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INDUSTRY COMPETITION AND COMMON STOCK RETURNS

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Abstract: This paper examines the relationship between industry competitiveness and common stock returns of twenty listed firms of the Colombo Stock Exchange. The Herfindahl (1950) *H* index is extended to include the variance of cross sectional earnings dispersion that accounts for the relative competition of an industry. The regression results show that the industry competitiveness is unrelated to common stock returns when the extended *H* index is included in the regression specification as a common factor. Although the overall market factor (i.e. market return) remains statistically significant, coefficients of extended *H* index together with two other controlled factors become statistically insignificant in the regression. These findings suggest that the risk pertaining to industry competition is not priced as it could be diversified away by the appropriately managed value chain of the individual firms and, as such, no compensation for the risk of industry competition is demanded.

Keywords: industry competitiveness, common stock return, competitive position, value chain innovation, Herfindahl index.

1. Introduction

The relative position of a firm in a particular industry could be determined by observing whether the firm's profitability is above or below the industry average. A firm could be regarded as competitive in an industry if it maintains above average profitability in the long run (Porter, 1980). The firm's ability to maintain superior profitability in the long run could be identified as sustainable competitive advantage. It focuses on economics of a firm's ability to deliver excess return on capital employed over time. Without sustainable competitive advantage, a firm may not be able to appreciate the market value of its common stocks in the long run. If the firm's stock is accurately priced in the market, the stock price increments should be justified by the operating margins[1] earned by the firm at any given point of time.

On the other hand, the concentration of firms in an industry is of significant interest to policymakers of a country. Industry margins are determined by the operations of respective firms in the industry and the relative concentration. Hou and Robinson (2006) demonstrate that the firms operating in concentrated industries are relieved from competitive distress and show lower levels of innovation (see Hashem and Su (2015) and Arrow (1972)). As such, these firms report lower level of profitability and return on equity holdings. Dhaliwal, Judd, Serfling and Shaikh (2016) find a positive association between customer

[1] Together with many other determinants.

concentration and suppliers' cost of equity whereas Bain (1951) and Mann (1966) find that the required rate of return on equity is positively associated with market power. Gu (2016) shows that the research and development intensive firms tend to provide higher expected returns than firms operating in concentrated industries.

Lyandres and Watanabe (2012) find that the cash flow risk resulting from competition in the product market is significant and the product market competition is associated with average return on equity at firm-level. Conversely, using Fama and MacBeth (1973) framework, Hashem and Su (2015) show that the industry concentration (not the concentrations of individual firms in a particular industry) is negatively related to expected stock returns. Competitive advantage is derived from innovation as firms need to be innovative in order to be competitive. As such, by adapting to the changes in the business environment, the firms could build their competitive positions in the industry. The process of creating competitive advantage is therefore random and no firm could forecast the future competitive position based on past performance of the firm in terms of competitiveness. Ireland and Webb (2007) demonstrate how firms could exploit their competitive advantages through the process of innovation.

Firms input various resources in the process of production of goods and services and the ultimate outcome are determined by the efficiency and effectiveness of the firms' operation. Barney (1991) studies the linkage between firm resources and sustained competitive advantage and his findings support the hypothesis that organizational strategic resources are heterogeneously distributed and the differences are stable over time. In order to ensure a sufficient amount of demand in the market place, firms should adjust the product – market mix on the basis of competition. In such an exercise, the firms' managers should take into account the extent of industry competition which determines the viability of firms' competitive strategy. Porter (1980) suggests three main ways that a firm could compete in an industry. A firm may become the low-cost producer in an industry maintaining a given level of quality of goods and services that it produces. Also, a firm may differentiate its products and services, adding unique attributes that are valued by the customers so that a premium price could be charged. A combination of both could also be adopted focusing on a narrow market segment.

The issue of whether the firm could maintain excess return (above industry average) in the long run depends upon the firm's competitive position and the extent of competition in the industry. The extent of industry competition is determined by the concentration in a particular industry and the extent of competition among players in the industry. Therefore, the additional stock return premium for excessive industry competition should include the components of compensation on risk of industry concentration and excessive industry competition.

The objective of this paper is to examine the relationship between industry competitiveness and common stock returns. In particular, the paper aims at understudying the role of information associated with industry competitiveness in common stock pricing. Very specifically, it focuses on whether the risk of industry competition could be diversified away by innovations in the value chain of individual firms. The standard Herfindahl (1950) index will be extended to include an additional common factor which accounts for industry competitiveness. The paper is organized as follows. Section one illustrates how firms' value chain is related to stock market operation and industry competition. Section two provides the conceptual framework and section three describes the sample and sampling procedure. It also contains a brief description on the statistical properties of the sample. Section four outlines and discusses the results of regressions. Section five elaborates the limitations of the study and section six concludes the paper.

2. Industry competition and value chain

According to Porter (1985), a firm's operation surpasses two activities in the main; primarily activities pertaining operation from inbound logistic to after sales services and the secondary activities that support the main operation in the primary activities. Collectively, the cost of two activities together with margin determines the value of the products or services. Therefore, every firm needs supporting activities such as firm infrastructure, human resources management, information technology and procurement to carry out primary activities such as inbound logistics, operations, outbound logistics, marketing and sales and services. Firms start operation with a given book value each day and the value at the end of the day is determined by the operating margin of the day (i.e. Earnings per Share – EPS). On the assumption that dividends (earnings) are reinvested in the firm's equity, the day end book value of equity can simply be arrived at by adding the day end operational results to the brought forward equity value from time $t - 1$. The competitive advantage of a firm is not only derived from the tangible resources

<table>
<tr><td rowspan="6">Firm's perspective</td><td rowspan="6">Book Value of Equity of firm/(value per share) at time $t-1$</td><td colspan="5">Firm Infrastructure</td><td rowspan="6">Margin</td><td rowspan="6">Book Value of Equity of firm i (value per share) at time t</td></tr>
<tr><td colspan="5">Human Resource Management</td></tr>
<tr><td colspan="5">Information Technology</td></tr>
<tr><td colspan="5">Procurement</td></tr>
<tr><td>Inbound Logistics</td><td>Operations</td><td>Outbound Logistics</td><td>Marketing & Sales</td><td>Services</td></tr>
<tr><td>Market – firm perspective</td><td>Market value per share of firm i at time $t-1$</td><td colspan="5">Operation of firm i at time t observed by n number of firm-specific observations in the market</td><td>EPS_{it}</td><td>Market value per share of firm i at time t</td></tr>
<tr><td colspan="8">The risk of industry competition = $\frac{1}{N}\sum_{ig=1}^{N}\left(EPS_{it}-\overline{EPS}_{gt}\right)^2$</td></tr>
<tr><td>Market--industry perspective</td><td>Market value per share of firm i to N in industry g at time $t-1$*</td><td colspan="5">Operations of firm i to N at time t observed by n number of aggregate observations in the market</td><td>$\overline{EPS}_{gt}$</td><td>Market value per share of firm i to N in industry g at time t.</td></tr>
</table>

*Note that this is proxied by the industry index value at respective operational time as average per share value computation for all firms listed in a particular industry is meaningless. $\overline{EPS}_{gt}$ simply equals to the industry index change from time $t-1$ to time t.

