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The Effect of Financial Ratios and Market Hype on Short Term Stock Prices

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This paper considers possible sources of short term changes in stock price. By predicting these changes, analysts can learn about the forces that drive the stock market enabling investors to earn greater returns. Studies conducted throughout the twentieth century have provided a conclusive basis for stock market analysis. The concept behind these studies is the use of intrinsic ratios to determine a change in stock price. Unfortunately, few studies have produced truly relevant results. This failure led to the introduction of a new variable into stock market analysis: hype. Hype consists of non-market factors that can affect the price of a stock. This paper makes use of financial ratios and market hype to predict changes in stock price. More specifically, this paper uses the dividend payout ratio, operating cash flow per share, earnings per share, equity per share, and analyst upgrades as indicators of changes in stock price. All of the variables are taken from the quarter immediately prior to the quarter over which the stock price was measured. Those various data are then broken down by industry in an attempt to determine how the ratios affect particular industry sectors. The results show that investors rely primarily on prior earnings information about a company when making their current period investment decisions. Furthermore, retail and restaurant stocks tend to under perform the market as a whole while hype has a significantly positive effect on the financial service and communications sectors. With these significant results, much can be learned about the predictive nature of financial ratios and market hype.

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I. Introduction

Investment in financial securities is an important aspect of the American economy. Each day, 1.46 billion shares of stock are traded on the New York Stock Exchange. The average daily value of shares traded is roughly $46.1 billion (NYSE 2005). People depend on securities markets for their jobs, their livelihoods, and their retirements. For some households, the only source of income lies with returns from financial securities. Because these instruments are so important, they are studied on a regular basis.

Each day, people decide to take risks by entering the securities market. Some investors rely on public information to choose which securities they should buy; others use sophisticated models that they hope will give them a money-making edge in this strictly competitive market. Using their models, these investors continually evaluate securities and the companies they represent. With these strategies, some people become rich; many more lose their investments. "About two-thirds of all active investors will under perform index funds every year" (Taylor 2002). Many of these investors' stock portfolio choices will perform more poorly, as a whole, than a market basket, or selection of stock from across the market. Obviously, the low success rate in financial markets indicates it is quite difficult to find a robust model for making financial predictions. In fact, many financial analysts say that the stock market is an efficient mechanism. This idea, commonly known as the efficient market hypothesis, says that there are no windfall profits to be made in a financial market because all advantageous information will already be reflected in the price of a security.

Historically, there are few comparative tools for financial analysis. Companies vary in size, purpose, and industry. However, the field of accounting has provided financial ratios that have proved quite valuable in not only determining a company's relative performance; but also in predicting future performance. This paper will add to the previous literature by systematically relating financial ratios to short-term stock performance. In addition to financial ratios, I will consider factors such as market

signals and investor over exuberance, and if they truly affect the price of a particular stock. In this study I hope to succeed where others have failed. Using an OLS regression, I will attempt to find a robust model for the prediction of short term stock prices. In section II, I summarize previous literature on stock prices and financial ratios. I develop a theoretical model in section III and hypothesize about that model in section IV. Section V explicitly describes the equations that constitute my model and section VI describes the data I use. Finally, sections VII and VIII provide results and conclusions about my model.

II. Literature Review

For as long as people have been able to buy and sell financial securities, some have attempted to analyze the market in order to gain a competitive advantage over other investors. During the 1920s, financial ratios developed as a comparative tool for banks to assess the risk inherent in their short term lending. However, financial analysts soon learned that they could predict a company's success with the same ratios. Unfortunately, due to exogenous factors, financial ratios never developed into a robust general theory for predicting company success. In fact, their value has been somewhat lost in the literature. "Financial ratios have been somewhat taken for granted as an aspect of analysis that everyone knows how to use effectively" (Horrigan 1965). James Horrigan, in his landmark paper attempts to bring analysts back to their roots. He proves through an empirical study that ratios and the factors behind them play a significant role in the market over the long term (5 years or more). Horrigan recommends the use of indicator ratios such as the price-book and earnings per share values. While Horrigan predicts which ratios may be the most valuable to a model for predicting corporate success, he does not attempt to test his theories. He is satisfied with showing general trends in ratios over a given industry and how they relate to general trends in the overall market (Horrigan 1965). For example, he states that during the early 1960s a general trend was increasing earnings per share which mimicked the bullish market at this time (Horrigan 1965). While it is interesting, his research is inadequate because it only considers general trends rather than mathematically proving significance with regression analysis.

