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THE PRACTICE OF DIVIDEND-YIELD STRATEGIES IN THE GREATER CHINA REGION

Chin-Sheng Huang

Department of Finance, National Yunlin University of Science and Technology, Taiwan

Chun-Fan You

Department of Finance, Trans World University, Taiwan

Jiang-Chuan Huang

Department of Finance, Trans World University, Taiwan

Su-Wen Kuo

Department of Finance, Ling Tung University of Science and Technology, Taiwan

ABSTRACT

Studies have shown that, under equally-weighted portfolio returns, dividend-yield strategies often exhibit anomalies in U.S. and European markets. However, Fama (1998) argued that long-term abnormal returns would disappear or shrink considerably if value-weighted returns are adopted. This study is the first to use an equally-weighted measure to show that this phenomenon is prevalent in the broad Chinese markets, covering China, Hong Kong, and Taiwan. While adopting the three-factor model and value-weighted measure, the differences between the returns of dividend yield portfolio and the market index still remain significantly positive. Further, the results remain largely unchanged after accounting for market liquidity. This phenomenon occurs during the two-year period immediately following dividend-announcements and gradually disappears in subsequent years.

Keywords: Dividend yield, Trading strategies, Three-factor model, The greater China region.

JEL Classification: G11.

Contribution/ Originality

This study adopts adopting the three-factor model and value-weighted measure, the differences between the returns of dividend yield portfolio and the market index still remain significantly positive. The results of this research may help shed more light on dividend-yield strategies among the white-hot in the Greater China region.

1. INTRODUCTION

since McQueen *et al.* (1997) found that a Dow-10 portfolio had a statistically higher mean return in the U.S. market over the 50 years from 1946 to 1995, many financial researchers have presented evidence declaring "higher dividends = higher returns" among North American and European markets (Visscher and Filbeck, 2003; Brzeszczyński and Gajdka, 2007). For international equity markets, Eun and Huang (2007) found that investors in China are willing to pay a premium for high-dividend-paying stocks. Kyriazis and Diacogiannis (2007) also showed that stocks with high-dividend-yields are associated with significantly higher returns in the Athens market. The rationale behind these findings could be based on the following arguments. Firstly, investors are essentially acknowledging the fundamental proposition of dividend signaling hypothesis; managers may tend to increase their dividends, and thereby raising the dividend yields, to convey the message of potential future profits (Nissim and Ziv, 2001; Harada and Nguyen, 2005). In particular, investors generally regard the dividends of firms ranked at the very top of dividend yields as having stronger information content than others.

Secondly, for corporate operational performance, Arnott and Asness (2003) found that high aggregate current payouts are associated with high aggregate future earnings growth for overall market. Zhou and Ruland (2006), ap Gwilym *et al.* (2006) and Huang *et al.* (2009) also found that high payouts are related to high future earnings growth for individual stocks. The 'free cash flow' hypothesis supports the empirical findings that high dividend payout ratios are favorable to future earnings growth. The free cash flow hypothesis posits that managers of companies with ample free cash flow will be tempted to over-invest rather than pay it out to shareholders (Jensen, 1986). Therefore, a high-dividend payout policy can greatly reduce the agency costs of firms with poor investment opportunities.

Thirdly, from the perspective of behavioral finance, (Edwards, 1968) maintained that market investors behave conservatively when facing new market information. Barberis *et al.* (1998) pointed out that a conservative bias can cause investors to react to dividend announcements slowly. Koch and Sun (2004) confirmed that, after firms increase their dividends, investors do not consider the signal information to be permanent until the subsequent quarter earnings show positive growth. Asem (2009) recently claimed that market generally under-reacts toward both dividend-increasing announcements of winners and the dividend-decreasing announcements of losers. Therefore, the trading profits involved in dividend-yield portfolio might simply be momentum effects from the under-reaction of dividend announcements.

Finally, why are dividend-yield portfolios taken for granted in stock markets? According to Barberis and Shleifer (2003), Teo and Woo (2004) and Derwall *et al.* (2005) investors often classify stocks into various categories, such as small cap stocks, value stocks, technology stocks, public service stocks, and cost-efficient stocks. For most market participants with certain investing habits, this categorization helps them obtain valuable information and make investment decisions. These investors believe that such investment strategies will outperform markets. Similarly, investors who favor high dividends believe that high-dividend-yield portfolios generate high future returns. Particularly, senior investors and pension fund managers who specifically request cash dividends are more in favor of the dogs strategies (Baker and Wurgler, 2004; Graham and Kumar, 2006; Eun and Huang, 2007).

Although many studies support dividend-yield strategies, financial economists have not yet reached consensus on this issue (Miller and Modigliani, 1961; Filbeck and Visscher, 1997). Black and Scholes (1974) forcefully argued that ‘If a corporation could increase its share price by increasing (or decreasing) its payout ratio, then many corporations would do so, which would saturate the demand for higher (or lower) dividend yield and would bring about an equilibrium wherein marginal changes in a corporation’s dividend policy would have no effect on the price of its stock.’ Empirical evidence from Black and Scholes (1974) indicates that neither the whole sample period, 1936-1966, nor three ten-year sub-periods can significantly support the “higher dividends = higher returns” concept.

