PRICE-EARNINGS RATIO, DIVIDEND YIELD, AND MARKET-TO-BOOK RATIO TO PREDICT RETURN ON STOCK MARKET: EVIDENCE FROM THE EMERGING MARKETS

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ABSTRACT

This study examines the predicability of stock returns in the 12 emerging stock markets by using price-earnings ratio, dividend yield, and market-to-book ratio as predictive variables during the period of 1997-2003. We analyse the predicability by deriving a new index value using the proper combination of these predictive variables and multi-regression models. We find that the predictability of stock returns in the emerging markets is variant. The market-to-book ratio stands to reveal significant results in terms of predicting stock returns for a one-year period among others for most of the emerging market countries. The dividend yield comes in at second place. The results of the validation tests also show that the forecasting power of the estimated model is fairly good. Finally, these evidences support the individual predictive power of some, but not all financial variables in the stock market. This causes much discussion on the effectiveness of the stock market.

INTRODUCTION

Economists and financial practitioners have sought to identify variables that predict stock returns in the market for the last two decades. They have looked at various metrics as future predictors of share price performance. They have found size, interest rate, beta, market-to-book ratio (MtB), price-earnings ratio (P/E), and dividend yield (DY) to be rather good indicators among many others.

The aim of this study is to examine the ability of the MtB, P/E, and DY to forecast market returns in an integrated form. The use of MtB is motivated by the findings of Fama and French (1992) that shows the MtB ratio of individual stocks has the ability to explain cross-sectional variation in stock returns. We have also included a dividend and earning yield measure as independent variables in our estimation. Intuitively, P/E

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ratio, MtB ratio, and the DY could be viewed as a multiple that the market attaches to earnings, book value and dividend respectively. In determining market prices and earnings, book value and dividend would be useful for predicting the behaviour of future stock prices or returns. Thus, one would be able to construct profitable trading strategies based on earnings, book value, and dividend.

According to the mispricing view, P/E effect states that stocks with low P/E ratios (or high E/P ratios) earn significantly higher returns than stocks with high P/E ratios (or low E/P ratios). Thus, there is an inverse relation between the P/E ratio and portfolio returns, and an investor could achieve systematically higher returns by investing the right stock having low P/E ratio. Then, the P/E could be a suitable fundamental variable to explain the cross-section of returns in the stock market.

Similarly, the MtB effect states that securities with high ratios between its market value and its book or equity value, persistently obtain lower returns than those securities with low MtB ratios. One explanation for the market-to-book ratio's ability to predict returns is that book value proxy for future cash flows. Dividing current market price by a cash flow proxy produces a variable that is correlated with future returns. This correlation is greater when better-expected cash flow proxies be used.

Coming to the DY, a high DY is a signal that the market is undervalued. The predictive power of DY stems from the role of dividends in capturing the permanent component of prices, whereas the P/E ratio is predictive due to earnings being a good measure of business conditions, which captures counter-cyclical risk aversion.

On the other hand the DY, in some studies, is defined to be somewhat better at explaining variation in real returns on the value-weighted index. The slightly better ability of DY to explain value-weighted index returns may be related to the fact that a large fraction of the firms in the market do not pay dividends in the last years. However, in finite samples, using only dividends may be problematic because they are often manipulated, smoothed, or set to zero, making them potentially poor indicators of the true value-relevant cash flows in the future. One obvious way to increase the information set is to use earnings and market-to-book value indicator.

Further, these three financial ratios, namely P/E, MtB and DY, share several features. One of these features is that all the ratios measure stock prices relative to fundamentals. Because price is in the denominator of DY, this ratio is likely to be positively related to expected returns. Thus, most of its movement is caused by price changes in the denominator. In this respect, this study provides a new test of the financial ratios' ability to predict stock returns.

For stock return forecasts, some studies find DY ratio to be significant, while others find MtB ratio or P/E ratio to be useful. The former tends to be related to a finance approach based on the conventional dividend discount model, while the latter tends to be related to an accounting approach based on the accounting surplus relation. Our model provides an integration of the finance and accounting approaches. In fact, in this paper, we propose a linear cointegration model that explains future profitability and stock returns in terms of a linear combination of MtB ratio, DY and P/E ratio. Furthermore, we attempt to show that our linear cointegration model performs better than the DY model, the MtB ratio model, and the P/E ratio model in terms of various forecasting performance comparisons.

