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Monthly Seasonality in the Top 50 Australian Stocks

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We studied monthly seasonality in the top 50 Australian stocks across different industry sectors. Unlike other Australian studies, we examined monthly seasonality using stock return data of individual companies for the period of January 1980 through to August 2010. We found that stock returns of over half of the 50 companies are significantly positive in April and December, and most companies have low stock returns in October. Seven companies have higher returns in April than in other months of the year, most of which are banking and financial services companies, while six companies have lower returns in February than in other months. Although Australia has a July-June taxation cycle, we found that only three stocks have a July anomaly. The findings are inconsistent with the tax-loss selling hypothesis and other studies on the Australian equity markets (e.g., Brown, Keim, Kleidon, & Marsh, 1983; Brailsford & Easton, 1991). However, our findings are generally consistent with Bonin and Moses (1974) on individual stock seasonality.

Keywords: Australian stock market, market efficiency, market anomaly, monthly effect, January effect, seasonality

Introduction

Seasonal anomalies in equity markets (over specific days, weeks, months, and even years) have attracted a widespread attention and considerable interests among both practitioners and academics. Over the last hundred years, a great number of economics and finance literature from both the practitioner and academic fields well document monthly seasonality of returns on various assets, such as stocks, debt securities, futures, foreign currencies and even commodities. More than 150 articles on monthly effects have been published worldwide by 2010, using different data, methods and time periods in different countries, suggesting the existence of monthly anomaly in stock markets.

Anomalous seasonality relies on the assumption that a certain pattern of stock markets, formed on the basis of the past stock price, can be used to predict the future stock price. If the anomalous pattern is fixed for a specific month, informed investors can utilize the pattern to earn a risk-free profit by trading these stocks. Therefore, the study of seasonality implies that investors could employ the anomaly findings to predict the future behavior of prices (Fama, 1965). Certainly, seasonal anomalies are in contradiction to any form of efficient market hypothesis, particularly the weak-form efficiency.

Over the last four decades, however, many researchers have well documented evidence on monthly seasonality of stock markets around the world. Extensive research on U.S. stock markets found that stock return in January is significantly greater than in other months of the year, referred to as “the January effect”, “the

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turn-of-the-year effect" or "the monthly seasonality/anomaly" (e.g., Wachtel, 1942; Bonin & Moses, 1974; Ariel, 1987; Heston & Sadka, 2008; Bentzen, 2009; Dzhabarov & Ziemba, 2010). International evidence further supported the existence of monthly anomalies (e.g., Officer, 1975; Brown et al., 1983; M. Gultekin & B. Gultekin, 1983; Yakob, Beal, & Delpachitra, 2005; Li & Liu, 2010). However, most of the research was limited to the use of various index or portfolio data.

Although Australia has a high level of share ownership, both institutionally and individually, compared to other developed countries, monthly anomalies in the equity market are obviously under-researched. Studies on the Australian stock market seasonality are very limited, for example, Officer (1975), Brown et al. (1983), and Worthington (2010). Their findings were mixed as the results are sensitive to the sample period and the portfolios used. However, all the studies were limited to the use of portfolio data and none of them used individual stock data. As Bonin and Moses (1974) found that only a part of individual stocks in the Dow Jones Industrial Average has January anomalies in the US, it is unclear whether individual stocks in Australia have different monthly anomalies from the indexes other researchers used. To address this question, in this study we investigated Australian seasonality of the top 50 companies' stocks for the period of January 1980 through to August 2010.

We found that more than half of the 50 company stock returns are statistically significant in April and December, while most of the 50 companies have low stock returns in October. This finding is inconsistent with Worthington (2010), who found that the lowest return occurs in September. The possible reason for the difference is that he used a market index and much longer sample period.

We also found that there is no "January effect" in the top 50 stock returns in Australia. In fact, for two companies stock returns are lower in January than in other months. For most companies, stock returns in one month are not significantly different from those in other months of the year. This result suggests that the stock market in Australia might generally be weak-form efficient. However there are two notable findings. First, 7 companies have higher returns in April than in other-than-April months and most of them are banking and/or financial services companies. Second, 6 companies have lower returns in February than in other-than-February months. The findings are inconsistent with the tax-loss selling hypothesis as Australia has a July-June taxation cycle and with the existing studies on Australian equity markets, such as Brown et al. (1983) and Brailsford and Easton (1991). Our findings generally are consistent with Bonin and Moses (1974) on different seasonality between individual stocks and indices.

The rest of the paper is structured as follows: Section 2 offers a description of the data and its summary statistics. Section 3 describes empirical approaches and discusses empirical findings. Section 4 concludes this paper.

Data

The data employed in this study are monthly closing prices of the top 50 companies traded on the Australian Stock Exchange (ASX) over the period from January 1980 to August 2010. The prices are adjusted by dividend distribution, new equity issuance and share buyback. The data are sourced from DataStream. These 50 companies are constituent companies in the ASX/S&P50 index as of September 2010. The detailed description of the companies and their associated industry category can be found in Table 1. Eight companies started to list their stocks on ASX in and after 2000, and therefore the sample starting periods for these companies are different from January 1980 (see Table 1 for the details). For example, the sample starting

month for CWN is December 2007. For most companies, the sample starting month is January 1980, as shown in Table 1. There are 16 out of 50 companies that do not have return observations more than 15 years.[1]

