## Impact of Selected Accounting and Economic Variables on Share Price of Publicly Listed Banks in the Philippines from 2002-2008

#### Placido M. Menaje, Jr.

Accountancy Department, De La Salle University, Manila, Philippines placido.menaje@dlsu.edu.ph 130 Dela Rosa Street, 1229 Makati City, Philippines ckmroncal13@yahoo.com

Investors seek financial measures that have significant impact on share price. Past studies used various accounting and economic variables to determine their effect on share price but some of the results were not very conclusive. A number of these studies came out with results that contradicted previous studies. This paper aims to determine whether the accounting variables Earnings per Share (EPS), Cash Flows per Share (CFPS), Cash Dividend per Share (CDPS) and the macroeconomic variables Inflation Rate (IR) and 3-month T-bill rate (BSP) have significant impact on share price of publicly listed banks in the Philippines. The study used the financial reports of 10 publicly listed commercial banks taken from the database of the Philippine Stock Exchange, Inc. through their website. The financial statements covered seven years from 2002 to 2008. The multiple regression results disclosed that of the five independent variables, only the 3-month Treasury bill (BSP) had a negative significant impact on share price. All other variables did not have significant effect on share price. Nine dummy variables were included in the final model to capture whatever unique qualitative factors a particular bank has over the rest.

*Keywords:* Share investing; share price, EPS, CFPS, CDPS, IR, BSP, Dow Theory, Fundamental Analysis, Technical Analysis, Mosaic Theory

#### **INTRODUCTION**

The broad area of financial accounting and reporting, through the fast-changing international financial reporting standards, offers a number of measures of a firm's performance for a particular accounting period. These measures compute the firm's profitability, liquidity, and solvency. A single financial measure may not be enough though for an investor when share price is being analyzed. Other relevant measures, not necessarily financial in nature, should also be considered.

With stock price as the focus of a listed firm's intrinsic value, investors and market analysts normally refer to the business entity's financial statements. Audited financial statements are the most reliable source of data on the firm's financial position, performance, and ability to generate cash by virtue of the accountant's strict adherence to various generally accepted accounting principles (GAAP) set by international financial reporting standards (IFRS) as well as the strict adherence of the auditor to generally accepted auditing standards (GAAS). These standards have been designed to harmonize reporting globally to allow fair presentation, consistency, objectivity, and comparability of financial information across countries.

This study essentially follows the fundamental analysis technique in using the data presented in the various financial statements of publicly listed banks in the Philippines from 2002 to 2008. There are various accounting data that can be used as variables for studies involving stock price. Accounting variables normally take the form of ratios culled from relevant account balances presented in the Statement of Financial Position (Balance Sheet), Income Statement, and the Statement of Cash Flows. These ratios can be grouped into the following: liquidity ratios, profitability ratios, activity ratios, capital structure ratios, and capital market ratios.

This study uses three accounting ratios or metrics, which are earnings per share (EPS), dividend per share (DPS), and cash flows per share (CFPS). By far, EPS is the most widely used metric to gauge a company's profitability per unit of shareholder ownership. It is considered the key driver of share prices. It is also used as the denominator in the frequently cited P/E ratio. Accounting standards stress the importance of EPS by requiring corporations to always indicate their earnings per share in the Income Statement. On the use of the EPS, critics say that this metric can often be susceptible to manipulation, accounting changes, and restatements. For that reason, cash flow is seen by some to be a more reliable indicator than EPS. Nevertheless, earnings per share remains as the industry standard in determining corporate profitability for shareholders.

The net income figure is the traditional information of a firm's profitability and this figure takes on additional meaning when the number of shares outstanding is taken into consideration. When net income is divided by the number of shares outstanding, obtain a measure of the firm's profitability, the earnings per share is obtained. Thus EPS, together with its changes from period to period, is an important and powerful measure of an entity's profitability.

According to O'Hara, Lazdowski, Moldovean, and Samuelson (2000), dividend per share "has the potential for increasing shareholders' wealth" and signals the "financial success of the organization" (p. 90). If dividends per share drop, then investors take that as a signal that the company is not doing well financially. It could mean a drop in the company's market value as investors sell off shares out of fear. The opposite is true if dividends per share go up because it is often a signal that the firm is performing well financially.

Cash flow is simply the moving in and out of cash for a particular period, normally one accounting period which is equivalent to one year or 12 months. This information is important to both investors and lenders because it tells whether the company is liquid or solvent. For investors in stocks, it signals that the firm is capable of distributing cash dividends when the appropriate cash dividend declaration is made by the Board of Directors. It is important to differentiate cash flow from net income because a corporation may be profitable but it may be cash-starved so that it may not be able to meet its maturing obligations. CFPS provides a measure of a firm's financial strength and is frequently used by analysts in valuing a firm's stock. Many of these financial experts believe that the amount of net cash a firm produces is a more important measure of its value than its reported earnings per share. Combined with earnings per share and dividend per share, CFPS can give a better picture of the overall financial health of a business entity.

In addition to the relevant accounting variables normally used in analyzing and/or predicting stock prices, the investor may oftentimes rely on his hunches with regards to which stocks to invest on. The investor, on the other hand, may just decide to follow the proverbial bandwagon for investing purposes. Behavioral Finance explains that this is quite normal because even with the availability of accounting variables that normally impact stock prices, an investor may still follow what he believes is a better alternative by acting on his prevailing emotions and instincts at the opportune time. Furthermore, an investor may not be satisfied with just accounting variables plus his instincts. He may still need to consider other relevant factors that impact stock prices. Economics offer variables such as inflation rate, interest rate, volume of share transactions (trading volume), gross domestic product, and other similar macroeconomic factors. Without exception, all scholarly papers make use of relevant accounting and economic variables when analyzing stock prices. What makes this topic interesting is the fact that researchers may come out with different and even contradicting conclusions as mentioned earlier thereby creating a research problem and gap that encourages more scholarly studies.

The variables considered in this paper draw their strength from a number of theories and analyses which are presented below.

**Mosaic Theory.** This theory, also known as the Scuttlebutt Approach (Kennon, 2008) may not yet be considered a reputable Finance theory since it is not yet mentioned in standard Finance and Economics books nor are there empirical researches that use this theory as their framework. This paper finds it necessary to mention it for the reason that it is practical and is actually being applied worldwide by the investors themselves. The Chartered Finance Analysts Institute (CFAI) accepts Mosaic Theory as a legitimate theory in stock investing. Moreover, Mosaic Theory is invariably being appealed to whenever one is accused of insider trading.

As its name suggests, Mosaic Theory simply means that a particular investor has plenty of sources of data that he can use for investment purposes. These sources may include the internet blogs, financial publications, books, newsletters, and even television shows. This theory can be called as the theory for the ordinary people and may not be appealing to the "scholarly". This theory or much better, a "practice", is not yet considered a reputable theory due to lack of scholarly papers that use this theory in stock investing.

Bolster and Trahan (2009) wrote an article wherein they wanted to determine if the buy and sell recommendations made by Jim Cramer on his nightly Mad Money television show had an impact on the share prices of the companies that he mentioned. They came up with the conclusion that "while Cramer may be entertaining and mesmerizing to many of his viewers" (p. 23), his recommendations were neither extraordinarily good nor unusually bad. Investors that followed Jim Cramer's recommendation, in effect, were applying the Mosaic Theory.

Claassen (2005) examined the determinants of stock price performance of sell-side recommendation changes and how these affected stock price. The determinants were (1) strength (extremeness) of the recommendation and (2) weight (credence) of the recommendation. The author concluded that the impact is positive for upgrades while negative for downgrades. Investors look for strength of the recommendation change when positive and look for both strength and weight when recommendation change is negative.

Mosaic theory is the modernized name for the *Scuttlebutt Approach* that was the trademark of Philip Fisher, one of the legendary titans in investing and is considered the father of highgrowth investing techniques for long-term investing. Fisher's book *Common Stock and Uncommon Profits*, published in 1958 by Wiley, was the first investment book to make the New York Times bestseller list. It also became standard reading at the Stanford's Graduate School of Business. Quoted below is an excerpt from Stockwatch.com (2012) describing how Fisher applied the Scuttlebutt Approach:

Fisher believed that a certain set of information was vital before investing with a company by using the scuttlebutt approach. The word scuttlebutt refers to a frank, although often malicious report on human behavior. To know how well a company was run, Fisher did not read the corporate handout. He would phone and interview different members, talk to the competition and so forth. He would tap into his grapevine of business executives, talk to the competition, suppliers, former employees, and customers of those related to the company he was interested in investing with. Philip Fisher would hold court as he cross-examined the different individuals painting a picture with each brushstroke as to what the company really was, and how the management worked. He continued to cross-examine until he could find out at least half of his criteria. If he was stonewalled and couldn't find the information, he would move on to a company he could assess. This Scuttlebutt approach proved highly successful and a trademark of this investment icon. (par. 11)

Under the current idea of the Mosaic Theory, investors make use of available information, financial or otherwise, to help them make the right decision. They continue to seek combination of those measures that will eventually lead to their acquiring the right investment portfolio mix. Market analysts do their own financial statement analysis as well when it comes to share investing so that they are able to supply financial information to their investor-clients. While other methods are used in analyzing the stock market, majority of market players usually resort to fundamental analysis which make use of accounting ratios and economic data. The information on EPS is readily available because it is presented in the Income Statement, the CFPS is computed out of the data provided by the Statement of Cash Flows, the CDPS is determined by examining all disclosures in the notes to financial statements, and the IR and BSP are obtained from the regular annual reports of the Bangko Sentral ng Pilipinas.

