A Study on the Relationship between Advertising Investment and Stock Market Returns in the Brand Value Chain

——An Empirical Test based on Panel Data for China's 22 Listed Companies (2002-2007)

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Abstract: Based on a review of literature outside of China on the relationship between brand equity and financial value, this article investigates the relationship between advertising investment and stock market gain in the Chinese marketplace. Using data disclosed in the financial statements for 2002 to 2007 of 22 listed companies of China, the relationship of advertising investment with earnings per share and with rate of return on common stockholders' equity（ROE）are each examined with a panel data model. Results show that advertising investment has a significant positive effect on the performance of China's listed companies in the financial market, which varies from sector to sector.

Keywords: Brand equity, advertising investment, earnings per share, return on common stockholders' equity（ROE）

1. Introduction

There has been little progress in the academia in devising methods to quantify real returns of marketing input. Marketing activities have been focused on the effects of outputs of an enterprise rather than the outcomes (Schultz, 2002a). Usually researchers have been measuring the change in consumers' attitude due to marketing stimulus (e.g. advertising), but establishment of a link between changes in attitude and in behaviour remains unsuccessful. Only a change in behaviour can result in brand formation in any form and returns in marketing investment. Financial returns resulting from revenue from customers is therefore a more valuable measurement than a change in attitude (Schultz, 2002b). Keller and Lehmann (2003) proposed the "brand value chain" model, summarising the effects of marketing input on attitudes towards a brand and its related outcomes. Based on this model, brand value begins with marketing activities and influences a business' customer base (brand equity), which in turns affects the brand's performance on the market, and consequently the financial market would ascertain the brand's value. A key concept in the value chain is "brand equity", generally taken as additional marketing effect resulting from attachment of a brand name onto a product or service. This additional effect stems from consumers' awareness of the brand and attitudes towards it, and is termed by Keller (1993) "customer-based brand equity" (CBBE). Previous study shows that apart from purchase behaviour and marketing performance, CBBE also gives information relevant to financial assessment by the financial market (He，2006).

To date, most studies on the brand value chain have focused on how marketing input is related to CBBE and how CBBE is related to a product's market performance, and little attention is paid to the effects of marketing input on a brand's financial performance. The importance of the relationship between marketing input and a brand's financial performance is that they serve as a basis in examining how the several factors or variables in the brand value chain are related and investment value of marketing. The objective of this article is to investigate this relationship.

2. Theory and hypotheses

Methods to assess returns from brand-formation investment have recently become a hot issue in branding strategy (Schultz, 2002b). Studies have shown a positive correlation between brand equity and corporate performance (Park and Srinivasan, 1994; Aaker, 1996; Jourdan, 2002; Conchar, Crask and Zinkhan, 2005; Kim and Kim, 2005), positive impact on a business' profitability and long-term cash flow (Srivastava and Shocker, 1991), and that a brand raises a business' value to shareholders (Barth et al., 1998; Kerin and Sethuraman, 1998; Aaker and Jacobson, 1994; Simon and Sullivan, 1993).

2.1 A review of previous studies

A study by Aaker and Jacobson (1994) opened up interest in relationship between the quality of customers' perception and financial performance of a brand, with the following conclusion: The perceptible quality of a brand gives a wealth of information about a company's long-term performance and is within investors' awareness, affecting a business' gain on sale of stock on the financial market. Subsequently, within the industry of high-technology products, Aaker and Jacobson (2001) devised a correlation model between attitudes towards a brand and share-related gains for the first time to study the impact of attitudes towards a brand on immediate share-related gains and long-term corporate gains. They found that a change in consumers' attitudes towards a brand is quickly reflected in a company's share-related gains and long-term financial performance. Therefore, as an important component of brand equity, attitudes towards the brand correlates to brand value and understanding this attitude is useful in forecast of future gains and the company's value. These two studies lay the foundation for studies on relationship between attitudes towards the brand (brand equity) and performance in the financial market. The significance lies in the notion that when brand formation is the major marketing activity, understanding the relationship between brand and investors will help in determining whether marketing is spending or investment.