The main contribution of this paper is the elaboration of stock return prediction at 12 emerging markets having similar characteristics by using the same market indicators. The results reveal that the investors in emerging markets could forecast the potential market stock return for one–year period to a certain extent with high level of probability by using market-to-book value ratio and partially dividend yield. Price-earnings ratio, on the other hand, plays a minor role in predicting stock return.

The paper is organized as follows. Section 2 aims to provide a general and conceptional overview of the stock market predicability literature. Section 3 describes the data used in the paper and the methodology employed to address the relationship between the predictive variables. Section 4 presents results regarding the ability of the predictors to predict returns on the stock market. Section 5, the final section, concludes and develops possible implications for the asset management industry.

LITERATURE REVIEW

Perhaps the most elusive goal in finance is the ability to predict stock market returns. Not surprisingly, the literature on stock market predicability has evolved considerably over the last twenty years. Almost all of the empirical research in this field has relied on regression models in which the realized equity premium is regressed on one or more of the predictive variables and significant *t*- or *F*- statistics and high R^2s are interpreted in favour of stock market predicability. Other studies, on the other hand, interpret the reported excess returns as evidence of market inefficiency.

Fama and French (1992), in a study held on New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) stocks during 1963-1990, argue that the significant relation between returns and variables like size, price-to-book ratio, and prior return is evidence of compensation for additional sources of risk that are not included in extant asset pricing models. They also conclude that the earnings-price ratio is significant when it is the unique explaining variable for the cross-section of stock returns. However, its significance disappears when book-to-market ratio is also taken into account.

Pontiff and Schall (1998) find that the book-to-market ratio provides some predictive ability, which stems from the relation between book value and future earnings. Kothari and Shanken (1997) find reliable evidence that book-to-market and dividend yield track time-series variation in expected real stock returns, over the period 1926-1991, for the US stock market.

Fama and French (1988), Nelson and Kim (1993) and Campbell and Shiller (1988) have documented that, dividend yield predicts stock returns with some success, as it captures expectations about dividend growth as well as expected returns.

While Lamont (1998) argues that, the P/E ratio has independent predictive power for excess returns in addition to the dividend-price ratio. Ang and Bekaert (2003) detect a strong role for the P/E ratio as a predictive instrument for future dividend growth.

Lewellen (1999) investigates the time-series relations among expected returns, risk, and book-to-market at the portfolio level and finds that book-to-market ratio predicts economically and statistically significant time-variation in expected stock returns. Also, in a recent study by Lewellen (2001), the predicability of returns with financial ratios, including book-to-market, is reinforced by emphasizing the forecasting power of these ratios.

Bae and Kim (1998), using a sample of Japanese firms, show that relative to the trading strategy based on earnings or book value alone, the trading strategy based on a combination of both earnings and book value generates substantially higher returns for all cases. This suggests that book value (or earnings) capture certain aspects of equity values that are not captured by earnings (book value). The regression results further indicate that the predictive ability of earnings is dominated by that of book value.

Jaffe, Keim, and Westerfield (1989) analyse the relation between stock returns and the effects of size and earnings-to-price ratio, for the periods 1951-1986, in the US. They find the earnings yield effect to be significant over the entire period for all months.

Ang and Bekaert (2003), analysing the predictive components in excess returns across five developed countries (US, France, Germany, Japan and UK), find that the predictive power of the dividend yield is best visible at short horizons with the short rate as an additional regressor, and that dividend yield only weakly predicts cash flows. They also detect a strong role for the earnings yield as a predictive instrument for future cash flows.

De Pena, Javier, and Gil-Alana (2003) find that there is a strong earnings-price ratio effect in the Spanish Stock Market and that beta is able to explain the cross-section of expected returns jointly with earnings-price ratio. On the other hand, there are neither size nor book-to-market effects.