The Dow Theory. This is a classic theory on stock market analysis from which more recent theories draw from. The Dow Theory was developed by Charles Dow based on his analysis of market price movements at the latter part of the 19<sup>th</sup> century. He was then part owner and editor of *The Wall Street Journal* until his death in 1902. Two people by the name of S.A. Nelson and William Peter Hamilton are credited for making refinements to the theory. The former wrote *The ABC of Stock Speculation* while Hamilton made further refinements to the theory and published his book, *The Stock Market Barometer*.

According to Hamilton (1922), while the Dow Theory may be able to form the foundation for analysis, it is meant as a starting point for investors and traders to develop analysis guidelines that they are comfortable with and understand. The theory was foremost based on the analysis of Charles Dow as he observed the movement of stock prices in the market. This paved the way for the early application of stock forecasting. The Dow Theory stood the test of time but not without some negative criticisms.

Alfred Cowle (1934) tested the assumptions of the Dow Theory in his article, *Can Stock Market Forecasters Forecast?* and provided strong evidence against the ability of the said theory to forecast the stock market. This particular article became the cornerstone in the development of the "Efficient Market Hypothesis". Goetzmann and Brown (1997) reviewed Cowle's evidence and their findings contradicted Cowle's conclusion. Their findings revealed that the Dow Theory, as applied by William Peter Hamilton, was able to predict the stock market.

After the death of Charles Dow, Hamilton took over the editorship of *The Wall Street Journal* from 1902 until his own death in 1929. Hamilton contributed much in the area of stock forecasting by discussing in his editorials major trends in the US stock market. It is in his book, *The Stock Market Barometer*, where Hamilton (1922) expounded on the stock market's persistent *"bull"* and *"bear"* trends—the very same trends that all market players today are very much aware of. He also pointed out the idea of "charting" past fluctuations in the industrial and transportation to allow analysts to identify the primary market movement and predict to a certain

extent the direction of the stock price movement. This gave rise to the idea of what is now called *technical analysis*. Pan (2003) contributed an article regarding the joint review of both technical analysis and fundamental analysis in an attempt to bridge the huge gap between the two techniques in analyzing market situation and unite them into what he calls a general science of intelligent finance or financial intelligence.

Technical analysis. This method draws its significance from The Dow Theory, which is the best example of a "chartist" theory (Fama, 1965). This analysis technique assumes that there is a trend in the stock price movements and that the trend is dictated by the behavior of the investors as they respond to external factors. The technical analyst normally charts the trend to predict future stock price movements. In short, technical analysts believe that history is a cycle so that a point in time is reached when it repeats itself. The focus is in the behavior of the stock price over a given period of time, normally in the long-term. Lawrence (1997) stated, "technical analysis is controversial and contradicts the Efficient Market *Hypothesis. However, it is used by approximately* 90 of the major stock traders ... Although technical analysis may yield insights into the market, its highly subjective nature and inherent time delay does not make it ideal for the fast, dynamic trading markets of today" (p. 3-4).

Fundamental analysis. On the other hand, various empirical studies have been published with regards to the determination of the fundamental or intrinsic value of a firm. Accounting figures that are generated and presented on the financial statements are inherently objective so that a firm's intrinsic value is determined principally by information reflected in its financial statements. Various value-relevant accounting attributes based on the financial statements are normally chosen and used as variables in an effort to discover which of these would be relevant to investment decisions. For publicly listed firms, the stock price would be the primary concern of the owners and the investors as well. From this Dow theory sprang various methods, models, and

approaches in an effort to analyze market behavior and logically, the stock price would be the focus. Researchers have come up with various studies that sought to determine the firm's value through the study of the behavior of its stock price. The method of analyzing a firm's value through the use of accounting information is what is called fundamental analysis.

Researchers use two main approaches to assess the relevance of accounting figures which are (1) association studies and (2) predictive studies. The first approach appeals to the efficient market hypothesis so that the stock price is considered a sufficient measure of a firm's value. Elleuch (2009), in her paper *Fundamental Analysis Strategy and the Prediction of Stock Returns* states,

"A statistical association or correlation between accounting data and stock prices or returns means that accounting information summarizes efficiently events and information incorporated in prices and so it is value-relevant because its use might provide a value of the firm that is close to its market value" (p. 95). The second approach departs from the efficient market theory in the sense that "stock prices do not reflect in a timely basis and/or correctly all this information and thus deviate from fundamental values. The predictive approach relies on discovering accounting data that are not reflected in stock prices and thus predicts future stock price adjustments as market values gravitate later to fundamental values" (Elleuch, 2009, p. 96).

#### LITERATURE REVIEW

A person or entity invests in equity securities (shares) of companies for a host of reasons. It may be for safety cushion, cyclical cash needs, investment for a return, investment for influence, or purchase for control (Skousen, Stice, & Stice, 2007). Whatever the reason might be, an investor undertakes thorough financial evaluation of the available options before deciding to invest in stocks of a particular company. This study focuses on investment in stocks for a return. Share investors desire to earn money that is normally higher than the return from a regular bank deposit and the share investor could be any individual or firm who has some excess cash and expects the highest possible rate of return out of the investment. This return could be in the form of dividend income (for long-term investors) or income from trading securities (for short-term investors). Either way, the movement of the share price and its direction is very important to the share investor.

Articles on stock investing have been very extensive during the last decade because of the rise of new theories, new techniques, new software and statistical tools, and new investor perspectives. All of them have, in one way or another, benefited the one person that needed them—the investor. Despite all this abundance of information, no theory, technique, model, or statistical tool can claim that it is the best in itself. The stock market is driven by forces and factors that no one can completely control and will continue to have its elusive and unpredictable character. As it is now, one article will have a particular conclusion which may not be confirmed by another article.

The inconclusive results of these studies, which oftentimes contradict each other regarding the behavior of share price in relation to various predictors, have created and continue to create a research gap that serves as the breeding ground for future researches on this topic. Statistical tools used in earlier and more recent studies range from the simple use of correlation to the more comprehensive research like the one undertaken by O'Hara, et al. (2000). Due to the volatile nature of the share price and complemented by the regular release by firms of their quarterly financial statements, practically all the previous studies were conducted using either time series or panel data.

#### Variables of the study

A primary objective of financial reporting is to provide information that is useful particularly to external users in making credit and investment

decisions. Investors are interested in gauging how well a company is performing in comparison with other companies over time. When evaluating a company, one may be interested in the pattern of net income-whether it is increasing or decreasing. One way to assess a firm's ability to pay its maturing obligations is availability of cash and where cash is to be obtained. Herein lies the main reason why the statement of cash flows is prepared. Another important information that the firm reports is its dividend policy and the regularity of the dividend declaration. When a firm is profitable, it normally returns a portion of its income to the shareholders in the form of cash dividend. Net income gauges a firm's profitability, the cash flows determines a firm's liquidity, while regular declaration of dividend normally signals a firm's solvency. These predictors are usually selected when analysts and researchers use the fundamental analysis technique.

Relevance has been an explicit objective of standard setting bodies like the Financial Accounting Standards Board (FASB) of the USA. Likewise, a major objective of accounting research has been to assess the relevance of accounting information in the market place. The typical format of these studies has been to isolate the impact of specific disclosures as reflected in the earnings figure, for example, on share price. The information may also be in the form of dividend yield vis-à-vis share price.

Regardless of the variables used to predict share price or its returns, if the information is relevant, which means that it contains something new, one should be able to observe a reaction in the market. The usual market reaction is a change in share price in either direction or trading volume as the market incorporates the new information (Bouwman, M. & Trahan, E.A., 1995).

This study chose share price as the dependent variable. Among the available financial and economic predictors, earnings per share, cash flows per share, cash dividend per share, inflation rate, and 3-month Treasury bill rate were selected as independent variables.

*Stock price.* A corporation is a business entity whose capitalization-the amount it owes to the owners-is represented by its shareholders' equity. This total capitalization is composed of several units of ownership where a single unit is called a share. The founding owners or incorporators fix an arbitrary amount for each single share called par value (or stated value if it is a no-par share). The par value becomes the minimum amount at which each share of stock can be sold to the public at the initial public offering and subsequent original issues of shares. When a corporation is publicly "listed", it may now offer its shares of stock at a price that is usually above the par or stated value. This is called the stock price or share price.

The importance of the share price cannot be overemphasized. Market analysts, investors, and lenders are all interested in the prevailing market share price of listed companies. Majority of the market players agree that the share price more or less approximates a firm's worth or intrinsic value (Leitner, 2007). Any movement of the share price can mean income or loss to the investor. The "short-term" investor is the one most interested in the price movement because of the gain or loss that may immediately accrue to him. In short, this investor is interested in the short-term fluctuation of the share price. An increase in the share price means gain; a decrease means loss. The focus of this paper is the short-term investor.

A share price is the price of a single share of a company's stock. Share prices in a publicly traded company are determined by market supply and demand. Share price is volatile because it largely depends upon the expectations of buyers and sellers. For the purpose of this study, the share price refers to the price of the share of each bank at March 31, June 30, September 30, and December 31 of every year.

*Earnings per share (EPS).* The presentation of earnings per share on the face of the income statement is required for enterprises whose ordinary shares or potential ordinary shares are publicly traded and by enterprises that are in the process of issuing shares or potential

ordinary shares in the public securities market (Valix & Peralta, 2009). Firms whose shares are not publicly traded are not required to present earnings per share; nevertheless, such entities are encouraged to present earnings per share to achieve comparability in financial reporting.

Various studies have been made with regards to the significance or non-significance of EPS as a predictor of stock price. A priori, EPS is expected to be a significant positive predictor of stock price.

