Stock Market & the Economy: Evidence from Philippines

D Dulani Jayasuriya
University of Auckland

This study reviews prior literature on the relationship between the stock market and the economy and conducts a simple analysis on the same empirically for Philippines. The study utilizes quarterly data from 2003 to 2015. Results show that increases in past quarter real GDP growth causes a 0.56 increase in the present quarter real GDP growth. In addition, increases in past quarter PSI index returns cause a 0.04 increase in real GDP growth in the present quarter. Moreover, the study identifies an inflation-GDP growth puzzle for Philippines. Results support the permanent income and the financial accelerator views.

INTRODUCTION

The impact of stock markets on the real economy has been a widely researched area for several decades. It has been an interesting topic not only to investors, and economists alike but regulators, politicians and the general public as well. Majority of prior academic literature finds that stock market indices and GDP tend to move together in developed countries. Moreover, the Great Depression era in the US and the slow economic growth during the 1990s in Japan are often associated with stock market crashes that preceded them. In both these scenarios, rapidly declining stock markets foretold an impending economic depression. However, this relationship maybe due to pure coincidence, a result of the wealth effect or the stock markets being associated with economic production conditions. Explaining this particular relationship involves assessing the strength and the causality of GDP growth and stock market indices. Does the stock market affect GDP growth or does GDP growth trigger fluctuations in the stock market? Prior literature rigorously documents evidence on the above relationship for stock markets world-wide and finds that movements in stock returns are related to the business cycle. However, few focus on emerging economies such as the Philippines which is presently the 10th fastest growing economy in the world.

Given this setting, this study explores the possibility of using fluctuations in the economy (GDP percentage) to forecast Philippine stock market movements proxied by the PSI index. Moreover, business cycles affect co-movements of the stock market with various economic indicators representing the state of the economy. Hence, several other control economic indicators (such as the unemployment rate, inflation rate) are included in the analysis. Even though shifts in business cycles and the stock market may be driven by the same fundamentals or exogenous economic shocks, the stock market seem to anticipate economic cycles to a certain extent.

This study reviews prior literature on the stock market and the economy and presents their implications for Philippines. To the authors' knowledge this is the first study that analyzes this particular relationship for Philippines recently. This study poses the following research questions. 1. Is there a direct

relationship between the Philippine Stock market and Economic Growth? 2. Does this relationship change over the long run? The results show that increases in past quarter real GDP growth causes a 0.56 increase in this quarter real GDP growth at 1% significance. In addition, an increase in past quarter PSI index returns cause a 0.04 increase in real GDP growth this quarter at 5% significance. Moreover, the study identifies an *inflation-GDP growth puzzle* for Philippines. The results support several theoretical views by Tobin (1969), Modigliani (1971), *permanent income hypothesis* and the *financial accelerator view by* Bernanke and Gertler, (1989); Kiyotaki and Moore, (1997) for Philippines.

This study is organized as follows. The second section conducts a literature review of prior research conducted on the stock market and the economy. The third section provides hypotheses development. Fourth section discusses the data. Fifth section provides the empirical methodology. Sixth section discusses empirical results. Seventh section provides the policy implications. Finally, section eight concludes the study.

LITERATURE REVIEW

Stock Exchanges and the Economy
The increasing prominence of financial markets across the world in the past half a century has firmly established the focus on the relationship between the real economy and stock market movements. Majority of prior literature finds a positive relationship between booming stock markets and positive economic growth. For example, Greenwood and Jovanovic (1990); King and Schwert (1989) finds evidence that stock market volatility movements are indeed associated with the economy. North (1991) finds that the existence of a stock exchange increases economic growth by lowering the ownership right exchange costs of firms.

In addition, Bencivenga and Smith (1992) states that a new stock market increases economic growth by reducing liquid asset holdings and the physical capital growth rate in the long run. Levine (1993), states that the establishment of a stock exchange increases economic growth by aggregating information about firms, thereby better directing capital to investments. However, the general consensus of the industry is that there is a negative correlation between economic growth and stock market growth. In fact, fast growing economies often have worst performing stock markets. A common perception is that stock markets in high growth economies are overvalued and subsequently stock markets underperform. Dimson, Marsh and Staunton (2010) cross country analysis finds that investing in low growth economies produce superior returns relative to high growth economies. The following section considers theoretical views on the stock prices and the economy.

