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RESEARCH ARTICLE

DOES EARNINGS PER SHARES (EPS) FACTOR REALLY MATTER FOR PRICING STOCKS ON THE VIETNAMESE STOCK MARKET?

***Le Long Hau**

School of Economics, Cantho University, Vietnam

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ABSTRACT

This study examined the effect of income factor on stock returns on Ho Chi Minh stock exchange using data collected from 2006 to 2014. Results from OLS regression showed that, compair to the other commonly-documented factors (market, size, value and liquidity factors), the income factor had a less significant impact on the stock returns. This mean that investors on stock market did not use EPS as a important variable in their stock-pricing model. Grounded on the findings, we put forward some recommendations.

INTRODUCTION

Sharpe (1964) and Lintner (1965) are pioneers in calibrating the tradeoff between risks and returns of stocks with the CAPM (Capital Asset Pricing Model), in which the returns on a stock is dependent on its market risk (measured by the beta coefficient). Fama and French (1992) find that together with the market factor, firm size and the book-to-market value can help also to predict the stock's returns (called the three-factor model). Other studies have also found a number of different factors that also explain the stock returns, for examples, among others, momentum, earnings per share (EPS) and liquidity factor (Carhart, 1997; Amihud and Mendelson, 1986; Amihud, 2002; etc.). The list of empirical studies on determinants of stock returns is unexhaustedfor stock markets around the world (e.g., Acharya and Pedersen, 2005; Keene and Peterson, 2007; AmihudvàMendelson, 1986; EleswarapuvàReinganum, 1993; Petersen vàFialkowski, 1994; BrenmanvàSubrahmanyam, 1996; ...). Like other emerging countries, the question of what factors may determine stock returns on the Vietnamese stock market is quite interesting for both academics and practioners. Some studies have been done for the Fama-French three-factor model (E.g., Truong Dong Loc and Duong Thi Hoang Trang, 2014; Tran ThiHai Ly, 2010), while others examine also the impact of liquidity factor on stock returns (Nguyen AnhPhong, 2012; Vo and Batten, 2010; Tran *et al.,* 2013). However, whether or not the income factor (EPS) – a common determinants of stock returns in empirical studies for stock markets of other countries – can help to predict stock returns in the stock market of Vietnam is still an open issue. Filling this gap of the literature, in this study we investigate the role of the income factor in explaining stock returns on the Ho chi minh stock exchange.

Corresponding author: Le Long Hau
School of Economics, Cantho University, Vietnam.

METHODOLOGY

Liquidity measure

Liquidity measure is defined following Amihud (2002). It reads

$$ILLIQ_{iy} = \frac{1}{D_{iy}} \sum_{t=1}^{D_{iy}} \frac{|R_{iyd}|}{VOLD_{iyyd}}$$

in which, D_{iy} is the number of trading days for stock i in the year; R_{iyd} represents returns of stock i in day d of year y and $VOLD_{iyyd}$ indicates the respective trading volumes of R_{iyd}

Portfolios and variables construction

Based on firm size, book-to-market-value ratio (BE/ME), liquidity ratio (LIQ) and earnings per share ratio (EP), we construct portfolios and variables following the approach by Fama and French (1993) and other previous studies (Datar et al. (1998), Batten and Vo (2010), Tran et al. (2014)). In this study, the time frame of portfolio reconstruction is 12 months. If a company's cap is less than or equal to 50% of the market cap for the entire market, then it is classified as a small group

(Portfolio S), and vice versa categorized into a big group (portfolio B). BE/ME ratio, liquidity (LIQ) and Earning Per Shares (EP) are sorted by the same manner: companies in the 30% lowest value group isclassified intoportfolio L (Low), 40% of stocks with subsequent values will be listed as portfolio M (Medium) and the remaining 30% of stocks with the highest values iscategorized asportfolio H (High).

Table 1.Portfolios constructions

Size	BE/ME (Book-to-Market)		
	L (30%)	M (40%)	H (30%)
S (50%)	SL	SM	SH
B (50%)	BL	BM	BH
	EP (Earnings Per Share)		
	E_L (30%)	E_M (40%)	E_H (30%)
S (50%)	SE_L	SE_M	SE_H
B (50%)	BE_L	BE_M	BE_H
	LIQ (Liquidity)		
	L_L (30%)	L_M (40%)	L_H (30%)
S (50%)	SL_L	SL_M	SL_H
B (50%)	BL_L	BL_M	BL_H