Table 1
Summary Statistics

ASX code	Industry	Mean (×100)	Std. Dev. (×100)	Median (×100)	Min (×100)	Max (×100)	Skewness	Kurtosis	Jacque-Bera	ρ(1)	Starting month
AGK	Utilities	0.94	8.09	0.95	-49.67	32.79	-0.39	5.81	527	0.05	1980M01
AIO†	Transportation	-4.08	27.51	-0.33	-86.91	67.04	-0.59	2.66	13	0.03	2007M07
AMC	Materials	0.53	6.69	0.67	-37.05	23.72	-0.40	3.79	229	-0.05	1980M01
AMP†	Insurance	-0.66	9.61	-0.21	-56.74	36.14	-1.17	8.73	497	-0.05	1998M07
ANZ	Banks	0.79	6.99	1.04	-25.19	22.78	-0.41	1.19	32	0.03	1980M01
ASX†	Diversified financials	1.29	9.63	1.31	-28.37	55.73	0.87	7.30	333	0.12	1998M12
AXA†	Insurance	0.68	9.32	0.84	-59.32	32.72	-1.25	10.17	759	-0.11	1996M11
BHP	Materials	0.99	7.56	0.73	-28.14	24.43	-0.08	0.59	6#	0.05	1980M01
BSL†	Materials	0.04	12.01	0.82	-45.00	31.79	-0.67	1.95	23	0.10	2002M08
BXB	Commercial service	0.75	8.09	0.85	-44.73	25.09	-0.87	4.58	367	0.00	1980M01
CBA	Banks	0.88	6.03	1.30	-24.53	19.45	-0.64	2.11	57	0.11	1991M10
CCL	Food beverage	0.96	8.57	1.18	-62.47	28.61	-1.65	11.00	2023	0.08	1980M01
CFX	Real estate	0.37	4.34	0.67	-14.75	10.87	-0.45	1.05	16	-0.17	1994M05
CPU	Software & services	2.14	11.66	1.79	-46.94	39.92	0.06	2.25	41	-0.01	1994M06
CSL	Pharmaceuticals, biotechnology & life sciences	1.90	9.10	1.69	-25.44	40.39	0.40	3.02	79	-0.02	1994M06
CWN†	Consumer services	-1.56	12.75	-0.50	-45.68	26.94	-0.85	3.91	25	-0.08	2007M12
FGL	Food beverage	0.73	7.92	0.85	-57.41	48.66	-0.83	13.22	2721	-0.10	1980M01
FMG†	Materials	3.54	25.07	3.45	-87.55	89.61	0.30	1.70	24	-0.10	1996M02
GPT	Real estate	-0.11	7.22	0.44	-71.79	25.86	-3.67	31.03	15595	0.02	1980M01
IAG†	Insurance	0.16	6.04	0.29	-19.09	13.66	-0.26	0.38	2#	-0.01	2000M09
IPL†	Materials	1.82	12.04	1.82	-40.29	29.93	-0.29	1.60	10	0.21	2003M08
LEI	Capital goods	1.08	11.46	1.24	-65.01	51.92	-0.68	5.39	473	0.01	1980M01
LLC	Real estate	0.59	8.31	1.16	-61.35	23.54	-1.27	8.36	1171	-0.04	1980M01
MAP†	Transport	0.92	10.85	1.36	-45.45	29.98	-0.98	3.84	74	0.06	2002M09
MGR†	Real estate	-0.55	12.15	0.56	-96.30	32.25	-4.34	31.24	5871	-0.12	1999M07
MQG†	Diversified financials	1.01	9.87	1.69	-45.00	51.65	-0.04	6.10	262	0.09	1996M08
NAB	Banks	0.75	6.42	0.94	-26.42	17.46	-0.60	1.89	77	-0.01	1980M01
NCM	Materials	0.69	12.00	1.00	-38.65	41.51	0.08	0.69	5#	-0.02	1988M07
NWS	Media	1.31	11.99	1.83	-75.61	36.41	-0.90	5.85	574	0.10	1980M01
ORG	Energy	0.97	7.82	0.95	-41.32	43.52	-0.24	5.73	507	0.00	1980M01
ORI	Materials	0.82	8.03	1.20	-44.74	36.63	-0.32	3.76	223	0.04	1980M01
OSH	Energy	0.94	13.81	0.72	-53.60	75.82	0.16	3.29	167	-0.04	1980M01
OST†	Materials	1.07	10.25	1.66	-40.04	19.93	-0.99	2.63	53	0.16	2000M11
QAN	Transportation	0.10	9.25	0.00	-45.70	32.76	-0.42	3.70	108	0.09	1995M08

(to be continued)

[1] The results for these companies may not be reliable as they contain fewer observations.

ASX code	Industry	Mean (×100)	Std. Dev. (×100)	Median (×100)	Min (×100)	Max (×100)	Skewness	Kurtosis	Jacque-Bera	ρ(1)	Starting month
QBE	Insurance	1.36	8.61	1.52	-57.80	26.55	-1.72	10.17	1767	-0.06	1980M01
RIO	Materials	0.83	10.04	0.42	-70.28	36.24	-1.64	11.43	2166	-0.02	1980M01
SGP	Real Estate	0.43	5.78	1.03	-31.35	17.03	-1.14	5.54	500	0.01	1982M11
SHL†	Health care equipment & services	1.52	8.35	1.17	-31.37	28.11	0.15	2.07	32	0.05	1996M02
STO	Energy	0.61	9.41	0.79	-41.14	48.50	-0.01	3.73	214	0.09	1980M01
SUN	Insurance	0.77	6.80	0.50	-39.49	22.53	-0.75	4.93	269	-0.03	1990M06
TAH	Consumer services	0.52	5.79	0.31	-21.87	16.27	-0.12	0.79	5#	0.06	1994M09
TCL†	Transportation	0.82	7.75	0.98	-28.47	22.31	-0.56	1.98	37	0.05	1996M04
TLS	Telecommunication service	0.02	6.74	-0.29	-18.67	29.86	0.60	2.15	39	-0.02	1997M12
TOL	Transportation	1.44	9.72	2.08	-27.77	30.12	-0.28	0.65	6	0.04	1993M11
WBC	Banks	0.66	6.97	0.71	-33.64	23.43	-0.33	1.77	55	-0.09	1980M01
WDC	Real estate	1.34	8.86	1.66	-55.30	54.76	-0.74	11.18	1951	0.09	1980M01
WES	Food & stapling retailing	1.11	7.21	0.96	-25.13	23.06	-0.02	0.73	6#	0.06	1988M02
WOR†	Energy	2.69	12.57	3.97	-63.71	28.96	-1.87	7.69	284	0.22	2002M12
WOW	Food & stapling retailing	1.12	5.32	0.69	-15.09	16.06	0.14	0.37	2#	-0.14	1993M08
WPL	Energy	0.85	9.47	0.95	-33.95	44.47	0.14	2.08	68	0.17	1980M01

Notes. The firms are: AGK-AGL Energy, AIO-Asciano Group, AMC-Amcor, AMP, ANZ-ANZ Bank, ASX, AXA-AXA Asia, BHP-BHP BLT, BSL-Bluescope, BXB-Bramble Ltd, CBA-Commonwealth Bank, CCL-Coca Cola Amatil, CFX-CFS Retail Property Trust, CPU-Cshare, CSL, CWN-Crown, FGL-Fosters, FMG-Fortescue, GPT, IAG-Insurance Australia, IPL-Incitec PV, LEI-Leighton, LLC-Lend Lease Group, MAP-Airport Investment Fund, MGR-Mirvac Group, MQG-Macquarie Group, NAB-National Australian Bank, NCM-Newcrest, NWS-News Corporation, ORG-Origin Energy, ORI-Orica, OSH-Oil Search, OST-Onesteel, QAN-Qantas, QBE-QBE Insurance, RIO-Rio Tinto, SGP-Stockland, SHL-Sonic Health, Sun-Sun Metway, TAH-Tabcorp, TCL-Transurban, TLS-Telstra, TOL-Tollholdings, WBC-Westpac, WDC-Westfield, WES-Wesfarmer, WOR-Worleypars, WOW-Woolworths, and WPL-Woodside. Jarque-Bera statistic for normality that is not significant at the 5% level is denoted with #. The ASX code of the firm that does not have more than 15 year data is denoted with †. The samples are monthly and end in August 2010.

The monthly market return at month *t* is calculated as:

$$R_{i,t} = \ln(P_{i,t+1} / P_{i,t}) \quad (1)$$

where $P_{i,t}$ is the price of stock *i* on the first day of month *t*, and $P_{i,t+1}$ is the price of stock *i* on the first day of month *t+1*.

Table 1 presents summary statistics of the monthly returns. The sample means, standard deviations, medians, minimums, maximums, skewness, kurtosis, Jacque-Bera statistics, and the first-order autocorrelation coefficients are reported. The mean returns vary across companies with the largest of 2.69% per month and the lowest of -4.08% per month. Consistent with the properties of the daily data studied by Liu and Li (2010), we found that the return distributions for most companies are non-normal. Most Jacque-Bera statistics for normality test are significant at the 1% level, suggesting the rejection of the null hypothesis. Furthermore, the kurtosis for more than half of the return series is significantly larger than 3, suggesting fat-tail distributions for these companies. Finally, the first-order autocorrelation coefficients vary across companies, with the largest of 0.22 and the lowest of -0.17, which is in contrast with the finding using daily data by Liu and Li (2010), who

found that most of first-order autocorrelation coefficients are less than 0.1.

