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An Analysis of the Recent Behavior of the Japanese Nikkei Stock Market Average

Mark I. Tanis

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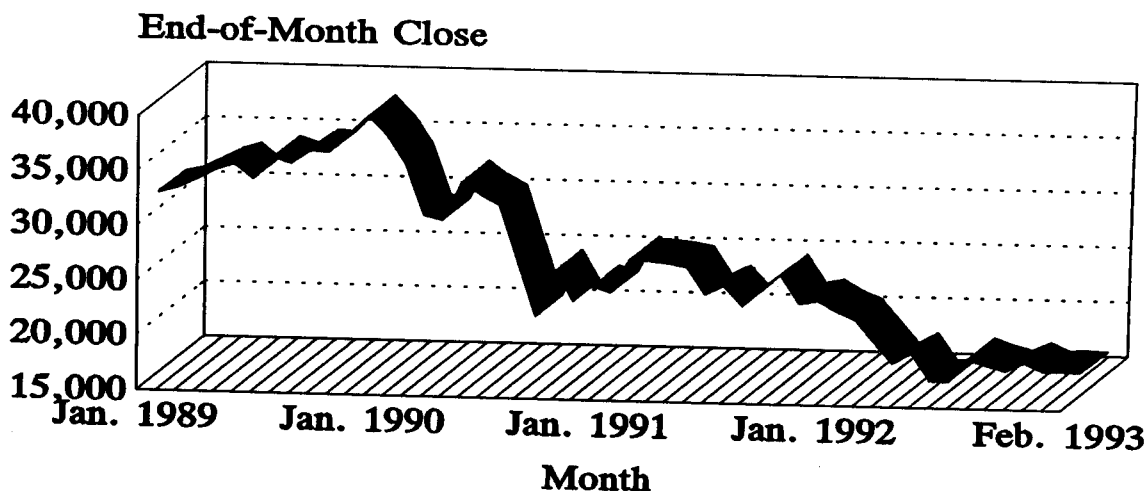
University Honors Program Northern Illinois University

An Analysis of the Recent Behavior of the Japanese Nikkei Stock Market Average

**A Thesis Submitted to the
University Honors Program
In Partial Fulfillment of the
Requirements of the Baccalaureate Degree
With Upper Division Honors
in the Department of Finance**

**Written By:
Mark I. Tanis
Northern Illinois University
DeKalb, Illinois 60115
May, 1993**

The Nikkei Stock Market Average Monthly Closings



Source: Various Wall Street Journals



University Honors Program Approval Page

Student Name: Mark I. Tanis
Printed Name

Approved By: Richard J. Downen, Ph.D., C.M.A.
Printed Name

A handwritten signature in dark ink, appearing to read 'Richard J. Downen', written over a horizontal line.

Signature

Department of: Finance

Date: Monday, May 3rd, 1993

A+

University Honors Program Honors Thesis Abstract

THOR:

Mark I. Tanis

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An Analysis of the Recent Behavior of the Japanese
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ABSTRACT:

Since December, 1989, The Japanese Nikkei Stock Market Average has lost over 59 percent of its value. This translates into trillions of Yen in "paper profits" lost with this recent decline in Japan's Stock Market. This thesis depicts several contributing causes to The Nikkei's fall including the following: A changing stock market arena, the banking industry, blue chip companies, and a changing Japanese society.

The Changing Stock Market Arena

The Tokyo Stock Exchange is changing in at least four different respects. The lack of a formal bond market forces investors to exercise their warrants, driving down The Nikkei Average. The Nikkei is also trading at lower, more American, P/E ratios; resulting in a lower Nikkei. The Japanese brokerage houses are getting caught violating securities laws. And the entrant of American brokerage houses, the Japanese charge, causes the Nikkei to spiral.

The Banking Industry

The banking industry is another contributor to The Nikkei's fall. Banks made a tremendous number of bad loans, interest rates were kept too low during Japan's great expansion, and The Japanese Postal Savings System forced banks to make risky loans in order to compete.

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Blue Chip Companies

Japanese blue chip firms also contributed to the fall in The Nikkei. A combination of falling profits, lower production capacity utilization, and higher cost of capital has made these firms undesirable. Selling-off shares in these firms has driven down their stock price and hence The Nikkei Stock Market Average.

A Changing Japanese Society

A changing Japanese society is another contributor to The Nikkei's fall. Japan's "lifetime employment" is breaking down, they are enjoying more leisure time, and experiencing a demographic change within the work place. All of the above changes indicate a more "American" Japanese society who are not as optimistic about future corporate profits, calling for lower P/E ratios and as a result, a lower Nikkei Stock Market Average.



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Japan



INTRODUCTION

Trillions of Yen (¥) in "paper profits" have been lost with the recent depreciation in the Tokyo Stock Exchange. This thesis will outline the underlying reasons why the Japanese Nikkei Stock Market Average has decreased so dramatically in the past few years, losing over 50% of its value since late 1989.

This section entitled will delineate this thesis' purpose, statement of the problem, literature review, construction of this thesis, and limitations.

PURPOSE

The purpose of this thesis is as follows:

1. To give the reader a clear understanding of Japan, it's culture, demographics, and social aspects. A thorough understanding of Japan is required to give the reader a foundation to build on as he/she reads the remainder of this thesis.
2. To give the non-financier a complete description of the Japanese Stock Exchange and a recent history of this stock exchange's performance, which is the key issue to be discussed in this thesis.
3. To enlighten the reader with definitions of key words which may be unknown to the novice reader.
4. To give the reader an answer to the "Statement of the Problem".

Yen (¥): The principal unit of currency used in Japan. At the time of final printing (May 3, 1993) ¥111 ≈ \$1.00.

Source: Barron's Finance & Investment Handbook, Page 561 and The Wall Street Journal, 4/30/93, Page C1.

Paper Profits: Unrealized capital gains in an investment or portfolio. Paper profits are calculated by subtracting the original purchase price from the current market price, even though there are no tangible profits.

Source: Barron's Finance & Investment Handbook, Page 399.

Stock Exchange: An organized marketplace in which stocks, common stock equivalents, and bonds are traded by members of the exchange, acting as both agents (brokers) and as principals (dealers or traders). Such exchanges have a physical location where members meet to execute orders from investors.

Source: Barron's Finance & Investment Handbook, Page 498.

Nikkei Stock Market Average: An index of 225 leading stocks traded on the Tokyo Stock Exchange. It is similar to the Dow Jones Industrial Average because they both are composed of representative blue chip (economically strong firms) stocks.

Source: Barron's Finance & Investment Handbook, Page 379.

Definition Box

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STATEMENT OF THE PROBLEM

This thesis seeks to answer the following question: Why has the Japanese Nikkei Stock Market Average decreased so dramatically? There are two main facets to the analysis of this question:

1. The first facet regards Japan's stagnant **economic growth**. This fact leads to a general perception that Japan is experiencing a **recession** unlike any other they have experienced in the past. This being the case, is the recession causing the decline in the Tokyo Stock Exchange and hence the decrease in the Nikkei Stock Market Average? In this section, different sectors of the economy will be analyzed, determining their contributory factor(s) and how they played a part in this recession. Issues to be discussed and analyzed in this section are as follows: the bond market, lower stock **P/E ratios**, higher **cost of capital**, lower **production capacity utilization**, lower interest rates, and other **macroeconomic indicators**.
2. The second facet will analyze another cause of the decline in the Nikkei Stock Market Average. Specifically, it is hypothesized that the Japanese are becoming more short-run oriented, their "lifetime employment" is no longer certain, there are shorter work days, and more women are entering the work force. With this established, Japan is becoming more "American" and, in theory, their stock market average is due for this correction; trading at lower P/E ratios, lower stock prices, and hence, a lower Nikkei Average.

