AN INVESTIGATION OF ANOMALIES AT ISTANBUL SECURITIES EXCHANGE: WINNER-LOSER EFFECT

A THESIS
Submitted to the Faculty of Management
and Graduate School of Business Administration
of Bilkent University
In Partial Fulfillment of Requirements
For the Degree of
Master of Business Administration

By
Müfide SAYIM
November, 1993

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tarafından imzalanmıştır

I certify that I have read this thesis and in my oppinion it is fully adequate, in scope and and quality, as a thesis for the degree of Master of Business Administration.

Assoc. Prof. Kürşad Aydoğan

I certify that I have read this thesis and in my oppinion it is fully adequate, in scope and and quality, as a thesis for the degree of Master of Business Administration.

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ABSTRACT

AN INVESTIGATION OF ANOMALIES AT İSTANBUL SECURITIES EXCHANGE: WINNER-LOSER EFFECT

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Supervisor:
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In this study, the presence of winner-loser effect in İstanbul Stock Exchange is investigated. Tests are done for the period of January 1988 - December 1992.

Past performance is used to form the "Winner" and "Loser" portfolios prior to the test period. Duration for past performance measurements change from 1 month to 48 months. Test periods change from 3 months to 36 months.

The results show that, in the first month of the test period, loser portfolio outperforms the winner portfolio. This effect is emphasized if the first month of the test period is January.

The above results carry similarities with the empirical results obtained from stock markets of USA and Japan.

Keywords: Winner-Loser Effect, Past performance, Test period.

ÖZET

İSTANBUL MENKUL KIYMETLER BORSASINDA BİR ANOMALİ ARASTIRMASI: KAZANAN-KAYBEDEN ETKİSİ

GÜRKAN SAYIN

Yüksek Lisans Tezi,İsletme Fakültesi

Tez Yöneticisi: Doç. Dr. Kürşat Aydoğan

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Bu çalişmada İstanbul Menkul Kıymetler Borsasın'da Kazanan-Kaybeden etkisinin olup olmadığı incelenmiştir. Testler 1988 Ocak ayından 1992 Aralık ayına kadar yapılmıştır.

Test periyodu öncesi oluşturulan Kazanan ve Kaybeden portföyleri geçmiş performansa göre oluşturulmuştur. Geçmiş performans süresi 1 aydan 48 aya kadar değişmektedir. Test süresi ise 3 ay ile 36 ay arasında değişmektedir.

Sonuçlar test periyodunun ilk ayinda, Kaybeden portföyünün Kazanan portföyünden daha çok ortalama getirisi olduğunu göstermiştir. Bu etki, ilk ayın Ocak ayı olması ile daha da belirginleşmektedir.

Yukarıdaki bulgular Amerikan ve Japon menkul kıymetler borsalarından elde edilen bulgularla benzerlikler göstermektedirler.

Anahtar kelimeler: Kazanan-Kaybeden Etkisi, Geçmiş Performans, Test Periyodu.

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1.Introduction

Main objective of this study is to investigate the presence of the winner-loser anomaly in the ISE. If its presence is encountered, questions about weak-form market efficiency will arise and another possibility of arbitrage will be found.

Experimental psychology suggests that, in violation of Bayes' rule, people tend to "overreact" to unexpected and dramatic news events. Overreaction contradicts market efficiency hypothesis, at least in the short-run. An empirical study, done by Bondt and Thaler(1987), based on CRSP monthly return data is consistent with the overreaction hypothesis. This study revealed out weak form market inefficiencies. The same study found out an interesting January effect.

It was observed that the prior loser portfolios gained more than the prior winner portfolios in the end of this formation period(the period in which the winner and loser portfolios are formed).

These observations can be used by the investors to gain extra earnings in the stock market by keeping track of the loser and winner stocks. It can be said that the loser portfolios can gain extra earnings over the market return(i.e. over and above a naive investment strategy) when some conditions hold. This might be the practical benefit of this paper. Academicians can also accept it as a stimulus to investigate the topic deeper including other variables of the stock markets because the results form another contradiction to the weak form market efficiency.

It is now well established that Bayes' rule is not an apt characterization of how individuals actually respond to new data(Kahneman&Tversky(1982)). It is observed that investors overweigh recent information and underweigh prior(base rate) data. They try to match their impressions with their predictions. This same matching is also observed among the professional security analysts and economic forecasters(De Bondt(1985)).

One of the earliest observations about the overreaction is from J.M. Keynes(1936), who said :"...day-to-day fluctuations in the profits of existing investments, which are obviously of an ephemeral and non significant character, tend to have an altogether excessive, and even an absurd, influence on the market".

Prices usually reflected too much of the current earning power and not the long term dividend paying power. Shiller(1984) showed that dividends over the last century did not fluctuate enough to justify the fluctuations in the prices. It is observed that, instead of the trendiness of the dividends, people tend to attach disproportionate importance to short-run economic developments.

When coming to reasons, Ball(1978) emphasizes the effects of the omitted risk factors. Reinganum (1981) claimed that equilibrium model might include more dimensions of risk which implies different betas for different risk factors. As the more dimensions of risk are included, as they claim, better predictions can be done, because this seems to be more realistic.

Another reason might be the lack of rational agents in the market (Russel&Thaler(1985)).

In any case, the prices can reflect, if they can, real dividend paying power after a certain lapse, which can be as long as months.

As this is the case, a rational agent, if aware of the situation, can hit the market by searching for "undervalued" and "overvalued" stocks. If he sells the overvalued ones and buy the undervalued ones, he can gain extra profits from this action.

A hypothesis is suggested for the above observations :

1) Extreme movements in stock prices will be followed by subsequent price movements in the opposite direction.
2) The more extreme the initial price movement, the greater will be the subsequent adjustment.

If there are no possible explanations with the betas (if 'risk' can not explain the price movements), both of the above imply a violation of weak-form market efficiency.

The rest of the thesis proceeds in the following manner:

Previous empirical work and results are summarized in Chapter 2. This part is followed by the description of the data and methodologies(Chapter 3). Findings will be summarized(Chapter 4) and conclusion will follow it in the end(Chapter 5).

2.Previous empirical work and results

In search of the other dimensions that could be used to explain the price movements, Reinganum(1981), Basu (1977) and Graham(1973) found out significant variables like P/E, size or small firm effect, all of which are indirectly tied to winner-loser effect and therefore can be investigated through the lenses of overreaction. Consistent losers for an enough long period can be easily found in the small firm range. So we can say that, words as "overvalued" or "undervalued", when talking about P/E s of firms, give signs of "overreaction" in one way or another.

All the above new variables, if they are significant anywhere, are just there to predict price movements, not to help us understand the real reasons of price movements. The price movements can be heavily dependent on the local culture or present common expectations which have roots in investors' psychologies. These variables can give more clues about future price movements, if they can be measured.

Even though these new variables seem to be important in the investigated stock market, they are not guaranteed to be vital everywhere, especially in a market where investors are rational in the sense of long term trendiness.

In any case, these variables will do no harm in those theoretically rational markets, so why not take care of them if they are economically significant too.

As Russel and Thaler(1985) concluded, all the above, seemingly unnecessary dimensions in a rational market, are needed, because the markets are not that "rational"

A problem here might be the definition of 'rationality'. In search of "What is rational?", we can tie the definition to the long-term movements and dividend paying power but not the short-term buying power. At this point one can argue as:"...then there are two rationalisms, one in the short-term, and the other in the long-term", which can not be completely rejected if subjective ideas of individual investors are considered. One can easily say that "time value of money is enough large not to consider 18 months later". In such a case, he can give unexpected and interesting impulses to the market if he has the power to do it.

In their paper, Bondt and Thaler(1985) found out that:

1) Extreme portfolios of prior losers earned larger gains than the extreme portfolios of the prior winners.
2) Overreaction effect is asymmetric. It is much larger for losers than for winners.
3) As the portfolios are more extreme or as the formation period (the period in which the performances are measured and loser/winner portfolios are formed) is longer, the price reversals will be more emphasized.
4) A seasonal pattern is observed, January is the main month where most of the reversal occurs.
5) Betas can not explain the reversal.

Vermaelen and Verstringe(1986) stated after their investigation of Belgian market that this was not overreaction and it was simply a matter of risk change.

At this point I can argue that these explanations actually don't contradict the previous statements. The prior ones are useful in prediction and the later ones are merely there to explain why it happens and this does not degrade the previous ones' values.

One other reason of difference in the results might be "culture" as explained before. Not every culture is short-term oriented and they could easily act as very rational in the "long-term" sense.

Still, formation period betas, which are argued to be sharply changing in test periods in favor of loser portfolios do not have the necessary magnitude to explain the whole change in those tests (De Bondt&Thaler(1987)).

Anomalies and bad modeling should be separated in order not to make mistakes. Our "overreaction" hypothesis can be meaningless in one modeling and can be of great interest in another (Fama(1986)). Not only that but one can also argue as, 'different models can be applied to different markets'. Actually one "big" model can cover every market but in special cases sub models can be more meaningful.

3.Data and methodology

Data used here consist of the monthly returns of the stocks at the Istanbul Securities Exchange from January 1988 to December 1992(the source is Istanbul Securities Exchange Monthly Bulletins) and three months treasury bill rates(the source is Central Bank) representing risk-free rate for the same period.

In this study there are mainly two periods, which are named as "**formation**" and "**test**" periods respectively.

After choosing a formation period, stocks are ranked according to their cumulative gains in that period. The stocks with missing data in the formation period are discarded to increase statistical rigor and replicability.

The cluster left is divided into three groups according to their gains in the formation period. The uppermost most group, which gained most, is assigned to the "winner portfolio", the lowermost group is assigned to the "loser portfolio" and the middle group is discarded.

These portfolios are not extreme enough (only 5% of the stocks formed these portfolios in the Bondt and Thaler(1985) tests of the CRSP data) but the number of stocks are so few that (around 80-150) if more extreme portfolios are formed, the number of stocks in those portfolios will be very small.

Two procedures are used here to test the overreaction hypothesis. First one is applicable only to multiyear tests and formation periods. Second one is applicable to all periods available.

Bondt and Thaler Methodology

The procedures used here are a variant of the one originally proposed by Beaver and Landsman(1983)in a different context and belong to Bondt&Thaler(1985).

Typically, tests of semistrong form market efficiency start, at time t = 0, with the information of portfolios on the basis of some event that affects all stocks in the portfolio, say, an earnings announcement. One then goes on to investigate whether later on (t > 0) the estimated residual portfolio return Upt measured relative to the single period CAPM-equals zero. Statistically significant departures from zero are interpreted as evidence against semistrong form market efficiency, even though the results may also be due to misspecification of the CAPM, misestimation of the relevant alphas/betas and/or lack of market efficiency of the weak form(Bondt&Thaler(1985)).

In contrast, the tests in this study will asses the extent to which systematic non zero residual return behavior in the period after portfolio formation(t>0) is associated with systematic residual return in the preformation months(t<0). Focus will be on the extreme winner and extreme loser(denoted by W and L respectively) portfolios.

Following Fama(1986), the arguments above can be summarized as

$$E\left(R_{jt} - E_m\left(R_{jt} | F^m_{t-1}\right)\right) = E\left(U_{jt} | F_{t-1}\right) = 0$$

F_{t-1} represents the complete set of information at time t-1,

R_{jt} is the return on security j at month t,

$E_m\left(R_{jt}|F_{t-1}^m\right)$ is the expectation of R_{jt}, assessed by the market on the basis of the information set, F_{t-1}^m ,where m stands for 'market'

$u_{jt} = R_{jt} - R_{mt}$ where

R_{mt} is the return on the market at t(equally weighted average return)

The efficient market hypothesis implies that

$E(u_{wt}|F_{t-1}) = E(u_{lt}|F_{t-1}) = 0.$

As explained in the introduction, the overreaction hypothesis, on the other hand, suggests that

$E(u_{wt}|F_{t-1}) < 0$ *and* $E(u_{lt}|F_{t-1}) > 0.$

Test procedure : Details

1. The length of the formation period is chosen to be 2 or 3 years in this study due to the shortness of the available period and the number of the stocks available.

As it is noted, lengthening the formation period or forcing more extreme portfolios can increase the rate of reversal of returns in the formation period (Bond&Thaler(1985)) but due to the 5 years of total test period, it is not easy to check the first option.

2. What remains after choosing the formation period is the test period .

3. Two portfolios are formed. Each contains the extreme winners and the extreme losers respectively in the end of the formation period in the following manner :

let

$$E\left(R_{jt} - E_m\left(R_{jt} | F_{t-1}^m\right)\right) = E\left(u_{jt} | F_{t-1}^m\right),$$

$$u_{jt} = R_{jt} - R_{mt},$$

$$CU_j = \sum_{t=-24}^{t=0} U_{jt}$$

for each of the stocks available in that period.

Top 30% and the bottom 30% stocks in terms of CU_j s form the Winner and Loser portfolios respectively.

4. Compute $CAR_{wnt} = \sum_w CU_j \times \frac{1}{w}$ meaning cumulative average residual returns of all securities in the winner portfolio in year n and month t.

Compute $CAR_{lnt} = \sum_l CU_j \times \frac{1}{l}$ meaning cumulative average residual returns of all securities in the loser portfolio in year n and month t.

n = 1..3/1..2

t = 1..12

CAR s for all the years and months in the test period will be calculated.

5. $ACAR_{wt}$ is the average of CAR_{wnt} s over the years, so the average monthly CAR_w s are found.

$ACAR_{lt}$ is the average of CAR_{lnt} s over the years, so the average monthly CAR_l s are found.

