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THE IMPACT OF MACROECONOMIC DETERMINANTS ON STOCK MARKET DEVELOPMENT IN ASIAN REGION: PANEL DATA ANALYSIS

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ABSTRACT

This study aims to investigate the role of macroeconomic determinants in stock market development in the Asian region. The empirical research was conducted using balanced panel data of eighteen Asian countries from 2009 to 2018. The econometric models used are Pooled OLS, Fixed Effects, and Random Effects. The study's findings include economic growth measured by per capita income, stock market liquidity measured by liquidity ratio, financial intermediaries' development measured by monetization ratio, and saving rate positively impacting stock market development. Furthermore, inflation measured by GDP Deflator is not an adequate indicator in measuring economic stability. Implications of the study are that policymakers and administrators can promote stock market development through enhancing stock market liquidity, developing financial intermediaries, and overall economic growth. Most of the economies in the Asian region are emerging economies; therefore, the economic environment and institutional environment of these economies are very different from that of developed economies. Further, equity markets in Asia have gone through many structural reforms in the past decade, and they account for 40% of the global equity market volume. Hence this study tries to identify the impact of macroeconomic determinants on stock market development specific to the Asian region.

Key Words: Macro-Economic Determinant, Stock Market, Development, Asian Region, Panel Analysis

1. Introduction

Financial markets and financial intermediaries are two important institutions that assist the efficient allocation of capital in an economy. Over the past two decades, numerous researches have been conducted as to how the efficient functioning of these two institutions helps to boost economic performance. Out of these, most researches has been conducted on the role of financial intermediaries, banking and non-banking, in economic development. Many researchers have found evidence of a high positive correlation between financial intermediaries' development and economic growth. (Swamy & Tulasimala, 2011; Islam & Osman, 2011; Morrison, 1967)

Different perspectives have been presented on the functioning of financial intermediaries and markets. Four such perspectives are intermediary-based view, market-based view, financial services view, and law and finance view. The intermediary-based view and the market-based view suggest that financial intermediaries and financial markets substitute each other because both institutions assist capital allocation. However, the financial services view and law and finance view suggest the two units' complement each other in the long run. Dolar & Meh supports the later perspective in their 2002 paper.

According to Demirgüç-Kunt & Levine (1996a), from 1985 to 1995, world stock market capitalization has jumped from $4.7 trillion to $15.2 trillion. The trading in emerging markets has increased from $1.6 trillion to $ 9.6 trillion. This sudden surge of stock markets in the '90s has attracted the attention of researchers and policymakers on the relationship between stock market development and economic growth.

According to Garcia & Liu (1999), the literature on the topic deals with the causal relationship between stock market development and economic growth along three lines. One, stock market development promotes economic growth, two; economic growth promotes stock market development; three, a reciprocal relationship between stock market development and economic growth.

One, stock market development promotes economic growth. The research results of Mohtadi & Agarwal (2001) suggest the stock market development is positively associated with economic growth. Their paper suggests that stock market development contributes to economic growth directly and indirectly. Market liquidity has a direct positive association with economic development whilst market size has an indirect positive association with economic development. According to Levine & Zervos (1998), even after controlling for many factors, stock market development is positively and robustly associated with future economic growth. King & Levine (1993) also prove that financial intermediaries can exert a significant influence on economic growth and development. They conclude their research by stating that financial development may well be an essential determinant of economic development.

Theoretically stock market promotes economic development through saving mobilization, risk sharing, information acquisition, and corporate control. Financial markets help to ease the frictions such as transaction costs and asymmetric information, which improves the saving mobilization in an economy. Further, financial markets enable cross-sectional risk sharing. Availability of numerous financial assets enables the investors to build the most suitable portfolio conferring to their risk preference.

According to Dolar & Meh (2002), financial markets have a considerable advantage, unlike banks, where a large pool of funds is controlled by a small number of people. Many investors participating directly in the investment decision-making process can lead to better judgment on which projects to be invested. Well-developed financial markets encourage takeovers and buyouts so that poorly managed enterprises can be transformed under new ownership. Liquid financial markets encourage investors to commit their funds to long-term projects. Therefore, a well-functioning financial market stimulates economic development by boosting capital formation and by improving resource allocation.