Figure 1. Value chain and market operation

Source: authors' presentation.

but it also has a direct link to the intangible ones. The relative contribution that intangible resources make to competitive advantage has been clearly demonstrated in the literature (see especially Hall (1993)). Pfeffer (1995) shows how firms could achieve competitive success through successfully managing *people* or the human resources of organizations, recognizing them as sources of strategic advantage. The following figure illustrates how the firm's value chain could relate to the wealth of equity holders.

The operating margin generated from the operation at time t is added to the book value per share at $t-1$ on the assumption that the firm reinvests entire earnings in equity. After the firm's operation on day t, the market value per share of common stock is determined in the market (i.e. the closing price). The profit is simply the difference between value of sale of products and services and the cost of operation in the value chain on day t. Therefore, profitable operations result in high value of sales which could be observed in the market with high volumes (i.e. value) of equity trades. The figure first illustrates how innovation or increments (usually recognized as margins) in the firm's value chain could determine the book value per share of equity and then it outlines how the increments in value chain is appreciated by the firm's equity traders in the stock market. Finally, the figure exhibits the same operation in the market from industry perspective. The flow of Figure 1 speaks for itself.

3. Methodological framework

In view of the fact that exchange traded equity firms are highly competitive, a meaningful way to analyze the relationship between the extent of competition among listed firms, within a particular industry, and the overall return on equity is to compute a common index relating to competition among individual firms and industry concentration.

Let r_{it} be the change in market price p of stock i trading in an efficient market. The change in market price p from trading day $t-1$ to t, for instance, would therefore be $p_t - p_{t-1}$. The return r_{it} of stock i at time t could also be expressed as;

$$r_{it} = \frac{p_{it} - p_{it-1}}{p_{it-1}} * 100 \,. \tag{1}$$

The industry return[2] (without averaging) could be computed as,

$$r_{gt} = \frac{p_{gt} - p_{gt-1}}{p_{gt-1}} * 100 \,, \tag{2}$$

where p_{gt} is the return on industry g at time t.

The expected return of a common stock trading in an efficient stock market could be forecasted in such a way that the return is proportional to the none-diversifiable risk of the firm's stock (i.e. Black's (1972) version of capital asset pricing model (CAPM)),

[2] Note that this is proxied by industry index return.

$$r_{it} = \beta_0 + \beta_m r_{mt} + \varepsilon_t, \quad (3)$$

where β_0 is the intercept term, β_m is the beta coefficient and r_{mt} is the return on market portfolio at time *t*. The error term ε_t at time *t* should clearly be idiosyncratic.

Collect intraday conditional equilibrium price increments of each trade *j* on day *t* of firm *i* in the market which is summed up over a *monthly time horizon*, so that $r_{it|n_t} = \sum_{j=1}^{n_t} \delta_{jt}$ where n_t is the operation *n* at time *t*. The price increments are generated from a stationary and stochastic price process. Hence, the conditional price increments are positive and they are an increasing function of operation *n* at time *t* in the sense of Clark (1973) and Senarathne and Jayasinghe (2017). These price increments are solely attributable to equity holders as these firms are assumed to be fully equity financed. Assume that firm *i* adopts cash basis of accounting, so that $r_{it|n_t} = \left(E_{it}(\Delta)/Q_{it}\right)|n_t$ where $E_{it}(\Delta)$ is the change in equity of firm *i* from time *t* – 1 to *t* and Q_{it} is the quantity of shares in issue of firm *i* at time *t*. As mentioned several times, keep in mind that the dividends are reinvested in equity. Assume that the net margin of each firm is a function of sales, which is observed at each operation in the market and each firm maintains a constant net profit margin ratio over time. The change in price, for example, from time *t* – 1 to *t* is due to operation of the firm *i* at time *t*, which results in a new equilibrium price determined in the market. The change in equity of firm *i* is therefore justified only by the operating results of firm *i* at time *t*. The market share of firm *i* is proxied by the aggregate rupee value of trades of each operating day and the value of total market (in the industry) will be the aggregate value of all trades carried out by the firms in the industry for a particular day because the net profit margins generated from each sale of goods and services are justified in equity at the end of each day. Therefore, it is reasonable to assume that the market share of each firm at time *t* is proportional to the value of equity traded at time *t*.

Suppose that *N* number of firms are listed in the stock exchange under industry category *g*. On the assumption that all firms operating in industry *g* are listed, the concentration of industry *g* could be measured in the sense of Herfindahl (1950) in such a way that,

$$H = \frac{1}{N} + N\sigma^2, \quad (4)$$

where σ^2 is the variance of the firms' market shares which can be computed with operational time subscript as $\sigma_t^2 = \frac{1}{N}\sum_{ig=1}^{N}\left(s_{igt} - \mu_t\right)^2$. μ_t is simply the mean of the participation[3] (i.e. $\frac{1}{N}$) at time *t* and s_{igt} is the market share of firm *i* in the industry *g* at operational time *t*. *N* is the number of firms participated in equity trading at any given operational time. Equities are usually exchanged in the market at the correct value in efficient stock markets.

