CHAPTER 4

DATA DESCRIPTION

4.1 Introduction

This chapter describes the characteristics of the data used in the study. Daily sectoral indices for the period from 29 March 1993 to 30 June 1999 are used in the analysis. These indices include the Finance Index, Industrial Index, Mining Index, Plantation Index and Property Index.

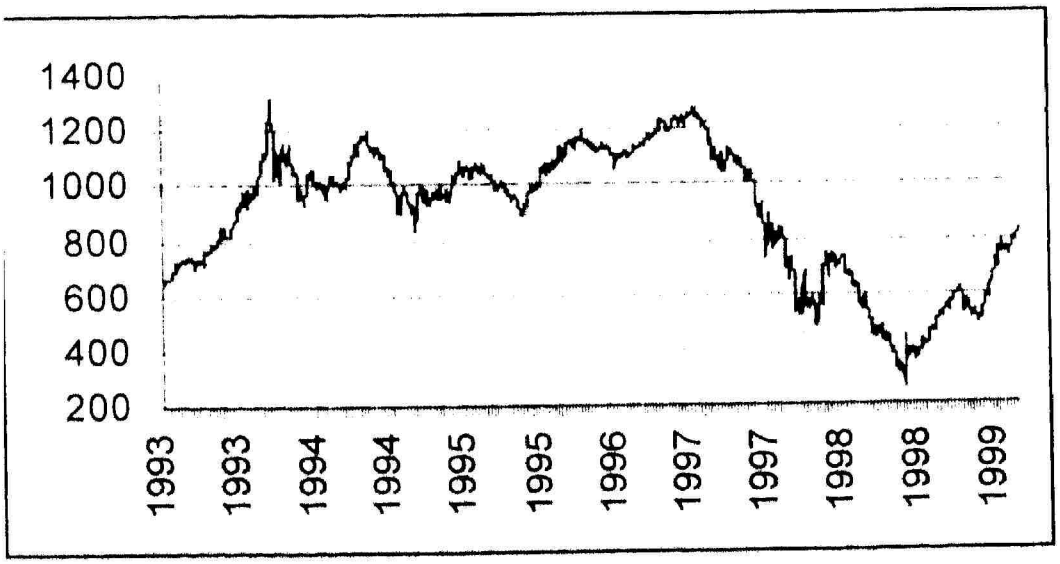
The choice of these sectoral indices is similar to that of Kok and Goh (1997). The finance, industrial, plantation and property sectors have the four largest number of companies listed as at 30 September 1999 (see Table 1.3). Their market capitalisations are equally large. In this sense, they represent the important sectors in the economy and are included in this study. The construction sector has a market capitalisation that is almost similar to that of the property sector. Because these two sectors are very closely linked in terms of economic roles, we include only the latter but not the former. The mining sector, although small, is also included so that we have a unique representation of the different type of economic activities in our sample. The hotel and infrastructure sectors are excluded as they have only very few listed stocks, of which some are infrequently traded.

4.2 Market Performance

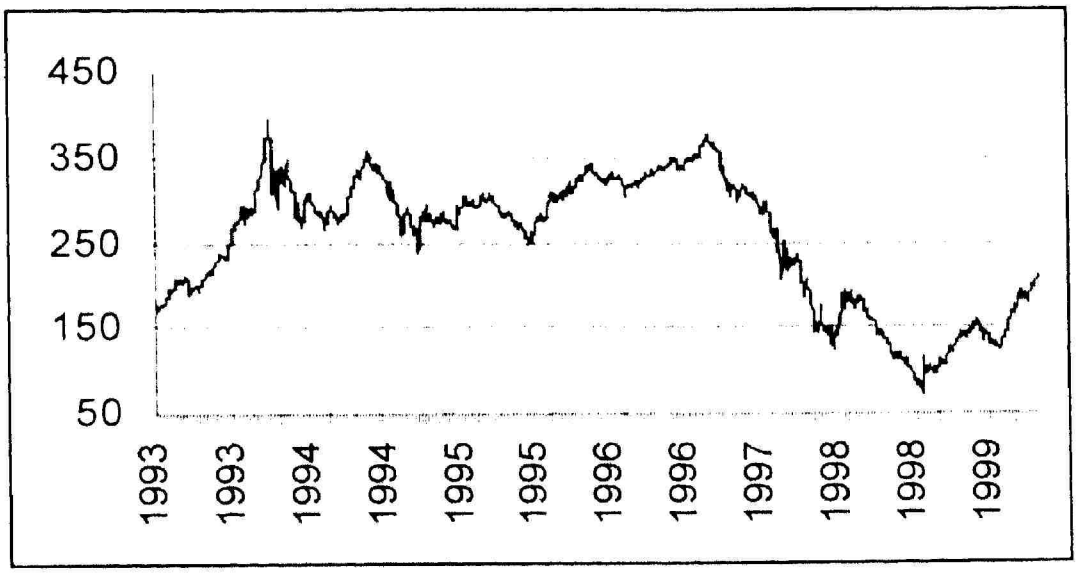
A total of 1548 trading days were observed for the chosen sample period. We notice that over the entire sample period, the market has different behaviour.

