
<td>.097</td>
<td>*</td>
</tr>
<tr>
<td>MS</td>
<td>.223</td>
<td>.117</td>
<td>1.90</td>
<td>.058</td>
<td>.008</td>
<td>.454</td>
<td>*</td>
</tr>
<tr>
<td>TRADE</td>
<td>.008</td>
<td>.003</td>
<td>3.09</td>
<td>.002</td>
<td>.003</td>
<td>.013</td>
<td>***</td>
</tr>
<tr>
<td>Constant</td>
<td>4.99</td>
<td>.642</td>
<td>7.78</td>
<td>.000</td>
<td>3.725</td>
<td>6.255</td>
<td>***</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.584</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of obs</td>
<td>236.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-test</td>
<td>59.167</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob &gt; F</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** p<.01, ** p<.05, * p<.1

The robust standard error results match the fixed-effects model and reveal that the predictors such as FDI, capital formation, money supply, and trade openness are positively associated with economic growth. In contrast, inflation has a negative association with the economic growth of Asian countries. These are highlighted in Table 6.

Table 6

**Robust Standard Error**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>S.D.</th>
<th>t-statistics</th>
<th>p-values</th>
<th>L.L.</th>
<th>U.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>1.119</td>
<td>0.169</td>
<td>6.620</td>
<td>0.000</td>
<td>0.765</td>
<td>1.473</td>
</tr>
<tr>
<td>INF</td>
<td>-.695</td>
<td>0.100</td>
<td>-6.960</td>
<td>0.000</td>
<td>-0.904</td>
<td>-0.486</td>
</tr>
<tr>
<td>CAPF</td>
<td>0.047</td>
<td>0.009</td>
<td>5.110</td>
<td>0.000</td>
<td>0.028</td>
<td>0.066</td>
</tr>
<tr>
<td>MS</td>
<td>0.223</td>
<td>0.059</td>
<td>3.779</td>
<td>0.009</td>
<td>0.318</td>
<td>0.765</td>
</tr>
<tr>
<td>TRADE</td>
<td>0.008</td>
<td>0.002</td>
<td>3.920</td>
<td>0.001</td>
<td>0.004</td>
<td>0.012</td>
</tr>
<tr>
<td>_cons</td>
<td>4.990</td>
<td>0.862</td>
<td>5.790</td>
<td>0.000</td>
<td>3.186</td>
<td>6.793</td>
</tr>
</tbody>
</table>

5. **Discussion and Implication**

The results indicate that there is a positive relationship between FDI and economic growth. This result is in line with the past studies of Hanif, Raza, Gago-de-Santrades, and Abbas (2019), as a high rate of FDI increases the country's economic growth. The results reveal that capital formation has a positive association with economic growth. This finding matches with the previous studies of Pelinescu (2015), which showed that capital formation has critical importance in achieving better economic growth. Moreover, the inflation rate found to be a negative relationship with economic growth. The result of inflation agrees with the previous studies by Bittencourt, Van Eyden, and Seleteng (2015), which also reveals that the inflation rate has unfavorable effects on the country's economic growth rate. Estimated results
of money supply indicate a positive association with the rate of economic growth of the country. Findings agree with the past study of Denbel, Ayen, and Regasa (2016). Similarly, trade openness is positively associated with economic growth, as found in the previous study by Ulaşan (2015).

This article has both theoretical and empirical implications. From a theoretical point of view, the study adds to the literature on the economy as the study's primary concern is the role of different factors like FDI, capital formation, inflation, money supply, and trade openness in achieving the improvement in the economic growth. The paper has empirical implications too, as it gives a guideline to the economy regular traders of how to bring improvement in the rate of economic growth with adequate foreign direct investment, capital formation, inflation situation, money supply, and trade openness.

5.1. Conclusion and Limitation

In the conclusion of the study, it is found that the rate of FDI has a positive relationship with the economic growth of the country. The paper found that capital formation is positively linked with the economic growth of the country. Moreover, the inflation period proves to be unfavorable to economic growth as inflation decreases the country's productivity, investment, and employment rate. Additionally, the study proves that with more money supply in the economic sectors, economic growth rises. It also proved that the extent to which the country makes trade relations across the globe has a positive association with economic growth's country's rate.

This study has analyzed twenty Asian economies by incorporating financial related variables and added to the existing literature. Only five factors like FDI, capital formation, inflation, money supply, and trade openness have discussed in the current study to capture the economic growth of Asian economies, while many other factors directly impact the economic growth, which is not part of a recent study. Future studies should incorporate other social, political, and environmental factors with mentioned financial factors to understand the exact impact on economic growth. Moreover, a country-specific analysis may depict the exact picture as different countries have different circumstances.

References