As time progressed, new prediction techniques appeared that attempted to forecast changes in stock price through the changes in information about a company. As the art of predicting stock price developed through the 1970s and 80s, professional investors began developing models that attempted to place a supposed market value on a particular stock. These models looked at past performance in order to predict the future price of a stock (Taylor 2004). As time went on, financial analysts developed more refined measurements of stock valuation. Several ratios reveal important information about a company's current financial situation. However, investors are not necessarily concerned with a company's financial situation unless they can profit from it. Therefore, investors rely on ratios that show a company can provide them with future returns. Historically, the most important of these are earnings per share and the dividend payout ratio.

Like James Horrigan, Jonathan Lewellan attempts to assess the merit of using financial ratios. Citing Horrigan's advice, Lewellan uses the price-book ratio extensively in his study attempting to predict stock prices over a long term. His model proved successful despite some statistical problems that resulted from correlation between his variables (Lewellan 2004). Obviously, as stock price, a dependent variable, increases, the price-book ratio will increase as well. Lewellan's study shows that ratios are still a valid tool for predicting stock prices in a more recent economic environment. After the Enron scandal and others like it, it is possible that investors are no longer using the same strategies in determining which stocks to buy or sell. Lewellan, himself, hypothesizes that other factors aside from traditional financial ratios, such as integrity and ethical values affect stock price. However, his study shows that even in an economy plagued by scandal, financial ratios are still good indicators of what a company's stock price will be in the future (Lewellan 2004).

Researchers and analysts such as H. Thomas O'Hara argue that certain ratios are fundamental to stock price. These ratios constitute a predictive model that can determine what future earnings should be. A modern analysis of predictive financial ratios would include the following:

Earnings per share (Net Income/Weighted Average Number of Shares Outstanding) is the benchmark ratio for financial analysis (Hake 2005). It gives a direct measure of how earnings are distributed over the average number of shares of a company's outstanding stock. The earnings per share figure is naturally included in an analytical valuation model if only as a control. Regardless, this ratio remains the most commonly used ratio by financial analysts, and as a matter of practicality, should be included in any predictive regression.

The payout ratio is examined by Robert D. Arnott in his article, "Surprise! Dividends Yield Greater Returns." Arnott's study finds future earnings tend to be greater when current dividend payout is greater. The **payout ratio** (Total Dividends/Net Income) is another subjective measure of financial success. Arnott tests payout ratios against earnings per share of stocks over 10 year periods between 1946 and 2001. Arnott finds there is a high correlation between increasing earnings per share and increasing payout ratios over this period of time. Obviously, as investors see a company tending to pay dividends; they will be more willing to invest in the company (Arnott 2003). Furthermore in her article, "Dividends are Back in Style," Lisa Gibbs claims that companies that pay dividends tend to continue the practice. According to Gibbs the payment of dividends means that the demand for that particular security will increase thus raising the price (Gibbs 2002).

The **cash flow per share ratio** (Operating Cash/Weighted Average Number of Shares Outstanding) is another important ratio in determining company's earnings. While this ratio does not relate to a company's earnings in the strictest sense, it does indeed give a picture of how much cash is flowing through the company during the course of a given year. If the business is operating properly, a high percentage of this cash will comprise earnings. Some modern day financial analysts give the cash flow per share ratio more bearing than earnings per share, because the earnings per share figure can be subject to manipulation, whether inadvertent or fraudulent. On the other had, it is almost impossible to fraudulently manipulate cash as it is a highly physical asset, and very easy to verify (Glassman 2005).

The combination of earnings per share, operating cash flow per share, and the dividend payout ratio is a fairly typical model that has proven significant. In 2000, H. Thomas O'Hara and several other authors built a successful model using these three ratios. The model considered a 5 year period. While my model considers a shorter time period, O'Hara's study provides evidence that my model shows promise.