Although the index *H* could measure the relative concentration of a particular market or industry, the variance of the dispersion of firms' net operating margins from the industry average that determines the *risk of competition among firms in the industry* is completely ignored. In particular, if the variance of cross-sectional return dispersion of firms is large, the competitiveness of individual firms is subject to significant variation and the uncertainty associated with predicting future competitive positions of individual firms is increased. Hence, it becomes a common factor of industry concerns. Incorporating the variances of cross-sectional return dispersion of industry *g* into equation (4), equation (5) can be written as;

$$H = \frac{1}{N} + N\left[\left(\frac{1}{N}\sum_{ig=1}^{N}(s_{igt} - \mu)^2\right) + \left(\frac{1}{N}\sum_{ig=1}^{N}(r_{it} - \bar{r}_{igt})^2\right)\right], \quad (5)$$

where $\frac{1}{N}\sum_{ig=1}^{N}\left(r_{it} - \bar{r}_{igt}\right)^2$ is the variance of cross-sectional earnings dispersion of firm *i* to *N* with respect to industry average. The term $\bar{r}_{igt} = \left(\frac{1}{N}\sum_{ig=1}^{N} r_{igt}\right)$ is the average industry return. The best proxy for industry average returns is the industry index change (return) as usually computed by the exchanges of the world. A large body of literature shows that the industry concentration is positively related to profitability (Bain, 1956; Mann, 1966; Collins and Preston, 1969). However, Stigler (1963), Shepherd (1972) and Keil (2017) find a negative relationship between profit rates and industry concentration. Therefore, high variances of both firms' market shares and cross-sectional return dispersions will result in increased risk of competition in the industry. Assume that the competitive advantage is created by firms through innovation in the value chain in terms of operation. As such, the market share is gained through the value creation in the value chain. *I* is a random variable which carries new innovation on competitiveness of individual firms to the market and has no obvious connection with the past competitive positions maintained by individual firms because the

[3] Out of listed firms in the industry g, how many firms participate in the market operation (trading process) at time *t* The market structure is assumed to be asymmetric as the number of firms in the market is expected to vary over time. This assumption usually expects the industries with few players to have higher variances of cross-sectional return dispersions.

evolution to the economic innovation process itself is stochastic and an increasing function of time[4] t. That is to say, $I_t = \varphi$.

$$I_t = \varphi + b(L)I_{t-1} + \varepsilon_t, \quad (6)$$

where φ and b are constrained to be non-negative and L is the lag polynomial operator.

In the sense of Banz (1981), the relationship between industry competition and common stock returns could be examined by introducing the common factor (H), together with two control variables, into equation (03) as follows:

$$r_{it} = \theta + \beta_m r_{mt} + \psi H_t + \lambda MPER_t + \xi MPBV_t + \upsilon, \quad (7)$$

where r_{mt} is the return on market portfolio[5] and $MPER$ is the Market Price Earnings Ratio which reflects the financial performance of all listed firms in the CSE. $MPBV$ denotes the Market Price to Book Value of all listed firms, which reflects the firms' fundamentals and financial statuses ($MPER$ and $MPBV$ are included in the regression as controlled factors). The error term υ_t is assumed to be well-behaved and θ serves as a proxy for risk free rate of return (see: Fama and French (1993, p. 5)). Stock returns and variety of common factors move together due to a number of economy or industry wide information in addition to firm-specific information, for example, technological innovation, competition and regulation. If a common risk is associated with industry competitiveness which should be priced, factor H should be able to capture such a risk in the asset pricing model as in (07). Speculative common stockholders will require compensations, if H becomes an undiversifable common factor variation such as the market factor. Malkiel (2003) and Fama and French (1992, 1993, and 1998) conclude that the variables such as PER and PBV (respectively) provide considerable explanatory power of future stock returns. Penman, Reggiani, Richardson and Tuna (2015) present an accounting framework to explain why P/B must be complemented by P/E in a characteristic-based asset pricing model. However, if efficient market hypothesis is invoked, these variables will play an insignificant role in regression (07) as all information pertaining market level performance and fundamentals are expected to be reflected in the equity price changes (Fama, 1965, 1970)[6].

Under null hypothesis of industry competitiveness, as a common factor, is useful in explaining the future stock price changes of individual firms, ψ should be statistically significant and positive[7]. Specifically, when significant variations of cross sectional return dispersions exist in the industry, investors require an adjustment (i.e. upward revision as hypothesized) of their returns due to high risk associated with the excessive competition created through innovation. This premium is required irrespective of whether the firms are gaining or losing the competitive positions in the market because either side will affect the potential wealth of the equity holders. In efficient stock markets, the investors cannot benefit from the information contained in the market level fundamentals (Fama, 1965), if arbitrage opportunities are not available on unexplained firm-specific factors. As such, coefficients λ and ξ should be statistically insignificant when the corresponding variables are controlled for in the regression equation (07). However, the coefficient (β_m) which measures the systematic risk of firm's stock should be statistically significant (see Black (1972) and Banz (1981)).

The level of survival is assessed as the break-even value of operation and the maintenance of it is guaranteed by the assumptions made under equation (06). If the firms are operating in a highly competitive industry, it poses an additional risk to individual firms (see e.g. Mandelker 1974; Jiménez, Lopez and Saurina 2013; Kick and Prieto 2014). This requires firms' equity holders to raise the return required on their investments, given the uncertainty associated with volatility of firms' excess earnings due to excessive competition. As such, the common stock returns and industry competitiveness should be positively related.

As argued under equation (06), the past industry competitiveness should not be related to current stock returns, if H is a common industry (or market) factor for stock pricing. Whether the past industry competitiveness is related to future stock return forecasting could be estimated by adopting the following representation,

$$r_{it} = \Omega + \beta_m r_{mt-1} + \varphi H_{t-1} + \xi MPER_{t-1} + \pi MPBV_{t-1} + u_t. \quad (8)$$

[4] Because it is assumed that the economy is not shrinking in terms of its innovation capacity. In particular, Hall, Jaffe and Trajtenberg (2000) quote that 'the market already knows much about the quality of inventions, which will ultimately be confirmed by the arrival of future citations that are unexpected in the sense of unpredictable based only on past citation information'. Number of patent citations has been taken as a proxy for firms' innovation and flows of knowledge and information (see e.g. Decarolis and Deeds (1999), Jaffe, Trajtenberg and Fogarty (2000), Yu and Wu (2014), Senarathne and Jianguo (2017)).

[5] I.e. the overall market factor which is the All Share Price Index (ASPI) return.

[6] Provided that the equation (03) is well specified.

[7] Coefficient ψ is capable of accounting whether the competitiveness has been sustained over time. This hypothesis is built upon on the usual arguments raised in the scholarly work (see: e.g. Fama and French 1992).

Under null hypothesis of stochastic process of creating competitive advantage and no helpful information could be gained by equity holders from past performance of firms in terms of industry competitiveness[8], the coefficient (φ) should be statistically insignificant. As such, the common stock holders of individual firms cannot benefit from the past information pertaining to industry competition. Coefficients of lagged control variables should not be helpful in forecasting stock returns, if the efficient market condition is established at individual stock level[9] (see Fama, 1965, 1970).

