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## FINANCIAL AND ECONOMIC INDICATORS OF ECONOMIC ADVANCEMENT: EVIDENCE FROM ASIAN COUNTRIES

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### ABSTRACT

This research examines the role of economic and financial indicators in boosting the economic advancement of Asian countries including; Bangladesh, Bhutan, China, Indonesia, Japan, Malaysia, Sri Lanka, and Pakistan. Economic advancement indicates economic growth and economic development of any country. Economic advancement is measured through GDP growth. To predict the economic advancement three financial indicators i.e. interest spread rate (ISR), Quasi money (QM) and foreign direct investment (FDI) and three economic indicators i.e. inflation (CPI), population growth (POP) and industry value added (INDV) were used. Secondary data were obtained from the websites of State Bank of Pakistan (SBP), World Bank, WDI and International financial statistics (IFS). Data of eight countries for a time span of 31 years from 1985 to 2015 formed it as a panel combination with 248 observations. Various tests and analysis techniques were applied to get results such as descriptive statistics, correlation analysis, and panel regression analysis. For panel regression; panel unit roots test, redundant fixed effects test & Hausman test were used and finally, fixed effects model is applied to test the hypotheses. Panel regression results showed that there is a negative and significant impact of inflation (CPI) on the economic advancement of Asian countries. While foreign direct investments (FDI) showed a positive and significant role in enhancing the economic advancement of selected Asian countries. The results also revealed that industry value added (INDV) and quasi money (QM) have negative but insignificant impact on economic advancement while population growth (POP) and interest spread rate (ISR) have positive but insignificant impact on the economic advancement of Asian countries. As a whole, both financial and economic sector indicators can be used to predict economic advancement of Asian countries. This study provides assistance to policymakers and investors for their decision making.

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# 1. INTRODUCTION

## 1.1 ECONOMIC ADVANCEMENT

Economic advancement or growth has been focused in all countries. All governments, as well as the general public, have interests in economic advancement (Tan, 2012). Economic development refers to a state in which the GDP per capita increases persistently and there should be an increase in the structure of the economy. Economic advancement reflects economic growth and economic development. Ohno (2005) asserted that internal and external factors influence the process of economic development. Today to achieve the motive of development it is necessary to coordinate and participate with the global system. Modernization of a country in term of industrial development, trade and investment are stairs for economic development.

Economic growth and development is a quantitative measure referred toward the number of goods and services produced in an economy. Economic growth is a two-way directional concept. Directions are either negative or positive. The negative impact such as recession and depression phase causes a shrinking of the economy. The short-run stability in business phase and long run in the economy is the indication of positive effect means the development of the economy.

Cultural, economic, political, social and financial dynamics are the foundation of development and growth of any economy whether developed or developing. Even on the ground of these bases, an economy may lead to progress or collapses. Statistical data of many indicators are used as a base or measure or to rank the different economies of the world. And sometimes to indicate the condition of overall world's economy the following some indicators are used: GDP: Real growth rate, GDP: per capita income, Inflation rate: CPI (consumer price index), Employment: Unemployment rate, Industrial production growth rate, Yearly import and export rate, Debt rate: external debt rate, Yearly economic Aid recipient (ODA), Airports, Railway, Roadways for transportation, Communication facilities: Telephone, internet services, World military expenditure etc.

Financial indicators include all variables that have a direct influence on banking sector ingredients. Financial sector's strength is the foundation for economic growth. There is a close relationship between financial strength and the real economy. The development of financial sections should lead in the direction of economic growth. Typically, financial services did efficient resource deployment and credit enlargement to elevate the level of investment as well as well-organized capital growth. In developed countries, the possible positive relationship between credit market and economic growth exist. Therefore, the policies for the development of the financial sector also needed and it is also expected that it would improve the economic growth of a country. Definitely, bank credit shows a considerable part in the economic development of an economy (Khan & Senhadji, 2002). Yakubu and Affoi (2014) used bank credit to the private sector as financial sector indicators. Al-Malkawi, Marshdeh, and Abdullah (2012) for financial intermediation ratio used credit by a bank to the private sector. For deep understanding first of all private sector means an area of ownership in an economy by individual and corporates or organizations that are not in hands of the government. Government of an economy has no involvement in the ownership of such activity. Most of the times, the one and most important reason to construct the private ownership of the business to earn the profit and strengthen the economy.