A study involving three financial variables which included EPS was undertaken by O'Hara et al. (2000). Their objective was to find some corporate financial measures that would correlate with share price that, on average, generates returns higher than the S&P 500 index over an extended period of time. The researchers concluded, among others, that companies that increased their earnings per share on a consistent basis should see a strong positive correlation between earnings per share and share price.

Subramanyam (2007) used earnings and operating cash flows to explain the firm's ex post intrinsic value. The study concluded that earnings are superior over cash flows in explaining ex post intrinsic values.

Tucker (2007) studied the effect on the firm's stock returns of announcements with regards to the direction of earnings. She found out that stock returns of firms that gave advance warnings concerning their earnings remained unaffected by the warning. She concluded her study by saying that "openness is ultimately not penalized by investors" (p. 1082).

Chang, H. Chang, Y., Chen, Y., Su, C. (2008) investigated the relationship between stock prices and earnings-per-share (EPS). They concluded that for the firm with a high level of growth rate, EPS has less power in explaining stock prices. For firms with low level of growth rate, EPS has a strong impact in stock prices.

Higgins and Lu (2009) selected, as one of their independent variables, forecasted earnings per share using the residual income model and the Bayesian statistics in predicting stock price. Their findings revealed that future (forecasted) quarterly abnormal earnings are generally significant for the residual income method. The authors did not mention, however, whether it was positively significant or negatively significant.

Jiang (2009) studied the financial data of Chinese listed company in manufacturing industry from 2003 to 2005 and adopted the price model using among others company earnings to determine whether earnings have relevant relation to stock price. Results showed that earnings have relevant (significant) relation to stock price. Again, the author did not specify whether the significant relationship was positive or negative.

*Cash Flows Per Share.* Users of financial statements would be interested to assess the ability of the firm to generate cash and cash equivalents and the needs of the firm to utilize those cash flows. Philippine Accounting Standards (PAS) 7, Statement of Cash Flows states:

Historical cash flow information is often used as an indicator of the amount, timing, and certainty of future cash flows. It is also useful in checking the accuracy of past assessments of future cash flows and in examining the relationship between profitability and net cash flow and the impact of changing prices. (IASB, 2004, p. 3)

Cash flows per share was also used by O'Hara et al. (2000). They concluded that companies which consistently increased their cash flows per share on a long-term basis should see a strong positive correlation between CFPS and share price, although the correlation was not as strong as the correlation between EPS and share price.

Stone and Niemeyer (2005) wrote on the effectiveness of cash flows per share as a predictor, especially if it is integrated along with the firm's earnings. The study of Jiang (2009) mentioned under earnings per share also included cash flows as one of the variables used to determine whether cash flows have relevant relation to stock price. Results of his study revealed that cash flows have

stronger relevant relation to stock price compared to earnings.

Martani, Mulyono, and Khairurizka (2009) examined the value relevance of accounting information in explaining stock return. The study used six accounting indicators which included cash flows from operating activities. Result of the study revealed that cash flows from operating activities had a positive significant impact on stock returns.

*Cash dividend per share.* Philippine Accounting Standards (PAS) 1, Presentation of Financial Statements requires firm to disclose, either on the face of the Income Statement or the Statement of Changes in Equity, or in the notes, the amount of dividends recognized as distributions to equity holders during the period, and the related amount per share. Compliance by firms of this requirement will help investors compute the dividend earned by their single common share by referring to the firm's income statement, statement of changes in equity, and notes to accompany financial statements.

Dividend per share was the third financial variable used by O'Hara et al. (2000). Their study concluded that although cash flows per share and dividends per share are closely related, in that dividends are paid from a company's cash flow resources, dividends per share did not appear to be as predictive of share performance, nor did the combination of cash flows with dividends.

Lee Chin and Weng Hong Lee (2008) used dividend yield as predictor of stock return. They concluded that dividend yield was able to predict share return in the Malaysian stock market.

Urooj and Zafar (2008) found overall positive returns in the 21-day event window after the announcement of positive dividends and negative returns after the announcement of negative dividends.

*Inflation rate.* Inflation rate is an economic variable computed from the Consumer Price Index (CPI) and reported as a percentage on a monthly basis by the Bangko Sentral ng Pilipinas. It measures changes in prices of goods and services to consumers. Furthermore, it is an important

figure because it signals the economic health of a nation. A rise, for example, in the inflation rate might require the Bangko Sentral ng Pilipinas to exercise its power of intervention to prevent inflation from getting out of hand. Studying the impact of macroeconomic factor such as the rate of inflation on conditional share market volatility has important implications for investors and policymakers.

Kirativanich (2000) studied the stock markets of four Southeast Asian countries (Philippines, Singapore, Indonesia, and Thailand). She used macroeconomic variables two of which are inflation rate and interest rate in determining whether these variables affected the stock price of each country. Her findings revealed that inflation rate did not have a significant impact on the stock price of not only for the Philippines but for Singapore and Thailand as well.

Al-Khazali and Chong (2004) investigated the statistical relationship between stock prices and inflation in nine countries in the Pacific-Basin. Regression analysis on the nine markets showed negative relationships between stock returns in real terms and inflation in the short run, while cointegration tests on the same markets displayed positive relationship between the same variables over the long run.

Ali Shah, Mujtaba, Hassan, and Abdullah (2007) tested the efficiency of the Pakistani stock market in terms of the effect of inflation announcements on stock returns where the announcement has been categorized into good news, bad news, and no news. The result suggested that the announcements did not affect stock returns; thus, inflation rate did not have any impact on stock returns or prices. Khan, Ahmad, and Abbas (2011) investigated the impact of macroeconomic variables on stock returns which included inflation and T-bill interest rate. The results indicated that inflation rate had significant impact on stock returns in Pakistan.

Kyereboah-Coleman (2008) examined the effect of macroeconomic variables, one of which is the inflation rate, on the stock market performance of Ghana. The result revealed that inflation rate has a negative effect on the stock prices in Ghana.

Hasan and Javed (2009) explored the relationship between equity prices and monetary variables which included by inflation rate and interest rate. Results of their study revealed that inflation has little impact on returns in the equity market.

## Treasury bill rate (Short-term interest rate).

Alam and Uddin (2009) investigated the relationship between share price and interest rate. The changes of share price and changes of interest rate were determined through both time series and panel regressions. For all of the countries it was found that interest rate had significant negative relationship with share price and for six countries, it was found that changes of interest rate had significant negative relationship with changes in share price.

According to Benninga and Wiener (1998), interest rates and their dynamics provide the computationally difficult part of the modern financial theory because the present-day market includes not only bonds but all kinds of securities sensitive to interest rates. Interest rates are used in time discounting to price securities. Investor expectations regarding alternative opportunities depend on the interest rates as well. Thus, monetary policymakers and their advisers, like the Bangko Sentral ng Pilipinas, pay particular attention to interest rates.

In finance, the interest rate and its term structure is represented by the yield curve. Goodfriend (1998) used the yield curve to discuss how the U.S. Federal Reserve Board controls inflation through the interest rate increases and decreases of short-term and long-term government securities, that is, treasury bonds and treasury bills.

The study of Kirativanich (2000) on the stock markets of four Southeast Asian countries (Philippines, Singapore, Indonesia, and Thailand) also included interest rate as one of the macroeconomic variables. Her findings revealed that interest rate likewise did not have a significant impact on the stock price of not only for the Philippines but for Singapore and Thailand as well.

The study of Hasan and Javed (2009) mentioned under the inflation rate variable also included interest rate. The authors found out that interest rate had negative impact on equity returns in the Pakistani stock market.

Hussainey and Ngoc (2009) investigated the effects of two macroeconomic indicators, interest rate and industrial production on Vietnamese stock price. They found out that interest rate, whether long-term or short-term, had negative significant impact on stock price.

The result of the study of Khan et al. (2011) mentioned under the inflation rate on the impact of macroeconomic variables on stock returns, which included T-bill interest rate indicated that the said variable had significant impact on stock returns in Pakistan.

## **RESEARCH PROBLEM, OBJECTIVE, SIGNIFICANCE, AND SCOPE AND LIMITATIONS**

#### Problem

As stated earlier in the literature review, various studies geared towards predicting movement of stock prices or stock returns generated mixed results. While majority of the more recent articles confirmed the results of previous studies, still a number of research papers presented conclusions that seem to cast doubts on the accuracy of the results of earlier studies. Furthermore, some openly contradicted previous studies. In the realm of empirical research, this situation is considered normal although for investors, these may create confusion. In an attempt to bridge this gap, researchers continue to think of variables that may correlate with, and impact, stock prices. Thus, I expect to have more and more empirical studies on this topic in the coming years. Considering all these, this paper poses the following problem: What is the impact of earnings per share, cash dividend per share, cash flows per

share, inflation rate, and 3-month T-Bill rate on stock price of publicly listed Philippine banks from 2002 to 2010?

#### Objective

This paper seeks to determine whether the three accounting variables and two macroeconomic variables have significant impact on stock price.

## Significance

This study is hoped to benefit not only the investors and financial market analysts but also the professors and students in business, economics, and finance courses. This could also serve as guide for students in starting their undergraduate research papers with the use of appropriate statistical software that floods the market right now.

