Working Paper

Gorbachev Betas
The Russian Coup and Market Blues

by

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Abstract

Extensive work has been done on response of stock markets to a variety of events, such as announcement of a firm's financial results, changes in a firm's accounting policies and changes in the macro-economic variables. However, little work has been done on response of stock markets to political events. These events, characterized by their suddenness, are often too short lived to leave an impression on the real economy. Yet, their occurrence results in significant fluctuations in prices of securities. One such event which shook the world was the abortive coup in the Soviet Union in August 1991. In this paper we have analyzed the responses of stock markets in 24 countries to the coup, and found differences in the adjustment processes. We also analyzed the impact of fluctuations in exchange rates, and inferred that changes in exchange rates, generally ignored by studies on market efficiency, could be an important factor in explaining the price movements. The large fluctuations in prices due to political events could partially explain the excessive volatility, not justified by economic reasoning, typically observed in stock markets.

GORBACHEV BETAS: THE RUSSIAN COUP AND THE MARKET BLUES

Introduction

It would be truism to state that political events significantly influence stock prices. These events, characterised by their suddenness, are often too short lived to be of relevance to real economy. One such event which shook the markets all over the world was the August 18 coup in the Soviet Union. As the news of overthrow of Gorbachev and takeover of control by hardline communists spread, the markets plunged in a day of chaotic trading on August 19. The markets rebounded to original levels, after the 60 hours coup was crushed on August 21, 1991. The event is of considerable interest from the point of view of market efficiency. How efficiently did the markets incorporate the impact of the upheaval in Soviet Union and its quick resolution?

Market efficiency is one of the fundamental principles in finance theory. In an efficient market, prices fully reflect all available information. Traditionally, market efficiency has been classified into three forms: weak, semi-strong and strong (for a cogent exposition see Fama(1965,1970,1976)). We shall be interested in the semi-strong and the strong form of market efficiency as we are dealing with response to specific events. The semi-strong form of efficiency postulates that prices adjust correctly and quickly to receipt of information, so that no one can earn abnormal returns by trading on the basis of the information received. The strong form of efficiency postulates that a market is omniscient, and therefore all future information is anticipated by it and incorporated in the prices.

This paper reports findings based on investigation of responses of 24 stock markets to the coup in the Soviet Union. We also examined the impact of fluctuations in the exchange rates on the behaviour of stock markets.

The Methodology

Since the semi-strong form of market efficiency is concerned with the behaviour of returns after an event has occurred, we should be able to clearly demarcate the time of occurrence of events. In the context under discussion, there are two events: the coup and the crushing of the coup. The coup took place in the night of August 18-19 and the official news that it was crushed came through announcement on Radio Moscow at 21 hrs. local time on August 21. The dates and the times are important because our focus is on markets spread across the world, which are open at different times. Since the second event closely followed the first, and there was continuous flow of information about the abortive coup, we shall study the process of adjustment in the market indices during the period covering the two events together. The response of the markets has been analyzed using the

standard methodology of studying the behaviour of abnormal returns (first used by Fama, Fisher, Jensen and Roll (1969)). The following return generating process has been used for computing the abnormal returns:

$$RM_{i,t} = \mu_i + \epsilon_{i,t}$$

where, $RM_{i,t}$ is the return in market i in period t

u_i is the expected return in the market i

$e_{i,t}$ is the error term

The data used are the trading day returns computed for the 24 markets, using the closing values of indices, as reported in Financial Dailies for the entire month of August 1991. The expected return and the variability of return in each market have been estimated using the observed returns from August 1 to 18. We have deliberately chosen a small sample to estimate the mean and the standard deviation to ensure that the responses to the coup are judged against immediately preceding behaviour of the markets. The abnormal returns from August 19 onwards have been computed as the difference between the observed return and the estimated mean return. The statistical significance of the observed abnormal returns in each market has been inferred using the respective value of estimated standard deviation. The inferences about the efficiency of markets are drawn based on the observed pattern of abnormal returns.