Regarding the issue of research methodology, Fama (1998) indicated that apparent anomalies in long-term post-event returns typically shrink significantly, and often disappear, when event firms are value-weighted rather than equally-weighted. Fama (1998) further argued for a value-weighted measure for two reasons: (i) value-weighted returns give the right perspective on an anomaly because they more accurately capture the total wealth effects experienced by investors; (ii) equally-weighted portfolio returns give more weight to small stocks, which increases the severity of misspecification problems (bad-model) in inferences from equally-weighted returns. Small stock sampling may also involve a survivorship bias. Wang (2000) showed that when ignoring a subset of small firms delisted due to bankruptcy or other causes during the sample period, the size effect may trigger an upward bias in reported returns. Ultimately, further research is necessary to answer the question of whether “higher dividends = higher returns.”

We investigate the issue of dividend-yield strategies based on the inconclusive evidence of previous studies and controversial research methods. We then adopt the following considerations to accommodate market practices. Firstly, this paper explores the dividend-yield portfolios whether exhibit anomalies in the content of CAPM and three-factor mode. Secondly, we examine a wide variety of measures of portfolio weights shown in literature to test the main findings. Thirdly, this study tests the phenomenon of “higher dividends = higher returns” within ten sub-samples of the original high-dividend-yield portfolio. Fourthly, to simultaneously account for the preferences of individuals and institutional investors, we investigate the abnormal returns of top 30 portfolios and high-dividend-yield portfolios, respectively. The results of this research may help shed more light on dividend-yield strategies among the white-hot in the Greater China region.

The remainder of this paper is organized as follows. Section 2 outlines the market institutional background of Greater China region and the description of data employed in this study. Section 3 presents the research methodology, followed by Section 4 with the empirical results and related analyses. Finally, conclusions and remarks of the paper are made in Section 5.

2. DATA DESCRIPTION

This study examines empirical data of corporate dividends, financial ratios, and stock prices provided by Taiwan Economic Journal (TEJ). However, the MSCI Golden Dragon Index of Data Stream International was employed as the market benchmark of the Greater China region because it is a free-float weighted equity index consisting of equities from China, Hong Kong, and Taiwan. The data frequency mainly is annual, except for the monthly stock prices. The dividend sample period spans from 2000 to 2008. When calculating portfolio returns, additional data of 2009 were added to the original sample. Furthermore, this study adopts the following criteria for data selection:

i. Companies were exclusively drawn from non-financial industries; companies in financial industry were excluded because the financial structure differs from others.
ii. Companies with incomplete financial data, preferred shares, or TDRs were excluded from the sample.
iii. The top 1% of dividend yield samples was removed.

This study first drew 23,284 non-financial firm samples. After excluding 730 incomplete financial data firms and 135 abnormal dividend yield samples, the final sample included 22,419 samples, including 12,949 dividend-distributing firms, with the rest being no-dividend firms. The dividend sample was further partitioned into five categories of dividend-subgroups in descending order of dividend yield; in addition, the firms of zero-dividend were added as the sixth category. Table 1 presents summary statistics of the empirical data.

The highest dividend-yield subgroup exhibits the highest average dividend yield of 10.55 per cent, as indicated in Panel A of Table 1, in contrast to the second subgroup with far lower dividend level at 5.23 per cent. This study defines dividend yield as the ratio of cash dividend and the year-end stock price. Panel B of Table 1 displays the size of the six dividend-subgroups. The zero-dividend subgroup and the highest subgroup respectively are with the smallest size (US$402 Mil.) and the second least size (US$627 Mil.). This study employs market value as the measure of firm size. The market value was calculated in two steps. Firstly, the local currency denominated year-end market value was obtained by multiplying the number of outstanding shares with the year-end share price. The year-end market value in local currency was then converted into US dollar denominated firm size using the year-end Dollar exchange rate in each issuing market. These figures imply that the abnormal returns of these two subgroups are likely related to the prevalent size effect.

Finally, Panels C and D show the investment returns of dividend-yield portfolios in terms of Yt+1 and Yt+2. The annual returns of five dividend-subgroups exhibit a significant pattern of monotonically decreasing, while the zero-dividend yield portfolio exhibit the highest annual returns. Previous research suggests that zero dividend stocks can also possess abnormal risk adjusted returns (Keim, 1985; Morgan and Thomas, 1998; Gwilym et al., 2005). These summary statistics indicate a strong trend linking higher dividend portfolios with higher returns in the Greater China region.