#### **Scope and limitations**

With the closure of Banco Filipino Savings and Mortgage Bank sometime in 2011, there are 15 publicly listed Philippine banks as of December 31, 2011. This study narrowed down to 10 its respondents, as presented in Table 1. The remaining five listed banks have been excluded for the following reasons:

- AsiaTrust Development Bank, Inc. prepares its financial statements as of June 30 of every year while the rest of the listed banks prepare theirs every December 31. Inclusion of AsiaTrust in this study will distort the uniformity of the data and violate the comparability requirement of generally accepted accounting principles.
- 2. Export and Industry Bank, which rose from the ruins of the old Urban Bank, started its operations only in 2005. This study used data from 2002 to 2008.
- 3. Philippine Bank of Communications, Philippine Trust Company, and Rizal Commercial Banking Corporation use

Ban	k	Code Name*
1.	Metropolitan Bank & Trust Company	MBT
2.	Banco de Oro Universal Bank, Inc.	BDO
3.	Bank of the Philippine Islands	BPI
4.	China Banking Corporation	CHIB
5.	Chinatrust (Phils.) Commercial Bank Corporation	CHTR
6.	Citystate Savings Bank, Inc.	CSB
7.	Philippine National Bank	PNB
8.	Philippine Savings Bank	PSB
9.	Security Bank Corporation	SECB
10.	Union Bank of the Philippines	UBP

## List of Publicly Listed Respondent Philippine Banks

\*Based on the code given by the Philippine Stock Exchange, Inc.

a different format for their Statement of Cash Flows. In order to make the data useful for this study, extensive recomputation and reconciliation are needed. In the process, material error might be committed in trying to reconcile the figures if new format is to be used.

## HYPOTHESIS AND METHODOLOGY

## Hypotheses

The research hypotheses of this study are presented as follows:

- Ha1: EPS, CDPS, and CFPS have positive significant impact on stock prices of the publicly listed banks from 2002 to 2008.
- Ha2: IR and BSP have negative significant impact on stock prices of the publicly listed banks from 2002 to 2008.

## Method of data collection

The figures on earnings per share, cash flows per share, and dividend per share used in this study were taken from the quarterly financial statements of the 10 publicly listed commercial banks from 2002 to 2008. The quarterly reports have been secured from the website of the Philippine Stock Exchange, Inc. The economic variables inflation rate and *BSP* 3-month treasury bill rate were obtained from the websites of the Bangko Sentral ng Pilipinas, Bureau of Treasury, and the National Census and Statistics Office. Specifically, earnings per share was obtained from the Income Statement, cash dividend per share from the Statement of Changes in Equity and the notes to accompany financial statements, and cash flows per share was computed from the relevant information presented in the Statement of Cash Flows.

On the other hand, share prices per quarter of each year from 2002 to 2007 were obtained directly from the Philippine Stock Exchange after payment of their usual fees. The quarterly share prices for 2008 were obtained from the back issues of *The Daily Inquirer* and *The Philippine Star* at the DLSU-Manila Library.

## Method of data analysis

This study made use of the data taken from the quarterly financial statements of 10 publicly listed Philippine commercial banks (Table 1) from 2002 to 2008 and came up with 280 observations. This number was adequate for a panel data. In order to capture the effect of the uniqueness of one particular bank from the rest, nine dummy variables were used to represent the nine out of the 10 banks considered. The remaining bank, Metro Bank, was made as the model or base bank.

The first step was to choose a model that would best fit the panel data. The fixed effects method (FEM) of panel data regression analysis was used in this study. Four models corresponding to the various assumptions under the FEM were tested and analyzed to determine the best-fit model. These models were (1) naïve, (2) Model 1, (3) Model 2, and (4) Model 3.

The naïve model assumes that the intercept is constant across time and across the 10 respondent banks. Model 1 assumes that the slope coefficient is constant but the intercept varies across banks. Model 2 assumes that the slope coefficient is constant but the intercept varies across time, while the last model assumes that the slope coefficient is constant but the intercept varies across time and across banks.

The next step in the analysis was to run the panel regression equation for each of the four models, after which the results were analyzed and were made to compete against each other. The F-test results were computed during the elimination process until only one model remained and finally considered to be the best-fit model. As a further test, the selected model was analyzed under the fixed effect and random effect method through the Hausman Test.

The final model was also subjected to the tests of multicollinearity, autocorrelation, and heteroscedasticity, after which the Newey-West HAC test was used to determine whether the OLS regression had overestimated or underestimated the standard errors.

# **RESULTS, DISCUSSION, CONCLUSION, AND RECOMMENDATION**

## Naïve model (Intercept is constant across time and across banks)

This model disregards time and space dimensions of the panel data in estimating the

ordinary least squares regression (Gujarati, 2003). The 28 observations for each bank are stacked one on top of the other for a total of 280 observations. The regression equation under this assumption is as follows:

$$\boldsymbol{Y}_{it} = \boldsymbol{\beta}_1 + \boldsymbol{\beta}_2 \boldsymbol{X}_{2it} + \boldsymbol{\beta}_3 \boldsymbol{X}_{3it} + \boldsymbol{\beta}_4 \boldsymbol{X}_{4it} + \boldsymbol{\beta}_5 \boldsymbol{X}_{5it} + \boldsymbol{\beta}_6 \boldsymbol{X}_{6it} + \boldsymbol{u}_{it}$$

where:

$$i = 1, 2, 3, \ldots, 10$$
 and  $t = 1, 2, 3, \ldots, 28$ 

Table 2 presents the regression result of the *Naïve Regression Model*.

The  $R^2$ , or the multiple regression coefficient of determination, which tells how "well" the population regression function (PRF) fits the data, is moderately high at 0.789044. This suggests that the naïve model is quite acceptable. Even the more stringent *Adjusted*  $R^2$  is also high at almost the same figure (0.785194), which suggests the same thing.

The Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) impose penalty for unnecessarily adding regressors to the model, whether inadvertent or deliberate. These two criteria were also considered, among others, to choose the best-fit model in addition to the various necessary tests employed in model selection. The model with the lowest computed values of AIC and SIC suggests the best-fit model.

Since this model assumes that all coefficients are constant across time and space, there might be autocorrelation. Therefore, due to the simplicity of this model, the panel regression might have distorted the true picture of the relationship between Y and the X's across the 10 banks. There is a need therefore to further account for the specific nature or "individuality" of each bank. The second assumption will allow this.

## Model 1 (Slope coefficient constant but the intercept varies across banks).

Under this assumption, the intercept for each bank is allowed to vary but still assumes that the slope coefficients are constant across banks

Dependent Variable: Y									
Method: Least Squares									
Date: 11/09/09 Time: 18	Date: 11/09/09 Time: 18:32								
Sample: 1 280									
Included observations: 280									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
DEPS	26.99614	0.928420	29.07752	0.0000					
CFPS	-0.690801	0.150989	-4.575172	0.0000					
CDPS	8.717416	1.844312	4.726649	0.0000					
IR	31.94005	213.8819	0.149335	0.8814					
BSP	-1003.188	429.6242	-2.335036	0.0203					
С	81.01847	23.68655	3.420442	0.0007					
R-squared	0.789044	Mean dependen	t var	96.57500					
Adjusted R-squared	0.785194	S.D. dependent	var	193.5663					
S.E. of regression	89.71245	Akaike info crit	11.85229						
Sum squared resid	2205241.	Schwarz criterio	11.93018						
Log likelihood	-1653.321	F-statistic	204.9696						
Durbin-Watson stat	1.369690	Prob(F-statistic) 0.000000							

### Regression Result for the Naïve Model

through the dummy variable technique, differential intercept dummies (Gujarati, 2003). The respondent banks have been assigned code names in accordance with the code names given by the Philippine Stock Exchange, Inc. Metropolitan Bank & Trust Company has been selected the bench mark bank with a code name of MBT. Nine bank dummies instead of 10 are introduced into the model to capture the individuality of each bank and to avoid falling into the dummy variable trap. Below is the regression equation for this model. The regression result is presented in Table 3.

$$Y_{it} = \alpha_1 + \alpha_2 \text{BDO}_t + \ldots + \alpha_{10} \text{UBP}_t + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + u_{it}$$

The high  $R^2$  of Model 1 suggests that this model is better-fit than the Naïve Model. Similarly, *Adjusted*  $R^2$  conveys the same idea. Both AIC and SIC are lower than that of the Naïve which further strengthens the idea that Model 1 is superior than Naïve. On the other hand, the *Durbin-Watson d statistic* of Model 1 was lower than Naïve (0.844267 for Model 1 and 1.369690 for Naive), which suggests possible autocorrelation between two or more disturbance terms of Model 1.

## Model 2 (Slope coefficients constant but the intercept varies across time)

The intercept is allowed to shift over time to account for significant events or factors that happened during a particular period like governmental regulatory policies, tax policies, economic factors, and external events that might have an impact on the banking system during the period under review. This model still assumes that the slope coefficients are constant across firms. This is done through the introduction of three time dummies this time. The fourth quarter (Q4) has

## **Regression Result for Model 1**

Dependent Variable: Y								
Method: Least Squares								
Date: 11/09/09 Time: 17:31								
Sample: 1 280								
Included observations: 280								
Variable	Coefficient	Std. Error	t-Statistic	Prob.				
DEPS	0.324610	0.839311	0.386758	0.6992				
CFPS	0.017748	0.066131	0.268384	0.7886				
CDPS	-1.665434	0.823699	-2.021896	0.0442				
IR	-135.9367	89.47311	-1.519303	0.1299				
BSP	-889.5558	179.5043	-4.955625	0.0000				
BDO	-4.090875	10.01758	-0.408370	0.6833				
BPI	15.33142	10.02646	1.529096	0.1274				
CHIB	628.4204	18.75255	33.51120	0.0000				
CHIT	-14.29107	10.01979	-1.426284	0.1550				
CITY	-17.91797	10.03062	-1.786327	0.0752				
PNB	-3.272858	10.02980	-0.326313	0.7444				
PSB	2.055737	10.01859	0.205192	0.8376				
SBC	0.537226	10.02332	0.053598	0.9573				
UBP	-4.688667	10.02087	-0.467890	0.6402				
С	92.66250	11.94178	7.759520	0.0000				
R-squared	0.964395	Mean depender	nt var	96.57500				
Adjusted R-squared	0.962514	S.D. dependent	t var	193.5663				
S.E. of regression	37.47685	Akaike info cri	terion	10.13741				
Sum squared resid	372196.3	Schwarz criterion 10.33213						
Log likelihood	-1404.237	F-statistic 512.7015						
Durbin-Watson stat	0.844267	Prob(F-statistic) 0.000000						

been selected as the base quarter and is excluded from the model regression to again avoid falling into the dummy variable trap. The regression equation for Model 2 is set forth below while the regression result is presented in Table 4:

$$Y_{it} = \lambda_0 + \lambda_1 Q 1_t + \lambda_2 Q 2_t + \lambda_3 Q 3_t + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + u_{it}$$

While the  $R^2$  (0.789633) of Model 2 is higher than Naïve's (0.789044), the *Adjusted*  $R^2$  (0.785194) of Naïve is higher than that of Model 2 (0.783423). Furthermore, both the *AIC* and *SIC* of Naïve (11.85229 and 11.93018, respectively) are lower compared with that for Model 2 (11.87092 and 11.98776, respectively). All of these information suggest that Naïve is better-fit than Model 2.