For each month these values are calculated.

By the overreaction hypothesis, for t > 0,

$[ACAR_{lt} - ACAR_{wt}] > 0.$

To check the statistical significance of the difference, pooled estimate of population variance in CAR_t,

$$S_{t^2}=\left[\sum_{n=1}^{N}\left(CAR_{wnt}-ACAR_{wt}\right)^2+\sum_{n=1}^{N}\left(CAR_{\ln t}-ACAR_{lt}\right)^2\right]/2(N-1)$$

where N is the number of years in the test period.

With two samples of equal size N, the variance of the difference of sample means equals $2St^2/N$ and the t-statistic is therefore

$$T_t=\left[ACAR_{lt}-ACAR_{wt}\right]/\left[2S_t^2/N\right]^{\frac{1}{2}}.$$

"Difference of two sample means" Methodology

This method is basically testing whether the difference of the means of the two samples are statistically different or not.

Here again I have used the past performance to form the winner and loser portfolios. In these tests I discarded all the stocks that have missing data in the formation and test periods.

The formation periods change from 1 month to 48 months and the test period is 3 months. The 3 months test period was enough to see the reversal effect, and longer test period months had very weak significance compared to these.

The formation periods are as follows:1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,15, 18, 24, 36, 48 months.

For an illustration, 2 months formation period tests begin with 1988 January. 1988 January and February are in the first formation period for the 2 months tests. Next two months test takes 1988 February and March as the formation period and April, May and June as the test period of that single test.

The formation periods are overlapping, which decreases the independence of the tests done but increases the number of them .

Test procedure: Details

let x_1 be the average return of the loser portfolio in a specific test month and

let x_2 be the average return of the winner portfolio in the same test month.

Mean of the difference is $x_1 - x_2$.

Let s_1, s_2 be the standard deviations of the returns of the two populations.

T value of the difference is then

$$t = (x_1 - x_2) / \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$$

where the degrees of freedom is

$$d.f. = \left((s_1^2 / n_1) + (s_2^2 / n_2)\right)^2 / \left((s_1^2 / n_1)^2 / (n_1 - 1) + (s_2^2 / n_2)^2 / (n_2 - 1)\right.$$

Calculation of betas

I used betas here to check if they could explain the results found.

The main regression used is

$$R_{jn} - R_{fn} = \alpha_{jn} + \beta_{jn}\left(R_{mn} - R_{fn}\right) + \varepsilon_{jn}$$

n runs through the prior 12 months of the formation periods in the tests of second procedure.

R_{in} is the return on stock j in month t,

R_{mn} is the equally weighted market portfolio's return in month t,

R_{fn} is the return on 3 months government bonds in that month,

β_{in} is the stock j's beta, and

α_{in} is the differential return for stock j.

4.Findings

I have done 4 tests according to the first procedure(Bondt & Thaler Methodology). These are as follows:

. Two years formation, two years test period, the formation begins in 1988,

Two years formation, two years test period, the formation begins in 1989,

. Two years formation, three years test period, the formation begins in 1988,

. Three years formation, two years test period, the formation begins in 1988.

Results are summarized in Table 1. January and April have always positive t values. January has the largest positive t values.February has a large variance around zero. April has low magnitude positive t values. After 6. month, similar patterns are followed. Even though month 7 is always a local maximum, its variance is large and have negative t values.On the average t values range from +0.4 to -1, which results in low statistical significance.

Shorter periods of formation could produce more meaningful results. To see if this was true, a second method is proposed. Due to different market conditions and communication style of the investors, in Tukey, shorter periods can be much more realistic too. Inflationary pressures are another force that shrinks the periods of formation.

TABLE 1.Results of Bondt and Thaler Method

Test no:	1	1	2	2
Month	d	t	d	t
1	+0.07	+0.35	+0.02	+0.07
2	-0.02	-0.15	+0.10	+0.48
3	+0.01	+0.10	+0.01	+0.05
4	-0.05	-0.22	+0.02	+0.15
5	-0.08	-0.41	-0.02	-0.10
6	-0.01	-0.04	-0.04	-0.28
7	+0.02	+0.14	+0.02	+0.11
8	-0.10	-0.56	-0.04	-0.25
9	+0.03	+0.17	+0.06	+0.32
10	+0.00	+0.04	+0.05	+0.25
11	-0.06	-0.31	-0.08	-0.51
12	+0.01	+0.14	-0.00	-0.01

Test no:	3	3	4	4
Month	d	t	d	t
1	+0.08	+0.42	+0.03	+0.15
2	-0.01	+0.09	+0.05	+0.31
3	+0.01	+0.08	+0.01	+0.02
4	+0.02	+0.13	+0.05	+0.23
5	-0.03	-0.19	-0.06	-0.32
6	-0.03	-0.24	-0.06	-0.36
7	-0.02	-0.21	+0.03	+0.18
8	-0.03	-0.26	-0.04	-0.34
9	-0.01	-0.12	+0.07	+0.35
10	-0.01	-0.10	+0.07	+0.37
11	-0.08	-0.45	-0.19	-0.95
12	+0.01	+0.07	-0.00	-0.05

d is $ACAR_{lt}$ - $ACAR_{wt}$. t is the t statistics. Month is the month of the year.

I have done 767 tests according to the second procedure(difference between the means of two samples).The results of these tests are detailed in Appendix 1.

From that point, DF1, DF2 and DF3 will show the difference between loser and winner portfolios' returns in the first, second and third months of the test periods respectively.

Table 2. Summary of DF1(2,3) observations

FORMATION PERIOD	DF1	t1	DF2	t2	DF3	t3
1	0.021	0.32	0.019	0.31	-0.010	-0.14
2	0.036	0.45	-0.004	-0.06	-0.014	-0.17
3	0.018	0.25	-0.005	-0.07	-0.015	-0.18
4	0.014	0.16	-0.019	-0.03	-0.025	-0.21
5	0.015	0.21	-0.014	-0.20	-0.016	-0.22
6	0.003	0.01	-0.015	-0.21	-0.025	-0.31
7	-0.004	-0.01	-0.016	-0.22	-0.022	-0.33
8	-0.003	-0.01	-0.011	-0.16	-0.015	-0.22
9	0.000	0.00	-0.015	-0.23	-0.025	-0.31
10	0.004	0.01	-0.020	-0.30	-0.025	-0.34
11	0.006	0.01	-0.017	-0.28	-0.036	-0.50
12	0.001	0.01	-0.027	-0.35	-0.038	-0.51

Table 2 summarizes the whole 767 tests as the averages of DF1, DF2, and DF3 for each formation period. DF1 means the "Difference between the loser and winner portfolios' gains in the first month of the test period" and others are for the second and the third months. "t" s represent the t values of the corresponding differences.

On the average, DF1, as shown by the summary of 767 experiments, is not significantly different from zero(Table 2).One thing interesting about DF2 is that, its average is positive (0.019) only for the formation period of 1 month(Table 2).

For DF1, formation periods 1,2,3,4 and 5 months, if observed alone, are more positive. What is more interesting is that, if the first 5 formation period results are investigated alone, their average is as large as 0.02, but it is still economically insignificant, because the value is only 2%, which can easily be eroded by transaction costs (Table 2).

DF3 is always negative for all formation periods .

Although not statistically significant, it is observed that, as the length of formation period increases, DF3 becomes more negative. DF1 and DF2 also show a decreasing trend as length of formation period increases, but this observation is also insignificant (Table 2).

If DF1, DF2 or DF3 happens to be January, they are observed to be more positive, so this case is separately investigated in detail. No other months show such significant behavior(Table 3).

Table 3. January values of the differences

FORMATION PERIOD	DIF1	t1	DIF2	t2	DIF3	t3
1	0.106	1.41	0.087	0.96	0.076	0.98
2	0.153	1.63	0.042	0.61	0.086	1.12
3	0.165	1.75	0.129	1.41	0.094	1.15
4	0.205	2.34	0.123	1.37	-0.003	-0.05
5	0.226	2.56	0.051	0.71	-0.027	-0.41
6	0.117	1.32	-0.005	0.08	-0.028	-0.44
7	0.034	0.54	-0.002	0.00	-0.058	-0.61
8	0.046	0.65	0.030	0.07	-0.017	-0.25
9	0.052	0.73	0.017	0.21	-0.014	-0.19
10	0.117	1.43	0.047	0.63	0.001	0.01
11	0.164	1.91	0.037	0.56	-0.013	-0.17
12	0.154	1.87	0.049	0.71	-0.073	-0.96
15	0.089	0.97	0.082	0.98	-0.015	-0.21
18	0.187	2.01	0.129	1.43	0.021	0.36
24	0.164	1.93	-0.057	0.79	-0.062	-0.73
36	0.034	0.51	-0.003	0.06	0.001	0.03

DIF1(2,3) is the difference between the loser and winner portfolios' gains in the 1(2,3). months of the test periods.t1(2,3) is the t value of the difference DIF1(2,3).

To lead the investors, I have found out the best formation periods for each of the months(different from January). As to give an example, if the next month is August, it is statistically best to form your portfolio based on a 2 months formation period (Table 4).

Table 4.Best formation periods for the first *months of the test periods*

BESTS OF EACH FIRST MONTH IN TEST PERIODS	FORMATION PERIOD	DIF1	t1
FEBRUARY	1	0.154	1.13
MARCH	1	0.023	0.31
APRIL	6	0.038	0.42
MAY	3	0.017	0.21
JUNE	2	0.044	0.63
JULY	7	0.022	0.31
AUGUST	2	0.037	0.53
SEPTEMBER	9	0.077	0.91
OCTOBER	1	0.043	0.67
NOVEMBER	2	-0.008	0.09
DECEMBER	12	0.043	0.67

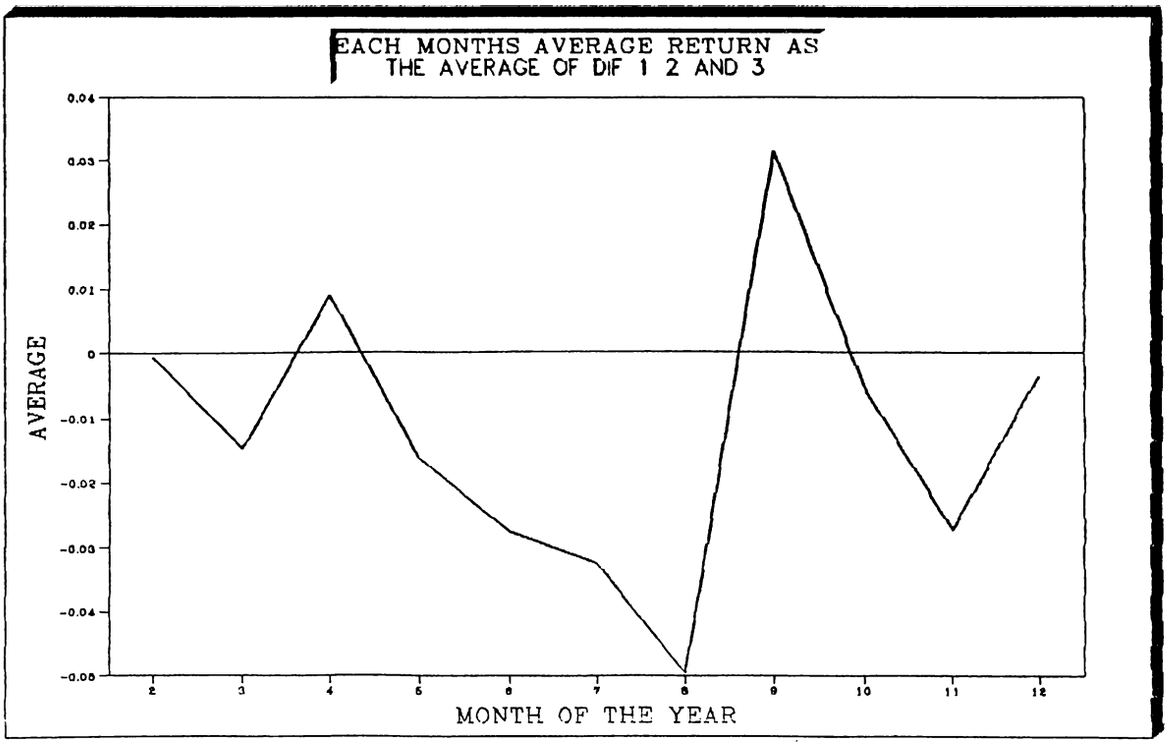
DIF1 is the expected gain over the winner portfolio's gain. "t1" s are the t values of these differences. *Only DIF1 s are shown, because DIF2* and DIF3 are more insignificant and are usually negative.

Average of DIF1,DIF2 and DIF3 for all months different from January are investigated (Figure 1, Figure 2).

It is observed that all the averages(average of DIF1, 2 and 3) for specific months are all negative, but they are not significantly different from zero. Only positive value is for September.

One interesting observation is the average of DIF1, 2 and 3 for each formation period(Figure 2). The only positive value so calculated is one month formation period, which is not significantly different from zero either.

