Company Size Effect in the Stock Market of Thailand

Gerardo "Gerry" Alfonso Perez[1]

[1] University of Cambridge, UK

Correspondence: Gerardo "Gerry" Alfonso Perez, University of Cambridge, UK.

Abstract

The outperformance of small capitalization companies over large capitalization companies is a well-known occurrence in developed markets (Gorn, 1962), (Jacobs, 1989) with (Banz, 1981) numerically showing that this effect on stocks in the New York Stock Exchange. This phenomenon is based on the idea that some company specific characteristics can have a statistically significant impact on stock performance. The existence, or otherwise of this effect in emerging markets has received less attention. Given the very different characteristics of emerging markets compared to mature markets like the US is not immediately evident that the same conclusions can be extrapolated. One of the immediate clear differences between emerging and mature markets is the depth with markets like the US having a large amount of listed companies as well as large average trading volumes. In fact, when this analysis has been repeated in some emerging markets, such as Sri Lanka, the results seem to indicate that there is no statistically appreciable difference between the return of small and large capitalization stocks (Macn, 2013). It should be noted that in the case of the Sri Lanka case there were only, at the time of the article, 25 listed companies, of which only 12 were included in the analysis. The specific case of the stock market of Thailand is analyzed in this paper. The results of this article seem to point towards the existence of a size effect, affecting stock performance, in the Thai stock market. Some articles covering emerging market as a whole as pointed towards the opposite results. Given the substantial differences among emerging markets countries it is perhaps a better approach to follow an individualized analysis, country per country, rather than treat it as a homogenous group.

Keywords: Thailand, stock return, market capitalization, emerging markets

1. Introduction

Looking for what type of stock is likely to outperform is clearly one of the major objectives in investment analysis and one that has attracted a lot of research. However, most of this research focuses on analyzing mature markets, particularly the US, which has one of the most developed, mature and deep stocks markets in the world. Given this substantial differences between mature and developed markets it is possible that some of the conclusions obtained by researchers cannot be assumed to be correct for emerging markets. This article tries to add in this regard, focusing on the Thai market. Thailand is consistently categorized as an emerging market and its stock market has experienced over the years substantial swings. A prior it is not obvious if the conclusions obtained in developed markets such as the US regarding the existence of a small size effect can be extrapolated to Thai case.

Then problem of determining the factors that impact the future performance of stocks is of clear academic and practical value and it has been an area of intense research, mostly focusing on developed markets, over the last few decades. There seems not to be a full agreement among scholars regarding the existence of a size effect in emerging market. For instance, (Hussaini, 2016) found that in the case of the stock market in Thailand there seem to be some impact size impact on stock returns. In this article, equal weighted portfolios are created and then their performances are compared. On the other hand, (Claessens, 1995) found little evidence of size effect on emerging markets, including Thailand. Market practioners, such as (Ross, 2014) or (Richards, 1996), have also analyzed this issue with, at least to some degree, inconclusive results.

The Thai capital market, similarly to other emerging markets, is a relatively young one. According to figures from the Stock Exchange of Thailand there are 714 securities listed in the securities registration system and, always according to the figures from the exchange was the most liquid stock market in among ASEAN countries with a daily average trading volume approximately USD 1.5 billion. Those amounts, while large compared to other ASEAN countries are but a fraction of the volumes traded in markets such as the US. The Thai market has also introduced

some derivatives, such as futures, that are used by some investors to hedge their exposure to the local market. Foreign investors, as of end of 2016, represent a sizeable 26% of the total trading volume.

Hypothesis

The primary hypothesis of this article is that there is not a statistically significant difference between the stock returns of small and large capitalization stocks. This is substantially different from the results obtained in developed markets. The analysis will focus on the period of time after the US financial crisis in 2009.

