

AN INVESTIGATION OF THE PRICE
MOVEMENTS OF THE KOREA FUND

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ABSTRACT

This study investigated the underlying forces which affected the price movements of the Korea Fund during the period of January 5, 1987 through March 31, 1988. The results indicate that during the period when Korea was unstable politically and economically, the price movements of the Korea Fund follow the movements of the Dow Jones Industrial Average. On the other hand, during the period when Korea was stable politically and economically, the price movements of the Korea Fund closely follow the trend of the Korean stock market index.

I. INTRODUCTION

Korea Fund is a common stock which is traded on the New York Stock Exchange (NYSE). As the name indicates, Korea Fund is a portfolio composed of equity securities of Korean companies. As of September 1987, the investment portfolio of Korea Fund consists of common stocks (93.9%), preferred stocks (0.2%), and other assets (5.9%).

The Korea Fund, Inc. incorporated in the State of Maryland in May 1983 and began operations in August 1984. The initial offering of the stock was made on August 22, 1984, at \$12 per share and was underwritten by the First Boston Corporation. The fund was, and still is, the first U.S. investment company organized to invest in Korean securities. Currently, the Korea Fund, Inc. is located in New York, and its transfer agent and registrar is State Street Bank and Trust company.

The special feature of Korea Fund is its license to invest in securities of Korean companies since investment in Korean securities is restricted and requires the permission of the Korean government. Permission is granted through a license from the Korean Ministry of Finance; it allows the Korea Fund to invest in securities and to repatriate income received from dividends, interest received, and capital gains realized on portfolio trading. Since the Korean authorities have no plans to open up the Korean stock market to other U.S. investment entities or to individual investors in near future, essentially the Korea Fund is the only vehicle that U.S. investors can use to participate in the Korean stock market.

The recent spectacular growth of the Korean economy has attracted many U.S. investors' attention to the Korea Fund. The increase in daily trading volume of the Korea Fund indicates the increased interest of investors. However, the daily price fluctuations of Korea Fund are noticeably more severe than most other stocks.

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Because the ultimate goal of investors is to maximize the returns while minimizing the risk, the wide-range and frequent fluctuations of the daily price of the Korea Fund give a negative impression to current as well as potential investors.

The purpose of this paper is to investigate the underlying forces which have affected the price movements of Korea Fund. This study covers the period of January 5, 1987 (the first trading day in 1987) through March 31, 1988. The results of this study provide investors with a better understanding about the daily price fluctuations of the Korea Fund.

II. THE STUDY

Conceivably, a number of factors can affect the price changes of the Korea Fund. Most of all, day-to-day developments in the Korean economy should be a driving force of the price changes of the Korea Fund. This is because 95.1% of the total assets of the Korea Fund, Inc. represent the value of a portfolio which consists of equity securities of Korean companies. Major industry groups in its portfolio as of September 30, 1987, are: basic industry (31.3% of total assets), consumer cyclical (20.4%), technology (16.8%), and consumer nondurable (11.0%). (Appendix 1 provides a more detailed information about the composition of the portfolio.) In essence, Korea Fund is a well-diversified portfolio with equity securities of Korean companies. Therefore, theoretically, the price of the Korea Fund should follow the pattern of movements of the Korean stock market index. Considering the fact that the local time of Korea is 14 hours ahead of the U.S. Eastern Standard Time, there should be enough time for the U.S. stock market to incorporate any changes in the Korean economy into the price of the Korea Fund.

However, recent price movements of the Korea Fund do not seem to follow the trend of Korean stock market indices. Rather, the price of Korea Fund seems to follow the leading index of New York Stock Exchange, the Dow Jones Industrial Average (DJIA). One good example of parallel movement between the price of the Korea Fund and the DJIA occurred during the October 1987 stock market crash in the U.S. Starting on October 14, the DJIA dropped significantly and recorded the biggest one-day drop in its history (508 points) on October 19, the day which is referred to as Black Monday. During the same period, however, Korean stock market indices stayed almost flat. Theoretically, the price of the Korea Fund should have stayed the same, if it had been representative of the Korean stock market. Instead, the price of the Korea Fund dropped sharply along with the DJIA. Table 1 shows the daily changes of the DJIA, the prices of the Korea Fund, and Korean stock market indices during the period of October 13 through October 19.