The Theoretical Link between Stock Prices and the Economy
Under the assumption that a stocks' current price is the discounted present value of all future payouts, one economic theory suggests a strong link between economic growth and stock prices. Given that investor expectations on future firm payouts are accurate on average, the standard discounted cash flow model imply that stock market movements lead real economic activity. In addition, there are three other theoretical views relating stock prices to economic activity. The first link is suggested by Tobin (1969) focusing on the stock price impact on the cost of capital. This is captured by a coefficient known as the *Tobin's Q*, which is the ratio of the market value of current capital to the cost of replacement capital. In more detail, when stock prices increase, the value of the firm relative to the replacement cost of its capital stock (Tobin's Q) also increase. Subsequently, this leads to increased investment expenditure and in turn results in higher aggregate economic output.

The second channel through which stock markets influence GDP is suggested by Modigliani (1971), through the *permanent income hypothesis* relating wealth variables to consumption. A permanent increase in stock prices result in an increase in an individual wealth and subsequently a higher level of permanent income. Modigliani (1971) states that intertemporally, consumers smoothen consumption in order to maximize utility. Therefore, an increase in permanent income will enable consumers to upwardly re-adjust consumption levels in each period.

The third possibility, namely the *financial accelerator hypothesis* also explains how stock prices impact economic output (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997). This channel focuses on how the stock price impact a firms' balance sheet. Primarily for firms with information asymmetry, the ability to access credit markets depends on the collateral pledged. However, the collateral value of firms may increase when their stock price increase giving them access to higher credit. This in turn leads to an expansion in economic activity due to increased investments by firms with higher credit access.

Moving on to empirical evidence from prior literature. Campbell (1998) uses a log linear asset pricing framework to analyze the empirical relationship between stock prices and economic output. The results are statistically insignificant for France, Germany, the UK, Japan and the US. According to Campbell (1998), stock prices have little predictive power with respect to economic output. Binswanger (2004) conducts regressions using growth rates of industrial production as the dependent variable and contemporaneous and lagged real stock returns as explanatory variables for G7 countries. His results are mixed. Humpe and Macmillan (2005) analyze the extent to which macroeconomic variables explain stock market movements in US and Japan. Using a log linear model, they find that a 1 per cent increase in industrial production triggers a 1.09 per cent increase in US stock prices. In addition, a 1 per cent increase in Japanese industrial production triggers a 0.4 per cent increase in Japanese stock prices. Hence, given divergent evidence from prior literature and various theoretical views, the debate on the link between stock prices and the real economy remains inconclusive.

HYPOTHESIS DEVELOPMENT

This paper aims to review prior academic literature on the stock market and the economy. In addition, this study analyzes the same relationship in the case of Philippines and tests several theoretical views of the relationship between stock market and the economy.

Hypothesis 1: An increase in the PSI index returns cause an increase in Real GDP for Philippines.

According to Hypothesis 1, movements in the Philippine stock market (proxied by the PSI index) effect Philippines' economic growth. Hypothesis 1 is based on the following theoretical views. Firstly, Tobin (1969) effect as explained in the literature review section. Increased stock prices result in the firm value rising relative to the replacement cost of its capital stock (Tobin's Q). This in turn leads to increased expenditure in investments and higher aggregate economic output. The second channel is the permanent income hypothesis introduced by Modigliani (1971) as explained in the earlier section. That is consumers intertemporally smoothens consumption to maximize their utility. Therefore, an increase in permanent income will enable consumers to increase their consumption. The third view is the *financial accelerator hypothesis* (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997). Scenarios of increased stock prices result in an increased value in collateral pledged to access credit markets by firms. This higher credit is subsequently used for investment purposes increasing economic output.

Hypothesis 2: Movements in the PSI index returns have no effect on Real GPD growth for Philippines.

According to the second hypothesis, movements in the stock market has no effect on the growth of the Philippine economy. Hypothesis 2 directly contradicts the above mentioned theoretical views for Philippines.