Four variables comprising of size factor (SMB), value factor (HML), liquidity factor (LIQ) and income factor (EP) are calculated using the approach by Fama-French (1993): Size factor (SMB-small minus big): defined by average returns on small portfolios (S) minus average returns on big portfolios (B).

$$SMB = \frac{(SL - BL) + (SM - BM) + (SH - BH)}{3}$$

Value factor (HML-high minus low): defined by average returns on high-BE/ME portfolios (H)minus average returns on low-BE/ME portfolios (L).

$$HML = \frac{(SH - SL) + (BH - BL)}{2}$$

Income factor (EPS-earnings per share): defined by average returns on low-EPS portfolios (E_L)minus average returns on high-EPS portfolios (E_H)

$$EP = \frac{(SE_L - SE_H) + (BE_L - BE_H)}{2}$$

Liquidity factor (LIQ): defined by average returns on low-liquidity portfolios (L_L)minus average returns on high-liquidity portfolios (L_H)

$$LIQ = \frac{(SL_L - SL_H) + (BL_L - BL_H)}{2}$$

Empirical model

Whilea number of previous studies have shown the applicability of the Fama-French three-factor model (1952) for the Vietnamese stock market (E.g., Truong Dong Loc and

Table 2. Descriptive statistics for all variables

Variables	Observations	Mean	Std.	Min	Max	P-Value ADF
MP	409	-0.0793	4.4105	-16.3330	13.3249	0.000
SMB	409	0.0200	1.6558	-6.8403	5.6220	0.000
HTL	409	0.4175	2.8216	-12.9171	11.9081	0.000
EP	409	-0.2769	2.3050	-10.2362	17.3031	0.000
LIQ	409	-0.0319	2.7211	-10.9656	10.0019	0.000

Table 3. Correlation matrix among variables

	MP	SMB	HML	EP	LIQ
MP	1.000				
SMB	-0.321	1.000			
HML	0.154	-0.167	1.000		
EP	0.100	0.064	-0.0309	-0.0333	1.000
LIQ	-0.297	0.260	-0.206	-0.2452	1.000

Table 4. Regression results from the three-factor model by Fama-French augmented with the liquidity and income factors for all portfolios

	Firm size					BE/ME			
		B	S	B	S		BM	SM	BM	SM
Liquidity		b		t(b)			b		t(b)	
	L_L	0.947	0.886	31.950	41.670	L_L	0.899	0.881	39.600	32.820
	L_H	0.931	0.903	45.940	29.980	L_H	0.887	0.940	31.560	47.570
		s		t(s)			s		t(s)	
	L_L	-0.122	0.931	-1.560	16.580	L_L	0.782	0.680	13.040	9.590
	L_H	-0.203	1.012	-3.800	12.740	L_H	0.533	-0.154	7.190	-2.950
		h		t(h)			h		t(h)	
	L_L	0.355	0.489	8.050	15.470	L_L	0.606	0.290	17.950	7.280
	L_H	0.121	0.722	4.040	16.140	L_H	0.697	0.016	16.680	0.550
		ψ		t(ψ)			ψ		t(ψ)	
	L_L	0.809	0.185	16.520	5.270	L_L	0.237	0.295	6.310	6.650
	L_H	-0.327	-0.679	-9.760	-13.660	L_H	-0.534	-0.303	-11.510	-9.300
		π		t(π)			π		t(π)	
	L_L	0.236	-0.009	4.370	-0.230	L_L	0.032	-0.021	0.770	-0.440
	L_H	0.123	0.104	3.340	1.900	L_H	0.166	0.073	3.230	2.030
		α		t(α)			α		t(α)	
	L_L	-0.641	-0.573	-5.250	-6.540	L_L	-0.528	-0.669	-5.650	-6.050
	L_H	-0.563	-0.651	-6.750	-5.250	L_H	-0.522	-0.642	-4.510	-7.890
		Adjusted-R^2					Adjusted-R^2			
	L_L	0.761	0.839			L_L	0.833	0.742		
	L_H	0.889	0.822			L_H	0.832	0.890		

*Notes: L_L and $L_H$are low and high liquidity, respectively. t(.) is t-value for regression coefficients.