Another factor that cannot be ignored in understanding the price movements of the Korea Fund is the political climate of Korea. Even though the Korean economy has grown explosively and probably will continue to grow the same way, investors are bothered by the political unrest of Korea. In the past, the authoritarian regime

[Table 1] DJIA, Prices of Korea Fund, and Korean Stock Market Indices
(October 13 - 19, 1987)

Date	DJIA	% Change	Prices of Korea Fund	% Change	Korea Index	% Change
Oct. 13	2,508.16		\$80 1/2		512.59	
Oct. 14	2,412.70	- 3.81	80 5/8	+ .16	513.46	+ .17
Oct. 15	2,355.09	- 2.39	79 1/8	- 1.86	509.59	- .75
Oct. 16	2,246.74	- 4.60	77 1/4	- 2.37	514.10	+ .89
Oct. 19	1,738.74	- 22.61	59 1/2	- 22.98	516.61	+ .49

caused political problems. Recently, the more militant Korean labor force is a part of political unrest. One goods example of the impact of the change in political climate on the price changes of the Korea Fund is the quick, large one-day price increase which occurred on June 29, 1987. On that day, Mr. Roh Tae Woo, then hand-picked successor by President Chun, now the new president, accepted the oppositions demands including direct presidential elections, and strengthened human rights and freedom of press. This event (known as June 29 Declaration) resulted from campus or street demonstrations spanning over a year by college students for direct presidential elections. Mr. Roh's June 29 declaration quieted street demonstrations and social unrest. On the same day, the price of the Korea Fund rose by \$10.50 (from 60 1/4 to 70 1/2, % change was +17.43%), while DJIA was up only 10.05 (from 2,436.86 to 2,446.91, % change was +.41%).

1. The First Regression

Based on the above discussion, the first exploratory trial was made to find out the influencing factors on the price changes of Korea Fund by setting up a multiple regression equation as follows:

$$(1) \quad KF = a + b_1X_1 + b_2X_2 + e$$

where KF = daily prices of Korea Fund,

X_1 = daily Korean stock market indices,

X_2 = daily DJIA,

b_1, b_2 = regression coefficients for X_1 & X_2 ,

e = error term.

The data collected consisted of the daily prices of the Korea Fund, daily Korean stock market indices, and daily DJIA for the period of January 5, 1987 through March 31, 1988. These data were used to compute the regression coefficients of the equation (1). The purpose of running this regression equation was to compare beta weights of the variables X_1 and X_2 . The results of this regression are presented in Table 2.

These results show that both the DJIA and Korean stock index contribute significantly in explaining the price movements of the Korea Fund. The b 's and the value of R^2 indicate that the data exhibit a strong regression relationship. However, the beta coefficients indicate the variable X_1 (DJIA) explains the price behavior of the Korea Fund better than the variable X_2 (Korean stock market index) since it is weighted more heavily than X_2 .

[Table 2] The Results of the First Regression

Variable	b_i	beta	Partial Corr.	t statistics	p
X_1	.046	.806	.783	35.97	.000
X_2	.098	.693	.673	30.91	.000

$$R^2 = .863$$

The above findings are somewhat surprising. As mentioned earlier, the Korea Fund consists of equity securities of Korean companies. More than 95% of the investment portfolio of the Korea Fund consists of common stocks of Korean companies in various industries. In that sense, the Korean stock market index should have more power than the DJIA in explaining the price behavior of the Korea Fund.

These unexpected results made this researcher investigate the impact of the political situation of Korea on the price movements of Korea Fund. During the period covered by this study, there was great fluctuation in the political stability in Korea. The year 1987 brought many radical changes in the political situation of Korea. Some important events are summarized here.

On April 13, 1987, former President Chun, who was to leave office in February 1988, suspended debate on constitutional reform. He also decreed that his successor would be chosen by electoral college. This announcement intensified the demonstrations for direct presidential elections, which had been simmering for more than a year. As social unrest had spread from the college campuses to the nation's middle class population, tension had increased between military hardliners and cooler heads. But on June 19, cooler heads prevailed. After a long afternoon meeting between President Chun and U.S. Ambassador Lilley, plans to put much of the country under the army's "garrison command" were called off.