DATA

This study utilizes quarterly data for the sample period 2003 to 2008. The data for the macro variables such as Gross Domestic Product, Unemployment Rate, Inflation rate is obtained from the Philippine Statistics Authority. The stock market data for the PSI index is obtained from the Philippine Stock Exchange. The main dependent variable is *RealGDPgr* which is the real GDP growth for Philippines. The key independent variable is the *PSI_IndexRet* which is the PSI index returns, since the frequency of the data for the PSI index returns is monthly, the simple moving average of the monthly index return is

considered to create a quarterly index return series. Other control variables are the key macro variables such as *UnEmpRate* which is the unemployment rate and the InflationRate which is the headline inflation rate.

EMPIRICAL METHODOLOGY

Firstly, a trend analysis is conducted to identify long term trends, possible non-stationarity etc. Furthermore, since several macro variables such as the consumer price index are known in general to contain a unit root, the dickey fuller test is conducted. The results show that all series are stationary. Secondly, a correlations analysis is conducted to identify the strength of the relationship between the dependent and the independent variable and to identify any multicollinearity issues. No multi collinearity issues are observed. Several diagnostics tests are conducted to identify autocorrelation, heterogeneity and non-normality etc. Finally, several basic ordinary least squares regression models are implemented to analyze the relationship between the Philippine economic growth and the stock market.

In addition, reverse causality can be a main issue in this particular setting, since some academics argue that economic growth causes better performance in the stock market. Therefore, a crude but often effective regression is conducted by switching the independent variable (PSI index returns) and the dependent variable (Real GDP growth). The results from this regression shows that for the case of Philippines, there is no reverse causality between economic growth and stock market returns.

Our main regression equations are as follows:

$$RealGDPgr_t = \alpha + \beta_1 PSI\_IndexRet_t + \beta_2 UnEmpRate_t + \beta_3 InflationRate_t + \varepsilon_t \tag{1}$$

$$RealGDPgr_t = \alpha + \beta_1 PSI\_IndexRet_t + \beta_2 PSI\_IndexRet_{t-1} + \beta_3 PSI\_IndexRet_{t-2} + \beta_4 UnEmpRate_t +$$
$$\beta_5 UnEmpRate_{t-1} + \beta_6 UnEmpRate_{t-2} + \beta_7 InflationRate_t + \beta_8 InflationRate_{t-1} + \beta_9 InflationRate_{t-2} + \varepsilon_t \tag{2}$$

$$PSI\_IndexRet_t = \alpha + \beta_1 RealGDPgr_t + \beta_2 UnEmpRate_t + \beta_3 InflationRate_t + \varepsilon_t \tag{3}$$

$$PSI\_IndexRet_t = \alpha + \beta_1 RealGDPgr_t + \beta_2 RealGDPgr_{t-1} + \beta_3 RealGDPgr_{t-2} + \beta_4 UnEmpRate_t +$$
$$\beta_5 UnEmpRate_{t-1} + \beta_6 UnEmpRate_{t-2} + \beta_7 InflationRate_t + \beta_8 InflationRate_{t-1} + \beta_9 InflationRate_{t-2} + \varepsilon_t \tag{4}$$

EMPIRICAL RESULTS

This section presents the empirical findings for Philippines and reconcile the results with prior academic literatures' empirical and theoretical views for the US and other countries.

Descriptive Statistics

Table 1 shows the descriptive statistics for the sample period 2003 to 2015. According to Table 1, the real GDP growth rate for Philippines on average is 5.35% and the unemployment rate is at 8% on average. Moreover, the inflation rate remains at 4.71% on average. PSI stock index returns remain at 9.7% on average.

TABLE 1

RealGDPgr is the real GDP growth for Philippines. *PSI_IndexRet* is the PSI index returns quarterly series created from the simple moving average of the monthly index returns. *UnEmpRate* is the unemployment rate and the InflationRate is the headline inflation rate. Sample period is from 2003-2015, quarterly data. P25, P50 and P75 depicts the 25th, 50th and 75th percentile values for the variables in question.