The increasing integration of financial markets in the world has resulted in quick cross border movement of funds globally. This is particularly true for highly developed economies. As a result of this, the stock markets, especially in the developed countries, are increasingly susceptible to international flow of funds resulting from fluctuations in the exchange rates. Therefore, we investigated the impact of fluctuations in the exchange rates on the behaviour of the markets, by computing returns in terms of dollars.

The Behaviour of Markets

The return for each trading day from August 19 to 28, and the mean and the standard deviation estimated using the returns from August 1 to 18, are presented in Table 1. The average returns indicate that while the major markets in Europe were experiencing a rise in values, prior to the coup, the markets in the U.S.A. and most of the markets in the Asia-Pacific region were experiencing a decline. The values of standard deviations indicate that the markets in Asia-Pacific region were far more volatile as compared to the Western markets.

The typical pattern of returns, as can be observed from Table 1 and Table 2, was a significant drop in values on August 19, followed by continuous recovery, that continued till August

22. The fall in values was led by markets in the Asia-Pacific region as they were the first to open for transactions after the coup. and the recovery began in the U.S. markets on August 21 itself. as the news that the coup had been crushed was received. The recovery spread to other markets when they opened for business the next day.

As mentioned earlier, a proper comparison must account for the differences in the trend observed in the markets, prior to the event. The t-values of abnormal returns from August 19 to August 28, were therefore computed. These are presented in Table 3. A comparison of values in Tables 2 and 3 reveals that though the declines on August 19, in percentage terms in the European and the Asia-Pacific markets were comparable, statistically, the European markets experienced a far more significant decrease in values. Using a significance level of 5% (t-value of approximately 1.782), the number of significant price movements, with "+" indicating a rise and "-" indicating a fall in values, are summarised below:

Region	No. of markets	Aug.19 +	Aug.19 −	Aug.20 +	Aug.20 −	Aug.21 +	Aug.21 −	Aug.22 +	Aug.22 −	Aug.23 +	Aug.23 −
Asia-Pacific	12	0	8	4	4	2	0	9	0	0	0
Europe	11	0	11	8	0	11	0	5	0	0	1
U.S.A.	1	0	1	0	0	1	0	0	0	1	0
Total	24	0	20	12	4	14	0	14	0	1	1

The number of significant price changes in the four days from August 19 to 22 are 20, 16, 14 and 14 (out of 24). Since each significant change has a chance of occurrence of only 0.05, the chance of observing such large number of significant changes in one day, is very low. Thus, it is clear that markets behaved abnormally on all the four days. The fall in values, as a result of the coup was immediate. while the recovery in values was equally spread over the next three days. Given this overall pattern of returns in the markets, let us examine the behaviour of each market separately.

The Western Markets

The U.S. market fell significantly on August 19, on receipt of information about the coup. and recovered significantly on August 21, when it became known that the coup had been crushed. The adjustment in values was swift, the decline as well as the recovery being completed in just one day.

All the European markets (including the British market!) showed almost identical pattern of price movements. They fell as expected on August 19, but started recovering the very next day. well before it became clear that the coup had failed. There could be two possible explanations for this behaviour. The markets perhaps over-reacted on the first day, and corrected themselves partially in the next two days, with a final recovery on August 22, after the "good" news was received. The other possibility is that, after discounting for the worst, as the news kept filtering out about the resistance to the coup, the markets correctly anticipated the final outcome. well before the occurrence of the event itself. Further investigation of which of the two explanations appears plausible has been carried out later.

The Asia-Pacific Markets

The Asia-Pacific markets presented a varied and therefore more interesting picture. Four of the twelve markets, those in Manila, Seoul, New Zealand and Bombay did not drop significantly on August 19, despite the sharp decline in prices in all other markets. The markets in Manila and New Zealand did not decline on August 19, but fell on August 20. The main reason for statistically insignificant drop in Seoul is the high volatility of returns the market experienced in the first half of August. The Indian market (Bombay), astonishingly, went up on August 19. It did not deviate from its normal behaviour, though it did show a positive return on August 22 also.