Economies achieve many advantages by international trade. Countries can enjoy the benefits of available resources, comparative cost benefits, scarcity of food, end of monopoly, optimum use of resources, stability in the supply of goods, demand fulfillment, foreign reserve, goodwill of the country, good relations with a trading country, facilities of modern technology and innovation. International trade is one of the strongest factors as the main source for the economic growth of an economy. International trade is a contributing factor to economic development. The international trade has also referred to as trade openness due to the manner in which an economy exposes its trade at international level (Tan, 2012).

The literature on financial economics delivers support for the dispute that countries with well-organized credit systems grow quicker whereas unproductive credit systems endure the risk of bank mischance (Kasekende, 2008). Moreover, in an economy, the credit institutions are like bridges between the excess profit and discrepancy in any sector of the economy. Hence, a better operational credit system lessens the external financing restraints that block credit expansion, and indirectly the firms and industries are also blocked to expand (Mishkin, 2007).

Museru, Toerien, and Gossel (2014) shed light on the question of whether the volatility of aid inflow and volatility of public investment contributes to the growth of the economy. They used an empirical model by alienating sample into four-five years. The model assessed that the volatility of both factors had a positive relation with economic growth.

Some economic and financial indicators are under consideration for measuring their impact on eight Asian economies named as Bhutan, China, Indonesia, Japan, Sri Lanka, Malaysia, Bangladesh, and Singapore. Selected economic indicators are economic growth (GDP), foreign direct investment (FDI), inflation (CPI), population growth (POP), interest spread rate (ISR), Quasi money (QM) and industry value added (INDV).

## **1.2 A GLIMPSE OF ASIAN COUNTRIES ECONOMY**

In this study, the observed countries are part of Asian countries. According to the gross domestic product at PPP in CIA factbook and world map these countries are categorized as follows:

China and Japan both are positioned at the northeast Asia portion. These are ranked according to GDP in Asia and in the world as China in Asia at no. 1st and in the world at 2nd rank and Japan at 3rd rank in Asia, at 4th rank in the world. Indonesia and Malaysia are the part of Southeast Asia with rank 5th, 12th in Asian countries respectively and rank 15th, 29th in the world respectively on the basis of GDP. South Asian countries include Pakistan, Bangladesh, Bhutan, and Sri Lanka. In Asia ranking, Pakistan is at 10th, Bangladesh at 14th, Bhutan at 41st and Sri Lanka at 24th by GDP (PPP). In the world ranking, these are at 26th, 33rd, 158th, and 61th respectively on bases of GDP (PPP).

## **1.3 RESEARCH OBJECTIVE**

- To examine the economic advancement change due to financial and economic indicators together.

## **1.4 RESEARCH QUESTIONS**

- What is the influence and direction of the relationships among economic advancement and both

economic indicators and financial indicators collectively?

- What is the impact of inflation on economic advancement?
- What is the impact of population growth on economic advancement?
- What is the impact of industrial performance on economic advancement?
- What is the impact of interest spread rate on economic advancement?
- What is the impact of foreign direct investment on economic advancement?
- What is the impact of quasi money on economic advancement?

## **1.5 RESEARCH PROBLEM**

Fluctuations in an economy is a result of the influence of many sectors indicators like service, manufacturing, economic and financial indicators. But economic sector indicators and financial sector indicators are the major sources of economic development and advancement. Even opposite to it these sectors are also the reason for economic instability and decrement. Economic and financial sectors are the cause of instability in many economies. Financial and economic indicators are the foundations of economic advancement respectively shown by literature in economies of different countries. Economic advancement of China, Japan, Sri Lanka, Malaysia, Bangladesh, Pakistan, Indonesia, and Bhutan has been measured by both economic and financial indicators.

## **1.6 RESEARCH CONTRIBUTION**

Current research effort used both financial sector indicators and economic sector indicators to demonstrate their influence on the economic advancement of eight Asian countries.

## **1.7 RESEARCH SIGNIFICANCE**

The study is significant for both economic as well as for the financial sector. Investors can come to know about the development and growth rate of different Asian countries in different aspects. This knowledge can help them to make a decision about their investment. This research has demonstrated the effect of considered variables which are important to keep in mind during policymaking. This research is also beneficial for the banking and financial sectors for the managerial view.