ierefore, in addition to studying the sample as a whole, sub-periods in which : market has generally similar behaviour within each sub-period were :ntified. For this purpose, we examine the Composite and Emas Index. Figure l shows a plot of the Composite Index and Figure 4.2 is a plot of the Emas dex. These two plots show almost similar patterns. The indices showed an ward trend until it reached its peak at 1314.46 on 5 January 1994 for the mposite Index. The Emas Index reached its peak of 394.42 on 4 January 94. Then, both the indices fluctuated around a constant mean level for quite me time, up to 28 February 1997. After that, it began to decline to the lowest int of 262.7 for the Composite Index and 71.6 for the Emas Index on 1 ptember 1998. After that, there was a period of recovery with the market dices trending upward.

igure 4.1: Composite Index, 29 March 1993 - 30 June 1999



igure 4.2: Emas Index, 29 March 1993 - 30 June 1999

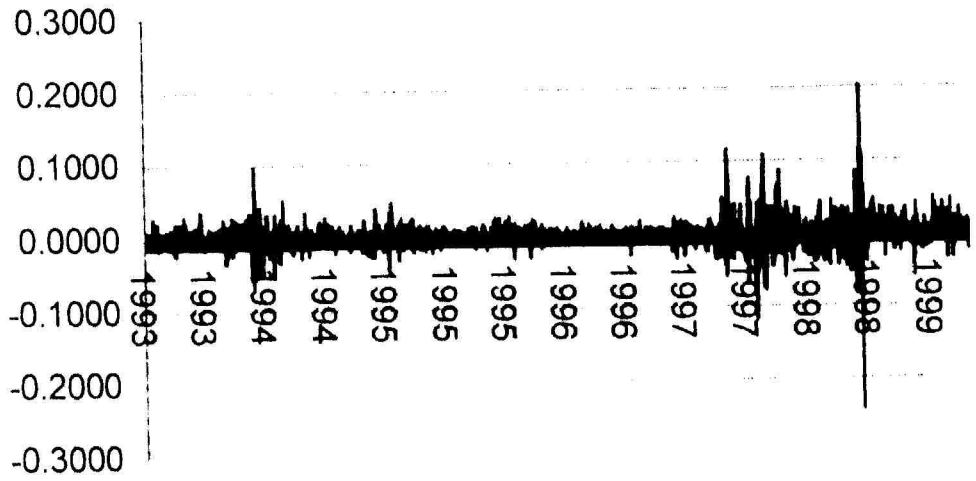


Based on these observations, we divide the sample period into four sub-periods s below:

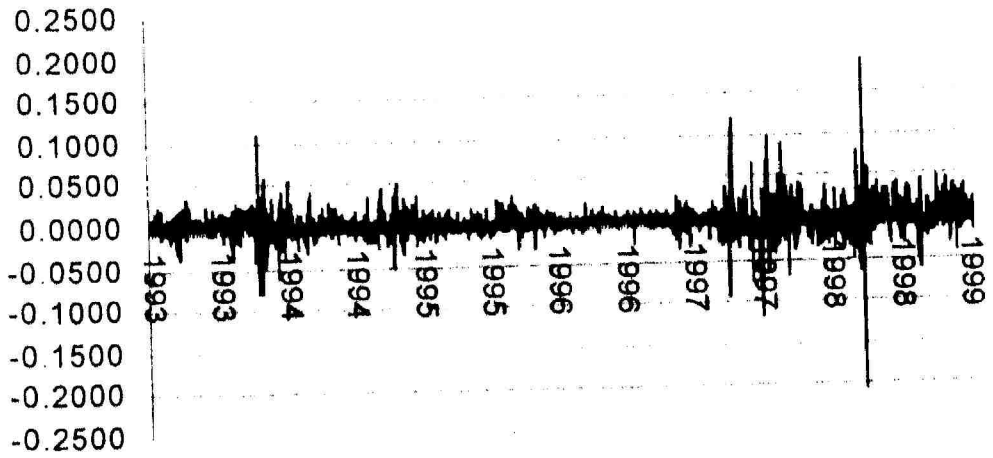
- First sub-period - 29 March 1993 to 5 January 1994
- Second sub-period - 6 January 1994 to 28 February 1997
- Third sub-period - 3 March 1997 to 1 September 1998
- Fourth sub-period - 2 September 1998 to 30 June 1999