Empirical Approaches and Results

We used usual *t*-tests to test the monthly effect hypothesis. We investigated the monthly effect by calculating returns during that month. To be specific, we calculated mean return in each month and mean return in other 11 months of the year. Then we calculated the difference of mean returns and used *t*-tests to test the statistical significance of the difference. For example, to test the January effect, the *t*-statistic is calculated as follows:

$$t = \frac{\bar{R}_{Jan} - \bar{R}_{NonJan}}{\sqrt{\frac{S^2_{Jan}}{n_{Jan}} + \frac{S^2_{NonJan}}{n_{NonJan}}}} \quad (2)$$

where $\bar{R}_{Jan}$ is the mean return in January, $\bar{R}_{NonJan}$ is the mean return in the months other than January, S^2_{Jan} is the variance of January returns, S^2_{NonJan} is the variance of Non-January returns, and n_{Jan} and n_{NonJan} are the observation numbers of January returns and non-January returns, respectively.

Before the *t*-tests, we presented the mean returns of 50 companies in each month (from January to December) and their associated standard errors of mean in Table 2. We also reported the mean and median returns, the numbers of statistically significant positive and negative returns of all the companies in each month in the bottom four rows of Table 2. The US studies document that returns appear to be abnormally high in January. The early Australian studies found that stock returns in Australia are highest in both January and July (Brown et al., 1983; Brailsford & Easton, 1991). Table 2 shows that the mean and median returns of all 50 companies are highest in January in the Australian market[2]. Nevertheless, the volatility of returns in January is also high. In fact, only 3 out of 50 companies have significant positive returns in January while 6 companies have significant negative returns in that month.

Table 2 also shows that stock returns for more than half of the companies are statistically significant in April and December. In contrast, many companies have low stock returns in October. This finding is inconsistent with Worthington (2010), who found that the lowest return occurs in September. The reason for the difference is that he used a market index and much longer sample period.

Table 3 reports the *t*-testing results of Equation (2) for all the 50 companies. Table 3 shows that there is no "January effect" in the top 50 stock returns in Australia. None of the 50 companies has statistically significant larger returns in January than in other months. In fact, for two companies (AXA & ORI), stock returns are lower in January than in other months.

There is also no strong evidence of monthly effect other than the January effect in the sample. For most companies, stock returns in one month are not significantly different from those in other months. This result suggests that the stock market in Australia might generally be weak-form efficient.

However, there are two notable features as shown in Table 3. First, 7 companies have higher returns in April than in other-than-April months (ANZ, BXB, CBA, NAB, QBE, WBC, & WPL) and most of them are banking and/or financial services companies. Second, 6 companies have lower returns in February than in other-than-February months (AGK, GPT, MQG, SGP, STO, TCL). The findings are inconsistent with the tax-loss selling hypothesis as Australia has a July-June taxation cycle and they also contradict the existing

[2] The result is driven by a few companies.

studies on the Australian equity market, such as Brown et al. (1983) and Brailsford and Easton (1991).

Table 2

Mean Returns on Months

ASX code	Jan.		Feb.		Mar.		Apr.		May		Jun.	
	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean
AGK	0.577	(1.254)	-2.515	(1.765)	0.675	(1.079)	3.168**	(1.362)	0.540	(1.580)	-0.534	(1.272)
AIO†	-20.425**	(8.190)	-34.896	(27.445)	18.310	(24.921)	13.411	(15.918)	0.405	(3.272)	-1.564	(11.736)
AMC	1.091	(1.414)	-0.241	(1.369)	-0.694	(0.814)	2.512**	(1.220)	0.920	(1.089)	-1.059	(1.094)
AMP†	-5.183**	(2.568)	-5.151*	(3.065)	3.279**	(1.543)	1.759	(2.445)	-7.171	(4.755)	0.156	(1.897)
ANZ	-0.153	(1.112)	0.304	(1.354)	0.480	(1.254)	3.478**	(1.086)	-0.483	(1.363)	-1.348	(1.125)
ASX†	0.032	(3.809)	2.684	(3.329)	-0.586	(2.056)	-0.162	(1.810)	-2.980	(3.498)	1.526	(1.999)
AXA†	-4.666**	(1.806)	-2.839	(4.604)	2.933	(2.212)	3.347*	(1.760)	0.268	(1.608)	-2.609	(2.493)
BHP	-0.435	(1.468)	0.297	(1.363)	1.959	(1.508)	3.935**	(1.652)	2.442*	(1.335)	0.081	(0.924)
BSL†	0.924	(4.071)	-3.950	(5.578)	3.791	(4.053)	-1.427	(3.848)	3.838	(4.797)	-0.040	(2.538)
BXB	0.549	(1.517)	-1.740	(2.034)	1.023	(0.940)	4.657**	(1.353)	-0.366	(1.286)	-1.324	(1.118)
CBA	0.732	(1.416)	-0.168	(1.867)	0.519	(1.781)	3.990**	(0.954)	-0.072	(1.303)	-0.055	(1.188)
CCL	2.419**	(1.135)	-0.749	(1.490)	0.648	(1.247)	3.358**	(1.401)	-0.561	(1.185)	0.236	(1.015)
CFX	-0.907	(0.899)	-0.375	(1.470)	0.328	(0.798)	0.097	(0.999)	0.925	(1.019)	-2.789**	(1.198)
CPU	-2.906	(3.984)	-2.680	(1.844)	4.162	(3.437)	2.277	(2.405)	-0.576	(2.221)	4.104	(3.144)
CSL	-1.262	(2.197)	3.485	(2.384)	1.050	(1.343)	0.894	(1.911)	-0.768	(2.556)	3.320	(3.035)
CWN†	-7.928**	(1.821)	-4.680	(4.474)	5.595	(8.261)	5.006**	(1.968)	-2.095	(2.436)	-4.354	(4.046)
FGL	2.171	(1.923)	-0.818	(1.047)	0.237	(1.597)	1.622	(1.283)	0.368	(0.882)	0.366	(0.909)
FMG†	11.381**	(5.586)	2.433	(6.004)	7.965	(7.646)	-7.262	(8.157)	8.844	(5.987)	0.564	(4.741)
GPT	0.098	(0.775)	-4.913*	(2.569)	0.596	(0.712)	1.817**	(0.800)	1.250	(1.331)	-1.461	(1.212)
IAG†	-0.615	(1.343)	-0.889	(2.853)	1.130	(1.258)	1.866	(1.634)	-0.818	(1.790)	-1.007	(2.323)
IPL†	0.679	(2.403)	2.218	(5.174)	1.772	(3.536)	1.120	(4.098)	8.670*	(5.158)	-0.326	(4.376)
LEI	1.355	(2.494)	0.698	(3.023)	0.914	(1.937)	3.658**	(1.279)	2.355	(2.140)	-1.786	(1.329)
LLC	0.106	(1.505)	-1.560	(1.679)	0.437	(1.434)	3.293**	(1.170)	-1.252	(1.308)	0.069	(1.258)
MAP†	0.592	(2.339)	-6.499	(6.137)	-0.053	(3.345)	2.935	(2.360)	4.093	(4.108)	-4.796	(4.601)
MGR†	-3.711**	(1.802)	-5.302	(5.894)	1.636	(1.956)	0.476	(2.409)	-1.746	(3.446)	-0.185	(1.759)
MQG†	-0.480	(2.107)	-6.589*	(3.947)	5.591	(3.677)	4.356*	(2.445)	-0.428	(2.203)	2.420	(2.770)
NAB	1.811*	(1.068)	-1.411	(1.279)	1.184	(1.063)	4.080**	(0.846)	1.264	(1.400)	-2.578**	(0.854)
NCM	-2.082	(2.686)	-0.575	(1.961)	2.228	(3.158)	-2.256	(1.795)	2.050	(3.072)	4.182**	(1.982)
NWS	2.849	(2.042)	2.090	(2.533)	2.656	(1.777)	3.633**	(1.620)	1.165	(1.651)	-1.246	(2.373)
ORG	1.143	(1.375)	0.089	(1.694)	-0.779	(1.317)	4.292**	(1.786)	1.209	(1.519)	0.107	(0.952)
ORI	-2.112*	(1.177)	-1.074	(1.309)	1.126	(1.385)	4.075**	(1.385)	1.062	(1.523)	-0.623	(1.036)
OSH	2.037	(2.407)	-2.115	(2.682)	0.659	(2.440)	5.895**	(2.389)	-0.527	(2.659)	-1.266	(2.086)
OST†	2.147	(3.262)	0.300	(3.821)	4.781*	(2.810)	-1.305	(3.473)	2.917	(3.238)	3.000	(1.994)
QAN	-0.329	(2.004)	-4.240	(4.251)	-3.634	(2.259)	2.779	(2.923)	-0.093	(1.261)	0.301	(1.888)
QBE	1.339	(1.420)	0.220	(2.027)	0.588	(1.221)	5.208**	(1.187)	-0.607	(1.108)	-1.004	(1.531)
RIO	-0.311	(2.018)	1.412	(1.220)	2.746	(1.752)	4.218**	(1.732)	0.906	(1.624)	-1.230	(0.979)
SGP	0.115	(0.944)	-2.838*	(1.498)	1.839*	(1.018)	1.143	(0.753)	0.252	(1.019)	-1.588**	(0.804)
SHL†	-0.139	(2.209)	0.963	(3.107)	-0.974	(1.802)	0.672	(1.457)	-2.059	(2.606)	3.485**	(1.577)
STO	-1.188	(1.352)	-3.763**	(1.807)	3.643*	(2.142)	4.251**	(1.852)	4.327**	(2.110)	0.007	(1.058)
SUN	1.392	(1.563)	-2.590	(2.604)	1.061	(1.597)	1.736	(1.135)	-0.011	(1.350)	-0.127	(1.435)
TAH	0.393	(1.779)	0.739	(1.857)	1.712	(1.220)	2.202	(2.281)	-0.616	(1.078)	-0.542	(1.260)