On June 29, 1987, the ruling party presidential candidate, Mr. Roh Tae Woo, an army general turned politician, diverted the government from confrontation with demonstrating students and workers by offering a sweeping, conciliatory package of democratic reforms, including the first free, direct presidential elections, set for December 1987. His moderation quickly cooled the crisis atmosphere, though tension has continued to simmer. Mr. Roh's dramatic action, however, could not quiet students down. After only a few weeks of silence, student protesters were back on campuses and back in the streets. The more radical among them wanted nothing less than to overthrow the government.

Starting on July 1, 1987, an independent labor movement was born in Korea. For a long time, Korea had one of the lowest levels of unionism of any industrial country. The wave of strikes had begun to seriously affect production and exports.

About 3,200 companies in the auto manufacturing, electronics, transport and other important industries have been hit by strikes since July. This movement cut production at factories and slowed the flow of Korean cars, electronics and other exports that account for a quarter of the gross national product. The labor conflicts added problems to the unstable political situation. The new unions were growing more adversarial. Companies kept asking the government to eliminate the unions. But the ruling party could not risk alienating workers, who would vote in the coming elections. Fortunately, most of the strikes were resolved by the end of September through negotiations between labor and management. The two-month long labor strikes caused \$1.59 billion in lost production and \$520 million in lost exports.

Because of those major political and economic events coupled with continued students' demonstration, 1987 was the year of unrest in Korea. This politically and economically unstable situation existed until December 15, 1987, the presidential election day through direct popular vote. Among four presidential candidates, Mr. Roh Tae Woo, candidate of the ruling party, won the election with only 35% of the vote. Though Mr. Roh lacked a majority, the post-election mood in Korea has been surprisingly calm. The new president has indicated that his administration will be far less repressive than the previous administration. From the December 15 election until the end of March 1988 (the end of the data collection period for this study), Korea has been politically and economically stable.

2. The Second Regression

Based on the above observations, the period this study covers was divided into two apparently different periods. The first is between January 5, 1987 and December 15, 1987, when Korea was experiencing political and economic unrest. The second is between December 16, 1987 and March 31, 1988, when Korea had settled down from previous unrest and had stayed stable politically as well as economically. The existence of two different periods within the whole period made this researcher run the same regression equation as equation number (1) for each of two sub-periods. Intuitively, the glaringly different characteristics of the two sub-periods should provide quite different results. Table 3 shows the results of the regression analysis with the data from the period of January 5, 1987 through December 15, 1987.

[Table 3] The Results of the Second Regression

Variable	b_i	beta	Partial Corr.	t statistics	p
X_1	.048	.801	.785	37.02	.000
X_2	.075	.368	.360	16.98	.000

$$R^2 = .897$$

These results are consistent with the results with the data from the whole study period. As t statistics indicate, both the DJIA and Korean stock market index explain the price movements of the Korea Fund. The R^2 value is quite high while the correlation coefficient between variable X_1 (DJIA) and variable X_2 (Korean stock market index) is found to be -.212. when these results are compared with the results of the whole period, the relative explanatory power of the DJIA for the price changes of the Korea Fund is much stronger than the Korean stock market index. The beta weight for the DJIA is about the same as the results of the first regression, but the beta weight for the Korean stock market index is far lower than .693.

3. The Third Regression

Table 4 presents the results of the same regression analysis with the data for the period December 17, 1987 through March 31, 1988.

[Table 4] The Results of the Third Regression

Variable	b_i	beta	Partial Corr.	t statistics	p
X_1	.062	.311	.298	6.60	.000
X_2	.192	.802	.768	17.01	.000

$R^2 = .884$

These results provide a striking contrast to the results of the first two regressions. The results in Table 4 confirm the original expectation, that is, the price of the Korea Fund will follow the trend of the Korean stock market index overtime. The beta coefficient of the variable X_2 is much larger than that of the variable X_1 . Once again the R^2 value is very high. Overall, the results indicate that during the period of December 17, 1987 through March 31, 1988, the daily market prices of the Korea Fund had closely followed the movements of Korean stock market indices rather than the trend of DJIA. Figure 1 shows the visual impression of how closely the daily prices of the Korea Fund followed the changes of the Korean stock market index.