Two; Economic growth promotes stock market development. The arguments have been brought forward that financial market development occurs as a consequence of overall economic development. This hypothesis postulates that new financial services and instruments are required to assist the progression of an economy. Therefore, in order to facilitate economic progression, the financial system also adapts and progresses itself parallel to the economy. Goldsmith discusses this passive development in his 1969 paper.

Three; A reciprocal development between stock market development and economic development. The third hypothesis postulates the financial market development and economic development positively influence each other. As mentioned earlier financial markets assist economic growth through saving mobilization, risk-sharing, and financial market liquidity. On the other hand, overall economic growth indirectly drives the stock market development.

Looking at the real-world situation, many researchers support the third view. That is, stock market development and economic growth have a two-way causal relationship. Even though many empirical studies have found a positive relationship between the two, they have not been able to establish the directional relationship.

2. Literature Review

A Broad-spectrum of literature is available on this topic. The earlier research of Goldsmith (1969), Shaw (1973), King & Levine (1993) reveals that financial intermediation has a positive impact on economic performance. However, this earlier work is based on aggregate indicators of financial structure. They have not singled out how the performance of stock markets impacts economic growth.

The earliest research on stock market development and economic growth was done by Levine & Zervos (1998). They have conducted their research using data from 47 countries from 1976 to 1993 and found that stock market liquidity positively impacts economic growth. Gracia & Liu (1999) has made a significant contribution to the domain by conducting the earliest research on how macro-economic determinants affect the stock market development. They have used pooled data of fifteen industrial and developing countries from 1980 to 1995, and results indicate real income, saving rate, financial intermediaries' development, and stock market liquidity positively impacts stock market development.

Rousseau & Wachtel (2000) used data from 47 countries from 1980 to 1995 and used panel VAR to find the relationship between equity markets and economic growth. Their research results show the leading role of stock market liquidity on per capita output.

Mohtadi & Agarwal (2001) also suggest the stock market development is positively associated with economic growth. They have used time-series cross-sectional data for 21 emerging market countries from 1977-1997. They further state that the impact is two folds; direct and indirect. Market liquidity impacts growth directly whilst market size impacts growth indirectly.

Naceur & Ghazouani (2007), using data samples of 11 MENA region countries, finds that overall financial development, financial intermediaries, and financial markets are unimportant to economic growth. Their research tested the impact of two institutions on economic growth independent of each other. They have used a dynamic panel model with GMM. Nevertheless, they state this might be due to the underdeveloped nature of the financial system in the MENA region.

Naceur et al. (2007) has conducted research using data set of 12 MENA countries, and findings reveal macroeconomic determinants such as saving rate, financial intermediary, stock market liquidity, and the stabilization variable are significant in stock market development. Billmeier & Massa (2009) analyzed the data of 17 Middle Eastern and Central Asian countries from 1995 to 2005. Their results suggest that financial development is an integral part of economic development.

Yartey (2010) performed panel data analysis of 42 emerging economies for the period of 1990 to 2004. The researcher emphasizes the importance of macro-economic determinants such as income level, gross domestic investment, banking sector development, private capital flows, and stock market liquidity on stock market development. Further, the researcher has highly emphasized the importance of institutional dimensions such as political risk, law and order, and bureaucratic quality on stock market development.

Cooray (2010) studies 35 developing economies and uses the Mankiw-Romer-Weil model to establish a relationship between stock market development and economic growth. The findings suggest that the policy measures taken to improve the market size, liquidity, and activity will positively impact economic growth. Kurach (2010) finds the positive role of GDP growth, banking sector development, market liquidity, fiscal balance, and EU membership on market capitalization. He has done a panel date analysis using a data set of thirteen CEE states from 1996 to 2006.

Ake (2010) explored five Euronext countries (Belgium, France, Portugal, Netherlands, and United Kingdom) from 1995 to 2008. The researcher used the Granger causality test to determine the causal relationship among the variables. The study shows a positive relationship between the stock market development and economic growth for highly active and liquid stock markets, and the relationship is rejected for the countries with small and less liquid stock markets. The variables used are GDP, Foreign Direct Investments, Stock Total Traded Value, Turnover Ratio, and Market Capitalization.