The behaviour of the Japanese market was identical to that of the U.S. market; it fell precipitously on August 19 and recovered on August 22. The markets in Hong Kong, Sydney, Singapore, Kuala Lumpur and Jakarta behaved the way the European markets behaved. The significant fall in values on the first day was followed by significant recovery spread over the next three days. The markets in Bangkok and Taipei dropped significantly on August 19 as well as August 20, the fall in values being spread over two days. In fact, the Thai government issued a public statement to the effect that the Thai economy would not be affected in a major way because of the coup. to stem the wave of selling in Thailand. While Taipei recovered on August 22, Bangkok showed significant recovery spread over August 21 and 22.

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Impact of Exchange Rates

While the exchange rates of currencies (vis-a-vis the dollar) of Asia-Pacific countries did not show any significant changes during the three days of turbulence, the European currencies fell sharply against the dollar on the first day after the coup. This is because the exchange rate setting in most Asia-Pacific countries is either the fixed or managed float system. A comparison of returns in local currencies and in terms of dollars in the European markets, presented in Table 4, conveys the striking impact on dollar returns, because of strengthening of dollar. The reduction in values (in terms of dollars) in most European markets was a double digit figure, with Germany showing the highest decrease of about 16% in just one day. Given these precipitous declines, it is hardly surprising that the markets recovered the next day, as international funds would have started buying into European markets, exchanging dollar for European currencies. There is thus evidence of an over-reaction in the European markets (in terms of dollar returns). This may have resulted in the buying witnessed in the markets from the very next day after the decline.

Conclusions

The 24 stock markets studied presented a rich collage of responses. The observed adjustment process has implications for three aspects: i) assessment of market efficiency using the standard approach based on pattern of abnormal returns, ii) international diversification and influence of exchange rate fluctuations on stock market returns, iii) the concept of market efficiency. We shall examine each of these aspects.

Efficiency of Markets

Before stating our inferences, it would be worthwhile to outline the conclusions reached by other studies on the stock markets investigated in this paper. A large number of studies have been carried out on the U.S. markets. There is overwhelming evidence, that the stock markets in the U.S. are efficient in the semi-strong form. Stock markets in other countries have not been studied as extensively as the U.S. markets. The limited number of studies also do not provide a consistent conclusion about market efficiency. We would quote a few studies to highlight the conflicting views. A recent study by Ko and Lee (1991) concludes that even weak form efficiency does not hold for markets in Japan, Singapore, Hong Kong, Korea and Taiwan. However, Ariff and Finn (1989) found evidence of semi-strong form of efficiency even in thinly traded stocks in Singapore. Though there is evidence that large European markets are efficient in the semi-strong form, Darrat (1987) found that markets in U.K. and Germany are not efficient in adjusting to changes in monetary policy. The

Indian market has been found to be efficient in the weak form by Barua(81), Sharma and Kennedy(1977). and Rao and Mukherjee (1971). Ramachandran (1985) found Indian market efficient in semi-strong form. However, Barua and Raghunathan (1986. 1987) found evidence of inefficiency arising from government interventions in the market.

It is clear from the above brief review that except for the U.S. market, perhaps because of paucity of work, there is no unequivocal view on efficiency of the other markets. The difficulty of arriving at an opinion on these markets is compounded by the fact that in the studies on efficiency, there is no agreed choice of length of a "period"; the returns analyzed could be daily, weekly or monthly. Therefore, when two studies conclude that the markets are efficient because the prices adjusted in just one period, the actual time span could be one day in one study and one month in the other! There is also a lack of consensus on the number of periods in which abnormal returns must disappear to conclude that a market is efficient. These make it difficult to compare the conclusions reached by different studies. We therefore decide to clearly specify our notion of efficiency, in the context studied, based on which we have judged the efficiency of the markets.