Figure 1

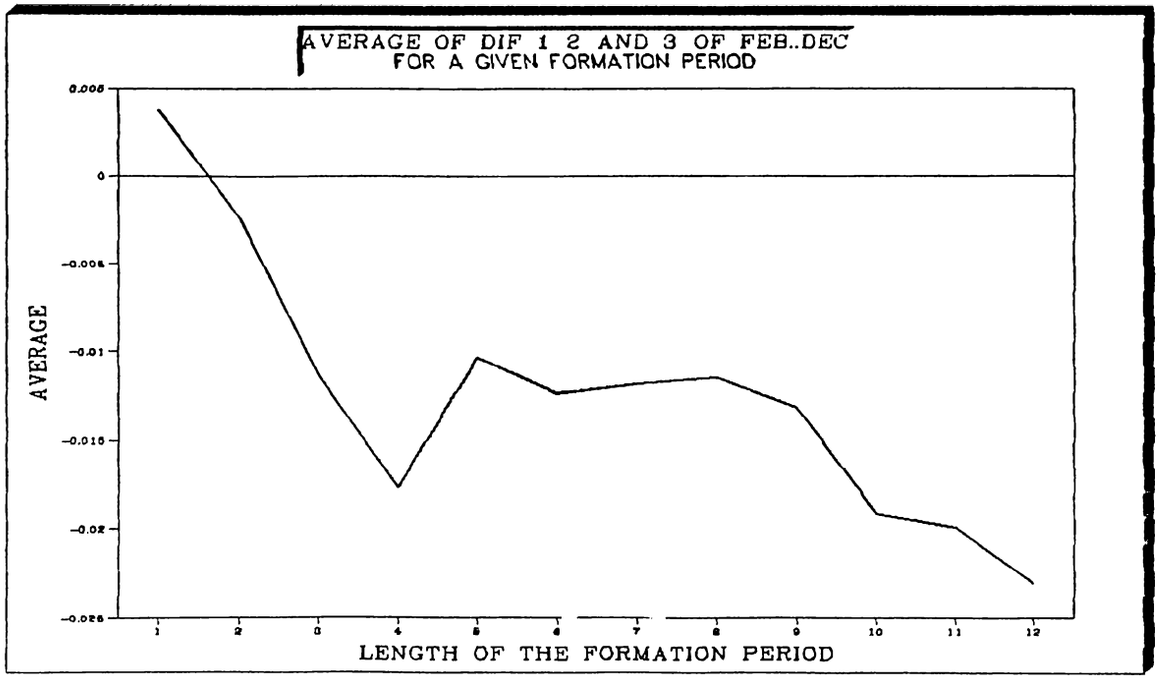


For each month of the year, average of all the DF1, DF2 and DF3 s that happen to be that month are averaged. T values of these averages are low (between 0.4 to -0.6). The pattern of the figure is important here.

Months June, July and especially August have the more negative values (Figure 1).

November, in most of the observations, is another local minimum where April is usually a local maximum.

Figure 2



For each of the formation period, average of all the DF1, DF2 and DF3 s are found. T values of these averages range from 0.05 to -0.36, which are not statistically significant. The pattern of the figure is important. Formation periods longer than 12 months are not shown here, because they have much less significance compared to the above periods.

What we can tell about Figure 2 is that, it is almost consistently decreasing, even though has a local maximum at "5 months formation period". Between 5 months and 9 months of formation periods, the average is almost constant.

Figure 3

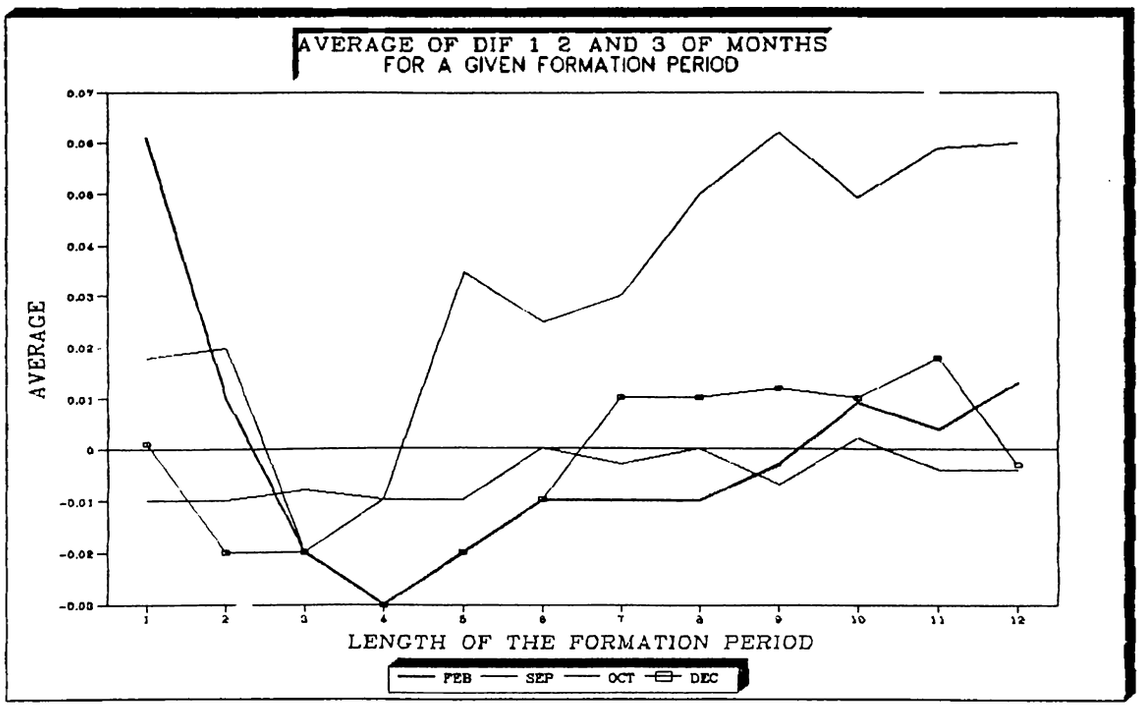


Figure 4

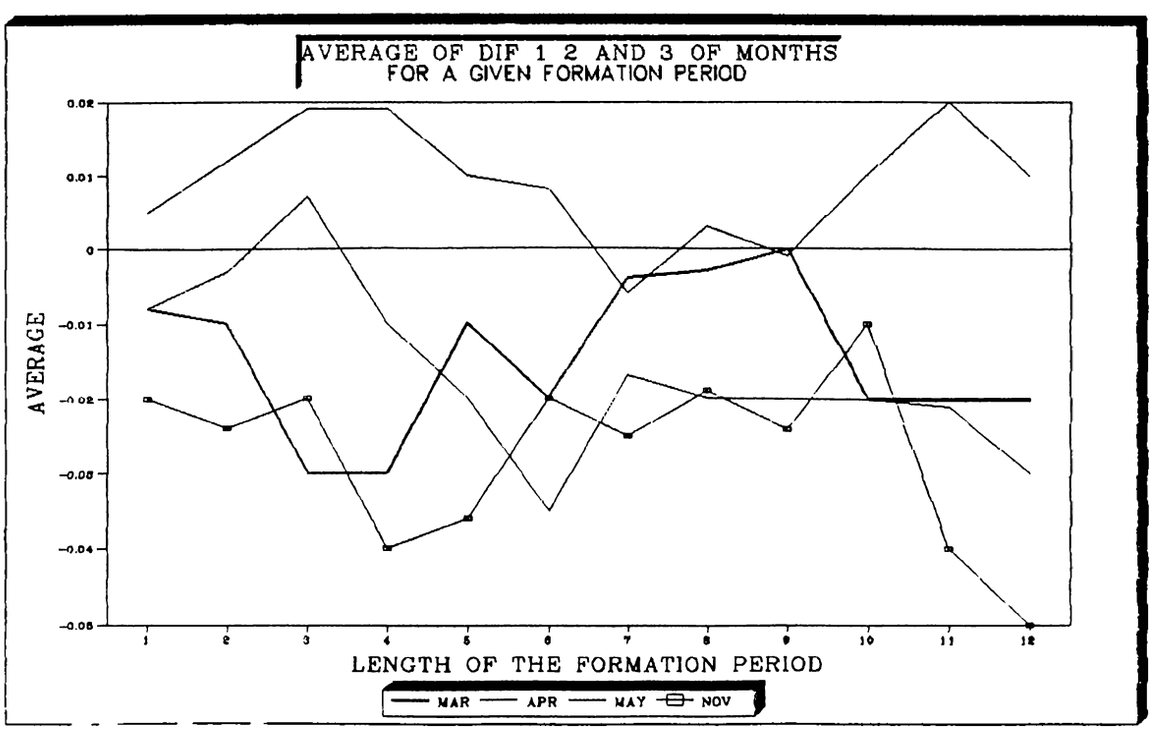
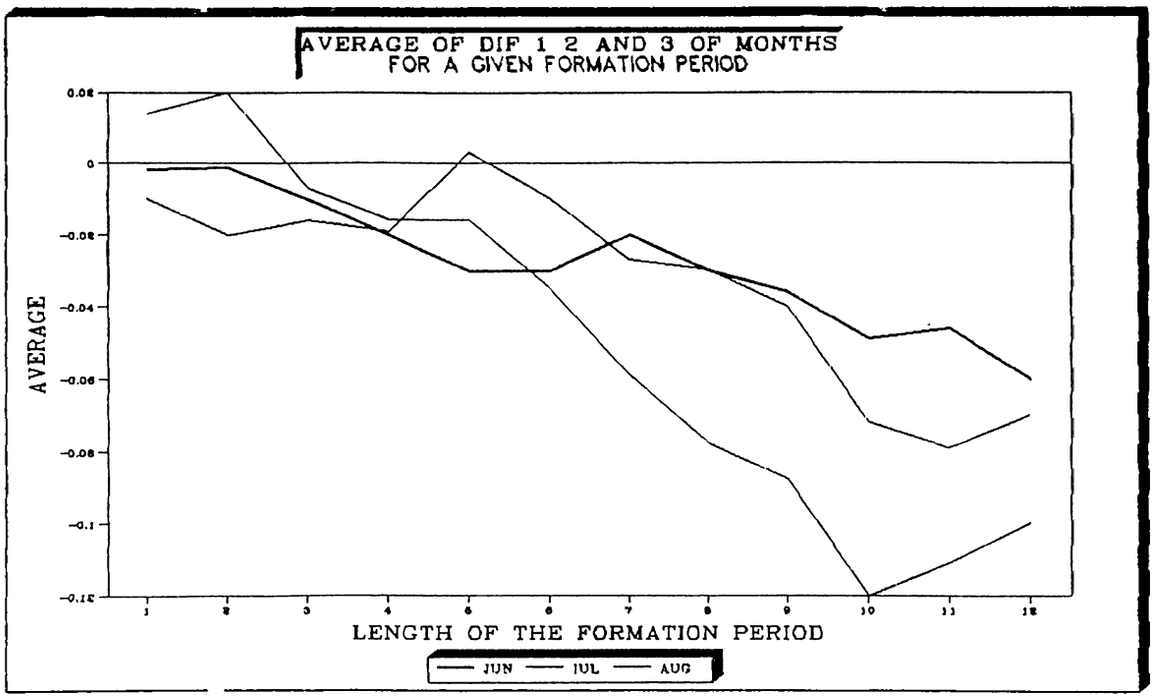


Figure 5



In figures ,Figure 3/4/5, groups of months are analyzed together to see the reason under their similarities. T values are low. The patterns of the figures are important.

March, April, May and November form a group, they share a similar pattern as can be seen from Figure 4, and have similar values in Figure 1. All the four graphs of those months show a cyclic pattern but no trend. Their residual average gains are not dependent on the length of the formation period.

February, September, October and December form another group. Their values in Figure 1 are similar and are mostly very near to zero. Their patterns in Figure 3 are also similar. An increase follows a sharp decrease in those graphs, so average gain is sensitive to the length of the formation period.

June, July and August form another group. They have the lowest values in the Figure 1 and they share a similar pattern in Figure 5. They have a decreasing trend in those graphs(Figure 5), and are again sensitive to the length of the formation period.

Although there is a grouping between months of the year, this effect is not statistically significant.

The tables in Appendix 1 are the summaries of the secondary method's results.As can be seen from those Tables, BW/BL is not significantly different from zero.There is no relation between the BW/BL and the DIF1, 2 or 3.

5. Conclusion

The existence of Winner-Loser effect is investigated for common stocks traded in Istanbul Stock Exchange for the period January 1988-December 1992. Two different methods are implemented for this purpose.

First method is the original method used by Bondt&Thaler(1985) for the CRSP data in the investigation of the presence of Winner-Loser effect. Second method looks for the difference between the gains of loser and winner portfolios in the test period. In both of the methods, extreme winners in the formation period form the winner portfolio and extreme losers form the loser portfolio. In the test period, which is just after the formation period, the difference between the gains of these portfolios are tracked.

The results obtained in this study can be summarized as :

1. Loser portfolios outperform the winner portfolios in the first month of the test period.
2. If the first month of the test period is January, the overreaction effect is emphasized.
3. January, by itself, is enough to see the overreaction.

As seen from the summary, I saw an interesting January effect in test results. This effect was also seen by other researchers. They have tied it to the taxation. A similar reasoning can be said for our case too. As the "sell" pressures increase for the prior winners, their prices have a decreasing trend and changing those with the prior losers will increase the losers' prices.

Both of the above pressures will force the prior losers to win the game for a time, but after a moment, like 4 months, market adjusts as turning to the prior winners again.

No other months of the year have such a significant effect. Months after January are not sensitive(most of them) to the length of the formation period.

Another important observation was the first month effect, which was more insignificant then the January effect. Actually I was after that effect in the beginning but it turned out to be not that much significant. Still there is a weak overreaction here.