Variable	Obs	Mean	Std.	Skewness	Kurtosis	Min	Max	P25	P50	P75
RealGDPgr	48	5.35	1.78	-0.94	3.60	0.40	7.90	4.50	5.50	6.70
UnEmpRate	52	8.09	1.89	1.55	4.20	6.00	13.70	7.00	7.40	8.00
InflationRate	48	4.71	2.31	1.14	4.15	0.30	12.20	3.10	4.10	6.25
PSI_IndexRet	52	4.20	9.78	-0.69	4.12	-27.12	22.75	-1.02	5.29	9.56

Correlations

Table 2 shows the correlations for all the variables included in the regression analysis for the sample period 2003 to 2015. Results show a semi strong negative correlation between the inflation rate and the PSI index returns. However, all the other variables are not strongly correlated with each other.

TABLE 2

RealGDPgr is the real GDP growth for Philippines. *PSI_IndexRet* is the PSI index returns quarterly series created from the simple moving average of the monthly index returns. *UnEmpRate* is the unemployment rate and the InflationRate is the headline inflation rate. Sample period is from 2003-2015, quarterly data.

Variables	RealGDPgr	PSI_IndexRet	UnEmpRate	InflationRate
RealGDPgr	1.00			
PSI_IndexRet	-0.09	1.00		
UnEmpRate	-0.08	0.13	1.00	
InflationRate	-0.16	-0.35	0.13	1.00

Trend Analysis

For the trend analysis each independent variable is plotted with the dependent variable, real GDP growth to identify any long term trends. Figure 1 depicts real GDP growth which is the red line and the PSI index returns which is the green line. The two orange vertical lines denote the beginning and the end of the 2008 financial crisis. This graph especially following the 2008 financial crisis depicts a lead lag relationship between the real GDP growth and the PSI index returns. This is a very interesting finding as this result is further supported by the regression results. Past performance of the PSI index returns can predict future real GDP growth for Philippines.

FIGURE 1

Quarterly Real GDP Growth (red line) vs PSI Index returns (green line). Two vertical orange lines depict the beginning and ending of the 2008 financial crisis effects for Philippines. Sample period 2003 to 2015.
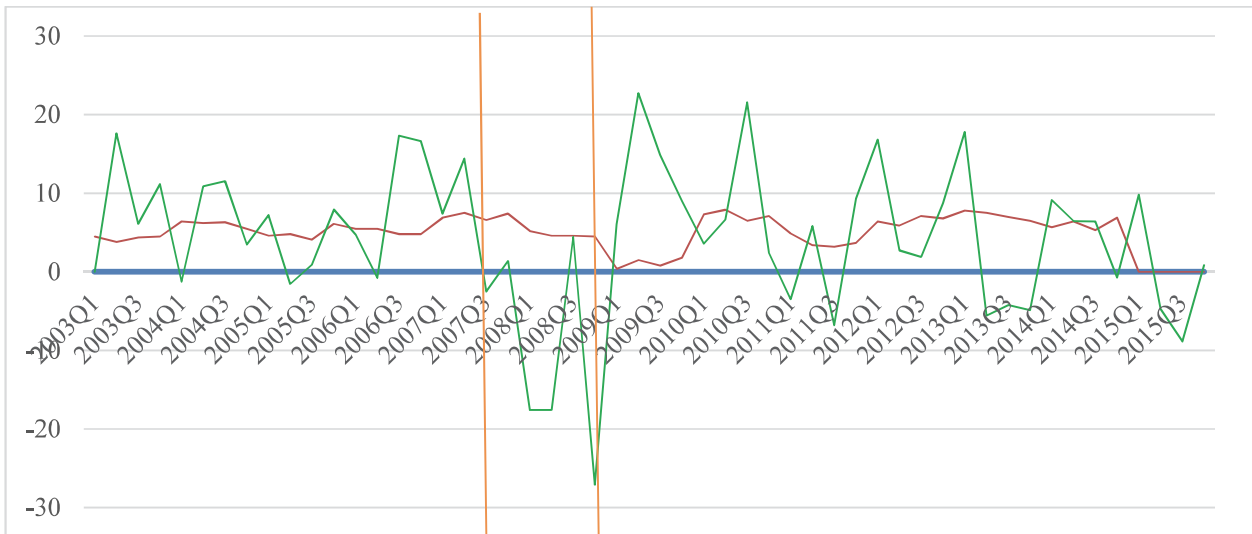