Table-1. Summary statistics for dividend-yield groups [a]

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Avg.
Panel A: Avg. Dividend Yield (%)											
High	11.95	10.94	11.80	10.49	11.42	12.09	8.62	7.41	10.27	-	10.55
#2	4.75	4.82	6.19	5.66	6.11	6.33	4.84	3.51	4.92	-	5.23
#3	2.54	2.83	4.01	3.75	4.07	4.28	3.06	1.73	2.73	-	3.22
#4	1.45	1.69	2.47	2.43	2.75	2.79	1.87	0.89	1.55	-	1.99
Low	0.69	0.69	1.07	1.24	1.35	1.36	0.86	0.37	0.73	-	0.93
zero div.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.00
Panel B: Avg. ME (US$ Mil.)											
High	546	640	469	524	620	555	719	1079	491	-	627
#2	777	801	742	699	892	1273	1228	3827	2235	-	1386
#3	700	943	844	982	864	935	1928	5488	3152	-	1760
#4	844	538	709	1047	1237	1520	2906	3652	1374	-	1536
Low	800	834	556	1283	727	1385	1523	3480	1295	-	1320
zero div.	566	392	244	276	322	253	427	815	327	-	402
Panel C: Avg. Invest Returns in Y_{t+1} (%) [b]											
High	-	31.91	26.48	66.23	15.91	20.10	84.19	78.36	-43.57	155.40	50.39
#2	-	6.07	-1.56	37.45	6.43	6.62	68.48	75.72	-51.75	125.36	33.34
#3	-	-9.36	-11.56	29.27	6.47	3.29	50.85	104.39	-53.35	126.10	31.93
#4	-	-21.42	-20.06	7.05	-3.38	-0.89	63.10	104.32	-57.00	137.04	28.77
Low	-	-19.97	-21.77	1.14	-7.77	-9.16	56.41	124.95	-60.29	117.92	25.18
zero div.	-	11.89	6.13	91.22	17.22	15.49	99.16	170.36	-54.30	201.09	68.30
Panel D: Avg. Invest Returns in Y_{t+2} (%) [c]											
High	-	-	25.36	56.10	8.73	9.06	72.09	109.82	-48.44	119.99	44.09
#2	-	-	1.60	52.80	3.94	7.09	70.98	73.04	-50.74	134.81	36.69
#3	-	-	-11.28	18.85	5.83	2.02	64.96	102.32	-53.96	144.35	34.14
#4	-	-	-14.68	0.95	-6.45	-5.14	61.92	100.80	-53.52	142.76	28.33
Low	-	-	-24.09	-6.87	-12.43	-7.48	64.54	97.96	-58.39	139.82	24.13
zero div.	-	-	8.84	110.76	25.08	14.77	100.83	168.41	-52.76	201.41	72.17

Notes:

[a] This table reports summary statistics for dividend-yield groups in the period, 2000-2008. For each year in the sample period, the table shows the average dividend yield, size, and investment return of the six dividend-yield groups. Specifically, Dividend Yield is the ratio of dividend and stock price at the year-end, ME denotes market value by stock price timing shares outstanding (US$ Mil.)

[b] Invest Returns in Y_{t+1} is the investment returns of dividend-yield portfolios constructed at the year-end of Y_t and invested in Y_{t+1} which is the dividend-announcement year.

[c] Invest Returns in Y_{t+2} is the investment returns of the same dividend-yield portfolios in Y_{t+2}.

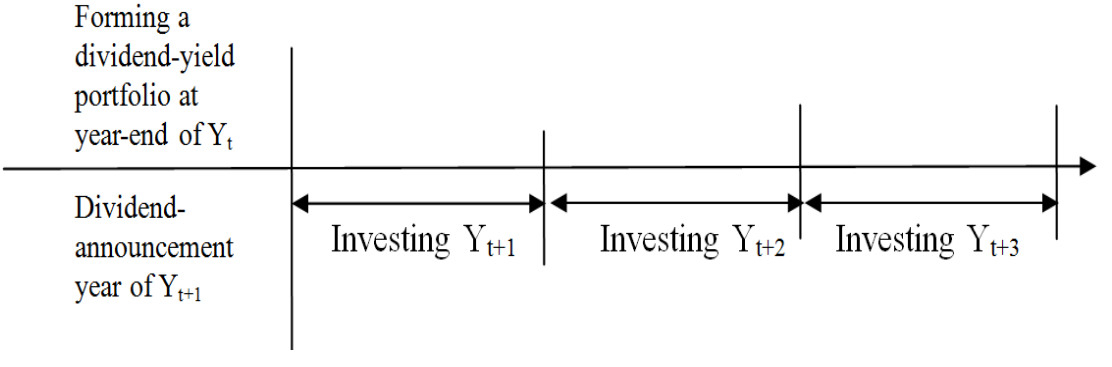
3. METHODOLOGY

A wide variety of factors could affect portfolio returns, including individual characteristics of constituent shares, weighting methods, market timing, the definition of dividend-yields, and risk-adjusted models. The above factors and models are described below.

According to Fisher and Lorie (1970), when portfolio constituent exceeds 20, non-systematic risk is then significantly reduced. Similarly, Elton *et al.* (2007) use the example of share investment portfolio from the United States and the United Kingdom to show that when the number of individual shares exceeds 20, then the reduction in the trend of portfolio risk display the sign of slowing and stagnating. Therefore, this study implements portfolio construction of 30 constituent stocks.