Pradhan et al. (2014) performed an empirical study using data from 16 Asian countries from 1988 to 2012. They used the panel vector autoregressive (VAR) model. The model suggests that long-run equilibrium exists among stock market development, inflation, and economic growth. However, they were not able to establish the directional relationship among variables. Şükrüoğlu & Nalin (2014) also conduct dynamic panel data analysis on

the impact of macro-economic variables in stock market development. The data is from selected European countries from 1995 to 2011. Their findings suggest that inflation and monetization ratio have adverse effects on stock market development while income, saving rate, and liquidity ratio have positive effects. Pradhan et al. (2014) highlight in the conclusion of their paper that well-developed stock markets are essential for economic development. They have conducted their research using data of ASEAN countries for the period of 1961 to 2012.

Bayar (2016) tested how economic growth, inflation, and stock market liquidity impacts stock market development. The results are consistent with the previous studies. The economic growth and stock market liquidity positively associated with the stock market development and inflation shows a negative association. Ho & Odhiambo (2018) conduct research on macroeconomic drivers of stock market development in the Philippines from 2001 to 2016. The independent variables are banking sector development, inflation rate, exchange rate, economic growth, trade openness, and stock market liquidity. The study suggests that trade openness negatively affects stock market development and banking sector development, and the exchange rate has a positive association.

Ho & Odhiambo (2019) performed autoregressive distributed lag bounds testing procedure to identify long-term and short-term macro-economic drivers of stock market development in Hong Kong from 1992 to 2016. The evidence from the study suggests banking sector development and economic growth drives stock market development whilst inflation rate and exchange rate hinders the stock market development.

2.1 Overview of Asian Equity Markets

During the last three decades' Asian equity markets have developed in both depth and liquidity. Hong Kong SAR China, Singapore, and Japan have become the leading financial hubs of Asia. An important point to note here is Asian financial market is financial-intermediary dominant yet. However, equity markets play an important role in assisting fund mobilization in the Asian economy. In the US and Europe, the equity capital raised by IPOs decreased to an average of USD 51 billion in 2009-2018 from an average of USD 78 billion from 2000-2008, whereas in Asia, this amount has increased from USD 46 billion average (2000-2008) to USD 67 billion (2009-2018).

Figure 1 extracted from IMF World Economic Outlook shows that equity markets of Emerging Asia are growing at a higher rate than other regions of the world[1]. According to Purfield et al. (2008), the growth of Asian equity markets has resulted from increased international investor inflows, integration of stock markets with international markets, financial liberalization, and structural improvements.

Figure 2 extracted from OECD Equity Markets Review Asia 2019 shows that the relative importance of Asian equity market share as a percentage of global equity market volume has increased over time, and in 2018, it is nearly 40%. For example, The Chinese mainland market has the highest number of listings, being only second to the United States (OECD,

[1] Emerging Asia include China, India, Indonesia, Korea, Malaysia, Pakistan, The Philippines, Taiwan and Thailand.

2019). Another example is in terms of market capitalization in 2018; six out of ten world's top stock exchanges are from Asia.

Another interesting structural transformation in Asian equity markets is that parent companies of stock exchanges are listing themselves on the stock exchanges. Examples are parent companies of Tokyo Stock Exchange (JPX) has listed itself, so are Hong Kong and Singapore stock exchanges. Further other structural transformations such as permitting the listing of biotech companies that do not meet the Main Board financial eligibility tests are taking place in Asian Equity Markets. Further, there are many steps taken from Asian equity markets to increase the integration with global equity markets. An example would be the inclusion of global stock market indices monitored by investors around the globe (Example: MSCI EM Index). With these significant structural transformations and the increased relative importance of Asian stock, research about Asian equity markets is timely and vital.