The first sub-period shows a growth and we expect a positive return on average. We expect a mean return of 0 for the second sub-period as the indices were fluctuating around a constant mean. The third sub-period exhibited a decline and thus, an average negative return is expected. The fourth sub-period is a recovery period and we expect a growth with a positive mean return. To confirm this, we computed the returns according to equation (3.1).

ure 4.3: The Market Returns Based on Composite Index, 30 March 1993 - 30 June 1999



gure 4.4: The Market Returns Based on Emas Index, 30 March 1993 - 30 June 1999



he returns were computed from the indices of two subsequent trading days. The eturns cannot be computed for a public holiday and the day after as the KLSE is losed on public holidays. Returns also cannot be computed for Saturdays and Sundays. However, because the non-trading over weekends occurs similarly very week, the Monday returns were computed in the usual manner.

ures 4.3 and 4.4 plot the market returns computed based on the Composite ex and Emas Index. Again, the pattern for both indices is almost similar. The criptive statistics for these two market indices are given in Table 4.1. The e reports the mean value of the indices, sample size, and the mean, standard iation and coefficient of variation for the returns.

the total of 1548 observations, 1487 returns were computed. There are 193 ervations for the first sub-period, 742 observations for the second sub-period, observations for the third sub-period and 196 observations for the fourth -period. The mean returns for the second sub-period are almost zero for both Composite and Emas Index. This was during the high market performance h the Composite Index averaging to 1067.30. The first and fourth sub-periods v positive returns on the average for both the Composite and Emas Index. wever, the economic conditions were different for both the sub-periods. The t sub-period was during the economic boom and there was an upward trend or sitive growth in the share market. On the other hand, the fourth sub-period s a recovery period after the financial crisis. For the third sub-period, the an return is -0.46% and -0.49% for the Composite and Emas Index, pectively. This is the period where negative returns occurred because the ntagion effects from the Asian crisis affected the Malaysian stock market.

ie coefficient of variation shows that the first sub-period is the most stable riod with the lowest value of 2.92 for the Composite Index and 2.60 for the nas Index. The highest variability is during the second sub-period with a value -106.10 for the Composite Index and -87.22 for the Emas Index. A low return

ıst 0) causes the coefficient of variation to be high. Volatility in the third ɔurth sub-periods are almost similar, and both are larger than the first sub-d. There were a lot of uncertainties in the market because of the effect of ːial crisis.

e 4.1: Descriptive Statistics for the Composite and Emas Index for Four Sub-Periods

	Mean of the Index	Number of Observations	Mean Return	Standard Deviation of Return	Coefficient of Variation
POSITE					
arch 1993 - 5 January 1994	839.01	193	0.003649	0.0107	2.92
uary 1994 - 28 February 1997	1067.30	742	-0.000117	0.0124	-106.10
rch 1997 - 1 September 1998	762.26	356	-0 004595	0.0260	-5.67
ɔtember 1998 - 30 June 1999	557.65	196	0 005760	0.0328	5.69
S					
larch 1993 - 5 January 1994	306.47	193	0 004305	0.0112	2.60
ıuary 1994 - 28 February 1997	209.66	742	-0.000157	0.0137	-87.22
ırch 1997 - 1 September 1998	141.73	356	-0.004940	0.0242	-4.91
ɔtember 1998 - 30 June 1999	216.94	196	0.005460	0.0305	5.58

e 4.2: The t-Test for A Zero Mean, F-Test for Equality of Means and Bartlett Test for Equality of Variances for the Market Returns for Four Sub-Periods

(	t-Test for A Zero Mean		F-Test for Equality of Means		Bartlett Test for Equality of Variances	
	Test statistic	p-value	Test Statistic	p-value	Test Statistic	p-value
IPOSITE			13.98***	0.0000	549.43***	0.0000
Aarch 1993-5 January 1994	4.7548***	0.0000				
nuary 1994-28 February 1997	-0.2567	0.7975				
arch 1997-1 September 1998	-3.3298***	0.0010				
ptember 1998-30 June 1999	2.4584**	0.0148				
,S			16.21***	0.0000	377.40***	0.0000
March 1993-5 January 1994	5.3499***	0.0000				
nuary 1994-28 February 1997	-0.3123	0.7549				
arch 1997-1 September 1998	-3.8461***	0.0001				
ːptember 1998-30 June 1999	2.5093**	0.0129				

Significant at 1%.
Significant at 5%.
Significant at 10%.

4.2 reports the results of some statistical tests. The t-test was used to test ll hypothesis that the sub-period mean return is zero. For the second sub-, p-values of 0.7975 and 0.7549 were obtained for the Composite and Index, respectively. This shows that the null hypothesis of a zero mean cannot be rejected. This agrees with our earlier conjecture.

e first and fourth sub-periods, the null hypothesis is strongly rejected. The s are significant with p-values of 0.0000 and 0.0148, respectively, for the osite Index. The null hypothesis is rejected with p-values of 0.0000 and 9, respectively, for the Emas Index. This shows that the mean returns are icantly positive for these two sub-periods. Significant negative mean s were found for the third sub-period. The results are significant with a p- of 0.0010 for the Composite Index and 0.0001 for the Emas Index.

sed the F-test to test if the mean returns of the four sub-periods are same. est statistic is 13.98 and 16.21 for the Composite Index and Emas Index, ctively. This means that the mean returns differ for at least two sub-periods.