The explanation here is a little bit different from the January effect case. The investor who owns the winner papers, always feels the risk of turning down and loosing the gain suddenly and wants to realize his/her gain. At that moment a "sell" pressure is felt and the prices will fall down, which will force him/her to think that "I was right to think that the prices will fall, they did!". We can also add to that by seeing that the market is not totally independent of the investor. Every investor take impulses from every other investor. This can be thought as a beauty contest where you have to choose the one whom everybody will like, but not your favorite. In such a case, when something is not expected to happen, but since it has been said now, everyone begins to think about it and become waiting for an impulse that can be linked to it. At that time investors act in the 'talked' direction as everybody does and what you have said becomes a fact.

CAPM betas can not explain these observations. One should also check this results with what we are really after. Our main question was about overreaction, and if it was present.

It is not, in the long-term sense, but we can see it in the short-terms, as 3 months, and this makes it deserve the necessary attention, because it can be economically significant under the conditions explained above.

When talking about economical significance I should also note that, the results are not truly statistically significant, which implies extra risk that the investor should carry if he is to use the method outlined above.

The results could be significant if the data was wider, and the tests done here are not that independent, which all decrease the significance level.

Anyway, I can conclude by saying that, if we are after the market mechanisms, we should deal more about the investors themselves, not the solid numbers only. Culture and psychology can add much more to our knowledge about those mechanisms. As seen from the results, the overreaction takes place in five months period in Turkey, but in the other countries it can be as large as years.

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Appendix 1

This appendix holds the summary of the test results of the "Difference of the means of two samples" procedure. There are 17 tables showing the results of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 18, 24, 36 and 48 months formation period tests.

The first line shows the length of the formation period.

ST MON means "starting month of the formation period". First month is the January of 1988.

BW/BL is the winner portfolio beta divided by the beta of the loser portfolio. These betas are equally weighted portfolio betas.

T1,T2 and T3 mean the t values of DIF1, 2 and 3 respectively with a significance of $\alpha=0.05$.

PERFORMANCE DURING 1 MONTH							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	0.998	0.074	2.237	-0.056	-1.728	-0.056	-1.218
2	0.725	-0.018	-0.733	-0.018	-0.371	0.041	0.935
3	1.177	0.003	0.067	-0.020	-0.392	-0.010	-0.226
4	2.138	-0.061	-1.516	-0.017	-0.392	0.053	1.150
5	1.542	0.094	2.351	0.012	0.285	0.074	1.402
6	0.600	0.032	0.894	-0.011	-0.262	0.023	0.371
7	1.564	0.082	1.213	-0.063	-1.109	0.001	0.020
8	0.410	0.009	0.161	-0.026	-0.547	-0.140	-2.150
9	1.060	0.048	1.065	-0.090	-1.133	-0.022	-0.730
10	0.772	-0.044	-0.618	0.078	1.845	0.058	1.532
11	0.790	-0.055	-1.380	-0.042	-0.666	0.001	0.014
12	0.594	-0.121	-2.006	-0.054	-1.247	0.027	0.488
13	0.798	0.027	0.523	0.010	0.225	0.085	2.071
14	0.819	-0.005	-0.125	0.063	1.242	-0.018	-0.237
15	0.987	0.026	0.490	-0.055	-0.743	-0.057	-0.591
16	2.780	-0.078	-1.195	0.036	0.378	0.107	2.323
17	1.555	0.018	0.234	0.065	1.416	0.112	0.923
18	1.149	0.114	2.554	0.185	1.649	-0.057	-0.281
19	0.616	-0.019	-0.174	0.472	2.690	-0.285	-3.753
20	0.967	0.047	0.466	-0.045	-0.621	0.060	0.949
21	1.490	0.192	2.184	0.057	0.548	-0.117	-1.391
22	0.462	-0.163	-1.581	0.076	0.779	0.051	0.272
23	0.580	0.088	0.831	0.091	0.630	-0.168	-2.176
24	1.414	0.198	0.956	0.093	0.306	-0.037	-0.709
25	0.655	0.633	2.059	-0.123	-2.182	0.152	1.850
26	1.156	0.037	0.537	-0.155	-1.767	0.036	0.476
27	1.258	-0.076	-0.932	0.139	2.014	0.089	1.434
28	1.702	0.017	0.249	0.044	0.697	-0.186	-1.861
29	1.027	-0.017	-0.473	-0.079	-0.676	0.057	1.442
30	1.601	-0.267	-2.338	-0.010	-0.202	-0.054	-1.161
31	1.744	-0.010	-0.251	-0.108	-2.593	-0.044	-1.205
32	0.894	-0.029	-0.457	0.045	1.300	-0.000	-0.002
33	1.086	-0.080	-1.093	0.076	2.218	0.003	0.105
34	0.717	-0.024	-0.678	0.031	0.925	0.097	1.202
35	1.041	-0.015	-0.488	0.274	3.797	0.096	0.980
36	0.830	0.306	4.658	0.080	0.996	0.039	0.939
37	0.734	-0.064	-0.785	-0.001	-0.017	0.090	3.536
38	0.605	-0.027	-0.646	0.063	2.245	-0.023	-0.548
39	0.710	-0.018	-0.551	-0.014	-0.331	0.005	0.162
40	0.918	0.087	2.081	0.026	0.798	-0.070	-2.055
41	0.515	-0.010	-0.323	0.015	0.409	-0.117	-3.246
42	0.656	0.029	0.780	0.028	0.631	0.012	0.183
43	0.486	0.027	0.663	0.017	0.293	-0.045	-1.246
44	0.953	-0.002	-0.043	0.012	0.330	-0.229	-2.915
45	1.165	0.081	2.020	0.078	0.959	0.029	0.747
46	0.647	-0.059	-0.688	-0.075	-1.873	0.175	3.237
47	1.739	-0.000	-0.004	0.112	2.021	0.045	1.222
48	1.142	0.150	2.683	0.054	1.335	-0.071	-1.868
49	1.090	0.101	3.313	-0.038	-0.989	0.016	0.377
50	0.597	0.130	3.675	-0.075	-1.637	-0.113	-2.693
51	1.623	-0.021	-0.512	-0.024	-0.516	-0.212	-4.819
52	0.914	-0.040	-0.868	-0.056	-1.048	-0.116	-2.660
53	0.833	0.029	0.502	0.016	0.373	-0.034	-0.772
54	1.418	0.012	0.270	-0.050	-1.256	0.023	0.504
55	0.870	-0.091	-1.312	0.038	0.860	0.008	0.253
56	0.874	-0.043	-0.849	-0.016	-0.519	0.038	1.377
57	0.707	-0.024	-0.549	0.037	1.359	0.004	0.064
AVERAGE	1.033	0.021	0.290	0.019	0.188	-0.010	-0.140
STDS	0.455	0.121	1.452	0.097	1.301	0.094	1.676

PERFORMANCE DURING 2 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	4.492	-0.056	-1.639	-0.112	-2.266	-0.053	-1.426
2	0.894	-0.027	-0.581	-0.009	-0.178	-0.034	-0.690
3	2.059	-0.007	-0.142	-0.043	-1.049	-0.022	-0.707
4	2.407	0.042	0.945	0.052	1.221	0.063	2.365
5	0.895	0.030	0.533	0.100	1.445	0.019	0.310
6	0.795	0.013	0.190	-0.050	-0.894	0.017	0.411
7	0.828	-0.013	-0.203	-0.006	-0.129	-0.036	-0.437
8	0.645	0.013	0.241	-0.243	-3.544	-0.095	-2.780
9	0.740	-0.145	-1.520	0.006	0.132	0.127	2.133
10	0.759	-0.059	-1.519	-0.035	-0.512	-0.034	-0.770
11	0.703	-0.050	-0.788	-0.068	-1.446	0.073	1.549
12	0.375	-0.034	-0.743	0.026	0.494	0.080	1.776
13	0.855	0.021	0.433	0.049	1.152	0.126	1.490
14	0.953	0.012	0.229	0.057	0.766	-0.097	-1.490
15	2.073	-0.042	-0.560	-0.015	-0.216	0.016	0.327
16	1.914	0.065	1.001	0.063	1.247	-0.019	-0.216
17	1.171	0.150	3.343	0.170	1.448	-0.336	-2.337
18	0.889	0.175	1.590	0.282	1.642	-0.074	-0.826
19	0.755	0.461	2.481	-0.188	-2.108	-0.079	-1.289
20	1.344	0.196	2.451	0.184	3.084	-0.205	-2.304
21	1.041	-0.009	-0.083	-0.127	-1.288	0.185	0.888
22	0.380	0.075	0.753	-0.149	-1.351	0.006	0.057
23	0.787	0.270	1.352	-0.185	-2.068	0.019	0.323
24	0.706	0.390	1.167	-0.164	-3.297	0.016	0.199
25	0.445	-0.060	-0.864	0.100	1.673	0.067	0.726
26	1.047	-0.066	-0.706	0.151	2.036	0.050	1.242
27	1.668	0.031	0.377	0.119	1.943	-0.114	-1.028
28	1.599	0.054	0.849	-0.131	-0.977	0.005	0.110
29	0.833	-0.143	-1.581	0.028	0.693	-0.124	-2.575
30	1.872	-0.037	-0.718	-0.048	-1.137	-0.001	-0.027
31	1.365	-0.095	-1.452	-0.032	-0.987	0.061	2.019
32	1.271	-0.009	-0.265	0.007	0.224	0.001	0.029
33	0.833	0.020	0.540	0.040	1.277	0.035	0.393
34	0.888	-0.006	-0.158	0.181	2.224	-0.026	-0.234
35	0.791	0.367	5.423	0.080	0.751	0.036	0.881
36	1.382	-0.035	-0.333	0.044	1.159	0.071	3.103
37	0.748	-0.005	-0.116	0.110	4.531	-0.171	-4.733
38	0.608	0.046	1.582	-0.036	-0.801	0.029	0.911
39	0.711	0.048	1.038	0.008	0.273	-0.054	-1.440
40	0.631	0.045	1.686	-0.044	-1.128	-0.040	-0.986
41	0.534	-0.007	-0.172	-0.013	-0.292	0.104	2.501
42	0.595	0.038	0.873	-0.004	-0.106	-0.074	-1.740
43	0.787	0.060	1.068	-0.027	-0.680	-0.183	-2.190
44	1.011	0.014	0.357	-0.111	-1.399	0.047	1.214
45	0.607	0.091	1.125	-0.033	-0.856	0.086	1.523
46	0.995	-0.007	-0.175	0.215	4.011	-0.037	-1.189
47	1.168	0.182	3.081	0.058	1.361	-0.148	-3.679
48	1.515	0.159	5.286	-0.044	-1.018	-0.010	-0.236
49	0.764	0.035	0.997	-0.014	-0.278	-0.082	-1.829
50	0.989	-0.070	-1.616	-0.096	-2.135	-0.053	-0.982
51	1.248	-0.042	-0.896	-0.200	-3.963	-0.052	-1.116
52	0.759	0.015	0.244	-0.105	-2.166	-0.065	-1.522
53	1.271	0.005	0.119	-0.056	-1.151	0.053	1.295
54	1.542	-0.001	-0.027	0.040	0.915	0.040	1.134
55	0.799	-0.039	-0.823	-0.055	-1.835	0.043	1.502
56	0.650	-0.007	-0.187	0.036	1.354	0.052	0.929
AVERAGE	1.078	0.037	0.419	-0.004	-0.075	-0.014	-0.168
STDS	0.645	0.118	1.483	0.108	1.740	0.091	1.607