While there are many more financial ratios examined in the literature, these few are the most relevant to a valuation model. They manage to capture a company's projected future earnings while having very little relation with each other. Many studies suffer from high multicolinearity because their ratios are composed of similar factors. For example, several authors would use both the cash and the current ratio in their studies which obviously creates problems when regressions are tested.

Aside from financial ratios, several authors suggest other market factors that may be responsible for increases and decreases in stock price. It is the combination of these extrinsic issues with the intrinsic issues such as valuation analysis that particularly concerns me. While ratios can reveal large amounts of information about a stock price, they cannot account for general upturns and downturns in the market or irrational hype about a particular stock. According to Robert A. Bennett, many CEOs are under pressure to hype their stocks rather than accept a lower stock price. In other words, CEOs are very willing to create investor exuberance about their stock through whatever means necessary. Because of certain compensatory measures, these CEOs have commonly falsely hyped their stock to raise the price rather than accept a period of lower earnings due to restructuring (Bennett 2001). Malkiel Burton conducted a study about the irrationality of investors in a market during the course of 2005. He found that there are not enough truly informed investors to drive a rational equilibrium in a stock price. The investors who improperly value the stock based on their mistaken assumptions will always control the price of a stock (Malkiel 2005). Similarly, other authors such as Goedhart and Koller suggest that financial bubbles are created as a result of over exuberance by irrational investors. Therefore, in my model I will consider the various factors that make up this hype.

It would be careless not to mention the other school of thought on the issue of stock price prediction. There is a large body of evidence in support of idea of an efficient market, including studies by Nobel laureate, Robert Merton. The efficient market hypothesis dictates that all information available to a market is already reflected in the price of a stock making it impossible to predict increases or decreases in stock price without insider information (Calio 2005). Should my model fail, this theory is certainly a possible explanation.

III. Theoretical Model

Conceptually, stock price has always been determined through trying to measure the present value of a stream of future earnings that a company may incur. The following general formula for the present value of a future earnings stream can be derived:

$$\text{PV (earnings stream)} = \sum_{t=1}^{n} \frac{E_t}{(1+r)^t}$$

In this model, the present value of a future earnings stream is given as the sum of the future earnings ($\sum_{t=1}^{n} E_t$) over a given time (t). These future earnings are discounted to yield present values at a going discount rate. In order to find the price for a single share of stock, it is necessary to divide the equation by the total number of shares. As the literature shows, there are more factors affecting a stock price than simply a future earnings steam. Because this paper is attempting to find a robust model, it is necessary to consider all aspects of a stock price. Unfortunately, these other factors that affect stock prices are not easily quantified. Therefore, I have a more complex equation that includes an element that I will entitle hype that will capture factors such as investor over exuberance or herding. This new variable is intended to capture any factor other than earnings that will positively or negatively affect stock price.

$$\textbf{Share Price}_t = [\sum_{t=1}^{n} \frac{E_t}{(1+r)^t} /(\#\ of\ shares)] + (\text{Hype})$$

Obviously, there is a direct relationship between share price and a company's earnings. A company's earnings, as a whole, are a function of that company's fundamental value. Changes in a company's fundamental value can be explained through changes in financial ratios.

Earnings per share (Net Income/Weighted Average Number of Shares Outstanding) is the benchmark ratio for stock price analysis. This figure represents the company's earnings distributed over the grand total of shareholders. In my model, I will specifically be using diluted earnings per share which treats all warrants and options as if they have already been exercised. This naturally increases the average number of shares outstanding; however it represents a more accurate total of the number of shareholders who could potentially benefit from the income. As investors see an increase in the earnings of each individual investor, the demand for that stock will increase. In this way, as a company's earnings per share increases, the stock price over that same period should also increase.

As described by Robert D. Arnott and Lisa Gibbs, the **payout ratio** (Total Dividends/Net Income) measures the proportion of a company's profits that get paid out to shareholders as dividends (Arnott 2003). Generally, having enough excess income to give a large portion of that income to shareholders as dividends means that a company is doing quite well. An increase in dividend payout will increase the demand for a stock and drive up the price because investors will see increased potential earnings.

