Tijdschrift voor Economie en Management
Vol. XXI, nr. 3, 1976

B.V. REGIDOR*
P. SERCU

Behavior of Share Prices of the Brussels Stock Exchange

I. INTRODUCTION

In this study we shall be concerned with the statistical properties of stock prices as generated on the Brussels Exchange. As an offshoot of this goal we expect to temper the claim of some technical analysts that they can detect, ex ante, trends or patterns in price changes which they subsequently can utilize to systematically increase investment profits.

Are technical analysts successful in predicting the market? There is plenty of evidence about the U.S. and some other countries that they are not.[1] Much of the evidence rests on the random walk model: tests by academic researchers, using statistical techniques and various trading rules, suggest that past price changes are not helpful in predicting future price changes. The reaction of some, if not most, technical analysts was simply to ignore this evidence.[2]

While the random walk model is considered a 'good' approximation of the behavior of stock prices on U.S. capital markets, there was too little evidence to assert the same for the Brussels

* The authors are respectively doctoral student and assistant at K.U.Leuven.
This research was completed as part of a Research Project on Capital Market Efficiency at the Department of Applied Economic Sciences, K.U.Leuven.
The authors are indebted to Prof. Dr. L. Vanthienen, for his guidance and valuable comments, and to Dhr. G. Kelles, assistant at the K.U.Leuven for his contributions to earlier drafts. All errors remain the authors' responsibility.

1. See Fama (1965); and Fama (1970); Jacquillat and Solnik (1974).
2. Fortune (August 1975).

Stock Exchange with great confidence. This paper attempts to fill the existing gap.

One of the findings of this study is that the Brussels stock prices did not exhibit a consistent pattern of non-randomness. Although for some stocks a significant statistical dependence was observed for the entire period considered, further tests on sub-periods indicated that the statistical dependence behaves erratically through time. Dependence in sub-periods may exist but knowing it yields no insight as to the type and importance of the dependence in subsequent sub-periods. Therefore it is doubtful whether possibly existing dependencies can be exploited successfully for superior forecasting especially if security analysis and transaction costs are taken into account.

Another finding of this study is that the distribution of stock returns has some characteristics of a non-normal generating process. In particular, the results pointed in the direction of a ' fat-tailed ' stable Paretian distribution with characteristic exponents in the neighborhood of 1.5.

II. THEORETICAL FRAMEWORK

The model to be tested in this study is expressed in terms of continuously compounded returns. These are defined as

$$r_{it} = \log_e(1 + R_{it})$$

where

r_{it} = the continuously compounded return of security i over the period $t-1$ to t

$\log_e$ = the natural logarithm operator

R_{it} = the « simple » return or proportional price change after correction for dividends, bonuses and stock splits.

Note that, for small R_{it} (e.g. $R_{it} \leq 15\ \%$), r_{it} and R_{it} are virtually identical.

The model states, firstly, that the distribution of returns is independent of the sequence of past returns :

$$f(\tilde{r}_{it} \mid r_{it-1}, r_{it-2}, \ldots) = f(\tilde{r}_{it})$$

where tildes ($\sim$) denote random variables,

and, secondly, that this distribution is invariant through time :

$$f(\tilde{r}_{it} \mid r_{it-1}, r_{it-2}, \ldots) = f(\tilde{r}_i) \qquad (1)$$

Since

$$r_{it} = \log_e\left(\frac{P_t}{P_{t-1}}\right) = \log_e(P_t) - \log_e(P_{t-1})$$

Expression (1) says that the sequence of $\log_e$ prices follow a random walk.

One implication of Equation 1 is

$$E(\tilde{r}_{it} \mid r_{it-1}, r_{it-2}, \ldots) = E(\tilde{r}_i) \qquad (2)$$

that is, the conditional expected rate of return is equal to the marginal rate of return (or the expected returns are constant over time), and individual returns are serially independent.

Equation 2 will be tested using serial correlation (a test on Cov $(\tilde{r}_{it}, \tilde{r}_{it-k}) = 0$; $k = 1, 2, 3, \ldots t - 1$) and runs analysis (a test on non-linear dependence).

The second topic of interest is the form of the distribution $f(\tilde{r}_i)$. Specifically, we will investigate whether the probability function may be normal, or if not, it may be some of other members of the family of symmetric stable Paretian distributions.

III. DATA

Since, for small differencing intervals, returns in excess of 15 % are very unusual and since for the small values and short periods the continuously compounded return is almost identical to the simple (« percentage ») return, the latter will be used in this study.

Daily returns of 29 companies were computed as follows :

$$R_{it} = \frac{P_{it}(CF_{it}) - P_{it-1} + d_{it}}{P_{it-1}}$$

whereby

R_{it} = denotes daily rate of return of security i over period $t - 1$ to t

P_{it} = the daily price of security i at period t
CF_{it} = a coefficient which adjusts for bonuses, stock splits, etc.
d_{it} = cash dividends paid.[3]

Our research period extends from January 1, 1972 to December 31, 1975, i.e. 984 price quotations per security. Each security was traded both at the 'contant' (spot) and 'termijn' (forward) markets, and thus two sets of data were collected for each security. All 29 companies, Belgian and foreign, are fairly large; their stocks are well traded. Table 1 decomposes the sample on a country basis.

IV. RESULTS

A. *Test of Independence*

1. Serial Correlation Model

A standard statistical method for the detection of systematic dependence in returns, or in any time series of data, is the computation of serial correlation coefficients. We define the sample serial correlation coefficient as

$$\hat{\rho}(\tilde{R}_{it}, \tilde{R}_{it-k}) = \frac{\text{Cov}\,(\tilde{R}_{it}, \tilde{R}_{it-k})}{S(\tilde{R}_{it})\, S(\tilde{R}_{it-k})}$$

S = the sample standard deviation of returns

$k = 1, 2, 3, \ldots t-1$

The null hypothesis to be tested is of the form:

$$H_0 : \hat{\rho}(\tilde{R}_{it}, \tilde{R}_{it-k}) = 0$$

against the alternative hypothesis:

$$H_1 : \hat{\rho}(\tilde{R}_{it}, \tilde{R}_{it-k}) \neq 0$$

3. If stated in foreign currency, the dividends are converted into Belgian francs on the basis of the official exchange rate on the ex-dividend date.

TABLE 1

Decomposition of the Sample on a Country Basis (a)

Country	Number of Companies
Belgium	21
Canada	1
Great Britain	1
Luxembourg	1
Netherlands	1
South Africa	3
U.S.A.	1
TOTAL SAMPLE	29

(a) Details of the sample in Appendix Table 1.