Dependent Variable: Y								
Method: Least Squares								
Date: 11/09/09 Time: 15:	58							
Sample: 1 280								
Included observations: 280								
VariableCoefficientStd. Errort-StatisticProb.								
DEPS	27.07104	0.939948	28.80058	0.0000				
CFPS	-0.697558	0.152748	-4.566733	0.0000				
CDPS	8.554825	1.888021	4.531107	0.0000				
IR	57.28354	216.8816	0.264124	0.7919				
BSP	-1061.077	437.2652	-2.426621	0.0159				
Q1	-2.225781	15.59398	-0.142733	0.8866				
Q2	-11.99693	15.65050	-0.766552	0.4440				
Q3	-8.583999	15.69309	-0.546992	0.5848				
С	88.42697	26.64355	3.318889	0.0010				
R-squared	0.789633	Mean depender	nt var	96.57500				
Adjusted R-squared	0.783423	S.D. dependent	var	193.5663				
S.E. of regression	90.08156	Akaike info criterion 11.87092						
Sum squared resid	2199080.	Schwarz criterion 11.98776						
Log likelihood	-1652.929	F-statistic 127.1532						
Durbin-Watson stat	1.367289	Prob(F-statistic) 0.000000						

#### **Regression Result for Model 2**

## Model 3 (Slope coefficients constant but the intercept varies across banks and time).

I test this model to take into account for both individual and time effects and use the following equation.

$$Y_{it} = \alpha_1 + \alpha_2 \text{BDO}_t + \ldots + \alpha_{10} \text{UBP}_t + \lambda_0 + \lambda_1 \text{Q1}_t + \lambda_2 \text{Q2}_t + \lambda_3 \text{Q3}_t + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + u_{it}$$

The regression of Model 3, the last model being considered, is run taking cognizance of dummies for both time and bank. Table 5 presents the regression result.

The high  $R^2$  and *Adjusted*  $R^2$  for Model 3 suggest that it is a good model, if not the best, for this study. The *Durbin-Watson d statistic* is low at 0.829035 which suggests possible autocorrelation in the residuals. The *AIC* and *SIC* values of Model 3 are lower than that of Naïve and Model 2 but more or less similar to Model 1. Of the four competing models, Model 1 and Model 3 showed their superiority over Naïve and Model 2.

#### Choosing the best-fit model out of the four competing models.

The *F Test* was used to compare the four models. This procedure can be generalized to models containing any number of explanatory variables and more than one linear equality restrictions. Hence,

## **Regression Result for Model 3**

Dependent Variable: Y									
Method: Least Squares									
Date: 11/07/09 Time: 13:	Date: 11/07/09 Time: 13:36								
Sample: 1 280									
Included observations: 280									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
DEPS	0.191922	0.847801	0.226376	0.8211					
CFPS	0.015307	0.066723	0.229412	0.8187					
CDPS	-1.562527	0.836648	-1.867604	0.0629					
IR	-143.2482	90.54210	-1.582117	0.1148					
BSP	-853.0236	182.2879	-4.679539	0.0000					
BDO	-4.126165	10.03265	-0.411274	0.6812					
BPI	15.25680	10.04178	1.519333	0.1299					
CHIB	630.3784	18.84582	33.44924	0.0000					
CHIT	-14.31511	10.03486	-1.426537	0.1549					
CITY	-17.99183	10.04582	-1.790977	0.0745					
PNB	-3.330126	10.04498	-0.331522	0.7405					
PSB	2.054287	10.03364	0.204740	0.8379					
SBC	0.573288	10.03844	0.057109	0.9545					
UBP	-4.659500	10.03595	-0.464281	0.6428					
Q1	4.672915	6.500619	0.718842	0.4729					
Q2	8.403849	6.546229	1.283769	0.2004					
Q3	0.593315	6.543939	0.090666	0.9278					
С	87.73650	12.95754	6.771079	0.0000					
R-squared	0.964693	Mean depende	ent var	96.57500					
Adjusted R-squared	0.962402	S.D. dependen	t var	193.5663					
S.E. of regression	37.53311	Akaike info cr	iterion	10.15045					
Sum squared resid	369088.5	Schwarz criter	ion	10.38412					
Log likelihood	-1403.063	F-statistic	F-statistic 421.0897						
Durbin-Watson stat	0.829035	Prob(F-statistic) 0.000000							

under this approach the unrestricted and restricted least-squares regressions can be compared (Gujarati, 2003). To accomplish the comparison, the following pairings were made and the F-value of each pair was computed:

- 1. Naïve versus Model 1 (where Naïve is restricted and Model 1 is unrestricted )
- 2. Naïve versus Model 2 (where Naïve is restricted and Model 2 is unrestricted)
- 3. Naïve versus Model 3 (where Naïve is restricted and Model 3 is unrestricted)
- 4. Model 1 versus Model 3 (where Model 1 is restricted and Model 3 is unrestricted)

51

F = 108.62

MENAJE, P. M.

The formula to compute the *F*-value is as follows:

$$\mathbf{F} = \frac{\left(R_{UR}^2 - R_R^2\right)/m}{\left(1 - R_{UR}^2\right)/(n - k)}$$

The computed *F*-value for each pair was compared with the critical *F*-value  $F\alpha(m, df_{UR})$ , and finally analyzed against the null hypothesis which is  $H_0$ : Restriction is valid. The decision rule is: If the computed F exceeds  $F_\alpha(m, n-k)$ , where  $F_\alpha(m, n-k)$  is the critical F at the  $\alpha$  level of significance, I reject the null hypothesis; otherwise I do not reject it.

#### Naïve versus Model 1

$$\mathbf{F} = \frac{(0.964395 - 0.789044)/9}{(1 - 0.964395)/(208 - 15)}$$
$$\mathbf{F} = 145.011$$

From Appendix D, Table D-3 of *Basic Econometrics* by Gujarati (2003), the critical value of F at  $F_{\alpha}$  (9, 265) is 1.93. Since the computed F value exceeded the critical F-value at 0.05 level of significance, the null hypothesis that the restriction is valid was rejected. Thus, the *Naïve* model was rejected and *Model 1* was accepted as the better-fit model.

#### Naïve versus Model 2

$$\mathbf{F} = \frac{(0.789633 - 0.789044)/3}{(1 - 0.789633)/(208 - 15)}$$
$$\mathbf{F} = 0.25292$$

From Appendix D, Table D-3, the critical value of *F* at  $F_{\alpha}$  (3, 271) is 2.65. Since the computed *F* value was less than the critical F-value at 0.05 level of significance, the null hypothesis that the restriction is valid was rejected. Thus, I rejected Model 2 (the unrestricted model) and accepted the Naïve model (the restricted model) as the better-fit model. Naïve Model versus Model 3

$$\mathbf{F} = \frac{(0.964693 - 0.789044)/12}{(1 - 0.964693)/(208 - 18)}$$
$$\mathbf{F} = 108.62$$

From Appendix D, Table D-3, the critical value of F at  $F_{\alpha}$  (12, 262) is 1.80. Since the computed F value exceeded the critical F-value at 0.05 level of significance, I rejected the null hypothesis that the restriction is valid. Thus, I rejected the *Naïve* model and accepted *Model 3* as the better-fit model.

*Model 1 versus Model 3.* Based on previous computations and by the process of elimination, Model 1 and Model 3 proved to be the superior models. One of these two models, however, had to be rejected. Thus, Model 1 was pitted against Model 3, with Model 1 designated as the restricted model.

$$\mathbf{F} = \frac{(0.964693 - 0.964395)/3}{(1 - 0.964693)/(208 - 18)}$$
$$\mathbf{F} = 0.73709$$

From Appendix D, Table D-3, the critical value of F at  $F_{\alpha}$  (3, 262) is 2.65. Since the computed F value was less than the critical F-value at 0.05 level of significance, I accepted the null hypothesis that the restriction is valid. Thus, I rejected *Model 3*, the unrestricted model, and accepted *Model 1*, the restricted model, as the better-fit model.

Table 6 below summarizes the computed F values for all the competing models against their respective critical values at the chosen 5% level of significance and the corresponding decisions.