Figure 2 depicts real GDP growth which is the red line and the inflation rate which is the blue line. This graph especially following the 2008 financial crisis depicts an anomaly between the real GDP growth and the inflation rate. In general, the real GDP growth rate and inflation has an inverse relationship. Lower inflation depicts adequate supply and investments and higher economic activity leading to an increase in GDP growth. However, following the 2008 financial crisis a positive relationship is observed between the two macro-economic variables, indicating a puzzle for that particular period. The two black vertical lines denote the beginning and the end of the puzzle period for Philippines. The puzzle might be explained by natural disasters (Typhoon Ketsana) and other social and political factors (presidential elections) that negatively affected both the economy and the stock market following the 2008 financial crisis.

FIGURE 2

Quarterly Real GDP Growth (red line) vs inflation rate (blue line). Two vertical black lines depict the puzzle periods' beginning and end. Sample period 2003 to 2015.
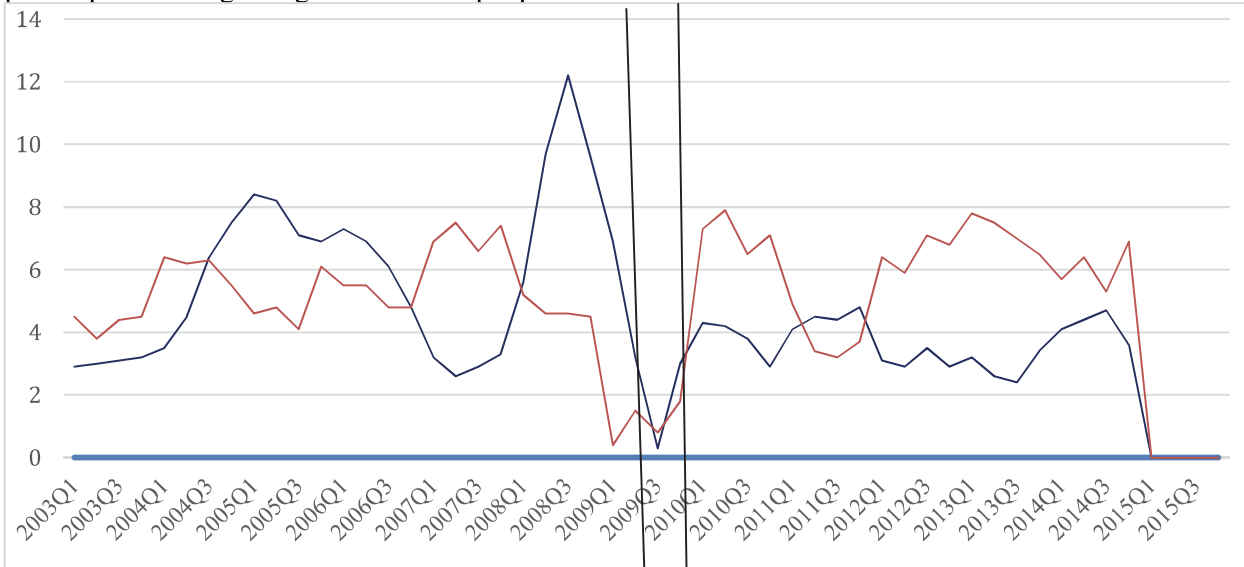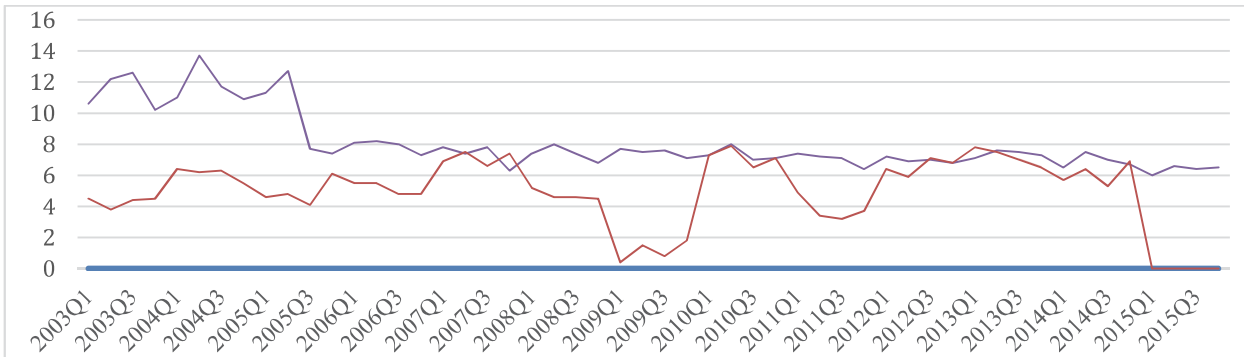