PERFORMANCE DURING 3 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.335	-0.075	-1.506	-0.042	-1.112	0.065	1.461
2	1.261	0.019	0.378	-0.071	-1.517	0.002	0.046
3	1.939	0.007	0.157	0.013	0.369	0.082	2.273
4	1.273	0.079	1.502	0.058	1.302	0.078	1.329
5	1.100	0.049	0.688	-0.055	-0.862	-0.010	-0.211
6	0.616	-0.032	-0.517	0.056	1.219	-0.111	-1.604
7	0.962	0.032	0.748	-0.201	-2.685	-0.036	-1.135
8	0.570	-0.204	-2.290	-0.018	-0.434	0.143	1.735
9	0.663	-0.084	-2.090	-0.024	-0.352	-0.070	-1.468
10	0.691	-0.063	-0.933	-0.033	-0.743	0.031	0.603
11	0.553	-0.015	-0.333	0.032	0.694	0.032	0.636
12	0.566	-0.008	-0.167	0.061	1.193	0.101	1.099
13	0.826	0.022	0.448	0.112	1.348	-0.126	-1.701
14	1.684	0.034	0.429	-0.008	-0.129	0.008	0.175
15	1.916	0.077	1.162	0.055	1.068	0.020	0.271
16	1.797	0.200	4.558	0.039	0.465	-0.254	-2.401
17	1.193	0.146	1.223	-0.141	-1.420	-0.096	-1.486
18	0.788	0.251	1.360	-0.090	-0.954	0.035	0.617
19	1.144	0.035	0.490	0.098	1.683	-0.156	-1.547
20	0.729	0.125	2.245	-0.185	-1.879	0.173	0.780
21	0.649	0.013	0.139	0.318	1.678	-0.125	-1.285
22	0.782	0.394	2.664	-0.238	-2.715	-0.049	-0.659
23	0.665	0.107	1.285	-0.149	-2.569	0.037	0.557
24	0.511	-0.152	-2.199	-0.016	-0.181	0.097	1.358
25	0.839	0.067	0.806	0.179	1.883	-0.089	-1.447
26	1.306	0.114	1.457	0.089	1.309	-0.115	-0.966
27	1.504	0.097	1.550	0.078	0.495	0.002	0.038
28	1.688	-0.212	-2.074	-0.047	-1.133	-0.072	-1.274
29	1.742	-0.025	-0.607	-0.112	-2.276	0.022	0.821
30	1.515	-0.105	-1.461	0.010	0.309	0.094	2.812
31	1.636	-0.020	-0.560	0.092	2.658	0.073	1.646
32	1.080	-0.014	-0.469	-0.030	-0.836	0.042	0.468
33	0.953	0.026	0.836	0.182	1.900	-0.156	-1.348
34	0.618	0.292	3.321	-0.023	-0.198	0.072	1.454
35	1.896	0.062	0.691	0.027	0.624	0.067	2.499
36	1.288	0.008	0.236	0.068	2.531	-0.148	-3.477
37	0.632	0.090	2.955	-0.160	-3.686	-0.057	-1.920
38	0.616	-0.017	-0.410	0.036	1.216	0.024	0.666
39	0.398	0.040	1.447	-0.047	-1.265	0.007	0.158
40	0.397	-0.071	-1.835	0.023	0.531	0.053	1.385
41	0.593	-0.017	-0.360	0.032	0.798	-0.051	-1.288
42	0.673	-0.060	-0.906	-0.033	-0.762	-0.207	-2.488
43	1.055	0.021	0.530	-0.036	-0.442	0.042	1.044
44	0.938	-0.113	-1.423	-0.008	-0.195	0.116	1.944
45	1.089	-0.023	-0.602	0.174	2.952	-0.036	-1.076
46	0.991	0.206	3.450	0.013	0.345	-0.126	-3.006
47	1.168	0.141	3.607	-0.159	-3.923	-0.008	-0.149
48	0.683	-0.008	-0.199	-0.007	-0.137	-0.052	-1.170
49	0.951	-0.051	-1.027	-0.066	-1.382	-0.065	-1.187
50	0.850	-0.063	-1.399	-0.111	-1.955	-0.124	-2.623
51	1.072	-0.179	-3.151	-0.060	-1.264	-0.128	-3.426
52	1.223	-0.075	-1.533	-0.056	-1.101	0.049	1.129
53	1.269	-0.047	-0.954	0.042	1.026	0.042	1.172
54	1.276	0.027	0.549	-0.012	-0.324	0.001	0.024
55	0.696	-0.031	-0.861	0.045	1.704	0.001	0.021
AVERAGE	1.034	0.019	0.201	-0.006	-0.130	-0.015	-0.184
STDS	0.420	0.114	1.633	0.102	1.560	0.092	1.542

PERFORMANCE DURING 4 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.002	-0.016	-0.318	0.054	1.166	-0.051	-0.963
2	1.185	-0.013	-0.282	-0.019	-0.547	0.055	1.290
3	1.048	-0.055	-1.289	0.043	0.936	0.042	0.623
4	1.518	0.042	1.238	0.011	0.244	-0.024	-0.519
5	0.736	-0.051	-0.843	0.016	0.364	-0.191	-2.532
6	0.738	0.063	1.747	-0.239	-3.528	-0.096	-3.988
7	0.878	-0.187	-2.537	-0.028	-0.617	0.096	1.250
8	0.617	-0.064	-1.514	-0.058	-0.748	-0.047	-1.050
9	0.625	-0.058	-0.829	-0.088	-1.947	-0.013	-0.270
10	0.682	-0.051	-1.068	0.019	0.358	-0.026	-0.526
11	0.617	0.052	1.145	-0.007	-0.123	0.002	0.019
12	0.687	0.049	0.932	0.073	0.805	-0.035	-0.309
13	1.248	0.087	0.958	-0.099	-1.339	0.073	1.341
14	1.856	0.004	0.065	0.044	0.851	0.010	0.121
15	1.454	0.167	3.552	0.027	0.314	-0.188	-1.600
16	1.594	0.010	0.124	-0.021	-0.135	-0.100	-1.685
17	0.695	0.035	0.287	-0.212	-3.081	-0.012	-0.168
18	0.946	0.074	0.812	0.135	2.365	-0.045	-0.468
19	0.709	0.054	1.041	-0.141	-1.465	0.055	0.290
20	0.579	-0.073	-0.677	0.379	1.873	-0.098	-1.207
21	0.674	0.574	3.033	-0.201	-1.909	-0.065	-0.857
22	0.349	0.161	1.338	-0.168	-2.276	0.103	1.046
23	0.430	-0.117	-1.594	-0.098	-0.962	0.033	0.404
24	0.449	0.031	0.340	0.072	0.884	-0.014	-0.368
25	0.966	0.070	0.712	0.002	0.052	0.051	0.421
26	1.384	0.037	0.516	-0.142	-1.151	-0.061	-1.231
27	1.432	-0.108	-0.948	-0.101	-2.127	-0.106	-1.830
28	1.542	-0.047	-1.088	-0.070	-1.346	0.047	1.256
29	1.646	-0.153	-1.985	0.049	1.555	0.132	4.148
30	1.801	-0.003	-0.082	0.112	3.477	0.028	0.643
31	1.484	0.069	2.354	0.064	1.403	-0.302	-3.975
32	1.264	-0.036	-1.064	0.140	1.440	-0.094	-0.940
33	0.638	0.312	3.397	-0.096	-0.858	0.064	1.267
34	1.675	-0.020	-0.178	0.069	1.387	0.025	1.214
35	1.298	0.007	0.195	0.079	2.858	-0.128	-3.049
36	1.044	0.088	2.755	-0.164	-3.831	-0.040	-1.184
37	0.790	-0.152	-3.471	-0.044	-1.433	0.036	0.955
38	0.444	0.024	0.848	-0.003	-0.072	-0.015	-0.365
39	0.407	-0.060	-1.633	-0.017	-0.359	0.081	2.408
40	0.410	0.073	1.717	0.027	0.782	-0.100	-2.245
41	0.561	0.058	1.513	-0.047	-1.155	-0.227	-2.572
42	0.974	0.023	0.539	-0.143	-1.777	0.009	0.198
43	0.955	-0.118	-1.449	-0.037	-0.822	0.135	2.217
44	1.074	0.006	0.145	0.158	2.771	-0.038	-1.088
45	0.996	0.200	3.203	-0.016	-0.444	-0.109	-2.646
46	1.210	0.065	1.685	-0.142	-3.468	0.020	0.486
47	1.121	-0.078	-2.006	0.069	1.401	-0.024	-0.474
48	1.117	-0.035	-0.719	-0.057	-1.120	-0.149	-2.931
49	1.022	-0.041	-0.786	-0.107	-1.904	-0.085	-1.811
50	0.779	-0.064	-1.010	-0.117	-2.549	-0.114	-2.979
51	1.241	-0.019	-0.327	-0.094	-2.393	0.080	1.838
52	0.977	-0.053	-1.017	0.033	0.697	0.056	1.677
53	1.155	0.050	1.108	0.013	0.394	0.014	0.431
54	0.962	-0.047	-1.342	0.026	0.986	-0.050	-0.766
AVERAGE	0.994	0.014	0.134	-0.020	-0.299	-0.026	-0.390
STDS	0.391	0.118	1.552	0.108	1.683	0.090	1.660

PERFORMANCE DURING 5 MONTHS							
ST MON	BW/BL	DF1	T1	DF2	T2	DF3	T3
1	0.871	0.083	1.831	0.000	0.006	0.137	3.714
2	0.878	-0.015	-0.331	0.099	1.834	0.091	1.185
3	1.391	0.022	0.760	-0.019	-0.423	-0.019	-0.378
4	1.060	-0.028	-0.436	0.021	0.468	-0.155	-2.300
5	0.968	0.026	0.654	-0.174	-2.194	-0.043	-1.316
6	0.718	-0.208	-2.436	-0.041	-0.988	0.113	1.740
7	0.860	-0.046	-1.146	0.031	0.768	-0.028	-0.578
8	0.649	-0.093	-1.252	-0.069	-1.368	-0.002	-0.044
9	0.615	-0.101	-2.100	0.005	0.089	-0.001	-0.016
10	0.561	0.023	0.448	0.016	0.304	0.012	0.136
11	0.608	0.068	1.219	0.016	0.185	0.074	0.627
12	1.059	0.068	0.740	-0.066	-0.923	0.011	0.188
13	1.585	-0.027	-0.358	0.077	1.357	-0.084	-0.982
14	1.580	0.137	2.785	0.043	0.509	-0.004	-0.026
15	1.410	0.035	0.439	0.105	0.682	-0.045	-0.749
16	1.258	0.149	0.983	-0.045	-0.690	0.065	0.949
17	0.804	-0.066	-0.985	0.034	0.898	-0.067	-0.695
18	0.672	0.040	0.907	-0.069	-0.690	-0.035	-0.140
19	0.722	-0.044	-0.378	0.271	1.796	-0.066	-0.765
20	0.805	0.746	3.784	-0.156	-1.782	-0.025	-0.356
21	0.515	0.132	1.253	-0.110	-1.538	-0.156	-1.486
22	0.372	-0.080	-1.024	0.020	0.243	0.047	0.568
23	0.427	0.002	0.025	0.040	0.506	-0.043	-0.960
24	0.429	0.077	0.964	0.013	0.272	0.030	0.292
25	1.004	0.010	0.214	0.030	0.235	-0.076	-1.606
26	1.289	-0.145	-1.214	-0.077	-1.707	0.049	0.892
27	1.567	-0.070	-1.530	-0.073	-1.278	0.031	0.776
28	1.401	-0.075	-1.450	0.029	0.812	0.126	3.997
29	1.708	0.015	0.485	0.123	3.702	0.078	1.737
30	1.838	0.089	2.745	0.038	0.861	-0.329	-4.152
31	1.880	0.051	1.175	-0.191	-2.792	-0.075	-0.736
32	0.782	0.260	2.723	-0.032	-0.350	0.109	2.064
33	1.694	0.010	0.095	0.071	1.385	0.058	2.629
34	1.256	0.072	1.464	0.065	2.245	-0.114	-2.359
35	1.056	0.079	2.527	-0.164	-3.378	-0.046	-1.299
36	0.899	-0.125	-2.913	-0.048	-1.446	0.030	0.778
37	0.651	-0.026	-1.009	0.057	1.466	-0.025	-0.558
38	0.479	0.009	0.235	0.027	0.549	0.059	1.755
39	0.351	0.067	1.443	0.034	0.828	-0.116	-2.737
40	0.629	0.078	2.240	-0.076	-1.576	-0.219	-2.615
41	0.770	-0.049	-1.021	-0.183	-2.170	0.007	0.146
42	0.730	-0.128	-1.598	-0.097	-2.249	0.113	1.833
43	0.985	-0.019	-0.427	0.148	2.704	-0.038	-1.050
44	0.946	0.222	3.594	-0.020	-0.568	-0.091	-2.155
45	1.231	0.067	1.779	-0.157	-3.853	0.012	0.257
46	1.111	-0.101	-2.562	0.045	0.898	-0.017	-0.332
47	1.252	-0.010	-0.250	-0.069	-1.641	-0.133	-2.685
48	1.459	-0.058	-1.090	-0.182	-3.447	-0.055	-1.034
49	0.884	-0.077	-1.272	-0.072	-1.535	-0.060	-1.597
50	0.881	-0.039	-0.815	-0.138	-3.212	0.060	1.318
51	0.978	-0.142	-2.985	0.081	1.612	0.042	1.468
52	1.042	0.030	0.614	0.026	0.835	0.023	0.748
53	1.027	-0.053	-1.325	0.014	0.479	-0.059	-0.885
AVERAGE	0.992	0.016	0.117	-0.014	-0.250	-0.016	-0.128
STDS	0.391	0.137	1.623	0.094	1.645	0.089	1.613