4. Data and methodology

Monthly stock prices and the firms' stock trading data are obtained from the data library of Colombo Stock Exchange. Twenty firms are selected from the population of all listed firms traded in the Colombo Stock Exchange (CSE) during the period January 2005 to December 2016. Monthly data pertaining to each industry including number of listings and other trading statistics are contained in the date set available in the data library. Index *H* is computed using the processed data according to equation (05)[10]. As already mentioned, it is assumed that all firms in a particular industry are listed in the CSE in order to make the necessary calculations possible according to conceptual model. The participation of individual firms in a particular industry is the number of firms participated (transacted) in the trading process under such industry during the sampling period. Some descriptive statistics of sample data are provided in Table 1.

As Table 1 outlines, monthly stock returns exhibit nonnormality in their distributions for all firms. Except for manufacturing industry return, return distributions of all other industries are nonnormal. Unconditional distributions of asset price changes are usually highly nonnormal, given the apparent association with common market expectation (see especially Fama (1965) for a complete survey). For the firms and industries whose returns are nonnormal, JB test statistic substantially exceeds its critical value of 5.99. The distributions of market return, *MPER* and *MPBV* variables are nonnormal. However, *MPER* is approximately normally distributed as JB test statistic marginally exceeds the critical value.

The index *H* data computed for each industry are highly nonnorally distributed as JB test statistic exceeds its critical value significantly. The null hypothesis for common stock returns of individual firms, industry returns and *H* Index data having unit roots is rejected for five industries as the test statistic is significantly below the critical value of –2.87 at 5% significance level. However, the nonstationarity is observed in *MPBV* and *H* index data for diversified and investment trust industries whereas the distribution of *MPER* is approximately nonstationary at 5% significance level. More importantly, the industry competition as measured by *H* index is very high for industries with few firms and vice versa[11]. However, whether the risk of industry competitiveness is reflected in the common stock returns of individual firms must be examined by regression results of equation (07) above.

5. Findings and Discussions

As Table 2 outlines, the coefficient (ψ) is statistically insignificant for sixteen firms at 5% significance level[12] rejecting the null hypothesis of the study. This implies that the industry competitiveness is not related to stock price increments as the corresponding risk could be diversified away by managing the value chain (i.e. the risk is unpriced) of individual firms. In other words, the investors could not increase the potential wealth[13] by trading on the information pertaining to industry competitiveness. The beta coefficients (β_m) of eighteen firms are positive and statistically significant at 5% significance level[14]. The coefficients (λ) and (ξ) correspond to control variables, *MPER* and *MPBV* are statistically insignificant for eighteen and nineteen firms (at 5% significance level)[15], respectively. Although these market level factors have shown some explanatory power of stock returns in other settings, the findings of this study suggest that they are unable to play the role as expected in the specification (07)[16]. Similar results (i.e. insignificant coefficients) have also been shown by Tseng (1988), Chung, Johnson and Schill (2006), Lhabitant and Gregoriou (2008,

[8] As per the conditions imposed in equation (6) and on the basis of arguments raised in the immediately preceding paragraph.

[9] Because the past information attached to control variables has already been reflected in the stock price changes (Fama, 1965).

[10] The effect of de-listing and new listing on the computations has been treated. However, these very few adjustments have no effect on the main results.

[11] This is in line with the central idea of Herfindahl (1950).

[12] The coefficients of two firms are negative and statistically significant at 10% significance level.

[13] By arbitrage opportunities.

[14] One firm at 10% significance level.

[15] Coefficients of *MPER and MPBV* for three and two firms are statistically significant at 10% significance level respectively.

[16] See: Fama (1965) and Banz (1981) for a complete exposition.

Table 1. Descriptive statistics of sample data

Firm	No. of Firms	Industry	Var	N	JB	ADF	Mean	Median	Max.	Min.
First Capital Holdings	43	Banks, Finance & Insurance	r_i	144	486.75	–12.40	0.031	–0.011	1.315	–0.690
			r_g	144	279.68	–10.34	0.015	0.008	0.436	–0.156
			h	144	32858.24	–11.64	0.039	0.032	0.435	0.017
Commercial Bank of Ceylon (Voting)	43	Banks, Finance & Insurance	r_i	144	356.38	–.11.22	0.006	0.005	0.504	–0.495
			r_g	144	279.68	–10.34	0.015	0.008	0.436	–0.156
			h	144	32858.24	–11.64	0.039	0.032	0.435	0.017
Eden Hotel Lanka	34	Hotels & Travels	r_i	144	911.00	–11.67	0.005	–0.011	0.893	–0.246
			r_g	144	108.03	–10.31	0.008	–0.003	0.340	–0.209
			h	144	9044.54	–10.86	0.055	0.054	0.221	0.031
Property Development	18	Land & Property	r_i	144	21.17	–15.38	0.018	0.001	0.413	–0.225
			r_g	144	82.65	–12.50	0.012	0.000	0.408	–0.233
			h	144	9792.593	–3.90	0.103	0.095	0.658	0.056
Chevron Lubricants Lanka	33	Manufacturing	r_i	144	1352.33	–13.17	0.010	0.008	0.316	–0.559
			r_g	144	2.80	–11.23	0.013	0.005	0.209	–0.194
			h	144	8872.586	–10.92	0.050	0.040	0.411	0.028
Kelani Tyres	33	Manufacturing	r_i	144	145.46	–11.42	0.025	0.000	0.721	–0.570
			r_g	144	2.80	–11.23	0.013	0.005	0.209	–0.194
			h	144	8872.586	–10.92	0.050	0.040	0.411	0.028
Union Assurance	43	Banks, Finance & Insurance	r_i	144	123.41	–11.83	0.016	0.011	0.460	–0.557
			r_g	144	279.68	–10.34	0.015	0.008	0.436	–0.156
			h	144	32858.24	–11.64	0.039	0.032	0.435	0.017
Aitken Spence Hotel Holdings	14	Diversified	r_i	144	1844.48	–10.90	0.007	0.000	0.564	–0.868
			r_g	144	180.26	–9.75	0.010	0.002	0.416	–0.205
			h	144	17971.85	–2.41	0.136	0.135	0.755	0.063
Hayleys Fibre	33	Manufacturing	r_i	144	77.37	–13.44	0.012	–0.027	0.591	–0.337
			r_g	144	2.80	–11.23	0.013	0.005	0.209	–0.194
			h	144	8872.586	–10.92	0.050	0.040	0.411	0.028
Lanka Ventures	43	Banks, Finance & Insurance	r_i	144	39.81	–12.00	0.015	0.017	0.391	–0.212
			r_g	144	279.68	–10.34	0.015	0.008	0.436	–0.156
			h	144	32858.24	–11.64	0.039	0.032	0.435	0.017
Richard Pieris and Company	14	Diversified	r_i	144	791.78	–13.27	0.000	0.000	0.511	(0.937)
			r_g	144	180.26	–9.75	0.010	0.002	0.416	–0.205
			h	144	17971.85	–2.41	0.136	0.135	0.755	0.063
Hatton National Bank (Voting)	43	Banks, Finance & Insurance	r_i	144	283.59	–10.82	0.015	0.008	0.344	–0.518
			r_g	144	279.68	–10.34	0.015	0.008	0.436	–0.156
			h	144	32858.24	–11.64	0.039	0.032	0.435	0.017
Merchant Bank of Sri Lanka & Finance	43	Banks, Finance & Insurance	r_i	144	62.74	–10.64	0.006	–0.008	0.483	–0.327
			r_g	144	279.68	–10.34	0.015	0.008	0.436	–0.156
			h	144	32858.24	–11.64	0.039	0.032	0.435	0.017
Ceylon Investment	08	Investment Trust	r_i	144	200.67	–11.75	0.007	–0.008	0.456	(0.798)
			r_g	144	2437.57	–12.53	0.012	–0.002	1.124	–0.456
			h	144	198.47	–2.36	0.252	0.217	0.649	0.111
Lankem Ceylon	09	Chemical and Pharmacyeutical	r_i	144	71.99	–11.05	0.013	–0.014	0.582	–0.279
			r_g	144	28.71	–10.87	0.012	0.002	0.326	–0.205
			h	144	24.10	–6.81	0.193	0.191	0.337	0.100
Seylan Bank (Voting)	43	Banks, Finance & Insurance	r_i	144	256.07	–10.55	0.013	–0.014	0.560	–0.234
			r_g	144	279.68	–10.34	0.015	0.008	0.436	–0.156
			h	144	32858.24	–11.64	0.039	0.032	0.435	0.017