Figure 3 depicts real GDP growth which is the red line and the unemployment rate which is the purple line. Following the year 2005 the unemployment rate has been relatively stable given various economic conditions.

FIGURE 3

Quarterly Real GDP Growth (red line) vs unemployment rate (purple line). Sample period 2003 to 2015.

Regression Results

Table 3 shows the main regression models. The first column depicts equation 1, second column depicts equation 2, third column depicts equation 3 and final column depicts equation 4.

TABLE 3

RealGDPgr is the real GDP growth for Philippines. *PSI_IndexRet* is the PSI index returns quarterly series created from the simple moving average of the monthly index returns. *UnEmpRate* is the unemployment rate and the InflationRate is the headline inflation rate. Sample period is from 2003-2015, quarterly data. Simple OLS regression models. *, **, *** depicts 10%, 5% and 1% significance respectively.

	Model 1	Model 2	Model 3	Model 4
	RealGDPgr	RealGDPgr	PSI_IndexRet	PSI_IndexRet
RealGDPgr			-0.79	1.67
			(0.60)	(1.11)
RealGDPgr$_{t-1}$		0.56***		-1.40
		(0.13)		(1.13)
RealGDPgr$_{t-2}$		-0.01		
		(0.13)		
PSI_IndexRet	-0.03	0.03		
	(0.03)	(0.02)		
PSI_IndexRet$_{t-1}$		0.04**		
		(0.02)		
PSI_IndexRet$_{t-2}$		0.02		
		(0.02)		
UnEmpRate	-0.04	-0.03	0.75	-0.17
	(0.10)	(0.12)	(0.58)	(1.24)
UnEmpRate$_{t-1}$		-0.33		2.31
		(0.18)		(1.47)
UnEmpRate$_{t-2}$		0.27		-1.23
		(0.21)		(1.08)
InflationRate	-0.17	-0.24	-1.68**	-1.01
	(0.12)	(0.14)	(0.78)	(1.56)
InflationRate$_{t-1}$		0.75***		-1.83
		(0.25)		(2.93)
InflationRate$_{t-2}$		-0.74***		2.59
		(0.19)		(1.70)
Constant	6.56	3.90	10.61	-1.23
	(1.07)	(1.24)	(5.85)	(8.75)
# of observations	48	46	48	46
Adj R Square	0.05	0.74	0.17	0.30

Based on the trend analysis and the correlations PSI index returns have positive relationship with Real GDP growth for Philippines.

The main model from equation 2 in column 2 from the above table supports the same. In essence the stock market and the economy in the Philippines has a positive relationship. According to column 2 in Table 3, increase in past quarter real GDP growth causes a 0.56 increase in this quarter real GDP growth at 1% significance. Moreover, increase in past quarter PSI index returns cause a 0.04 increase in real GDP growth this quarter at 5% significance.

Hence the results support Hypothesis 1 and the theoretical views of 1. Tobin (1969) on cost of capital and higher aggregate economic output, 2. Modigliani (1971), *permanent income hypothesis*, 3. *financial accelerator* (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997) remain true for Philippines. These results are very interesting since past quarter real GDP growth and the PSI index returns have the power to predict the future economic growth for Philippines.

Increases in the past quarter and 2 quarters prior inflation rate increases real GDP growth by 0.75 and decreases real GDP growth by 0.74 at 1% significance. These results support the trend analysis of the inflation rate and GDP growth for Philippines, again depicting the puzzle period identified earlier. In general, the real GDP growth rate and inflation has an inverse relationship. Lower inflation depicts adequate supply and investments and higher economic activity leading to an increase in GDP growth. However, according to the regression results a positive relationship is observed between the two macro-economic variables with a 1 quarter lag, indicating an *inflation-GDP growth puzzle* for Philippines.