We hypothesize the efficient process in the our context as follows: i) no significant change in the behaviour of market from August 19 to 22, would imply efficiency in the strong form. ii) a significant decline in values on August 19 followed by a significant rise in value on August 21 (for U.S.) and August 22 (for other markets) would imply efficiency in the semi-strong form. Any other adjustment process would be inefficient. With these rules for judging the markets. our conclusions about each market is as follows:

* None of the markets (except perhaps the market at Bombay) was found efficient in the strong form. This conclusion is reached because all of them (except Bombay) showed significant decline in values on August 19.

* The two largest stock markets in the world, in New York and Tokyo, adjusted to the events as postulated in theory, upholding the process prescribed for markets that are efficient in the semi-strong form.

* The European markets showed an over-reaction to the coup; they were inefficient in adjusting to the coup. However, we must point out that the decline in values was accentuated by the strengthening of dollar vis-a-vis all European currencies. It is debatable whether the recovery would have begun (the very next day after the steep decline in values), without the weakening of the currencies.

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* The markets in Hong Kong, Sydney, Singapore, Kuala Lumpur and Jakarta behaved like the European markets. Since there was no significant change in the exchange rates of their respective currencies vis-a-vis the dollar, their over-reaction to the event from the point of view of efficiency is less pardonable. They were certainly inefficient.

* The markets in Bangkok and Taipei, declined significantly on two successive days, and the former recovered significantly over the next two days. The relatively slow response is a sign of inefficiency. The markets in Manila and New Zealand declined only on August 20. The delayed response is also a sign of inefficiency as it provides an opportunity to earn abnormal returns. The exceptionally high volatility of Seoul ensured that even the large decline in values would not be statistically significant, therefore we shall refrain from passing a judgement on the Korean market.

* The market in Bombay behaved like a market that is efficient in the strong form. This strong conclusion however must be tempered with the fact that the market was closed on August 20, hence no clue is available about its behaviour on the second day after the coup. The surprising aspect about Bombay though was the rise in values on August 19, in complete contrast to markets the world over. A partial explanation of this can be found in the fact that a debacle in Soviet Union may be a boon in disguise for developing economies (like India's) as it reduces the threat of diversion of international aid from the third world countries to East Europe.

Exchange Rate Fluctuations

International diversification is increasingly attracting attention of researchers. Some of the studies done in this area are: Grubel (1968), Levy and Marshall (1970), Solnik (1974), Biger (1979), Makridakis and Wheelwright (1974), Hilliard (1979), Panton, Lessig and Joy (1976), Errunza(83), Errunza and Losq(87), Chan and Leung(90). These studies have generally focused attention on less than perfect correlations between returns in markets in two different economies and explored the stability of the correlation matrices. While some of the studies have accounted for impact of exchange rates on returns, most of the studies ignore exchange risk using the argument that this risk can be completely hedged against and are therefore irrelevant. However, none of the studies on international markets have investigated the efficiency (or the lack of it) in international markets when responding to unexpected developments in the political arena. With ever increasing globalization of financial markets, and easy, quick and increasingly less costly transfer of funds across nations, it has become possible to exploit opportunities that arise during major upheavals in the world. Our

analysis clearly points out the need for detailed studies on the joint response of the two markets to such unanticipated events.

The Concept of Efficiency

. The standard methodology, that of investigating the pattern of abnormal returns has come under an indirect attack from a modification of the notion of market efficiency in the last decade. Shiller (1981,1990), Summers (1986), Poterba and Summers (1986), Cutler, Poterba and Summers (1989), among others have investigated what is termed as "excessive" volatility of stock markets. This variability has been called irrational because it can not be explained by the variability observed in the underlying economic factors. The large fluctuations in values because of short lived political events, such as the abortive coup in the Soviet Union, shows that there are important factors, which have little economic relevance, that sway the markets significantly from time to time. These increase the volatility of returns in the markets. Should the response of stock markets to political events be called irrational? ... Perhaps no! There is a need to assess the impact of such events over longer time spans, in order to develop a better understanding about the variability of stock market returns.