PERFORMANCE DURING 6 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	0.879	-0.048	-1.229	0.119	2.573	0.065	0.951
2	1.133	0.022	0.767	-0.021	-0.501	-0.027	-0.643
3	1.276	-0.062	-0.977	0.018	0.349	-0.102	-1.215
4	1.211	0.065	1.636	-0.210	-2.913	-0.031	-1.139
5	1.135	-0.200	-2.411	0.015	0.354	0.146	2.320
6	0.950	-0.060	-1.425	-0.027	-0.349	-0.045	-0.869
7	0.886	-0.027	-0.358	-0.057	-1.056	-0.037	-1.125
8	0.611	-0.064	-1.387	0.020	0.353	0.003	0.055
9	0.599	-0.010	-0.189	0.022	0.413	0.022	0.229
10	0.611	0.003	0.053	-0.020	-0.220	0.064	0.498
11	0.804	-0.050	-0.582	0.141	1.265	0.006	0.123
12	1.415	0.038	0.316	0.034	0.718	-0.103	-1.163
13	1.438	0.164	3.042	-0.022	-0.298	0.023	0.129
14	1.578	0.016	0.202	0.084	0.555	-0.068	-1.080
15	1.316	0.100	0.673	0.022	0.388	0.060	0.822
16	1.237	0.065	1.145	0.088	1.624	-0.097	-1.240
17	0.924	0.062	1.438	-0.058	-0.611	0.001	0.003
18	0.574	-0.055	-0.510	0.176	0.757	0.046	0.438
19	0.637	0.398	2.336	-0.053	-0.459	-0.056	-0.717
20	0.352	0.120	1.065	-0.116	-1.567	-0.178	-1.664
21	0.380	-0.133	-1.741	-0.125	-1.180	0.076	0.955
22	0.453	0.105	1.304	0.043	0.492	-0.114	-1.489
23	0.423	-0.027	-0.327	-0.046	-0.839	-0.202	-1.378
24	0.451	0.034	0.454	-0.096	-0.672	-0.049	-0.926
25	1.275	-0.061	-0.392	-0.101	-2.042	-0.048	-0.898
26	1.524	-0.074	-1.568	-0.019	-0.480	0.024	0.566
27	1.415	-0.043	-0.706	0.041	1.058	0.120	4.512
28	1.949	0.031	0.841	0.144	4.682	0.077	1.481
29	1.316	0.127	3.726	0.098	2.129	-0.324	-3.085
30	1.944	0.054	1.076	-0.302	-3.576	-0.096	-1.213
31	1.165	0.005	0.050	-0.027	-0.319	0.101	2.172
32	1.412	0.015	0.186	0.087	1.647	0.041	1.809
33	1.578	0.100	1.969	0.082	2.944	-0.106	-2.278
34	1.116	0.067	2.134	-0.164	-3.053	-0.018	-0.476
35	1.031	-0.124	-2.702	-0.052	-1.465	0.018	0.435
36	0.863	-0.033	-1.078	0.066	1.604	-0.045	-0.869
37	0.485	0.014	0.377	-0.012	-0.248	0.074	2.088
38	0.394	0.043	0.876	0.028	0.689	-0.069	-1.339
39	0.608	0.081	2.439	-0.094	-2.149	-0.133	-1.459
40	0.723	-0.064	-1.305	-0.158	-1.715	0.027	0.594
41	0.518	-0.171	-1.939	-0.041	-0.894	0.033	0.665
42	0.979	-0.013	-0.264	0.125	1.985	-0.064	-1.462
43	0.864	0.213	3.481	-0.038	-0.943	-0.079	-1.795
44	1.173	0.039	0.980	-0.115	-2.965	0.086	1.663
45	1.094	-0.087	-2.322	0.000	0.006	-0.035	-0.649
46	0.994	0.016	0.367	-0.022	-0.356	-0.210	-4.461
47	1.139	-0.121	-2.154	-0.187	-3.648	-0.025	-0.433
48	1.561	-0.137	-2.677	-0.086	-1.549	-0.082	-2.057
49	1.073	-0.003	-0.061	-0.091	-2.205	0.004	0.095
50	0.805	-0.158	-3.293	0.065	1.185	0.048	1.617
51	1.064	0.056	1.096	0.030	0.989	0.026	0.782
52	0.755	-0.027	-0.698	0.011	0.379	-0.071	-1.057
AVERAGE	1.002	0.004	0.033	-0.015	-0.176	-0.025	-0.253
STDS	0.400	0.103	1.610	0.096	1.676	0.090	1.520

PERFORMANCE DURING 7 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	0.836	0.124	2.556	0.022	0.324	-0.058	-1.186
2	0.971	-0.069	-1.030	-0.008	-0.152	-0.165	-1.932
3	1.189	0.017	0.338	-0.132	-1.564	0.021	0.530
4	1.398	-0.234	-2.776	0.030	0.589	0.085	2.639
5	0.962	-0.010	-0.184	0.053	1.166	-0.053	-1.030
6	0.911	-0.064	-0.832	-0.048	-0.942	-0.002	-0.039
7	0.924	-0.071	-1.441	0.017	0.320	-0.034	-0.657
8	0.606	0.017	0.291	0.014	0.247	0.034	0.360
9	0.646	0.012	0.221	0.022	0.215	0.188	1.157
10	0.715	0.021	0.229	0.079	0.611	0.029	0.600
11	1.085	0.048	0.413	0.009	0.168	-0.181	-1.976
12	1.011	0.190	3.628	-0.058	-0.597	0.002	0.015
13	1.214	-0.044	-0.578	0.169	0.926	-0.021	-0.298
14	1.460	0.036	0.238	0.024	0.372	0.082	1.593
15	1.167	0.064	0.914	0.046	1.266	0.032	0.433
16	0.984	0.067	1.625	-0.022	-0.265	-0.107	-0.417
17	0.703	-0.039	-0.358	0.176	0.744	0.139	1.555
18	0.516	0.163	0.958	0.032	0.254	-0.032	-0.389
19	0.457	0.073	0.618	-0.056	-0.668	-0.118	-1.047
20	0.396	-0.061	-0.810	-0.187	-1.769	0.081	1.021
21	0.377	-0.141	-1.312	0.087	1.093	-0.066	-1.192
22	0.237	0.042	0.453	-0.057	-1.002	-0.157	-1.051
23	0.611	0.031	0.345	-0.262	-1.689	-0.039	-0.614
24	0.337	-0.100	-0.696	-0.110	-2.237	-0.009	-0.161
25	1.213	-0.108	-2.105	-0.004	-0.068	0.060	1.262
26	1.387	-0.011	-0.271	0.002	0.044	0.070	2.021
27	1.338	-0.010	-0.250	0.133	4.422	0.044	0.831
28	1.624	0.132	4.033	0.111	2.217	-0.287	-2.568
29	1.653	0.107	2.366	-0.316	-3.005	-0.114	-1.376
30	1.089	-0.090	-1.137	-0.111	-1.330	0.112	2.421
31	1.714	0.030	0.363	0.068	1.386	0.057	2.158
32	1.401	0.105	2.066	0.063	2.153	-0.096	-1.886
33	1.044	0.097	3.234	-0.163	-3.032	-0.000	-0.008
34	0.905	-0.111	-2.159	-0.014	-0.359	-0.015	-0.376
35	1.190	-0.037	-1.046	0.012	0.302	-0.094	-1.856
36	0.920	0.026	0.625	-0.043	-0.782	0.108	2.650
37	0.533	-0.041	-0.819	0.059	2.477	-0.034	-0.752
38	0.390	0.078	2.061	-0.062	-1.302	-0.195	-1.984
39	0.675	-0.087	-2.048	-0.069	-0.752	-0.040	-0.824
40	0.512	-0.194	-2.487	0.007	0.138	0.017	0.323
41	0.707	-0.008	-0.172	0.073	1.088	-0.007	-0.160
42	0.623	0.162	2.338	-0.046	-1.032	-0.076	-2.159
43	0.793	0.025	0.631	-0.106	-2.596	0.072	1.388
44	0.857	-0.059	-1.527	0.059	1.072	-0.041	-0.720
45	0.760	0.003	0.064	-0.051	-0.877	-0.178	-3.727
46	1.045	-0.093	-1.543	-0.193	-3.501	-0.103	-1.723
47	1.231	-0.136	-2.447	-0.043	-0.738	-0.068	-1.432
48	1.336	-0.002	-0.036	-0.116	-3.240	-0.000	-0.007
49	0.948	-0.107	-2.499	0.028	0.550	0.043	1.340
50	0.886	0.047	0.845	0.027	0.873	0.042	1.258
51	0.914	-0.006	-0.155	0.028	0.925	-0.073	-1.027
AVERAGE	0.929	-0.004	0.014	-0.016	-0.148	-0.022	-0.177
STDS	0.361	0.091	1.599	0.099	1.538	0.094	1.442

PERFORMANCE DURING 8 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	0.779	0.039	0.930	-0.008	-0.161	-0.045	-0.657
2	0.981	-0.023	-0.488	-0.183	-2.109	0.022	0.530
3	1.636	-0.167	-1.718	0.039	0.816	0.171	2.360
4	1.109	-0.031	-0.654	0.029	0.369	-0.007	-0.125
5	0.949	0.011	0.232	-0.040	-0.730	-0.005	-0.080
6	0.734	-0.090	-1.814	0.025	0.445	0.030	0.531
7	0.823	0.020	0.351	0.007	0.136	0.040	0.419
8	0.631	-0.001	-0.019	0.009	0.093	0.032	0.229
9	0.710	0.007	0.070	0.061	0.437	0.059	1.146
10	0.834	0.076	0.616	0.013	0.266	-0.242	-2.987
11	0.849	0.095	1.949	-0.131	-1.384	0.109	0.686
12	0.987	-0.051	-0.645	0.162	0.803	-0.076	-1.139
13	1.039	0.169	0.921	0.018	0.255	0.067	1.229
14	1.524	0.093	1.252	0.114	1.908	-0.022	-0.294
15	0.952	0.057	1.441	0.025	0.294	-0.083	-0.292
16	1.049	0.071	0.854	0.257	0.908	0.126	1.316
17	0.730	0.264	1.136	0.044	0.465	-0.006	-0.078
18	0.432	0.188	1.849	-0.082	-1.054	-0.054	-0.477
19	0.484	-0.030	-0.408	-0.097	-0.813	0.049	0.551
20	0.398	-0.170	-1.513	0.110	1.433	-0.039	-0.420
21	0.498	0.098	1.229	-0.020	-0.341	-0.093	-0.653
22	0.329	-0.049	-0.869	-0.078	-0.407	-0.062	-1.159
23	0.385	-0.258	-1.627	-0.129	-2.391	-0.016	-0.262
24	0.460	-0.078	-1.698	-0.038	-0.636	0.009	0.192
25	1.222	-0.020	-0.333	0.038	0.891	0.065	1.829
26	1.223	-0.041	-1.057	0.061	1.709	0.044	0.811
27	1.605	0.121	3.809	0.051	1.008	-0.164	-1.419
28	1.916	0.090	1.710	-0.284	-2.533	-0.138	-1.464
29	1.326	-0.195	-1.887	-0.120	-1.425	0.121	2.550
30	1.537	-0.070	-0.851	0.092	1.853	0.066	2.692
31	1.389	0.085	1.771	0.050	1.986	-0.124	-2.314
32	1.072	0.069	2.036	-0.148	-2.545	0.021	0.717
33	1.101	-0.107	-2.057	0.011	0.348	0.078	1.780
34	1.150	0.003	0.076	0.006	0.130	-0.153	-3.814
35	1.004	0.027	0.642	-0.051	-0.883	0.115	2.942
36	0.881	0.004	0.062	0.077	2.607	-0.006	-0.150
37	0.603	0.100	3.704	-0.018	-0.428	-0.223	-2.264
38	0.536	-0.007	-0.124	-0.067	-0.679	-0.005	-0.111
39	0.558	-0.150	-1.685	-0.061	-1.218	0.014	0.193
40	0.806	0.003	0.067	0.151	2.289	-0.068	-1.474
41	0.504	0.154	2.173	-0.019	-0.444	-0.092	-2.452
42	0.889	0.023	0.502	-0.124	-2.871	0.065	1.079
43	0.821	-0.055	-1.221	0.065	1.168	-0.061	-1.022
44	0.874	0.026	0.510	-0.073	-1.203	-0.165	-3.019
45	1.070	-0.115	-1.863	-0.196	-3.661	-0.122	-1.974
46	0.870	-0.189	-3.866	-0.091	-1.459	-0.115	-2.376
47	1.009	-0.057	-0.921	-0.074	-1.488	0.079	1.757
48	1.532	-0.100	-2.211	0.022	0.420	0.048	1.538
49	0.951	-0.019	-0.350	0.004	0.118	0.056	1.575
50	0.709	-0.020	-0.542	0.000	0.008	-0.073	-0.977
AVERAGE	0.929	-0.004	-0.011	-0.012	-0.154	-0.015	-0.096
STDS	0.363	0.105	1.535	0.098	1.385	0.093	1.576

PERFORMANCE DURING 9 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	0.860	-0.002	-0.042	0.008	0.095	0.065	1.642
2	0.942	-0.231	-2.505	0.031	0.564	0.193	2.789
3	1.116	0.001	0.022	0.069	1.386	-0.014	-0.241
4	1.025	-0.025	-0.295	-0.030	-0.535	-0.041	-0.824
5	0.871	-0.054	-1.035	0.029	0.488	-0.039	-0.703
6	0.808	0.051	0.941	-0.012	-0.217	0.039	0.391
7	0.991	-0.022	-0.400	-0.024	-0.271	0.060	0.447
8	0.698	0.013	0.128	0.069	0.493	0.060	1.303
9	0.701	0.082	0.627	0.025	0.444	-0.194	-2.627
10	0.700	0.089	1.797	-0.144	-1.433	0.116	0.705
11	0.888	-0.115	-1.272	0.141	0.896	-0.075	-1.083
12	0.740	0.269	1.340	-0.060	-0.897	0.057	0.959
13	1.150	0.165	2.656	0.121	1.587	0.011	0.126
14	0.992	0.063	1.578	0.091	1.016	-0.101	-0.354
15	0.779	0.149	1.771	0.105	0.394	0.149	1.532
16	1.059	0.403	1.569	0.069	0.701	0.029	0.430
17	0.459	0.203	2.197	-0.029	-0.386	0.021	0.306
18	0.340	-0.001	-0.016	-0.124	-1.085	0.052	0.616
19	0.466	-0.178	-1.554	0.147	1.811	-0.169	-2.712
20	0.390	0.143	1.750	0.000	0.000	-0.403	-2.139
21	0.437	-0.019	-0.204	-0.159	-1.008	-0.073	-1.107
22	0.432	-0.161	-1.111	-0.108	-1.968	-0.007	-0.135
23	0.705	-0.084	-1.753	-0.001	-0.024	-0.029	-0.713
24	0.525	-0.012	-0.202	0.004	0.088	0.055	1.431
25	1.032	-0.046	-1.161	0.038	0.978	-0.012	-0.187
26	1.690	0.066	1.740	0.048	0.908	-0.153	-1.247
27	1.652	0.052	1.046	-0.165	-1.404	-0.105	-1.301
28	1.674	-0.254	-2.184	-0.170	-1.708	0.061	1.187
29	1.690	-0.086	-0.993	0.071	1.519	0.060	2.192
30	1.520	0.079	1.515	0.024	0.940	-0.126	-2.371
31	1.387	0.052	1.897	-0.174	-2.925	-0.055	-1.530
32	1.054	-0.097	-1.650	0.016	0.549	0.090	1.857
33	1.241	-0.015	-0.479	0.051	1.226	-0.147	-4.172
34	1.089	-0.009	-0.201	-0.117	-2.246	0.105	2.463
35	1.049	-0.036	-0.628	0.061	2.361	-0.054	-0.986
36	1.311	0.113	3.774	-0.053	-0.966	-0.233	-2.139
37	0.580	-0.009	-0.200	-0.199	-2.025	-0.102	-2.144
38	0.448	-0.192	-1.920	-0.012	-0.244	-0.010	-0.136
39	0.630	-0.022	-0.445	0.077	1.416	-0.033	-0.787
40	0.737	0.139	1.990	-0.042	-0.888	-0.085	-2.196
41	0.914	0.058	1.396	-0.124	-2.797	0.092	1.448
42	0.765	-0.045	-1.336	0.112	1.918	-0.044	-0.645
43	0.809	-0.005	-0.108	-0.138	-3.740	-0.152	-2.607
44	0.821	-0.148	-2.241	-0.217	-4.214	-0.058	-1.104
45	0.878	-0.153	-3.059	-0.076	-1.212	-0.111	-2.297
46	0.985	-0.058	-0.869	-0.124	-2.507	0.053	1.115
47	1.347	-0.081	-1.557	0.084	1.695	0.039	1.229
48	1.246	0.016	0.283	0.048	1.472	0.059	1.518
49	0.906	-0.039	-0.972	0.024	0.796	-0.109	-2.095
AVERAGE	0.929	0.000	-0.008	-0.015	-0.183	-0.026	-0.304
STDS	0.355	0.124	1.516	0.097	1.544	0.108	1.600