The puzzle might be explained by natural disasters and other social and political factors (presidential elections) that negatively affected both the economy and the stock market during the sample period. As shown by the trend analysis, unemployment does not seem to have any predictive power over real GDP growth for Philippines. In a bank-based economy such as Philippines, the result that the stock market contributed to the development of the economy and more over has predictive power is an important finding and has several timely policy implications.

POLICY IMPLICATIONS

The results obtained in this paper have several important policy implications for academic research, investors, businesses, government and households in general in Philippines. Predicting economic growth is important for businesses to forecast future sales, to make capital structure decisions, investing activities and business expansions etc. For investors, predicting economic growth is important to re-balance their investment portfolios and make new investment decisions. For households predicting economic growth is important to decide on savings and investments. Moreover, predicting economic growth is most important for the government and central bank to decide on fiscal and monetary policy. Hence investors, governments, households and businesses can use these variables in their valuation models to identify economic growth. In general, the real GDP growth rate and inflation has an inverse relationship. However, the results observe a positive relationship between the two macro-economic variables with a 1 quarter lag, especially following the 2008 world financial crisis indicating an *inflation-GDP growth puzzle* for Philippines. This result shows the importance of considering factors such as natural disasters and other social and political factors (presidential elections) factors into asset and economic valuation models for Philippines. Finally, this basic study sets the foundation for academics to conduct further research on the stock market and the economy for Philippines.

CONCLUSION

This study reviews prior literature on the stock market and the economy and presents empirical analyses of the same for Philippines. To the authors' knowledge this is the first study that analyzes this particular relationship for Philippines. The results support the view that the Philippine stock market can predict future economic growth. Moreover, an inflation-GDP growth puzzle is identified for Philippines. The Philippines is considered as a newly industrialized country and has become the 33rd largest economy in the world (International Monetary Fund). This fact highlights the importance and implications of research and models that predict Philippine economic growth to market participants, government and central bank in general. The results support several important theoretical views of 1.Tobin (1969) on cost of capital and higher aggregate economic output, 2. Modigliani (1971), *permanent income hypothesis*, 3. *financial accelerator* (Bernanke and Gertler, 1989; Kiyotaki and Moore, 1997) in the Philippine context. This study could be the main basis for further research on the Philippine stock market and economic

growth. Moreover, our results highlight the importance of maintaining financial stability and growth in the Philippine stock market as it is directly linked to the growth of the Philippine economy.

REFERENCES

Ang, A. & Bekaert, B. (2001). Stock Return Predictability: Is It There?, *Columbia University and NBER Working Paper.*

Arnott, R. & Ryan, R. (2001). The Death of the Risk Premium: Consequences of the 1990's, *Journal of Portfolio Management*, Spring 2001.

Binswanger, M. (2004). Stock Returns and Real Activity in the G7 Countries: Did the Relationship Change in the Early 1980s, *The Quarterly Review of Economics and Finance*, Vol. 44(2): 237-252.

Campbell, J. Y. & Shiller, R.J. (1988), The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors, *Review of Financial Studies* 1, 195-228.

Campbell, J. Y. (1998). Asset Prices, Consumption, and the Business Cycle, *NBER Working Paper*: No.6485.

Campbell R. H., & Graham, J.R. (2001). Expectations of Equity Risk Premia, Volatility and Asymmetry from a Corporate Finance Perspective, *Working Paper, Fuqua School of Business, Duke University*, August 3, 2001.

Campbell, J. Y. & Shiller, R.J. (2001). Valuation Ratios and the Long Run Stock Market Outlook: An Update, *NBER Working Paper*, No.8221.

Charles P. J., & Wilson, J. W. (2002). An Analysis of the S&P 500 Index and Cowles' Extensions: Price Indexes and Stock Returns, 1870-1999, *Journal of Business* 75-3, July 2002.

Diermeier, J. J., Ibbotson, R.G., & Siegel, L.B. (1984). The Supply for Capital Market Returns, *Financial Analyst Journal*, March/April, 1984.