This study mainly employs equally-weighted returns, in addition to the ln value-weighted returns and price-weighted returns. Year-end capitalization and prices are used to measure value-weighted and price-weighted portfolio returns. Value-weighted portfolio returns are generally close to benchmark returns, while equally-weighted measures easily display rosy outlook on returns due to the size effect. Price-weighted portfolios are suitably adopted by individual investors, while ln value-weighted construction can result in higher returns by deflating the influence of big companies.

This study presumes that investors start dividend-yield portfolios at the very beginning of the dividend-announcement year. Information about the designated components of dividend-yield portfolios is not available until the June of the dividend-announcement year, raising some skepticism about the investment timing. However, most financial analysts attempt to forecast dividend-yield portfolios at the current year-end, and therefore implement investment portfolios at the beginning of the next year. Therefore, this study regards the beginning of the dividend-announcement year as reasonable investment timing and examines the related investment consequences in terms of several different implementing timings. We depict the original forming and investing of three different periods in the following schematic diagram.



The measure of dividend yields mostly used in financial researches is defined by the ratio of dividend and stock price at year-end (Blume, 1980; Morgan and Thomas, 1998). However, the measure easily falls into a downwards bias because the stock prices of companies with promising outlooks may have already significantly risen at the year-end. This study accommodates the dividend yield by employing the annual average price per share as the denominator, but doing so only results in similar performance compared to the traditional method. To address this issue, this study reviews the relevant data and finds that the prices of constituent companies at year-end are indeed higher than annual average prices, resulting in lower dividend yields. Fortunately, this phenomenon is more common in companies with high dividend yields, and therefore only a small portion of the constituent stocks must be replaced. This study simply applies the traditional calculation for dividend yields due to its robustness. In addition, all prices included are both cash-dividend adjusted and stock-dividend adjusted.

Regarding risk-adjusted models, this study first employs one-period Sharpe-Lintner CAPM as benchmark to empirically examine the divergences of abnormal returns of among six dividend-yield portfolios. The Sharpe-Lintner CAPM is specified as follows:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + u_{pt}, \quad (1)$$

Where, R_{pt} represents the dividend-yield portfolio's return at month t; R_{ft} uses the return of one-year U.S. Treasury Bill at month t as the proxy of the risk-free assets return (Source is from the Data Stream); R_{mt} is the market portfolio's return at month t; and u_{pt} is the error item. Among the regression, β_p represents the loading of the systematic risk of dividend-yield portfolios and α_p measures the abnormal returns beyond market risk for the portfolios.

Many researchers have identified that the covariation in the returns of small firms and the covariation in returns related to relative distress of book-to-market equity are consistently not captured by the market return and are compensated in average returns. Therefore, this study adopts the three-factor model as Fama (1998) to further verify whether the abnormal returns of dividend-yield portfolios still left unexplained. The specification of the three-factor model of Fama and French (1993) is as follows.

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + s_p SMB + h_p HML + u_{pt}, \quad (2)$$

where *SMB* refers to the difference between the returns of small- and large-stock portfolios in the Greater China region; and *HML* measures the difference between the returns of high- and low-*BE/ME* portfolios in the Greater China region (where *BE/ME* is the ratio of the book value of common equity to its market equity). The factor sensitivities (or loadings), β_p, s_p and h_p, are the slopes in the time-series model; all other variables are the same as those described in Equation (1).

4. RESULTS

This study employs a three-step procedure for investigating the abnormal returns of dividend-yield strategies. Firstly, equally-weighted high-dividend-yield portfolios as those of Visscher and Filbeck (2003) and Brzeszczyński and Gajdka (2007) are constructed to test the "higher dividends = higher returns" issue. Secondly, the analysis of broader top 30 dividend-yield portfolios, particularly by value-weighted measure, reveals whether significant abnormal returns actually exist compared to market indices. Ultimately, this study presents empirically robust tests for the main findings by accommodating several methodological considerations.

4.1. Risk-adjusted Models

Firstly, the risk-adjusted α associated with CAPM is reported in Table 2 for the six dividend-yield groups, respectively. Particularly, the results indicate that the highest dividend-yield group captures the greatest α value (0.022) as reported in Morgan and Thomas (1998).

Table-2. The return of dividend-yield portfolios with risk-adjusted models [a]

Portfolio	CAPM model [b,c]			Three-factors model [d]				
	α^d	β	R^2	α	β	s	h	R^2
High	0.022*	0.826*	0.643		0.799*	0.345***		0.802
#2	0.011*	0.892*	0.757	-0.001	0.868*	0.318***		0.846
#3	0.007**	1.008*	0.827	-0.001	0.982*	0.383***	0.040	0.899
#4	0.002	1.049*	0.742	-0.001	1.020*	0.476***	-	0.886
Low	-0.001	1.098*	0.649	-0.005	1.062*	0.615***	-	0.874
zero div.	0.010**	1.158*	0.662	-0.007	1.099*	0.862***	0.114*	0.887

Notes:

[a] This table evaluates abnormal returns of dividend-yield portfolios using the month-by-month cross-section risk-adjusted models in the dividend announcement year. Dividend-yield portfolios are ranked in descending order of dividend yield from the highest-dividend group to zero-dividend group. The monthly returns are calculated in the dividend-announcement years during the period, 2001~2009.