# **2. LITERATURE REVIEW**

## **2.1 FINANCIAL SECTOR INDICATORS**

Meyer and Shera (2017) collected the data from 1999 to 2013 of six high remittance-receiving countries. The multiple regression model scanned that worker remittances have a significant and positive relationship with all these selected countries. Bashir, Mansha, Zulfiqar and Riaz, (2014) applied OLS and Granger Causality analytical tools concluded the negative impact of FDI on Pakistan, India, and Bangladesh while Sri Lanka has a positive impact. Saleem, Zahid, Shoaib, Mohamood, and Nayab (2013) explored the association of inflation and economic growth with FDI. From 1990 to 2011, they assessed FDI had a direct relation with INF and GDP. Every increase in the rate of GDP and INF created an increase in FDI. GuechHeang and Moolio (2013) investigated the association between FDI and growth using both direct and indirect methods for the estimation of

results. Results showed FDI growth rate had a long-run positive association with GDP growth.

Cecchetti and Kharroubi (2015) examined the financial sector growth and economic growth of 20 countries by using 30 year's penal data. The results showed a negative relationship between growth factors. They concluded that if economic growth reduces it means financial growth faster. Kiptui (2014) provided empirical evidence for factors influencing the ISR in the banking sector of Kenya's economy. This effort used 39 customer banks and concluded that macroeconomic, as well as industrial indicators, had a significant role in ISR. Ogunmuyiwa and Ekone (2010) investigated the economic growth behavior due to the money supply in Nigeria. For this purpose, descriptive statistics and inferential statistical tools of ordinary least square were utilized. They also used the VAR (Vector Auto Regression) technique and the Granger Causality test to judge the direction, employing data from 1982 to 2006. The test concluded that there was no significant impact of money supply on real GDP even GDP has a positive association with the money supply. The results of the study were contradicting with the results of Ikechukwu (2012) study.

The Nigerian economy was observed by Yakubu and Affoi (2014) with respect to commercial banks credit to the private sector for a time span of 1992-2012. They employed the econometric technique named a simple regression and assessed that the relationship was significant. The financial sector had a negative impact on economic growth evident by the Nigerian economy. The research was conducted by Olusegun, Ganiyu, and Oluseyi (2013) by using the OLS method of regression analysis. Financial indicators like liquid liability ratio to GDP, real interest rate and private credit ratio to GDP from 1992-2008 were used.

## 2.2 ECONOMIC SECTOR INDICATORS

Parvathamma (2014) anatomized the Indian economy from 1958-2014, using GDPD as a proxy to measure inflation and revealed that the common man suffered greatly by increasing inflation. Barro (2013) utilized the data from 100 countries for the period of 1960 to 1990 and the results of regression have shown that the increase in inflation rate put an impact on per capita GDP and investment. Chughtai, Malik and Aftab (2015) examined the relation of inflation, interest rate, exchange rate and GDP from 1981 to 2013. By applying multiple linear regression model it was summed up that negative relation exists among inflation, interest rate. However, the exchange rate has a positive impact on GDP.

Furuoka (2014) narrated the casual relationship for Malaysian Sarawak between population and real per capita income during 1980-2005. By utilizing econometric techniques, it was summed up that economic growth could not increase by population but population could be increased by economic growth. Darrat and Al-Yousif (1999) investigated the link between economic growth and population growth, showing the impact on both long-run and short-run effect. Twenty developing countries' economies were considered as sample covered 1950-1996. They used error-correction, co-integration techniques for investigation. They revealed that there was a long run presence of a link between population and economic growth. While in short-run there was slight relation among variables. In the long run, the population affected the economy badly.

Sultan (2008) considered industry value-added as a major determinant of economic growth and

also to import and exports. The key effort was to sort out the query whether industry value-added, imports and exports generate GDP growth or not. The study utilized the annual time series data covering the time period of 1965 to 2004. Annual time series data was in the form of Bangladesh local currency and collected from different authentic sources. The results of the correlation matrix indicated a positive relation of all independent indicators with GDP growth ratio. The regression test also specified that only the contributions of exports growth rate and imports growth rate were not adequate for an impressive economic growth rate. Ellahi, Mehmood, Ahmad and Khattak (2011) explored the empirical association between trade openness, industry value-added and economic growth of Pakistan. Growth of developing nations is no doubt greatly influenced by indicators under observation. They followed the method employed by Sultan (2008). The study showed results that there was no strong and positive link between exports and growth of Pakistan. At the same time, it was also concluded that imports of capital goods boost up the industry value added which boosts the GDP growth.