Another cause could be simple finance theory applied in a different way. The **Gordon Growth Model** is usually applied to a firm's stock price, but in this section, the plausibility of applying this concept to Japan as a country is tested.

Economic Growth: In the United States, two consecutive quarterly increases in Gross National Product reflects an expanding economy and hence economic growth.

Source: Barron's Finance & Investment Handbook, Page 258.

Recession: Two consecutive quarterly decreases in Gross National Product is considered a recession in America.

Source: Barron's Finance & Investment Handbook, Page 437.

P/E Ratio: Is equal to the price of a stock divided by either its present or future earnings per share.

Source: Barron's Finance & Investment Handbook, Page 419.

Cost of Capital: The rate of return a business could earn if it chose another investment with equivalent risk. In other words, it's the opportunity cost of the funds employed as a result of the investment.

Source: Barron's Finance & Investment Handbook, Page 232.

Production Capacity Utilization:

The percentage of total production capacity a firm is utilizing. At 100% production capacity utilization, a firm is producing all it can under normal employment of capital and labor.

Macroeconomic Indicators: Key statistics showing the direction of the economy. Among them include the unemployment rate, inflation, and balance of trade.

Source: Barron's Finance & Investment Handbook, Page 258.

Gordon Growth Model: Is a constant growth model used in finance to determine the price of a stock. It is found by dividing the stock's dividend by the cost of capital less the growth rate in dividends.

Source: Richard J. Downen, Ph.D. Class Lecture Notes, 10/15/92.

Definition Box

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LITERATURE REVIEW

Data and sources were obtained primarily from Northern Illinois University's Founder's Memorial Library. In addition, this author subscribes to Business Week and The Wall Street Journal which have been reviewed on a regular basis. Worthy numerical data will be presented in graphical form and placed strategically within the text.

CONSTRUCTION OF THIS THESIS

This thesis was typed using WordPerfect 5.1 and laser printed on double-bonded paper to produce maximum quality. The graphics package used was Harvard Graphics 3.05 and charts were exported into WordPerfect 5.1. For easier reading, this thesis is double spaced with each major section centered, bolded, capitalized, and larger in font size. Sub-sections are flushed to the left, underlined, and capitalized.

This thesis was written for all age groups. For this purpose, there are sporadic "Definition Boxes" which contain the definition of **bolded words** within the text which may be unknown to some non-finance oriented individuals. Unknown Japanese words are *italicized* to highlight their foreign nature. In addition, complex words or phrases will herein be addressed by the word(s) in quotes that immediately follow. For example, the Nikkei Stock Market Average will be referred to as "The Nikkei". This will eliminate excess verbiage and allow for easier reading. At the conclusion of this thesis, there are appendices which contain information that would otherwise interrupt the consistency and flow of the text.

LIMITATIONS

The limitations incurred in researching this thesis are as follows:

1. The availability of current periodicals relating to this thesis are scarce. This thesis deals with such current and possibly underexplored territory that makes locating relevant information difficult.
2. Many articles were unavailable at Founder's Memorial Library. These periodicals or newspapers were "sent out to be transformed into microfiche/microfilm". Due to the currentness of this thesis, this occurred in many attempts at locating these articles. In this case, a second and third library was solicited as well as the intra-library loan system.
3. Please note that this thesis was written throughout the Spring Semester of 1993. At the beginning of the semester, The Nikkei was at approximately 16,000 but at the end of this semester the average is at approximately 20,000. For purposes of "not shooting in the dark at a moving object" this author has selected the last trading day in February, 1993 for his selection of a "static"

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Nikkei average. The Nikkei's more recent strength (increasing approximately 6,000 points since March 1993) is beyond the scope of this thesis, but this is primarily due to the Japanese government's efforts of dumping ¥3 trillion of pension money into the Tokyo Stock Market.

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Japan



JAPAN AS A COUNTRY

DEMOGRAPHICS

Japan is a small, insular nation composed of four main islands: *Hokkaido*, *Honshu*, *Shikoku*, and *Kyushu* (See Exhibit 1, Map of Japan). With land mass totalling 145,856 square miles, this ranks Japan slightly smaller than the state of California (World Almanac, Page 768). However, 75% of all land in Japan is too steep for cultivation and the land that is suitable for cultivation is too acidic for most crops (Dillman). This is primarily due to the numerous volcanoes located throughout the country which formed the Japanese islands. Not only is farming arduous, but Japan, being an

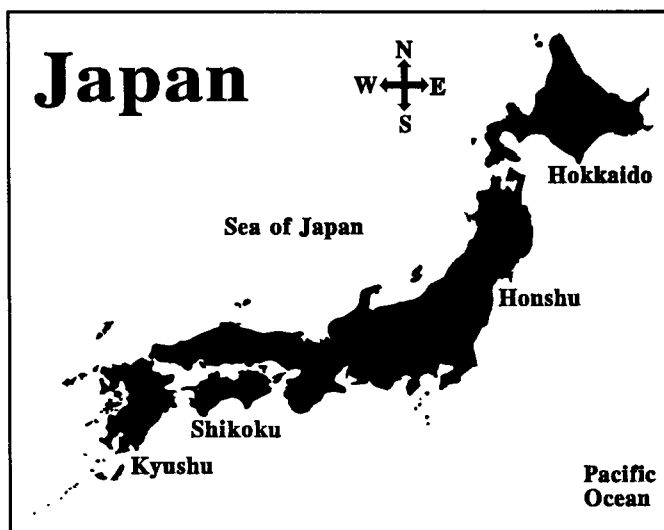


Exhibit 1 Map of Japan.

island country, must import most of its natural resources, accounting for the majority of its total imports (Japan 1992, Page 19). Exhibit 2 shows the relative composition of Japan's exports and imports. Their single largest export is machinery & equipment which includes motor vehicles, television and radio equipment, vessels, and scientific & optical equipment. Their largest imports are mineral fuels, machinery & equipment, and foodstuffs. Because Japan is not self-sufficient, international trade is a vital economic practice.