The **cash flow per share ratio** (Operating Cash/Weighted Average Number of Shares Outstanding) is another indicator of increased earnings over the short term for a particular stock. As the literature dictates, this ratio gives a proxy of earnings that is less susceptible to fraud than simple earnings per share figure (Glassman 2004). Specifically, I will be using cash flow from operations which indicates cash flows from a company's core operations, the major source of income. Large inflows of operating cash indicate that the company is not only doing well in its primary line of business, but it is also converting many of its sales to cash. As cash flow increases, earnings should likewise increase, resulting in an increase in stock price.

The fourth and final value indicator ratio is **equity per share** (Assets-Liabilities/Weighted Average Number of Shares Outstanding). To a liquidation specialist, this ratio represents the residual value of a company. In liquidation, a company's debt holders are paid back with the liquidation proceeds before shareholders receive the residual. Equity (assets-liabilities) is the amount the current shareholders would receive. As equity increases, shareholders will have increased confidence in their investment because they will receive a greater residual for the company in the event liquidation.

If stock prices could be predicted through simple valuation models using the preceding ratios, there would never be market bubbles. These bubbles result from uninformed investors basing their investment decisions upon how their stocks fare in earlier periods, responding to the market rather than acting with the market. In other words, these uninformed investors are victims of irrational hype. John Maynard Keynes describes this phenomenon as follows, "It is as though a farmer, having tapped his barometer after breakfast, could decide to remove his capital from the farming business between 10 and 11 in the morning and reconsider whether he should return to it later in the week." The bubble is the result of this type of misguided investment that Keynes blames for the unpredictability of the market. A bubble is a period of time in which stock prices are irrationally high due to non-valuation factors. Stock prices in a bubble typically drop and stabilize when the bubble "bursts." This indicates that there is some sort of irrational exuberance over certain investments that causes investors to jump on the proverbial bandwagon, creating irrational demand for that stock. The literature refers to this phenomenon of irrational exuberance as "hype" (Malkiel 2005). These investors do not invest based on the true value of a stock, but rather on the basis of how everyone else is investing.

Of course, the concept of irrational investors warrants no consideration if the market is simply guided by large, institutional, well-informed investors. Charles Rolo states that since the late 1970s individual investors have had an edge on institutional investors in the market. Individual investors are unfettered by laws and regulations such as the Employee Retirement Income Security Act (ERISA) which prevents institutions from selling securities and switching mutual funds erratically. In many cases

these institutions are forced by law avoid speculative purchases in the market, while individuals are free to speculate on whatever stock they choose. In this way, individuals, sometimes acting irrationally, guide the stock market (Rolo 1979).

In my model, hype will be measured by (total analyst upgrades/total analyst recommendations). Professional financial analysts supposedly have functional models and insights that average investors lack. These analysts can create hype over a stock by touting their own supposed insight. Average investors who know very little about markets and valuation would certainly invest based on what an educated analyst says about a stock. Hence, analyst upgrades are an excellent proxy of the hype surrounding a stock.

Furthermore, this phenomenon of hype can have a greater effect on stock prices depending on the specific industry sector. The literature dictates that the technology sector is more susceptible to hype than a mature industry sector such as the foods sector (Chung 2003). Technology is a relatively new industry, and investors are still learning how to react to news in the market. Irrational exuberance is demonstrated by the tech bubble of the 1990s. After the tech bubble burst, many stocks that were touted by financial analysts became valueless, and many investors lost incredible amounts of money.

These ratios that value stocks and proxy outside hype complete a robust model for the prediction of changes in stock prices. Of course, many ratios vary across industries.

IV. Hypothesis

According to economic theory, changes in the prior period operating cash flow per share, earnings per share, equity per share, and payout ratios, along with hype should effectively predict future changes in stock prices. These ratios provide the clearest picture of a company's future earning possibilities while eliminating statistical problems such as multicolinearity. Whereas Horrigan, Lewellan, and O'Hara attempted to use financial ratios over longer periods, I will attempt to do so over a much shorter period of time. Because my results are timelier than those in other studies, they should be of greater value to investors.

