

# **Decomposing Contrarian Strategies by the Global Industry Classification Standard. Australian Evidence**

Monagle S., Ramiah V., Jing W., Hallahan T., and Naughton T.

School of Economics, Finance and Marketing, RMIT, GPO Box 2476V, Melbourne, 3001,  
Australia.

**JEL Classification: G11, G12, G15**

**Keywords:** Contrarian, Momentum, Turnover Ratio, Past Returns, Australia,  
Multifactor Model

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# **Decomposing Contrarian Strategies by the Global Industry Classification Standard. Australian Evidence**

## **Abstract**

We investigate the profitability of contrarian investment strategies for equities listed on the Australian Stock Exchange. Following the Global Industry Classification Standard, we analyse whether contrarian investment strategy works across the different sectors in Australia. We also investigate the relationship between stock returns and past trading volume for equities listed in these sectors. We report significant short-term contrarian profits and document that contrarian is a persistent feature of stock returns for most of the sectors. We also document that contrarian portfolios earn returns as high as 11.74% per month in the Health sector. Our findings show that low volume traded portfolios drive contrarian portfolios and to a lesser extent the losers portfolios.

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## I. Introduction

There is enough evidence to suggest that past stock returns can predict returns reversals for different horizons. DeBondt and Thaler (1985) were among the first to suggest the idea of contrarian profits, i.e. returns reversal. They argue that prior losers generally outperformed the market and generally prior winners under perform. Hence investors could buy the loser and short sell the winners to earn abnormal profit. Academics applied this simple strategy in different markets around the world and there is a general consensus on the profitability of contrarian technique. Some of the empirical tests conducted in Europe include Brouwer, Van Der Put and Veld (1997), Mun, Vasconcellos and Kish (1999), Bacmann and Dubois (1998), Forner and Marhuenda (2003), Drehmann, Oechssler and Roider (2005), Novak and Hamberg (2005), Antoniou, Galariotis and Spyrou (2005). Assoe and Sy (2003) found that the contrarian strategy in the Canadian Stock market was economically viable for only small firms. Diether, Lee and Werner (2005) found strong evidence that short-sellers in NASDAQ-listed stocks were contrarian traders. They also proved that contrarian short-sellers were more successful at predicting future returns. Ball, Kothari and Wasley (1995) found that low-priced loser stocks drove the profitability of contrarian strategies.

Fung, Leung and Patterson (1999) showed that the US market was more consistent with other contrarian studies and that most Asian markets were consistent with momentum strategies. For instance Hameed and Ting (2000), Kang, Liu and Ni (2002), Chin, Lihara, Kato and Tokunaga (2002) and Otchere and Chan (2003) found evidence of contrarian returns in Malaysia, China, Japan and Hong Kong respectively. Fung (1999) and Ramiah, Naughton, Hallahan, Cheng, and Orriols (2006) are the other studies that document that contrarian behaviour in the Hong Kong Stock Equity Market. Closer to Australia, Chin, Prevost and Gottesman (2002) found that contrarian strategies produce superior returns in New Zealand. Lee, Chan,

Faff and Kalev (2003) and more recently Lo and Coggins (2006) observed short-term contrarian profits on stocks in Australia.

The Australian market has traditionally been associated with 24 unique industry sectors. Global Industry Classification Standard (GICS) is a joint Standard and Poor's/Morgan Stanley Capital International product aimed at standardising industry definitions. To bring Australia in line with the rest of the world Standard and Poor's have reclassified all ASX listed entities according to GICS. From 1 July 2002 the ASX industry classification became redundant. The standardised classification system has the advantage that it encourages foreign investors to look in to local markets, as well as allowing local investors to look at the rest of the world and compare stocks via industry classification. To our best knowledge there is no current study in Australia that considers the GICS classification in their contrarian analysis. Our first objective will be to study contrarian behaviour across the different industries classified by GICS.

Our second objective is to look at how volume information affects contrarian portfolios across the different Australian industries. The bulk of the literature on volume information and contrarian portfolios points towards portfolios of heavily and frequently traded securities tended to earn substantially higher contrarian profits than low trading activity portfolios, see Conrad, Hameed and Niden (1994), Chordia and Swaminathan (1999), Bremer and Hiraki (1999), and Hameed and Ting (2000). On the other end, Yoshio, Hideaki-Kiyoshi and Toshifumi (2002) and Ramiah et al. (2006) showed otherwise, i.e. there are instances where low volume traded portfolios drive returns.

Our analysis suggests that returns are driven by contrarian phenomenon. This is because over 75% of the sectors exhibit a very strong contrarian effect. We find that on average, a zero cost portfolio that invests in past losers and sells past winners

earns returns as high as 11.74% per month. This return was recorded in the Health Sector. Interestingly, when replicating the trading volume sort we find that trading volume does not play an explicit role in predicting future returns of stocks in some sectors while it does in others. We also test if the industry contrarian profits are explained by the three factor model and our results shows that this asset pricing model fails to explain contrarian behaviour. The rest of the paper is organised as follows: In Section II we present the data and methods used in this paper. Section III presents the empirical findings while Section IV concludes the paper.

## II. Data and Methods

### **Data**

Monthly stock return index, trading volume and the number of outstanding shares for the period March 2001 to March 2006 are obtained from Datastream. We have a total of 1019 stocks in our sample. One of the practical problems that we face in portfolio formations is the small number of firms in some sectors when we follow the GICS. Consequently we slightly modified the GICS to get the following classifications, namely Materials, Bank-Financials, Energy, Real Estate, Capital Goods, Computers, Pharmaceuticals, Health and Retail. The number of firms in each of these sectors is shown in Table 1.

The monthly average of the variables for the entire period is calculated and Table 1 shows the descriptive statistics of the above variables for all the different classifications. On average the monthly return for all the sectors (except for Health) is positive and statistically different from zero for that period of time. Energy sector turn out to produce the highest return, i.e. 5.39% per month. The rest of Table 1 shows the descriptive statistics for volume traded, turnover ratio and number of shares.

Datastream and Kenneth French's website<sup>1</sup> were used to collect data on size factor, book-to-market factor, risk free rate and Australian market indices. We used the Australian Interbank three-month rate as the risk free rate, and All Ordinaries as the proxy for the market. To overcome the practical problem of applying the Fama and French Model to markets outside the United States, we used the Small Ordinaries index as a proxy for small firms and the ASX 20 index as a proxy for big firms. We define SMB as the difference between the returns on the Small Ordinaries and the ASX 20. Given that Kenneth French's website reports the returns for HML we downloaded the returns from French's website.

## Methodology

We define monthly return as follows:

$$MR_i = \frac{(SRI_{it} - SRI_{it-1})}{SRI_{it-1}} \quad (1)$$

Where

$MR_i$  is the monthly return for stock  $i$ .