The population of Japan is pegged at 124,017,000, a large proportion of whom live in the Tokaido Megapolous (*Tokyo*, *Osaka*, and *Nagoya*) where 12.8 million Japanese choose to

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live (World Almanac, Page 768 and Dillman). This has caused a severe problem with congestion on the Southern Pacific side of *Honshu*, Japan's mainland. Such a large population condensed onto a small amount of livable land

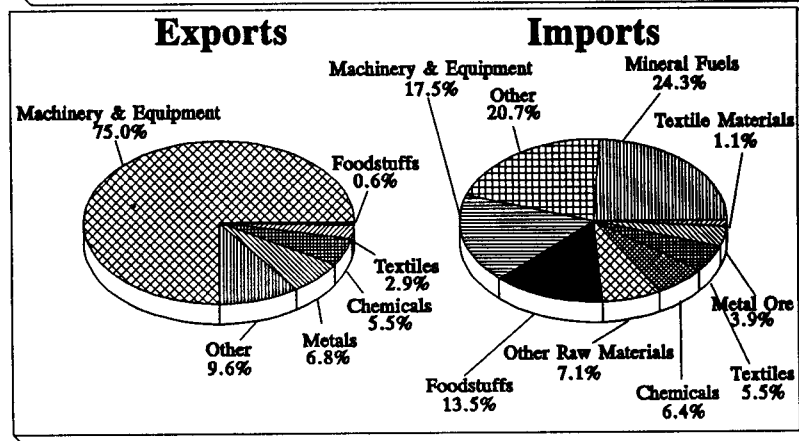
translates into a population

density of 850 people per square mile (Page 768). Compare this to America's 68 people per square mile and one can observe how important space is to the Japanese, possibly explaining why their cars and dwellings are relatively small (Page 811). Japan also has an extraordinarily high percentage of elderly (17.7%) for a South-East Asian country (Page 768). More recently, however, articles have been written indicating a near-zero **natural rate of increase**. If Japan is to expand and become more powerful in the future, a population increase is usually required to have the appropriate work force to work in these growing and expanding industries. This stagnant population growth is a detriment to Japan and could cause a problem with their global competition as other countries continue to experience population increases.

CULTURAL AND SOCIAL ASPECTS

In this section, a brief description of Japan's culture, **societal norms**, and **morés** are

Japanese Global Exports and Imports, 1990 Includes All Trading Partners



Source: Japan 1992, Pages 40, 41.

Exhibit 2 Decomposition of Japan's Exports and Imports.

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characterized. Culture cannot be "learned" via a book or this paper, but rather this section is intended to compare and contrast Japan's culture to that of the United States, possibly shedding some light onto the issues discussed later.

Japan's culture is distinct and unlike any other country. The United States and Britain share some societal norms and morés (the same language, for instance), but locating a country who acts and behaves just like Japan is difficult. Japan is the only non-Western country to achieve world power status (Dillman). They rank second in per capita Gross National Product (GNP), first in private disposable savings, first in higher education advancement, first in overall labor productivity, and have the lowest crime rate in the world (Japan 1992, Pages 12, 85, and 93). "Japan Incorporated" is used by some cynical people to refer to Japan's rise to power much like that of a growing and expanding corporation (Dillman). However, it is the society that has produced in this outcome. The Japanese are very competitive individuals, to the extent that they might be called "ruthless" from an American viewpoint, but from a Japanese viewpoint, they are doing nothing wrong. For example, there is nothing "wrong" with selling below cost in order to capture market share from a Japanese viewpoint, but from an American viewpoint, it's a violation of the Sherman Anti-Trust Act.

Natural Rate of Increase: Is equal to the nation's Birth Rate minus the Mortality Rate plus Net Immigration. Japan's Natural Rate of Increase is approximately 0.5%.
Source: Clinton Dillman, Ph.D. Class Lecture Notes, 10/16/90.

Societal Norms: A principle of right action binding the members of a group and serving to guide, control, or regulate proper and acceptable behavior.
Source: Webster's, 9th Edition.

Morés: The fixed morally binding customs of a particular group; moral attitudes.
Source: Webster's, 9th Edition.

Gross National Product (GNP): The total value of goods and services produced in a country over a particular time period, usually one year. The growth in GNP is the primary indicator of the status of the economy. This figure includes consumer and government purchases, private domestic and foreign investment into the country, and the value of net exports. In 1990, Japan's GNP was ¥426 Trillion, a change of 5.7% from the prior year.
Source: Barron's Finance & Investment Handbook, Page 303.

Private Disposable Savings Rate: Total Private Savings divided by Total Disposable Income. In 1989, Japan's Private Savings Rate was 14.2% whereas the U.S. Private Savings Rate was only 7.1%.
Source: Japan 1992, Page 85.

Definition Box

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As mentioned earlier, Japan is an insular country. It is hard to influence a country that is only reachable by airplane or boat. This has played a contributing factor in the development of their culture. They do not have the problem with illegal immigrants like the United States. This has the effect of keeping their homogeneous society, unlike "The Great Melting Pot" of the United States. Further, the insularity of Japan has great domestic defense implications. In fact, to date, Japan has yet to be conquered by its enemies (Dillman).

Life in Japan is relatively more expensive. Gasoline is three times more expensive than the United States, milk is twice as expensive, and beer is four times as expensive (Japan 1992, Page 74). In addition, there are very few livestock farms in Japan which translates into fishing for their source of protein. This exorbitant amount of fish consumption has resulted in the killing of dolphins, for which they are criticized greatly (Dillman).

Historically, the typical Japanese lifestyle consists of the following: the husband will go to work as the wife stays home and sends the kids off to school. Until recently, the wife never thought of working; it was understood to stay home and take care of the house and children. But now, women are entering the Japanese work force and making their own mark on the Japanese society. The husband usually doesn't come home until 10:00pm or later, sometimes checking into a hotel room if it's too late. In 1990, the Japanese spent an average of 2,100 hours on the job compared to an average of 1,950 for workers in the United States and 1,598 for workers in Germany (Blustein, Page H5). The Japanese are also very loyal to their companies and rarely leave that company throughout their career (called "Lifetime Employment"), often staying for some 20 or 30 years. Saturdays are usually normal work

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days with Sundays reserved as a day off to spend with the family. In America, this would seem unheard of, but in Japan, it's the norm.

Overall, the Japanese are a distinct group of individuals. It is this distinction that sets them apart from the rest of the world. The Japanese are sometimes referred to as "rude" and "uncompromising", but an analysis of their culture should reveal that it is these characteristics that have allowed them to "win" in the fierce global competitive battle.

THE TOKYO STOCK EXCHANGE

HISTORY OF THE TOKYO STOCK EXCHANGE

The Tokyo Stock Exchange ("The Exchange") was established in 1878, marking Japan's first securities exchange market (Uemura, Page 2). The Exchange experienced uninterrupted trading until World War II. At the onset of the war, the Japanese government ("The Diet") reorganized The Exchange into a governmental organization (Page 2). Throughout the war, large, monopolistic holding organizations called *Zaibatsus* held a tremendous number of shares of stock in the companies they controlled (Page 2). To protect investors from irregular and disorderly trading, the reopening of The Exchange became a matter of urgency. Thus, on May 16, 1949, The Tokyo Stock Exchange reopened along with other exchanges in Osaka and Nagoya, Japan's second and third largest cities (See Exhibit 3, Map of Japan and It's 3 Stock Exchanges) (Page 2).

DEMOGRAPHICS OF THE TOKYO STOCK EXCHANGE

The hours of The Exchange are from 9:00am until 11:00am (the morning session called *zenba*) and 1:00pm until 3:00pm (the afternoon session called *goba*) (Page 62). The

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Exchange is open everyday of the year except Sundays, national holidays, the first three and last three days of the year (Page 63). There are also partial trading days on Saturdays, the opening ceremony day at the beginning of the year and the closing ceremony day at the end of the year in which trading occurs only in the *goba* session (Page 63).