When the true correlation coefficient is zero and the sample is large, the sample serial correlation coefficient is approximately normal with :

$$t\text{-statistic} = \frac{\hat{\rho}(\tilde{R}_{it}, \tilde{R}_{it-k}) - (N - k)^{-1}}{(N - k)^{-1/2}}$$

where

N = the sample size

$-(N - k)^{-1}$ = the bias

$(N - k)^{-1/2}$ = the estimate of the standard deviation.

Using the 983 realized daily returns, sample serial correlation coefficients were computed for each stock, both on the spot and forward markets and for lags from 1 to 10 days. The results are shown in Appendix Tables 2 and 2-A.

In general, the sample serial correlation coefficients are small in absolute value. For the spot market, the first order coefficients range from —0.1488 to 0.1390. For the forward market, the values of the serial correlation coefficients range from —0.1418 to 0.1630.

Of the 29 companies on the spot market, 11 and 6 are significant at the 5 % and 1 % levels of significance respectively. Similarly, on the forward market, there are 12 and 7 values which are significant at the 5 % and 1 % respectively. These observations are highly improbable if the true serial correlation coefficient is zero and if the correlations over the sample are cross-sectionally independent (we are aware they are not).

Yet, from a practical point of view, the overall importance remains questionable. Although for some stocks the hypothesis of zero serial correlation can hardly be retained, the values are not large. Even a $\hat{\rho}(\widetilde{R}_{it}, \widetilde{R}_{it-k}) = 0.1630$ (the largest absolute value found) explains no more than 3.0 % of the variance.

It is worthwhile to note a slight preponderance of positive signs for the first order sample serial correlation coefficients in Appendix Tables 2 and 2-A. This result corresponds with the results obtained by Fama (1965) for daily price changes on the Dow-Jones Industrials. The reader is cautioned against drawing any premature conclusion — such as utilizing the information for forecasting purposes — from the correspondence in sign on the sample serial correlation coefficients. According to the 'market' model,[4] returns for different securities are related to a market factor common to all securities which means that the serial correlation coefficients are not cross-sectionally independent.

2. Runs Analysis[5]

Runs tests are based on the classification of sample events into mutually exclusive categories, such as defective or non-defective, below 100 or above 100. In our case, a change in price can be classified as positive (+), negative (—) or no change (0). A single run then, will be defined as a series of one or more events of the same category. Practically, our data are represented in a chronological order, showing strings of category designations, i.e. we represent the observations by +'s, —'s and 0's :

$$\underbrace{++}\ \underbrace{-}\ \underbrace{+}\ \underbrace{0}\ \underbrace{-}\ \underbrace{++}\ \underbrace{00}\ \underbrace{---}\ \underbrace{+}$$

The series of identical signs are grouped and a run is connected with a brace. In the example there are 4 runs of pluses (two

4. A description of the model can be found in Fama (1976).
5. Adapted from Fama (1965).

times ++ and two times +), 3 of minuses (two times — and one time ———) and 2 of « no change » (one time 0 and one time 00). The idea behind every runs analysis in testing randomness is that too few or too many runs are unlikely if a sample is truly random through time. For in the case of randomness, the sequence of signs would be one random « permutation » of the signs out of all possible permutations.

Under the hypothesis that drawings from a trinomial population (+, —, 0) are independent and random, the total actual number of runs, $\tilde{TR}$, will have an approximately normal distribution with expected value :

$$\bar{M} = \left[N(N+1) - \sum_{i=1}^{3} n_i^2 \right] / N \qquad (3)$$

where N is the total actual number of price changes and n_i, $i=1, 2, 3$, are the number of price changes of each sign, and standard error :

$$S_{\tilde{TR}} = \left\{ \frac{\sum_{i=1}^{3} n_i^2 \left[\sum_{i=1}^{3} n_i^2 + N(N+1) \right] - 2N \sum_{i=1}^{3} n_i^3 - N^3}{N^2(N-1)} \right\}^{1/2} \qquad (4)$$

These formulas yield a test statistic and a decision rule to claim whether or not stock price changes are random and serially independent. Given the normality of $\tilde{TR}$, the Z-statistic is determined in the usual manner as :

$$Z = \frac{TR - M}{S_{TR}}$$

In the appendix, Tables 3 and 3-A show the results of the runs analysis by totals, irrespective of signs, for one-day intervals on both the spot and forward markets. For 22 out of 29 companies, the total actual number of runs is lower than expected, as consistent with the previous evidence of positive first order serial

correlation.[6] For the spot market, there are 11 and 4 securities which are significant at respectively 5 % and 1 % levels of significance. For the forward market, there are 14 and 10 stocks which are significant at the 5 % and 1 % level respectively.

To a random walk theorist, the results of the runs analysis during the sample period for the securities on the forward market must come as a disturbing surprise. One cannot claim that the investigated price sequences on the Brussels Stock Exchange conform completely to the independence hypothesis of the random walk model. So, it was interesting to carry out some further tests. The entire sample period was subdivided into four sub-periods and a separate runs analysis for each sub-period was performed. The new results, in general, revealed no ' systematic ' pattern of dependence over time, which supports the observation that some stocks may exhibit non-random characteristics during certain periods of time but that the importance and type of dependence behaved erratically through time. The stock trader, then, will be faced with the problem of identifying such profitable periods whenever they occur, if they do so at all.

B. *Distribution of Daily Returns*

In this section we investigate whether the empirical distribution of daily returns conforms to the normal distribution or not. Moreover, we also investigate if departures from normality are in the direction of Mandelbrot's hypothesis of symmetric stable Paretian returns with characteristic exponent $1 < \alpha < 2$. The most important feature of such a distribution is that extreme positive and negative values would occur more often than one would expect if the sample were normally distributed.

1. Tests of Normality

1.1. Studentized Range

The studentized range will be applied to test whether or not the empirical distribution of daily returns conforms to the normal distribution. It is given by :

6. Spearman rank correlation coefficients between both series of t (serial correlation) and Z (runs) statistics were 0.678 for the spot market and 0.508 for the forward market.

$$SR = \frac{\text{Max}(R_i) - \text{Min}(R_i)}{S(R_i)}$$

that is the studentized range is the ratio of the range (maximum minus minimum value of the variable) over the sample standard deviation of returns.

Appendix Tables 4 and 4-A show the studentized range for each of the individual stocks. A table is available where fractiles of the distribution of studentized ranges have been computed based on the assumption that the sample is drawn from a normal distribution. In a sample of 1000, the probabilities that the studentized range will be equal to or less than 7.33 or 7.99 are 0.95 and 0.99 respectively. In a sample size of 983, the studentized range values will not differ significantly from 7.33 or 7.99 at the 5 % and 1 % levels of significance respectively. We found the studentized range for all securities to be well beyond the critical values. This result therefore indicates that extreme values occurred much more often than would be expected if the sample came from a normal distribution.