$SRI_{it}$  is the stock return index for stock  $i$  at time  $t$ .

$SRI_{it-1}$  is the stock return index for stock  $i$  at time  $t-1$ .

Our portfolio construction follows the methodologies used by Lo and MacKinlay (1990), Jegadeesh and Titman (1993), Kang, Liu and Ni (2002), and Ramiah et al. (2006). We form portfolios on a monthly basis for the period March 2001 to March 2006. At the beginning of each month, we rank all eligible stocks independently on the basis of their past returns over the past  $J$  months (where  $J = 1, 3, 6, 9$  and  $12$  months respectively). The stocks are then assigned to one of ten decile portfolios based on their past performance. In this study, we focus only on the first and last deciles, i.e. we concentrate on the extreme winners and extreme losers. Next these

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<sup>1</sup> [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)

portfolios are held for K months (where K = 1, 3, 6, 9 and 12 months) and next 3 years. Returns for K-month holding period are based on equally weighted average returns of every stock in the portfolios. For example, the monthly return for a three-month holding portfolio is the average of the portfolio return from this month's strategy, last month's strategy and strategy from two months ago. The zero cost contrarian strategies are to short sell the winner portfolio and long the loser portfolio for different holding and formation periods.

For the volume exercise, we start by subcategorizing the winner and loser portfolios into three other portfolios namely, high volume (H), medium volume (M) and low volume (L). The stocks within each decile are split into three other tertiles (H, M, L) based on average monthly trading volume during the J-month estimation period. Trading volume is defined as the average monthly turnover ratio where the monthly turnover ratio is obtained by dividing the monthly trading volume of a stock by the number of shares of the same stock at the end of the month. Many studies have used turnover ratio as a consistent measure of trading volume since raw trading volume is not scaled and highly likely to be correlated with size.<sup>2</sup> The high, medium and low portfolios within each tertile refer to stocks with smallest to largest trading volume. The strategy is to long the high volume traded portfolios and short the low volume traded in each decile. Therefore, H-L return can be calculated for each decile. When these returns are positive (negative) we can conclude that, conditional on past returns, high volume stocks generally perform better (worse) than low volume stocks.

Lakonishok et al. (1994) report the importance of the three-factor model in explaining contrarian profits. A time series analysis similar to Fama and French (1996), Naranjo et al. (1998), Heston et al. (1999), Faff (2004), Naughton et al. (2006), and Ramiah et al. is used in this approach. Thus, we regress the momentum portfolio returns on the

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<sup>2</sup> See, Campbell, Grossman, and Wang (1993) and Lee and Swaminathan (2000).

overall market factor, size and book to market equity factors. We also regress the returns of winners and losers on the market, firm size and book-to-market factors.

$$R_{pt} - R_{Ft} = \alpha_p + \beta_p (R_{Mt} - R_{Ft}) + S_p (\text{SMB}_t) + H_p (\text{HML}_t) + e_{pt} \quad (2)$$

Where  $R_{pt}$  is the return of portfolio in month  $t$ ,  $R_{Ft}$  is the risk free asset in month  $t$ , and  $R_{Mt}$  is the return on the market proxy in the month.  $R_{pt} - R_{Ft}$  is the excess return on the portfolio and  $R_{Mt} - R_{Ft}$  is the excess return on the market portfolio. SMB represents the mimic portfolio for the size factor and HML the mimic portfolio for the book-to-market factor.

### **III. Empirical Findings**

This section reports the returns for different contrarian and volume-based contrarian strategies. We confirm strong short-term contrarian behaviour in that contrarian effects are present in almost every sector with the strongest effect for equities listed in the Health sector. Interestingly, we find no clear and consistent evidence of a relationship between stock returns and trading volume across the different industries.

#### **Simple Strategies**

Table 2 summarises the empirical results from several contrarian strategies in the different markets. Following Kang, Liu and Ni (2002), and Ramiah et al. (2006), we report the mean return from a dollar neutral strategy of selling extreme winners and buying extreme losers, R1-R10. At the beginning of each month, stocks are ranked and grouped into deciles on the basis of their returns over the previous 1, 3, 6, 9 and 12 months. Thus, there are 10 portfolios ranging from top winners to worst losers every month from March 2001 to March 2006.



We report results for the extreme losers (R1) and the winner (R10). In each month, we also short the winner portfolio and long the loser portfolio and the returns of this zero cost portfolio is shown as R1-R10. The results in Table 2 suggest a clear and consistent contrarian effect for equities listed in the Australian Stock Exchange. For the J=1 formation period, returns for winner portfolios are significantly smaller than those of stocks in the loser portfolio. These results are consistent across the different sectors, except for Real Estate and Pharmaceuticals where it is smaller but not statistically significant.

Columns 3 to 9 report the equal-weighted average monthly returns over the next K months (K=1, 3, 6, 9, 12) for portfolios formed based on J=1 month<sup>3</sup>. For example on the materials sector (see Table 2), when J=1 and K=3, with a one month portfolio formation period, past losers on average win 5.09 % over the next three months while past winners on average gain 2.58% over the same period. The zero cost portfolio, which long the loser and short the winner in this case earns 2.51% over three months. This return translates to an annual return of around 10%. With the exception of Real Estate and Pharmaceuticals, the differences in monthly returns between loser and winner portfolios are positive, significant and at its highest in every combination of K=1 and J=1, i.e. the short run. This result is consistent across the different sectors. On average, these differences are very high. For example in the Health Sector and Computer Sector, the zero cost portfolio earns 11.74% per month and 8.11% when K=1 and J=1 respectively. The last 6 columns of Table 2 report the monthly returns for each portfolio for up to three years following the portfolio formation. We find that the contrarian effect lasts up to one month for portfolios formed based on past one month. For holding periods of higher than one month, we may observe some occasional statistical significance but rarely any economic significance, implying a rapid mean reversion. Exhibit 1A illustrates that the highest

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<sup>3</sup> Note that we calculate the contrarian profits for all the other formation periods but we do not report them in this paper. We observe the highest, consistent, statistically significant profit for the one-month formation period.

contrarian profits for holding periods of one month and zero economic profit for higher holding periods. Exhibit 1B shows that winners produce a profit of 1% to 3% depending on the holding period (except for computer) while exhibit 1C demonstrates that losers generate profits of up to 12% and that these profits occurs in holding period of one month. Hence it is possible to conclude that the losers in the Australian Equities drive contrarian profits.