With an example from some company belonging to a hypothetical sector, Doyle (2000) modelled the several business conditions a company faced, adjusted financial statistics such as sales revenue, profit after tax and cash flow in accordance with the different decision made. Comparison of the same figures under different conditions shows that making some marketing input can increase the company's value to shareholders. In a study on the hotel industry, Prasad and Dev (2000) expect a higher patronage in hotels with higher brand equity, resulting in higher revenue for each usable room. An empirical study based on this by Kim, Kim and An (2003) shows that financial statistics like return on equity (ROE) and return on sales (ROS) positively correlates with variables such as brand loyalty, brand awareness and brand image. Considering a brand to be an enterprise's asset and source of present and future cash flow, De Mortanges and Van Riel (2003) confirmed that the value of a brand and brand equity is bound to have some effect on shareholders' interest of a company. Based on the studies of Aaker and Jacobson (1994, 2001) and using FF modelling, widely used in finance studies in conjunction with measurements of a brand's financial value, Madden, Fehle and Fournier (2006) conducted further studies that shows that a strong brand has markedly better performance, greater returns and smaller risks compared to other brands. Luo (2007) dealt with how brand equity relates to a company's value from an opposing perspective. Taking customer dissatisfaction as a source of heterogeneous share gains, and using information about dissatisfactions with customer service, flights, luggage, and the like, from an airline's database, he argues that there is a negative correlation between dissatisfaction and heterogeneous share gains, and a positive correlation between brand equity and a company's value.

The above studies demonstrate the relationship between brand equity and stock market returns, and the high-return, low-risk nature of a strong brand. According to a model on the brand value chain, an antecedent influencing brand equity is the marketing stimulus variable. Although a large volume of studies have been done on the relationship between marketing stimulus a customers' attitudes towards a brand, most are based on measurements of subjective perception and attitudes. For example, with data on marketing stimulus acquired through subjective perception, Yoo, Donthu and Lee (2000) confirmed a positive correlation between subjective perception and brand equity by structural equation modelling (SEM). In contrast, the interest of this study is whether there is a significant positive correlation between marketing input and stock market returns when measured with objective figures.

2.2 Theoretical model and hypotheses

Considering how China's listed companies disclose information, advertising investment is selected as the independent variable, and earnings per share and return on common stockholders' equity（ROE）as the two dependent variables of stock market returns. In light of the basic relationship in the brand value chain (Keller and Lehmann, 2003) and previous relevant studies (Aaker and Jacobson, 1994; Aaker and Jacobson, 2001; Yoo, Donthu and Lee, 2000), the following hypotheses are formulated:

H1: Advertising investment correlates with stock market gain. In particular:
H1a: Advertising investment explains a significant increase in earnings per share.
H1b: Advertising investment explains a significant increase in ROE.

Due to the limitations resulting from how China's listed companies disclose information, data on advertising investment, earnings per share and ROE may be missing. To ensure that a sufficient number of samples are presented, a panel data model is made and statistical analysis is run on the software known as Eviews 5.0 for purposes of this article. A panel data model is a behavioural equation model formulated and tested based on time-series data for various entities. It contains more information than a simple set of cross-section data or time-series data, and makes a more realistic representation. Due to differences of enterprises' financial market output, variable intercept modelling is conducted instead of an F test. Because the model deals with only data for the 22 selected enterprises, the certainty effect model is selected.

$$EPS_{it} = \alpha_{it} + \beta Ad_{it} + \mu_{it} \qquad (1)$$

$$ROE_{it} = \alpha'_{it} + \beta' Ad_{it} + \mu'_{it} \qquad (2)$$

where EPS_{it} stands for earnings per share, ROE_{it} return on common stockholders' equity（ROE）, and Ad_{it} expenditure on advertising investment, for company *i* during time period *t*.