Colombo Land &Development	18	Land & Property	r_i	139	310.46	–12.80	0.025	–0.014	0.769	–0.333
			r_g	139	82.65	–12.50	0.012	0.000	0.408	–0.233
			h	139	9792.593	–3.90	0.103	0.095	0.658	0.056
Overseas Realty (Ceylon)	18	Land & Property	r_i	144	1822.01	–12.50	0.014	0.000	0.952	–0.293
			r_g	144	82.65	–12.50	0.012	0.000	0.408	–0.233
			h	144	9792.593	–3.90	0.103	0.095	0.658	0.056
John Keells Holdings	14	Diversified	r_i	144	284.30	–10.70	0.006	–0.001	0.601	–0.330
			r_g	144	180.26	–9.75	0.010	0.002	0.416	–0.205
			h	144	17971.85	–2.41	0.136	0.135	0.755	0.063
Hayleys	14	Diversified	r_i	144	172.85	–10.76	0.007	0.000	0.429	–0.281
			r_g	144	180.26	–9.75	0.010	0.002	0.416	–0.205
			h	144	17971.85	–2.41	0.136	0.135	0.755	0.063
Control Variables			*ASPI*	144	18.12	–10.06	0.011	0.005	0.236	–0.161
			MPER	144	7.74	–2.99	15.429	15.005	29.500	5.380
			MPBV	144	13.31	–1.66	1.897	1.915	3.500	0.760

Note:

1. JB - Jarque–Bera test statistic for normality. Under null hypothesis for normality, critical value of $\chi 2$ (2) distribution at 5% significance level is 5.99.

2. ADF- Augmented Dickey–Fuller test statistic for stationarity of returns for maximum 15 lags. Under null hypothesis for residuals having unit root, the critical value at 5% significance level is -2.87.

3. Number of firms is the average number of firms traded during the sampling period. Traded firms are more appropriate than listed first under a particular industry. Note that the number of firms traded may vary over time.

Source: author's presentation.

Table 2. Empirical test results (estimating equation 07-NW)

No	Firm	β_m	t-stat	ψ	t-stat	λ	t-stat	ξ	t-stat
1	First Capital Holdings	1.3019*	4.8331	0.2515	1.1956	–0.0019	–0.1498	–0.0285	–0.2476
2	Commercial Bank of Ceylon (Voting)	1.0535*	6.6477	–0.2040*	–2.4114	–0.0012	–0.2905	–0.0071	–0.1942
3	Eden Hotel Lanka	1.4092*	5.1828	0.1310	0.4759	–0.0076	–1.4340	0.0270	0.6207
4	Property Development	1.2201*	9.0167	0.3366*	4.2377	–0.0055	–1.6074	0.0493	1.6328
5	Chevron Lubricants Lanka	0.5376*	3.4488	–0.108**	–1.8494	–0.007**	–1.8711	0.0627	1.4886
6	Kelani Tyres	1.5603*	7.6404	–0.0804	–0.5763	–0.0151*	–2.7851	0.1015*	2.3273
7	Union Assurance	1.0238*	6.5312	–0.0362	–0.1702	–0.0023	–0.3566	0.0215	0.3557
8	Aitken Spence Hotel Holdings	0.9952*	7.8093	–0.1078	–1.4588	–0.0042	–1.0177	–0.0189	–0.4543
9	Hayleys Fibre	1.4086*	6.2737	–0.2072	–0.6580	–0.0003	–0.0546	–0.0059	–0.1320
10	Lanka Ventures	0.9927*	6.1476	0.4038*	6.4440	0.0015	0.5523	–0.0091	–0.3377
11	Richard Pieris and Company	1.4291*	6.7776	–0.0643	–0.7985	0.0042	0.7408	–0.0601	–1.4658
12	Hatton National Bank (Voting)	1.0116*	10.3183	–0.0861	–0.7713	0.0027	0.8314	–0.0482	–1.3775
13	Merchant Bank of Sri Lanka & Finance	1.4963*	10.3132	0.2349*	2.2063	–0.0019	–0.4342	0.0006	0.0142
14	Ceylon Investment	1.7528*	14.3057	–0.2022	–1.6044	–0.008**	–1.7518	0.0284	0.8261
15	Lankem Ceylon	1.6354*	10.0327	–0.2605	–0.7926	–0.0016	–0.2559	0.0305	0.5172
16	Seylan Bank (Voting)	1.0428*	5.7115	0.0506	0.5600	0.0033	0.9327	–0.0457	–1.3676
17	Colombo Land & Development	0.4152	1.4674	–0.1218	–0.5500	0.0077	1.1438	–0.0618	–0.9376
18	Overseas Realty (Ceylon)	1.1735*	5.0043	0.2151	1.0450	–0.0108*	–2.0718	0.0786**	1.6749
19	John Keells Holdings	1.2252*	8.7751	–0.142**	–1.6905	–0.0016	–0.5169	–0.0129	–0.5416
20	Hayleys	0.1515**	1.8702	–0.0405	–0.4816	0.0080**	1.8325	–0.0610**	–1.6734

Note:

1. NW stands for Newey and West (1987) procedures for the estimate of regression coefficients on the robust standard errors for consistent heteroskedasticity and autocorrelation.