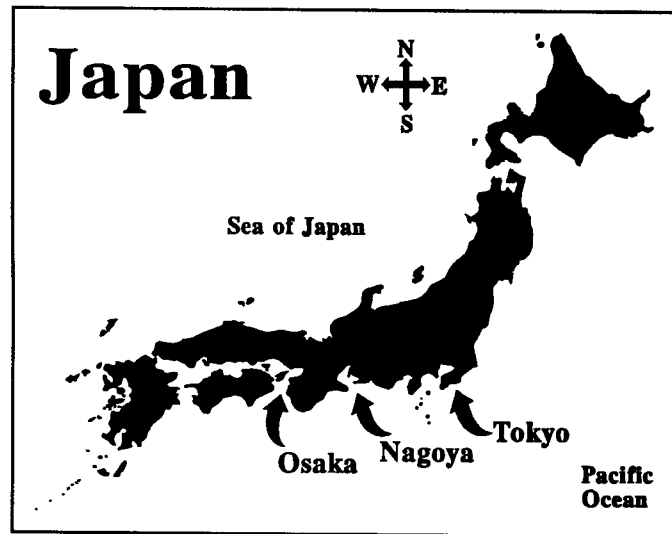


Exhibit 3 Japan and It's 3 Stock Exchanges.

The Exchange consists of two kinds of members: regular members and *Saitori* members (Page 9). The Articles of Association of The Exchange limit the number of regular members to 100 and *Saitori* members to 20 (Page 9). The *Saitori* members are prohibited from selling or buying securities for their own accounts or for non-members accounts (Page 10). Each *Saitori* member handles one post on the trading floor and keeps a book in which orders from the regular members are recorded (Page 10). The basic responsibility of a *Saitori* member is to intermediate transactions and report the results to The Exchange (Page 10). The responsibilities of a regular member is similar to the responsibilities of a **specialist** on the New York Stock Exchange ("The NYSE"). These regular members facilitate the market's equilibrium, especially when supply and demand do not equate.

Specialist: A member of a stock exchange who maintains a fair and orderly market in one or more securities. A specialist performs two main functions: (1) Executes limit orders on behalf of other exchange members for a portion of the broker's commission and (2) Buys and sells for the specialist's own account to counteract temporary imbalances in supply and demand and thus prevents wide swings in stock prices. They basically control both the supply and demand.

Source: Barron's Finance & Investment Handbook, Page 487.

Definition Box



THE NIKKEI STOCK MARKET AVERAGE

FORMATION OF THE NIKKEI STOCK MARKET AVERAGE

When The Exchange reopened on May 16, 1949, 225 representative stocks among those listed were selected as the basis for computing the Nikkei Stock Market Average ("The Nikkei"). The Nikkei is basically an arithmetic average of all 225 stock prices with the denominator adjusted to allow for when one of the selected stocks goes ex-rights. The Nikkei, as published daily by The Wall Street Journal, is computed arithmetically the same as the Dow Jones Industrial Average ("The Dow") with one exception: The Dow is computed using only 30 industrial stocks whereas The Nikkei is computed using 225 stocks from various sectors of the economy. A listing of the 30 stocks selected for The Dow and the 225 stocks selected for The Nikkei are presented in Appendices A and B, respectively. The equation of The Dow and The Nikkei are given Exhibit 4.

The Nikkei is probably the best known daily barometer of Japan's stock activity. However, there is a major inconsistency with The Nikkei (as well as The Dow) and their relative ability to indicate stock market activity. The Nikkei (as well as The Dow) is not weighted to allow for differing stock prices or a differing number of shares

Ex-Rights: Without the right to buy a company's stock at a discount from the prevailing market price, which was distributed until a particular date. Typically, after this date, the rights trade separately from the stock itself.
Source: Barron's Finance & Investment Handbook, Page 267.

Definition Box

$$\text{The Dow}_t = \sum_{n=1}^{30} \frac{P_{nt}}{D_t}$$

$$\text{The Nikkei}_t = \sum_{n=1}^{225} \frac{P_{nt}}{D_t}$$

P_{nt} is the price of an individual stock at time "t".

D_t is the divisor, which is the average cost of a share of stock.

Exhibit 4 Formula of The Dow and The Nikkei.

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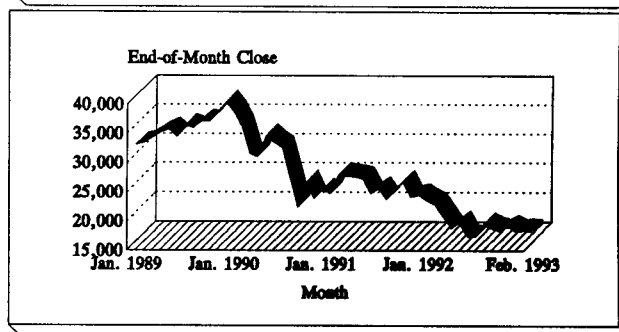


outstanding (Hardy, Page C1). It assumes that the same amount of money is invested in each share of stock (Page C1). The divisor in the formula (D) is only one average number taken from 1949. Any appreciation in these 225 stocks are summed and then divided by this one number. Therefore, each share of stock is treated identically, irregardless of its cost. For example, Nippon Telegraph & Telephone is grossly under represented, accounting for only 0.3% of The Nikkei (Page C1). However, if the index were weighted to mimic NT&T's market value and capitalization, its weight would approximate 5.5% (Currently, NT&T's stock price is over ¥1,000,000 a share). This disproportionate feature of the Nikkei has caused volatility in the daily quoted average (Page C1). When the Nikkei increased so dramatically in the late 1980's, it was giving more emphasis to the low-priced stocks and a less emphasis to the high-priced stocks. Now that The Nikkei has "bottomed out", investors are seeking shelter and losing money. It is this recent behavior in The Nikkei that has prompted the writing of this thesis.

RECENT BEHAVIOR OF THE NIKKEI

Since its high of 38,915.87 on December 29th, 1989, The Nikkei has lost over 59% of its value, with the average currently around 16,000 (Samuelson, Page A21). Exhibit 5 shows the strong rise and fall of The Nikkei from January 1989 until February 1993. This tumble in The Nikkei has captured

The Nikkei Stock Market Average Monthly Closings



Source: Various Wall Street Journals

Exhibit 5 The Rise and Fall of The Nikkei.

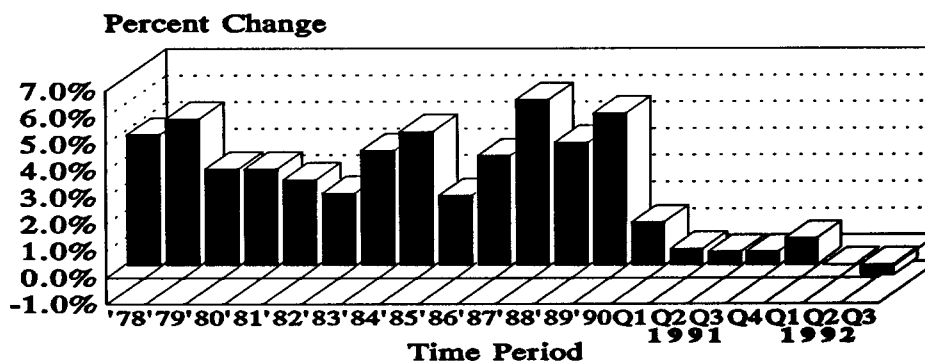
An Analysis of the Recent Behavior of the Japanese Nikkei Stock Market Average



tremendous attention from both the Japanese and abroad, since The Nikkei is supposed to be the best measurement of the Japanese economy. It is everyone's best interest to keep the Japanese economy healthy, especially the United States, since the Japanese buy a large proportion of our government bonds (which counter their huge yearly trade deficits, currently \$115 billion in fiscal 1992). In fact, the Japanese have bought \$46.7 billion worth of Treasury securities between 1985 and 1989 (Schwimmer, Page 40).