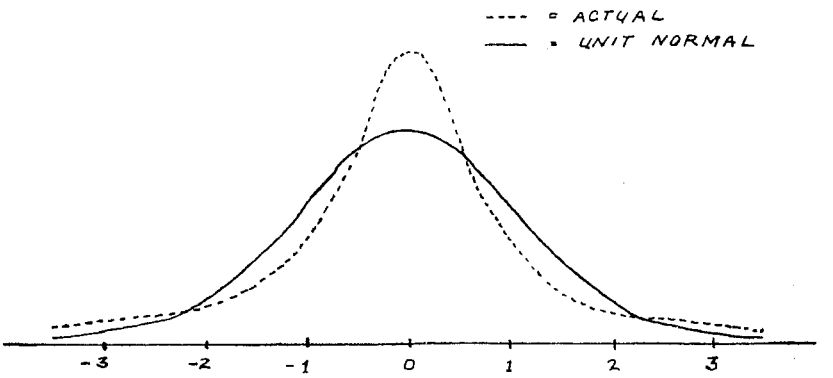
1.2. Frequency Distributions

Another method of analyzing the distribution of daily returns is to construct frequency distributions for the individual securities. With intervals expressed in standard deviations from the mean, the actual number of daily returns is set out and compared to what is expected under a normal distribution (Appendix Tables 5 and 5-A). The expected frequencies are computed under the assumption that the daily returns are independent drawings from a normal distribution with mean and standard deviation equal to the sample estimates of these parameters for each security.

A common characteristic of Appendix Tables 5 and 5-A is the presence of some degree of leptokurtosis : the empirical distribution is more peaked at the center, and ' fatter ' on the tails than a normal distribution. Within the interval — 0.5 to 0.5 standard deviations from the mean, as well as in extreme classes (columns 1, 2, 3, 13, 14 and 15), the actual frequencies are greater than expected, whereas in columns 4, 5, 6, 7, 10, 11 and 12 they are less. Figure 1 provides a graphical comparison between the empirical and normal distributions. The solid curve represents the

Figure 1

Comparison Between Actual and Unit Normal Probability Distributions



unit normal while the dashed curve represents the general form of the empirical distribution of the sample.

The significance of the observed departures from normality was tested by Pearson X^2-test on the average distribution of all companies. With 10 degrees of freedom,[7] the critical value of $X\alpha^2$ with $\alpha = 0.05$ is 18.307. The computed X^2 values, 127.32 for the spot market and 123.18 for the forward market, are well beyond this. Hence we reject the hypothesis that daily returns are drawings from a single normal population.

2. The Mandelbrot's Hypothesis

Given the results of the previous sections, it is apparent that the distribution of daily returns did not conform to a single normal distribution. The distribution has been described as leptokurtic, i.e. 'fat-tailed' and 'peaked at the center'.

According to the Mandelbrot hypothesis, the distribution of returns is symmetric stable Paretian with characteristic exponent $1 < \alpha < 2$. Such a distribution is characterized by three parameters, namely the location parameter, the scale parameter, and the characteristic exponent. The Cauchy and normal distributions represent limiting cases with respective values 1.0 and 2.0 for the characteristic exponent. As α decreases from 2.0, the distribution exhibits 'fatter' and 'fatter' tails.

7. The three extreme intervals in each tail were treated as one class.

An important property of the symmetric stable Paretian distribution is that it is invariant under addition. That is, the distributions of sums of independent and identically distributed stable variables have the same characteristic exponent as the distribution of the individual components.

An alternative explanation of leptokutosis is that returns are random and independent drawings from a mixture of normal distributions with an identical mean but different standard deviations. Such a mixture of normals will also show leptokurtosis so that the estimated characteristic (' tail ') exponent will be less than 2.0. However, this tail exponent will not be stable under addition and will in fact converge to 2.0 as the sum size is increased.

In the coming sections, we will estimate the tail exponent and test its stability under addition in order to distinguish between the Mandelbrot and the « mixture of normals » hypothesis.[8] Finally, the symmetry of the distribution will be investigated.

2.1. Test of Stability

A test of stability suggested by Fama and Roll (1971) makes use of the property of linear combinations of independent and identically distributed variables with characteristic exponent $1 < \alpha < 2$. If, with the presumption of independence in the data, the value of α approaches 2.0 as the sum size is increased, such would be evidence of normal properties in the data. However, if the value of α remains independent of the sum size, such would be evidence in favor of a symmetric stable distribution.

According to Fama and Roll (1971), the estimate of the characteristic exponent can be obtained by using the equation

$$Z_f = \left(\frac{(R_{.72} - R_{.28})}{(R_f - R_{1-f})} \right) 0.827$$

where for a sample size N of the return variable R, R_f is the $f(N+1)^{st}$ ordered observation, so that both the numerator and the denominator measure interfractile ranges, and Z_f is the ratio of two interfractile ranges. In order to estimate α, we refer to

8. The above test of stability under addition presumes independence of the data. In view of our former findings this may be a critical point.

Table 2 given by Fama and Roll (1968) who listed the values of α_f for various Z_f.

Appendix Tables 7 and 7-A list our estimates of the characteristic or « tail » exponent of the distributions of daily returns. Fractiles of 0.95, 0.96 and 0.97 were used to estimate the ' tail ' exponents, α, for the original sample of 983 daily returns. All characteristic or « tail » exponents lie between 1 and 2. On the spot and forward markets, the mean values, based on 0.96 fractile estimates, equal 1.458 and 1.456 respectively. This agrees with the previous results that the empirical distribution of returns is more peaked at the center and ' fatter ' on the tails than would be expected from a normal distribution.

To test stability under addition, characteristic exponents were computed for the distributions of sums of 2 and 5 non-overlapping successive returns (these sum sizes were chosen arbitrarily). The results are shown in columns 4 and 5 of Appendix Tables 6 and 6-A. Comparing these values with those of the original samples yields no appreciable differences. Therefore, we might conclude that the property of stability of the symmetric stable distribution is upheld. Conversely, since our results did not show any convergence towards the Gaussian limit the « mixture of normals » hypothesis is not validated.

2.2. Test of Symmetry

Tests of symmetry (coefficient of skewness) on daily returns have produced evidence of a slight effect of right-skewness. This can be explained, perhaps, by the fact that all daily returns were expressed in terms of percentages rather than logarithmically, the form required on a strict theoretical basis. Compounding the daily returns logarithmically would have the effect of pulling back the right, and extending the left tail of the distributions.

V. CONCLUSIONS

We now summarize the basic results of this study.