[b] The CAPM here adopts the Sharpe-Lintner specification.

[c] *, **, and *** respectively indicate significance at the 10%, 5%, and 1% levels.

[d] The three-factor model follows Fama and French (1993) and assesses the effects of SMB and HML, with s and h respectively indicating the coefficients of SMB and HML.

The picture of risk-adjusted returns turns a lot different under the three-factor model. As Table 2 shows, positive abnormal return only appears at the highest dividend-yield group with relative smaller α (α approximates 0.007 vs. 0.022 under CAPM). Moreover, the zero-dividend group appears in a negative abnormal return (α approximates -0.007). This result is consistent with the Fama (1998) argument, using a robust model to evaluate the abnormal return, and then it will shrink a lot, or disappear. For the coefficient value of SMB, generally showing the lower dividend-yield, then SMB's coefficient values are higher. In the HML factor, h value (0.419) in the highest dividend-yield group, significantly higher than other dividend-yield groups. Those results imply that the abnormal returns of highest dividend-yield group may stem from the risk of firm value; in contrast, the return of zero dividend-yield is from a firm size effect.

4.2 Equally-Weighted Returns

Market ranking on public information, including sale growth rates, earnings growth rates, and dividend yields, have traditionally been the foci of investors since the very first launching of modern stock markets. Although discarded by the doctrines of market efficiency, the bold figures of Table 3 clearly indicate that the equal-weighted top 30 dividend-yield portfolios has generated average annual returns of 82.08 per cent, 64.83 per cent, and 58.54 per cent, respectively, in $Y_{t+1,}$ $Y_{t+2,}$ $Y_{t+3,}$ during 2003-2009 compared to the 20.29 per cent of MSCI Golden Dragon index. The Y_{t+3} returns reported in Table 3 serve the purpose of tracking the long-term performance of the dividend-yield portfolios. The significance of abnormal returns is supported at the 1 per cent level by both the t-test and non-parametric Wilcoxon test.

Table-3. Returns of top 30 dividend-yield portfolios: equally-weighted measure [a]

Portfolios	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Avg. R.
Shanghai A	34.38	-21.89	-17.13	10.57	-15.23	-8.21	130.57	96.14	-65.38	79.80	32.61
Shenzhen A	35.16	-26.84	-17.91	-4.02	-16.46	-11.75	96.36	167.04	-61.77	116.89	40.90
HIS	-2.81	-24.50	-18.21	34.92	13.15	4.54	34.20	39.31	-48.27	52.02	18.55
TAIEX	-51.37	17.14	-19.79	32.30	4.23	6.66	19.48	8.72	-46.03	78.34	14.81
MSCI Golden Dragon index (A)	-31.27	-12.78	-21.67	44.02	10.83	6.28	35.03	34.29	-51.12	62.70	**20.29**
Panel A: Invest year $_{t+1}$ [b,c]											
Equally-Weighted (B)	-	14.39	49.72	140.68	23.35	11.07	113.58	88.16	-42.68	240.39	**82.08**
Ln Value-Weighted	-	6.18	39.98	112.92	17.60	10.28	117.68	88.00	-45.12	242.72	77.73
Price-Weighted	-	7.82	61.49	43.14	18.16	-2.89	105.56	62.46	-49.30	165.23	48.91
Difference in return rates (*B*–A)	-	27.17	71.39	96.66	12.52	4.79	78.55	53.87	8.44	177.69	61.79
t-Statistic	-	1.14	4.64***	1.40*	0.33	0.38	2.17**	1.21	0.83	3.09***	3.73***
Wilcoxon signed-rank test	-	1.10	2.75***	1.18	0.39	0.39	2.35**	1.26	0.47	2.82***	3.57***
Panel B: Invest year$_{t+2}$ [d]											
Equally-Weighted (B)	-	-	41.09	42.54	36.87	8.16	126.17	170.11	-46.00	115.98	**64.83**
Ln Value-Weighted	-	-	33.88	43.95	29.22	8.58	132.73	168.72	-47.48	116.61	64.62
Price-Weighted	-	-	50.31	32.08	27.90	8.26	98.86	99.17	-45.84	144.02	52.06
Difference in return rates (*B*–A)	-	-	62.76	-1.48	26.04	1.88	91.14	135.82	5.12	53.28	44.54
t-Statistic	-	-	3.96***	-0.01	1.17	0.24	2.64**	1.86**	0.82	3.09***	3.34***
Wilcoxon signed-rank test	-	-	2.75***	0.24	1.33	0.71	2.51**	1.73*	0.55	2.51**	3.42***
Panel C: Invest year$_{t+3}$ [e]											
Equally-Weighted (B)	-	-	-	74.41	17.75	8.89	105.27	139.28	-48.00	112.22	**58.54**
Ln Value-Weighted	-	-	-	68.10	14.26	6.47	111.08	142.62	-49.19	119.59	58.99
Price-Weighted	-	-	-	51.20	20.48	-4.28	70.44	79.15	-47.45	141.10	44.38
Difference in return rates (*B*–A)	-	-	-	30.39	6.92	2.61	70.24	104.99	3.12	49.52	38.25
t-Statistic	-	-	-	1.13	0.44	-0.01	2.30**	1.57*	0.31	2.20**	2.69***
Wilcoxon signed-rank test	-	-	-	1.10	0.78	-0.16	2.43**	1.49	0.16	1.80*	2.63***