PERFORMANCE DURING 10 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.029	-0.001	-0.009	0.081	1.684	0.194	2.269
2	0.999	-0.013	-0.297	0.096	2.946	-0.057	-0.884
3	1.125	0.026	0.587	-0.092	-1.583	-0.074	-2.181
4	0.997	-0.082	-1.367	0.036	0.602	-0.077	-1.418
5	0.892	0.041	0.697	-0.027	-0.464	-0.070	-0.757
6	0.836	-0.005	-0.084	-0.036	-0.410	0.050	0.370
7	1.058	-0.037	-0.416	0.068	0.505	0.058	1.047
8	0.722	0.034	0.249	0.037	0.762	-0.259	-3.302
9	0.720	0.125	2.415	-0.091	-0.867	0.081	0.459
10	0.719	-0.160	-1.610	0.096	0.576	-0.075	-1.202
11	0.736	0.076	0.482	-0.016	-0.250	0.047	0.769
12	0.893	0.071	1.109	0.087	1.395	0.040	0.409
13	0.905	0.038	0.981	0.096	1.018	-0.072	-0.238
14	0.989	0.051	0.546	0.174	0.612	0.109	1.072
15	0.880	0.348	1.351	0.097	0.961	-0.020	-0.256
16	0.533	0.378	3.563	-0.091	-1.428	0.024	0.359
17	0.452	0.002	0.022	-0.006	-0.087	0.162	2.149
18	0.372	-0.053	-0.423	0.137	1.506	-0.095	-1.816
19	0.451	0.178	2.216	-0.144	-2.594	-0.353	-1.729
20	0.475	-0.016	-0.166	-0.454	-2.528	-0.047	-0.771
21	0.542	-0.162	-1.059	-0.106	-1.763	-0.079	-1.383
22	0.685	-0.068	-1.279	-0.012	-0.228	0.040	0.980
23	0.824	-0.015	-0.253	0.004	0.093	0.067	2.203
24	0.324	-0.007	-0.172	0.069	1.785	0.067	1.240
25	1.208	0.047	1.136	-0.003	-0.051	-0.077	-0.781
26	1.415	0.078	1.521	-0.169	-1.384	-0.059	-0.924
27	1.350	-0.048	-0.375	-0.133	-1.596	0.091	1.654
28	1.678	-0.025	-0.299	0.022	0.415	0.075	2.400
29	1.630	0.051	1.121	0.048	1.672	-0.125	-2.264
30	1.707	0.057	1.939	-0.157	-2.585	-0.069	-1.790
31	1.465	-0.136	-2.153	-0.020	-0.595	0.028	0.542
32	1.208	0.037	0.971	0.071	1.571	-0.188	-4.488
33	1.361	0.020	0.427	-0.134	-2.793	0.156	3.354
34	1.005	-0.106	-1.976	0.075	2.463	-0.040	-0.667
35	1.295	0.112	3.502	-0.028	-0.513	-0.223	-2.041
36	1.127	-0.001	-0.016	-0.213	-1.822	-0.072	-1.539
37	0.597	-0.236	-2.349	-0.082	-1.696	-0.039	-0.484
38	0.599	0.028	0.589	0.090	1.617	-0.054	-1.270
39	0.820	0.144	2.060	-0.012	-0.250	-0.098	-2.358
40	0.898	0.048	1.148	-0.111	-2.966	0.048	0.915
41	0.807	-0.096	-2.564	0.072	1.304	-0.005	-0.071
42	0.808	0.027	0.501	-0.061	-0.853	-0.141	-2.342
43	0.847	-0.188	-3.131	-0.134	-2.491	-0.080	-1.426
44	0.752	-0.166	-2.984	-0.080	-1.374	-0.106	-1.971
45	0.990	-0.081	-1.217	-0.157	-3.797	0.029	0.660
46	1.107	-0.120	-2.150	0.053	1.002	0.048	1.392
47	1.647	0.024	0.418	0.026	0.729	0.080	2.145
48	1.374	0.011	0.275	0.009	0.317	-0.080	-1.051
AVERAGE	0.955	0.005	0.072	-0.021	-0.238	-0.026	-0.313
STDS	0.353	0.116	1.533	0.112	1.581	0.107	1.663

PERFORMANCE DURING 11 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.012	0.004	0.095	0.076	1.981	-0.077	-1.154
2	0.954	0.050	1.038	-0.062	-0.974	-0.055	-1.540
3	1.073	-0.073	-1.215	-0.045	-1.121	-0.086	-1.554
4	0.922	0.049	0.853	-0.066	-1.260	-0.075	-0.810
5	0.952	-0.028	-0.478	-0.053	-0.556	0.078	0.533
6	1.019	0.003	0.031	0.092	0.686	-0.007	-0.142
7	1.012	0.172	0.949	-0.011	-0.185	-0.140	-1.242
8	0.721	0.125	2.714	-0.095	-0.899	0.113	0.636
9	0.682	-0.129	-1.218	0.162	0.916	-0.092	-1.349
10	0.616	0.136	0.827	-0.038	-0.619	-0.041	-1.058
11	0.891	0.111	1.588	0.111	1.689	-0.024	-0.233
12	0.745	0.046	1.228	0.106	1.117	-0.189	-0.617
13	0.648	0.184	2.092	0.152	0.543	0.093	1.338
14	0.966	0.580	1.882	0.049	0.455	-0.024	-0.328
15	0.578	0.250	2.469	-0.052	-0.779	0.005	0.071
16	0.525	-0.067	-0.960	0.013	0.189	0.179	2.156
17	0.471	0.062	0.976	0.186	2.304	-0.159	-2.685
18	0.385	0.113	1.303	-0.093	-1.451	-0.350	-1.745
19	0.526	-0.088	-1.499	-0.318	-2.131	-0.036	-0.660
20	0.521	-0.348	-1.864	-0.106	-1.880	-0.071	-1.229
21	0.831	-0.068	-1.259	-0.051	-0.919	0.006	0.133
22	0.523	0.009	0.163	0.006	0.112	0.054	1.526
23	0.579	-0.067	-1.775	0.059	2.070	0.086	1.470
24	0.336	0.040	0.947	0.026	0.478	-0.127	-1.254
25	1.184	0.023	0.424	-0.126	-1.341	-0.096	-1.134
26	1.126	-0.090	-0.718	-0.070	-1.098	0.102	1.719
27	1.110	-0.048	-0.569	0.046	0.774	0.062	2.127
28	1.619	0.026	0.514	0.083	2.708	-0.135	-2.223
29	2.063	0.052	1.850	-0.166	-2.715	-0.060	-1.576
30	1.575	-0.135	-2.172	-0.053	-1.373	0.045	0.791
31	1.337	-0.060	-1.685	0.057	1.037	-0.124	-2.332
32	1.650	0.058	1.137	-0.193	-4.437	0.127	2.833
33	1.295	-0.079	-1.504	0.124	3.193	-0.068	-1.070
34	1.263	0.084	2.658	-0.034	-0.562	-0.371	-3.363
35	1.387	-0.021	-0.391	-0.221	-2.005	-0.028	-0.656
36	1.580	-0.278	-2.448	-0.048	-1.069	0.014	0.150
37	0.641	-0.040	-0.873	0.048	0.768	0.025	0.565
38	0.512	0.119	1.958	-0.022	-0.519	-0.055	-1.288
39	0.893	0.082	1.941	-0.100	-2.349	0.066	1.052
40	0.796	-0.096	-2.378	0.053	0.969	-0.025	-0.352
41	0.783	0.029	0.543	-0.042	-0.552	-0.126	-1.940
42	0.546	-0.113	-2.687	-0.137	-2.435	-0.090	-1.686
43	0.712	-0.128	-2.168	-0.074	-1.219	-0.121	-2.289
44	0.983	-0.044	-0.824	-0.132	-2.481	0.003	0.061
45	1.111	-0.118	-2.191	0.043	0.841	0.063	1.879
46	0.919	0.027	0.478	0.066	1.721	0.082	2.002
47	1.929	0.009	0.234	0.028	0.893	-0.062	-0.824
AVERAGE	0.947	0.007	0.000	-0.017	-0.244	-0.036	-0.368
STDS	0.405	0.140	1.532	0.104	1.589	0.109	1.455

PERFORMANCE DURING 12 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.012	0.076	1.981	-0.077	-1.154	-0.058	-1.473
2	1.007	-0.087	-1.521	-0.042	-1.032	-0.097	-1.806
3	1.145	-0.063	-1.542	-0.064	-1.044	-0.046	-0.477
4	1.145	-0.064	-1.044	-0.046	-0.477	0.066	0.439
5	1.145	-0.046	-0.477	0.066	0.439	0.022	0.405
6	1.142	0.049	0.328	0.030	0.547	-0.168	-1.420
7	0.988	0.096	1.990	-0.165	-1.414	0.151	0.782
8	0.645	-0.051	-0.562	0.168	0.970	-0.136	-2.342
9	0.609	0.123	0.683	-0.067	-0.935	0.002	0.054
10	0.718	0.052	0.759	0.024	0.620	-0.056	-0.552
11	0.624	0.027	0.751	-0.056	-0.561	-0.121	-0.525
12	0.592	0.187	1.941	0.180	0.638	0.088	1.092
13	0.757	0.478	1.776	0.046	0.450	-0.015	-0.197
14	0.673	0.287	3.150	-0.127	-1.704	0.086	1.288
15	0.523	-0.017	-0.256	-0.001	-0.019	0.155	2.025
16	0.626	0.083	1.347	0.176	2.124	-0.114	-2.192
17	0.450	0.130	1.754	-0.153	-2.591	-0.448	-2.117
18	0.415	-0.115	-2.037	-0.250	-1.603	-0.124	-2.202
19	0.661	-0.464	-2.444	-0.081	-1.541	-0.085	-1.425
20	0.757	-0.046	-0.791	-0.064	-1.159	0.017	0.396
21	0.725	-0.012	-0.189	0.021	0.489	0.058	1.588
22	0.482	-0.095	-0.114	0.062	1.807	-0.015	-0.240
23	0.715	0.061	1.798	0.084	1.445	-0.184	-1.685
24	0.437	0.014	0.244	-0.118	-1.150	-0.053	-0.874
25	0.960	-0.021	-0.205	-0.092	-0.992	0.127	2.590
26	1.160	-0.020	-0.318	0.070	1.124	0.028	0.763
27	1.252	0.030	0.458	0.056	2.202	-0.101	-1.548
28	1.420	0.087	2.971	-0.141	-2.098	-0.044	-0.930
29	2.155	-0.141	-2.148	-0.067	-1.674	0.068	1.124
30	1.587	-0.064	-1.712	0.034	0.579	-0.152	-3.381
31	1.276	0.034	0.577	-0.124	-2.184	0.162	3.095
32	1.108	-0.144	-2.953	0.124	3.664	-0.047	-0.689
33	1.403	0.128	3.221	-0.022	-0.367	-0.377	-3.296
34	1.237	-0.030	-0.506	-0.340	-3.016	0.023	0.484
35	1.420	-0.256	-2.132	-0.049	-1.135	0.013	0.135
36	1.844	-0.027	-0.602	0.134	2.033	0.001	0.028
37	0.659	0.085	1.403	0.018	0.396	-0.097	-2.234
38	0.757	0.051	1.209	-0.052	-1.216	0.056	0.922
39	0.702	-0.081	-2.024	0.039	0.623	-0.112	-2.662
40	0.809	0.015	0.302	-0.103	-2.624	-0.104	-1.473
41	0.544	-0.086	-2.133	-0.212	-3.593	-0.020	-0.425
42	0.870	-0.086	-1.302	-0.023	-0.463	-0.111	-1.946
43	1.003	-0.021	-0.395	-0.146	-2.799	0.037	0.747
44	0.913	-0.171	-2.975	0.022	0.399	0.021	0.689
45	0.947	0.007	0.117	0.061	1.744	0.076	1.773
46	1.287	0.077	1.822	0.021	0.641	-0.144	-1.601
AVERAGE	0.941	0.001	0.004	-0.027	-0.339	-0.039	-0.419
STDS	0.378	0.139	1.628	0.110	1.580	0.121	1.537