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TABLE 1
Returns in World Stock Markets

| | Returns:Aug.1 - 18 | | | | | | | | | |
	Avg	Std dev	Aug.19	Aug.20	Aug.21	Aug.22	Aug.23	Aug.26	Aug.27	Aug.28
Asia - Pacific										
Hong Kong (Hang Seng)	0.1504	0.7365	-8.3807	3.3763	0.3960	4.7077	-0.6068	N.A.	N.A.	-0.3471
Singapore (Straits Times)	-0.4844	0.7053	-6.0635	2.8146	-0.0468	4.9470	-1.6388	-0.1361	-0.2783	0.5119
Sydney (All Ordinaries)	-0.0371	0.5969	-4.1356	1.4846	0.7544	1.0482	-0.7216	-0.4997	0.4566	0.0714
Tokyo (Nikkei 225)	-0.3701	1.2371	-5.9507	1.0733	1.6809	2.1049	-2.0005	-2.1440	0.2257	-0.0895
Kuala Lumpur (Composite)	-0.8688	1.3436	-6.6813	4.4632	-0.0284	4.8818	-1.8351	-0.3220	-0.5796	-0.5978
Bangkok (SET)	-0.5245	1.0234	-4.6343	-6.4428	4.5134	5.3002	-1.3204	0.1937	0.8367	0.2078
Seoul (Composite Stock)	-0.5447	2.7070	-4.6465	2.4611	0.5772	3.8953	-2.1285	-0.0969	-1.5207	0.2810
Taipei (Weighted Price)	-0.5187	2.3064	-5.0435	-5.1665	-0.3834	6.7659	-3.4762	-0.2397	-2.3230	-1.3301
Manila (Composite)	-0.5749	1.1126	-0.5279	-3.1043	0.4040	3.8925	1.1744	2.1988	1.4902	2.0652
Jakarta (Stock Index)	-0.2180	0.7899	-8.0108	-0.8303	4.3026	-0.0796	0.1180	1.4424	0.5368	-1.5548
New Zealand (NZSE-40)	-0.2418	0.8081	-0.1537	-3.3590	0.6517	2.9986	-0.7250	-0.7106	-0.4819	0.9328
Bombay (National Index)	0.3248	1.2637	1.3000	N.A.	0.0317	2.4484	N.A.	N.A.	-1.3320	N.A.
Europe										
Amsterdam (CBS Trend)	-0.0796	0.4545	-5.1836	1.5945	2.2422	0.2193	0.2188	0.1092	-0.5453	0.1096
Brussels (Stock Index)	0.1138	0.3418	-5.1463	1.5212	1.0161	1.3622	-0.7899	0.1251	0.3644	0.0030
Frankfurt (FAZ)	0.1440	0.5553	-9.9848	2.6528	2.2922	4.1020	0.4299	1.5868	-0.4039	0.0394
Helsinki (HEX)	-0.2887	0.3926	-4.1067	0.3384	1.2014	1.2392	0.1543	-0.0616	0.3597	-0.1843
London (FT 30)	0.1363	0.6006	-3.2323	0.7642	2.1447	1.1654	0.5784	N.A.	N.A.	0.0828
Madrid (General Index)	0.0684	0.7464	-8.2505	3.6163	3.5717	0.5441	0.7614	1.3631	-0.3362	-0.3080
Milan (MIB)	-0.1259	0.4945	-7.0000	2.0731	3.3849	0.7484	-0.8357	0.0936	0.1871	-0.4669
Paris (CAC 40)	0.3590	0.6838	-7.3000	2.2536	3.9002	1.4647	0.7872	1.0870	-0.2002	0.1168
Stockholm (Affarsvariden)	-0.0092	1.0550	-6.4613	2.0655	2.7682	0.6130	-0.6185	1.1519	-0.1837	-0.1932
Vienna (Stock Index)	-0.1938	0.3953	-7.2000	N.A.	4.2427	7.3141	0.5041	0.8194	-1.1033	-0.3476
Zurich (SBS)	0.0347	0.3100	-6.4246	1.2989	2.8976	0.8416	0.5457	0.2873	-0.5093	0.4319
U.S.A.										
Dow Jones	-0.1328	0.5899	-2.3430	0.5248	3.0007	0.2086	1.0857	-0.0220	-0.4343	0.9606