Lewellen (2002) studies whether financial ratios can predict aggregate stock returns and finds that while dividend yield is typically significant in forecasting stock returns, the evidence for book-to-market and earnings-price ratios is somewhat weaker and overall, they seem to have limited forecasting power.

Jiang and Lee (2007) explain future profitability and excess stock returns in terms of a linear combination of log book-to-market and log dividend yield and find that this linear combination performs better than both the log dividend yield model and the log book-to-market model in terms of excess return forecasting performance.

Aydogan and Güney (1997), analysing the effect of price-earnings ratio and dividend yield in the Istanbul Stock Exchange (ISE), find that these are good indicators for predicting future returns in the market. Aydogan and Gursoy (2000), in an enlarged study covering 19 emerging equity markets, reveal that both price-earnings and book-to-market ratios have predictive power of future return, especially over longer time periods, and can be used as tools in forming a market timing and asset allocation strategy in emerging markets.

Akdeniz, Altay and Aydogan (2000), addressing firm specific factors that explain stock returns in Istanbul Stock Exchange (ISE) for the period 1992-1998, indicate that book-to-market ratio and firm size explain stock returns and no significant earnings-price ratio effect is encountered.

DATA AND METHODOLOGY

Data Description and Variable Definitions

We confine our empirical analysis to the sample period, 1997-2003. Our time-series investigation at the market level employs the value-weighted index monthly returns data of 12 emerging market countries[1]. The data sample consists of these emerging countries' stock market index monthly total return (capital gain plus dividend), monthly average MtB ratio, DY, and P/E ratio from January 1997 to December 2003. This monthly frequency data is obtained from the IFC Emerging Stock Markets Yearly and Monthly Factbooks.

While the DY is equal to dividends paid in the preceding year divided by the price level at the end of the month, the P/E ratio is equal to the price level at the end of the month divided by the earnings received in the preceding year. A monthly MtB ratio, on the other hand, is constructed by dividing the prevailing level of the price level to the most recent year's book value [2]. Emerging Countries Stock Market Return Index and the three predictors' data are available since 1997, permitting us to study them over a shorter period than has been possible in the cross-sectional literature.

Methodology

Predictive regressions are common in the finance literature. They have been used to test whether past prices, financial ratios, interest rates, and a variety of other macroeconomic variables can forecast stock returns. In this study, we try to estimate a regression model similar to Fama and French, however using a different set of independent variables.

We first construct a monthly MtB ratio, P/E ratio and DY series and analyse them separately. Then, we combine all three metrics into one number and call it the "new index value" (I). It was derived by dividing

the DY by the product of P/E ratio and MtB ratio. We also calculate the yearly ISE-100 value weighted return index changes. The higher the "new index value", supposedly the more value the market offers in terms of subsequent one-year market returns.

*New Index Value = Dividend Yield / (Price-Earnings Ratio * Market-to-Book Ratio)*

Further, in this study, we used the unit root tests to look for the stationary of variables. We look at the correlation values among the variables and also work with multi-regression models to test the forecasting power of each predictive variable for the stock return in the market. We finally perform confidence interval tests to see the forecasting power of the predictive variables for the market returns by employing the data set from July 2004 to June 2005.

EMPIRICAL RESULTS

In this section, we try to analyse the time series characteristics of the predictive variables. In this context, we look at the correlation among the pre-mentioned predictive variables and stock returns as well as the predictive power of each variable by using regression models and validation tests.

To begin with, Table 1 reports the average one-year nominal return figures and the monthly mean and yearly standard deviation values of (1) DY, (2) MtB ratio, and (3) E/P ratio for 12 emerging market countries. The figures in Table 4.1 are self-explanatory. Russia has the highest average yearly nominal return and standard deviation figure. While Turkey is in the second place as to the high standard deviation figure, its nominal return is at moderate level. This fact should be interpreted with a caution.