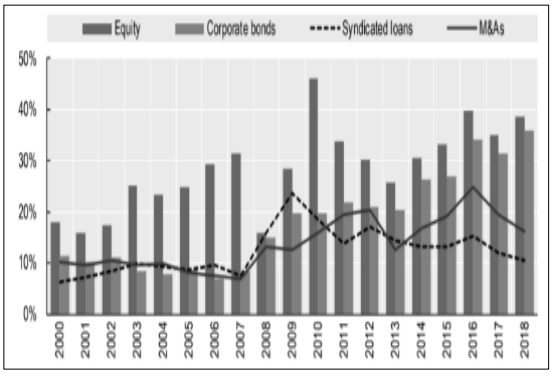

Figure 1: Emerging markets: Equity Markets

Source: IMF, World Economic Outlook 2018, IMF Staff estimates

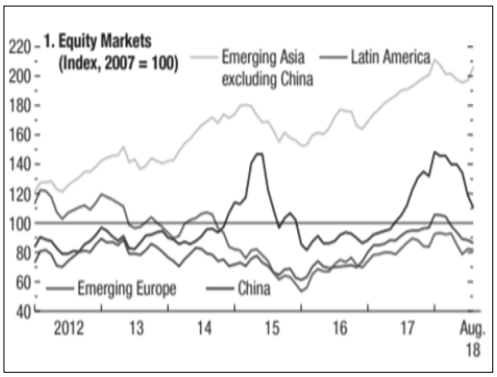

Figure 2: Asia in global capital markets, as share of global volume

Source: OECD, Equity Markets Review Asia 2019, OECD Capital Market Series dataset

3. Data and Methodology

This study focus on data from eighteen Asian countries. Namely China, Hong Kong, Indonesia, India, Israel, Jordan, Japan, Korean Republic, Lebanon, Sri Lanka, Malaysia, Oman, Philippines, Saudi Arabia, Singapore, Thailand, Turkey, and Vietnam. The other Asian countries were dropped from the sample due to a lack of data availability. The data was collected from 2009 to 2018 for ten years. The data were obtained from the world development indicators database. The data analysis tool used was State/ SE12.0. In our country sample, we have included:

Table 1: Sample countries according to sub-regions

Sub-Region	Country
Eastern Asia	China
	Japan
	Korean Republic
	Hong Kong
South-Eastern Asia	Indonesia
	Philippines

	Vietnam
	Thailand
	Malaysia
	Singapore
South Asia	India
	Sri Lanka
Western Asia	Turkey
	Saudi Arabia
	Jordan
	Israel
	Lebanon
	Oman

Source: The author developed

Apart from macro-economic determinants, previous literature indicates that political stability and institutional factors also impacts stock market development (Yartey, 2010). However, in this study, the researcher only considers macro-economic determinants. The reasons being limited information available on institutional factors of the selected countries, and according to Gracia & Liu (1999), the institutional factors are directly reflected in macro-economic factors. Proper regulatory and institutional frameworks and policies are essential for well-developed and liquid stock markets.

3.1 Variables:

Stock Market development

The dependent variable is stock market development. The stock market development is multifaceted. Therefore, to measure the stock market development, we have to look at different aspects of the stock market. According to Ng, Ibrahim & Mirakhor (2016), past literature mainly uses three approaches to measure stock market development. (1) Using market capitalization as the sole measurement of stock market development (Levine & Zervos, 1998; Garcia and Liu, 1999; Yartey, 2010). (2) Using two or more criteria, examples are stock market size and stock market liquidity, stock market integration to measure stock market development (Demirgui-Kunt & Levine, 1996; Mohtadi & Agarwal, 2004; Pradhan et al., 2010; Ng, Ibrahim & Mirakhor, 2016). (3) Using a composite index of different variables. In this study, the researcher has used the first approach, and the criterion is the same as Garcia & Liu (1999).

The stock market development is measured using the Market Capitalization Ratio (MARKET_CAPITALIZATION). That is the total market value of the listed company shares divided by GDP. We use this as a proxy for stock market development. This ratio measures the size of the stock market and is the dependent variable of the study. (Levine & Zervos, 1998; Gracia & Liu, 1999; Mohtadi & Agarwal,2004; Şükrüoğlu & Nalin, 2014)

Following are the independent variables of the study.

Economic Growth

GDP per capita growth (PER_CAPITA_GROWTH). The annual percentage growth rate of GDP per capita is based on constant local currency. GDP per capita is gross domestic

product divided by midyear population. This measures how much the selected economies have grown compared to the previous year. This is a proxy for economic growth. While economic development is one of the main determinants of stock market development, two have a reciprocal relationship. The development of one leads to the development of the other. Therefore, the researcher expects a positive association between explanatory and exploratory variables.