Nasir and Saima (2010) found a significant negative relation of inflation and the significant positive impact of investment on GDP by using a linear model. Moreover, population growth also had a significant positive relation with GDP. They used an equation for estimation of relation and applied two threshold levels and found nonlinear relation.

## 2.3 RESEARCH HYPOTHESES

Based on the literature discussed above the following hypotheses were developed and tested in this study.

**H<sub>1</sub>:** There is a significant relationship between economic advancement and economic sector and financial sector indicators collectively.

**H<sub>2</sub>:** There is a significant relationship between economic advancement and inflation (CPI).

**H<sub>3</sub>:** There is a significant relationship between economic advancement and population growth (POP).

**H<sub>4</sub>:** There is a significant relationship between economic advancement and industrial performance (INDV).

**H<sub>5</sub>:** There is a significant relationship between economic advancement and interest spread rate (ISR).

**H<sub>6</sub>:** There is a significant relationship between economic advancement and foreign direct investment (FDI).

**H<sub>7</sub>:** There is a significant relationship between economic advancement and quasi money (QM).

## 3. RESEARCH METHODOLOGY

For the purpose to ascertain the financial and economic sector indicators for economic advancement in Asian countries available data and information are assembled. The nature of data and information is completely based on annual values. The data was in the form of an annual data series. The data for the current study is considered on the time span of 31 years from 1985 to 2015. The sample size for the current study is comprised of eight Asian countries. These countries are selected on the bases of the International Union of Geodesy and Geophysics (IUGG). IUGG during its 26th general assembly 2015 declared these countries as developing countries. The names of these eight Asian countries are; Bhutan, China, Indonesia, Japan, Sri Lanka, Malaysia, Bangladesh, and

Pakistan. For the current study, the under observation factors are divided into two categories 1st is economic sector factors and 2nd is financial sector factors. The economic sector factors that are under observation named as Inflation (CPI), population growth rate (POP) and industry value added (INDV). The financial sector indicators that are under observation named as interest spread rate (ISR), Quasi money (QM) and foreign direct investment (FDI). Secondary data is gathered for this purpose from the website of index Mundi, State Bank of Pakistan (SBP), World Bank, WDI and International financial statistics (IFS).

### **3.1 DEPENDENT VARIABLE**

#### **3.1.1 ECONOMIC ADVANCEMENT**

Dependent indicator of the current study is economic advancement. Economic advancement means economic growth and economic development. Economic advancement of an economy comes when the individuals of an economy get strong income capacity. In many economies for the measurement of living standard of people in a country an adjusted GDP per capita has been used as a proxy. In a given time period GDP per capita calculate the income of a common person. So, the real GDP per capita may be a more appropriate measure for valuation of growth (Tan, 2012). This study used Gross Domestic Production as a proxy for the measurement of economic advancement.

### **3.2 INDEPENDENT VARIABLES**

#### **3.2.1 MONEY SUPPLY (QUASI MONEY M2)**

Money supply has various measures for it. The measures depend upon every country that how they use it and how they classify it. The money supply is abbreviated as M's. There are many M's like M0, M1, M2, M3, and M4. Every M has its own definition. Basically, it is the aggregated quantity of monetary resources available in an economy at some specified time period. Money supply not only considers currency or coins it also considers bank time and demand deposits as well as deposits in the post office and other instruments available that relate to its nature. Moreover, quantity theory also supports the relationship between money supply and inflation (pricing). According to its long term inflation is also caused by the fluctuation in the money supply.

#### **3.2.2 INTEREST SPREAD RATE (ISR)**

Basically, interest spread rate is used by the financial and banking sectors. The bank calculates the ISR by the difference between interest earned by the bank on loans and interest paid by the bank on deposits, i.e.,  $ISR = \text{bank lending rate} - \text{bank deposit rate}$ .

#### **3.2.3 FOREIGN DIRECT INVESTMENT (FDI)**

FDI indicates the investment made in the host country by foreigners directly in the organization, equipment, all assets for income generation. FDI includes three types of inward FDI, outward FDI and net FDI. Inward FDI means all inflow from the foreign inside the host country. Outward FDI means outflow towards foreign countries. Net FDI means the difference between inward and outward FDI flows. GuechHeang and Moolio (2013) used inflows for measuring foreign direct investment. This study also used the inflows of foreign direct investment for the collection of data.