The contrarian returns based on our range of formation periods for the Health Sector (the highest reported contrarian profits) are shown graphically in Exhibit 2A. Most of the formation periods show the highest returns in the first month of holding followed by a steady decline. For formation period of 6 months to 12 months, the mean reversal processes is slower than the remaining formation periods, or alternatively reiterate our earlier point of rapid mean reversion for formation shorter formation periods. Contrarian returns are calculated as the returns on the extreme loser portfolios minus the returns on the extreme winner portfolios (R1-R10). For winner portfolios, the returns reach their best at K=1 (except for J=1 and J=3) and decline if the holding period is extended to 6, 9 and 12 months. They all converge to about 1%to 2% return before year 3 (see Exhibit 2B). It should be noted that formation period 9 has a completely different pattern.

It is noticeable from Exhibit 2C that when the holding period is extended to more than 1 month, returns for loser portfolios (R1) generally decrease. In other words, the returns of R1 portfolios are at their best when they are held for one month (K=1). The return for the one-month formation period is always positive (highest 12.78%) and just like other formation periods approaches the 1% to 3% return. The results are very similar in the remaining contrarian profitable sectors.

### **Stock Returns and Past Trading Volume**

In this section we examine whether there is any relationship between stock returns and past trading volume for equities listed in the ASX. Table 3 reports returns for portfolios formed on the basis of a two-way sort between past returns and past trading volume on the ten different sectors. However, when we take trading volume into consideration, we find that trading volume does help predict stock returns reversals only in some sectors. In some respect our findings challenge prior research in the informational content of trading volume as we show some evidence that volume traded fails to predict return. However we also show that it does on other sectors.

Several interesting results can be observed in this table. Conditional on past returns, when lower volume stocks perform better than high volume stocks, the H (high volume) - L (low volume) portfolios results in a negative value. Our results show negative returns for H-L for both loser and contrarian portfolios. Capital Goods, Computers, Retail and All are the sectors where we observe the impact of low volume stock for contrarian portfolios. Only two sectors (namely Retail and Real Estate) in the loser portfolios were explained by low volume. Hence we can conclude that conditional on past returns there is evidence that low volume stocks for both contrarian and losers (to a lesser extent) will outperform high volume stocks. Furthermore we can observe that M-L generates negative returns on both the losing portfolios (R1) and the contrarian portfolios (R1-R10), and the values are statistically different from zero<sup>4</sup>. As for winners, there is no evidence that low volume explains any of the portfolio returns for any of the sectors but high volume tend to explain the winner's return for Materials, Energy, Capital Goods, Computers and All. Therefore, our findings on the relationship between volume traded and contrarian profits do provide an inconsistent picture to support Conrad, Hameed and Niden (1994), Bremer and Hiraki (1999), and Hameed and Ting (2000) but are very consistent with Yoshio, Hideaki-Kiyoshi and Toshifumi (2002) and Ramiah et al. (2006).

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<sup>4</sup> Note that we do not report these t-statistics.

In Table 3 we also report returns of R1-R10. For example, when  $K=J=1$ , the high volume zero cost portfolio R1L-R10L only earns 7.25% for the Capital Goods companies, and 16.74% for the Computer companies. On the other hand, the low volume zero cost portfolio R1H-R10H earns -3.19% for Capital Goods companies, and 3.27% for the other sector.

#### **Application of the Three-Factor Model:**

The portfolios returns of the losers, winners and contrarian are regressed against the three factors namely market, size and book-to-market for all the different sectors. We show the results for the Health sector only (see Table 4). The intercept term (alpha) is statistically different from zero on numerous occasions. Alpha for loser, winner and momentum portfolios are positive. It appears that there exists a pattern for these three types on portfolios on this sector. These portfolios have a tendency to produce positive 'risk-adjusted performance'- see Faff (2004). These patterns decrease for both loser and contrarian portfolios when the holding period periods are extended. However there is no pattern in the behaviour of alpha for winners' portfolios. The market, size and the book-to-market factor systematically fail to explain any of these portfolio returns. Hence the three-factor model implies the existence of a contrarian pattern (via a significant alpha) across different sectors but does not explain this phenomenon as none of the systematic factors are significant.

#### **IV. Conclusions**

In this paper, we investigate various contrarian-trading strategies for equities listed on the Australian Stock Exchange. We also consider the role of trading volume and use different formation and holding periods. We find evidence of substantial short-term contrarian profits during the period 2001 to 2006 across the different industries. A zero cost portfolio that goes long in past losers and short in past winners on

average can earn up to 11.74% per month. Our results challenge the literature as we find that past trading volume does not play an explicit role in predicting future returns of stocks in shorter-term horizons in some sectors. However, trading volume does contain information about the extent of the reversal of stock returns in other sectors. In other words, trading volume can help predict the persistence and the reversal of contrarian pattern. An attempt is also made to explain the contrarian effect using the three-factor model. The evidence provided shows that the three-factor model of Fama and French cannot explain the contrarian phenomenon.

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**Table 1: Descriptive Statistics of Return, Volume and Number of Shares (NOSH)  
for nine sectors in Australia from March 2001 to March 2006**

	Mean	Stdev	Skewness	Excess Kurt	Range	Count	T-Test Statistic*	JB-Statistic
<b>Return</b>								
Materials	2.96%	0.0448	0.8313	8.7305	0.4411	278	10.99	915
Bank-Financials	1.87%	0.0237	1.4376	5.5810	0.1705	98	7.82	161
Energy	5.39%	0.0851	2.9721	12.0770	0.6191	94	6.14	710
Real Estate	1.28%	0.0242	-1.8952	8.6616	0.1715	70	4.41	261
Capital Goods	2.17%	0.0271	0.6535	2.7405	0.1789	67	6.54	26
Computers	1.57%	0.0381	1.8508	6.8603	0.2386	89	3.89	225
Pharmaceuticals	1.90%	0.0598	4.3697	25.6880	0.4632	66	2.57	2025
Health	1.09%	0.0452	-0.7931	2.9973	0.2535	50	1.71	24
Retail	1.89%	0.0300	2.2986	14.1109	0.2856	207	9.10	1900
All	2.41%	0.0459	3.2604	26.6607	0.6842	1019	16.77	31984
<b>Turnover Ratio</b>								
Materials	0.07	0.0560	2.3822	8.0756	0.3635	278	20.08	1018
Bank-Financials	0.03	0.0218	1.5600	2.4770	0.1262	98	13.74	65
Energy	0.09	0.0775	2.9057	11.8216	0.5251	94	11.34	680
Real Estate	0.04	0.0374	1.2115	0.9202	0.1529	70	9.74	20
Capital Goods	0.04	0.0334	2.3038	7.0358	0.1918	67	9.64	197
Computers	0.04	0.0357	4.5542	29.3512	0.2888	89	9.97	3502
Pharmaceuticals	0.06	0.0468	2.8895	12.2289	0.3042	66	9.84	503
Health	0.05	0.0439	2.2494	5.9051	0.2233	50	8.03	115
Retail	0.04	0.0317	1.6307	3.4004	0.1790	207	16.81	191
All	0.05	0.0501	3.0715	15.9192	0.5261	1019	33.25	12362
<b>NOSH (000's)</b>								
Materials	166907	288299	7	73	3564164	278	9.65	63373
Bank-Financials	236405	77871	3	6	1779533	98	30.05	251
Energy	149100	176260	3	8	994610	94	8.20	329
Real Estate	356181	423907	2	3	1937230	70	7.03	69
Capital Goods	106992	113806	2	4	509449	67	7.70	94
Computers	312913	1362822	9	84	12848931	89	2.17	27509
Pharmaceuticals	98982	92344	4	18	631121	66	8.71	1007
Health	116622	135954	3	11	677905	50	6.07	321
Retail	195779	317611	3	13	2026477	207	8.87	1899
All	192761	492914	18	431	12854829	1019	12.48	7946532
<b>Volume (000's)</b>								
Materials	12629	29863	6	48	317615	278	7.05	28429
Bank-Financials	12006	1540	3	13	175050	98	77.20	836
Energy	11215	16116	4	24	120595	94	6.75	2555
Real Estate	21122	30081	2	2	127920	70	5.87	42
Capital Goods	5286	11259	5	32	80100	67	3.84	3092
Computers	14704	63439	7	48	507155	89	2.19	9344
Pharmaceuticals	6560	12301	4	23	78830	66	4.33	1636
Health	7310	16825	5	32	111776	50	3.07	2311
Retail	11272	27703	4	23	192681	207	5.85	5056
All	11791	31025	8	89	507184	1019	12.13	346377