Notes:

[a] This table reports the equally-weighted excess returns between top 30 dividend-yield portfolios and MSCI Golden Dragon Index during the period, 2003-2009. The table also shows the index returns for A-shares of Shanghai, A-shares of Shenzhen, Hong Kong (HIS) and Taiwan (TAIEX). To compare the sensitivity of measurement of returns, we also present two alternative measures of Ln Value-Weight and Price-Weight.

[b] Invest Returns of Y_{t+1} is the investment returns of dividend-yield portfolios constructed at the year-end of Y_t and invested in Y_{t+1} which is the dividend-announcement year.

[c] The calculation of the *t*-statistic is based upon the paired difference test; *, **, and *** respectively indicate significance at the 10%, 5%, and 1% levels.

[d] Invest Returns in Y_{t+2} is the investment returns of the same dividend-yield portfolios in Y_{t+2}.

[e] Invest Returns in Y_{t+3} is the investment returns of the same dividend-yield portfolios in $Y_{t+3.}$

This phenomenon is robust across returns of ln value-weighted and price-weighted measures. Ultimately, this empirical evidence confirms the findings of Visscher and Filbeck (2003) and Brzeszczyński and Gajdka (2007) and implies that the dividend announcement effects gradually die out.

4.3. Value-Weighted Returns

The value-weighted return proposed by Fama (1998) exhibits statistically significant abnormal returns of 41.59 per cent, 26.03 per cent, and 18.07 per cent, as indicated by the italicized figures of Panels A-C in Table 4.

Table-4. Returns of top 30 dividend-yield portfolios: value-weighted measure [a]

Portfolios	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Avg. R.
MSCI Golden Dragon index (A)	-31.27	-12.78	-21.67	44.02	10.83	6.28	35.03	34.29	-51.12	62.70	**20.29**
Panel A: Invest year $_{t+1}$ [b,c]											
Value-Weighted (B)	-	-20.10	6.23	49.79	27.62	-7.23	89.68	125.71	-56.31	203.90	61.88
Difference in return rates (*B*–A)	-	-7.32	27.90	5.77	16.79	-13.51	54.65	91.42	-5.19	141.20	*41.59*
t-Statistic	-	-0.40	1.20	0.11	1.03	-0.79	2.46**	1.60*	-0.38	3.47***	2.70***
Wilcoxon signed-rank test	-	-0.31	0.94	0.00	0.78	-0.86	2.35**	1.57	-0.47	2.59***	2.56**
Panel B: Invest year$_{t+2}$ [d]											
Value-Weighted (B)	-	-	12.34	49.34	27.53	-2.24	94.31	96.03	-52.35	111.65	46.32
Difference in return rates (*B*–A)	-	-	34.01	5.32	16.70	-8.52	59.28	61.74	-1.23	48.95	*26.03*
t-Statistic	-	-	1.73*	0.19	0.77	-0.59	2.80***	1.12	0.20	3.27***	2.21**
Wilcoxon signed-rank test	-	-	1.33	0.24	0.39	-0.55	2.35**	1.33	-0.08	2.35**	2.42**
Panel C: Invest year$_{t+3}$ [e]											
Value-Weighted (B)	-	-	-	19.66	0.89	-2.84	65.45	85.26	-45.71	145.80	38.36
Difference in return rates (*B*–A)	-	-	-	-24.36	-9.94	-9.12	30.42	50.97	5.41	83.10	*18.07*
t-Statistic	-	-	-	-1.14	-0.55	-0.54	1.19	1.04	0.55	2.35**	1.2.3
Wilcoxon signed-rank test	-	-	-	1.07	-0.63	-0.04	0.86	1.26	0.26	2.28**	1.07

Notes:

[a] This table uses value-weighted measure to evaluate the abnormal returns between top 30 dividend-yield portfolios and MSCI Golden Dragon Index in the period, 2003-2009. We adopt U.S. dollar as the currency numeracies of four different markets in the Greater China region. Moreover, the MSCI Golden Dragon Index of Data Stream International is employed as the market benchmark for the Greater China region because it is a free-float equity index covering the major stocks in China, Hong Kong, and Taiwan.

[b] Invest Returns in Y_{t+1} is the investment returns of dividend-yield portfolios constructed at the year-end of Y_t and invested in Y_{t+1} which is the dividend-announcement year.

[c] The calculation of the *t*-statistic is based upon the paired difference test; *, **, and *** respectively indicate significance at the 10%, 5%, and 1% levels.

[d] Invest Returns in Y_{t+2} is the investment returns of the same dividend-yield portfolios in Y_{t+2}.

[e] Invest Returns in Y_{t+3} is the investment returns of the same dividend-yield portfolios in Y_{t+3}.