A. *Independence*

The techniques used were serial correlation and runs analysis. The results did not conform completely to the independence

hypothesis : for nearly one-third of the stocks, evidence of a slight but not necessarily consistent form of statistical dependence was found. However it remains highly doubtful whether such dependence can be exploited to realize profits, especially if security analysis and transaction costs are taken into account.

B. *Distribution of Returns*

The hypotheses of a single normal distribution and « mixture of normals » have not been validated by the data. If truly independent, the data correspond to symmetric stable distributions with characteristic exponent around 1.5.

References

Fama, Eugene F. « The Behavior of Stock Market Prices.» *Journal of Business* (January 1965), pp. 34-105.

Fama, Eugene F. « Efficient Capital Markets : A Review of Theory and Empirical Work.» *Journal of Finance* (May 1970), pp. 383-417.

Fama, Eugene F. *Portfolio Decisions and Security Prices.* Leuven, 1976. (manuscript)

Fama, Eugene F. and Roll, Richard. « Some Properties of Symmetric Stable Distributions.» *Journal of the American Statistical Association* (September 1968), pp. 817-836.

Fama, Eugene F. and Roll, Richard. « Parameter Estimates for Symmetric Stable Distributions.» *Journal of the American Statistical Association* (June 1971), pp. 331-338.

Fortune. « Technical Analysis Refuses to Die.» August 1975, pp. 99-103.

Jacquillat, Bertrand and Solnik, Bruno. *Les Marches Financiers et La Gestion De Portefeuille.* Paris : Dunod, 1974.

APPENDIX

TABLE 1
List of Sample

Spot	Forward(*)	Company	Country
3128	5001	Acec	Belgium
3299	5010	C B R	Belgium
3135	5012	Cockerill	Belgium
3022	5014	Cometra Oil	Belgium
3108	5016	Electrobel	Belgium
3117	5018	EBES	Belgium
3171	5019	Fabr. Nat.	Belgium
3217	5026	Gevaert	Belgium
3123	5029	Interbrabant	Belgium
3124	5030	Intercom	Belgium
3144	5036	M.H.S.	Belgium
3441	5040	Petrofina	Belgium
3484	5042	Cobepa	Belgium
3109	5053	Sidro	Belgium
3428	5059	Tabacofina	Belgium
3235	5064	U C B	Belgium
3209	5066	Union Minière	Belgium
3470	5072	Solvay	Belgium
3107	5073	Electrafina	Belgium
3234	5081	Tessenderlo	Belgium
3490	5083	Traction et Elec	Belgium
4000	5003	ARBED	Luxembourg
4221	5015	De Beers	South Africa
4049	5028	Imperial Oil Ltd.	Canada
4145	5043	Philips	Netherlands
4014	5044	Pres. Brand	South Africa
4066	5046	Boeing	U.S.A.
4118	5048	Rio Tinto	Great Britain
4020	5058	Stilfontein	South Africa

(*) 5 was prefixed to the actual code number.

TABLE 2

Daily Serial Correlation for Lags 1, 2, 3, . . . 10
(Spot Market)

Stock No.	Company	LAG 1	2	3	4	5	6	7	8	9	10
3128	Acec	—0.1207**	0.0394	—0.0575	—0.0053*	—0.0036	0.0257	—0.0589	0.0384	—0.0076	0.0286
3299	CBR	—0.0110	—0.0050	—0.0234	—0.0039	—0.0001	—0.0271	—0.0002	—0.0122	0.0244	—0.0149
3135	Cockerill	0.1390**	—0.0553	—0.0309	—0.0156	—0.0116	—0.0291	—0.0080	—0.0100	0.0021	—0.0416
3022	Cometra Oil	—0.0161	—0.0496	—0.0335	—0.0027	0.0689*	—0.0073	0.0137	—0.0012	—0.0049	—0.0348
3108	Electrobel	0.0485	0.0119	0.0317	0.0057	—0.0379	0.0511	0.0033	—0.0429	0.0011	—0.0419
3117	EBES	—0.0402	0.0339	0.0497	—0.0670*	0.0101	0.0097	0.0069	0.0512	—0.0131	—0.0280
3171	Fabr. Nat.	—0.0200	—0.0120	0.0191	0.0323	—0.0724*	—0.0086	—0.0369	0.0017	—0.0327	0.0295
3217	Gevaert	0.0408	—0.0526	0.0233	—0.0202	0.0049	0.0745	—0.0232	0.0083	0.0615	0.0044
3123	Interbrabant	—0.1145**	—0.0491	—0.0606	0.0164	0.0513	0.0527	—0.0148	—0.0508	—0.0047	—0.0049
3124	Intercom	—0.0273	—0.0943**	—0.0349	0.0020	0.0310	0.0220	0.0099	0.0067	0.0454	0.0318
3144	M.H.S.	0.0687*	0.0475	—0.0265	—0.0040	0.0386	—0.0275	—0.0067	—0.0044	0.0086	—0.0910**
3441	Petrofina	0.0239	—0.0389	—0.0150	0.0215	—0.0187	0.0780*	0.0444	—0.0164	0.0260	0.0319
3484	Cobepa	—0.0508	—0.0616	—0.0314	0.0451	—0.0369	0.0254	0.0228	0.0624*	0.0139	0.0028
3109	Sidro	—0.0884**	0.0096	—0.0613	—0.1081**	—0.0054	—0.0255	0.0049	0.0438	0.0430	—0.0381
3428	Tabacofina	0.0215	0.0619	—0.0485	—0.0330	0.0298	—0.0166	—0.0315	0.0200	0.0559	0.0379
3235	UCB	0.0667*	—0.0332	—0.0446	0.0197	0.0494	0.0425	—0.0565	—0.0771*	—0.0202	—0.0709*
3209	Union Minière	0.0465	—0.0097	—0.0690	0.0349	0.0598	0.0382	—0.0048	0.0316	—0.0087	—0.0601
3470	Solvay	—0.1488**	—0.0563	—0.0261	0.0599	—0.0617	—0.0195	0.0177	0.0270	0.0339	—0.0375
3107	Electrafina	—0.1229**	—0.0371	—0.0400	—0.0092	0.0474	0.0186	0.0539	0.0388	—0.0361	—0.0134
3234	Tessenderlo	0.0477	—0.0588	—0.0163	0.0043	0.0273	0.0380	—0.0407	0.0568	0.0245	—0.0676*
3490	Traction et Elec.	—0.0098	—0.0552	—0.0278	—0.0216	0.0715*	0.0350	—0.0069	0.0440	—0.0149	—0.0536
4000	ARBED	0.0686*	—0.0319	—0.0524	—0.0753*	—0.0476	—0.0138	0.0140	—0.0312	0.0485	—0.0298
4221	De Beers	0.0107	0.0252	0.0041	0.0052	—0.0532	0.0048	—0.0034	0.0018	—0.0119	0.0145
4049	Imperial Oil Ltd.	—0.0023	—0.0049	—0.0265	0.0343	—0.0398	—0.0410	—0.1020**	0.0028	0.0502	—0.0361
4145	Philips	0.0736*	—0.0860**	—0.0880**	—0.0070	0.0066	—0.0316	—0.0164	0.0739*	0.0602	—0.0319
4014	Pres. Brand	0.0048	—0.1484**	—0.0224	0.0223	0.0047	0.0260	0.0419	—0.0118	—0.0022	0.0309
4066	Boeing	—0.0320	—0.0722*	—0.0018	—0.0009	—0.0171	—0.0162	0.0734*	—0.0538	—0.0577	0.0372
4118	Rio Tinto	0.0300	—0.0766*	—0.0051	0.0541	0.0329	0.0185	—0.0424	0.0315	0.0968**	—0.0001
4020	Stilfontein	0.0809*	—0.1942**	—0.0398	0.0459	0.0235	0.0621	0.0259	0.0054	0.0205	0.0140