Estrella, A. & Mishkin, F. S.(1998), Predicting U.S. Recessions: Financial Variables as Leading Indicators, *The Review of Economics and Statistics*, 80, pp. 45-61.

Fama, E. & French, K. R. (1988), Dividend Yields and Expected Stock Returns, *Journal of Financial Economics*, 22, 3-25.

Fama, E. & French, K.R. (2001). Disappearing dividends: Changing firm characteristics or lower propensity to pay, *Journal of Financial Economics* 60, 3-43.

Fama, E. & French, K.R. (2002). The Equity Risk Premium, *Journal of Finance*, April 2002.

Green, R.C. & Hollifield, B.(2001). The Personal-Tax Advantages of Equity, *Carnegie Mellon University Working Paper*, January 2001.

Gordon, M. (1962). *The Investment Financing and Valuation of the Corporation*, Irwin: Homewood, Illinois.

Goyal, A., & Welch, I. (2001). Predicting the Equity Premium with Dividend Ratios, *Yale School of Management and UCLA Working Paper.*

Humpe, A., & Macmillan, P. (2005), Can Macroeconomic Variables Explain Long Term Stock Market Movements? A Comparison of the US and Japan, *Centre for Research into Industry, Enterprise, Finance and the Firm*, Working Paper: No. 11.

Ibbotson Associates. (2001). Stocks, Bonds, Bills, and Inflation 2001 Yearbook, Ibbotson Associates, 2001.

Ibbotson, R. G., & Sinquefield., R.A. 1976. Stocks, Bonds, Bills, and Inflation: Year-By Year Historical Returns (1926-1974),The Journal of Business 49, No. 1, 11-47.

Ibbotson, R. G., and Sinquefield., R.A. 1976. Stocks, Bonds, Bills, and Inflation: Simulations of Future (1976-2000),*The Journal of Business 49*, No. 3, 313-338.

Kiyotaki, N., & Moore, J. (1997).Credit Cycles, *Journal of Political Economy*, 105: 211-48.

Mehra, R., and Edward P. (1985). The Equity Premium: A Puzzle, *Journal of Monetary Economics*, No. 2, 145-161.

Modigliani, F. (1971). Consumer Spending and Monetary Policy: the Linkages, *Federal Reserve Bank of Boston Conference Series: Paper"*, No. 5.

Modigliani, F. (1986). Life Cycle, Individual Thrift and the Wealth of Nations, *American Economic Review*, Vol. 76(3): 297-313.

Miller, M., & Modigliani, F. (1961). Dividend policy, Growth and the Valuation of Shares, *Journal of Business*, October 1961.

Pesaran, M. H. and A. Timmemann. (1995). Predictability of Stock Returns: Robustness and Economic Significance, *The Journal of Finance*, 4, pp. 1201-1228.

Phylaktis, K. & Ravazolo, F. (2002). Stock Market Linkages in Emerging Markets: Implications for International Portfolio Diversification, *Cass Business School Working Paper*: Emerging Market Group.

Shiller, Robert J. (2000). *Irrational Exuberance*, Princeton University Press, Princeton, NJ.

Siegel, Jeremy J. (1999). The Shrinking Equity Risk Premium, Journal of Portfolio Management, Fall 1999.

Stock, J. & Watson, M. (2001). Forecasting Output and Inflation: The Role of Asset Prices, *NBER Working Paper:* No. 8180.

Schwert, G. (1989). Why Does Stock Market Volatility Change over Time?, *The Journal of Finance*, Vol. 44(5): 1115-1153.

Schwert, G. (1990). Stock Returns and Real Activity: A Century of Evidence, *The Journal of Finance*, Vol. 45(4): 1237-1257.

Tobin, J. (1969). A General Equilibrium Approach to Monetary Theory, *Journal of Money, Credit, and Banking"*, Vol. 1: 15-29.

Vuolenteenaho, Tuomo. (2000). Understanding the Aggregate Book-to-Market Ratio and Its Implications to Current Equity-Premium Expectations. *Harvard University Working Paper*.

Welch, Ivo. (2000). Views of Financial Economists on the Equity Premium and Other Issues. *The Journal of Business* 73-4, October 2000, 501-537.