(to be continued)

ASX code	Jan.		Feb.		Mar.		Apr.		May		Jun.	
	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean
TCL†	1.543	(3.202)	-3.408*	(1.740)	1.251	(1.011)	1.887	(1.559)	-1.369	(2.014)	-1.303	(2.432)
TLS	1.838	(1.901)	-2.559	(1.982)	-1.021	(1.475)	0.975	(1.393)	-2.051	(1.369)	0.560	(2.583)
TOL	3.235	(2.671)	1.865	(2.829)	2.266	(2.621)	0.687	(2.463)	0.771	(2.089)	-0.848	(2.607)
WBC	1.983	(1.280)	-0.595	(1.226)	0.909	(1.182)	2.973**	(0.775)	-0.810	(1.607)	-2.517**	(0.958)
WDC	0.310	(1.420)	0.503	(1.666)	3.171	(2.111)	3.492**	(1.193)	-0.383	(2.136)	0.825	(1.247)
WES	0.500	(1.357)	3.723*	(1.915)	-0.655	(1.354)	2.106	(1.564)	0.193	(1.328)	1.677	(1.561)
WOR†	-3.593	(5.127)	5.865	(3.637)	4.984**	(2.163)	2.134	(2.091)	6.390*	(3.456)	-0.924	(2.941)
WOW	-0.511	(1.578)	3.636**	(1.478)	-1.729	(1.060)	2.760*	(1.527)	0.189	(0.817)	0.157	(1.443)
WPL	-1.622	(1.542)	-0.348	(1.928)	3.062	(1.865)	5.645**	(2.129)	3.167*	(1.722)	-0.384	(1.178)
Mean	0.322		-1.411		1.694		1.215		0.176		-0.283	
Median	0.393		-0.475		1.050		1.143		-0.011		-0.256	
# with + ve	3		2		5		25		5		2	
# with - ve	6		6		0		0		0		4	