ırtlett test is used to test for equality of variances across the four sub- ds. P-values of 0.0000 were obtained for both the indices. This shows that ariability in returns is different for at least two sub-periods.

e tests proved that the four sub-periods exhibit different mean and bility and are unique on its own. Thus, it will be interesting to conduct a

)d analysis, as each sub-period characterises different economic
ı and market performance.

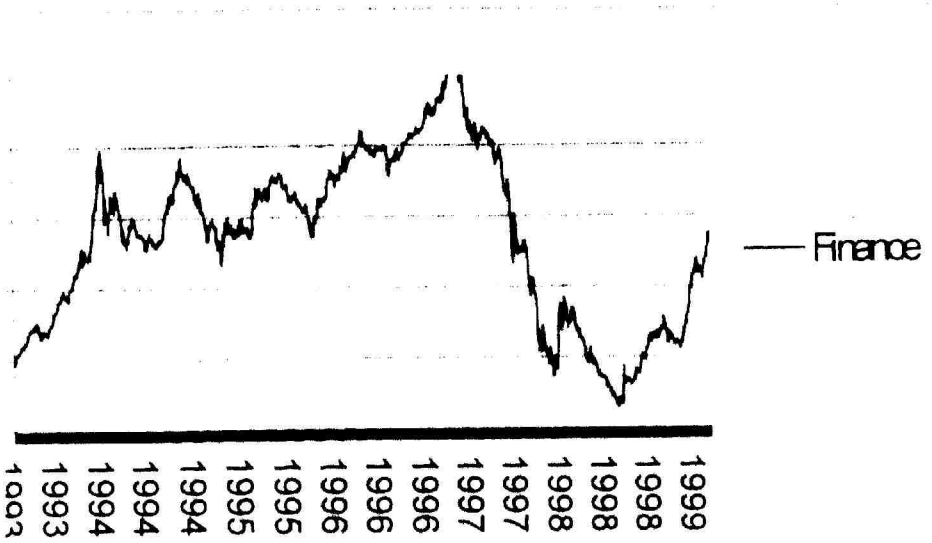
ctoral Performance

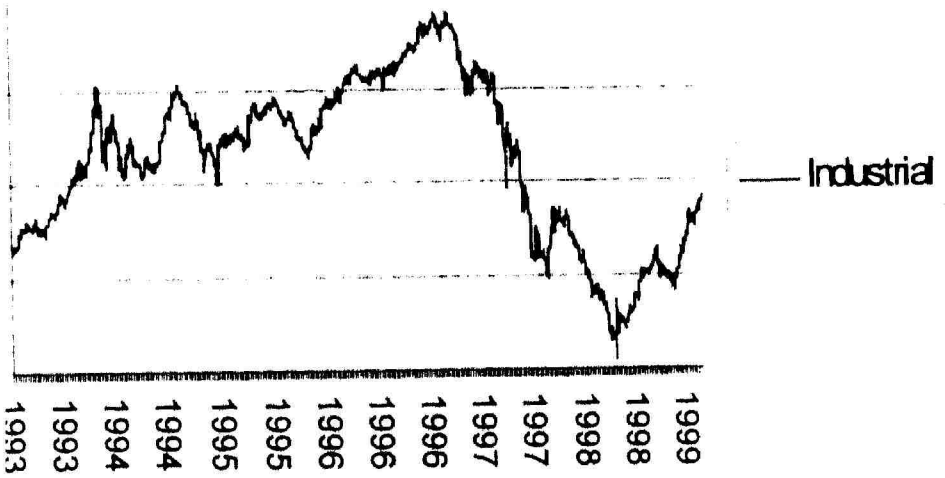
examine the behaviour of the individual sectors to see whether they are
non with the market behaviour. The plots are shown in Figure 4.5.
v, all the plots show similar pattern to the plots of the Composite and
ıdex. However, there are some small differences. For the Finance and
ıl Index, they peaked in the early 1997 before the Asian crisis and not in
hen the market was booming. For the Plantation Index, the decrease
ıe 1997 crisis was not as steep as that of the Composite and Emas Index.
ggests that this sector was not affected as badly by the currency crisis. In
: cheaper ringgit has given a competitive advantage for our crude palm
ırters, besides good palm oil prices.