* = Significant at the 5 % level.
** = Significant at the 1 % level.

TABLE 2-A

Daily Serial Correlation for Lags 1, 2, 3, . . 10
(Forward Market)

Stock No.	Company	LAG 1	2	3	4	5	6	7	8	9	10
5001	Acec	—0.0037	—0.0919*	0.0190	—0.0059	0.0318	0.0331	—0.0607	—0.0139	—0.0129	—0.0062
5010	CBR	—0.0718*	0.0048	—0.0269	0.0226	—0.0414	—0.0143	0.0043	—0.0184	0.0319	—0.0436
5012	Cockerill	0.0663*	—0.0155	—0.0226	—0.0273	—0.0211	—0.0087	—0.0065	0.0194	0.0311	—0.0645*
5014	Cometra Oil	0.0691*	—0.0698*	—0.0217	—0.0307	0.0402	0.0529	0.0782*	—0.0213	—0.0228	—0.0341
5016	Electrobel	0.0898**	0.0590	0.0353	—0.0057	—0.0285	0.0129	—0.0119	—0.0156	0.0063	—0.0080
5018	EBES	—0.0671*	0.0625	0.0057	0.0045	—0.0488	—0.0246	0.0063	0.0176	0.0230	—0.0227
5019	Fabr. Nat.	—0.0270	0.0106	0.0214	—0.0055	—0.0785*	—0.0455	—0.0069	0.0279	0.0209	0.0211
5026	Gevaert	0.0568	—0.0464	—0.0281	0.0623	—0.0038	—0.0015	0.0173	—0.0330	0.0539	0.0122
5029	Interbrabant	—0.1418**	0.0084	—0.0023	—0.0308	0.0467	0.0580	—0.0254	—0.0001	—0.0386	—0.0176
5030	Intercom	—0.0248	—0.0860**	0.0033	—0.0020	0.0122	0.0588	—0.0104	0.0551	—0.0054	0.0092
5036	M.H.S.	0.1235**	0.0380	0.0040	0.0182	0.0061	0.0098	—0.0121	—0.0455	0.0461	—0.0835**
5040	Petrofina	—0.0356	—0.0266	0.0197	0.0084	—0.0737*	0.1353**	0.0490	—0.0055	—0.0147	0.0640
5042	Cobepa	0.0393	—0.0262	—0.0186	—0.0034	—0.0057	0.0085	—0.0064	0.0660*	0.0159	0.0009
5053	Sidro	—0.0005	—0.0357	—0.0648*	—0.0688*	0.0110	—0.0885**	0.0333	0.0087	0.0598	0.0552
5059	Tabacofina	0.1161**	—0.0041	—0.0204	0.0032	0.0504	—0.0394	—0.0301	0.0102	0.0345	0.0156
5064	UCB	0.0995**	0.0094	0.0129	0.0085	0.0581	0.0361	—0.0808*	—0.0426	—0.0167	—0.0540
5066	Union Minière	0.0208	—0.0148	—0.0154	0.0479	0.0680*	0.0106	—0.0266	0.0199	—0.0075	—0.0782
5072	Solvay	—0.0745*	—0.1084**	0.0280	0.0858**	—0.0241	—0.0626*	0.0067	—0.0038	0.0589	—0.0253
5073	Electrafina	0.0508	0.0217	0.0107	—0.0383	0.0116	0.0138	0.0214	—0.0124	0.0433	—0.0211
5081	Tessenderlo	0.1630**	—0.0295	—0.0475	0.0116	0.0499	0.0178	0.0148	0.0248	0.0394	—0.0875**
5083	Traction et Elec.	0.0384	—0.0218	—0.0585	0.0088	0.0418	0.0587	0.0200	—0.0329	0.0100	—0.0111
5003	ARBED	0.0435	—0.0206	—0.0274	—0.0647*	—0.0897**	0.0191	—0.0034	0.0098	0.0215	—0.0021
5015	De Beers	0.0448	0.0587	0.0431	0.0183	—0.0331	—0.0210	—0.0061	—0.0248	0.0178	—0.0246
5028	Imperial Oil Ltd.	0.0066	0.0224	—0.0288	0.0006	—0.0094	—0.0770*	—0.0878**	—0.0164	0.0373	—0.0206
5043	Philips	0.0130	—0.0470	—0.0746*	—0.0068	—0.0180	0.0113	0.0187	0.0657*	0.0181	—0.0130
5044	Pres. Brand	—0.0064	—0.1538**	—0.0207	—0.0060	0.0384	—0.0000	0.0382	—0.0099	—0.0148	0.0285
5046	Boeing	—0.0934**	—0.0121	0.0292	—0.0381	—0.0199	0.0049	0.0499	—0.0152	—0.0714*	0.0232
5048	Rio Tinto	0.0080	—0.0728*	0.0280	0.0894**	0.0056	0.0182	—0.0198	0.0122	0.0423	0.0991
5058	Stilfontein	—0.0246	—0.1363**	0.0326	0.0418	0.0286	0.0061	0.0446	0.0476	0.0073	—0.0499

* = Significant at the 5 % evel.l
** = Significant at the 1 % level.