V. Empirical Model

I will use the percentage change in stock price over time as the dependent variable. My independent variables are operating cash flow per share, earnings per share, equity per share, and payout ratio measured over the second quarter of 2005. Also, the effect of market variation will be controlled for by including each company's beta value multiplied by the change in the SNP 500 over the period. Along with all of these easily calculated variables, I have also included analyst upgrades divided by total analyst opinions to account for the hype regarding a stock. Stock price is measured as the percentage change between the price at the end of the second quarter of 2005 and the end of the third quarter of 2005. Because my data are cross sectional (taken from exactly the same time period), there is no need to control for the interest rate, or other time sensitive information that affects the price of each company's stock in a similar manner. For example, a sharp increase in energy prices over the period would tend to make some investors more apprehensive about investing in the market as a whole. Hence, stock prices will remain low. However, my data are taken from the same time period in which each company should face the same factors and constraints. Therefore, this type of exogenous problem should be controlled for in the model. I use the linear form to both express my regression. Also, recall the equation must control for industry. Therefore, I create a dummy variable for the industry in which a particular company operates which will control for the differences in expected ratio values between industries. This yields a base equation as follows (table 1 gives some summary statistics of the data):

$$\frac{(\Delta StkP_{(t)-(t-1)})}{StkP_{(t-1)}} = \alpha_0 + \alpha_1(\Delta CFPS_{(t-1)}) + \alpha_2(\Delta EQPS_{(t-1)}) + \alpha_3(\Delta EPS_{(t-1)}) + \alpha_4(\Delta PO_{(t-1)}) + \alpha_5(Hype_{(t-1)}) + \alpha_6(beta * \Delta SNP)$$

$$+ \alpha_7(Tech) + \alpha_8(Foods) + \alpha_9(Retail) + \alpha_{10}(\mathrm{Re}st) + \alpha_{11}(Com) + \alpha_{12}(Fin) + \alpha_{13}(Othr)$$

$Omitted\ Variable: \alpha_{14}(Manufacturing)$

Table 1: Description of Variables

Variable	Description	MEAN	STDEV	Pred. Sign
Dependent Variable				
PDSP	Percentage Change in Stock Price (Period 0-1)	0.034	0.222	n/a
Independent Variable(s)				
DCFPS(t-1)	Change in Cash Flow Per Share (Period 0-1)	1.561	1.783	(+)
DEQPS(t-1)	Change in Equity Per Share (Period 0-1)	2.185	19.434	(+)
DPO(t-1)	Change in Payout Ratio (Period 0-1)	0.661	4.463	(+)
DEPS(t-1)	Change in Earnings Per Share (Period 0-1)	0.123	1.685	(+)
beta	Market beta (risk) * Change in SNP	0.9327	0.6876	(+)
PUP	Hype - (Analyst Upgrades)/(Total Analyst Opinions)	0.2975	0.3622	(+)
Tech	(1) if company belongs to the tech sector (0) otherwise	n/a	n/a	n/a
Retail	(1) if company belongs to the retail sector, (0) otherwise	n/a	n/a	n/a
Food	(1) if company belongs to the foods sector, (0) otherwise	n/a	n/a	n/a
Rest	(1) if company belongs to the restaurant sector, (0) otherwise	n/a	n/a	n/a
Com	(1) if company belongs to the communicaitons sector, (0) otherwise	n/a	n/a	n/a
Fin	(1) if company belongs to the financial services sector, (0) otherwise	n/a	n/a	n/a
Othr	(1) if company belongs to another sector, (0) otherwise	n/a	n/a	n/a
Omitted Variable				
Manu	(1) if company belongs to the manufacturing sector, (0) otherwise	n/a	n/a	n/a

Of course, while this model accounts for the effects of hype, it would be much more interesting to see the effects of hype on the individual industries. Therefore, I create industry interactive variables by multiplying the industry dummy variables by the percentage of analyst upgrades for each company. The interaction yields a new equation of:

$$\frac{(\Delta StkP_{(t)-(t-1)})}{StkP_{(t-1)}} = \alpha_0 + \alpha_1(\Delta CFPS_{(t-1)}) + \alpha_2(\Delta EQPS_{(t-1)}) + \alpha_3(\Delta EPS_{(t-1)}) + \alpha_4(\Delta PO_{(t-1)}) + \alpha_5(Hype_{(t-1)}) + \alpha_6(beta * \Delta SNP)$$
$$+ \alpha_7(Tech) + \alpha_8(Foods) + \alpha_9(Retail) + \alpha_{10}(Rest) + \alpha_{11}(Com) + \alpha_{12}(Fin) + \alpha_{13}(Othr)$$
$$+ \alpha_{14}(Hype)*(Tech) + \alpha_{15}(Hype)*(Foods) + \alpha_{16}(Hype)*(Retail) + \alpha_{17}(Hype)*(Rest)$$
$$+ \alpha_{18}(Hype)*(Com) + \alpha_{19}(Hype)*(Fin) + \alpha_{20}(Hype)*(Othr)$$
$$Omitted\ Variable: \alpha_{21}(Manufacturing)$$

The inherent problem in this first equation is that not every company pays out dividends, and some companies continue to pay out dividends even with negative net incomes. This oversight presents a problem in the model. Recall that the payout ratio is (total dividends/net income). It is supposed to give financial analysts an idea of what percent of a company's net income is being paid out in dividends as opposed to how much is being plowed back into the company. A negative payout ratio simply provides no information about this percentage because the company did not have any earnings to pay out

in the first place. About fifteen percent of the companies in my data set are affected by this problem which is significant enough to warrant a solution.

I address the problem using a separation of equations, one involving all companies and one that involves a subset of data that eliminates companies that do not pay dividends or have negative payout ratios. Furthermore, preliminary analysis showed that the dividend payout ratio is highly correlated with the equity per share ratio. Because of these problems in the model, I estimate two equations:

(1) All companies, but eliminating the dividend payout ratio from the equation

(2) Subset of data with dividend payouts greater then zero, dividend payout ratio included, eliminating equity per share.

Equation 1: Full Data Set

$$\frac{(\Delta StkP_{(t)-(t-1)})}{StkP_{(t-1)}} = \alpha_0 + \alpha_1(\Delta CFPS_{(t-1)}) + \alpha_2(\Delta EQPS_{(t-1)}) + \alpha_3(\Delta EPS_{(t-1)}) + \alpha_4(Hype_{(t-1)}) + \alpha_5(beta * \Delta SNP)$$
$$+ \alpha_6(Tech) + \alpha_7(Foods) + \alpha_8(Retail) + \alpha_9(\mathrm{Re}\,st) + \alpha_{10}(Com) + \alpha_{11}(Fin) + \alpha_{12}(Othr)$$
$$+ \alpha_{13}(Hype)*(Tech) + \alpha_{14}(Hype)*(Foods) + \alpha_{15}(Hype)*(Retail) + \alpha_{16}(Hype)*(\mathrm{Re}\,st)$$
$$+ \alpha_{17}(Hype)*(Com) + \alpha_{18}(Hype)*(Fin) + \alpha_{19}(Hype)*(Othr)$$

$Omitted\ \ Variable\ :\alpha_{20}(Manufactur\ ing)$

Equation 2: Partial Data Set

$$\frac{(\Delta StkP_{(t)-(t-1)})}{StkP_{(t-1)}} = \alpha_0 + \alpha_1(\Delta CFPS_{(t-1)}) + \alpha_2(\Delta PO_{(t-1)}) + \alpha_3(\Delta EPS_{(t-1)}) + \alpha_4(Hype_{(t-1)}) + \alpha_5(beta * \Delta SNP)$$
$$+ \alpha_6(Tech) + \alpha_7(Foods) + \alpha_8(Retail) + \alpha_9(\mathrm{Re}\,st) + \alpha_{10}(Com) + \alpha_{11}(Fin) + \alpha_{12}(Othr)$$
$$+ \alpha_{13}(Hype)*(Tech) + \alpha_{14}(Hype)*(Foods) + \alpha_{15}(Hype)*(Retail) + \alpha_{16}(Hype)*(\mathrm{Re}\,st)$$
$$+ \alpha_{17}(Hype)*(Com) + \alpha_{18}(Hype)*(Fin) + \alpha_{19}(Hype)*(Othr)$$

$Omitted\ \ Variable\ :\alpha_{20}(Manufactur\ ing)$

VI. Data

My data are a selection of 100 well established companies taken from a variety of industries. The data for the financial ratios as well as the individual company betas are taken from Hoovers Online (www.hoovers.com), whereas the data for the stock price at time: *t* are taken from Yahoo! Finance (finance.yahoo.com). Each company has a January 1 year end. My time frame for the percentage change in stock price is the quarter ended September 30, 2005. More explicitly, the base stock price and

ratios are recorded on September 30, 2005, whereas the stock prices from (t-1) is recorded from June 30, 2005. Data for the change in financial ratios are taken on June 30, 2005 as well as on March 31, 2005.