2. *Statistically significant at 5% significance level assuming conditional normality.

3. ** Statistically significant at 10% significance level assuming conditional normality.

Source: author's presentation.

Table 3. Empirical test results (estimating equation 08-NW)

No	Firm	β_m	t-stat	φ	t-stat	ζ	t-stat	π	t-stat
1	First Capital Holdings	0.0319	0.0819	–0.2744**	–1.8032	0.0096	0.9038	–0.1453	–1.4450
2	Commercial Bank of Ceylon (Voting)	0.1108	0.8319	–0.0811	–1.3418	0.0091*	2.0273	–0.1172*	–2.6703
3	Eden Hotel Lanka	–0.0610	–0.3024	0.0967	0.3278	0.0071	0.9418	–0.1190**	–1.8020
4	Property Development	–0.1075	–0.7865	–0.2834	–1.6048	0.0064	1.6546	–0.0556	–1.5097
5	Chevron Lubricants Lanka	0.0191	0.1851	–0.0623	–0.7495	–0.0031	–0.8796	0.0087	0.2546
6	Kelani Tyres	0.2112	0.9515	–0.4054	–1.0977	–0.0020	–0.2157	–0.0316	–0.4134
7	Union Assurance	0.0982	0.6556	0.2766**	1.7195	0.0052	0.9028	–0.0560	–0.9835
8	Aitken Spence Hotel Holdings	0.1952	1.0299	0.0666	0.3607	0.0035	0.5581	–0.1006**	–1.8841
9	Hayleys Fibre	–0.1913	–0.7660	–0.2216	–1.5963	0.0150*	2.4854	–0.1574*	–2.7531
10	Lanka Ventures	–0.0112	–0.0686	0.0144	0.1534	0.0087*	2.1365	–0.0861*	–2.2933
11	Richard Pieris and Company	–0.1742	–0.5234	–0.0101	–0.0460	0.0168*	2.2751	–0.1835*	–2.6713
12	Hatton National Bank (Voting)	0.1516	1.0309	–0.2060**	–1.9205	0.0100*	2.1714	–0.1345*	–3.3028
13	Merchant Bank of Sri Lanka & Finance	0.0827	0.4507	0.3635*	4.3099	0.0109	1.6355	–0.1344*	–2.3945
14	Ceylon Investment	–0.1491	–0.5014	–0.1318	–1.1977	0.0110	1.5275	–0.1573*	–2.3154
15	Lankem Ceylon	0.1041	0.5961	0.3786	1.0262	0.0167**	1.6935	–0.1420	–1.6003
16	Seylan Bank (Voting)	–0.2155	–1.1992	–0.2583*	–2.7688	0.0129*	2.2478	–0.1456*	–2.8187
17	Colombo Land & Development	–0.3109	–1.4143	–0.3412	–1.1501	0.0181*	2.6811	–0.1554*	–2.1553
18	Overseas Realty (Ceylon)	0.0338	0.1385	–0.2400	–1.0104	0.0009	0.2216	–0.0250	–0.6915
19	John Keells Holdings	0.1235	0.7907	0.2181	1.0660	0.0105*	2.2464	–0.1302*	–3.2192
20	Hayleys	0.6875*	7.0659	0.0568	1.3552	0.0039	1.2158	–0.0375	–1.4333

Note:

1. NW stands for Newey and West (1987) procedures for the estimate of regression coefficients on the robust standard errors for consistent heteroskedasticity and autocorrelation.

2. *Statistically significant at 5% significance level assuming conditional normality.

3. ** Statistically significant at 10% significance level assuming conditional normality.

Source: author's presentation.

p. 431), Khan (2009), Levy (2011, p. 207) and Novak and Petr (2011). Overall, the regression equation (07) simplifies to the Black's (1972) version of CAPM. The insignificance of coefficients applicable to *MPER* and *MPBV* further testifies that equation (03) is well specified in the sense of Banz (1981).

Irrespective of statistical significance, the reported coefficient of index *H* is negative for thirteen firms. These findings complement the conclusions of Hou and Robinson (2006, p. 1) that the equity holders expect a lower return when firms are operating in highly concentrated industries, because they engage in less innovation activities and, as such, the common stockholders demand a lower expected return. Hashem and Su (2015) also find a negative association between industry concentrations and expected stock returns. On the other hand, the relative competitive position of a firm in a particular industry is also determined by the macro economic factors, for example, foreign exchange exposure to firm's operation (see e.g. Griffin and Stulz (2001)). Generation of excess return in a particular industry does not itself guarantee that the firms' competitive positions are sustained and they must be recognized with reference to the overall competitiveness in the industry.

The past industry competitiveness is unrelated to common stock returns as the reported coefficient (φ) is statistically insignificant for eighteen firms at 5% significance level[17]. The coefficient (φ) is negative for twelve firms in the sample. Negative association between past industry competitiveness and the common stock returns implies that the investors reveal the pattern of creating and maintaining competitive advantage of individual firms. However, the evidence from the majority (i.e. 90% of the sample) of firms suggests that the common stock returns are not related to past industry competitiveness. The systematic risk of prior periods as measured by (β_m) are unrelated to stock returns for all firms except for Hayleys. However, some useful information appears to be contained in the prior periods *MPER* and *MPBV* as their coefficients are statistically significant at 5% significance

[17] The coefficients of three firms are statistically significant at 10% significance level.

level for eight and ten firms respectively[18]. These findings may also be attributable to late reactions of stock prices to current information on industry competitiveness and other common factors (see e.g. Abarbanell and Bernard (1992), Poteshman (2001), Kadiyala and Rau (2004), Spyrou, Kassimatis and Galariotis (2007) for findings on late reactions of stock prices to current information).