TABLE 3

Total Actual and Expected Number of Runs Irrespective of Signs for One-day Interval (Spot arket)

Stock No.	Company	Actual	Expected	Z-Statistic
3128	Acec	600	600.6	0.64
3299	CBR	606	626.1	—1.38
3135	Cockerill	521	576.4	—3.77**
3022	Cometra Oil	585	589.5	—0.31
3108	Electrobel	594	605.8	—0.81
3117	EBES	611	621.2	—0.70
3171	Fabr. Nat.	634	622.5	0.79
3217	Gevaert	572	608.3	—2.50*
3123	Interbrabant	647	617.4	2.03*
3124	Intercom	598	628.8	—2.11*
3144	M.H.S.	577	608.1	—2.13*
3441	Petrofina	518	540.3	—1.48
3484	Cobepa	611	586.5	1.67
3109	Sidro	612	629.7	1.21
3428	Tabacofina	611	637.5	—1.81
3235	UCB	586	622.6	—2.51*
3209	Union Minière	559	581.2	—1.51
3470	Solvay	635	604.9	2.06*
3107	Electrafina	672	603.1	4.71**
3234	Tessenderlo	587	635.3	—3.30**
3490	Traction et Elec.	599	622.3	—1.59
4000	ARBED	552	574.1	—1.50
4221	De Beers	571	608.2	—2.55*
4049	Imperial Oil Ltd.	637	641.4	—0.30
4145	Philips	566	587.3	—1.45
4014	Pres. Brand	553	565.8	—0.87
4066	Boeing	563	564.7	—0.11
4118	Rio Tinto	607	621.8	—1.01
4020	Stilfontein	557	605.9	—3.35**

TABLE 3-A

Total Actual and Expected Number of Runs Irrespective of Signs for One-day Interval (Forward Market)

Stock No.	Company	Actual	Expected	Z-Statistic
5001	Acec	600	608.0	—0.55
5010	CBR	608	631.4	—1.60
5012	Cockerill	512	556.2	—2.98**
5014	Cometra Oil	535	583.9	—3.35**
5016	Electrobel	566	618.0	—3.57**
5018	EBES	584	625.7	—2.86**
5019	Fabr. Nat.	589	627.8	—2.66**
5026	Gevaert	570	602.7	—2.26
5029	Interbrabant	625	620.8	0.29
5030	Intercom	596	627.0	—2.12*
5059	M.H.S.	536	608.9	—5.00**
5040	Petrofina	549	543.9	0.34
5042	Cobepa	569	612.3	—2.97**
5053	Sidro	643	622.6	1.40
5059	Tabacofina	600	641.3	—2.82**
5064	UCB	563	628.0	—4.45**
5066	Union Minière	576	578.4	—0.16
5072	Solvay	615	608.7	0.43
5073	Electrafina	643	648.5	—0.37
5081	Tessenderlo	555	637.3	—5.63**
5083	Traction et Elec.	591	604.3	—0.91
5003	ARBED	536	572.3	—2.46*
5015	De Beers	555	589.3	—2.38*
5028	Imperial Oil Ltd.	559	576.6	—1.20
5043	Philips	573	576.6	—0.20
5044	Pres. Brand	564	566.5	—0.17
5046	Boeing	564	538.6	1.69
5048	Rio Tinto	590	599.6	—0.66
5058	Stilfontein	593	592.4	0.04

TABLE 4

Extreme Values and Studentized Ranges for Daily Returns

(Spot Market)

Stock No.	Company	Largest return	Smallest return	Standard deviation	Studended range	Average return
3128	Acec	—14.13	— 9.52	2.41	9.82	0.0106
3299	CBR	11.39	—14.77	1.50	17.49	0.0300
3135	Cockerill	9.32	— 9.42	1.72	10.91	0.0213
3022	Cometra Oil	13.75	—19.86	2.95	11.40	0.0484
3108	Electrobel	5.49	— 4.91	0.93	11.23	0.0339
3117	EBES	5.02	— 6.13	0.86	12.95	0.0119
3171	Fabr. Nat.	13.93	— 9.92	2.32	10.30	0.0475
3217	Gevaert	5.57	— 6.51	1.14	10.61	—0.0122
3123	Interbrabant	11.63	— 6.67	1.27	14.37	0.0075
3124	Intercom	9.51	— 7.76	1.05	16.49	0.0213
3144	M.H.S.	10.00	— 8.67	2.22	8.40	0.1140
3441	Petrofina	9.87	— 8.50	1.93	9.51	0.0626
3484	Cobepa	9.64	— 8.80	1.75	10.56	0.0722
3109	Sidro	14.37	— 9.85	1.63	14.90	0.0269
3428	Tabacofina	8.68	— 6.57	1.58	9.66	—0.0015
3235	UCB	32.91	—14.78	1.89	25.23	0.0585
3209	Union Minière	11.43	— 6.98	1.47	12.52	0.0211
3470	Solvay	22.90	— 9.68	1.58	20.68	0.0508
3107	Electrafina	10.99	— 7.76	1.34	13.95	0.0169
3234	Tessenderlo	15.04	— 9.27	1.52	16.01	0.0330
3490	Traction et Elec.	6.83	—10.59	1.40	12.47	0.034
4000	ARBED	6.56	— 6.85	1.37	9.77	0.0331
4221	De Beers	18.42	—16.11	2.20	15.71	—0.0182
4049	Imperial Oil Ltd.	9.25	—10.10	2.15	9.02	—0.0123
4145	Philips	8.37	—11.83	1.73	11.64	—0.0384
4014	Pres. Brand	15.63	—10.29	2.68	9.66	0.1338
4066	Boeing	15.81	— 7.32	2.37	9.75	0.0539
4118	Rio Tinto	9.57	—18.44	2.25	12.42	—0.0269
4020	Stilfontein	15.23	—14.14	3.41	8.61	0.2130

TABLE 4-A

Extreme Values and Studentized Ranges for Daily Returns

(Forward Market)