### 3.2.4 INFLATION

Inflation is an upsurge of a price for commodities and facilities, i.e., a decrease in purchasing power of buyer or reduction in purchasing power of the money. The increasing rate of inflation price is called a rate of inflation. Nasir and Saima (2010) used the consumer price index as a proxy of inflation in 2010. Ayyoub, Chaudhry, and Farooq (2011) and Younus (2013) also used CPI to measure inflation.

### 3.2.5 POPULATION GROWTH RATE

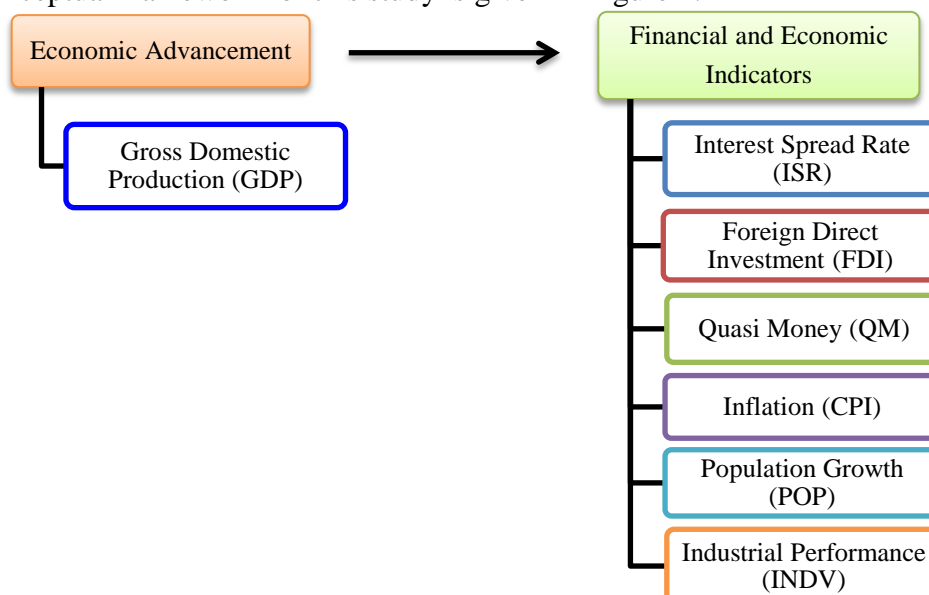
Sociologically a collection of human beings is regarded as population. At a certain time, a total of people of living there are called the population of that area. For the population growth measurement, it is used in the form of an annual percentage.

### 3.2.6 INDUSTRIAL PERFORMANCE (INDUSTRY VALUE ADDED)

Nowadays in modern times the development and advancement of an economy are possible through industrial performance. Industrial performance helps a country to make exports and make useful imports also. In the time of industrial growth, the imports of capital good increased. This import further results in the enhancement of production capacity which leads toward exports. The proxy of industrial performance is industry value added in this study. It is operationalized in the form of a percentage of GDP. Sultan (2008) also used industry value added as a proxy to industrial performance. The industrial growth was necessary because industrial goods have the capability to improve the growth as it increases the rate of production as production improved it affect the rate of exports and imports. So, ultimately it enhances the industrial growth rate. For Bangladesh, the factor imports and exports were of comparative benefit which accelerated the industrialization and GDP growth rate. At whole, the growth of an economy was not possible with only imports and exports unless or until economic growth rate was caused due to industry value-added.

## 3.3 CONCEPTUAL FRAMEWORK

The conceptual framework for this study is given in Figure 1.



**Figure 1:** Conceptual Framework



### 3.4 ECONOMETRIC MODELS

The following econometric models developed to ascertain the research objectives and analysis,

$$GDP_{it} = \beta_0 + \beta_1(ISR_{it}) + \beta_2(FDI_{it}) + \beta_3(QM_{it}) + e_{it} \quad (1),$$

$$GDP_{it} = \beta_0 + \beta_1(CPI_{it}) + \beta_2(POP_{it}) + \beta_3(INDV_{it}) + e_{it} \quad (2),$$

$$GDP_{it} = \beta_0 + \beta_1(CPI_{it}) + \beta_2(POP_{it}) + \beta_3(INDV_{it}) + \beta_4(ISR_{it}) + \beta_5(QM_{it}) + \beta_6(FDI_{it}) + e_{it} \quad (3),$$