VII. Results

My models yielded some conclusive results that proved rather interesting. I examined the two regressions as described in my empirical model. Obviously the second model which omits companies that do not pay dividends is an improvement over the first. The results of the regressions are reproduced below in Table 2.1-2.2.

Table 2.1

Regression 1			
Variable	**Coefficient**	**T-Statistic (Sigma)**	**Significance**
Dependent Variable			
PDSP	n/a	n/a	n/a
Independent Variable(s)			
DCFPS(t-1)	0.034	0.323 (0.747)	
DEQPS(t-1)	-0.006	-0.060 (0.952)	
DEPS(t-1)	0.223	2.264 (0.026)	**
beta	0.099	0.837 (0.405)	
PUP	0.122	0.660 (0.511)	
Tech	0.188	1.187 (0.239)	
Retail	-0.158	-1.190 (0.237)	
Food	0.083	0.595 (0.554)	
Rest	-0.266	-2.112 (0.038)	**
Com	-0.043	-0.271 (0.787)	
Fin	0.014	0.111 (0.912)	
Othr	0.206	1.437 (0.155)	
Hype*Tech	0.118	0.724 (0.471)	
Hype*Retail	0.172	1.392 (0.168)	
Hype*Food	0.075	0.489 (0.626)	
Hype*Rest	0.464	3.442 (0.001)	***
Hype*Com	0.090	0.511 (0.611)	
Hype*Fin	0.122	1.146 (0.255)	
Hype*Othr	-0.026	-0.168 (0.867)	
Omitted Variable			
Manu	n/a	n/a	n/a
Hype*Manu	n/a	n/a	n/a
Adjusted R-Square	0.16		
Sample Size	100		

Table 2.2

Regression 2			
Variable	Coefficient	T-Statistic (Sigma)	Significance
Dependent Variable			
PDSP	n/a	n/a	n/a
Independent Variable(s)			
DCFPS(t-1)	-0.113	-0.996 (0.324)	
DPO(t-1)	0.106	1.037 (0.305)	
DEPS(t-1)	0.174	1.697 (0.096)	*
beta	0.239	2.034 (0.047)	**
PUP	0.167	0.781 (0.438)	
Tech	0.045	0.331 (0.742)	
Retail	-0.547	-4.369 (0.000)	***
Food	-0.028	-0.184 (0.855)	
Rest	-0.28	-2.295 (0.026)	***
Com	-0.291	-1.790 (0.079)	*
Fin	-0.032	-0.270 (0.789)	
Othr	0.121	0.847 (0.386)	
Hype*Tech	-0.096	-0.719 (0.476)	
Hype*Retail	0.063	0.592 (0.566)	
Hype*Food	0.266	1.567 (0.123)	
Hype*Rest	0.001	0.012 (0.991)	
Hype*Com	0.342	1.982 (0.053)	*
Hype*Fin	0.304	2.718 (0.009)	***
Hype*Othr	0.142	1.032 (0.307)	
Omitted Variable			
Manu	n/a	n/a	n/a
Hype*Manu	n/a	n/a	n/a
Adjusted R-Square	0.38		
Sample Size	70		

Regression 1 had a low number of significant variables. Only the prior period earnings per share figure proved to be significant among the predictive ratios. The restaurant and retail industries also showed significance. The negative coefficient indicates both of these sectors tend to under perform compared to market as a whole. While Regression 1 had some interesting results, Regression 2 showed marked improvement. Regression 2 had a higher R-square which allows a bit more confidence in the results. The earnings per share figure remained significant and several other variables became significant when the companies that had zero or negative payout ratios were eliminated. The retail and restaurant sectors still under performed compared to the market as expected. The company beta value also became significant, which is important because this value accounts for a company's reaction to changes in the overall market. Communications companies also tend to under perform the market.