ASX code	Jul.		Aug.		Sep.		Oct.		Nov.		Dec.	
	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean
AGK	3.756**	(1.571)	2.093**	(1.022)	0.948	(1.538)	-0.626	(2.189)	0.242	(0.991)	2.983**	(1.354)
AIO†	8.371	(6.798)	1.964	(4.824)	-10.094	(14.212)	-17.745	(11.451)	-23.999	(25.097)	11.124	(11.915)
AMC	1.265	(1.106)	2.647**	(1.345)	-2.148**	(1.062)	-0.339	(1.812)	-0.250	(0.900)	2.623**	(0.701)
AMP†	-0.430	(2.032)	6.097*	(3.231)	-4.666**	(1.575)	-0.114	(2.269)	1.099	(2.177)	1.772	(2.244)
ANZ	1.690	(1.182)	0.881	(1.598)	2.164*	(1.315)	0.768	(1.353)	0.312	(1.430)	1.421*	(0.748)
ASX†	1.348	(1.657)	1.421	(1.667)	-3.606	(2.823)	4.243*	(2.173)	7.038	(4.685)	4.326**	(1.604)
AXA†	-2.146	(1.883)	5.337**	(2.334)	0.416	(2.177)	0.449	(1.519)	1.820	(2.865)	5.793**	(2.217)
BHP	2.185	(1.557)	0.655	(0.999)	-0.574	(1.490)	-1.367	(1.482)	0.399	(1.339)	2.196**	(0.938)
BSL†	8.025*	(4.752)	0.009	(3.278)	-2.417	(3.064)	-5.300	(6.754)	-3.889	(3.791)	0.904	(3.171)
BXB	1.896	(1.395)	1.847	(1.650)	2.574**	(1.136)	-0.782	(1.511)	-2.654	(1.815)	3.272**	(0.983)
CBA	1.857	(1.180)	-0.570	(1.336)	0.911	(1.453)	2.137*	(1.108)	-0.805	(1.632)	2.133*	(1.102)
CCL	-0.019	(2.338)	0.602	(2.002)	0.071	(1.041)	1.891	(2.207)	-0.612	(1.346)	4.339**	(1.377)
CFX	2.431**	(0.858)	1.229	(0.971)	1.690*	(0.893)	0.273	(0.980)	2.628**	(0.741)	-1.072	(1.351)
CPU	1.132	(3.469)	6.909**	(3.152)	1.209	(1.806)	5.261*	(2.980)	3.091	(3.132)	3.364*	(1.773)
CSL	1.022	(1.637)	5.139	(3.218)	2.814*	(1.700)	0.950	(2.266)	1.322	(2.352)	4.537**	(1.648)
CWN†	-3.567	(7.274)	9.668**	(2.875)	3.645	(7.397)	-13.574**	(4.542)	-23.087	(22.589)	7.174	(10.056)
FGL	1.824*	(1.023)	1.520	(1.110)	0.292	(1.861)	-2.267	(2.523)	1.423	(1.227)	1.960**	(0.852)
FMG†	7.169	(6.612)	1.493	(2.912)	-0.394	(5.559)	-4.872	(8.991)	15.462*	(8.049)	-0.024	(6.361)
GPT	1.014	(1.305)	0.023	(1.092)	0.752	(0.985)	-2.998*	(1.721)	0.514	(0.710)	1.988**	(0.678)
IAG†	0.671	(1.785)	0.618	(2.071)	-0.594	(1.387)	-1.490	(2.573)	-0.227	(1.783)	3.311*	(1.969)
IPL†	4.111	(4.620)	0.890	(1.922)	-2.592	(7.244)	-3.998	(4.374)	2.946	(6.146)	6.469	(4.925)
LEI	2.191	(2.008)	6.368**	(1.724)	-0.886	(1.431)	-2.788	(3.194)	-1.398	(1.590)	2.062	(1.278)
LLC	2.628**	(1.093)	2.322	(1.551)	-0.457	(1.285)	-1.475	(2.583)	1.170	(1.248)	1.737	(1.305)
MAP†	9.573**	(4.015)	4.128*	(2.252)	-0.649	(3.742)	-4.290	(4.173)	0.066	(2.485)	5.908**	(2.847)
MGR†	0.593	(2.130)	4.166**	(1.561)	-0.163	(1.786)	-9.137	(8.849)	5.079*	(2.828)	1.190	(0.841)
MQG†	0.900	(2.505)	1.320	(1.929)	2.163	(2.331)	-0.523	(3.067)	0.257	(1.505)	3.068**	(1.448)
NAB	1.579	(1.148)	1.238	(1.185)	1.325	(1.069)	0.690	(1.319)	-1.300	(1.344)	1.057	(0.865)
NCM	-3.065	(2.091)	-1.245	(1.925)	2.592	(3.264)	-1.520	(2.946)	0.834	(2.718)	7.364**	(2.089)
NWS	1.759	(1.759)	2.570	(1.779)	-1.682	(2.446)	-2.687	(3.457)	2.308	(2.394)	2.165	(1.504)

(to be continued)

ASX code	Jul.		Aug.		Sep.		Oct.		Nov.		Dec.	
	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean	Mean return	Standard error of mean
ORG	1.357	(1.298)	0.272	(1.495)	1.929*	(1.141)	-0.794	(1.920)	-0.523	(1.135)	3.325**	(0.748)
ORI	3.063**	(1.400)	-0.952	(1.118)	2.438**	(1.196)	-2.583	(2.043)	1.160	(1.939)	4.367**	(1.134)
OSH	2.893	(1.787)	1.189	(3.409)	1.773	(2.426)	-1.876	(2.925)	-0.625	(1.891)	3.181	(2.424)
OST†	4.967*	(2.587)	4.067	(2.583)	-2.264	(5.188)	-3.014	(2.361)	-6.182	(4.384)	2.738	(1.912)
QAN	2.306	(1.747)	-1.253	(1.672)	1.667	(2.429)	1.679	(2.778)	-1.103	(2.165)	3.242*	(1.816)
QBE	-0.686	(1.197)	4.066**	(1.193)	1.505	(2.332)	2.717	(2.280)	-0.831	(1.135)	3.877**	(1.023)
RIO	2.892*	(1.631)	0.502	(1.552)	-0.533	(1.706)	-2.361	(2.759)	-0.428	(2.656)	2.011	(1.356)
SGP	2.393**	(0.938)	1.300	(1.379)	1.770**	(0.885)	-1.490	(1.632)	0.806	(0.714)	1.414*	(0.856)
SHL†	-1.633	(1.155)	5.019*	(2.596)	5.786**	(2.598)	1.301	(2.174)	2.332	(1.840)	3.883**	(1.906)
STO	0.341	(1.635)	2.053	(1.500)	1.436	(1.530)	-3.563*	(2.061)	-1.524	(1.121)	1.155	(1.153)
SUN	2.147	(1.376)	1.417	(1.112)	0.380	(1.677)	1.987	(1.483)	0.277	(1.297)	1.574	(1.043)
TAH	-1.238	(1.420)	1.876	(1.173)	0.754	(1.112)	0.829	(1.517)	0.396	(1.310)	-0.300	(1.087)
TCL†	1.340	(2.294)	2.708	(1.704)	2.875**	(1.416)	-0.990	(2.226)	3.637	(2.254)	1.671	(1.682)
TLS	1.684	(1.219)	-4.300**	(1.678)	-1.419	(1.700)	3.380	(2.695)	1.260	(1.867)	2.151	(1.889)
TOL	1.040	(1.783)	3.707*	(2.157)	1.337	(2.340)	0.068	(2.285)	1.188	(2.563)	1.833	(2.385)
WBC	3.494**	(1.144)	0.316	(1.272)	1.102	(1.115)	-0.061	(1.622)	-0.163	(1.423)	1.255	(1.059)
WDC	2.262*	(1.289)	1.306	(1.184)	1.917	(1.627)	-1.256	(2.194)	2.074	(1.585)	1.875*	(1.064)
WES	1.814	(1.525)	2.411*	(1.277)	-0.416	(1.448)	-1.403	(1.713)	-0.135	(1.685)	3.293**	(1.260)
WOR†	3.674	(4.411)	8.601**	(4.272)	1.668	(4.491)	-4.091	(11.273)	-0.531	(4.329)	6.747**	(1.377)
WOW	-0.917	(1.022)	4.362**	(1.324)	1.771*	(1.016)	1.281	(1.381)	0.060	(1.051)	2.151**	(0.910)
WPL	-1.043	(1.713)	2.551**	(1.065)	3.105*	(1.781)	-2.346	(1.830)	-2.250	(1.868)	0.468	(1.063)
Mean	1.174		1.174		-0.024		-1.485		-0.734		2.274	
Median	1.303		1.238		0.380		-1.123		0.242		1.737	
# with + ve	12		15		11		3		3		27	
# with - ve	0		1		2		3		0		0	

Notes. Mean returns and their associated standard errors of mean are expressed in percentages. Mean returns which are statistically significant different from zero at the 5% and 10% levels are denoted with ** and *, respectively. The samples are monthly, starting from January 1980 for most firms and ending in August 2010 for all firms. "# with + ve" and "# with - ve" refer to the number of companies with statistically significant positive and negative returns, respectively.