Table 1: Summary Statistics For Emerging Markets, 1997-2003

	Average One-Year Returns		Earnings-Price Ratio **(E/P)**		**Dividend Yield (DY)**		**Market-to-Book Ratio (MtB)**	
Countries	**Mean**	Standard Deviation	**Mean**	Standard Deviation	**Mean**	Standard Deviation	**Mean**	Standard Deviation
Argentina	7.00	58.53	-0.03	0.65	3.02	7.15	1.34	1.34
Brazil	10.49	51.55	0.09	0.09	4.67	4.79	1.20	0.96
Korea	29.91	81.57	0.02	0.15	1.67	2.06	1.12	1.35
Malaysia	7.25	49.14	0.03	0.14	2.74	3.32	1.66	2.18
Mexico	9.99	30.36	0.06	0.04	1.83	1.68	1.84	0.91
Philippines	-8.99	34.42	0.05	0.08	1.34	1.73	1.25	1.82
Poland	2.32	23.77	0.07	0.17	1.45	1.47	1.75	1.16
Russia	36.97	74.64	0.12	0.38	1.04	2.78	0.83	1.44
South Africa	8.97	28.71	0.09	0.05	3.51	3.33	1.99	0.95
Taiwan	-0.01	35.25	0.04	0.05	0.98	1.21	2.48	2.48
Thailand	14.55	58.26	-0.06	0.52	2.18	5.11	1.53	1.55
Turkey	18.89	73.11	0.06	0.11	1.83	3.76	4.01	6.29

This table reports the average one-year nominal return figures and the monthly mean and yearly standard deviation values of (1) DY, (2) MtB ratio, and (3) E/P ratio for the 12 emerging market countries. All data come from the IFC Emerging Markets Factbook, 1997-2003.

Coming to the correlation among the predictive variables for emerging countries, the results shown in Table 2 reveal that there is a high level of correlation among the variables and it is statistically significant at 1 % level. However, in all models built by considering multi-regression analysis results, it is observed that the variance inflation factor (VIF) [3] is found to be less than 10, which may be interpreted that there is no multicollinarity problem for the sample [4].

Table 2: Pearson Correlation Matrix For Emerging Markets, 1997-2003

	Argentina			**Brazil**			**South Korea**		
	PE	**MtB**	**DY**	**PE**	**MtB**	**DY**	PE	**MtB**	**DY**
PE	1,000	0,272	-0,201	1,000	0,773	-0,611	1,000	0,359	-0,154
MtB		1,000	-0,283		1,000	-0,742		1,000	-0,409
DY			1,000			1,000			1,000
	Malaysia			**Mexico**			**The Philippines**		
	PE	**MtB**	**DY**	PE	**MtB**	**DY**	**PE**	MtB	**DY**
PE	1,000	0,414	-0,355	1,000	0,405	-0,234	1,000	0,468	-0,364
MtB		1,000	-0,751		1,000	-0,554		1,000	-0,511
DY			1,000			1,000			1,000
	Poland			**Russia**			**South Africa**		
	PE	**MtB**	**DY**	PE	**MtB**	**DY**	**PE**	**MtB**	**DY**
PE	1,000	0,113	-0,125	1,000	0,828	-0,316	1,000	0,686	-0,647
MtB		1,000	-0,385		1,000	-0,382		1,000	-0,541
DY			1,000			1,000			1,000
	Taiwan			**Thailand**			**Turkey**		
	PE	**MtB**	**DY**	**PE**	**MtB**	**DY**	PE	**MtB**	**DY**
PE	1,000	0,516	-0,315	1,000	0,231	-0,102	1,000	0,854	-0,587
MtB		1,000	-0,382		1,000	-0,591		1,000	-0,721
DY			1,000			1,000			1,000

This table reports the correlations among DY, MtB, and P/E in the emerging market countries (Argentina, Brazil, Korea, Malaysia, Mexico, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey). The correlations among the variables and returns use the full sample period, 1997-2003.

While proceeding throughout the study, before handling regression analysis, we first look for the stationary of predictive variables by using the Dickey and Fuller test. This is a pre-request for doing the regression analysis.