TABLE 2
The Abnormal Stock Returns

	Aug.19	Aug.20	Aug.21	Aug.22	Aug.23	Aug.26	Aug.27	Aug.28
Asia – Pacific								
Hong Kong (Hang Seng)	-8.5311	3.2258	0.2456	4.5573	-0.7573	N.A.	N.A.	-0.4975
Singapore (Straits Times)	-5.5792	3.2990	0.4376	5.4314	-1.1544	0.3483	0.2061	0.9963
Sydney (All Ordinaries)	-4.0985	1.5217	0.7915	1.0853	-0.6846	-0.4626	0.4937	0.1085
Tokyo (Nikkei 225)	-5.5805	1.4435	2.0511	2.4751	-1.6304	-1.7738	0.5958	0.2806
Kuala Lumpur (Composite)	-5.8125	5.3320	0.8404	5.7506	-0.9663	0.5468	0.2892	0.2709
Bangkok (SET)	-4.1099	-5.9184	5.0379	5.8247	-0.7959	0.7181	1.3611	0.7323
Seoul (Composite Stock)	-4.1017	3.0058	1.1219	4.4401	-1.5837	0.4478	-0.9759	0.8258
Taipei (Weighted Price)	-4.5248	-4.6478	0.1353	7.2847	-2.9575	0.2791	-1.8043	-0.8114
Manila (Composite)	0.0470	-2.5293	0.9789	4.4675	1.7494	2.7738	2.0651	2.6401
Jakarta (Stock Index)	-7.7928	-0.6123	4.5206	0.1384	0.3359	1.6604	0.7547	-1.3369
New Zealand (NZSE-40)	0.0881	-3.1172	0.8935	3.2404	-0.4832	-0.4688	-0.2401	1.1746
Bombay (National Index)	0.9752	N.A.	-0.2931	2.1236	N.A.	N.A.	-1.6567	N.A.
Europe								
Amsterdam (CBS Trend)	-5.1040	1.6742	2.3218	0.2989	0.2984	0.1888	-0.4656	0.1893
Brussels (Stock Index)	-5.2601	1.4074	0.9023	1.2484	-0.9037	0.0113	0.2506	-0.1108
Frankfurt (FAZ)	-10.1288	2.5088	2.1482	3.9580	0.2859	1.4428	-0.5479	-0.1046
Helsinki (HEX)	-3.8180	0.6271	1.4901	1.5279	0.4430	0.2271	0.6484	0.1044
London (FT 30)	-3.3686	0.6279	2.0084	1.0291	0.4421	N.A.	N.A.	-0.0535
Madrid (General Index)	-8.3189	3.5479	3.5034	0.4758	0.6930	1.2947	-0.4045	-0.3763
Milan (MIB)	-6.8741	2.1989	3.5108	0.8742	-0.7098	0.2195	0.3130	-0.3410
Paris (CAC 40)	-7.6590	1.8945	3.5411	1.1056	0.4281	0.7280	-0.5592	-0.2423
Stockholm (Affarsvarlden)	-6.4521	2.0747	2.7775	0.6223	-0.6093	1.1611	-0.1744	-0.1840
Vienna (Stock Index)	-7.0062	N.A.	4.4365	7.5079	0.6980	1.0133	-0.9095	-0.1537
Zurich (SBS)	-6.4593	1.2642	2.8629	0.8068	0.5109	0.2526	-0.5440	0.3972
U.S.A.								
Dow Jones	-2.2101	0.6576	3.1335	0.3414	1.2185	0.1108	-0.3015	1.0935