\*Testing if the Monthly Mean is statistically different from Zero

**Table 2: Price Contrarian Portfolios and Stock Returns for Formation Period J=1**

This table presents average monthly returns for the time period March 2001 to March 2006. R1 represents the loser portfolio and R10 the winner portfolio. K represents monthly holding periods where K=1,3,6,9 or 12 months. Returns are average monthly returns over the portfolio formation period. Year 1 to Year 3 represent the average monthly return over the portfolio formation period. Year 1 to Year 3 represent the average monthly return for portfolios held for 1 to 3 years.

		K=1	K=3	K=6	K=9	K=12	Year2	Year3
<b>Materials</b>	<b>R1</b>	8.89%	5.09%	4.38%	3.96%	3.29%	2.73%	1.81%
	<i>T-Stats</i>	4.33	4.61	5.08	6.31	6.58	7.75	6.06
	<b>R10</b>	1.19%	2.58%	2.94%	2.75%	2.51%	1.99%	1.35%
	<i>T-Stats</i>	0.85	2.47	4.25	5.18	6.09	7.14	5.62
	<b>R1-R10</b>	7.70%	2.51%	1.44%	1.20%	0.78%	0.74%	0.46%
	<i>T-Stats</i>	4.48	2.54	2.18	2.88	2.26	3.82	3.29
<b>Bank-Financials</b>	<b>R1</b>	3.84%	3.07%	2.40%	2.70%	2.49%	1.63%	1.14%
	<i>T-Stats</i>	2.70	3.27	3.68	5.54	7.04	7.17	5.65
	<b>R10</b>	1.02%	1.69%	2.39%	2.00%	1.62%	1.40%	0.91%
	<i>T-Stats</i>	0.85	2.54	4.16	5.36	5.57	6.85	5.46
	<b>R1-R10</b>	2.82%	1.38%	0.01%	0.70%	0.87%	0.23%	0.23%
	<i>T-Stats</i>	1.57	1.32	0.01	1.12	1.87	1.04	1.74
<b>Energy</b>	<b>R1</b>	7.94%	3.37%	3.01%	3.17%	3.09%	2.60%	1.73%
	<i>T-Stats</i>	2.74	2.93	4.48	4.83	4.97	5.92	5.20
	<b>R10</b>	1.41%	3.04%	2.39%	2.85%	2.94%	2.20%	1.40%
	<i>T-Stats</i>	0.75	2.68	3.45	4.39	5.57	5.81	5.18
	<b>R1-R10</b>	6.52%	0.33%	0.62%	0.32%	0.15%	0.40%	0.33%
	<i>T-Stats</i>	2.77	0.29	0.86	0.44	0.23	1.07	1.39
<b>Real Estate</b>	<b>R1</b>	1.25%	1.28%	1.37%	1.33%	1.32%	1.31%	0.91%
	<i>T-Stats</i>	1.48	2.08	2.90	3.66	4.34	6.02	5.44
	<b>R10</b>	0.98%	1.46%	1.45%	1.62%	1.79%	1.47%	1.11%
	<i>T-Stats</i>	1.09	2.75	3.92	5.43	6.81	6.48	5.66
	<b>R1-R10</b>	0.27%	-0.18%	-0.07%	-0.29%	-0.46%	-0.16%	-0.20%
	<i>T-Stats</i>	0.25	-0.34	-0.18	-0.91	-1.67	-0.88	-1.71
<b>Capital Goods</b>	<b>R1</b>	6.74%	4.13%	3.25%	2.61%	2.18%	1.65%	0.98%
	<i>T-Stats</i>	1.97	2.34	3.28	3.81	4.12	5.02	3.90
	<b>R10</b>	1.15%	1.96%	1.90%	1.85%	1.38%	1.29%	0.88%
	<i>T-Stats</i>	0.89	2.64	3.73	4.62	3.87	5.99	5.20
	<b>R1-R10</b>	5.59%	2.17%	1.34%	0.76%	0.80%	0.36%	0.10%
	<i>T-Stats</i>	1.73	1.30	1.45	1.14	1.49	1.22	0.42
<b>Computers</b>	<b>R1</b>	6.75%	2.34%	3.24%	2.79%	2.75%	2.43%	1.35%
	<i>T-Stats</i>	3.11	2.01	3.30	3.94	4.31	6.40	5.35
	<b>R10</b>	-1.36%	1.50%	1.44%	1.55%	1.54%	1.51%	1.02%
	<i>T-Stats</i>	-0.94	1.30	1.75	2.47	2.97	5.09	5.26
	<b>R1-R10</b>	8.11%	0.83%	1.81%	1.24%	1.21%	0.92%	0.33%
	<i>T-Stats</i>	3.61	0.72	1.95	1.78	2.35	3.15	1.96
<b>Pharmaceuticals</b>	<b>R1</b>	5.42%	2.93%	2.13%	1.89%	1.65%	1.47%	0.90%
	<i>T-Stats</i>	2.02	2.17	2.25	2.86	3.02	4.56	3.99
	<b>R10</b>	2.28%	2.80%	2.43%	1.79%	1.55%	1.34%	0.83%
	<i>T-Stats</i>	0.99	2.24	2.62	2.41	2.56	3.85	4.14
	<b>R1-R10</b>	3.14%	0.13%	-0.30%	0.10%	0.10%	0.13%	0.06%
	<i>T-Stats</i>	1.36	0.10	-0.30	0.14	0.19	0.38	0.37
<b>Health</b>	<b>R1</b>	12.78%	5.49%	3.78%	2.96%	2.68%	2.03%	1.34%
	<i>T-Stats</i>	2.58	2.45	3.07	3.33	3.32	4.34	4.12
	<b>R10</b>	1.04%	3.27%	2.51%	2.16%	2.02%	1.53%	0.97%
	<i>T-Stats</i>	0.55	1.87	2.18	2.47	2.95	3.95	3.85
	<b>R1-R10</b>	11.74%	2.22%	1.28%	0.81%	0.66%	0.50%	0.37%
	<i>T-Stats</i>	2.22	0.82	0.83	0.72	0.69	1.12	1.18
<b>Retail</b>	<b>R1</b>	3.58%	1.85%	1.67%	1.62%	1.42%	1.19%	0.90%
	<i>T-Stats</i>	3.10	2.84	3.75	5.27	5.54	6.66	5.62
	<b>R10</b>	1.35%	2.23%	2.11%	2.00%	1.86%	1.36%	0.84%
	<i>T-Stats</i>	1.75	4.78	6.55	6.97	7.54	7.53	5.78
	<b>R1-R10</b>	2.23%	-0.37%	-0.44%	-0.38%	-0.44%	-0.18%	0.06%
	<i>T-Stats</i>	2.30	-0.87	-1.32	-1.41	-1.91	-1.25	0.65
<b>All</b>	<b>R1</b>	6.32%	3.39%	3.17%	3.04%	2.84%	3.17%	3.11%
	<i>T-Stats</i>	4.63	3.93	4.76	6.25	7.12	13.07	20.23
	<b>R10</b>	1.03%	2.46%	2.36%	2.41%	2.45%	2.67%	2.67%
	<i>T-Stats</i>	1.07	3.71	5.25	6.86	8.30	14.35	24.34
	<b>R1-R10</b>	5.29%	0.92%	0.81%	0.63%	0.39%	0.50%	0.43%
	<i>T-Stats</i>	5.98	2.05	2.27	2.57	1.76	3.03	2.87