Japan is currently in a recession. The Japanese economy is often called a "bicycle economy". This means that it performs brilliantly at high speeds but has trouble keeping its balance when it slows down (Chandler, Schlesinger, and Bussey, Page A1). Japan has averaged 5 percent real annual growth throughout the 1980's (Page A1). For fiscal 1992, however, Japan will be lucky to meet analysts' expectation of 1.6 percent, marking Japan's first decrease in real GDP since the 1973 oil crisis (Page A1) (See Exhibit 6). However, it

Japan's Real Gross Domestic Product In Percent Change From Prior Period



Sources: Japan 1992, Page 12 and The Wall Street Journal, 12/4/92, Page A6.

Exhibit 6 Japan's Real GDP.

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is not just the recession that is causing the decline in The Nikkei, rather it is several mitigating circumstances that have resulted in a 16,000 Nikkei. The next section discusses how different aspects of the Japanese economy have contributed to the spiralling Nikkei.

THE CHANGING STOCK MARKET ARENA

The Japanese stock market arena has experienced great changes. It is these changes in the stock market that make them contributors to the fall in The Nikkei. This section discusses four aspects of this changing arena: the **bond market**, lower price/earnings ratios, fraud in the **brokerage houses**, and the new tactics employed by foreign brokerage houses.

THE BOND MARKET

Historically, in the United States, there has been an inverse relationship between the stock market and the bond market. Usually, if the bond market index increases, the stock market index decreases as investors transfer money from one securities market to another. But what happens if a country doesn't have a formal bond market? How do investors and firms balance themselves between debt and equity financing? Answer: They try to use the stock market as a bond market which only makes the stock market more susceptible to fluctuations.

Japan does not have a formal **primary** or **secondary** bond market, like the United States, even though there is a

Bond Market: A public place where products or services (in this case, bonds) are bought and sold, directly or through an intermediary.
Source: Barron's Finance & Investment Handbook, Page 352.

Brokerage House: A firm engaged in the business of buying and selling securities for itself or its customers.
Source: Barron's Finance & Investment Handbook, Page 310.

Primary Bond Market: The market for new issues of bonds. Here, the proceeds go directly to the issuer of the bond.
Source: Barron's Finance & Investment Handbook, Page 420.

Secondary Bond Market: The market in which bonds are traded subsequent to original issuance. Proceeds of secondary market sales accrue to the selling dealers and investors.
Source: Barron's Finance & Investment Handbook, Page 465.

Definition Box

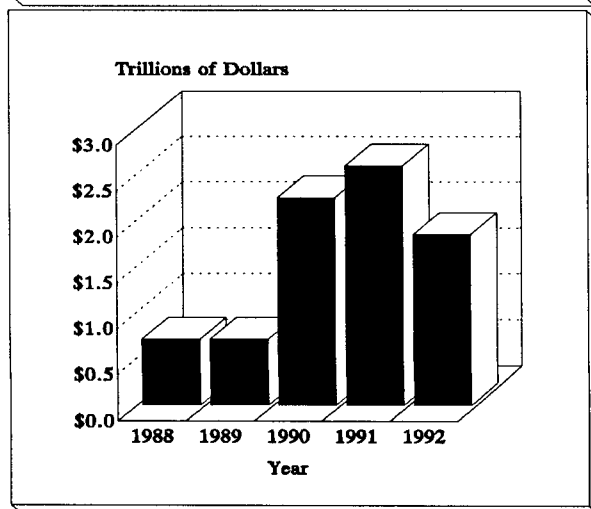
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demand for such (Hardy, Page C1). If you were to open The Wall Street Journal you would see numerous bond quotes of many American corporations; however, you could not do this in Japan. "Surprising as it is, the world's second largest economy and financial system has only the most fledgling of corporate bond markets, an oversight of Japan's finance bureaucrats that has come back to haunt this economically troubled country" (Page C1).

When a Japanese firm wants to raise money for capital investment, it has two choices: **debt** or **equity financing**. Exhibits 7 and 8 show the recent debt and equity initial placements

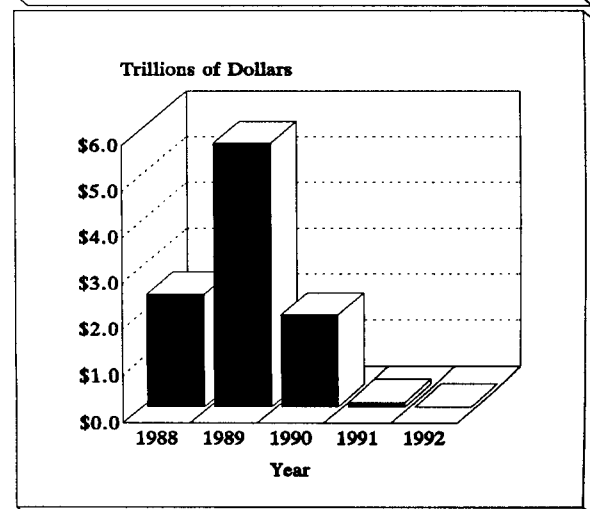
**Japanese Corporate Bond Issues
By Fiscal Year**



Source: The Wall Street Journal, 10/20/92, Page C1.

Exhibit 7 Bond Issues in Japan.

**Japanese Public Stock Offerings
By Fiscal Year**



Source: The Wall Street Journal, 10/20/92, Page C1.

Exhibit 8 Stock Issues in Japan.

over the past 5 years. If a Japanese firm wants to finance a project via debt financing, most turn to the European bond markets and "sell bonds with **warrants attached** - equity-linked bonds that pay low interest but give a buyer stock-purchase rights" (Page C1). However, with the collapse in The Nikkei, these warrants are now unattractive and definitely not worth the several hundred **basis points** of interest they substitute, leaving Japanese firms hard-

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pressed for new funds (Page C1). Back in the 1980's, a number of firms, such as shipper *Nippon Yusen*, floated debt instruments with warrants that yielded just 0.1 percent (Impoco, Page 41). The real value is obtained from the warrant. However, because there isn't a secondary bond market for an investor to get rid of an unwanted bond, many investors converted the bonds into the shares of stock and subsequently sold these shares of stock. Finance and economics theory states that selling shares of stock (hence increased supply and static demand) drives down the price of that stock and the a stock market index, which is what happened with The Nikkei. This is how the Japanese bond market, or rather their lack of one, contributed to the decline in The Nikkei.

LOWER PRICE/EARNINGS (P/E) RATIOS

Another changing aspect of The Tokyo Stock Exchange is lower P/E ratios. Recall that the P/E ratio (as defined on page vi) is the price of a stock divided by either current earnings per share (E.P.S.) or future expected E.P.S. In the 1980's, Japanese stocks have traded at extremely high P/E ratios - indicating that investors are willing to pay many times earnings for a share of stock in a particular company. Exhibit 9 shows that Japan has always had higher P/E ratios than the United States. Thus, a Japanese investor who is willing to pay such a high P/E ratio must

Debt Financing: Raising money by issuing debt instruments: a bill, note, bond, banker's acceptance, certificate of deposit, or commercial paper. It is borrowed money that must be repaid, having a specific amount, maturity date, rate of interest, and par value.