Stock No.	Company	Largest return	Smallest return	Standard deviation	Student-ized range	Average return
5001	Acec	11.73	—12.06	2.15	11.53	0.0029
5010	CBR	10.95	—14.18	1.61	15.61	0.0321
5012	Cockerill	6.47	— 7.32	1.77	7.81	0.0170
5014	Cometra Oil	15.96	—14.09	2.75	10.94	0.0416
5016	Electrobel	4.39	— 4.42	0.88	10.05	0.0335
5018	EBES	9.75	— 9.09	0.91	20.70	0.0125
5019	Fabr. Nat.	12.00	—11.11	2.30	10.05	0.0494
5026	Gevaert	6.42	— 4.75	1.17	9.58	—0.0088
5029	Interbrabant	11.46	— 7.16	1.22	15.30	0.0056
5030	Intercom	7.14	— 4.71	1.02	11.67	0.0209
5036	M.H.S.	10.39	— 8.98	2.20	8.79	0.1102
5040	Petrofina	11.16	— 8.57	2.01	9.81	0.0647
5042	Cobepa	9.52	— 7.55	1.58	10.80	0.0692
5053	Sidro	13.29	—16.09	1.51	15.46	0.0237
5059	Tabacofina	9.91	— 8.39	1.58	11.60	—0.0010
5064	UCB	29.00	—13.04	1.75	23.98	0.0564
5066	Union Minière	12.16	— 6.29	1.50	12.29	0.0224
5072	Solvay	19.64	— 5.10	1.46	16.90	0.0513
5073	Electrafina	10.00	— 9.83	1.10	18.05	0.0147
5081	Tessenderlo	13.47	— 9.28	1.36	16.71	0.0323
5083	Traction et Elec.	6.05	— 8.70	1.33	11.09	0.0338
5003	ARBED	6.62	— 6.13	1.39	9.20	0.0329
5015	De Beers	9.57	— 9.64	2.00	9.62	—0.0255
5028	Imperial Oil Ltd.	9.58	— 8.76	2.13	8.58	—0.0107
5043	Philips	6.63	—18.41	1.85	13.51	0.0014
5044	Pres. Brand	15.00	—11.68	2.83	9.41	0.0992
5046	Boeing	15.51	— 8.64	2.41	10.04	0.0435
5048	Rio Tinto	13.98	—14.29	2.23	12.65	—0.0334
5058	Stilfontein	17.07	—12.81	3.52	8.49	0.1749

TABLE 5

Frequency Distributions for Daily Returns
(Spot Market)

Stock No.	Company	Intervals (in units of standard deviation from the mean)														
		⩽ −3.5	−3.5 to −3.0	−3.0 to −2.5	−2.5 to −2.0	−2.0 to −1.5	−1.5 to −1.0	−1.0 to −0.5	−0.5 to 0.5	0.5 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 2.5	2.5 to 3.0	3.0 to 3.5	⩾ 3.5
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
3128	Acec	2	6	4	9	20	73	137	501	115	54	30	16	4	5	7
3299	CBR	3	2	6	12	14	28	134	570	127	47	18	10	3	3	6
3135	Cockerill	2	4	6	18	26	57	122	488	130	73	26	18	6	3	4
3022	Cometra Oil	2	6	4	14	21	55	131	511	126	56	23	16	5	8	5
3108	Electrobel	5	7	5	9	26	35	118	545	128	49	29	8	10	5	4
3117	EBES	3	3	7	8	14	69	149	498	124	57	24	13	5	2	7
3171	Fabr. Nat.	2	5	4	14	20	60	116	558	90	52	25	14	7	9	7
3217	Gevaert	3	3	7	10	27	63	145	483	124	58	33	12	3	3	8
3123	Interbrabant	4	3	5	12	29	47	101	568	119	53	19	7	4	4	8
3124	Intercom	4	4	5	12	18	42	127	543	126	50	22	12	10	3	5
3144	M.H.S.	4	2	6	10	24	53	131	497	125	51	37	16	4	5	8
3441	Petrofina	5	0	6	11	28	52	136	492	119	79	24	13	7	4	7
3484	Cobepa	3	3	3	11	35	59	111	502	133	67	22	16	7	6	5
3109	Sidro	4	3	3	9	30	36	115	584	113	37	22	9	4	8	6
3428	Tabacofina	4	4	6	9	30	67	114	527	104	65	28	8	6	2	9
3235	UCB	2	2	1	11	17	36	119	599	116	45	17	9	4	2	3
3209	Union Minière	3	2	6	11	29	43	140	517	122	47	29	18	16	2	4
3470	Solvay	1	3	2	11	19	46	129	551	133	42	22	8	6	5	5
3107	Electrafina	3	5	8	6	30	52	121	521	127	48	37	12	6	3	4
3234	Tessenderlo	6	2	7	8	15	38	119	573	115	56	19	12	5	3	5
3490	Traction et Elec.	3	2	4	13	29	60	112	521	132	51	26	16	3	3	8
4000	ARBED	3	3	4	10	26	70	117	517	122	53	24	15	10	1	8
4221	De Beers	4	2	3	11	30	60	121	535	122	51	26	10	4	2	7
4049	Imperial Oil Ltd.	4	8	7	19	25	53	108	521	124	60	78	12	7	1	7
4145	Philips	5	1	2	9	21	68	133	518	103	61	31	15	4	1	5
4014	Pres. Brand	1	8	7	6	31	53	114	513	130	63	26	10	10	4	7
4066	Boeing	0	1	5	14	30	81	154	423	128	74	43	18	7	1	4
4118	Rio Tinto	3	1	6	9	22	73	130	492	126	55	28	13	9	3	3
4020	Stilfontein	1	4	7	5	28	65	148	459	122	74	37	15	5	7	6
	Average	3.07	3.41	5.03	10.72	24.96	54.96	152.92	521.61	121.89	56.14	26.56	12.79	6.24	3.72	5.90
	Expected Frenquency	0.23	1.10	4.78	16.26	43.30	90.28	147.33	376.40	147.33	90.28	43.30	16.26	4.78	1.10	0.23

TABLE 5-A

Frequency Distributions for Daily Returns
(Forward Market)