These empirical results are consistent with Fama (1998) view that the size of abnormal return shrinks a lot under the value-weighted measure. However, the evidence also confirms the statistical and economic content of dividend-yield strategies in terms of the more reasonable measure. Finally, the result remains largely valid when expanding the coverage of sample with financial companies. Only three financial firms exhibited higher dividend yields than the constituent shares of top 30 portfolios during 2000-2008. One occurred in 2006, and the other two were in 2008. Therefore, this study presumes that the inclusion of financial firms does not alter the main results.

4.4. Market Timing

Does market timing affect abnormal returns? Table 5 reports the average monthly returns of the top 30 dividend-yield portfolios from January 2002 to December 2009.

Table-5. Monthly returns of top 30 dividend-yield portfolios: 200201~200912(%)[a]

Portfolios	Invest period [b, c]								
	2002	2003	2004	2005	2006	2007	2008	2009	Avg.
Jan.	0.90	13.27	6.87	-7.15	9.26	10.31	-14.70	-1.03	2.22
Feb.	3.73	-2.84	7.67	13.19	6.56	6.38	13.38	8.28	7.04
Mar.	3.75	-2.69	2.48	-16.94	4.29	7.18	-0.93	17.72	1.86
Apr.	3.76	2.45	-8.17	-8.98	5.75	13.30	9.01	25.25	5.29
May.	-5.51	3.67	-0.03	-2.05	4.74	7.09	-6.73	29.26	3.81
Jun.	10.05	8.91	2.62	3.96	5.88	4.49	-16.21	1.89	2.70
Jul.	-3.52	5.30	1.04	-10.20	-2.93	20.45	-2.66	18.75	3.28
Aug.	-0.90	4.76	1.58	21.71	2.72	7.27	-8.42	-9.57	2.39
Sep.	-3.30	-4.00	6.80	-2.66	5.40	11.90	-28.93	4.94	-1.23
Oct.	-2.18	5.30	0.98	-1.70	4.91	-3.32	-22.85	5.26	-1.70
Nov.	-1.20	0.98	5.41	5.18	11.30	-13.02	-4.25	6.99	1.42
Dec.	-0.81	5.27	-1.96	11.27	5.69	6.37	14.16	5.76	5.72
F-test	-	-	-	-	-	-	-	-	0.59

Notes:

[a] This table reports average monthly returns for top 30 dividend-yield portfolios by value-weighted measure in the period, 2001-2008, and the investment during the period, 200201~200912. For each year in the sample period, the table shows the monthly return of the portfolios.

[b] We adopt F- test to test the null hypothesis that average monthly returns are equal for each month in the Great China region, where F-statistic distributed F(11,84).

[c] *, **, and *** respectively indicate significance at the 10%, 5%, and 1% levels.

This table indicates that October, September, and November respectively account for the lowest three average returns, while February, December, and April have the largest returns. The former period represents the quarter just closely following the start of schools with slack consumption, while the latter period stands for actively trading seasons of Chinese lunar New Year, accounting the window dressing date, and the annual earnings and dividends announcements dates. Although Table 5 seems to show monthly timing, the de facto trading profits are not able to capitalize on market timing. For example, February, the month with the highest average return, exhibits only one negative figure within the eight-year period of Table 5, showing a large loss in 2010 (not reported in the Table). Moreover, the F-test is not able to reject the null hypothesis of the equality across average monthly returns with the low F-statistic of 0.59. Due to the intractable monthly seasonality, the annual measure of portfolio returns can be utilized to smooth out the monthly returns volatility. Ultimately, the monthly timing of buy-and-hold strategy can be expected to have little influence on the main results of this study.

4.5. Market Liquidity

This study rebuilds high dividend-yield subgroup into the new portfolio with the accommodation of both market liquidity and factors related to potential profitability. The new portfolio is accordingly built using the following two-step procedure. Firstly, rank the annual high dividend-yield subgroup by market value in descending order and select the top 1/3 firms to form the new pool. Secondly, rank again the pool by BE/ME ratio in descending order and finally form the top 30 stocks as the new dividend-yield portfolio. The first step effectively excludes illiquid small stocks and contracts the original annual sample numbers ranging from 215-346 to 65-104. The second step adopts the higher BE/ME ratios ascribed by the three-factor model conducted by this study.

Table 6 reports the investment performance of the new high-dividend-yield portfolios under value-weighted measure. The abnormal returns of high-dividend-yield portfolios at Y_{t+1}, Y_{t+2}, and Y_{t+3} respectively account for 24.31 per cent, 39.87 per cent, and 25.60 per cent. Among them, Y_{t+1}, and Y_{t+2} reach the 5 per cent statistical significance level with the exception of Y_{t+3} at marginal 10 per cent. The Wilcoxon test reveals similar results, but is a bit weaker in statistical significance.