2. Method

In order In order to compare the relative performance of small and large capitalization stocks in the Thai stock market commercially available index were used. One important characteristic of these indexes is that all the components (stocks) are investable and that they are compiled by reputable organizations (MSCI). It was also considered appropriate because a large amount of international investors do measure their performance against those indexes. The two indexes used were: 1) The MSCI Thailand Large Cap index (for large capitalization stocks) and the MSCI Thailand Small Cap index. Both of the indexes follow the Global Industry Classification Standard (GICS@). All the securities contained in those three indexes are investable. The MSCI indexes are relatively new with the first data available in Bloomberg for the MSCI Thai Large Cap index starting in March 6th 2009. The MSCI Thai small cap index data series started in May 31st, 2007. For comparison purposes the selected starting date for comparing all 3 indexes was March 6th 2009.
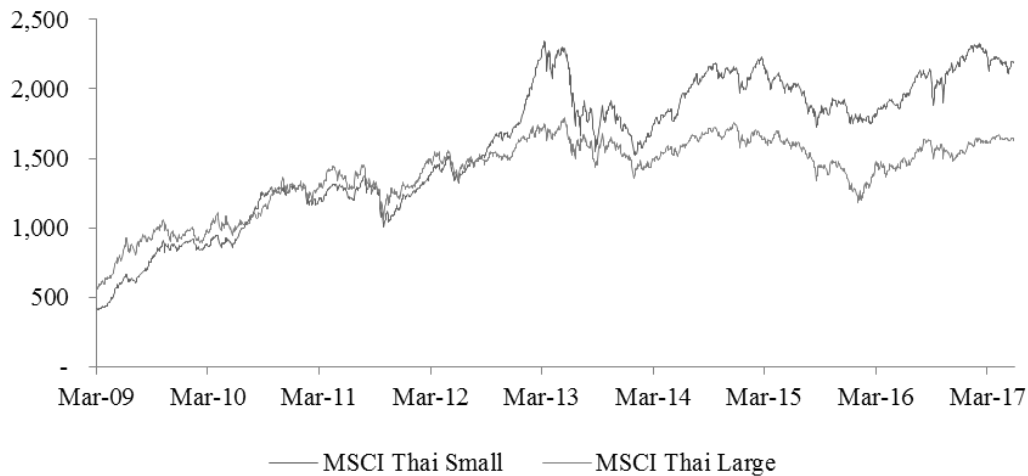

Figure 1. Performance of the SET 50 (large cap), MSCI Thai Large cap and MSCI Thai Small cap

2.1 Normal Distribution Analysis

The first step is to determine if the stock indexes returns follow a normal distribution. It is a known that stock returns tend not to follow such distribution making some traditional analysis techniques inappropriate. A Lillietest as well as a Kolmogorov-Smirnov test were performed on the index returns. Both tests indicate that the returns seem not to follow a normal distribution. A traditional approach to remedy such issue is using the log-returns of the indexes, rather than the return. This transformation has proven, in many markets, to solve the issue of no normality but unfortunately in this case such transformation does not yield the desired results. All the tests were performed for daily returns (or log-return) for the period between from Amy 2009 to May 2017.

Table 1. Lillie Test

	Lillie Test – Return of indexes		Lillie Test – Log return of indexes	
	Thai Large Cap	**Thai Small Cap**	**Thai Large Cap**	**Thai Small Cap**
H	1	1	1	1
P	1.0 e-03	1.0 e-03	1.0 e-03	1.0 e-03

Table 2. Engle – Granger

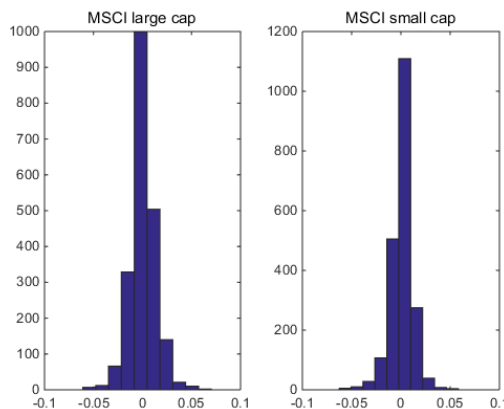|	EG Test – Return of indexes		EG – Log return of indexes	
	Thai Large Cap	**Thai Small Cap**	**Thai Large Cap**	**Thai Small Cap**
H	1	1	1	1
P	0	0	0	0