Source: Barron's Finance & Investment Handbook, Page 240.

Equity Financing: Raising money by issuing shares of common or preferred stock. Usually done when prices are high and the most capital can be raised for the smallest number of shares.

Source: Barron's Finance & Investment Handbook, Page 262.

Warrant: A type of security, usually issued together with a bond or preferred stock, that entitles the holder to buy a proportionate amount of common stock at a specified price, usually higher than the market price at the time of issuance, for a period of time or to perpetuity.

Source: Barron's Finance & Investment Handbook, Page 506.

Basis Point: The smallest measure used in quoting yields on bonds and notes. One basis point is .01% of yield. Thus a bond's yield that changed from 10.67% to 11.57% would be said to have moved 90 basis points.

Source: Barron's Finance & Investment Handbook, Page 190.

Definition Box

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have confidence and security in the firm for many years to come. But The Wall Street Journal reports that the 1992 Nikkei P/E ratio was 43.1 versus the U.S. Dow P/E ratio of 13.9 (Page C1). For Japan, this translates into lower stock prices due to a lower P/E ratio trading range, which normally trades in the range of 50 ~ 60

Yearly Price/Earnings Ratios For Japanese and U.S. Companies

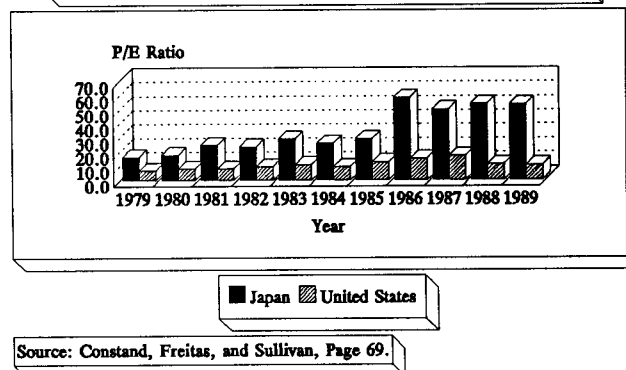


Exhibit 9 P/E Ratios.

times earnings (The Economist, Page 93). Therefore, as Japanese investors "bid-down" P/E ratios, Japanese stocks will suffer. This is exactly how a pessimistic view from Japanese investors drove down P/E ratios and hence The Nikkei.

FRAUD IN THE JAPANESE BROKERAGE HOUSES

The Japanese brokerage houses seem to play by a different rule book than other brokerage houses. "The 'Big Four' securities companies - Normura, Nikko, Daiwa, and Yamaichi - have admitted to retroactively reimbursing \$933 million to selected institutional investors whose portfolios have suffered losses in the stock market downturn" (Stevens, Page A19). However, the Finance Ministry regulators and the security companies say such reimbursements are illegal only if promised when the orders for securities were solicited (Page A19). But this has the tendency to affect The Nikkei in an adverse way. Back in 1989 (when The Nikkei reached its all-time high) if you were an institutional investor and knew you were going to receive a kickback should the investment go bad, you're likely to feel more confident and invest more with the securities firm. This "promise" or

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"understanding" of reimbursement caused more than 250 firms to invest great amounts of money with these "Big Four", driving up The Nikkei until it was discovered what was going on (Cullison, Page 2A). Is this illegal? The answer is unclear. It is a violation of Article 50 of The Japanese Securities and Exchange Law which prohibits securities companies from trying to attract customers by promising compensation for trading losses, but it does not prevent such payments itself (Page 2A). If a law is not enforced, it becomes moot, and people will ignore it. This is exactly what the Japanese securities companies did, resulting in an artificially high Nikkei destined to deflate once the secret was let out.

FOREIGN BROKERAGE HOUSES AND THEIR NEW TACTICS

For decades, the Japanese security firms have been a sheltered industry, protected by "a paternalistic government that (by sanctioning fixed commissions) enabled them to rake in huge profits" (Hardy and Bussey, Page A1). But then came the American securities firms and their "risky arbitrage" (Page A1). "Among the foreign houses, none did more index-arbitrating for its own account than Salomon Brothers, with ¥23.9 billion in ordinary profits" in 1992 (The Economist, Page 89). However, the Japanese feel this is a cause of The Nikkei's fall:

"A trader can distort the index (The Nikkei) by buying or selling certain stocks. By then taking advantage of temporary price discrepancies between underlying stock prices and futures prices, certain securities firms, mostly foreign, have made millions of dollars in the Japanese index arbitrating business. (The futures contract, which can be bought or sold, allows investors to bet on the future price of any given commodity, in this case, a stock market average). Japan's regulators have made no secret that they think index arbitrage is bad for stock prices. They believe it increases volatility and scares away small investors" (Hardy, Page C1).

To counter this "devastating effect of arbitrage, Japan's Ministry of Finance has imposed

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trading limits and higher commissions on futures, in order to reduce what it sees as their pernicious effect on the stock market" (The Economist, Page 89). In addition, Japan's tax inspectors are taking a closer interest in foreign brokers, who have remained "provocatively profitable" while their Japanese rivals are losing money (Page 89). The Japanese are adamantly opposed to foreign firms because of their "new and tricky trading tactics and risk management, employing a variety of trading strategies including computer-assisted proprietary trading, arbitrage, and risk management (which uses technical trading techniques to hedge against losses in other investments)" (Hardy and Bussey, Page A4). Even though foreign firms (U.S. firms) account for 30 percent of Tokyo's trading volume, the Japanese blame them for the declining Nikkei (Page A4). However, after analyzing the preceding three aspects of the stock market arena, this should prove that it is a combined effort that drove down The Nikkei.

Arbitrage: Profiting from differences in price when the same security, currency, or commodity is traded on two or more markets. Index arbitrage exploits price differences between stock index futures and underlying stocks. By taking advantage of momentary disparities in prices between markets, arbitrageurs perform the economic function of making those markets trade more efficiently.

Source: Barron's Finance & Investment Handbook, Page 179.

Futures Contract: An agreement to buy or sell a specific amount of a commodity or financial instrument at a particular price in a stipulated future month. A futures contract obligates the buyer to purchase the underlying commodity and the seller to sell it, unless the contract is sold to another before settlement date.

Source: Barron's Finance & Investment Handbook, Page 293.

Commodities: Bulk goods such as grains, metals, and foods traded on a commodities exchange or on the spot market.

Source: Barron's Finance & Investment Handbook, Page 223.

Definition Box

THE BANKING INDUSTRY

The banking industry has also had an effect on the decline in The Nikkei. In this section, different ways the banking industry affected The Nikkei are analyzed, specifically, the tremendous number of bad loans, interest rates, and the competition with the Japanese

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Postal Savings System.

THE TREMENDOUS NUMBER OF BAD LOANS

"A huge 8.6 percent (or about \$500 million) of the banking industry's \$6 trillion in outstanding loans may now be non-performers or on shaky ground" (Neff, Page 73). In fact, Sumitomo Bank, Ltd. recently took an unprecedented \$1.4 billion write-down to cover bad loans and additions to reserves (Page 73). The reason for this is because about 70 percent of bank's entire portfolio is collateralized by property, whose value has plummeted (Impoco, Page 43). Some critics have called this "America's S&L crisis in Japan". This translates into banks having less money to loan out, and when they do, it is only to its healthiest borrowers (Neff, Page 73). With the prospect of making big money in the rising Tokyo Stock Market, many Japanese took out loans collateralized by an over-appreciated house or land. Where the banks went wrong was by not realizing that all these loans were backed by the full faith of assets that have inflated in value, in some cases, 167 percent between 1985 and 1990 (Samuelson, Page A21). In the late 1980's, banks should have restricted loans to those who had real collateral to back them up.