Before Model 1 under the Fixed Effect Method was finally accepted as the best-fit model for this study, it was compared against the Random Effect Model (REM) or the error components model (ECM). This alternative approach assumes that the 10 banks are a random drawing from a

Summary	of F-Values
•	

Model Pairing	Computed	Critical	Decision
Naïve vs. Model 1	145.011	1.93	Accept Model 1
Naïve vs. Model 2	0.2592	2.65	Accept Naive
Naïve vs. Model 3	108.62	1.80	Accept Model 3
Model 1 vs. Model 3	0.73709	2.65	Accept Model 1

population of such companies (in this case 16 banks) and that they have a common mean value for the intercept ( $\beta_1$ ) and the individual differences in the intercept values of each bank are reflected in the error term  $\varepsilon_r$ . Thus, I obtained a *regression function* under the REM as follows:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \varepsilon_i + u_{it}$$

or

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + W_{it}$$

where

$$W_{it} = \varepsilon_i + u_{it}$$

#### Fixed effect method of Model 1 versus random effect method.

Using a statistical software, the panel regression result under the fixed effect method of Model 1 is as follows:

```
_____
    log: C:\Documents and Settings\IMS\Desktop\thesis.log
 log type: text
opened on: 17 Nov 2009, 13:59:29
. edit
(8 vears, 280 obs pasted into editor)
- preserve
. tsset bank qtr
    panel variable: bank, 1 to 10
    time variable: qtr, 1 to 28
. xi: reg stockprice deps cfps cdps ir bsp i.bank
           Ibank 1-10 (naturally coded; Ibank 1 omitted)
i.bank
Source | SS df MS
                                   Number of obs = 280
                                   F(14, 265) = 512.63
                                  Prob > F = 0.0000
R-squared = 0.9644
  Model | 10081303.2 14 720093.084
Residual | 372246.871 265 1404.70517
_____
                                   Adj R-squared = 0.9625
    Total | 10453550 279 37467.9213 Root MSE = 37.479
_____
            Coef. Std. Err. t P>|t|
                                     [95% Conf. Interval]
 stockprice |
_____+
```

de	eps	.3241061	.8393648	0.39	0.700	-1.328567	1.976779
cf	ps	.0177294	.066135	0.27	0.789	1124876	.1479463
cc	lps	-1.664768	.8237484	-2.02	0.044	-3.286693	0428432
	ir	-135.9449	89.48435	-1.52	0.130	-312.1356	40.24591
k	sp	-888.9917	179.5341	-4.95	0.000	-1242.487	-535.4969
Ibank	2	-4.091035	10.01826	-0.41	0.683	-23.81655	15.63448
	3	15.33099	10.02714	1.53	0.127	-4.412013	35.07399
	4	628.4268	18.7538	33.51	0.000	591.5014	665.3522
		-14.29113	10.02047	-1.43	0.155	-34.02101	5.438744
	- 6	-17.91823	10.0313	-1.79	0.075	-37.66943	1.832968
	. 7	-3.273027	10.03048	-0.33	0.744	-23.02261	16.47655
	. 8	2.05568	10.01927	0.21	0.838	-17.67182	21.78318
	. 9	.5373232	10.024	0.05	0.957	-19.19949	20.27414
 Ibank	10	-4.688592	10.02155	-0.47	0.640	-24.42059	15.0434
cc	ns	92.63086	11.9424	7.76	0.000	69.1168	116.1449

. est store fixed

. xtreg stockprice deps cfps cdps ir bsp, re

Using the same statistical software, the panel regression result under the Random Effect Method (or ECM) is as follows:

Random-effects	s GLS regressi	on		Number o	of obs	=	280
Group variable	e (i): bank			Number o	of group	)s =	10
R-sq: within	= 0.0061			Obs per	group:	min =	28
between	n = 0.9972					avg =	28.0
overall	= 0.7887					max =	28
Random effects u_i ~ Gaussian Wald chi2(5) =							418.87
corr(u_i, X)	= 0 (ass	sumed)		Prob > d	chi2	=	0.0000
stockprice	Coef.	Std. Err.	Z	P> z	[95%	Conf.	Interval]
deps	21.66958	1.113975	19.45	0.000	19.48	8623	23.85293
cfps	5488544	.1388754	-3.95	0.000	8210	452	2766636
cdps	6.621397	1.704194	3.89	0.000	3.281	238	9.961556
ir	-1.416245	194.8193	-0.01	0.994	-383.	255	380.4225
bsp	-980.1119	391.2526	-2.51	0.012	-1746.	953	-213.271
_cons	95.34941	22.40686	4.26	0.000	51.43	3277	139.266
sigma u	8.3473729						
sigma e	37.479397						
rho	.04725949	(fraction	of varia	nce due t	to u_i)		

We use the Hausman Test to determine which of the two models, Model 1 under FEM or REM, is more appropriate for our purpose. I obtain the following result of the comparison.

. hausman random fixed

	Coeffic	ients		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	random	fixed	Difference	S.E.
+				
deps	21.66958	.3241061	21.34548	.7323981
cfps	5488544	.0177294	5665837	.1221169
cdps	6.621397	-1.664768	8.286165	1.491883
ir	-1.416245	-135.9449	134.5286	173.0523
bsp	-980.1119	-888.9917	-91.12016	347.6292
B =	k inconsistent v	) = consistent Inder Ha, effici	under Ho and Ha ent under Ho; c	; obtained from treg btained from egress
Test: Ho:	difference i	n coefficients	not systematic	
	chi2(5) = = Prob>chi2 =	(b-B)'[(V_b-V_ 1065.77 0.0000	B)^(-1)](b-B)	

The null hypothesis underlying the Hausman Test is that the FEM and REM (or ECM) estimators do not differ substantially. If the null hypothesis is rejected, the conclusion is that the REM (or ECM) is not appropriate because the random effects are probably correlated with one or more regressors. In this case, FEM is preferred to REM (Gujarati & Porter, 2009).

Based on the generated results as presented above, the Hausman Test clearly rejects the null hypothesis, for the estimated  $\chi^2$  value for 5 df is highly significant; if the null hypothesis were true, the probability of obtaining a chi-square value of as much as 1065.77 or greater would be practically zero. Consequently, I reject Model 1 under REM (or ECM) and accepted *Model 1 under FEM*.

**Test for Multicollinearity.** This test is made to determine if any one regressor is correlated to one or more of the other regressors. The Variance-Inflation Factor (VIF) is used to determine the presence or absence of multicollinearity among regressors. As a rule of thumb, if the VIF of a variable exceeds 10, that variable is said to be highly collinear. Table 7 summarizes the result of the VIF test.

#### Table 7

Table of Variance-Inflation Factor

Variable	VIF
CHIB	6.31
EPS	5.24
CSB	1.81
PNB	1.80
BPI	1.80
SECB	1.80
UBP	1.80
CHTR	1.80
PSB	1.80
BDO	1.80
CDPS	1.55
CFPS	1.39
IR	1.10
BSP	1.10
Mean VIF	2.22

The mean VIF of 2.22 is lower than 10, which means that there is no multicollinearity among the regressors. The VIF of each parameter, as well as for each bank, is also low thus affirming the absence of multicollinearity.

**Test for autocorrelation.** As defined by Gujarati and Porter (2009), the term autocorrelation is "correlation between members of series of observations ordered in time (serial autocorrelation in time series data) or space (spatial autocorrelation in cross-sectional data)" (p. 413). As with heteroscedasticity, there are many tests to detect autocorrelation. Once again, this study opted to do away with the various tests but just assumed there was autocorrelation and proceeded to apply measure to remedy it using the Newey-West method.

**Test for heteroscedasticity.** Heteroscedasticity is a situation, very common in cross-sectional data, where the disturbance term,  $u_1$ , is not constant. According to Gujarati and Porter (2009):

... in cross-sectional data involving heterogeneous units, heteroscedasticity may be the rule rather than the exception. Thus, in a cross-sectional analysis involving the investment expenditure in relation to sales, rate of interest, etc., heteroscedasticity is generally expected if small-, medium-, and large-size firms are sampled together. (p. 376)

Many authors recommend formal tests to detect heteroscedasticity. These tests, however, are more appropriate in examining the OLS residuals,  $\hat{u}_i$ (for samples), rather than the disturbances,  $u_i$  (for population). I opted to do away with the various tests but just assumed there is heteroscedasticity and proceeded to apply the "cure". The usual method to remedy heteroscedasticity is through the use of White's heteroscedasticity-corrected standard errors known as robust standard errors. This study used the Newey-West method to correct any heteroscedasticity.

The Newey-West method. This method is an extension of White's Test for heteroscedasticity

and may be used to simultaneously correct heteroscedasticity and autocorrelation. The decision to choose Newey-West Method rather than the White's Test is based on the opinion of Gujarati and Porter (2009) which says:

It is important to point out that the Newey-West procedure is strictly speaking valid in large samples and may not be appropriate in small samples. Therefore if a sample is reasonably large, one should use the Newey-West procedure to correct OLS standard errors not only in situations of autocorrelation only but also in cases of heteroscedasticity, for the HAC method can handle both, unlike the White method, which was designed specifically for heteroscedasticity. (p. 448)

The corrected OLS regression output under the Newey-West Method in Table 8 below reveals that the previous OLS without the correction underestimated the true standard errors.

Of the five independent variables, only the 3-month treasury bill rate (BSP) has a negative significant *p*-value of 0.0003 while the rest of the regressors were not significant at all. Of the dummy variables, Bank 3,4,5, and 6 possess significant qualitative factors that contributed to the adjusted coefficient of determination ( $R^2$ ) of about 96% (0.962514).

## CONCLUSION

## **BSP (3-month Treasury Bill)**

Based on the statistical results, 3-month Treasury Bill rate had a significant p-value of 0.0003 with a negative coefficient of 889.5558. This meant that BSP (treasury bill) had a negative impact on share price so that when interest rate goes up, stock price is anticipated to go down.