Macro-Economic Stability

Overall macro-economic stability impacts the stock market performance. A stable economic environment makes the stock market an attractive investment opportunity, whereas economic variability discourages investments in the stock market. This is because volatility in the economy negatively impacts the profitability of the corporations.

To measure the macro-economic stability, the researcher uses the inflation rate (GDP_DEFLATOR). The inflation rate used is GDP Deflator. Here inflation is measured by the annual growth rate of the GDP implicit deflator, which shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency. High inflation rates reveal macro-economic instability. Therefore, the researcher expects a negative relationship between the dependent and independent variables.

Stock Market Liquidity

Liquid stock markets enable investors to buy and sell financial instruments swiftly at a lower transaction cost. That is the ability to convert financial assets into money with less friction. Liquid stock markets promote long-term investments, reduce risk and increase profitability. Therefore, the researcher expects a liquid stock market to promote stock market development; hence, a positive relationship between explanatory and exploratory variables is expected.

To measure the stock market liquidity, the researcher uses the liquidity ratio (LIQUIDITY_RATIO). The liquidity ratio is calculated by dividing the total value of the shares traded by GDP. The liquidity ratio is an indicator of stock market size compared to the economy and volume of trading.

Financial Intermediary Development

To measure the financial intermediary development, the researcher uses the monetization ratio (MONETIZATION_RATIO). That is the broad money supply (M3) to GDP. The arguments have been made by different researchers on whether financial intermediaries complement or substitute stock markets. In the short run, investors might substitute between the two because of interest rate and stock market return. However, the two institutions complement each other in the long run because stock markets provide equity capital while financial intermediaries provide debt capital. Therefore, stock markets satisfy different financial needs than the financial intermediaries. Based on the latter argument, it is expected that both financial intermediaries and stock markets will grow when the economy grows, the researcher expects a positive relationship between the independent and dependent variables.

Saving Rate

The researcher hypothesizes that the saving rate has a high positive relationship with stock market growth. The reason is that higher savings mean more funds to be invested. Gross Domestic Savings as a percentage of GDP is used to measure the saving rate (SAVING_RATE).

The summary of how independent variables relate to dependent variables is given in the below table.

Table2: Signs of Regressors According to Past Literature

PER_CAPITA GROWTH	GDP_DEFLATOR	LIQUIDITY_RATIO	MONETIZATION_RATIO	SAVING RATE
+	-	+	+	+

Source: Past Literature

3.2 Econometric modeling

Since the study is both cross-sectional and time-series in nature, the researcher has employed a panel data approach. In this study, cross-sections are countries, and time-series data is consecutive years from 2009 to 2018. The panel data approach helps us utilize both types of data and observe more complicated behavior among variables.

Panel data include data on I number of individuals observed over T regular time intervals. Here, in this case, we have $I = 18$ (countries) and $T = 10$ (years). We have a balanced panel data model; data on all the variables are available for the entire research period for all the countries.

In panel data models, we consider about three types of approaches. Those are Pooled OLS model, Fixed Effect model, and Random Effect model.

In pooled OLS model, we specify a constant co-efficient for all the countries (I). The constant-coefficient posits that one country is not better or worse than the other countries. In simple this model applies the OLS model to the data ignoring the fact that it deals with panel data. The model equation is:

$$Y_{it} = \beta_1 + \beta' x_{it} + u_{it} \quad (1)$$

If any unobservable determinants impact Y_{it} we cannot measure its effect on Y_{it} Using eq. 1. Therefore, we can re-write the equation as below:

$$Y_{it} = \beta_1 + \beta' x_{it} + \alpha_i + u_{it} \quad (2)$$

α_i in the eq. 2 shows the unobservable determinant of the impact Y_{it}. Since α_i is not directly observable, we can consider it as random and include it in the error term. Then the composite error term will be:

$$v_{it} = \alpha_i + u_{it} \quad (3)$$

However, if α_i included in composite error term correlate with any of regressors in the OLS equation it violates one of the main assumptions of a classical linear regression model. That is, "The error term is not correlated with the regressors." This causes a severe biasness issue.