Stock No.	Company	Intervals (in units of standard deviation from the mean)														
		⩽ —3.5	—3.5 to —3.0	—3.0 to —2.5	—2.5 to —2.0	—2.0 to —1.5	—1.5 to —1.0	—1.0 to —0.5	—0.5 to 0.5	0.5 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 2.5	2.5 to 3.0	3.0 to 3.5	⩾ 3.5
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
5001	Acec	1	1	9	10	28	66	136	499	111	62	27	14	5	8	6
5010	CBR	3	3	5	7	21	45	112	583	118	42	20	11	3	0	10
5012	Cockerill	3	3	8	13	30	67	131	464	128	71	41	10	8	3	3
5014	Cometra Oil	3	4	4	15	21	56	130	520	104	63	32	18	3	4	6
5016	Electrobel	7	2	4	11	26	60	104	534	111	65	27	16	5	7	4
5018	EBES	2	1	5	7	24	55	145	502	141	59	16	13	7	2	4
5019	Fabr. Nat.	4	4	5	6	28	58	108	573	90	42	28	14	12	2	9
5026	Gevaert	2	4	6	11	18	72	150	493	111	46	33	18	7	5	7
5029	Interbrabant	3	4	5	9	19	53	131	543	122	50	24	9	5	1	5
5030	Intercom	2	7	3	10	21	62	129	520	123	43	34	18	4	2	5
5036	M.H.S.	2	1	7	8	25	72	108	503	141	43	31	20	12	3	7
5040	Petrofina	3	3	5	17	25	49	124	505	119	67	36	16	5	4	5
5042	Cobepa	2	0	10	9	30	46	126	529	105	70	24	12	8	6	6
5053	Sidro	3	2	5	10	25	45	130	558	114	43	21	8	7	3	9
5059	Tabacofina	4	4	7	13	17	52	120	571	89	51	24	16	6	3	6
5064	UCB	3	2	3	7	14	43	109	605	121	33	24	8	5	2	4
5066	Union Minière	3	3	5	9	22	56	166	478	119	56	34	14	11	3	4
5072	Solvay	0	6	4	12	17	49	131	536	128	48	26	12	7	3	4
5073	Electrafina	4	6	4	8	12	47	121	577	124	39	19	7	3	3	9
5081	Tessenderlo	7	4	5	10	20	36	100	588	115	50	20	13	7	3	5
5083	Traction et Elec.	3	3	9	9	21	61	130	495	126	66	35	11	5	3	6
5003	ARBED	5	4	4	15	22	41	147	525	115	46	21	15	10	8	5
5015	De Beers	5	3	7	14	28	72	120	497	118	64	23	17	10	1	4
5028	Imperial Oil Ltd.	6	2	6	17	34	62	129	451	164	63	28	10	4	2	5
5043	Philips	4	0	2	12	23	70	128	503	120	69	22	14	11	3	2
5044	Pres. Brand	3	0	9	14	22	53	143	486	131	60	29	15	7	6	5
5046	Boeing	1	1	4	10	39	78	146	422	139	79	35	19	5	3	2
5048	Rio Tinto	5	4	7	4	19	67	153	496	116	57	27	11	9	4	4
5058	Stilfontein	1	3	3	13	23	67	160	440	134	67	38	16	9	4	5
	Average	3.24	2.90	5.52	10.69	23.24	57.24	130.0	517.10	120.59	55.66	27.55	13.62	6.90	3.48	5.38
	Expected frequency	0.23	1.10	4.78	16.26	43.30	90.28	147.33	376.40	147.33	90.28	43.30	16.26	4.78	1.10	0.23

TABLE 6

Estimates of Characteristic Exponents

(Spot Market)

Stock No.	Company	Original sample .95	Original sample .96	Original sample .97	Sums of 2 .96	Sums of 5 .96
3128	Acec	1.490	1.517	1.555	1.388	1.484
3299	CBR	1.449	1.386	1.417	1.291	1.384
3135	Cockerill	1.499	1.524	1.538	1.399	1.486
3022	Cometra Oil	1.460	1.430	1.435	1.329	1.434
3108	Electrobel	1.440	1.382	1.435	1.287	1.373
3117	EBES	1.576	1.610	1.612	1.522	1.621
3171	Fabr. Nat.	1.246	1.266	1.320	1.167	1.271
3217	Gevaert	1.450	1.408	1.478	1.307	1.420
3123	Interbrabant	1.505	1.512	1.576	1.426	1.536
3124	Intercom	1.278	1.285	1.323	1.180	1.263
3144	M.H.S.	1.466	1.430	1.485	1.338	1.440
3441	Petrofina	1.497	1.514	1.558	1.413	1.539
3484	Cobepa	1.503	1.537	1.573	1.428	1.533
3109	Sidro	1.244	1.294	1.360	1.195	1.318
3428	Tabacofina	1.445	1.398	1.469	1.318	1.437
3235	UCB	1.491	1.480	1.508	1.373	1.476
3209	Union Minière	1.468	1.473	1.520	1.371	1.468
3470	Solvay	1.473	1.442	1.459	1.338	1.447
3107	Electrafina	1.450	1.446	1.496	1.350	1.442
3234	Tessenderlo	1.471	1.469	1.465	1.355	1.478
3490	Traction et Elec.	1.473	1.459	1.496	1.353	1.445
4000	ARBED	1.480	1.469	1.508	1.389	1.477
4221	De Beers	1.451	1.431	1.485	1.327	1.431
4049	Imperial Oil Ltd.	1.261	1.284	1.367	1.177	1.280
4145	Philips	1.556	1.572	1.603	1.452	1.563
4014	Pres. Brand	1.451	1.429	1.450	1.340	1.459
4066	Boeing	1.714	1.746	1.755	1.636	1.701
4118	Rio Tinto	1.515	1.548	1.621	1.450	1.542
4020	Stilfontein	1.502	1.536	1.599	1.447	1.551
	Average	1.459	1.458	1.499	1.357	1.459

TABLE 6-A

Estimates of Characteristic Exponents

(Forward Market)

Stock No.	Company	Original sample .95	Original sample .96	Original sample .97	Sums of 2 .96	Sums of 5 .96
5001	Acec	1.457	1.436	1.473	1.351	1.461
5010	CBR	1.252	1.289	1.340	1.190	1.279
5012	Cockerill	1.566	1.595	1.638	1.493	1.587
5014	Cometra Oil	1.455	1.429	1.450	1.322	1.421
5016	Electrobel	1.430	1.382	1.428	1.289	1.402
5018	EBES	1.606	1.594	1.594	1.501	1.609
5019	Fabr. Nat.	1.186	1.231	1.296	1.129	1.249
5026	Gevaert	1.447	1.408	1.457	1.305	1.417
5029	Interbrabant	1.503	1.529	1.575	1.378	1.442
5030	Intercom	1.464	1.436	1.507	1.353	1.464
5036	M.H.S.	1.463	1.456	1.502	1.354	1.447
5040	Petrofina	1.477	1.458	1.517	1.354	1.456
5042	Cobepa	1.443	1.382	1.449	1.288	1.416
5053	Sidro	1.415	1.322	1.375	1.230	1.347
5059	Tabacofina	1.192	1.226	1.263	1.134	1.244
5064	UCB	1.422	1.321	1.377	1.216	1.324
5066	Union Minière	1.565	1.584	1.588	1.492	1.581
5072	Solvay	1.473	1.442	1.474	1.335	1.459
5073	Electrafina	1.447	1.381	1.408	1.288	1.395
5081	Tessenderlo	1.256	1.282	1.319	1.183	1.294
5083	Traction et Elec.	1.549	1.549	1.596	1.446	1.551
5003	ARBED	1.452	1.405	1.438	1.317	1.418
5015	De Beers	1.468	1.419	1.483	1.324	1.420
5028	Imperial Oil Ltd.	1.607	1.629	1.665	1.488	1.574
5043	Philips	1.555	1.575	1.578	1.474	1.568
5044	Pres. Brand	1.493	1.489	1.525	1.387	1.482
5046	Boeing	1.710	1.716	1.774	1.615	1.727
5048	Rio Tinto	1.568	1.575	1.626	1.470	1.540
5058	Stilfontein	1.658	1.694	1.686	1.596	1.672
	Average	1.468	1.456	1.497	1.355	1.457