III. DISCUSSION AND CONCLUSIONS

Korea Fund is a common stock which is being traded on the New York Stock Exchange. As such, it is natural to assume that daily price movements of the Korea Fund are influenced by the daily changes in market condition of the New York Stock Exchange. By the same token, more than 95% of the investment portfolio of the Korea Fund consist of common stocks of Korean companies which are being traded on the Korean Stock Exchange. This special characteristic of the Korea Fund suggests that the daily price changes of the Korea Fund should reflect the daily changes in

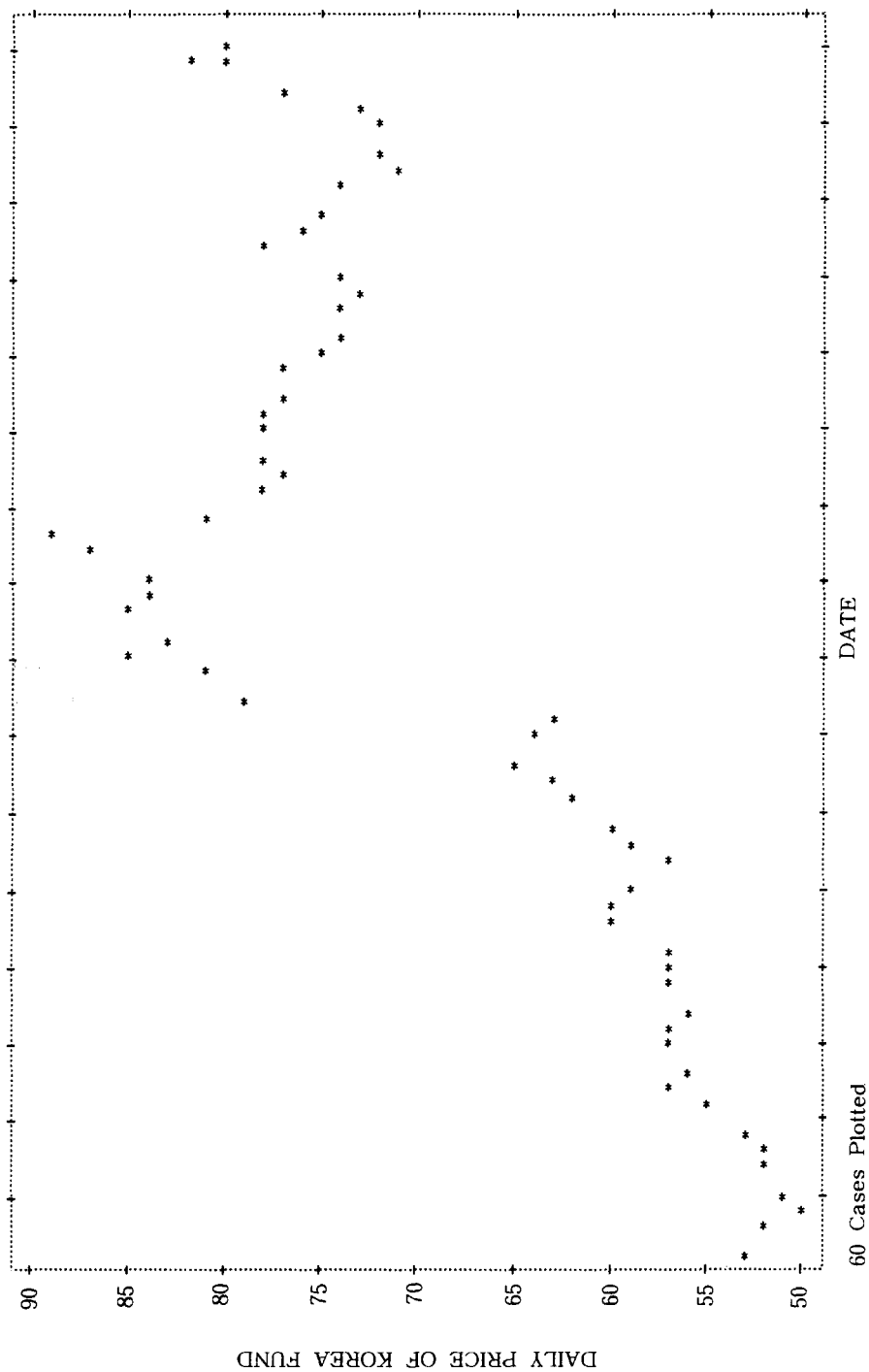
market condition of the Korean Stock Exchange since the changes in the total asset value of the Korea Fund, Inc. are solely dependent on the market value changes of Korean companies' stocks it holds in its investment portfolio.