The interest rate has a wide and varied impact upon the economy. When it is raised, the general effect is to lessen the amount of money

Included observations: 280						
Newey-West HAC Standa	rd Errors & Covaria	ance (lag truncation	n=5)			
Variable	Coefficient	Std. Error	t-Statistic	Prob.		
EPS	0.324610	3.220373	0.100799	0.9198		
CFPS	0.017748	0.112677	0.157515	0.8750		
CDPS	-1.665434	1.339417	-1.243403	0.2148		
IR	-135.9367	153.8349	-0.883653	0.3777		
BSP	-889.5558	240.0991	-3.704952	0.0003		
BDO	-4.090875	4.803386	-0.851665	0.3952		
BPI	15.33142	4.462623	3.435518	0.0007		
CHIB	628.4204	90.61196	6.935292	0.0000		
CHTR	-14.29107	3.734987	-3.826271	0.0002		
CSB	-17.91797	5.128114	-3.494067	0.0006		
PNB	-3.272858	4.376871	-0.747762	0.4553		
PSB	2.055737	4.057018	0.506711	0.6128		
SECB	0.537226	7.917777	0.067851	0.9460		
UBP	-4.688667	4.644592	-1.009490	0.3137		
С	92.66250	18.64198	4.970637	0.0000		
R-squared	0.964395	Mean depender	nt var	96.57500		
Adjusted R-squared	0.962514	S.D. dependent	t var	193.5663		
S.E. of regression	37.47685	Akaike info criterion		10.13741		
Sum squared resid	372196.3	Schwarz criteri	on	10.33213		
Log likelihood	-1404.237	F-statistic 512		512.7015		
Durbin-Watson stat	0.844267	Prob(F-statistic) 0.000000				

### **OLS Regression under Newey-West (HAC)**

in circulation, which works to keep inflation low. It also makes borrowing money more expensive so that how consumers and businesses spend their money is also affected to a certain extent. The increase in interest rates also results in increased expenses for companies with debts to pay and consequently lowers earnings. Finally, increase in interest rate tends to make the stock market a slightly less attractive place to invest because investors will now turn to the "risk free" T-Bill of the Bangko Sentral ng Pilipinas where they will get higher returns at no risk at all. This shift in investor behavior will have the effect of decreasing stock prices.

Interest rate is not the only determinant of stock prices and there are many considerations that go into stock prices and the general trend of the market. Change in interest rate is only one of them. Therefore, one can never say with confidence that an interest rate hike by the government will have an overall negative effect on stock prices.

This study was able to confirm a priori expectation as well as previous studies that the government short-term interest rate has a negative impact on stock price.

# Earnings per share, cash dividend per share, cash flows per share

These three accounting variables are closely related with each other in the sense that when the firm is profitable, as indicated by consistent increases in its earnings per share, cash dividends are more probable to be declared but subject to the condition that there is enough cash to be paid to the shareholders. When a firm is liquid which means that it has "free-flowing" cash to meet short- and long-term obligations as they fall due, investors develop more confidence in the firm and will look forward to receiving their quarterly or annual cash dividends. Therefore, EPS, CDPS, and CFPS indicators are expected to significantly impact stock price in a positive way.

EPS is expected to significantly impact stock price in a positive way which means that when the firm is profitable, investors will want to buy its shares of stock thereby increasing demand for that particular shares of stock, resulting in stock price increase. This study was not able to confirm this expectation. One reason could be the short 7-year period covered by this study. This study did not impose the same strict limitation on the three accounting variables but rather followed a more liberal approach by allowing EPS, CFPS, and CDPS to fluctuate between quarter periods. The study by O'Hara et al. (2000) covered 17 years with one very stringent condition-that a firm will only be included in their study if the EPS of that firm has consistently increased for 16 years and allowed only to decrease or remain constant for one year. It is possible that if I lengthen the period of my study, a probable positively significant EPS may be obtained. This was the findings of Chang et al. (2008) which I quote:

cointegration relationship existed between stock prices and EPS in the longrun. Furthermore, we found that for the firm with a high level of growth rate, EPS has less power in explaining the stock prices; however, for the firm with a low level of growth rate, EPS has a strong impact in stock prices. (p. 1)

The high adjusted coefficient of determination of 96% may probably be due to the unique qualitative factors of some banks that the model was able to capture rather than to the three accounting variables. Four of the 10 bank dummies registered significant p-values. I may assume that Filipino investors in general do not give much weight to the amount of net income per share of banks as represented by their EPS as long as the bank of their choice is earning. It was noted from the panel data that stock prices of most of the banks increased even if their earnings per share decreased.

CDPS is expected to significantly impact stock price positively. This study came out with insignificant p-value 0.2148 and negative coefficient of 1.665434. Cash dividend per share was not a significant predictor of stock price for the period under review. Normally, when firms regularly declare cash dividends, they give the impression to their shareholders and prospective investors that they are profitable, liquid, and solvent at the same time. These favorable financial indicators would normally attract investors. Based on the regression result, it is assumed that CDPS has no significant contribution to the high adjusted R2. It is worth mentioning that PNB is the only bank in the group that did not declare any cash dividend since 2002. Its stock price, however, continue to increase.

Of the three accounting indicators, cash flows per share is relatively new as a predictor of stock price. O'Hara et al. (2000) stated in their study that consistent increase in cash flows per share for 16 years with one year decrease or constant may render CFPS as a significant predictor of stock price. In my study, cash flows per share was not restricted but allowed to fluctuate between positive and negative values every quarter. This could be the reason why CFPS came out a weak predictor of stock price. The prevailing general observation and criticism about CFPS is the fact that it can fluctuate from negative to positive figures so that an analyst cannot obtain a pattern of stable behavior, making it a weak indicator of stock price.

#### **Inflation rate**

Inflation rate is expected to have a negative and significant impact on stock price. This is quite true in purely time series data but not in cross-sectional data. Inflation varies with time but invariant across space. With panel data, inflation may or may not be significant but usually inflation is negatively correlated with stock price. This study confirmed the results of past studies that inflation has a negative or no impact on stock price. Kirativanich (2000) concluded that inflation rate has no impact on stock price, Hassan and Javed (2009) stated that inflation rate has little impact on stock price, while Kyereboah-Coleman (2008) found out that inflation rate has negative impact on stock price.

Panel data analysis has gained momentum over the last decade. The method of combining time series and cross-section observations allows the analyst to obtain more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency (Baltagi, 2005). Panel data may employ the use of dummy variables or qualitative variables (Gujarati & Porter, 2009) in order to capture the latent uniqueness of a particular entity. Normally, a benchmark entity is selected against which the rest of the cross-section individuals are compared. The analysis is made by taking note of any significant dummy variable. The researcher seeks to find out what makes a particular entity unique from the rest. For banks, unique characteristics may refer to the quality of service offered to the public, the vision/mission of the firm, corporate culture, physical facilities, the firm's corporate attitude towards environmental protection, reputation built over the years, composition of the board of directors, and so forth. The list is almost anything that we can think of.

This study obtained significant p-values of dummy variables for the following banks:

Bank of the Philippines Islands, China Banking Corporation, Chinatrust (Phils.) Commercial Bank Corporation, and Citystate Savings Bank, Inc. This study presents the following bank qualities that make them stand out from the other banks, with Metropolitan Bank and Trust Company as the bench mark.

Bank of the Philippine Islands has been known for its conservative banking policies and is the oldest commercial universal bank in the Philippines. It is owned by a philanthropistmillionaire who exercises excellent management style that enabled the bank to remain solvent and competitive throughout the years. Investors consider Bank of Philippine Island as one of the most stable and generous banks.

China Banking Corporation is the favorite bank of the Filipino-Chinese community and has been cited for the fifth time as most outstanding commercial bank in 2008. Of the 10 listed banks, it is China Bank that has the highest amount of par value per share. This fact might also have contributed to its uniqueness which the model was able to capture.

Chinatrust (Phils.) Commercial Bank Corporation is a subsidiary of the biggest privately-owned commercial bank based in Taiwan. It has become the most awarded financial institution in the said Asian country and among the world's top 200 in terms of capital.

Citystate Savings Bank is one of the three savings banks whose shares are publicly listed. Being a savings bank, it does not boast of bigness but its strength and attractiveness lie in its stability through its deposit base—mostly savings deposit. As is known, savings deposit is less costly than time deposit and the least volatile of the three usual types of bank deposit.

BDO, PNB, PSB, Security Bank, and Union Bank have many things in common with Metro Bank, the benchmark bank; hence, they are not unique enough for the model to account for.

#### Recommendations

For investors, market analysts, and those in the academe (professors and students), I recommend the continued use of earnings per share as a predictor of share price. Most of the previous studies found EPS to have a positively significant correlation with share price. However, more research works under various situations and conditions should be conducted involving cash flows per share and dividend per share in relation to share price before these variables can be considered as regular predictors of share price along with EPS.

Other variables like solvency ratio, liquidity ratio, interest rate, inflation rate, volume of share transactions, and categorical variables like firm size (Martani et al., 2009) nature of business, and so forth should be tried as well. Any combination of these variables may be made to compete against each other to determine the best-fit model. Behavioral Finance and the Mosaic Theory both affirm that investors, on their own, normally seek information in addition to the long-established and widely accepted determinants of share price and use these data to arrive at a good investment decision.

For the more experienced investors and market analysts, they may apply the residual income model and Bayesian statistics in predicting share price (Higgins & Lu, 2009).