TABLE 3
The t-values of Abnormal Stock Returns

	Aug.19	Aug.20	Aug.21	Aug.22	Aug.23	Aug.26	Aug.27	Aug.28
Asia + Pacific								
Hong Kong (Hang Seng)	-11.5828	4.3798	0.3334	6.1875	-1.0282	N.A.	N.A.	-0.6755
Singapore (Straits Times)	-7.9098	4.6772	0.6204	7.7004	-1.6367	0.4938	0.2922	1.4125
Sydney (All Ordinaries)	-6.8664	2.5493	1.3260	1.8183	-1.1469	-0.7751	0.8271	0.1818
Tokyo (Nikkei 225)	-4.5109	1.1668	1.6579	2.0007	-1.3179	-1.4338	0.4816	0.2268
Kuala Lumpur (Composite)	-4.3262	3.9685	0.6255	4.2801	-0.7192	0.4070	0.2152	0.2017
Bangkok (SET)	-4.0160	-5.7831	4.9227	5.6915	-0.7777	0.7017	1.3300	0.7155
Seoul (Composite Stock)	-1.5152	1.1104	0.4145	1.6402	-0.5851	0.1654	-0.3605	0.3051
Taipei (Weighted Price)	-1.9619	-2.0152	0.0587	3.1585	-1.2823	0.1210	-0.7823	-0.3518
Manila (Composite)	0.0422	-2.2734	0.8799	4.0154	1.5723	2.4931	1.8562	2.3730
Jakarta (Stock Index)	-9.8661	-0.7752	5.7233	0.1752	0.4253	2.1022	0.9555	-1.6925
New Zealand (NZSE-40)	0.1090	-3.8576	1.1058	4.0101	-0.5980	-0.5802	-0.2971	1.4536
Bombay (National Index)	0.7717	N.A.	-0.2319	1.6805	N.A.	N.A.	-1.3110	N.A.
Europe								
Amsterdam (CBS Trend)	-11.2302	3.6836	5.1086	0.6577	0.6567	0.4154	-1.0245	0.4165
Brussels (Stock Index)	-15.3912	4.1181	2.6401	3.6529	-2.6444	0.0330	0.7334	-0.3242
Frankfurt (FAZ)	-18.2400	4.5178	3.8685	7.1276	0.5149	2.5983	-0.9867	-0.1883
Helsinki (HEX)	-9.7256	1.5974	3.7958	3.8921	1.1284	0.5785	1.6516	0.2659
London (FT 30)	-5.6083	1.0454	3.3437	1.7133	0.7361	N.A.	N.A.	-0.0890
Madrid (General Index)	-11.1449	4.7532	4.6935	0.6374	0.9284	1.7345	-0.5420	-0.5042
Milan (MIB)	-13.9015	4.4469	7.0998	1.7679	-1.4354	0.4439	0.6329	-0.6896
Paris (CAC 40)	-11.2010	2.7707	5.1787	1.6170	0.6261	1.0646	-0.8178	-0.3543
Stockholm (Affersvarlden)	-6.1155	1.9665	2.6326	0.5898	-0.5775	1.1006	-0.1653	-0.1744
Vienna (Stock Index)	-17.7228	N.A.	11.2227	18.9920	1.7656	2.5631	-2.3007	-0.3889
Zurich (SBS)	-20.8387	4.0785	9.2360	2.6030	1.6484	0.8149	-1.7551	1.2815
U.S.A.								
Dow Jones	-3.7468	1.1148	5.3122	0.5788	2.0657	0.1878	-0.5111	.1.8537

Table 4
Impact of Exchange Rates

Europe	Local Currency Returns (%)	Dollar Returns (%)
Amsterdam (CBS Trend)	-5.1836	-10.6796
Brussels (Stock Index)	-5.1463	-11.0134
Frankfurt (FAZ)	-9.9848	-16.0477
Helsinki (HEX)	-4.1067	-9.6408
London (FT 30)	-3.2323	-7.0785
Madrid (General Index)	-8.2505	-13.1227
Milan (MIB)	-7.0000	-10.8852
Paris (CAC 40)	-7.3000	-11.5476
Stockholm (Affarsvariden)	-6.4613	-11.7571
Vienna (Stock Index)	-7.2000	-12.4545
Zurich (SBS)	-6.4246	-8.9687