Figure 2. Histogram

2.2 Comparisson of the Retuns

2.2.1 Wilcoxon Test

Given that the data does not appear to follow a normal distribution a Wilcoxon comparison seemed appropriate to determine if the data came from the same distribution. The Wilcoxon test is a non-parametric test that does not require the data to follow a normal distribution. The null hypothesis is that the two data sets, the returns on the MSCI Large Cap and MSCI Small Cap, are distributions with equal means. The zvalue (Winner, 2009) can be defined as:

$$z = \frac{W - E(W)}{\sqrt{V(W)}}$$

Similarly to the case for the Lillie test and the Engle-Granger tests, the Wilcoxon tests were performed for daily returns for the period between from Amy 2009 to May 2017. The results indicate that the returns in the MSCI Large Cap and MSCI Small Cap indexes do no follow distributions with the same mean.

Table 3. Wilcoxon Test (index retuns)

MSCI Large Cap and MSCI Small Cap Wilcoxon test		
P	**h**	**zval**
0.0106	1	-2.5562

2.2.2 Kruskal-Wallis Test

Another test performed to compare the returns on both indexes was the Kruskal-Wallis test, which is another non-parametric test. The null hypothesis in this case is that the returns on the MSCI Large Cap and the MSCI Small Cap come from the same distribution. At a 5% significance level the Kruskal-Wallis test rejects the hypothesis that the MSCSI Small Cap returns and the MSCI Large Cap Returns come from the same distribution.

Table 4. Kruskal-Wallis test

Kruskal-Wallis;m MSCI Larce Cap and MSCI Small cap					
Source	**SS**	**df**	**MS**	**Chi square**	**Prob**
Columns	9.51548e+06	1	9.51548e+06	6.53	0.0106
Error	6.07634e+09	4178	1.45436e+06		
Total	6.08585e+09	4179			
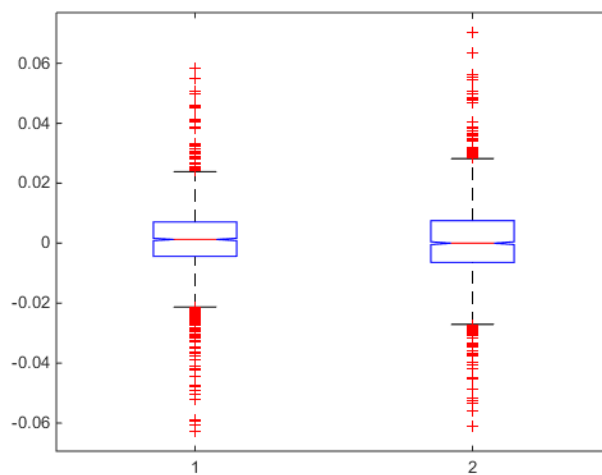
Figures 3. Kruskal-Wallis

2.2.3 Risk Adjusted Returns

Another way of looking at this issue is estimating their risk adjusted returns. In order to do so the Sharpe ratio of both indexes could be calculated for every year. The Sharpe index is calculated by substracting the risk-free rate from return on the index and then dividing it by its standard deviation.

$$Sharpe = \frac{R_{index} - R_f}{\sigma_{index}}$$

The rationale to do such analysis is the common assumption that small capitalization stocks are riskier and hence any possible differential returns might be related to such increase in risk by the investor. The results indicate that the Sharpe ratio of small capitalization stocks is bigger for all years with positive returns in the market (2010, 2012, 2014 and 2016). For the years with negative returns the Sharpe ratio was smaller in magnitude for two years (2013 and 2015) and bigger in magnitude only in one year (2011).