Table 3

Test of Mean Difference

ASX code	Jan.-Non Jan.		Feb.-Non Feb.		Mar.-Non Mar.		Apr.-Non Apr.		May.-Non May.		June.-Non June.	
	Mean difference	Standard error	Mean difference	Standard error	Mean difference	Mean difference	Standard error	Standard error	Mean difference	Standard error	Mean difference	Standard error
AGK	-0.400	(1.934)	-3.776*	(2.259)	-0.293	(1.835)	2.430	(1.995)	-0.440	(2.140)	-1.613	(1.943)
AIO†	-17.745	(18.139)	-33.456	(30.871)	24.310	(29.034)	18.991	(22.431)	4.871	(16.848)	2.733	(20.096)
AMC	0.608	(1.843)	-0.845	(1.812)	-1.340	(1.475)	2.161	(1.709)	0.423	(1.630)	-1.739	(1.631)
AMP†	-4.924	(3.779)	-4.889	(4.105)	4.296	(3.233)	2.641	(3.720)	-7.090	(5.366)	0.894	(3.420)
ANZ	-1.028	(1.686)	-0.529	(1.841)	-0.337	(1.775)	2.937*	(1.665)	-1.389	(1.846)	-2.334	(1.690)
ASX†	-1.371	(4.659)	1.526	(4.309)	-2.046	(3.504)	-1.583	(3.380)	-4.661	(4.414)	0.261	(3.478)
AXA†	-5.836*	(3.091)	-3.841	(5.105)	2.463	(3.348)	2.915	(3.092)	-0.448	(3.023)	-3.591	(3.518)
BHP	-1.556	(1.993)	-0.756	(1.925)	1.058	(2.021)	3.216	(2.115)	1.586	(1.906)	-0.993	(1.670)
BSL†	0.965	(5.909)	-4.348	(6.937)	4.089	(5.884)	-1.598	(5.768)	4.141	(6.378)	-0.086	(5.060)
BXB	-0.217	(2.098)	-2.717	(2.460)	0.301	(1.763)	4.269**	(1.980)	-1.216	(1.951)	-2.262	(1.852)
CBA	-0.166	(1.981)	-1.148	(2.295)	-0.399	(2.233)	3.390**	(1.695)	-1.043	(1.908)	-1.025	(1.837)
CCL	1.589	(1.937)	-1.870	(2.145)	-0.345	(2.001)	2.615	(2.087)	-1.665	(1.964)	-0.795	(1.877)
CPU	-5.499	(4.861)	-5.253	(3.497)	2.200	(4.477)	0.147	(3.815)	-2.961	(3.705)	2.150	(4.210)
CSL	-3.439	(3.162)	1.732	(3.291)	-0.921	(2.700)	-1.090	(2.996)	-2.901	(3.403)	1.561	(3.702)
CWN†	-7.001	(7.830)	-3.429	(8.833)	7.874	(11.016)	7.226	(7.856)	-0.586	(8.079)	-3.070	(8.643)

(to be continued)

ASX code	Jan.-Non Jan.		Feb.-Non Feb.		Mar.-Non Mar.		Apr.-Non Apr.		May.-Non May.		June.-Non June.	
	Mean difference	Standard error	Mean difference	Standard error	Mean difference	Mean difference	Standard error	Standard error	Mean difference	Standard error	Mean difference	Standard error
FGL	1.575	(2.360)	-1.689	(1.789)	-0.537	(2.129)	0.975	(1.926)	-0.394	(1.709)	-0.397	(1.722)
FMG†	8.521	(8.778)	-1.213	(8.871)	4.838	(9.951)	-11.817	(10.282)	5.799	(8.850)	-3.257	(8.141)
GPT	0.229	(1.544)	-5.243*	(2.788)	0.773	(1.516)	2.106	(1.552)	1.487	(1.856)	-1.473	(1.781)
IAG†	-0.848	(2.374)	-1.148	(3.382)	1.055	(2.330)	1.858	(2.531)	-1.070	(2.630)	-1.276	(2.987)
IPL	-1.243	(5.284)	0.435	(6.877)	-0.051	(5.843)	-0.762	(6.172)	7.466	(6.817)	-2.338	(6.340)
LEI	0.298	(3.208)	-0.419	(3.599)	-0.183	(2.836)	2.814	(2.469)	1.391	(2.965)	-3.132	(2.492)
LLC	-0.527	(2.119)	-2.346	(2.232)	-0.165	(2.075)	2.953	(1.911)	-2.010	(1.994)	-0.568	(1.968)
MAP†	-0.354	(4.592)	-8.091	(7.071)	-1.059	(5.132)	2.201	(4.596)	3.464	(5.608)	-6.232	(5.926)
MGR†	-3.446	(4.187)	-5.179	(6.807)	2.379	(4.256)	1.115	(4.467)	-1.305	(5.052)	0.395	(4.180)
MQG†	-1.620	(3.411)	-8.282*	(4.630)	4.999	(4.452)	3.652	(3.603)	-1.564	(3.466)	1.541	(3.821)
NAB	1.161	(1.576)	-2.358	(1.710)	0.475	(1.574)	3.638**	(1.438)	0.563	(1.798)	-3.632**	(1.442)
NCM	-3.019	(3.700)	-1.377	(3.262)	1.679	(4.029)	-3.209	(3.169)	1.486	(3.969)	3.810	(3.267)
NWS	1.678	(2.975)	0.849	(3.303)	1.467	(2.817)	2.535	(2.727)	-0.160	(2.747)	-2.794	(3.189)
ORG	0.191	(1.969)	-0.961	(2.183)	-1.908	(1.930)	3.629	(2.242)	0.262	(2.063)	-0.941	(1.726)
ORI	-3.205*	(1.873)	-2.072	(1.955)	0.330	(2.005)	3.550*	(1.997)	0.260	(2.094)	-1.579	(1.802)
OSH	1.200	(3.463)	-3.334	(3.639)	-0.305	(3.485)	5.412	(3.441)	-1.600	(3.627)	-2.407	(3.266)
OST†	1.172	(4.608)	-0.846	(4.986)	4.049	(4.311)	-2.600	(4.742)	2.013	(4.590)	2.104	(3.886)
QAN	-0.471	(3.145)	-4.735	(4.757)	-4.074	(3.285)	2.918	(3.740)	-0.214	(2.770)	0.216	(3.078)
QBE	-0.024	(2.109)	-1.246	(2.520)	-0.844	(1.992)	4.201**	(1.962)	-2.149	(1.928)	-2.583	(2.175)
RIO	-1.248	(2.694)	0.634	(2.215)	2.091	(2.517)	3.699	(2.500)	0.082	(2.440)	-2.251	(2.100)
SGP	-0.341	(1.454)	-3.565**	(1.819)	1.540	(1.496)	0.780	(1.348)	-0.192	(1.499)	-2.201	(1.370)
SHL†	-1.806	(3.143)	-0.612	(3.726)	-2.730	(2.829)	-0.930	(2.648)	-3.917	(3.345)	2.146	(2.706)
STO	-1.965	(2.186)	-4.777*	(2.457)	3.311	(2.696)	3.975	(2.491)	4.058	(2.670)	-0.659	(2.035)
SUN	0.672	(2.179)	-3.667	(2.943)	0.311	(2.202)	1.047	(1.921)	-0.856	(2.045)	-0.987	(2.068)
TAH	-0.135	(2.277)	0.242	(2.333)	1.304	(1.908)	1.838	(2.651)	-1.236	(1.829)	-1.155	(1.933)
TCL†	0.792	(3.752)	-4.595*	(2.707)	0.474	(2.368)	1.173	(2.568)	-2.391	(2.837)	-2.320	(3.121)
TLS	1.985	(2.665)	-2.820	(2.713)	-1.139	(2.409)	1.042	(2.365)	-2.265	(2.346)	0.589	(3.149)
TOL	1.964	(3.545)	0.469	(3.658)	0.905	(3.513)	-0.818	(3.407)	-0.726	(3.171)	-2.494	(3.500)
WBC	1.446	(1.788)	-1.369	(1.753)	0.274	(1.727)	2.527*	(1.497)	-1.604	(2.014)	-3.467**	(1.586)
WDC	-1.129	(2.144)	-0.917	(2.300)	1.996	(2.610)	2.347	(2.011)	-1.886	(2.629)	-0.566	(2.045)
WES	-0.659	(2.063)	2.860	(2.405)	-1.924	(2.031)	1.093	(2.167)	-0.998	(2.018)	0.625	(2.165)
WOR†	-6.877	(6.724)	3.471	(5.799)	2.508	(5.085)	-0.611	(5.063)	4.046	(5.692)	-3.956	(5.422)
WOW	-1.775	(2.020)	2.747	(1.944)	-3.103*	(1.672)	1.792	(1.983)	-1.012	(1.556)	-1.046	(1.928)
WPL	-2.694	(2.303)	-1.303	(2.557)	2.420	(2.512)	5.240*	(2.685)	2.535	(2.417)	-1.343	(2.102)
Mean	-1.018		-2.196		1.329		1.619		-0.108		-0.988	
Median	-0.436		-1.230		0.474		1.848		-0.517		-1.046	
# with + ve	0		0		0		7		0		0	
# with - ve	2		6		1		0		0		3	
ASX code	Jul.-Non Jul.		Aug.-Non Aug.		Sep.-Non Sep.		Oct.-Non Oct.		Nov.-Non Nov.		Dec.-Non Dec.	
	Mean difference	Standard error	Mean difference	Standard error	Mean difference	Mean difference	Standard error	Standard error	Mean difference	Standard error	Mean difference	Standard error
AGK	3.072	(2.128)	1.256	(1.804)	0.005	(2.130)	-1.708	(2.598)	-0.763	(1.809)	2.221	(2.010)
AIO†	13.917	(15.774)	6.756	(15.231)	-6.529	(21.526)	-14.835	(19.796)	-21.625	(29.233)	16.508	(20.017)
AMC	0.799	(1.640)	2.308	(1.791)	-2.920*	(1.622)	-0.950	(2.151)	-0.853	(1.537)	2.275	(1.435)
AMP†	0.257	(3.401)	7.422*	(4.113)	-4.360	(3.247)	0.600	(3.622)	1.921	(3.567)	2.654	(3.601)
ANZ	0.984	(1.729)	0.100	(2.012)	1.497	(1.829)	-0.022	(1.856)	-0.520	(1.908)	0.689	(1.510)
AXA†	-3.084	(3.156)	5.087	(3.406)	-0.284	(3.408)	-0.249	(3.062)	1.247	(3.778)	5.586*	(3.329)
BHP	1.305	(2.054)	-0.366	(1.710)	-1.703	(2.024)	-2.566	(2.017)	-0.644	(1.927)	1.313	(1.696)
BSL†	8.704	(6.299)	-0.032	(5.239)	-2.677	(5.314)	-5.819	(7.830)	-4.280	(5.719)	0.943	(5.378)