During the recent 15-month period, there has not been a noticeable trend in the price movements of the Korea Fund. Sometimes it seemed to drift in the same fashion as the movements of the DJIA, while at other times it seemed to move with the changes in the Korean stock market index. The trend analysis for the whole 15-month period does not provide a clear answer as to how the price of the Korea Fund moves. However, when the 15-month period is divided into two periods based on political and economic stability of Korea, the answer becomes much clearer. During the first eleven-and-half-month period, when Korea was unstable politically and economically, the analysis indicates that the price movements of the Korea Fund follow the movements of the DJIA. On the other hand, during the second three-and-half-month period, when Korea was stable politically and economically, the price movements of the Korea Fund closely follow the trend of the Korean stock market index.

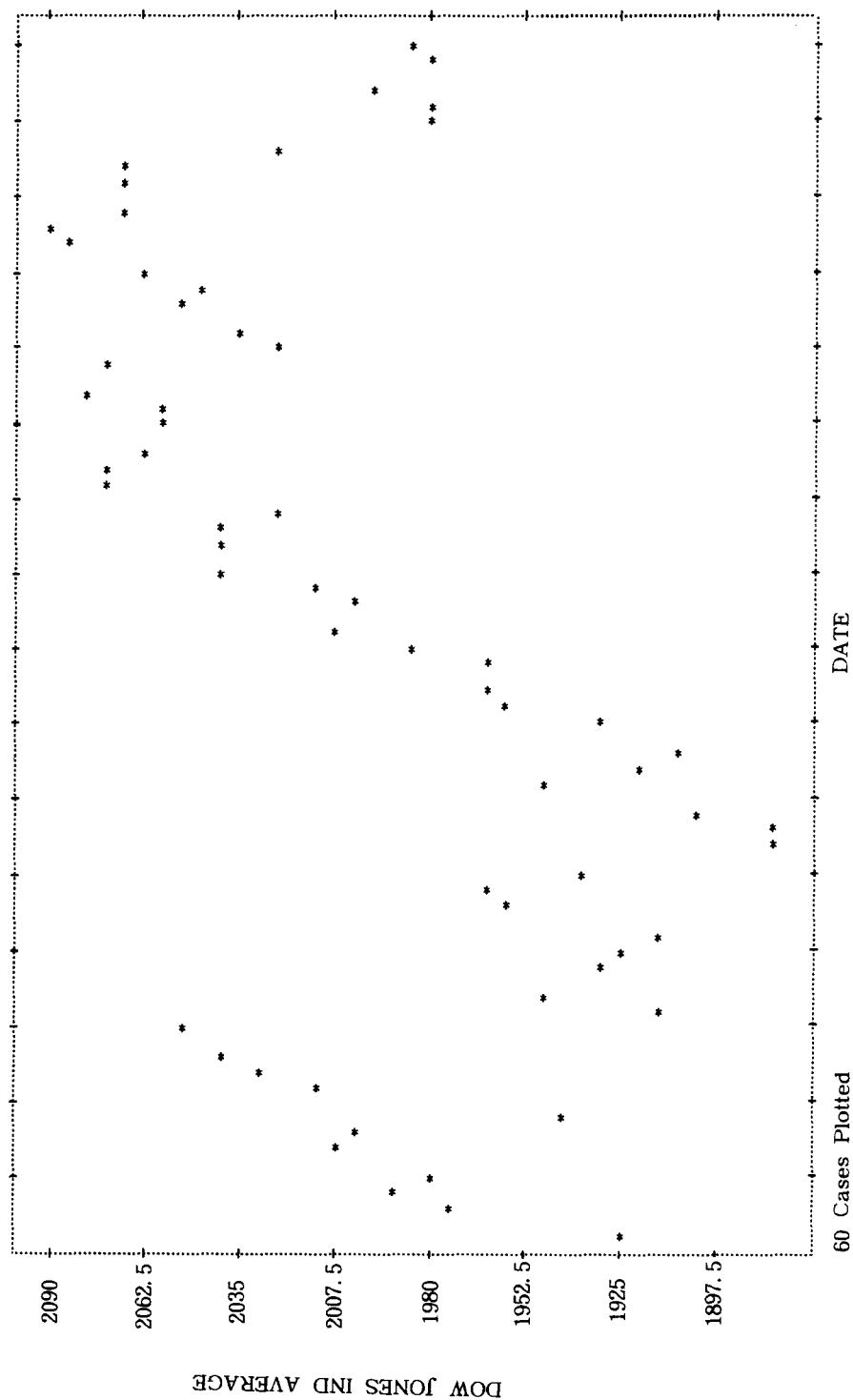
Based on the above analyses, the following conclusions can be derived. During the period when Korea is politically and economically stable, the daily market prices of the Korea Fund follow the daily changes in the Korean stock market index. This is theoretically sound and understandable. However, during the period when Korea is not stable politically and/or economically, the daily market prices of the Korea Fund follow the daily movements of the DJIA more closely than the daily movements of the Korean stock market index.