Duong Thi Hoang Trang, 2014; Tran Thi Hai Ly, 2010), other research finds that liquidity factor is also an important factor for pricing stocks on the Vietnamese stock market (Nguyen AnhPhong, 2012; Vo and Batten, 2010; Tran *et al.,* 2013). In this study, we estimate a model with five factors, i.e. the Fama-French three-factor model (1952) augmented with theliquidity (LIQ)and Earning Per Shares (EP) factors, to test for the role of EP in pricing stocks. Specifically, the empirical model is shown as:

$$R_{pt} - R_{ft} = \alpha_p + b_p MP_t + s_p SMB_t + h_p HTM_t + \psi_p LIQ_1 + \pi_p EP_t + \varepsilon_{pt}$$

in which:R_{pt} is the average portfolio returns at time t; R_{ft} is risk-free rate at time t; MP represents the excess returns of the market (market returns minus risk-free rates at time t); SMB_t (small-minus-big) indicates size factor at time t; HML_t (high-minus-low) is value factor at time t; LIQ_t(low-minus-high liquidity) shows liquidity factor at time t; EP_t is income factor at time t and ε_{pt} is error terms. All portfolios are first sorted based on three criteria including firm size, BE/ME ratios and liquidity. Sorting by this manner can control for effects of size, value and liquidity factorson stock returns.Then regressions on stock portfolios are implemented using the OLS method.

Variables are checked for stationary with ADF test. OLS assumptions are also tested and corrected for violations using appropriate methods.

Data

All stock prices and market price index data are obtained from Ho Chi Minh Stock Exchange from 1/2006 to 12/2014.All data are in monthly frequency. Financial reports of listed firms are gathered from their websites.Government bond rates proxies for risk-free rates, collected from the stock market's website.

Empirical results

Descriptive statistics

Table 2 shows the summary statistics for variables. In general, since no outliers in data can be observed, OLS estimations is appropriate. Besides, all variables are stationary. As can be seen from Table 3, the correlation between variables is fairly small (almost less than 0.3). Therefore, the possible effects of multi-collinearity in OLS regressions are negligible.

Regression results

Table 4 presents results of the OLS regression estimations for all portfolios sorted by firm size, BE/ME ratio and liquidity factor.As can be seen, all coefficients of the market factor (*b*) for all portfolios arestatistically positive at 1% level and very close to 1.0. The coefficient of size factor (*s*) is statistically significant in 7 portfolios, only one coefficients are notstatistically significant (i.e. big size portfolios (B) - liquidity is BL_L). For the value factor, all coefficients (*h*) for most portfolios are positiveand statistical significance at the 1% level, except for SML_H. For the liquidity factor, all regression coefficients $(\psi)$are statistically significant at the 1% level. As expected, these results are similar to those in the previous studies (E.g., Lam and Tam (2011), Keene and Peterson (2007), Fama and French (1993)), confirming the applicability of our investigating approach. As for the income factor (EP), the regression coefficient of only 4 portfolios is statistically positive at the 1% to 5% level, meanwhile that of the others are not (i.e. portfolios: SL_L, BML_L, SML_L). Noticeably, although significantly, all the coefficients are relatively smaller than those of other factors. Remarkably, all intercepts (α) for portfolios are significantly negative at about 1% level with the absolute value of below 0.6. To sum up, compare to the others comprising of market, size, value and liquidity factors, the income factor does not seem to have a significant impact on the stock-pricing model on the Vietnamese stock market. In other words, investors on the stock market do not take into account of the EPS ratio when valuing stocks. These results could be explained by the fact that stock market in developing countries such as Vietnam often suffer from poor accounting practices, price manipulation, and so forth. As a consequence, the market growth does not necessarily mean that they are sophisticated, and stock pricesis potentially driven by speculative motives (Shirai, 2004). In fact, it has been argued that emerging stock markets are highly volatile and may not reflect market fundamentals but instead be affected by "bubbles" or factors other than the present value of the expected future profits (Goergen and Renneboog, 2001, Bond *et al.,* 2004). These reasons may result in an untrue value of EPS, this in turn deteriorates the market participants' beliefs in the information signaling by earnings-per-share ratio. Investors hence exclude the income factor from the stock-pricing model.

Conclusion and recommendation

This study examines the role of income factor (EPS) in pricing common stocks in the Ho Chi Minh Stock Exchange. Compare to the other factors comprising of market, size, value and liquidity, we find that the income factor seems to play a less important role in the stock-pricing model. In other words, investors may not consider the income factor when valuing shares in the Vietnam stock market. These results could be explained by the investors' beliefs in the accuracy of EPS ratio (and hence its contained information) due to poor accounting practices, price manipulation, high volatility and bubbles of stock prices. A number of recommendations for policy makers and stock market managers have been putforward. Firstly, stricter supervision rules should be imposed to avoid illegal stock prices manipulations leading to price bubbling. In addition, more transparency and timely information declaration to investors should also be taken care of to avoid the asymmetry, which can reduce speculative motives. Finally, higher standardized accounting standards should also be applied for listed firms.

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