Table 5. Annual risk adjusted returns

	2010	2011	2012	2013	2014	2015	2016
Returns (%)							
MSCI small cap	45.6	-5.8	45.3	-8.3	22.6	-8.9	23.6
MCSI large cap	31.6	0.1	26.4	-11.8	12.5	-21.9	24.6
Risk free rate (%)	3.7	3.3	3.5	3.9	2.7	2.5	2.6
σ (annualized)							
MSCI small cap	16.8	21.0	11.7	25.3	14.2	14.8	15.1
MCSI large cap	22.3	26.0	15.7	22.3	15.5	16.2	18.3

Sharpe ratio							
MSCI small cap	2.48	-0.43	3.57	-0.48	1.40	-0.77	1.39
MCSI large cap	1.25	-0.12	1.46	-0.70	0.63	-1.51	1.20

Yield of the 10-year Thai Treasury bond was used as the risk-free rate

3. Results

The results point towards the existence of a small size effect in the Thai stock market for the period between May 2009 and May 2017 when using the MSCI Thailand Large Capitalization index and the MSCI Small Capitalization Index to represent the stock performance of small and large size capitalization companies in the Thai market. These results were confirmed with two different non parametric tests, such as the Kruskal Wallis and the Wilcoxon test. Both point to the same conclusion. These test were selected because it was shown with Lillie tests and Engle-Granger tests that the returns (and the log –returns) of the above mentioned indexes do not follow a normal distribution. The risk adjusted returns for every year during the considered period were also estimated by using the Sharpe ratio. During all the years of positive returns the Sharpe ratio was better for the MSCI Thailand Small-cap index compared to the MSCI Thailand Large-cap Index. For the years were the Thai market experienced corrections the Sharpe ratio for small size companies was only worse than the one for large capitalization companies in one year (out of 3). Suggesting that on a risk-adjusted basis small capitalization companies tend to outperform large capitalization stocks during the period analyzed.

Between the 2010 and 2016 year small caps had higher returns in all the years that the Thai market had positive returns (2010, 2012, 2017 and 2016). In 2011, 2013 and 2015 the Thai market had negative returns. Only in 2011 the absolute return of the MSCI Thai small cap index was bigger (-5.8%), in absolute terms, was bigger than the returns for the SET 50 (+0.2%) and the MSCI Thai Large (0.1%). In 2013 the MCSI Thai Small index had a return of (-8.3%), dropping more than the SET 50 index (-6.6%) but less than the MSCI Thai Large index. This was the only year in which the returns of the SET 50 and the MSCI Thai large cap index where contradictory (one dropping more than the small caps and the other one dropping less). In 2015, the MSCI Thai small cap index dropped less (-8.9%) than the SET 50 index (-18.7%) and the MSCI Thai large cap (-21.9%).

As previously mentioned, on a risk adjusted basis, using the Sharpe ratio, the results for the analyzed period also seem to favor the results of the MSCI Thailand Small Cap over the MSCI Thailand Large cap index. The Sharpe ratio was better for the small companies for all the years analyzed but one (2011). A typical assumption tends to be that small caps are more volatile and hence might outperform during bullish markets and underperform during bearish markets. This assumption seems not to be supported with the results obtained as of the three years with negatives return in the market, in two of them the Sharpe ratio of the small capitalization index was better than the one from the large capitalization index. It should be noted however that only a limited amount of years, due to data availability, were analyzed.

It is also worth noticing that frequent procedures to analyze the outperformance of small capitalization stocks in a market, based on the assumption of normal distributions of returns, would not be appropriate in this market during the period analyzed as shown with two different statistical tests. Perhaps more surprisingly, the log returns of the indexes did also appeared not to follow a normal distribution.

4. Discussion

The results support the idea that there is a small size effect in the Thai stock market, similarly to the one observed in developed markets when the MSCI Thailand Large Cap and the MSCI Thailand Large Cap indexes are taken as proxies for the performance of large and small capitalization stocks in Thailand. Both the Wilcoxon tests and the Kruskal tests support this result for the period of time between May 2009 and May 2017, which is the longest available time frame for these two indexes. These results were obtained without needing to assume that the indexes returns follow a normal distribution, which was proven not the case.

In the literature there seems to be contradictory results regarding the existence of small size effect on stock returns in emerging markets. One of the possible reasons behind these discrepancies is the fact that the concept of emerging markets engulfs several very different countries which might have very different stock market dynamics and hence it might not be appropriate to consider that their stock markets have the same characteristics. Factors that could potentially impact the existence of a small size effect could be the depth of the market or the degree of openness of the stock market to foreign investors. These are areas that could be areas in which this article cokld be potentially expanded in the future.