One implication of the results of this study to the investors is that the daily price fluctuations of the Korea Fund are quite predictable as long as Korea is stable politically and economically. This is attributable to the fact that the Korean stock market closes seven hours before the New York Stock Exchange opens for the same day. Knowing the change in the Korean stock market index for the day, investors can reasonably predict the price change of the Korea Fund in the New York Stock Exchange for that day.

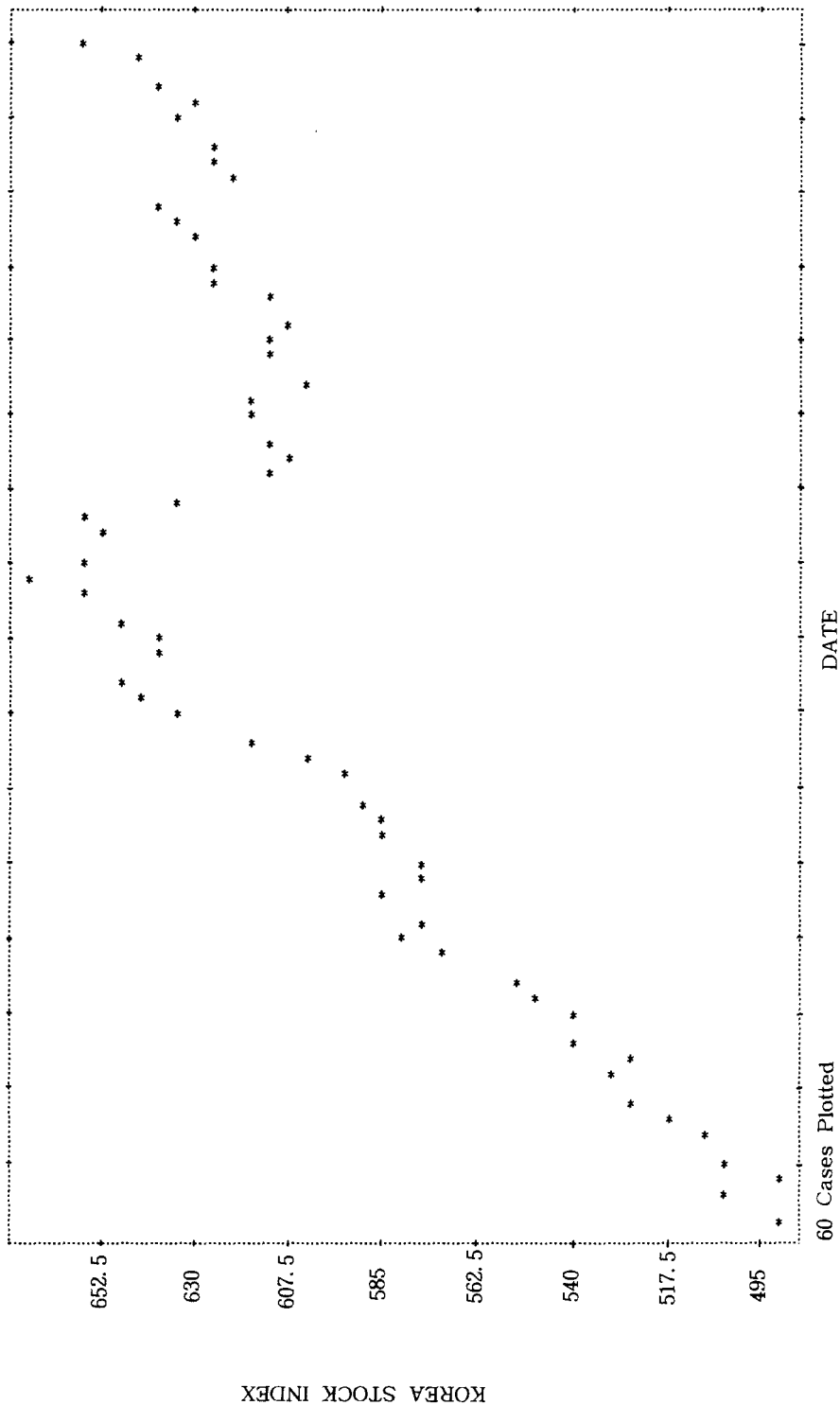
Another implication of the results is the difference in the sensitivity to the risk between U.S. investors and Korean investors. Korean stock market indices are not useful to U.S. investors when political and economic conditions in Korea are unstable. On the other hand, Korean investors seem to be less concerned with the changes in domestic political and economic conditions. During the entire year of 1987, the Korean stock market index almost doubled from 264.82 on January 5 to 525.11 on December 28.