Unit Root Tests

The strength of an analysis that will be held by using time series techniques depends on the level of the stationary of variables. In this stage, the stationary of variables is tested with methods of an augmented unit root test developed by Dickey and Fuller (1981). For this purpose, we take the first difference of all time series logarithm. The test statistics are calculated by using the following formula:

$$\Delta X_t = \beta_0 X_{t-1} + \sum_{t=1}^{n} \beta_i \Delta X_{t-i} + \varepsilon_t$$

where

X_t: the value of the first difference of logarithm of the variable X at year T.

H_0: $\beta_0=0$ H_1: $\beta_0\neq 0$

If β_0 is statistically different from 0 at a significant level, then the zero hypothesis which states that there is a unit root in time series of the variables whose first difference is taken will be rejected. The results for Augmented Dickey-Fuller tests are depicted on Table 3. Out of these tests, all three variables are found to be stationary at 1 % significance level for all emerging market countries. Since the variables are stationary, we can conclude that there is no cointegration among the variables.

Table 3: Augmented Dickey-Fuller Tests, 1997-2003

Country	Price-Earnings Ratio	Market-to Book Ratio	**Dividend Yield**	**One-Year Return**	**New Index Value (I)**
Argentina	(-8.6189)***	(-9.463)***	(-9.5754)***	(-9.8262)***	(-7.1362)***
Brazil	(-9.4748)***	(-10.2005)***	(-10.0629)***	(-9.3128)***	(-11.6753)***
Korea	(-9.4192)***	(-7.8684)***	(-8.7611)***	(-8.1003)***	(-8.6141)***
Malaysia	(-9.3961)***	(-8.033)***	(-7.8709)***	(-6.8615)***	(-10.9586)***
Mexico	(-10.6796)***	(-9.4214)***	(-8.939)***	(-9.3109)***	(-9.8891)***
Philippines	(-10.5137)***	(-7.2867)***	(-9.4167)***	(-9.7466)***	(-7.4637)***
Poland	(-14.8786)***	(-9.9278)***	(-12.2546)***	(-9.7237)***	(-10.043)***
Russia	(-9.2869)***	(-8.9951)***	(-8.3704)***	(-9.3939)***	(-9.9809)***
South Africa	(-10.181)***	(-10.4069)***	(-10.7293)***	(-8.7813)***	(-10.7206)***
Taiwan	(-6.6602)***	(-5.8492)***	(-9.8166)***	(-7.0071)***	(-10.9783)***
Thailand	(-9.5583)***	(-9.7428)***	(-8.9502)***	(-9.1628)***	(-10.2428)***
Turkey	(-9.0066)***	(-10.1989)***	(-9.3600)***	(-10.6243)***	(-7.1376)***

**** Statistically significant at 1 % level.*

This table reports the augmented Dickey-Fuller Test results for nominal stock returns, DY, MtB, and P/E for the 12 emerging market countries. The financial ratios are all calculated for the emerging market countries value-weighted index. DY equals dividends paid over the prior year divided by the current level of the price; MtB is the ratio of market equity to book equity; P/E is the ratio market price to the earnings received after tax.

Regression Results

After testing the stationary of variables, we look at the regression results for each of the variables tested for the stock return predicability. Generally speaking, there is some difference among the predictive power of independent variables for stock market returns. They vary from 61 % to 90 %, except Argentina, which has the lowest R^2 (24 %). Taiwan (90 %) and Turkey and Philippines (80 %) have the highest R^2. All equations set for emerging market countries are statistically significant at 1 % level. In fact, this result may imply that in countries like Argentina, where there is high level of economic and political instability, the market risk effect outweighs the other unsystematic risks in determining the stock market returns. The explanatory power of each of independent variable is reviewed below:

The results show that the MtB ratio has a positive relation with the market index returns, except South Africa, and this relation is statistically significant at 1 % level for all emerging market countries subject to the study. That is, the market return increases when MtB ratio increases. The regression results depict that the MtB ratio is most influential in Turkey, among other emerging market countries, having a relatively high R^2 of 99.8 %. The t-statistics figures in Table 4 show the significance results.