Where;

#### Constant

$\beta_0$  = The intercept of the linear equation,

#### Coefficients

In the model for financial indicators

$\beta_1$  = The co-efficient for (consumer price index),

$\beta_2$  = The co-efficient for population growth rate,

$\beta_3$  = The co-efficient industry value-added,

$\beta_4$  = The co-efficient for interest spread rate,

$\beta_5$  = The co-efficient for Quasi money,

$\beta_6$  = The co-efficient for foreign direct investment,

#### Dependent Variable

GDP = ECONOMIC ADVANCEMENT,

#### Independent Variables

ISR = Interest spread rate,

QM = Quasi money M2,

FDI = foreign direct investment,

CPI = inflation,

POP = population growth,

INDV = industry value-added, and

Error Term ( $\epsilon$ ) corresponds to the error term.

## 4. DATA ANALYSIS AND RESULTS DISCUSSION

Descriptive analysis, correlation matrix and other techniques for panel data are used. Descriptive analysis, correlation matrix, redundant fixed effects test, Hausman test, fixed effects model and random effects model are used in current research. For the purpose to handle the panel data; STATA and Eviews are used.

### 4.1 DESCRIPTIVE STATISTICS

Table 1 shows the results of descriptive statistics of the financial and economic indicator along with the economic advancement of selected eight Asian countries. There were 248 observations of seven variables. The mean values of all financial indicators i.e. interest spread rate (ISR), foreign

direct investment (FDI), and quasi money M2 (QM) are 5.2681, 1.2367 and 25.0861 respectively. The mean values of all economic indicators i.e. inflation (CPI), population growth (POP) and industry added value (INDV) are 6.4226, 1.55122 and 31.8415 respectively. While the mean value of GDP is 5.5786 having minimum (-13.10), maximum (28.70), range (41.80) and standard deviation of 3.7808.

**Table 1:** Descriptive analysis

Variables	N	Mean	Minimum	Maximum	Range	SD
GDP	248	5.5786	-13.1000	28.7000	41.8000	3.7808
CPI	248	6.4226	-18.1000	58.4000	76.5000	6.0268
INDV	248	31.8415	0.0000	48.5000	48.5000	8.8528
POP	248	1.5512	-1.8000	3.4000	5.2000	1.0244
ISR	248	5.2681	-6.9000	11.8000	18.7000	3.2046
QM	248	25.0861	-43.7000	72.8000	116.5000	20.0891
FDI	248	1.2367	-2.8000	12.0000	14.8000	1.7399

Note: the GDP denominated the value of dependent variable gross domestic production, CPI is representing the value consumer price index, FDI denominated the value of foreign direct investment, INDV indicate the value of industry value-added, ISR denominated the value of interest spread rate, QM indicates the value of quasi money M2, POP denominated population growth.

Table 1 also shows SD indicating dispersion from its average mean value. The quasi money with SD 20.0891 shows that its data has highly deviated and the SD value 1.24 of population growth rate is an indication of less deviation of data from their mean values.

## 4.2 CORRELATION ANALYSIS

A statistical tool or technique that is used to find out the relation or association among the study variables is named as correlation test. It is not only used to find the relation but it is also used to know the direction of relationship i.e. positive, negative or even no correlation among the study variables.

**Table 2:** Correlation Matrix

	GDP	CPI	INDV	POP	ISR	QM	FDI
GDP	1						
CPI	-0.0885	1					
INDV	0.1724	-0.0156	1				
POP	0.2447	-0.0500	0.0239	1			
ISR	0.4305	-0.0349	0.1265	0.2057	1		
QM	0.3700	0.0908	0.1722	0.1919	0.5034	1	
FDI	0.2738	-0.0503	0.2792	0.2282	-0.0735	0.0964	1

Note: the GDP denominated the value of dependent variable gross domestic production, CPI is representing the value consumer price index, FDI denominated the value of foreign direct investment, INDV indicate the value of industry value-added, ISR denominated the value of interest spread rate, QM indicates the value of quasi money M2, POP denominated population growth.