Further, the OLS model will overlook the heterogeneity effect of the individual entities. Hence we can identify this as the most restrictive panel data model. To eliminate the constraints of the pooled OLS model, we will adopt an individual-specific effects model. Those are the fixed-effect model and random effect model.

When adopting these two models, we assume that there is unobserved heterogeneity across individuals captured by α_i.

The fixed-effect model equation can be written as below:

$$Y_{it} = \alpha_i + \beta' x_{it} + u_{it} \quad (4)$$

Here, we can interpret α_i as each entity's intercept, that means each i has its own intercept that is time-invariant. Therefore, we can state that this model allows heterogeneity of individual entities through introducing individual intercepts for each entity. Hence we can re-write eq. 4 as below:

$$Y_{it} = \alpha_1 + \alpha_i D_i + \beta' x_{it} + u_{it} \quad (5)$$

In eq. 5 we use the differential intercept dummy technique and introduce a dummy variable for each entity's intercept. α_1 is the intercept of $i = 1$ and this is considered as the base. $\alpha_i D_i$ tells by how much i^{th} entity's intercept differs from α_1. An important point to note here is that even though intercept differs for each entity, slope parameters are the same for all entities. We can calculate the individual-specific effect from the below equation.

$$\hat{\alpha_\iota} = \overline{y_\iota} - \overline{x_\iota}\hat{\beta} \quad (6)$$

It is important to note that here fixed-effect model also has its own disadvantages.

Then looking at the random effect model. The formula can be written as below:

$$Y_{it} = \beta' x_{it} + w_{it} \quad (7)$$

In this equation, we do not fix α_i. We assume α_i or the intercept of each entity is random. Therefore, the composition of α_i is:

$$\alpha_i = \alpha + \varepsilon_i \quad (8)$$

That is α_i consist of random error terms of an individual entity. Therefore, the individual-specific effect is reflected in ε_i. We can include individual effects in the composite error term (w_{it}) and re-write the formula:

$$Y_{it} = \alpha + \beta' x_{it} + w_{it} \quad (9)$$

Where;

$$w_{it} = \varepsilon_i + u_{it} \quad (10)$$

Here the usual assumptions are made that is error term is normally distributed. $\{\varepsilon_i \sim N(0, \sigma_\varepsilon^2) / \ u_{it} \sim N(0, \sigma_u^2)\}$. We can see random effect model has a common intercept, and the individual-specific effect is reflected in the ε_iWhereas in the fixed-effect model, each individual entity has its own intercept to reflect the heterogeneity effect. The fixed-

effect model only verifies intra-country variations, whereas the random effect model verifies both inter-country and intra-country variation.

To decide between FEM and REM, we conduct Hausman Test. This test checks whether estimators of FEM and REM are substantially different and whether α_i is correlated with any of the regressors. If the test is significant and null hypothesize is rejected, that means α_i probably correlate with any of the regressors. In that situation, we have to apply a fixed-effect model.

We can also conduct Breuusch and Pegan Lagrange multiplier test to reinstate the results from Hausman Test. This test hypothesizes that there are no random effects.

4. Discussion of Empirical Results

The data of eighteen Asian countries were analyzed using Stata software. The initial diagnostic tests revealed that data is present with country-level effect, time effect, and heteroscedasticity. The researcher used the Wooldridge test for autocorrelation (serial correlation) in panel data to test the time effect (p-value- 0.0219), Pesaran's test of cross-sectional independence to test the firm effect (p-value- 0.0000), and Modified Wald test for group-wise heteroscedasticity (p-value- 0.0000). The further researcher carried out a joint test to verify whether time-fixed effects are present, which gave a significant p-value of 0.0011.

In the presence of the time effect, the researcher introduced time dummies to capture the time effect. The standard errors were clustered on a country level to capture the country-level effect; This is one of the methods proposed in Petersen (2009) to capture time and entity effect in the presence of both. Further clustered standard errors address both the heteroscedasticity and autocorrelation problem when N>T (Hoechle, 2007).

The below are the results of error-corrected panel regression.