[Figure 1-(i)] Daily Plot of Prices of the Korea Fund (Dec. 17, 1987~Mar. 31, 1988)



[Figure 1-(ii)] Daily Plot of the DJIA (Dec. 17, 1987~Mar. 31, 1988)



[Figure 1-(iii)] Daily Plot of Korean Stock Market Indices (Dec. 17, 1987 ~ Mar. 31, 1988)

APPENDIX : The Korea Fund, Inc.

Investment Portfolio as of September 30, 1987

	Shares	Market Value (\$)
SHORT-TERM INVESTMENT 0.5%		
Financial 0.5%		
Credit and Finance 0.5%		
General Electric Credit Corp., 7.5%		<u>985,000</u>
Total Short-term Investment		<u>985,000</u>
PREFERRED STOCKS 0.2%		
Doo San Food Co., Ltd.	7,776	121,590
Chosun Brewery Co., Ltd.	17,952	<u>262,886</u>
Total Preferred Stocks		<u>384,476</u>
COMMON STOCKS 93.9%		
Consumer Nondurable 11.0%		
Cosmetics 1.0%		
Hankook Cosmetics Ind. Co., Ltd.	46,360	<u>2,128,712</u>
Beverage & Tobacco 2.3%		
Chosun Brewery Co., Ltd.	109,713	1,606,615
Jinro	30,949	856,492
Oriental Brewery Co., Ltd.	114,862	<u>2,193,748</u>
Subtotal		<u>4,656,855</u>
Food 4.9%		
Cheil Sugar Co., Ltd.	149,146	6,441,138
Dong Bang Oil and Flour Mill	59,521	1,493,519
Doo San Food Co., Ltd.	43,200	566,134
Lotte Confectionary	25,344	691,942
Nhong Shim	40,000	<u>853,808</u>
Subtotal		<u>10,046,541</u>
Household Products 1.3%		
Pacific Chemical Industry Co., Ltd.	147,656	<u>2,602,024</u>
Retailing 1.5%		
Shinsegae	88,970	<u>3,058,406</u>