Table 2 has shown the results of correlation analysis. This test tells the relationship of study variables i.e. gross domestic production inflation, foreign direct investment, industry value-added, interest spread rate, quasi money M2 and population growth rate. The positive values indicate a positive relationship while the negative values indicate a negative relationship. The variables that are positively correlated shows the direction of relations as direct. If one variable tends to increase, then other variables also tend to increase or if one variable tends to decrease then other also tends to decrease. The variables that are negatively correlated shows the direction of relations as inverse or indirect. If one variable tends to increase, then other variables tend to decrease or if one variable tends to decrease then others tend to increase. Considering the values of correlation with GDP and other variables the values are respectively like this, the foreign direct investment is +0.273, inflation is -0.0885, the industry added value is +0.174, interest spread rate +0.4305, quasi money M2 is

+0.3700, population growth +0.2447. POP, INDV, QM, ISR, and FDI are positively associated. However, CPI is negatively associated with the economic advancement (gross domestic production) of Asian economies named as Bangladesh, Bhutan, China, Indonesia, Japan, Malaysia, Sri Lanka, and Pakistan.

### 4.3 PANEL DATA ANALYSIS

#### 4.3.1 PANEL UNIT ROOT TEST

For data examination, the stationary of data is an important factor. Panel unit root test is applied to the stationarity of the data. When data is stationary the results are reliable. Or contrary to this if the unit root test shows nonstationary data then results are also spurious.

**Table 3: Panel Unit Root Test (Levin, Lin & Chu test)**

Variable	Statistics Values	Sig.	Conclusion
GDP	-3.85108	0.0001	1(0) Stationary at level
CPI	-1.55474	0.0002	1(0) Stationary at level
INDV	-5.58388	<0.001	1(0) Stationary at level
POP	-4.92299	<0.001	1(0) Stationary at level
ISR	-4.14925	<0.001	1(0) Stationary at level
QM	-3.65449	<0.001	1(0) Stationary at level
FDI	-3.65449	0.0001	1(0) Stationary at level

The null hypothesis regarding the unit root test is that the data has unit root (at level) and the alternative hypothesis is data has no unit root at the level.  $H_0$  is showing the no stationary and  $H_1$  is showing the stationary of data. Table 3 shows the output of the test is showing that the data of all the study variables are stationary at level. So, the alternative hypothesis ( $H_1$ ) is accepted.

#### 4.3.2 REDUNDANT FIXED EFFECTS TEST

As there are three regression models for panel data. One is the common effects model (OLS), second is the random effects model and third is the fixed-effects model. Only one of these models can be used instead of all. Which one is an appropriate model to use is an important question to decide. So for such purpose redundant fixed effects test is used to decide between the common effects and fixed effects model.

**Table 4: Redundant Fixed Effects Tests**

Effects Test	Statistic	d.f.	Prob.
Cross-section F	7.740412	(7,234)	<0.001
Cross-section Chi-square	51.651994	7	<0.001

Results of Table 4 shows the redundant fixed effect test for the econometric model i.e. the role of financial and economic indicators on economic advancement. In Table 4 probability value (<0.001) indicates at 1% level of significance. The significant result accepts the alternative hypothesis that is a fixed effect model is appropriate. So it is concluded that the common effect model is not favorable and the fixed effect model is appropriate and can be applied.

#### 4.3.3 HAUSMAN TEST

Gujrati and Porter (2009) demonstrated that the use of the Hausman test, as a distinction among fixed effects and random effects. In fixed the assumption of own fixed intercept value for each cross-section exists. However, the assumption for ECM is to have same (common) intercept

representing the mean value for all cross-sections (N) and in this model to represent the individual intercept deviation from mean value error component is used. This error component is also known as unobservable.

**Table 5: Hausman Test**

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	37.414961	6	<0.001

Note: the GDP denominated the value of dependent variable gross domestic production, CPI is representing the value consumer price index, FDI denominated the value of foreign direct investment, INDV indicate the value of industry value-added, ISR denominated the value of interest spread rate, QM indicate the value of quasi money M2 and POP denominated population growth,

Table 5 demonstrates the result of the Hausman test for the role of economic and financial indicators in economic advancement. This is applied for the selection of the appropriate model between random-effects model and fixed-effects model. The null hypothesis for the Hausman test is that the random effect model is appropriate and the alternative hypothesis is that the random effect model is not appropriate. The p-value is almost zero (<0.05) indicating the alternative hypothesis is accepted and fixed-effects model is best fitted.