(to be continued)

ASX code	Jul.-Non Jul.		Aug.-Non Aug.		Sep.-Non Sep.		Oct.-Non Oct.		Nov.-Non Nov.		Dec.-Non Dec.	
	Mean difference	Standard error	Mean difference	Standard error	Mean difference	Mean difference	Standard error	Standard error	Mean difference	Standard error	Mean difference	Standard error
BXB	1.254	(2.018)	1.200	(2.186)	1.989	(1.882)	-1.666	(2.110)	-3.703	(2.313)	2.749	(1.799)
CBA	1.062	(1.833)	-1.587	(1.926)	0.029	(2.034)	1.367	(1.790)	-1.843	(2.124)	1.363	(1.787)
CCL	-1.073	(2.750)	-0.394	(2.497)	-0.972	(1.911)	1.010	(2.667)	-1.715	(2.077)	3.674*	(2.088)
CFX	2.253*	(1.362)	0.937	(1.437)	1.434	(1.414)	-0.109	(1.470)	2.456*	(1.323)	-1.574	(1.714)
CPU	-1.106	(4.438)	5.222	(4.202)	-1.016	(3.498)	3.397	(4.163)	1.034	(4.270)	1.331	(3.482)
CSL	-0.956	(2.788)	3.554	(3.833)	1.001	(2.878)	-1.030	(3.215)	-0.624	(3.272)	2.878	(2.844)
CWN†	-2.205	(10.434)	12.354	(7.916)	5.544	(11.772)	-12.786	(10.073)	-22.913	(23.737)	9.611	(12.289)
FGL	1.195	(1.778)	0.864	(1.825)	-0.475	(2.333)	-3.261	(2.841)	0.756	(1.911)	1.340	(1.714)
FMG†	3.967	(9.253)	-2.241	(7.317)	-4.278	(8.780)	-9.145	(11.072)	12.957	(10.362)	-3.876	(9.268)
GPT	1.230	(1.840)	0.147	(1.710)	0.941	(1.667)	-3.142	(2.139)	0.681	(1.534)	2.286	(1.516)
IAG†	0.555	(2.628)	0.496	(2.814)	-0.825	(2.397)	-1.803	(3.167)	-0.426	(2.627)	3.434	(2.729)
IPL†	2.498	(6.497)	-1.025	(4.836)	-4.806	(8.410)	-6.338	(6.307)	1.228	(7.577)	5.068	(6.684)
LEI	1.211	(2.880)	5.773**	(2.691)	-2.142	(2.574)	-4.213	(3.747)	-2.700	(2.657)	1.068	(2.501)
LLC	2.227	(1.872)	1.893	(2.147)	-1.138	(2.002)	-2.247	(2.930)	0.633	(1.982)	1.251	(2.014)
MAP†	9.442*	(5.472)	3.503	(4.538)	-1.709	(5.376)	-5.681	(5.633)	-0.929	(4.661)	5.445	(4.817)
MGR†	1.252	(4.200)	5.178	(3.942)	0.419	(4.191)	-9.358	(9.267)	6.130	(4.658)	1.893	(3.907)
MQG†	-0.116	(3.651)	0.344	(3.241)	1.261	(3.543)	-1.667	(4.023)	-0.817	(3.108)	2.248	(3.078)
NAB	0.907	(1.628)	0.535	(1.652)	0.628	(1.593)	-0.063	(1.757)	-2.230	(1.770)	0.336	(1.476)
NCM	-4.108	(3.281)	-2.115	(3.195)	2.076	(4.105)	-2.406	(3.879)	0.160	(3.727)	7.279**	(3.306)
NWS	0.488	(2.807)	1.374	(2.818)	-3.260	(3.265)	-4.354	(4.011)	1.084	(3.233)	0.928	(2.699)
ORG	0.424	(1.921)	-0.761	(2.047)	1.046	(1.846)	-1.919	(2.362)	-1.624	(1.841)	2.565	(1.647)
ORI	2.446	(2.010)	-1.938	(1.844)	1.758	(1.908)	-3.708	(2.474)	0.366	(2.404)	3.858**	(1.865)
OSH	2.134	(3.101)	0.274	(4.160)	0.909	(3.508)	-3.064	(3.837)	-1.702	(3.192)	2.442	(3.504)
OST†	4.253	(4.180)	3.270	(4.185)	-3.614	(6.121)	-4.427	(4.201)	-7.928	(5.344)	1.817	(3.849)
QAN	2.402	(2.996)	-1.488	(2.896)	1.706	(3.406)	1.719	(3.642)	-1.314	(3.240)	3.423	(3.028)
QBE	-2.235	(1.976)	2.953	(1.971)	0.157	(2.768)	1.477	(2.727)	-2.387	(1.963)	2.739	(1.905)
RIO	2.250	(2.442)	-0.359	(2.397)	-1.486	(2.513)	-3.475	(3.253)	-1.370	(3.179)	1.285	(2.310)
SGP	2.145	(1.446)	0.952	(1.741)	1.460	(1.434)	-2.087	(1.941)	0.412	(1.329)	1.076	(1.402)
SHL†	-3.451	(2.496)	3.824	(3.338)	4.635	(3.390)	-0.240	(3.123)	0.881	(2.918)	2.566	(2.951)
STO	-0.295	(2.357)	1.574	(2.273)	0.898	(2.314)	-4.545*	(2.654)	-2.324	(2.086)	0.592	(2.105)
SUN	1.502	(2.030)	0.703	(1.879)	-0.430	(2.255)	1.321	(2.127)	-0.542	(2.014)	0.870	(1.873)
TAH	-1.915	(2.028)	1.482	(1.881)	0.259	(1.849)	0.340	(2.096)	-0.132	(1.964)	-0.892	(1.835)
TCL†	0.574	(3.029)	2.072	(2.647)	2.241	(2.546)	-1.964	(3.033)	3.070	(3.046)	0.931	(2.695)
TLS	1.817	(2.271)	-4.722*	(2.500)	-1.563	(2.600)	3.645	(3.274)	1.343	(2.704)	2.327	(2.655)
TOL	-0.432	(2.996)	2.479	(3.208)	-0.108	(3.384)	-1.486	(3.348)	-0.271	(3.474)	0.433	(3.357)
WBC	3.097*	(1.696)	-0.374	(1.785)	0.483	(1.703)	-0.783	(2.041)	-0.895	(1.901)	0.649	(1.670)
WDC	1.003	(2.067)	-0.041	(2.010)	0.624	(2.295)	-2.831	(2.688)	0.796	(2.268)	0.579	(1.970)
WES	0.774	(2.142)	1.426	(1.987)	-1.657	(2.117)	-2.730	(2.287)	-1.351	(2.272)	2.381	(2.001)
WOR†	1.075	(6.281)	6.465	(6.157)	-1.107	(6.570)	-7.335	(11.914)	-3.485	(6.459)	4.437	(4.812)
WOW	-2.218	(1.658)	3.558**	(1.804)	0.713	(1.661)	0.180	(1.887)	-1.153	(1.679)	1.128	(1.603)
WPL	-2.062	(2.412)	1.862	(2.045)	2.460	(2.477)	-3.475	(2.507)	-3.370	(2.532)	-0.411	(2.071)
Mean	0.947		1.519		-0.312		-2.381		-1.132		2.144	
Median	0.984		0.945		0.029		-1.919		-0.644		1.590	
# with + ve	3		3		0		0		1		4	
# with - ve	0		1		1		1		0		0	