In predicting the stock market returns for one-year period, the DY also plays a vital role. The results in Table 4.4 show that the DY has a negative relation with the stock market returns and it is statistically significant for 6 emerging market countries, namely Brazil, Malaysia, Mexico, Philippines, Russia and South Africa. This variable is most influential in Malaysia with a high R^2 of 45.6 %.

Coming to the P/E ratio, it has the weakest power in the prediction of stock returns in the market and the direction of this relationship is positive, except Argentina and Turkey. It is only statistically significant for four emerging market countries, namely Poland, South Africa, Taiwan and Turkey. Table 4 shows the regression results for all predictive variables for each country.

Table 4: Regression Results for Predictive Variables

Country	Constant	PE	*PBV*	*DY*	R^2	*Adj.*R^2	*F-statistics*	N
Argentina	-0.006	-0.006	0.371	-0.026	0.24	0.21	8.341***	82
	(-0.51)	(-0.37)	(4.56)***	(-0.58)				
Brazil	0	0.125	0,621	-0.234	0.61	0.6	44.966***	88
		(-1.05)	(4.12)***	(-2.13)***				
Korea	-0.003	0,010	0.86	-0.032	0.71	0.7	67.739***	83
	(-0.38)	(-0.38)	(11.41)***	(-1.49)				
Malaysia	0	0.019	0.39	-0.456	0.76	0.75	86.574***	86
		(-0.57)	(4.98)***	(-6.06)***				
Mexico	0.006	0.068	0.863	-0.101	0.78	0.78	101.975***	88
	-1.27	(-1.47)	(11.90)***	(-2.17)**				
Philippines	-0.005	0.039	0.774	-0.134	0.8	0.79	112.578***	88
	(-1.01)	(-1.26)	(-12.59)***	(-2.89)***				
Poland	0.003	0.056	0.792	-0.027	0.72	0.71	70.656***	87
	-0.44	(2.69)***	(12.56)***	(-0.75)				
Russia	0.005	0.003	0.565	-0.131	0.61	0.59	41.515***	84
	-0.37	-0.04	(5.16)***	(-3.01)***				
South Africa	0.008	0.214	-0.541	-0.159	0.64	0.62	49.675***	88
	-1.3	(2.24)**	(5.35)***	(-2.23)**				
Taiwan	0	0.082	0.799	-0.025	0.9	0.9	257.577***	88
		(3.62)***	(17.42)***	(-0.82)				
Thailand	-0.005	0.025	0.811	-0.035	0.63	0,61	46.457***	86
	(-0.46)	-1.08	(8.72)***	(-0.58)				
Turkey	0.014	-0.163	0.998	-0.023	0.8	0.8	113.237***	88
	-1.6	(-2.21)**	(9.53)***	(-0.42)				

*Coefficients in parenthesis show the t-statistics for the variables. *, **, *** mean 10 %, 5 % and 1 % significance level. This table reports the regression results for nominal stock returns, DY, MtB and P/E for the 12 emerging market countries for the period 1997-2003*

In fact, the results support the findings of Fama and French and many other academicians that found the MtB ratio and DY to be rather good indicators in predicting future stock market returns in the long-run period. These results however, may also be interpreted as a sign of inefficiency in the market, which is a highly debatable issue in the finance literature for the last three decades. Nevertheless, the investors may benefit from the trend of all these variables and may pursue promising profitable trading strategies for one-year period, by using each of them separately as an indicator or by combining them.

When the regression results for the new index value (I) are analysed from Table 4.5, it is observed that although they are somehow statistically significant, their explanatory power is less than the multi-regression results mentioned above. To give an example, while the multi-regression result (R^2) for Korea is 70 %, the regression result for the new index stands to be at 37 %. Again, the multi-regression and the new index regression figures stand to be 80 % and 68 % for Turkey. The results could be compared by analysing Table 4 and Table 5.