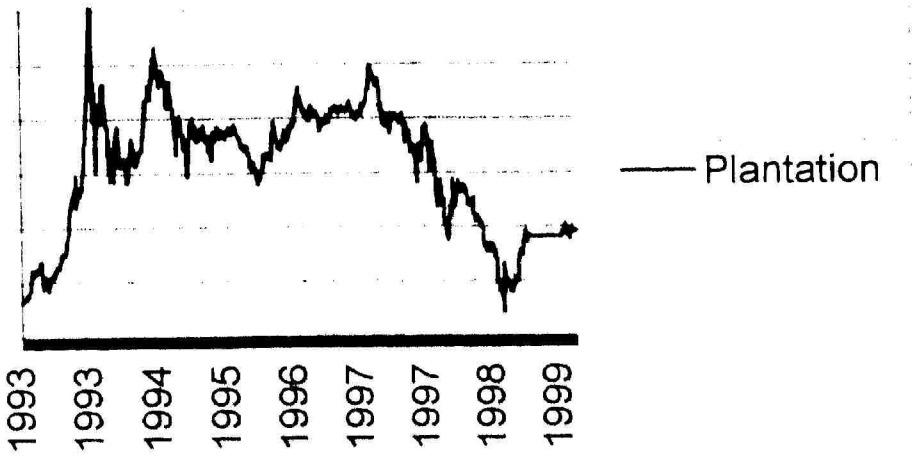
formance of the mining sector is quite similar to the overall market
ıance. However, during the last 2 years, activity in the mining sector was
ue to lower production of petroleum and tin. From the plot, the last 100
ıtions show very little variation.

operty Index reached its peak during the stock market boom in 1993.
the crisis, it was hit by the high interest rate and demand for properties
ł. With the new strategy implemented by the government to lower
: rates, it showed recovery.