**Table 3: Returns for Portfolios Sorted on Past Returns and Volume for the Different Sectors for J=1**

This table presents average monthly returns for portfolios sorted on past returns and past average monthly turnover for the period 2001 to 2006. K represents monthly holding periods where K=1, 3, 6, 9 or 12 months. R1 represents the loser portfolio and R10 represents the winner portfolio. L represents the lowest trading volume portfolio, M represents the medium trading volume portfolio and H represents the highest trading volume portfolio. The numbers in parentheses are t-values.

Sector	Portfolio	K=1			K=3			K=6			K=9			K=12				
		L	M	H	H-L	L	M	H	H-L	L	M	H	H-L	L	M	H	H-L	
Materials	R1	8.58%	6.19%	9.89%	1.31%	4.73%	3.95%	6.39%	1.65%	4.71%	3.62%	5.93%	1.22%	4.69%	3.36%	5.61%	0.91%	4.25%
	T-stats	4.13	2.92	1.76	0.22	3.85	2.75	3	0.74	5.49	3.43	3.92	0.94	6.92	4.07	5.43	0.93	6.84
	R10	-2.71%	0.88%	2.54%	5.24%	-0.47%	2.92%	3.57%	4.04%	1.37%	3.04%	3.90%	2.54%	2.62%	2.83%	3.64%	1.02%	2.84%
	T-stats	-1.4	0.44	1.38	2.41	-0.42	2.54	2.37	2.7	1.77	4.33	3.88	2.8	4.08	4.41	4.62	1.48	4.69
	R1-R10	11.29%	5.31%	7.35%	-3.94%	5.20%	1.03%	2.82%	-2.38%	3.34%	0.58%	2.02%	-1.32%	2.07%	0.53%	1.96%	-0.11%	1.41%
T-stats	6.03	1.97	1.30	-0.63	5.12	0.72	1.19	-0.91	4.74	0.60	1.35	-0.82	3.13	0.67	1.87	-0.08	2.29	
Bank-Financials	R1	3.74%	3.34%	1.60%	-2.15%	5.08%	2.26%	0.62%	-4.46%	4.08%	1.30%	1.24%	-2.84%	4.64%	1.14%	1.88%	-2.76%	4.67%
	T-stats	1.61	1.67	1.16	-0.93	2.09	2.24	0.76	-1.67	2.93	1.48	1.84	-1.84	4.16	1.67	3.36	-2.15	5.85
	R10	-0.39%	1.22%	2.83%	3.22%	1.35%	1.67%	2.10%	0.75%	3.08%	2.17%	1.92%	-1.15%	3.15%	1.41%	1.66%	-1.49%	2.33%
	T-stats	-0.17	0.49	2.1	1.23	1.16	1.51	2.67	0.65	2.76	2.65	3.5	-1.01	4.1	2.19	3.63	-1.67	4.27
	R1-R10	4.14%	2.12%	-1.23%	-5.37%	3.73%	0.59%	-1.48%	-5.21%	1.00%	-0.87%	-0.68%	-1.69%	1.49%	-0.27%	0.22%	-1.27%	2.34%
T-stats	1.15	0.72	-0.60	-1.46	1.32	0.40	-1.41	-1.67	0.53	-0.86	-0.87	-0.83	1.06	-0.35	0.33	-0.77	2.20	
Energy	R1	4.36%	10.50%	9.61%	5.26%	2.15%	4.74%	3.73%	1.58%	1.77%	3.48%	3.74%	1.98%	2.13%	3.21%	4.66%	2.53%	2.27%
	T-stats	1.7	1.5	1.13	0.65	1.73	1.9	1.22	0.53	2.04	2.37	2.43	1.22	2.56	2.83	3.08	1.63	2.85
	R10	-3.20%	0.41%	2.46%	5.66%	0.94%	0.51%	7.13%	6.19%	0.05%	2.17%	4.48%	4.43%	0.72%	1.54%	4.80%	4.08%	0.84%
	T-stats	-1.74	0.17	1.06	1.86	0.8	0.45	2.52	2.14	0.07	2.46	2.96	2.93	0.96	2.65	4.36	3.27	1.44
	R1-R10	7.56%	10.09%	7.15%	0.60%	1.21%	4.23%	0.57%	-3.63%	0.82%	2.36%	0.26%	1.75%	1.07%	1.67%	0.06%	0.54%	1.43%
T-stats	3.82	3.18	3.18	1.44	3.18	3.18	5.47	3.82	1.44	3.18	3.18	5.47	3.82	1.44	3.18	3.18	5.47	