INTEREST RATES TOO LOW

Exhibit 10 shows just how easy it was to borrow money in Japan as compared to the United States. Notice that during The Nikkei's rise (late 1980's), it became relatively cheaper to borrow the funds to invest in the stock market. Japan does not have a Federal Reserve System like the United States. Rather, The Ministry of Finance and The Bank of Japan (Japan's largest bank) work together to contract or expand the money supply (Meyer, Page 21).

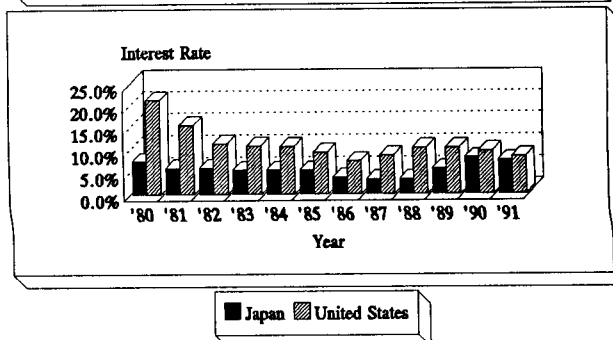
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"However, these two (The Ministry of Finance and The Bank of Japan) made one of the biggest blunders in Japan's history. The Yen was rising on foreign markets, making Japan's exports more expensive abroad. The idea was to stimulate domestic spending to offset a feared loss of exports. The key discount rate fell to 2.5 percent. Easy credit fueled an explosion of corporate investment in new equipment and factories, residential, and office construction. What ensued was a dizzying cycle of spending and speculation. The construction boom inflated real estate values, because land is so scarce in Japan. Higher real estate prices bloated the stock market, because most major companies have huge land holdings. And a soaring stock market helped companies raise capital (via the stock market) to sustain investment spending" (Samuelson, Page A21).

Interest Rates in Japan and The U.S. End of Year Lending Rates



Source: Japan 1992, Page 75.

Exhibit 10 Contrast in Interest Rates.

THE POSTAL SAVINGS SYSTEM

A side step to the banking industry is the Japanese Postal Savings System. Through this government-controlled system, a Japanese can go to one of his/her 24,000 local post offices and deposit Yen into a savings account, earning a competitive rate of return linked to the money market rate (Chandler, Page A4). With deposits in the range of ¥160 trillion (one-third of all private disposable savings), it is the largest savings institution in the world (Page A4). Some of the benefits of The Postal Savings System is as follows: it offers compounded interest every six months as opposed to yearly compounding for Japanese commercial banks, makes small-business loans to Japanese businessmen without substantial collateral to back-up such loans, and it gives the government a source of cash for fiscal development programs (Page A4). At the same time, however, it is indirectly forcing banks

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to make more risky loans (un-collateralized or collateralized with inflated assets) in order to make profits since the Postal Savings System is taking a large chunk of market share. In fact, some banks claim that "The Postal Savings System prices its services below cost, essentially 'dumping' its cut-rate savings products onto its private competitors (Page A4). It is The Postal Savings System that has given Japanese banks such stiff competition that the banks had to do whatever it could in order to make a little profit.

BLUE CHIP COMPANIES

This section is intended to describe some of the characteristics facing blue chip firms in Japan. The purpose is to understand the present situation facing these firms, which makes them less attractive to the investor. Theoretically, this causes investors not to buy or sell-off these shares of stock, causing stock prices to fall. The focus of this argument is lower P/E ratios. If a firm is undesirable, a Japanese investor is no longer willing to pay 50~60 times earnings for the share of stock but rather maybe only 30~40 times earnings. In order to get the P/E ratio of a certain stock down to the 30~40 times earnings range, investors would have to sell-off shares or expected earnings would have to decrease. Either way, the result would be the same: a lower stock price and hence a lower Nikkei average.

PROFITS SAG

Corporate profits dropped 20 percent for the third straight year (Chandler, Page A1). Toyota Motors corporate profits dropped 40 percent in the first six months ended June

Blue Chip Firms: A nationally known company that has a long record of profit growth and dividend payment and a reputation for quality management, products, and services. Blue chip stocks typically are relatively high priced and low yielding.
Source: Barron's Finance & Investment Handbook, Page 195.

Definition Box

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30, 1992 (Miller, Page 1A). And Nissan Motors reported their first-ever operating loss ever since it has been listed on The Exchange in 1951 (Miyoshi, Page A11). Another indicator of these tough times is NEC. NEC is giving its employees coupons good for NEC merchandise instead of cash bonuses (Page A11). Profits are very scarce in Japan right now and nor are they expected to improve real soon.

PRODUCTION CAPACITY UTILIZATION & THE BREAK-EVEN POINT

Capacity utilization rates have plunged in 1992 to 71 percent, their lowest level since 1976 (The Economist, Page 82). From 1987 to 1991, Japanese companies poured \$2.5 trillion into new machinery and equipment (Blustein, Page A13). The Japanese did this because of the ease of both borrowing from the banks and equity financing. However, now their **break-even point** is a staggering 91.8 percent, up from 79.5 percent a decade earlier (The Economist, Page 82). This forces Japanese companies to run plants at or near full capacity in order to stay profitable. But when sales drop, as they did in 1992, losses are difficult to avoid.

COST OF CAPITAL/EQUITY

For the first time in years, **cost of capital** is higher now in Japan than in the United States (The Economist, Page 71). Traditionally, Japan's cost of capital has been lower than that in the United States, allowing them to invest in projects that would be unprofitable in the U.S. (See Exhibit 11). This allowed Japanese firms, especially in the late 1980's, to discount future profits less heavily which means they can be

Break-even Point: The point at which sales equal costs. This point is located by break-even analysis, which determines the volume of sales at which fixed and variable costs will be covered.

Source: Barron's Finance & Investment Handbook, Page 281.

Cost of Capital: The rate of return a business could earn if it chooses another investment with equivalent risk - in other words, it's the opportunity cost of the funds employed as the result of an investment decision.

Source: Barron's Finance & Investment Handbook, Page 232.

Definition Box

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Japan

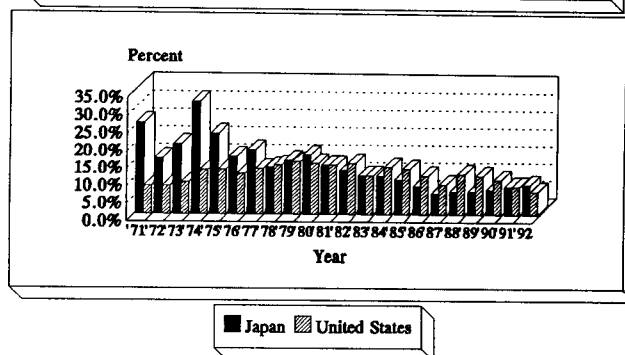


reaped further into the future and still offset the initial project costs (Page 71).

However, with the decline in The Exchange, raising cash on the equity markets is next to impossible (Impoco, Page 41).