The Sectoral Indices, 29 March 1993 - 30 June 1999



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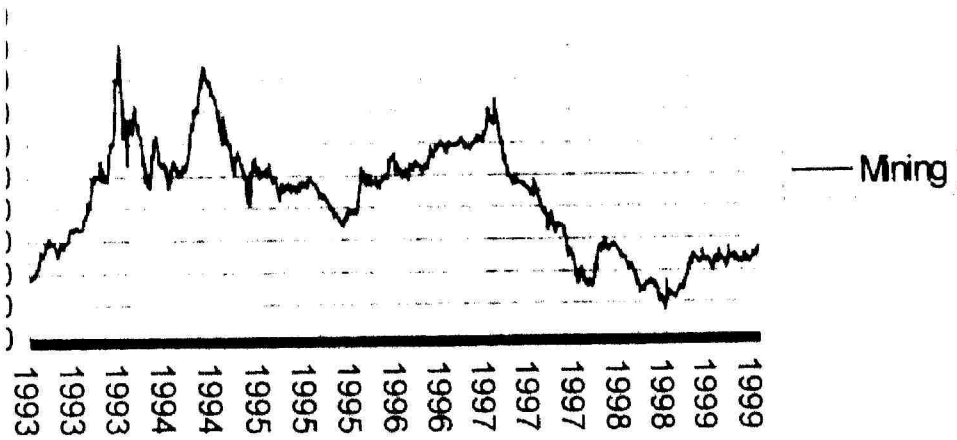
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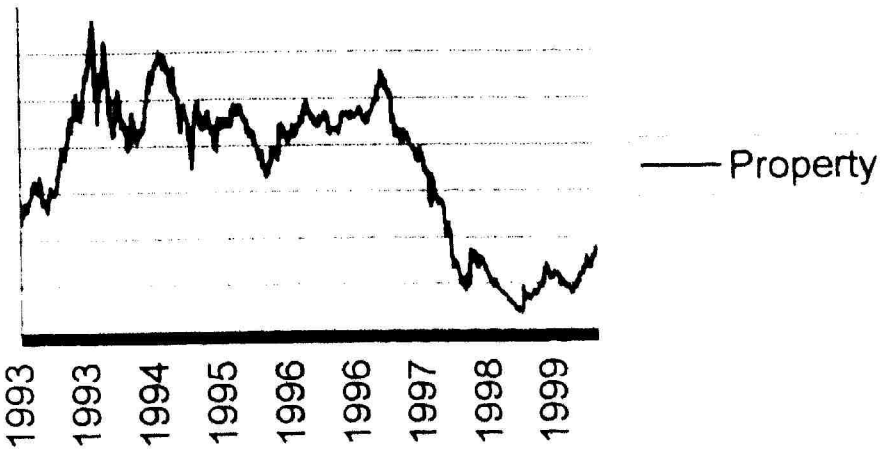
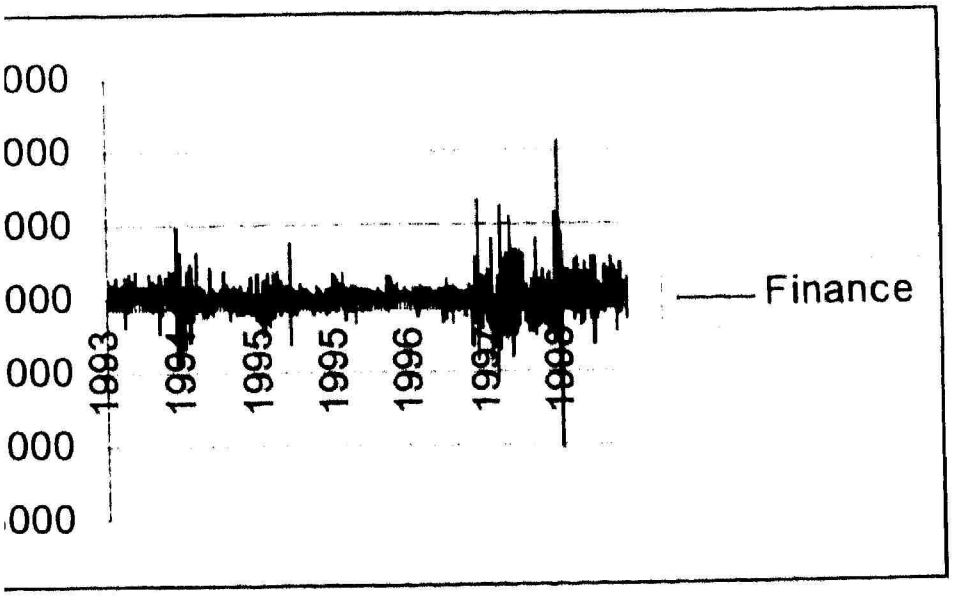
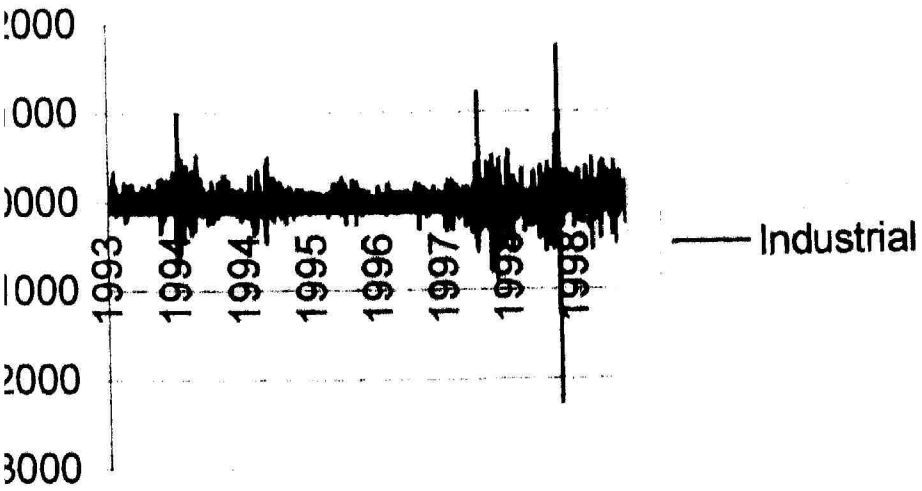
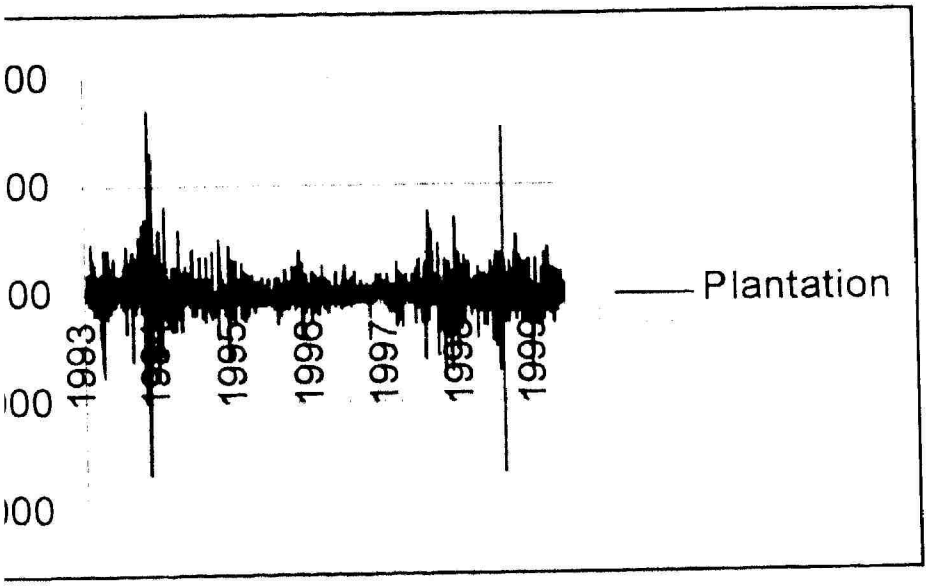