3. Methodology

3.1 Definition of variables

Based on the research hypothesis, advertising investment is made the explaining variable, and earnings per share and ROE the explained variables.

Due to differences in how listed companies disclose their information, for the purpose of this study, advertising investment includes expenditures by names such as advertising cost, promotion cost, advertising and marketing cost, advertising and imaging cost, marketing cost, and marketing promotion cost under the item "other operation costs" in annexes to financial statements of selected listed companies. One of the major measures of stock market returns of a listed company is earnings per share. Its drawback is that, being an absolute measure, reported earnings per share would be reduced if a company practises expansion in share capital and distributes dividends in the form of large-scale allotment or additional shares. For an objective result, ROE, a relative measure, is examined to make up for the different share capitals of different listed companies.

Earnings per share, or profit per share, is the profit for ordinary shares. It is defined as profit after tax less preferential stock dividend, divided by the average number of ordinary shares issued to the public, given as the following formula:

Earnings per share = **Errore.**

Return on common stockholders' equity（ROE） is an important financial measure that reflects a company's profitability, and reflects the investment returns of a company's shareholders. It is defined as the ratio between a company's net profits and average total of shareholders' interests, given as the following formula:

ROE = **Errore.**

Where average total of shareholders' interests

= **Errore.**

3.2 Data source and samples

As mentioned above, advertising investment includes all marketing-related expenditures by any name under the item "other operation costs" in annexes to the financial statement of a listed company. Relevant data is therefore not directly available from any existing database. The fiscal figures in this article involves 22 brands from 7 sectors, and are taken from annual and interim financial statements of listed companies as published on the websites of the Shanghai Securities Exchange (www.see.com.cn) and www.jrj.com.cn. Advertising investment is obtained by manually query of other operation costs at the annex of financial statements and extraction of relevant figures. Due to the differences in starting time of disclosing statements, the time period studied spans 6 years from 1 January 2002 to 31 December 2007. For each company, 14 data points are obtained. Using Eviews 5.0 as the data analysis tool to process the panel data collected, the relationship between advertising investment and stock market gain is analysed and given sector-specific treatment.

This study covers 22 brands from 7 subsectors belonging to 4 sectors, namely high-technology, fast-moving consumer goods, conventional manufacturing and service. They are listed in Table 1.

Table 1. Sample distribution

Sector	IT, electronics	Household electrical appliance	Liquor	Food	Textiles	Chemical industries	Travel service
Brands	Bird（波导）；Ufida（用友）；Founder（方正）；	Konka（康佳）；SVA（上广电）	Moutai（贵州茅台）；Tsingtao (青岛啤酒)；Swellfun (水井坊)；	Shuanghui (双汇)；V V (维维)	Eerduosi(鄂尔多斯)；Youngor（雅戈尔）；Mailyard（美尔雅）；	Lucky（乐凯）；Huayang(华阳科技)	China CYTS Tours (中青旅)；Tibet Tourism（西藏圣地）

	Hundsun (恒生电子)；Humanwell (人福)；Inspur (浪潮)		Huiquan (惠泉)		Qinghai Xianchen (青海贤成)		

4. Results

Using statistics software Eviews 5.0, the relationship between advertisement input and earnings per share and net equity gain for each brand is computed. The results are given in Tables 2 and 3.

Table 2. Influence of advertising investment on earnings per share

Sector	β	R^2	Adjusted R^2	F value	D-W value	Number of samples
All samples	0.545***	0.727	0.670	26.640***	1.688	22
Consumer goods	0.383***	0.808	0.789	42.056***	1.979	10
High-tech products	0.514***	0.513	0.464	10.378***	1.429	6
Manufacturing	0.814***	0.471	0.416	8.468***	1.758	4
Service	0.582**	0.503	0.453	10.112***	1.289	2

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Table 3. Influence of advertising investment on ROE