Table 5: Regression Results for the New Index

Country	Constant	*I*	R^2	*F-statistics*	*N*
Argentina	-0.006	-0.029	0.1	4.419**	84
	(-0.5)	(-2.10)**			
Brazil	0.004	-0.325	0.6	127.323***	88
	-0.43	(-11.28)***			
Korea	0.007	-0.133	0.4	50.772***	86
	-0.54	(-7.13)***			
Malaysia	-0.002	-0.235	0.6	115.942***	86
	(-0.28)	(-10.77)***			
Mexico	0.009	-0.299	0.6	136.02***	88
	-1.52	(-11.66)***			
Philippines	-0.011	-0.239	0.6	125.543***	87
	(-1.50)	(-11.21)***			
Poland	-0.003	-0.144	0.3	40.187***	87
	(-0.28)	(-6.34)***			
Russia	0.007	-0.206	0.6	101.061***	84
	-0.48	(-10.05)***			
South Africa	0.008	-0.282	0.6	131.295***	88
	-1.3	(-11.46)***			
Taiwan	-0.003	-0.249	0.7	227.902***	88
	(-0.50)	(-15.10)***			
Thailand	0.001	-0.14	0.3	36.009***	86
	-0.06	(-6.00)***			
Turkey	0.007	-0.254	0.7	183.537***	88
	-0.62	(-13.55)***			

*Coefficients in parenthesis show the t-statistics for the variables. *, **, *** mean 10 %, 5 % and 1 % significance level. This table reports the regression results for nominal stock returns and the new index value (I) for the 12 emerging market countries for the period, 1997-2003.*

Validation Tests

To see the forecasting power of the predictive variables for the market returns we have also calculated the confidence intervals, like t-statistics for linear regression, to evaluate the significance of the analysis by employing the data set from July 2004 to June 2005. Table 6 shows the actual and forecasted values for the market return for each emerging market country. While the value "1" in the last column for each country depicts that the actual value stays within the confidence interval, the value "0" shows the reverse of it. Overall, the results reveal that 92 % of the calculated forecasted figures are within the confidence interval for each country. This strengthens the reliability of the model in forecasting the market returns through the use of aforementioned predictive variables.

Table 6: Validation Tests

	ARGENTINA			BRAZIL			KOREA		
	Actual Return	**Forecasted Return**	**Conf. Int. Test**	**Actual Return**	**Forecasted Return**	**Conf. Int. Test**	**Actual Return**	**Forecasted Return**	**Conf. Int. Test**
2004/7	0.05	0.02	**1**	0.08	0.06	**1**	-0.08	-0.07	**1**
2004/8	0.03	-0.01	**1**	0.07	0	**1**	0.1	0.06	**1**
2004/9	0.16	0.06	**1**	0.09	0.05	**1**	0.04	-0.14	**0**
2004/10	0.04	0.02	**1**	0.02	-0.03	**1**	0.03	0	**1**
2004/11	0.02	0	**1**	0.1	0.05	**1**	0.11	0	**1**
2004/12	0.05	0	**1**	0.1	0.04	**1**	0.03	0.07	**1**
2005/1	0.02	-0.01	**1**	-0.03	-0.05	**1**	0.06	0	**1**
2005/2	0.18	0.06	**1**	0.15	0.14	**1**	0.1	0.06	**1**
2005/3	-0.09	-0.05	**1**	-0.09	-0.04	**1**	-0.05	-0.01	**1**
2005/4	-0.06	-0.04	**1**	-0.03	-0.15	**1**	-0.03	-0.07	**1**
2005/5	0.12	0.04	**1**	0.07	-0.08	**1**	0.05	0.06	**1**
2005/6	0	-0.01	**1**	0.03	0.04	**1**	0.01	0	**1**
	MALAYSIA			**MEXICO**			**PHILIPPINES**		
	Actual Return	**Forecasted Return**	**Conf. Int. Test**	**Actual Return**	**Forecasted Return**	**Conf. Int. Test**	**Actual Return**	**Forecasted Return**	**Conf. Int. Test**
2004/7	0.01	0.01	**1**	-0.01	-0.04	**1**	0	0.01	**1**
2004/8	-0.01	-0.03	**1**	0.01	-0.03	**1**	-0.01	-0.01	**1**
2004/9	0.03	0	**1**	0.06	0.1	**1**	0.08	0	**1**
2004/10	0.01	0.02	**1**	0.05	0.05	**1**	0.04	0.07	**1**
2004/11	0.06	0.11	**1**	0.08	-0.05	**0**	0.02	0.04	**1**
2004/12	0	-0.07	**1**	0.08	0.08	**1**	0	0	**1**
2005/1	0.02	0.02	**1**	0	0.01	**1**	0.1	0.05	**1**
2005/2	-0.01	-0.01	**1**	0.07	0.04	**1**	0.04	0	**1**
2005/3	-0.04	-0.05	**1**	-0.1	-0.12	**1**	-0.05	-0.02	**1**
2005/4	-	-0.03	**1**	-0.02	-0.05	**1**	-0.02	-0.07	**1**
2005/5	-0.02	-0.05	**1**	0.08	0.05	**1**	0.04	0.08	**1**
2005/6	0.03	0.03	**1**	0.06	0.05	**1**	-0.01	0.05	**1**