However, hype tends to have a positive effect on the communication and financial services industries in contrast to other sectors.

What can be said about these models? Were Horrigan, and Lewellan incorrect in their analyses? Was the H Thomas O'Hara study incorrect? It is important to note that each of these authors conducted their studies over long periods of time. Horrigan, Lewellan, and O'Hara all conducted studies over periods of greater than five years. My study was conducted over a very short term. It could very well be that my results would become much more defined over longer periods. However, my study was an attempt to generate relevant results involving stock prices rather than simply studying market trends. Several other researchers decry any attempts to predict short term stock prices due to inherent short term volatility in the market. These researchers maintain that there are too many factors acting on a stock price over a short period of time to possibly express this information in a set of variables (Lewellan 2004).

These researchers may well be correct. My model does control for industry; however, there are a number of other factors that differentiated the companies in my model that could have come into play. In Regression 2, by eliminating the companies that have zero or negative payout ratios, I was forced to eliminate several technology firms from my model. These firms could well have played an important role in stock price prediction due to the hype that often surrounds technology companies. Also, several researchers say that the sort of prediction I am attempting will only work in a period of expansionary monetary policy because there will be a general increases in stock prices during these periods. These researchers contend that prices during periods of recessionary monetary policies cause investor habits to somehow go awry (Cavaletti 2004). I am less willing to believe these researchers. However, my model cannot fully dispute their claim.

VIII. Conclusions and Future Research

While my model is not a perfect representation of how stock prices will act over the short term, it does point to some market inefficiencies. The significance of the prior period earnings per share figure

shows that investors will generally invest based on how a company performed in the prior period. Logically, the restaurant, retail, and communications industry stock prices tend to fall below the overall market. This could be due to volatilities in these particular sectors or simply market sentiment against buying these stocks. Beta is positively correlated with the percentage change in stock price which means that as the company becomes more volatile (beta increases), the percentage change in stock price, relative to the market, increases as well.

The other important aspect of my model, hype, significantly affects the communications and financial services sectors which means that these sectors have significant (positive) reactions when analysts upgrade their stocks. Hype positively affects the communications sector even though the industry tends to under perform the market. Unfortunately, in restricting my model to companies that have positive dividend payout ratios, I was forced to eliminate many of the technology sector companies which theory dictates could have been influenced by hype.

Even though hype plays an important role in some individual sectors, I am disappointed by the overall insignificance of the hype variable. Interestingly, when a regression is performed including only the hype variable and industry controls, hype is significant. This change in significance implies that stock analysts are making recommendations based on the fundamental financial ratios that are already included in my model. If the hype variable were still significant even with the fundamental ratios in the model, this would imply that analysts are irrationally puffing stock price. Puffing a stock price was a grave problem that led to the bursting of the tech bubble in the 1990s. However, for the period studied, there was no significant irrational puffing of stock prices. Perhaps a comparative study conducted using data derived from insider information would be more successful in determining how hype affects the value of a stock. Of course, this type of study is impossible because the data are unavailable.

As other researchers have indicated, this model may be inefficient or even completely irrelevant in periods with different economic environments. The period from June to September of 2005 was a period of economic growth where the Federal Reserve was trying to rein in the economy by increasing

interest rates. Further research is needed in different periods to determine if the model can apply in other periods. Perhaps the public would respond differently to analyst recommendations. The public might be more hesitant to throw their money behind an upgraded company in a period of recession. Also the variability between industry sectors could change with time as well. For example well-established manufacturing companies would be more prepared to weather a recession than companies in the fickle retail sector. These manufacturing companies would see much less change in their stock price due to the economic downturn than the retail companies.

Obviously further research is needed to form a conclusion about the general inefficiency of the market. The significant results provided by my model show some market inefficiencies; however, as with most theories, further testing is needed. But for now, based on the results of my study, it is best for investors to assume that stock prices will generally increase for companies with increasing prior period earnings. With this information it may be possible for an individual to know how a stock price will perform in the future.

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