<b>RI-R10</b>	7.56%	10.09%	7.15%	-0.41%	1.21%	4.22%	-3.39%	-4.61%	1.71%	1.31%	-0.74%	-2.45%	1.41%	1.67%	-0.14%	-1.55%	1.43%	1.92%	-0.27%	-1.70%
<b>T-stats</b>	2.75	1.43	0.96	-0.06	0.77	1.64	-0.93	-1.14	1.49	0.80	-0.38	-1.05	1.24	1.29	-0.08	-0.74	1.46	1.73	-0.17	-0.92
<b>Real Estate</b>																				
<b>RI</b>	2.38%	1.35%	-0.82%	-3.20%	1.86%	1.86%	-0.73%	-2.59%	1.70%	1.93%	-0.61%	-2.32%	1.66%	1.76%	-0.31%	-1.97%	1.81%	1.63%	-0.14%	-1.95%
<b>T-stats</b>	2.66	1.1	-0.75	-2.32	2.47	2.51	-0.71	-2.16	3.09	3.54	-0.96	-3.12	3.75	3.63	-0.56	-3.01	5.1	3.33	-0.31	-3.51
<b>RI0</b>	-0.71%	1.59%	2.20%	2.91%	1.38%	1.76%	0.82%	-0.56%	1.41%	2.46%	0.15%	-1.26%	1.84%	2.18%	0.15%	-1.69%	2.22%	2.39%	0.35%	-1.87%
<b>T-stats</b>	-0.73	1.01	1.55	1.64	2.36	2.29	0.93	-0.62	3.11	4.46	0.29	-2.02	5.19	5.13	0.36	-3.2	7.34	6.37	0.96	-4.34
<b>RI-R10</b>	3.09%	-0.24%	-3.02%	-6.11%	0.47%	0.09%	-1.56%	-2.03%	0.29%	-0.53%	-0.77%	-1.06%	-0.18%	-0.41%	-0.46%	-0.28%	-0.41%	-0.75%	-0.49%	-0.07%
<b>T-stats</b>	2.24	-0.14	-1.72	-2.62	0.61	0.11	-1.32	-1.33	0.44	-0.89	-1.04	-1.04	-0.37	-0.73	-0.75	-0.36	-1.05	-1.42	-0.90	-0.11
<b>Capital</b>																				
<b>RI</b>	5.82%	4.97%	-1.46%	-7.28%	6.42%	3.03%	-0.35%	-6.77%	4.60%	2.43%	1.46%	-3.14%	3.37%	2.72%	0.99%	-2.38%	2.44%	2.44%	1.37%	-1.07%
<b>T-stats</b>	1.48	1.87	-0.74	-1.73	1.54	2.11	-0.23	-1.56	1.95	2.31	1.42	-1.19	2	3.57	1.23	-1.23	1.82	4.37	1.76	-0.68
<b>RI0</b>	-1.42%	0.66%	1.73%	3.15%	-0.15%	1.36%	2.18%	2.33%	0.55%	1.52%	2.16%	1.62%	0.53%	1.14%	2.40%	1.87%	0.78%	0.60%	1.91%	1.13%
<b>T-stats</b>	-0.99	0.41	0.78	1.33	-0.19	1.66	1.92	1.94	0.8	2.42	2.82	1.65	1.08	2.22	3.29	2.35	1.59	1.08	3.1	1.59
<b>RI-R10</b>	7.24%	4.30%	-3.19%	-10.43%	6.56%	1.67%	-2.53%	-9.09%	4.06%	0.91%	-0.70%	-4.75%	2.84%	1.58%	-1.41%	-4.25%	1.66%	1.85%	-0.54%	-2.20%
<b>T-stats</b>	1.70	1.34	-1.32	-1.99	1.66	0.99	-1.41	-2.01	1.75	0.84	-0.55	-1.72	1.62	1.74	-1.30	-1.98	1.19	2.40	-0.57	-1.30
<b>Computers</b>																				
<b>RI</b>	8.07%	4.03%	7.65%	-0.43%	2.17%	3.50%	1.14%	-1.03%	3.18%	3.47%	2.52%	-0.65%	2.16%	4.21%	2.18%	0.03%	2.53%	3.74%	2.36%	-0.17%
<b>T-stats</b>	2.57	1.76	2	-0.11	1.34	2.18	0.66	-0.57	2.45	2.55	1.98	-0.46	2.3	3.58	2.02	0.02	3.02	3.55	2.11	-0.16
<b>RI0</b>	-8.66%	-4.16%	4.37%	13.04%	-2.84%	-1.26%	5.02%	7.86%	-0.65%	1.37%	2.74%	3.39%	0.29%	1.88%	2.27%	1.98%	0.28%	1.64%	2.61%	2.33%
<b>T-stats</b>	-3.77	-2.15	1.89	3.84	-2.03	-1.24	2.31	3.51	-0.7	1.19	1.96	2.48	0.32	1.92	2.18	1.7	0.33	2.09	2.94	2.3
<b>RI-R10</b>	16.74%	8.19%	3.27%	-13.46%	5.01%	4.77%	-3.88%	-8.89%	3.82%	2.10%	-0.22%	-4.04%	1.87%	2.33%	-0.09%	-1.95%	2.25%	2.11%	-0.24%	-2.50%
<b>T-stats</b>	4.47	2.65	0.73	-2.54	2.74	2.73	-1.63	-3.29	2.68	1.31	-0.14	-2.14	1.61	1.62	-0.06	-1.18	2.20	1.73	-0.18	-1.70