In the Philippines, where long-established relationships, loyalties, and sentiments play significant role in almost any endeavor, investors often give more weight to qualitative rather than to quantitative factors. The following additional recommendations are offered.

1. Future researches on this topic should cover a longer period and increase the number of respondents if the researcher intends to use panel or pooled data. The respondents may be homogeneous like all publicly listed banks in the Philippines, or heterogeneous, as in the case of selected top 500 corporations in the Philippines ranked accordingly in terms of total assets, total generated revenues, net income, or some other groupings that suits the intention of the researcher. Instead of share price, researcher may use stock return as the dependent variable (Elleuch, 2009). This may prove more beneficial to investors who might be interested to know which direction share price would go and by what percentage. In other words, the focus of the study would be the change in share price rather than share price itself.

- 2. If quarterly financial statements are to be used in the research involving share price, great care should be taken because these data are not audited yet. They may contain some errors that might significantly affect the results of the study. On the other hand, if annual reports are used, a longer period of time might be needed. The obvious disadvantage is the inability of the data to capture short-term fluctuations in share price. The benefit of an annual report, however, is that it is audited; thus, errors in reporting is minimized to a great extent, making the data more reliable.
- 3. For qualitative variables, dummies may be used to specifically capture unquantifiable factors like those that have already been mentioned earlier in this study. One study made use of a qualitative factor that was assigned a value making it an intangible asset. Fornel, Mithas, Morgeson, and Krishnan (2006) used customer satisfaction as the lone predictor variable of stock price. In concluding their study, the authors had this to say:

Though firms with highly satisfied customers usually generate positive abnormal returns, news about changes in customer satisfaction does not have an effect on stock prices. There seem to be imperfections with respect to the time it takes for stock markets to reward firms that do well by their customers and to punish firms that do not. In the wake of accounting scandals, the bursting of the stock market bubble, and the continued weakening of the relationship between balance sheet assets and future income, it would be in the interest of securities research to pay closer attention to customer satisfaction and the strength of customer relationships. For marketing managers, it is clear that the cost of managing customer relationships and the cash flows they produce is fundamental to value creation. (p. 11)

Smith and Harvey (2011) examined the changing nature of investor behavior. Their study supported Behavioral Finance's literature as to how investors make decisions. They also found out that investors rely more on past stock prices (a support of technical analysis) rather than the fundamental analysis. Economic factors were the predominant factors used in investment decisions.

- 4. Colleges and universities should provide students and faculty members alike with tools for extensive research endeavors like Gretl which is a powerful free statistical software that is available anytime from the internet.
- 5. In 2004, new approach on how to maximize returns on stock investing is now gaining momentum. This is called Intelligent Finance. Intelligent finance represents an emerging convergence of several distinct disciplines in financial market analysis whose objective is to integrate four components: financial market prediction, technical analysis and trading strategies, fundamental analysis and investing methodologies, and quantitative analysis and portfolio management, into a coherent framework for total return maximization with total risk under control. We can now look forward to seeing scholarly outputs in this new approach.

## REFERENCES

- Alam, M., & Uddin, G. (2009). Relationship between interest rate and stock price: Empirical evidence from developed and developing countries. *International Journal of Business* and Management, 4(3), 43-51.
- Al-Khazali, O. & Chong, S. (2004). Stock prices and inflation: New evidence from the Pacific-basin countries. *Review of Quantitative Finance and Accounting*, *22*, 123-140.
- Ali Shah, S.Z., Mujtaba, H., Hassan, A., & Abdullah, M.S. (2007). Impact of macroeconomic announcements on the stock prices: An empirical study on the Pakistani stock market. *The Business Review*, *Cambridge*, 9(1), 281-288.
- Baltagi, B. (2005). Econometric Theory. USA: John Wiley & sions, Inc.
- Benninga, S. & Wiener, Z. (1998). Term Structure of Interest Rates. *Mathematica in Education and Research*, 7(2), 1-9.
- Bolster, P.J., & Trahan, E. A. (2009). Investing in mad money: Price and style effects. Retrieved from http://www.npr.org/blogs/ globalpoolofmoney/images/2009/05/bolster. pdf.
- Bouwman, M. & Frishkoff, P. & Frishkoff, P.A. (1995). The relevance of GAAP-based information: A case study exploring some uses and limitations. *Accounting Horizons*, 9(4), 22-47.
- Chang, H., Cheng, Y., Su, C. (2008). The relationship between stock price and EPS: Evidence based on Taiwan panel data. *Economics Bulletin*, 3(30), 1-12.
- Chin, L., & Lee, W. H. (2008). Can financial ratios predict the Malaysian stock return? *Integration and Dissemination*, 2, 7-8.
- Claassen, B. (2005). Determinants of stock price performance of sell-side recommendation changes. Michigan: University Microfilm International.
- Cowles, A. (1934). Can stock market forecasters forecast? Economoetrica, pp. 309-324.

- Elleuch, J. (2009). Fundamental analysis strategy and the prediction of stock returns. *International Research Journal of Finance and Economics*,(30), 95-107.
- Fama, E. (1965). The behavior of stock-market prices. *The Journal of Business*, *38*(1), 34-105
- Fisher, P. (1958). Common Stocks and Uncommon Profits. Wiley Investment Chain (1997). USA: Wiley and Sons.
- Fornell, C., Mithas, S., Morgeson, F., & Krishnan, M. (2006). Customer satisfaction and stock prices: High returns, low risk. Journal of Marketing, 70, 3-14.
- Goodfriend, M. (2011). Central banking in the credit turmoil: An assessment of federal reserve practice. *Journal of Monetary Eocnomics*, 58(1), 1-12.
- Gujarati, D. (2003). *Basic econometrics* (4<sup>th</sup> ed.). New York: McGrawHill Publications.
- Gujarati, D., & Porter, C. (2009). *Basic* econometrics (5<sup>th</sup> ed.). New York: McGrawHill Publications.
- Hamilton, W.P. (1922). The Stock Market Baromoter: A study of its forecast value based on Charles H. Dow's Theory of the Price Movement. Barrons, New York.
- Hasan A. & Javed, T. (2009). An empirical investigation of the causal relationship among monetary variables and equity market returns. *The Lahore Journal of Economics*, *14*(1), 115-137.
- Higgins, H. & Lu, Q. (2009). Predicting stock price by applying the residual income model and Bayesian statistics. *Advances in Quantitative Analysis of Finance and Accounting*,7, 71-94.
- Hussainey, K., & Ngoc, L. (2009). The impact of macroeconomic indicators on Vietnamese stock prices. *The Journal of Risk Finance*, *10*(4), 321-332.
- Jiang, B. (2009). An empirical study on information content of accounting earnings and cash flow. *Journal of Modern Accounting and Auditing*, 5(7), 44-48.
- Kennon, J. (2008). A real life example of the Philip Fisher Scuttlebutt Approach.

Retrieved from http://beginnersinvest.about. com/b/2008/08/10/a-real-life-example-of-thephilip-fisher-scuttlebutt-approach.htm.

- Khan, A., Ahmad, H., & Abbas, Z. (2011). Impact of macro-economic factors on stock prices. *Interdisciplinary Journal of Contemporary Research in Business*, 3(1), 472-483.
- Kirativanich, T. (2000). The effects of macroeconomic variables on the Southeast Asian stock markets: Indonesia, Malaysia, the Philippines, and Thailand. Michigan: Bell and Howell Information and Learning Company.
- Kyereboah-Coleman, A. (2008). Impact of macroeconomic indicators on stock market performance. *Journal of Risk Finance*, 9(4), 365-378.
- Lawrence, R. (1997). Using neural networks to forecast stock market price. Retrieved from http://sharesforcast.googlecode.com/svn-history/r77/nn.pdf.
- Leitner, Y. (2007). Stock prices and business investment. *Business Review, Q4*, 13-18.
- Martani, D., Mulyono, R.K.. (2009). The effect of financial ratios, firm size, and cash flow from operating activities in the interim report to the stock returns. *Chinese Business Review*, 8(6), 44-55.
- O'Hara, T., Lazdowski, C., Moldovean, C., & Samuelson, S. (2000). Financial indicators of stock performance. *American Business Review*, *18*(1), 90-100.
- Pan, H. (2003). A joint review of technical and quantitative analysis of financial markets towards a unified science of intelligent Finance. Retrieved from http://guerin.ballarat. edu.au/ard/itms/publications/researchPapers/ Papers\_2003/03-14.pdf.
- Philip Fisher The Scuttlebutt Approach (2012). Retrieved June 6, 2012 from http://www. stockwatch.com.au/articles/fundamentalanalysis/philip-fisher.aspx.
- Skousen, K., Stice, J., & Stice, E. (2007). *Intermediate accounting* (16<sup>th</sup> ed.). Ohio: Thomson South-Western.

- Smith, A., & Harvey, T. (2011). Test of a theory: An empirical examination of the changing nature of investor behaviour. *Journal of Management Policy and Practice*, 12(3), 49-68.
- Stone, K., & Niemeyer, R. (2005) Integrating earnings and cash flows per common share. *The Journal of Theoretical Accounting Research*, 1(1), 63-76.
- Subramanyan, K. (2007). Earnings, cash flows, and ex post intrinsic value of equity. *The Accounting Review*, vol. 82 (issue 1), 457-481.
- Tucker, J. (2007). Is openness penalized? Stock returns around earnings warnings. *The Accounting Review*, 82 (4), 1055-1087Urooj, S., & Zafar, N. (2008) Share price reaction to dividend announcements. *The Business Review, Cambridge*, 10(1), 322-329
- Valix, C., & Peralta, J. (Eds.). (2009). *Financial accounting* (Vol. 2). Manila: GIC Enterprises & Co., Inc.