3: The Sectoral Returns, 30 March 1993 to 30 June 1999



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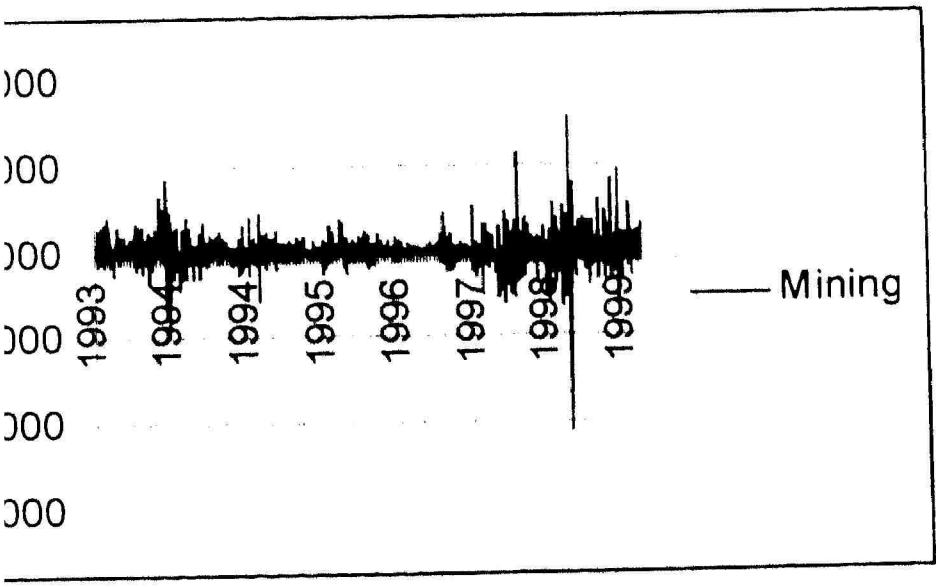
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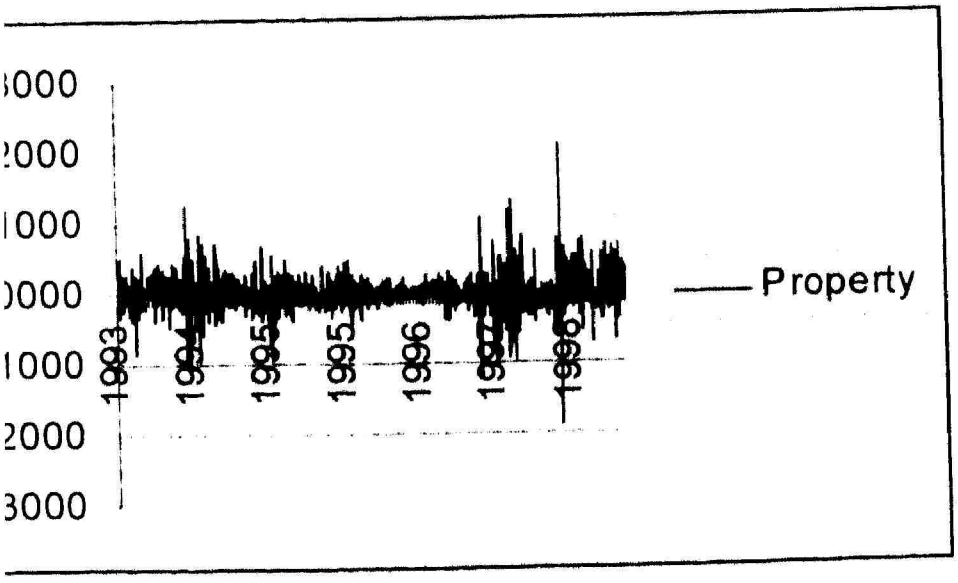
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1995
1995
1996
Property

ots the returns for the five sectors. Overall, they fluctuate around a
:hough the pattern of volatility is rather different.

:sents similar descriptive statistics for the sectoral indices as those
'able 4.1. The descriptive statistics for all the five sectors are very
nmon with the statistics for the Composite and Emas Index. Zero
; were recorded during the second sub-period for all the five sectors.
ın returns were recorded during the first and fourth sub-periods. As
l sub-period, all sectors showed a negative mean return. Higher
of variation were found for the second sub-period. The lowest
)f variation was for the first sub-period. These show that the sectoral
: moved very much in accordance with the general market