PERFORMANCE DURING 15 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.062	-0.101	-1.525	0.001	0.008	0.094	0.565
2	1.103	-0.045	-0.466	0.067	0.442	0.060	1.162
3	1.746	0.133	0.913	0.002	0.044	-0.061	-0.535
4	1.000	0.061	1.341	-0.114	-0.970	0.402	1.617
5	0.977	-0.067	-0.697	0.145	0.776	-0.103	-1.811
6	0.845	0.128	0.650	-0.052	-0.740	0.065	0.787
7	0.714	0.014	0.179	0.059	0.713	-0.035	-0.320
8	0.603	0.106	1.530	-0.037	-0.343	0.004	0.014
9	0.473	0.100	0.959	0.213	1.067	0.018	0.212
10	0.642	0.233	1.168	-0.012	-0.144	-0.014	-0.185
11	0.614	0.212	3.036	-0.087	-1.169	0.158	2.493
12	0.476	0.037	0.551	0.085	1.492	0.130	1.409
13	0.555	0.110	1.885	0.202	2.256	-0.099	-1.711
14	0.610	0.144	1.716	-0.098	-1.742	-0.415	-1.756
15	0.720	-0.161	-2.843	-0.407	-1.760	-0.066	-1.123
16	0.708	-0.453	-1.950	-0.023	-0.386	-0.101	-1.472
17	0.726	-0.043	-0.828	-0.106	-1.746	0.035	0.986
18	0.603	-0.036	-0.604	0.020	0.542	0.088	2.264
19	0.682	-0.050	-1.879	0.064	2.153	0.107	1.808
20	0.586	0.114	3.308	0.083	1.323	-0.129	-0.772
21	0.671	0.011	0.151	-0.018	-0.107	-0.030	-0.582
22	0.625	-0.078	-0.629	-0.031	-0.285	0.067	0.989
23	0.657	0.093	1.255	0.070	1.128	0.004	0.090
24	0.549	0.123	1.808	-0.015	-0.397	-0.004	-0.065
25	0.848	-0.017	-0.430	-0.000	-0.005	0.044	1.034
26	0.806	-0.063	-0.952	-0.012	-0.316	0.012	0.193
27	1.178	-0.042	-1.075	-0.000	-0.006	-0.103	-2.259
28	1.296	0.008	0.143	-0.086	-1.979	0.079	2.125
29	1.462	-0.084	-1.505	0.109	2.514	-0.052	-0.899
30	1.478	0.140	3.139	-0.104	-1.641	-0.302	-2.948
31	1.304	-0.037	-0.639	-0.271	-2.694	0.011	0.236
32	1.889	-0.426	-4.131	-0.026	-0.587	0.061	0.836
33	1.788	-0.010	-0.236	0.136	1.386	-0.025	-0.433
34	1.687	0.203	2.116	-0.021	-0.438	-0.146	-2.819
35	1.434	0.068	1.466	-0.113	-2.128	0.097	1.242
36	1.232	-0.125	-2.546	0.050	0.680	-0.029	-0.874
37	0.576	0.019	0.263	-0.074	-1.975	-0.100	-1.263
38	0.468	-0.079	-2.278	-0.115	-1.615	-0.026	-0.561
39	0.761	-0.074	-1.014	-0.045	-0.828	-0.101	-1.631
40	0.598	0.019	0.387	-0.100	-1.487	0.137	2.263
41	0.500	-0.114	-1.426	0.033	0.491	0.071	2.069
42	0.990	0.057	0.836	0.048	1.282	0.104	2.333
43	1.313	0.034	1.068	0.035	0.985	-0.056	-0.623
AVERAGE	0.920	0.001	0.051	-0.013	-0.144	-0.004	0.048
STDS	0.404	0.138	1.652	0.111	1.285	0.127	1.453

PERFORMANCE DURING 18 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.038	0.102	2.248	-0.201	-2.003	0.112	0.526
2	0.883	-0.140	-2.412	0.153	0.768	-0.093	-1.323
3	0.910	0.276	1.052	-0.054	-0.765	-0.008	-0.179
4	0.892	0.052	0.694	0.073	1.617	0.062	0.536
5	0.863	0.037	0.838	0.016	0.142	0.170	0.582
6	0.641	0.141	1.187	0.479	2.111	-0.166	-1.330
7	0.985	0.694	2.821	-0.151	-1.539	0.113	1.374
8	0.392	0.201	2.120	-0.013	-0.160	0.179	2.461
9	0.441	0.049	0.743	0.198	3.687	-0.124	-1.544
10	0.600	0.137	2.057	0.047	0.484	-0.083	-1.298
11	0.616	0.040	0.457	-0.061	-1.022	-0.487	-2.111
12	0.724	-0.054	-0.907	-0.508	-2.228	-0.043	-0.842
13	0.691	-0.489	-2.198	-0.033	-0.624	-0.134	-1.993
14	0.996	-0.060	-1.002	-0.086	-1.311	0.052	1.040
15	0.879	-0.090	-1.304	0.006	0.176	0.030	0.823
16	0.683	-0.039	-1.098	0.061	1.970	0.030	0.636
17	0.629	0.040	0.929	0.030	0.577	-0.102	-0.789
18	0.471	0.048	0.881	-0.019	-0.104	-0.070	-1.145
19	0.960	-0.015	-0.078	-0.046	-0.802	0.033	0.468
20	0.773	0.011	0.245	0.047	0.705	0.040	1.022
21	0.645	0.048	0.669	-0.036	-0.908	-0.044	-0.607
22	0.612	-0.092	-1.990	0.027	0.289	-0.073	-1.531
23	0.584	-0.005	-0.063	-0.009	-0.199	-0.018	-0.281
24	0.364	-0.020	-0.560	0.004	0.066	0.004	0.082
25	0.947	0.018	0.317	-0.056	-1.144	0.121	2.270
26	0.982	-0.084	-1.671	0.062	1.147	-0.057	-0.779
27	1.025	0.133	2.899	-0.013	-0.235	-0.293	-2.651
28	0.928	-0.025	-0.473	-0.266	-2.040	-0.092	-1.439
29	1.137	-0.226	-1.923	-0.052	-0.808	0.017	0.272
30	1.424	-0.026	-0.610	0.059	0.766	0.040	0.662
31	1.256	0.072	1.052	0.064	1.258	-0.175	-3.237
32	1.555	0.070	1.404	-0.180	-3.854	0.110	1.569
33	1.719	-0.068	-1.368	0.200	2.542	-0.108	-2.037
34	1.055	0.102	1.494	-0.069	-2.254	-0.004	-0.036
35	1.313	-0.046	-1.479	-0.097	-1.055	0.014	0.283
36	1.200	-0.104	-1.222	0.023	0.471	-0.048	-0.608
37	0.642	0.019	0.279	-0.060	-0.779	0.116	2.078
38	0.370	-0.049	-0.645	0.129	2.358	0.084	1.778
39	1.111	0.056	0.787	0.064	1.502	0.093	1.799
40	1.013	0.009	0.278	0.079	1.953	-0.102	-1.989
AVERAGE	0.874	0.018	0.111	-0.005	0.019	-0.023	-0.187
STDS	0.317	0.164	1.388	0.148	1.541	0.127	1.432

PERFORMANCE DURING 24 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.077	0.415	1.274	-0.117	-1.095	-0.058	-0.638
2	0.737	0.265	1.941	-0.081	-0.696	0.104	1.235
3	0.716	0.085	0.876	0.171	2.684	-0.165	-1.921
4	0.917	0.180	2.301	-0.092	-1.051	-0.115	-1.728
5	0.913	-0.020	-0.443	-0.137	-2.323	-0.443	-1.278
6	0.951	-0.110	-1.589	-0.582	-1.831	-0.052	-0.664
7	0.933	-0.556	-1.695	-0.047	-0.651	-0.119	-2.270
8	0.599	-0.040	-0.569	-0.121	-1.597	0.047	0.759
9	0.502	-0.113	-1.511	0.007	0.170	0.072	1.641
10	0.544	-0.047	-1.049	0.098	1.877	0.031	0.731
11	0.570	0.102	1.991	0.062	1.358	-0.277	-2.171
12	0.614	0.033	0.626	-0.173	-1.179	0.015	0.195
13	0.757	0.089	0.431	-0.024	-0.447	0.087	2.254
14	0.732	-0.019	-0.329	0.043	1.207	-0.010	-0.205
15	0.644	0.017	0.446	-0.035	-0.831	-0.024	-0.255
16	0.654	-0.039	-1.286	-0.086	-1.058	-0.089	-2.100
17	0.460	-0.009	-0.098	-0.025	-0.451	-0.049	-0.640
18	0.514	0.028	0.673	0.013	0.161	-0.072	-1.251
19	0.373	-0.037	-0.417	-0.014	-0.250	0.059	1.860
20	0.737	-0.090	-1.810	0.042	1.231	0.059	1.289
21	0.590	0.088	1.950	0.006	0.094	-0.310	-2.637
22	0.658	0.035	0.521	-0.111	-1.026	-0.078	-1.681
23	0.832	-0.109	-1.428	-0.057	-1.062	0.089	1.072
24	0.733	-0.017	-0.390	0.001	0.017	0.012	0.342
25	1.126	-0.010	-0.157	0.031	0.984	-0.131	-4.184
26	1.111	0.081	1.474	-0.095	-2.578	0.195	2.199
27	1.710	-0.094	-2.168	0.331	3.512	-0.037	-0.715
28	1.747	0.302	3.079	-0.034	-0.653	0.020	0.134
29	1.239	-0.029	-0.629	-0.107	-0.800	0.170	1.551
30	1.234	-0.068	-0.569	0.095	1.409	-0.057	-0.536
31	1.439	0.163	1.596	-0.062	-0.589	0.091	1.449
32	1.451	-0.114	-0.989	0.015	0.160	0.075	1.968
33	1.287	0.082	0.857	0.085	2.314	0.011	0.163
34	1.091	0.063	1.669	-0.015	-0.304	-0.150	-2.810
AVERAGE	0.888	0.015	0.135	-0.030	-0.097	-0.032	-0.260
STDS	0.354	0.158	1.359	0.138	1.398	0.133	1.645

PERFORMANCE DURING 36 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.108	0.100	-0.342	-0.055	-0.793	0.095	1.942
2	0.737	-0.040	-0.324	0.021	0.452	0.044	0.770
3	0.955	0.019	0.423	0.040	0.680	-0.055	-0.552
4	0.778	-0.040	-0.948	-0.098	-0.842	-0.090	-1.601
5	0.778	-0.098	-0.842	-0.090	-1.601	0.003	0.024
6	0.764	-0.121	-2.272	-0.033	-0.320	-0.104	-1.546
7	0.764	-0.033	-0.320	-0.104	-1.546	0.031	2.205
8	0.764	-0.104	-1.546	0.031	2.205	0.094	1.261
9	0.764	0.031	2.205	0.094	1.261	-0.478	-3.948
10	0.764	0.094	1.261	-0.478	-3.948	-0.095	-2.149
11	0.764	-0.478	-3.948	-0.095	-2.149	0.004	0.072
12	0.921	-0.049	-1.151	-0.010	-0.168	0.102	2.681
13	0.764	0.004	0.072	0.060	1.518	-0.189	-5.849
14	0.897	0.043	0.697	-0.161	-3.824	0.312	4.538
15	0.897	-0.161	-3.824	0.312	4.538	-0.011	-0.288
16	0.935	0.342	4.684	-0.068	-1.397	0.351	1.943
17	0.935	-0.068	-1.397	0.351	1.943	0.229	3.192
18	0.692	0.042	0.261	0.114	1.947	0.246	1.536
19	0.877	0.152	2.121	0.106	0.618	0.102	2.779
20	0.877	0.106	0.618	0.102	2.779	-0.075	-1.604
21	1.307	0.136	2.222	-0.016	-0.602	-0.154	-2.090
22	1.324	0.024	0.456	-0.101	-1.040	-0.140	-3.203
AVERAGE	0.880	-0.004	-0.086	-0.004	-0.013	0.010	0.005
STDS	0.171	0.153	1.976	0.166	2.074	0.185	2.578

PERFORMANCE DURING 48 MONTHS							
ST MON	BW/BL	DIF1	T1	DIF2	T2	DIF3	T3
1	1.051	0.100	-1.130	0.147	2.035	-0.172	-5.118
2	0.856	0.085	2.022	-0.212	-5.626	0.273	3.737
3	1.341	-0.210	-5.686	0.235	2.624	-0.091	-1.604
4	0.856	0.273	3.737	-0.036	-0.736	0.145	0.802
5	0.806	0.013	0.309	-0.129	-1.498	0.075	2.163
6	0.932	0.056	0.479	0.089	2.429	0.306	1.720
7	0.962	0.116	7.861	0.529	95.840	0.149	31.841
8	0.962	0.529	95.840	0.149	31.841	0.032	2.140
9	0.995	0.099	2.806	-0.008	-0.254	-0.218	-3.343
10	1.030	-0.048	-3.232	-0.204	-3.160	-0.078	-158.190
AVERAGE	0.979	0.101	10.301	0.056	12.350	0.042	-12.585
STDS	0.150	0.195	30.288	0.226	31.155	0.180	52.197