The apparent existence of a small size effect on the Thai market is likely something of importance for investors before making investment decisions. Particularly for those investors that do not have a restriction on company size. This could affect investors' asset allocation substantially. Given the relatively large percentage of foreign investors in the Thai market this might even apply to them. It is acknowledge that some foreign institutional investors do tend to have restrictions on the market capitalization of the companies that they invest in emerging markets.

References

Anthony, R. (1996). *Volatility and predictability in national stock markets: how do emerging and mature markets differ?* Staff paper. Palgrave macmillan journals on behalf of the international monetary fund.

Banz, R. (1981). The relationship between return and market value of common stocks. *Journal of financial economics, 9,* 3-18. North-Holland Publishing Company. https://doi.org/10.1016/0304-405X(81)90018-0

Chaudhuri, K., & Koo, K. (2001). Volatility of stock returns: importance of economic fundamentals. *Economic and Political Weekly.* Retrieved from http://www.jstor.org/doi/xml/10.2307/4411205

Cheung, Y. L. (1994). Small firm effect: evidence from Korean Stock exchange. *Small Business Economics.* https://doi.org/10.1007/BF01065140

Claessens, S., & Dasgupta, S. (1995). Return behavior in emerging stocks markets. *The World Bank Economic Review, 9*(1).

Gordon, M. (1962). *The investment, financing and valuation of the corporation.*

Hou, K., Karolyi, A., & Kho, B-C. (2011). What factors drive global stock returns? *The Review of Financial Studies.*

Hussaini, M. (2016). Size and value in the stock exchange of Thailand. *Journal of Financial Risk Management.* https://doi.org/10.4236/jfrm.2016.51003

Jacobs, B., & Levy, K. (1998*).* Forecasting the size effect. *Financial analyst journal, 45*(3). Retrieved from http://www.jstor.org/stable/4479222

Jaffe, J., & Westerfield, R. (1985). The week-end effect in common stock returns: the international evidence. *The Journal of Finance.* https://doi.org/10.1111/j.1540-6261.1985.tb04966.x

Jensen, G., & Johnson, R. (1997). New evidence on size and price-to-book effects in stock returns. *Financial Analyst Journal, 99*, 34-42. https://doi.org/10.2469/faj.v53.n6.2128

Kim, C-W., & Park, J. (1994). Holiday effects and stocks returns: further evidence. *The Journal of Financial and Quantitative Analysis, 29*. https://doi.org/10.2307/2331196

Macn, S., Al, F., & Am, J. (2013). Relationships between stock returns and firm size, and book to market equity: empirical evidence from selected companies listed on Milanka price index in Colombo stock exchange. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS), 4*(2), 217-225.

Malkiel, B. (2003*).* The efficient market hypothesis and its critics. *CEPS working paper No. 91*.

Ogden, J. (1990). Turn-of-month evaluations of liquid profits and stock returns: A common explanation for the monthly and January effects. *The Journal of Finance, 45*(4). https://doi.org/10.1111/j.1540-6261.1990.tb02435.x

Olowe, R. (2009). Stock return volatility, global financial crisis and the monthly seasonal effect on the Nigerian stock exchange. *African Review of Money Finance and Banking*.

Penman, S. (2007). The book-to-price effect in stock return: accounting for leverage. *Journal of Accounting Research.* https://doi.org/10.1111/j.1475-679X.2007.00240.x

Peterson, D. (1990). Stock returns seasonalities and earning information. *The journal of finance and Quantitative Analysis, 25*(2). https://doi.org/10.2307/2330823

Ross, K. (2014). The value and size effects in emerging markets. *Advisory Research Investment Management.*

Rouwenhorst, G. (1999). Local return factors and turnover in emerging stock markets. *The Journal of Finance, 54*(4). https://doi.org/10.1111/0022-1082.00151

Schwert, G. W. (1983). Size and stock returns and other empirical regularities. *Journal of Financial Economics, 12*, 3-12. https://doi.org/10.1016/0304-405X(83)90024-7

Victporia, A., & Nitschka, T. (2013). Momentum factors: implications for the Cross-section of international stock returns. *Tinbergen institute discussion paper*. https://doi.org/10.2139/ssrn.2351711