This table reports the results of the validation tests for the period July 2004 – June 2005. First column (Actual Return) shows the realized return for the month, second column (forecasted return) shows the forecasted returns estimated using the regression models developed in this study, third column (Conf. Int. Tests) reports value of 1 or 0 depending on whether realized return lies within two standard deviation confidence interval. "1" indicates that realized return is within the confidence interval, "0" indicates that the realized return is out of confidence interval

PRACTICAL IMPLICATIONS AND CONCLUSION

While the financial ratios considered in this study for predicting stock returns can be motivated theoretically, dividend yield is examined because of its prominence in past time-series studies, market-to-book ratio is considered primarily because of its recently acquired celebrity status in explaining cross-sectional stock returns variation, and price-earnings ratio is included because the earnings-related strategies have a long tradition in the investment community.

The results from the analysis reveal that the investors in emerging market countries could forecast the potential market stock returns for one–year period, to a certain extent, with a high level of probability by using MtB ratio and partially DY. P/E ratio, on the other hand, plays a minor role in predicting stock returns. The different combination of these variables may also increase the significance of the analysis. The investors may also improve the significance of the analysis by adding new variables, such as consumer price index, that may be used as indicators of macroeconomic changes in forecasting the stock returns in the market. All these efforts would seem to help the investors in the emerging market countries to make one-year period investment decisions and get a stock return well above the market average. The results of the validation tests show that the forecasting power of the estimated model is fairly good. It should be noted that validation procedure involves the usage of the same sample that was used for model estimation. Of course, this method results in the bias of prediction accuracy and requires careful interpretation of the research findings.

It seems very questionable whether a time-varying equity premium can be predicted using simple or multi-regression techniques and whether the respective results should be considered as a serious input for dynamic asset allocation strategies. The world of investment opportunities is probably much simpler than indicated by the stock market predicability and dynamic asset allocation literature. For investment purposes, the natural alternative to returns predicability is the assumption that excess returns are constant and unpredictable.

Overall, there are a number of reasons why the empirical results of stock market predicability should be regarded with caution. Stock market predicability is still a very broad and active research topic, not only in emerging market countries, and the strength and usefulness of many results is still hotly debated. Thus, it is no easy task to consistently evaluate their significance.

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ENDNOTES

1. These emerging market countries are; Argentina, Brazil, Korea, Malaysia, Mexico, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, Turkey.

2. DY is calculated monthly and it is defined as dividends paid over the prior year divided by the current level of the price. Thus, DY is based on a rolling window of annual dividends. MtB is the ratio of the market equity in the previous month to the book equity for the previous fiscal year. Similarly, P/E is the ratio of market equity in the previous month to the net income after tax in the previous fiscal year.

3. Variance Inflation Factor (VIF) is a method used to determine multicollinearity. High VIF values implies that there is a multicollinearity among the independent variables. In practice, VIF values over 10 are interpreted as the indication of a multicollinearity among the independent variables.

4. We have found high correlations between Market to Book and Price-Earnings ratios (0.85 and 0.83 respectively) for Turkey and Russia. Though, VIF indices were less than threshold 10, research findings for these two countries should be interpreted carefully due the observed high correlation between research variables.