Notes. Mean differences and their associated standard errors are expressed in percentages. Mean differences which are statistically significant different from zero at the 5% and 10% levels are denoted with ** and *, respectively. The samples are monthly, starting from January 1980 for most firms and ending in August 2010 for all firms. "# with + e" and "# with - ve" refer to the number of companies statistically significant positive and negative different in mean returns, respectively.

Conclusions

During the last four decades, many researchers have documented evidence on monthly seasonality of stock markets around the world. The findings of monthly anomalies on the Australian stock market are mixed, depending on the sample period and the portfolios used. However, all these studies are only limited to the use of portfolio data and none of them use individual stock data. Stock returns of individual companies may have different monthly anomalies. To address this problem, we investigated Australian stock seasonality using the top 50 companies' stocks for the period of January 2001 through to August 2010.

We found that stock returns for more than half of the companies are statistically significant in April and December. By contrast, many companies have low stock returns in October. This finding is inconsistent with Worthington (2010), who found that the lowest return occurs in September. The possible reason for the difference is that he used a market index and much longer sample period.

We also found that there is no "January effect" in the top 50 stock returns in Australia. None of the 50 companies has statistically significant larger returns in January than in other months. In fact, for two companies, stock returns are lower in January than in other months. There is also no strong evidence of a monthly effect in the sample. For most companies, stock returns in one month are not significantly different from those in other months. This result suggests that the stock market in Australia might generally be weak-form efficient.

References

Ariel, R. A. (1987). A monthly effect on stock returns. *Journal of Financial Economics, 17*, 161-174.

Bentzen, E. (2009). Seasonality in stock returns. *Applied Financial Economics, 19,* 1605-1609.

Bonin, J. M., & Moses, E. A. (1974). Seasonal variations in prices of individual Dow Jones industrial stocks. *Journal of Financial and Quantitative Analysis, 9*, 963-991.

Brailsford, T., & Easton, S. (1991). Seasonality in Australian share price indices between 1936 and 1957. *Accounting and Finance, 31*, 69-85.

Brown, P., Keim, D., Kleidon, A., & Marsh, T. (1983). Stock return seasonalities and the tax-loss selling hypothesis: Analysis of the arguments and Australian evidence. *Journal of Financial Economics, 12*, 105-127.

Dzhabarov, C., & Ziemba, W. T. (2010). Do seasonal anomalies still work? *Journal of Portfolio Management, 36*, 93-104.

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

Gultekin, M., & Gultekin, B. (1983). Stock market seasonality: International evidence. *Journal of Financial Economics, 12*, 469-482.

Heston, S. L., & Sadka, R. (2008). Seasonality in the cross-section of stock returns. *Journal of Financial Economics, 87*, 418-445.

Li, B., & Liu, B. (2010). Monthly seasonality in the New Zealand stock market. *International Journal of Business Management and Economic Research, 1*, 9-14.

Liu, B., & Li, B. (2010). Day-of-the-week effects: Another evidence from top 50 Australian stocks. *European Journal of Economics, Finance and Administrative Sciences, 24*, 78-87.

Officer, R. (1975). Seasonality in Australian capital markets: Market efficiency and empirical issues. *Journal of Financial Economics, 2*, 29-51.

Wachtel, S. B. (1942). Certain observations on seasonal movements in stock prices. *Journal of Business, 15*, 184-193.

Worthington, A. C. (2010). The decline of calendar seasonality in the Australian stock exchange: 1958-2005. *Annals of Finance, 6*, 421-433.

Yakob, N. A., Beal, D., & Delpachitra, S. (2005). Seasonality in the Asia Pacific stock markets. *Journal of Asset Management, 6*, 298-317.