Table 3: Panel Regression Results (Standard Errors Adjusted)

	Pooled OLS	**FEM**	**REM**
PER_CAPITA_GROWTH	-3.1705	0.8521	0.8286
	(0.310)	(0.056)*	(0.044)**
GDP_DEFLATOR	0.3223	-.2918	-0.1993
	(0.799)	(0.451)	(0.519)
LIQUIDITY_RATIO	1.7966	0.1377	0.2586
	(0.000)***	(0.003)***	(0.001)***
MONETIZATION_RATIO	-0.0867	1.0080	1.2864
	(0.789)	(0.000)***	(0.008)***
SAVING_RATE	-1.7256	0.9267	0.9947
	(0.425)	(0.056)*	(0.035)**
CONSTANT	31.2222	-25.0110	-97.4883
	(0.695)**	(0.039)**	(0.026)**
R^2:	0.8647		
Within		0.3141	0.3016
Between		0.5979	0.6324
Overall		0.5984	0.6330
RHO		0.9816	0.9231

*** p<.01, ** p<.05, * p<.1
Source: The author developed

Table 4: Hausman (1978) Specification Test

Chi2	3.34
p-value	.9964

*** p<.01, ** p<.05, * p<.1
Source: The author developed

Table 5: Breusch and Pagan Lagrangian Multiplier Test

Chibar2	260.93
p-value	.000***

*** p<.01, ** p<.05, * p<.1
Source: The author developed

Table 4 presents the results of the Hausman (1978) specification test, which is not significant. That means we can accept the null hypothesis that FEM and REM estimators do not differ considerably. Therefore, we can choose the Random Effect model. This result is confirmed by Breusch and Pagan Lagrangian multiplier test, which is significant. The results of the Breusch and Pagan Lagrangian multiplier test are presented in table 3. Breusch and Pagan Lagrangian multiplier test reveals Random Effect Model is preferred over Pooled OLS Model.

Table 3 presents regression results. According to the regression results, inflation (GDP_DEFLATOR) is insignificant in all three models. This might be due to the fact that the reduced importance of the GDP deflator as an indicator of economic stability. The author suggests using the budget balance or interest rate to reflect the economic stability better.

The saving rate (SAVING_RATE), a crucial determinant of stock market development, is as significant and positive as expected. This means a higher saving of country leads to higher investments which will in turn positively impact stock market development.

The study further reveals that economic growth (PER_CAPITA_GROWTH) positively and significantly impacts stock market development. As past literature suggests (Goldsmith, 1969), economic growth promotes stock market development by increasing the demand for equity funds. Therefore, we can state that overall economic growth propels stock markets to develop themselves to cater to the growing needs of the economy.

Our findings also suggest that stock market liquidity (LIQUIDITY_RATIO) plays a positive and significant role in stock market development. On one hand liquid stock market increase investor confidence, and on the other hand higher activity level helps to reduce the transaction cost. The financial intermediary development (MONETIZATION_RATIO) has a complementing effect on stock market development rather than substituting effect. Table 1 results reveal the significant positive role of financial intermediaries in stock market development.

In FEM and REM models, α is significant.

5. Summary and Conclusion

This investigation aimed to empirically assess the impact of macro-economic determinants on stock market development in the Asian Region. As the sample, we selected eighteen Asian countries. The period under consideration was 2009 to 2018. The study has used panel data analysis.

The results reveal that economic growth, stock market liquidity, financial intermediary development, and saving rate positively impacts stock market development. Further study indicates that inflation is not significant. This might be due to the fact that the inflation rate is not an adequate measure of economic stability, and better results might be achieved using a budget balance or interest rate.

This paper only sheds light on the role of macroeconomic determinants in stock market development. Apart from those institutional factors and social factors also impacts stock market development as well. Even though there are researches done on these factors separately, past literature lacks research that considers all the factors that affect stock market development. For future research, I can suggest combining all the factors (macro-economic, institutional and social) that determine stock market development using a more complex econometric model—further, this study focus on eighteen Asian countries as an aggregate. Hence researching individual country status will shed light on country-specific factors of stock market development, adding more depth.

Last but not least, we have to assess the impact of the bond market on stock market development. Because like financial intermediaries, debt markets can either substitute or complement the stock market, and we can further assess why debt markets in the Asian region are less developed than equity markets.

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