	β	R^2	Adjusted R^2	F value	D-W value	Number of samples
All samples	0.291***	0.998	0.998	5429.460***	1．748	22
Consumer goods	0.254***	0.692	0.661	22.450***	2.295	10
High-tech products	0.428***	0.999	0.999	23119.51***	1.030	6
Manufacturing	0.555***	0.576	0.531	12.873***	1.868	4

Service	0.214*	0.202	0.123	2.538	1.603	2

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

The results in Table 2 shows that both the regression coefficients for all samples and that for sector-specific samples have attained statistically significant levels, providing support of hypothesis H1a, that is, advertising investment explains a significant increase in earnings per share. The impact coefficient of advertising investment on earnings per share is 0.545 for all samples. Within this sample, consumer goods and high-tech products sectors give values of 0.383 and 0.514 respectively, below that for all samples, whilst manufacturing and service sectors give values of 0.814 and 0.582 respectively, above that for all samples.

The results in Table 3 shows that both the regression coefficients for all samples and that for sector-specific samples have attained statistically significant levels, providing support of hypothesis H1b, that is, advertising investment explains a significant increase in ROE. The impact coefficient of advertising investment on earnings per share is 0.291 for all samples. Within this sample, consumer goods and service sectors give values of 0.254 and 0.214 respectively, below that for all samples, whilst high-tech products and manufacturing sectors give values of 0.428 and 0.555 respectively, above that for all samples.

Overall, a regression analysis returns a high confidence level both for all samples and for sector-specific samples. Except for the impact of advertising investment on ROE in the service sector, the results show that the model used fits in reality.

5. Conclusions and management implications

Theoretically speaking, this article confirms that advertising investment explains a significant increase in earnings per share, and ascertains, in a sector-specific manner, the effect of brand equity on shareholders' interests. Although there has been considerable research in other countries about the relationship between brand equity and shareholders' interests, relevant studies in the case of China are still in want. This study reveals that advertising investment by China's enterprises has a clear positive correlation to shareholders' interests, still found in sector-specific examination. The amount of impact advertising investment has on stockholders' interests varies from sector to sector, mainly because of each sector's nature. This impact is more pronounced in the manufacturing and high-tech sectors, but less so in the tourism and consumer goods sectors.

Practical implications of this study are better support for an enterprise's brand building as a marketing activity. Establishment of brand equity is a long-term process, but in practice people in management tend to seek short-term profits and neglect marketing activities. From the results of this study, advertising investment has important impact on a company's financial indices such as earnings per share and ROE, leading to real financial returns. These results will draw management's attention to long-term profits that stem from establishment of brand equity rather than short-term gains.

6. Limitations and future research direction

This study merely covers 7 sectors, and because of limitations of data availability, methods of ascertaining advertising investment are yet to be refined. Also, it determines the impact of brand equity on performance in the financial market solely by looking at the impact on performance in the financial market of advertising investment, which is but one of the many ways of building a strong brand. In subsequent studies, other variables can be used to measure the relationship between brand equity and performance in the financial market. Before an analysis with Eviews, a Hausman test could be performed to determine whether the certainty effect model or the random effect model should be applied. With previous experience in mind, this study applies the certainty effect model, and improvements may be made in subsequent studies. Further, apart from advertising investment, other factors such as costs in developing new products also influence a company's performance on the financial market. In future studies, attention may be paid to number of samples and scope to make conclusions more representative. The concept of brand strength can also be introduced to investigate whether the impact of brand equity on performance in the financial market varies with brand strength, and to explain the results. This will prove helpful in guiding an enterprise's marketing activities and strategic planning in a specific and targeted manner.

Acknowledgements The first author appreciatively acknowledges the financial supports by the National Natural Science Foundation of China (No.70772107) and Program for New Century Excellent Talents in University (No.NCET-08-0198). He also thanks Ms. Ying WANG and Ms.Yao CHEN for their helps of data collection and literature preparation at the earlier stage of this

research.

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