**Table 6: Fixed Effect Model**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.139	1.144	4.491	<0.0001
CPI	-0.136	0.038	-3.532	0.0005
INDV	-0.009	0.031	-0.298	0.7663
POP	0.236	0.246	0.957	0.3395
ISR	0.131	0.094	1.385	0.1673
QM	-0.013	0.014	-0.899	0.3692
FDI	0.706	0.142	4.962	<0.0001
R <sup>2</sup>	0.438	F-statistic		14.05103
Adjusted R <sup>2</sup>	0.407	Prob(F-statistic)		<0.00001

Note: GDP denominated the value of dependent variable gross domestic production, CPI is representing the value consumer price index, FDI denominated the value of foreign direct investment, INDV indicate the value of industry value-added, ISR denominated the value of interest spread rate, QM indicates the value of quasi money M2, POP denominated population growth.

The fixed-effect model in Table 6 illustrates the effect of economic indicators and financial indicators on the economic advancement of eight Asian countries. The significant influence of independent variables on the dependent variable is shown with probability values in their respective rows. The outcome shows that according to the p-values of the independent variables such as CPI and FDI having a significant effect with the p-values of +0.0005 and +0.0000 respectively on the economic advancement of all eight Asian economies at 1% level of significance. CPI has a negative and significant impact on economic advancement while the FDI has a positive and significant impact on economic advancement. GuechHeang and Moolio (2013) also found a positive and significant impact of FDI. Babatunde and Shuaibu (2011); Elias and Noone (2011); Mallik and Chowdhury (2001) also found a positive and significant impact of CPI on economic growth. The variable INDV, POP, ISR, and QM shows an insignificant role in the detection of economic advancement in Asian countries. Dao (2012) found a negative impact of POP in developing countries; Lozeau (2007) also supported these results. Results also show an insignificant impact of ISR on GDP which is supported by Olusegun et al. (2013). The coefficient values of the independent variables are to indicate the direction and extent of the impact of indicator on economic advancement. The coefficient values of three independent variables population growth rate, interest spread rate and foreign direct investment are showing a positive role in enhancing the economic advancement in eight Asian economies. But

the coefficient values of three independent variables i.e. CPI, INDV, and QM are indicating the negative impact on the economic advancement of eight Asian countries. The value of R-squared defines the total impact in percentage caused by all the independent indicators used in the study on the economic advancement of the Asian countries. The value of R-squared is 43.9 % that means 43.9 % change in economic advancement of eight Asian economies is caused by the concerned factors. F-statistics value describes the model overall i.e. well fitted or not. The value of F-statistic is 0.00001 (<0.00000) indicates that the model is best fitted.

## 5. CONCLUSION

The study was conducted in the intension to find the role of financial and economic indicator on the economic advancement of Asian countries i.e. China, Japan, Sri Lanka, Malaysia, Bangladesh, Pakistan, Indonesia, and Bhutan. Three economic indicators i.e. Inflation (CPI), population growth rate (POP) and industry value added (INDV) and three financial indicators i.e. interest spread rate (ISR), Quasi money (QM) and foreign direct investment (FDI) were used to predict their role in boosting the economic advancement of Asian countries. For the purpose of analysis secondary data was obtained from the websites of State Bank of Pakistan (SBP), World Bank, WDI and International financial statistics (IFS). Data of eight countries for a time span of 31 years from 1985 to 2015 formed it a panel combination. Data were analyzed by applying the fixed-effects model. The results showed that CPI has a negative and significant impact on the economic advancement of Asian countries which supports and accepts the 2<sup>nd</sup> hypothesis (H<sub>2</sub>) of the study. The results also proved that FDI has a positive and significant impact on the economic advancement of Asian countries which supports and accepts the 6<sup>th</sup> hypothesis (H<sub>6</sub>) of the study. While other four independent variables such as industry value added (INDV), interest spread rate (ISR), quasi money (QM) and population growth (POP) showed no significant impact on economic advancement. So, H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, and H<sub>7</sub> were rejected based on insignificant results. Moreover, the results indicate that all independent variables chase up to 43 % change in the economic advancement of selected Asian countries i.e. Bangladesh, Bhutan, China, Indonesia, Japan, Malaysia, Sri Lanka, and Pakistan.

## 6. AVAILABILITY OF DATA AND MATERIAL

Data used or generated from this study is available upon request to the corresponding author.

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