Health 1.4%**Pharmaceuticals 1.4%**

Chong Kun Dang Co., Ltd.	73,914	1,366,159
Yuhan Corp.	74,777	1,429,093
Subtotal		<u>2,795,252</u>

Basic Industry 31.3%**Chemicals 15.5%**

Dong Yang Nylon Co., Ltd.	107,173	7,448,095
Kolon Industries, Inc.	190,545	8,276,322
Korea Steel Chemical	101,840	1,870,475
Lucky, Ltd.	457,061	9,737,876
Oriental Chemical Industries Co., Ltd.	109,750	3,404,994
Sam Yang Co.	36,753	1,021,675
Subtotal		<u>31,759,437</u>

Construction 9.8%

Byuck San Corp.	56,800	782,426
Dae Lim Ind. Co., Ltd.	220,120	6,337,519
Han Il Development	14,000	201,538
Hankuk Glass Co., Ltd	164,746	3,414,311
Hyundai Cement Co., Ltd	99,606	1,718,194
Keum Kang Co., Ltd.	190,500	3,404,311
Sam Whan Corp.	35,610	1,016,416
Ssangyong Cement Industrial Co., Ltd.	144,194	2,218,915
Sung Shin Cement	58,000	950,110
Subtotal		<u>20,043,740</u>

Forest Products 1.1%

Han Kook Paper	59,000	1,281,333
Shin Poong Paper Mfg. Co., Ltd.	32,940	981,085
Subtotal		<u>2,262,418</u>

Metals 4.9%

Dong Bu Steel	225,000	5,193,585
Sammi Steel	131,830	2,498,054
Union Steel Mfg. Co., Ltd.	55,130	2,469,830
Subtotal		<u>10,161,469</u>

Media & Service 3.3%**Services 3.3%**

Korea Air Terminal Service Co., Ltd.	46,784	1,049,125
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Sam Sung Co., Ltd.	293,312	5,824,003
Subtotal		<u>6,873,128</u>
Consumer Cyclical 20.4%		
Airlines and Trucking 4.6%		
Global Enterprises, Ltd.	35,500	947,193
Korean Airlines Co., Ltd.	431,828	8,440,402
Subtotal		<u>9,387,595</u>
Automobiles 14.0%		
Dae Won Kang Up	58,790	1,568,605
Han Kook Tire Mfg. Co., Ltd.	118,868	4,527,241
Hyundai Motor Co., Ltd.	290,723	8,298,107
Hyundai Motor Services Co., Ltd.	194,198	4,441,044
Kia Motors Corp.	404,540	8,609,886
Kum Ho	56,000	1,271,777
Subtotal		<u>28,716,660</u>
Home & Leisure 1.8%		
Young Chang Akki Co., Ltd.	88,780	3,723,948
Technology 16.8%		
Consumer Electronics 12.4%		
Gold Star Co., Ltd.	366,991	7,605,778
Sam Sung Electronics Co., Ltd.	299,520	11,626,021
Sam Sung Electromechanics Co., Ltd.	127,257	6,119,975
Subtotal		<u>25,315,774</u>
Telecommunications 4.4%		
Sam Sung Semiconductor and Telecommunications Co., Ltd.	339,124	9,048,337
Producer Durables 2.7%		
Machinery		
Daewoo Heavy Industries Ltd.	299,599	4,461,628
Hyundai Mipo Dockyard	80,000	1,111,936
Subtotal		<u>5,573,564</u>
Energy 1.9%		
Petroleum 1.9%		
Yukong Ltd.	84,500	3,871,942

Financial 5.1%		
Banking 3.9%		
Cheju Bank	55,000	1,268,860
Korea Long Term Credit Bank	266,000	6,836,495
Subtotal		<u>8,105,355</u>
Insurance 1.2%		
Ankuk Fire and Marine Insurance	25,280	1,496,467
Korea Reinsurance Corp.	17,000	928,268
Subtotal		<u>2,424,735</u>
Total Common Stocks		<u>192,591,892</u>
TOTAL INVESTMENT PORTFOLIO 94.6%.....		193,961,368
OTHER ASSETS AND LIABILITIES, NET 5.4%.....		<u>11,004,135</u>
NET ASSETS 100.0%.....		<u>204,965,503</u>