6. Limitations of the study

Although the industry participation at any given operational time is proxied by the number of listed firms participating in equity trading (i.e. traded equity), the participation of non-listed firms may alter the reported participation rates. Of course, if there is no change in the value chain of a firm which results in the change in equity as depicted in Figure 1, trading does not make sense as it is not justified by new information or updates about the firms competitiveness[19]. This proxy is taken as there is no secondary data available on firms' participation in a particular industry. However, the use of stock market data for computing Herfindahl index is not new in this section of economics (see especially Nawrocki and Carter (2010)). The market share of each firm is ascertained on the basis of equity sales value observed at each operational time[20]. This proxy is quite reasonable as high sales of product and services due to profitable operation should be observed in the market, if stock prices quickly adjust underlying information.

7. Conclusions

According to Schumpeter (1912), innovation itself is risky and results in creative destruction in competitive industries. There is no obvious connection between past competitiveness, for example, competitiveness created through technological innovation, and common stock return because the economic innovation evolves over time and is an increasing function of time, if the economy is not shrinking in terms of its innovation capacity. Therefore, the firms are forced to update with what is novel in terms of innovation and adapt to the changing environment. If a firm is unable to cope up with the changes in the industry in terms of innovation, it is highly likely that the firm's competitiveness will be lost in the market. The industry competitiveness is therefore important for stakeholders of a firm in order to understand the risk of relevant interest in the firm. For example, suppliers of raw material may increase the prices of supplies if the firm is operating in a highly competitive industry. More importantly, the suppliers may be more concerned about the firm's competitive position in the industry (i.e. whether the firm maintains above average returns in the industry) because it affects the suppliers supply chain risk (e.g. default risk). Value chain is part and parcel of competitive strategy and the risk of value chain operation (including risk of innovation) collectively determines the ultimate expectation (or risk premium) of common stockholders on firm's competitiveness. On the other hand, firms' equity investors do not receive any useful information from past competitiveness of the industry. As such, stock price changes are independent from the past records pertaining to industry competitiveness.

Moreover, the equity holders, as the most important internal stakeholders of a firm, may be more concerned about the industry competition as it creates an additional business risk (i.e. variability in firm's earnings due to uncertainty associated with firm's competitive strategy[21]) that ultimately impacts the return required by the ordinary shareholders. The regression results show that the stock price increments are independent from industry competitiveness as the risk of industry competitiveness is not priced in the regression specification. The findings suggest that the risk of industry competitiveness is diversifiable through innovation in the value chain as stockholders demand no compensation on the excessive risk of industry competition. As conceptually illustrated, the firms could respond to the risk of industry competition by appropriately designing/adjusting their competitive strategies, so that the shareholder risk could be successfully managed.

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[18] However, the coefficients of *MPER* and *MPBV* for one and two firms are statistically significant at 10% significance level, respectively.

[19] This argument is supported by the efficient market hypothesis of Fama (1965).

[20] Other measures of market share include assets, products, geographic regional subsets or new business premium (see e.g. Thorburn (2008)).

[21] As such, frequent changes to business strategy may result in significant volatility of firm's cash flows.

References

Abarbanell, J. S., and Bernard, V. L. (1992). Tests of analysts' overreaction/underreaction to earnings information as an explanation for anomalous stock price behavior, *Journal of Finance*, *47*(3), 1181-1207.

Arrow, K. J. (1972). *Economic welfare and the allocation of resources for invention*. In C. K. Rowley (Ed), *Readings in Industrial Economics* (pp. 219-236). London: Palgrave.

Bain, J. S. (1951). Relation of profit rate to industry concentration: American manufacturing, 1936–1940, *The Quarterly Journal of Economics, 65*(3), 293-324.

Bain, J. S. (1956). *Barriers to new competition* (vol. 3, p. 55). Cambridge, MA: Harvard University Press.

Banz, R. W. (1981). The relationship between return and market value of common stocks, *Journal of Financial Economics*, *9*(1), 3-18.

Barney, J. (1991). Firm resources and sustained competitive advantage, *Journal of Management*, *17*(1), 99-120.

Black, F. (1972). Capital market equilibrium with restricted borrowing, *The Journal of Business*, *45*(3), 444-455.

Chung, Y. P., Johnson, H., and Schill, M. J. (2006). Asset pricing when returns are nonnormal: Fama–French factors versus higher–order systematic comoments, *The Journal of Business*, *79*(2), 923-940.

Clark, P. K. (1973). A subordinated stochastic process model with finite variance for speculative prices, *Econometrica*, *41*, 135-155.

Collins, N. R., and Preston, L. E. (1969). Price-cost margins and industry structure, *The Review of Economics and Statistics, 51*, 271-286.

Decarolis, D. M., and Deeds, D. L. (1999). The impact of stocks and flows of organizational knowledge on firm performance: An empirical investigation of the biotechnology industry, *Strategic Management Journal, 20(*10), 953-968.

Dhaliwal, D., Judd, J. S., Serfling, M., and Shaikh, S. (2016). Customer concentration risk and the cost of equity capital, *Journal of Accounting and Economics*, *61*(1), 23-48.

Fama, E. F. (1965). The behavior of stock-market prices, *The Journal of Business*, *38*(1), 34-105.

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work, *The Journal of Finance*, *25*(2), 383-417.

Fama, E. F., and French, K. R. (1992). The cross–section of expected stock returns, *Journal of Finance*, *47*(2), 427-465.

Fama, E. F., and French, K. R. (1993). Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics*, *33*(1), 3-56.

Fama, E. F., and French, K. R. (1998). Value versus growth: The international evidence, *The Journal of Finance, 53*(6), 1975-1999.

Fama, E. F., and MacBeth, J. D. (1973). Risk, return, and equilibrium: Empirical tests, *Journal of Political Economy*, *81*(3), 607-636.

Griffin, J. M., and Stulz, R. M. (2001). International competition and exchange rate shocks: A cross-country industry analysis of stock returns, *The Review of Financial Studies*, *14*(1), 215-241.

Gu, L. (2016). Product market competition, R&D investment, and stock returns, *Journal of Financial Economics*, *119*(2), 441-455.

Hall, B. H., Jaffe, A. B., and Trajtenberg, M. (2000). *Market value and patent citations: A first look*, Working paper, Berkley: University of California.

Hall, R. (1993). A framework linking intangible resources and capabilites to sustainable competitive advantage, *Strategic Management Journal*, *14*(8), 607-618.

Hashem, N., and Su, L. (2015). Industry concentration and the cross-section of stock returns: Evidence from the UK, *Journal of Business Economics and Management*, *16*(4), 769-785.

Herfindahl, O. C. (1950). *Concentration in the U.S. steel industry*. Unpublished doctoral dissertation, New York: Columbia University.

Hou, K., and Robinson, D. T. (2006). Industry concentration and average stock returns, *The Journal of Finance*, *61*(4), 1927-1956.