<b>Pharma-</b>	<b>RI</b>	3.40%	6.38%	2.61%	-0.79%	3.19%	1.69%	0.91%	-2.28%	1.87%	0.87%	1.54%	-0.33%	1.85%	1.20%	1.76%	-0.08%	2.07%	0.56%	1.33%	-0.74%
<b>ceuticals</b>	<b>T-stats</b>	1.26	1.94	0.94	-0.29	1.75	1.17	0.61	-1.04	1.19	0.9	1.48	-0.18	1.65	1.56	2.05	-0.06	1.92	0.86	2.09	-0.61
	<b>RI10</b>	1.61%	-0.12%	1.06%	-0.54%	0.07%	0.55%	3.42%	3.35%	1.13%	0.22%	3.30%	2.17%	1.50%	-0.22%	2.09%	0.59%	0.60%	0.75%	1.81%	1.21%
	<b>T-stats</b>	0.46	-0.05	0.5	-0.13	0.05	0.44	2.18	1.71	1.2	0.24	2.51	1.54	1.56	-0.29	1.99	0.48	0.81	1.17	2.03	1.19
	<b>RI-R10</b>	1.79%	6.50%	1.54%	-0.25%	3.12%	1.14%	-2.51%	-5.63%	0.74%	0.64%	-1.76%	-2.50%	0.34%	1.42%	-0.33%	-0.67%	1.47%	-0.18%	-0.48%	-1.95%
	<b>T-stats</b>	0.41	1.55	0.64	-0.05	1.28	0.61	-1.20	-1.73	0.39	0.49	-1.22	-1.12	0.21	1.56	-0.25	-0.33	1.03	-0.22	-0.50	-1.08
<b>Health</b>	<b>RI</b>	8.70%	0.64%	12.29%	3.59%	5.34%	0.10%	3.52%	-1.83%	4.02%	2.15%	1.94%	-2.08%	2.86%	1.85%	1.52%	-1.34%	2.78%	2.21%	0.95%	-1.83%
	<b>T-stats</b>	2.31	0.3	1.53	0.4	2.33	0.09	1.15	-0.48	2.49	2.26	1.17	-0.89	2.48	1.87	1.21	-0.77	2.63	2.08	0.98	-1.24
	<b>RI10</b>	-2.49%	0.32%	3.81%	6.30%	3.43%	-0.20%	3.59%	0.15%	2.05%	2.12%	1.91%	-0.14%	1.70%	2.29%	1.48%	-0.22%	3.19%	1.76%	0.82%	-2.37%
	<b>T-stats</b>	-0.95	0.13	1.49	1.58	1.23	-0.17	2.31	0.06	1.27	1.64	1.89	-0.08	1.28	2.67	1.59	-0.15	2.32	2.71	1.1	-1.51
	<b>RI-R10</b>	11.19%	0.32%	8.48%	-2.71%	1.91%	0.31%	-0.07%	-1.98%	1.97%	0.03%	0.03%	-1.94%	1.15%	-0.44%	0.04%	-1.12%	-0.41%	0.46%	0.13%	0.54%
	<b>T-stats</b>	2.40	0.11	0.98	-0.26	0.52	0.19	-0.02	-0.40	0.83	0.02	0.02	-0.63	0.66	-0.32	0.03	-0.49	-0.23	0.36	0.11	0.24
<b>Retail</b>	<b>RI</b>	6.19%	2.54%	1.20%	-5.00%	1.93%	1.20%	1.72%	-0.21%	1.62%	1.44%	1.15%	-0.47%	1.51%	1.79%	1.35%	-0.16%	1.80%	1.56%	1.23%	-0.57%
	<b>T-stats</b>	3.21	2.02	0.77	-2.43	1.88	1.49	1.88	-0.2	2.26	2.53	1.55	-0.55	2.58	4.39	2.59	-0.24	4.24	3.86	2.52	-0.97
	<b>RI10</b>	-0.53%	2.01%	2.25%	2.78%	3.00%	2.98%	1.77%	-1.23%	2.83%	2.58%	2.14%	-0.70%	2.75%	2.42%	2.18%	-0.57%	2.39%	2.33%	2.42%	0.04%
	<b>T-stats</b>	-0.39	1.71	1.91	1.57	2.48	4.35	2.54	-0.9	3.79	4.68	4.9	-0.81	4.26	5.39	5.84	-0.79	4.66	5.82	8.13	0.06
	<b>RI-R10</b>	6.72%	0.53%	-1.05%	-7.78%	-1.07%	-1.78%	-0.06%	1.02%	-1.21%	-1.14%	-0.99%	0.22%	-1.24%	-0.64%	-0.83%	0.41%	-0.59%	-0.77%	-1.19%	-0.61%
	<b>T-stats</b>	3.02	0.49	-0.67	-3.06	-0.81	-2.28	-0.05	0.57	-1.37	-1.86	-1.17	0.18	-1.60	-1.27	-1.31	0.41	-1.00	-1.59	-2.13	-0.74
<b>All</b>	<b>RI</b>	6.35%	5.68%	4.99%	-1.36%	3.29%	3.18%	2.57%	-0.72%	3.20%	3.40%	2.40%	-0.79%	3.13%	3.21%	2.31%	-0.82%	2.87%	3.07%	2.22%	-0.65%
	<b>T-stats</b>	4.28	3.52	3	-0.86	3.45	3.27	2.92	-1.06	4.57	4.54	3.61	-1.86	5.83	5.85	4.7	-2.06	6.32	7.1	5.47	-1.96
	<b>RI10</b>	-2.06%	-0.21%	2.59%	4.65%	1.21%	1.62%	3.07%	1.85%	1.78%	2.14%	2.63%	0.85%	2.24%	2.19%	2.48%	0.23%	2.36%	2.30%	2.48%	0.12%

<b>T-stats</b>	-1.97	-0.24	2.14	4.27	1.79	2.51	3.82	3.06	3.53	4.72	5	1.84	5.31	6.37	6.15	0.71	6.03	7.58	7.87	0.38
<b>R1-R10</b>	8.41%	5.90%	2.41%	-6.00%	2.07%	1.56%	-0.50%	-2.57%	1.42%	1.27%	-0.22%	-1.64%	0.89%	1.02%	-0.16%	-1.05%	0.51%	0.78%	-0.25%	-0.77%
<b>T-stats</b>	5.75	4.88	1.85	-3.02	2.83	2.39	-0.76	-2.44	2.61	2.65	-0.44	-2.21	2.33	2.53	-0.40	-1.77	1.37	2.25	-0.74	-1.42

**Table 4: The Application of the Three-Factor Model to the Health Sector**

This table presents the time series results of the Fama and French Three Factor model for the period 2001 to 2006. K represents monthly holding periods where K=1,3, 6, 9 or 12 months. R1 represents the loser portfolio and R10 represents the winner portfolio. Alpha represents the intercept of the regression, the coefficient of RM-RF represents the beta of the portfolio, SMB represents the size factor and HML represents the Book-to-market factor. The numbers in italic are t-values.