escriptive Statistics for the Sectoral Indices for Four Sub-eriods

	Mean of the Index	Number of Observations	Mean Return	Standard Deviation of Return	Coefficient of Variation
3-5 January 1994	7891.19	193	0.005681	0.0142	2.50
4-28 February 1997	5567.74	742	0.000257	0.0144	55.85
-1 September 1998	3777.28	356	-0.005887	0.0302	-5.14
998-30 June 1999	5035.91	196	0.006907	0.0337	4.87
3-5 January 1994	1896.72	193	0.002999	0.0110	3.65
4-28 February 1997	1476.21	742	0.000130	0.0123	94.66
-1 September 1998	1013.62	356	-0.004147	0.0218	-5.25
1998-30 June 1999	1434.52	196	0.004734	0.0307	6.48
93-5 January 1994	2724.02	193	0.006287	0.0196	3.12
94-28 February 1997	2269.96	742	-0.000256	0.0194	-75.92
7-1 September 1998	1594.37	356	-0.003608	0.0197	-5.46
1998-30 June 1999	1896.70	196	0.002947	0.0252	8.54
93-5 January 1994	540.17	193	0.008178	0.0268	3.28
94-28 February 1997	319.38	742	-0.000414	0.0240	-57.99
7-1 September 1998	209.02	356	-0.006243	0.0382	-6.12
1998-30 June 1999	348.73	196	0.006764	0.0571	8.45
93-5 January 1994	2512.27	193	0.004575	0.0193	4.21
94-28 February 1997	1373.20	742	-0.000251	0.0194	-77.23
7-1 September 1998	741.95	356	-0.005982	0.0270	-4.51
1998-30 June 1999	1722.51	196	0.005089	0.0361	7.09

e t-Test for A Zero Mean, F-Test for Equality of Means and rtlett Test for Equality of Variances for the Sectoral Returns · Four Sub-Periods

	t-Test for A Zero Mean		F-Test for Equality of Means		Bartlett Test for Equality of Variances	
	Test Statistic	p-value	Test Statistic	p-value	Test Statistic	p-value
			17.82***	0.0000	439.53***	0.0000
3-5 January 1994	5.5564***	0.0000				
4-28 February 1997	0.4877	0.6259				
-1 September 1998	-3.6724***	0.0003				
998-30 June 1999	2.7616***	0.0062				
			11.59***	0.0000	426.33***	0.0000
3-5 January 1994	3.8014***	0.0002				
4-28 February 1997	0.2878	0.7736				
-1 September 1998	-3.5928***	0.0004				
998-30 June 1999	2.0117**	0.0455				
			10.77***	0.0000	20.32***	0.0000
3-5 January 1994	4.4554***	0.0000				
4-28 February 1997	-0.3588	0.7198				
-1 September 1998	-3.4535***	0.0006				
1998-30 June 1999	1.3257	0.1863				
			9.59***	0.0000	327.24***	0.0000
3-5 January 1994	4.2371***	0.0000				
4-28 February 1997	-0.4698	0.6387				
7-1 September 1998	-3.0818***	0.0022				
1998-30 June 1999	1.4798	0.1404				
			11.98***	0.0000	192.77***	0.0000
93-5 January 1994	3.3010***	0.0011				
94-28 February 1997	-0.3527	0.7244				
7-1 September 1998	-4.1870***	0.0000				
1998-30 June 1999	1.8904*	0.0600				

ant at 1%.
ant at 5%.
ant at 10%.

esents the results of the different tests conducted for the five sectoral

se tests are similar to those reported in Table 4.2. The t-test for a

eturn shows that the results for the finance and industrial sectors are

ie results for the Composite and Emas Index. Their mean returns are

1 zero for the first and fourth sub-periods, but are negative for the

eriod. Their mean returns are zero for the second sub-period as the

cannot be rejected. The results for the Property Index are largely
e exception that the evidence against the null hypothesis for the
od is weaker than those for the Finance and Industrial Index.

ion and mining sectors, the results for the first and third sub-
m to those for the overall market performance. They are all
he 1 percent level of significance. However, for the fourth sub-
ılts are not significant for these sectors. This indicates that we do
gh evidence to say that the mean returns in these sectors are
ro in the fourth sub-period.

atistics for the F-test of equal means and Bartlett test of equal
significant at the 1 percent level. This shows that the means and the
at least two of the sub-periods for all the five sectors are different.
re again justify our selection of sub-periods.

null hypothesis cannot be rejected. The results for the Property Index are largely similar, with the exception that the evidence against the null hypothesis for the fourth sub-period is weaker than those for the Finance and Industrial Index.

For the plantation and mining sectors, the results for the first and third sub-periods conform to those for the overall market performance. They are all significant at the 1 percent level of significance. However, for the fourth sub-period, the results are not significant for these sectors. This indicates that we do not have enough evidence to say that the mean returns in these sectors are greater than zero in the fourth sub-period.

All the test statistics for the F-test of equal means and Bartlett test of equal variances are significant at the 1 percent level. This shows that the means and the variances for at least two of the sub-periods for all the five sectors are different. The results here again justify our selection of sub-periods.