Ireland, R. D., and Webb, J. W. (2007). Strategic entrepreneurship: Creating competitive advantage through streams of innovation, *Business Horizons*, *50*(1), 49-59.

Jaffe, A. B., Trajtenberg, M., and Fogarty, M. S. (2000). Knowledge spillovers and patent citations: Evidence from a survey of inventors, *American Economic Review*, *90*(2), 215-218.

Jiménez, G., Lopez, J. A., and Saurina, J. (2013). How does competition affect bank risk-taking?, *Journal of Financial Stability*, *9*(2), 185-195.

Kadiyala, P., and Rau, P. R. (2004). Investor reaction to corporate event announcements: Underreaction or overreaction?, *The Journal of Business*, *77*(2), 357-386.

Keil, J. (2017). Explaining the concentration-profitability paradox, *Review of Political Economy*, *29(*2), 209-231.

Khan, M. I, (2009). Price earnings ratio and market to book ratio: A case study of Pakistani textile sector, *IUB Journal of Social Sciences and Humanities*, *7*(2), 103-112.

Kick, T., and Prieto, E. (2014). Bank risk and competition: Evidence from regional banking markets, *Review of Finance*, *19*(3), 1185-1222.

Levy, H. (2011). *The Capital Asset Pricing Model in the 21st Century: Analytical, Empirical, and Behavioral Perspectives*. Jerusalem: Cambridge University Press.

Lhabitant, F. S., and Gregoriou, G. N. (2008). *Stock Market Liquidity: Implications for Market Microstructure and Asset Pricing* (vol. 420). Hoboken: John Wiley & Sons.

Lyandres, E., and Watanabe, M. (2012). *Product market competition and equity returns. Product Market Competition and Equity Returns*. Working paper, Boston University School of Management.

Malkiel, B. G. (2003). The efficient market hypothesis and its critics, Journal of Economic Perspectives, *17*(1), 59-82.

Mandelker, G. (1974). Risk and return: The case of merging firms, *Journal of Financial Economics*, *1*(4), 303-335.

Mann, H. M. (1966). Seller concentration, barriers to entry, and rates of return in thirty industries, 1950-1960, *The Review of Economics and Statistics*, *17*(1), 296-307.

Nawrocki, D., and Carter, W. (2010). Industry competitiveness using Herfindahl and entropy concentration indices with firm market capitalization data, *Applied Economics*, *42*(22), 2855-2863.

Newey, W. K., and West, K.D. (1987). A simple, positive-definite, heteroskedasticity and autocorrelation consistent covariance matrix, *Econometrica*, *55*, 703-708.

Novak, J., and Petr, D. (2011). CAPM beta, size, book-to-market, and momentum in realized stock returns, *Finance a Uver: Czech Journal of Economics & Finance*, *61*(1), 447-460.

Penman, S. H., Reggiani, F., Richardson, S., and Tuna, A. (2015). An accounting-based characteristic model for asset pricing. Retrived from https://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/17189/penman_characteristic_model.pdf.

Pfeffer, J. (1995). Producing sustainable competitive advantage through the effective management of people, *The Academy of Management Executive*, *9*(1), 55-69.

Porter, M. E. (1980). *Competitive Strategy: Techniques for Analyzing Industries and Competitors,* New York: Free Press/ Macmillan .

Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

Poteshman, A. M. (2001). Underreaction, overreaction, and increasing misreaction to information in the options market, *The Journal of Finance*, *56*(3), 851-876.

Schumpeter, J. (1912). *The Theory of Economic Development*. Cambridge: Harvard University Press.

Senarathne, C. W., and Jayasinghe, P. (2017). Information flow interpretation of heteroskedasticity for capital asset pricing: An expectation-based view of risk, *Economic Issues*, *22*(1), 1-24.

Senarathne, C. W., and Jianguo, W. (2017). *The Impact of Patent Citation Information Flow of Economic Innovation on Common Stock Return: Volume vs. Patent Citations*. Working paper, Wuhan University of Technology.

Shepherd, W. G. (1972). The elements of market structure, *The Review of Economics and Statistics, 54*(1), 25-37.

Spyrou, S., Kassimatis, K., and Galariotis, E. (2007). Short-term overreaction, underreaction and efficient reaction: Evidence from the London Stock Exchange, *Applied Financial Economics*, *17*(3), 221-235.

Stigler, G. J. (1963). *Introduction to" Capital and Rates of Return in Manufacturing Industries"*. In *Capital and Rates of Return in Manufacturing Industries* (pp. 3-10). Princeton: Princeton University Press.

Thorburn, C. (2008). Insures: Too many, too few, or just right? Initial observations on a cross-country dataset of concentration and competition measures, *Policy Research Working Papers*, Retrived from http://documents.worldbank.org/curated/en/566861468137732315/pdf/wps4578.pdf.

Tseng, K. C. (1988). Low price, price–earnings ratio, market value, and abnormal stock returns, *Financial Review*, *23*(3), 333-343.

Yu, F., and Wu, Y. (2014). Patent citations and knowledge spillovers: An analysis of Chinese patents registered in the USA, *Asian Journal of Technology Innovation*, *22*(1), 86-99.

KONKURENCYJNOŚĆ BRANŻY A ZWROT Z INWESTYCJI W AKCJE

Streszczenie: Niniejszy artykuł analizuje związek między konkurencyjnością branży a zwrotem z inwestycji w akcje zwykłe dwudziestu spółek notowanych na giełdzie w Kolombo. Indeks Herfindahla (1950) *H* został rozszerzony, aby uwzględnić wariancję przekrojowego rozproszenia zysków, która odpowiada względnej konkurencji branży. Wyniki regresji pokazują, że konkurencyjność branży nie jest związana ze zwrotami z inwestycji w akcje zwykłe z uwzględnieniem rozszerzonego indeksu *H* w regresji jako zmiennej w powiązaniu przyczynowym. Przy uwzględnieniu zwrotu z inwestycji rynkowych współczynniki rozszerzonego indeksu *H* wraz z dwoma innymi badanymi zmiennymi stają się statystycznie nieistotne w regresji. Ustalenia te sugerują, że ryzyko związane z konkurencją branżową nie jest wyceniane, ponieważ może być zdywersyfikowane przez odpowiednio zarządzany łańcuch wartości poszczególnych firm, co powoduje, iż nie jest wymagana rekompensata za ryzyko konkurencji branżowej.

Słowa kluczowe: konkurencyjność, zwrot z inwestycji w akcje zwykłe, pozycja konkurencyjna, innowacje w łańcuchu wartości, indeks Herfindahla.