J	Portfolio	K=1					K=3					K=6					K=9					K=12				
		Alpha	RM-RF	SMB	HML	Alpha	RM-RF	SMB	HML	Alpha	RM-RF	SMB	HML	Alpha	RM-RF	SMB	HML	Alpha	RM-RF	SMB	HML	Alpha	RM-RF	SMB	HML	
<b>1</b>	<b>R1</b>	0.131	-0.198	-1.386	2.608	0.056	-0.241	-0.534	0.383	0.042	-0.312	-0.211	-0.263	0.033	-0.189	-0.065	-0.452	0.029	0.197	-0.105	-0.156					
	<i>T-stats</i>	2.51	-0.12	-1.23	1.37	2.34	-0.32	-1.03	0.44	2.99	-0.70	-0.72	-0.52	3.16	-0.57	-0.30	-1.19	2.82	0.61	-0.50	-0.41					
	<b>R10</b>	0.007	0.073	-0.474	0.736	0.035	-0.767	-0.130	-0.059	0.027	-0.299	-0.195	-0.061	0.024	-0.281	-0.147	-0.237	0.023	-0.416	0.048	-0.106					
	<i>T-stats</i>	0.33	0.11	-1.08	0.99	1.90	-1.31	-0.32	-0.09	2.03	-0.72	-0.71	-0.13	2.31	-0.86	-0.68	-0.64	2.67	-1.53	0.27	-0.34					
	<b>R1-R10</b>	0.128	-0.270	-0.910	1.870	0.025	0.527	-0.403	0.440	0.019	-0.012	-0.014	-0.203	0.013	0.093	0.084	-0.216	0.010	0.614	-0.152	-0.050					
	<i>T-stats</i>	2.26	-0.15	-0.74	0.90	0.86	0.57	-0.63	0.41	1.08	-0.02	-0.04	-0.31	0.99	0.22	0.30	-0.44	0.84	1.60	-0.62	-0.11					
<b>3</b>	<b>R1</b>	0.083	-0.628	-0.365	0.386	0.040	-0.106	-0.414	0.348	0.029	-0.140	-0.430	0.183	0.028	-0.029	-0.341	-0.190	0.026	-0.086	-0.321	-0.114					
	<i>T-stats</i>	2.58	-0.62	-0.52	0.33	2.34	-0.19	-1.09	0.55	3.03	-0.46	-2.14	0.54	3.39	-0.11	-1.97	-0.64	2.74	-0.29	-1.66	-0.33					
	<b>R10</b>	0.009	-0.510	-0.640	-0.172	0.043	-1.824	0.336	-0.092	0.023	-1.069	0.153	-0.096	0.021	-0.674	0.230	-0.148	0.015	-0.410	0.114	-0.255					
	<i>T-stats</i>	0.47	-0.84	-1.53	-0.25	2.16	-2.87	0.76	-0.13	1.90	-2.82	0.61	-0.22	2.40	-2.46	1.26	-0.48	2.23	-1.89	0.80	-1.01					
	<b>R1-R10</b>	0.078	-0.117	0.276	0.556	0.001	1.720	-0.749	0.438	0.010	0.931	-0.582	0.278	0.011	0.646	-0.570	-0.043	0.015	0.325	-0.433	0.140					
	<i>T-stats</i>	2.26	-0.11	0.36	0.44	0.06	2.30	-1.44	0.51	0.78	2.22	-2.07	0.58	0.96	1.73	-2.29	-0.10	1.34	0.95	-1.94	0.35					
<b>6</b>	<b>R1</b>	0.093	0.554	-0.940	1.211	0.051	0.002	-0.109	0.073	0.048	-0.163	-0.228	-0.368	0.032	0.116	-0.386	-0.230	0.027	0.143	-0.371	0.041					
	<i>T-stats</i>	2.65	0.51	-1.23	0.95	2.81	0.00	-0.28	0.11	3.68	-0.41	-0.83	-0.79	3.07	0.36	-1.76	-0.61	2.81	0.50	-1.95	0.12					
	<b>R10</b>	0.047	-0.206	-1.338	-1.402	0.025	-0.796	-0.160	-0.135	0.011	-0.658	0.106	-0.401	0.008	-0.393	0.073	-0.234	0.002	-0.313	0.204	-0.150					
	<i>T-stats</i>	1.78	-0.25	-2.33	-1.47	1.76	-1.84	-0.53	-0.27	1.29	-2.44	0.58	-1.29	1.23	-1.90	0.52	-0.98	0.34	-1.65	1.62	-0.67					
	<b>R1-R10</b>	0.051	0.761	0.399	2.611	0.030	0.800	0.052	0.206	0.041	0.496	-0.333	0.031	0.028	0.510	-0.459	0.003	0.029	0.457	-0.574	0.190					
	<i>T-stats</i>	1.26	0.62	0.46	1.81	1.54	1.32	0.12	0.29	2.85	1.12	-1.10	0.06	2.36	1.39	-1.84	0.01	2.75	1.44	-2.73	0.51					

<b>9 R1</b>	0.058	-0.823	-0.115	-0.452	0.036	-0.037	-0.174	-0.487	0.035	-0.841	-0.107	-0.792	0.028	-0.689	0.006	-0.816	0.028	-0.400	-0.132	-0.646
<i>T-stats</i>	1.63	-0.64	-0.15	-0.37	1.84	-0.05	-0.41	-0.71	2.62	-1.71	-0.39	-1.76	2.66	-1.73	0.03	-2.24	2.81	-1.07	-0.66	-1.89
<b>R10</b>	0.027	-0.518	-0.692	-1.023	0.003	-0.709	0.077	-0.554	0.006	-0.915	0.374	-0.587	0.001	-0.621	0.176	-0.442	-0.002	-0.511	0.114	-0.473
<i>T-stats</i>	0.91	-0.48	-1.07	-0.98	0.20	-1.51	0.27	-1.23	0.62	-2.52	1.86	-1.77	0.19	-2.33	1.19	-1.81	-0.27	-2.09	0.88	-2.12
<b>R1-R10</b>	0.035	-0.301	0.578	0.569	0.038	0.675	-0.250	0.065	0.033	0.077	-0.481	-0.207	0.031	-0.065	-0.169	-0.377	0.034	0.114	-0.245	-0.174
<i>T-stats</i>	0.87	-0.21	0.67	0.41	1.99	0.98	-0.61	0.10	2.73	0.17	-1.93	-0.51	2.71	-0.15	-0.71	-0.96	3.68	0.33	-1.33	-0.55
<b>12 R1</b>	0.047	-0.540	-0.789	0.704	0.017	-0.317	-0.369	0.901	0.034	-1.156	-0.309	0.401	0.021	-0.697	-0.163	0.053	0.023	-0.462	-0.272	-0.007
<i>T-stats</i>	1.32	-0.43	-1.02	0.57	1.00	-0.54	-1.01	1.54	2.31	-2.14	-1.00	0.79	1.89	-1.76	-0.72	0.14	2.62	-1.47	-1.59	-0.02
<b>R10</b>	-0.020	0.390	-0.684	0.558	-0.031	0.152	0.041	0.397	-0.030	0.096	-0.058	0.261	-0.024	0.003	0.016	0.049	-0.026	0.116	-0.059	0.059
<i>T-stats</i>	-0.95	0.53	-1.51	0.77	-2.80	0.39	0.17	1.03	-3.93	0.35	-0.37	1.00	-3.67	0.01	0.12	0.22	-4.74	0.57	-0.53	0.31
<b>R1-R10</b>	0.072	-0.926	-0.105	0.145	0.052	-0.466	-0.410	0.503	0.069	-1.248	-0.250	0.139	0.050	-0.697	-0.179	0.002	0.053	-0.574	-0.213	-0.067
<i>T-stats</i>	1.92	-0.71	-0.13	0.11	3.21	-0.81	-1.16	0.89	4.59	-2.30	-0.80	0.27	4.45	-1.73	-0.78	0.00	6.78	-2.00	-1.36	-0.25