Table-6. Returns of high-dividend-yield portfolios: value-weighted measure [a]

Portfolios	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Avg. R.**
MSCI Golden Dragon index (A)	-31.27	-12.78	-21.67	44.02	10.83	6.28	35.03	34.29	-51.12	62.70	20.29
Panel A: Invest year $_{t+1}$ [b,c]											
High-dividend-yield portfolios (B)	-	-9.76	15.80	41.65	10.59	-7.39	121.55	54.85	-46.59	137.53	44.60
Difference in return rates (B–A)	-	3.02	37.47	-2.37	-0.24	-13.67	86.52	20.56	4.53	74.83	24.31
t-Statistic	-	0.11	1.71*	-0.25	-0.05	-0.41	2.15**	0.60	1.11	2.82***	2.31**
Wilcoxon signed-rank test	-	0.31	1.49	-0.39	-0.63	-0.78	1.88*	1.10	1.02	2.43**	1.92*
Panel B: Invest year$_{t+2}$ [d]											
High-dividend-yield portfolios (B)	-	-	19.04	87.09	23.44	-6.64	133.94	136.89	-37.57	83.93	60.15
Difference in return rates (B–A)	-	-	40.71	43.07	12.61	-12.92	98.91	102.60	13.55	21.23	39.87
t-Statistic	-	-	2.24**	1.09	0.96	-0.84	0.71	1.54*	1.58*	1.23	2.33**
Wilcoxon signed-rank test	-	-	1.73*	0.94	0.71	-0.78	0.08	1.41	1.65*	1.10	1.95*
Panel C: Invest year$_{t+3}$ [e]											
High-dividend-yield portfolios (B)	-	-	-	69.86	10.46	1.39	72.51	158.56	-63.48	71.91	45.89
Difference in return rates (B–A)		-	-	25.84	-0.37	-4.89	37.48	124.27	-12.36	9.21	25.60
t-Statistic	-	-	-	0.86	-0.09	-0.47	1.21	1.51*	-0.55	0.50	1.24
Wilcoxon signed-rank test	-	-	-	0.71	0.08	-0.39	0.94	1.33	-0.78	0.16	0.95

Notes:

[a] This table adopts value-weighted measure to evaluate the excess returns between high-dividend-yield portfolios and MSCI Golden Dragon Index during the period 2003-2009.

[b] Invest Returns in Y_{t+1} is the investment returns of dividend-yield portfolios constructed at the year-end of Y_t and invested in Y_{t+1} which is the dividend-announcement year.

[c] The calculation of the *t*-statistic is based upon the paired difference test; *, **, and *** respectively indicate significance at the 10%, 5%, and 1% levels.

[d] Invest Returns in Y_{t+2} is the investment returns of the same dividend-yield portfolios in Y_{t+2}.

[e] Invest Returns in Y_{t+3} is the investment returns of the same dividend-yield portfolios in Y_{t+3}.

However, Barber and Lyon (1997a) document that long-horizon buy-and-hold abnormal returns are positively skewed and this positive skewness leads to negatively biased *t*-statistics. This in turn leads to an inflated significance level for lower-tailed tests (i.e., reported *p* values will be smaller than they should be) and a loss of power for upper-tailed tests (i.e., reported *p* values will be too large). To address this issue, we follow the bootstrapped skewness-adjusted t-statistic of Lyon *et al.* (1999), and the findings of table 6 remain largely unchanged.

In addition, Campbell *et al.* (2001) suggests that, because of increase in idiosyncratic risk, the requirement of amounts of shares to constitute a fully diversified portfolio increases significantly up to 50 in the US markets after 1990s. Therefore, we form a new high-dividend-yield portfolio adopting 50 firms for the purpose of sensitivity test, but the result is similar to our main finding.

5. CONCLUSIONS

This study is among the first and most comprehensive examinations of the performance of the Dogs strategy in the Greater China region. Although many studies show that the superior performance of the dividend strategy is firmly provided in both North American and European markets, Fama (1998) argued that reasonable changes of measure of abnormal returns typically suggest that apparent anomalies are methodological illusions. Therefore, in addition to traditional equally-weighted abnormal returns, this study examines the evidence in terms of three-factor model and value-weighted measure.

Our empirical evidence indicates that positive abnormal returns do appear at the highest dividend-yield group even under the three-factor model. Further, the annual returns of equally-weighted portfolios also significantly beat MSCI Golden Dragon index during 2003-2009. The results are robust across measures of ln value-weighted and price-weighted portfolios. Particularly, the value-weighted portfolios of Fama (1998) also provide statistically significant abnormal returns of the Dogs strategy. Finally, the superiority of the buy and hold strategy of dividend portfolios remains strongly confirmed even when market liquidity is taken into consideration.

This study helps shed light on the issue surrounding dividend portfolios in several aspects. Firstly, this study extends the evidence of Visscher and Filbeck (2003) and Brzeszczyński and Gajdka (2007) from equally-weighted measure to value-weighted measures. Secondly, this study provides an in-depth analysis of the Dogs strategy based on the white-hot broad China markets. Thirdly, this study carefully examines empirical to avoid the critical factors of liquidity risk and market timing. Particularly, the annual return measure instead of monthly timing used by previous researches provides direct evidence that abnormal returns of dividend announcements actually occur during the first two years and gradually die out thereafter. These findings provide important insights into capital market behavior and should prove useful for trading strategies and portfolio management.

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