Overall, blue chip companies are presently less attractive to investors. This has the effect of causing The Nikkei to decline as investors sell their shares of stock in these companies. This section has analyzed what features are causing investors to shun blue chips and hence cause a decline in The Nikkei. The next section discusses a changing Japanese society and its relationship to The Nikkei's fall.

Cost of Capital in Japan and The U.S.
Adjusted for Differences in Accounting and Cross-Holdings



Source: The Economist, 5/23/92, Page 71.

Exhibit 11 Comparison of Cost of Capital.

A CHANGING JAPANESE SOCIETY

Maybe it's not only the different aspects of the Japanese economy that have changed and contributed to the decline in The Nikkei, but rather a changing Japanese society. In this section, consideration is given that the Japanese are becoming more like their American counterparts - to the extent that they are no longer willing to pay 50~60 times earnings for a share of stock, but rather a P/E ratio range similar to The NYSE. In fact, if The Nikkei traded at the P/E ratio level of the United States, it would be in the range of 10,000 (DuBois, Page 48). Maybe this is what is happening with the decline in The Nikkei?

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NO MORE "LIFETIME EMPLOYMENT"

In Japan, nobody is fired - unless they commit a crime (Blustein, Page G1). what they call "lifetime employment". Even if a manager does not perform, they do have to take a pay cut. They become part of the *madogiwa-zoku* which means "window tribe" (Page G1). "What this means is that such people are assigned to jobs that don't involve much responsibility, yet still rate the same salary and hold the same formal prestige" ... but this is changing (Pages G1, G5). They could instead be transferred to another division or company through the convoluted *keiretsu* network. However, *keiretsu* affiliates are increasingly resistant to the idea of accepting transfers from related companies (Page G5). Recently there is a scary term floating around Japan - "reverse headhunting". "Here is how it works: Suppose there is a *madogiwa-zoku* manager at company A. The 'reverse headhunter' then comes along and offers him a job at company B on a one-year contract basis. And the guy happily moves to company B. But he is dropped from company B after the one year is up. Under this scenario, the headhunter is secretly employed by company A" (Page G5). Historically, there has always been very low unemployment in Japan (currently, 2.2 percent) (Kanabayashi, Page A8). However, this figure does not include the part-time and temporary workers who tend to withdraw from the job market during crunch times, keeping their microscopic unemployment rate (Impoco, Page 40). When times turn bad, Japanese firms have seldom laid employees off. But with Nissan and JVC experiencing mass losses, they are laying off 4,000 and 3,000 employees (respectively) over the next two years (The Economist, Page 82). Japanese companies have realized that the usual way of dumping excess labor is ineffective, prompting a change in corporate policy (Page 82).

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MORE LEISURE TIME

Overall, the Japanese are working less, sleeping less, and enjoying more leisure time. For the longest time, the Japanese have often spent long hours at the work place, working until 8:00pm or 9:00pm (Nogochi, Page M2). In Japan, however, the focus is on the process. Even if a worker cannot produce results by putting in long hours, he or she is still respected as a hard worker (Page M2). But is this changing? Working hours averaged 7 hours 10 minutes, down 14 minutes from the previous survey (The Wall Street Journal, Page A8). Furthermore, the Japanese are sleeping less: last year the Japanese slept an average 7 hours 42 minutes, down 5 minutes from 1986 and down 23 minutes from 1976 (Page A8). It stands to reason that if you are working and sleeping less, leisure time must increase. But this is exactly what the government is aiming for: with more leisure time and a shorter work week, consumers will spend more money on leisure activities and/or consume more durable goods (Jones, Page 7).

CHANGING WORK PLACE DEMOGRAPHICS

The Japanese work place is seeing two new entrants: women and immigrants. Japanese law requires a married female to adopt their new husband's surname for business cards, the company telephone directory, and other professional purposes (Schlesinger, Page B1). This can often be a burden, especially when a women has established a successful career. However, this has not stopped an influx of women into the work place, now accounting for 40 percent of the Japanese work force (Page B1). Plus, with the passage of a law officially banning sexual discrimination, this figure is destined to increase (Page B1).

Due to labor shortages, Japan has allowed the importation of foreign workers,

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primarily to work in industries they call *kitanai* (dirty), *kitsui* (tough), and *kiten* (dangerous) (Kanabayashi, Page B5). Despite these undesirable jobs, The Japanese Justice Ministry puts the total of such foreigners, most of whom are working illegally, at 160,000, up 50 percent from a 1990 estimate (Page B5). But some analysts predict thousands more, both legal and illegal, will arrive during the 1990's as growth in domestic labor slows to a halt around the year 2000 (Page B5). The upshot of this is a changing work place for Japan to encounter and adapt to, whether good or bad, we shall see.

The purpose of this section was to compare and contrast how Japan's society has changed to parallel itself with that of the United States. With a society more like the United States their stock market expectations are bound to be more pessimistic than their prior expectations, hence, calling for lower P/E ratios and consequently lower stock prices. With this in mind, a lower Japanese Nikkei is rightfully justified. The next section applies a simple finance concept to the Japanese economy.

THE GORDON GROWTH MODEL

The Gordon Growth Model, also known as the Constant Growth Model, is usually implemented by financiers to predict the price of a stock. Exhibit 12 shows that the price of a stock is derived from the dividend divided by cost of capital less the growth rate. But can the Gordon Growth Model, or a variation such as

The Gordon Growth Model

$$P_0 = \frac{D_1}{k_s - g}$$

Where:

- P_0 is the Current Stock Price.
 D_1 is Next Period's Dividend.
 g is Expected Compound Growth rate of Dividends.
 k_s is the Cost of Capital.

Exhibit 12 The Gordon Growth Model.

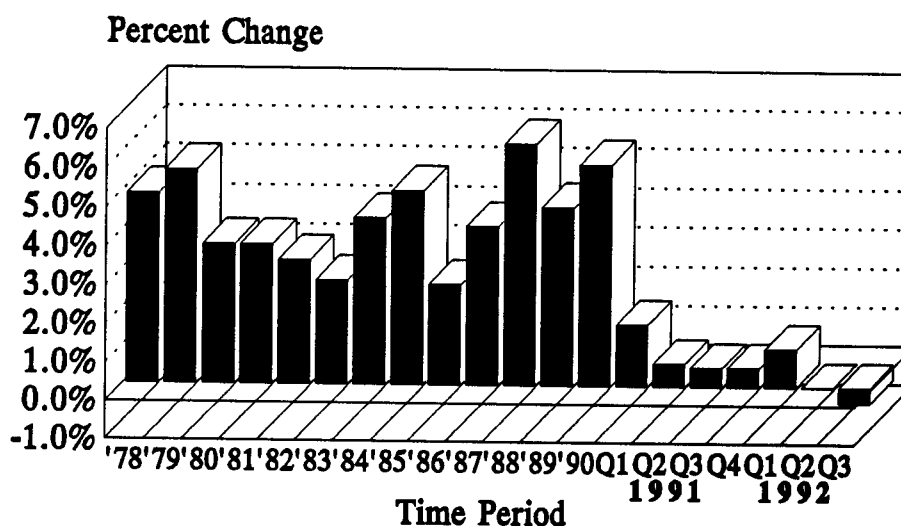
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the Supernormal Growth Model, be applied to a nation's economy, specifically Japan?

Exhibit 13 (a reproduction of Exhibit 6) shows Japan's Real Gross Domestic Product (Real GDP). Notice the strong growth of this country versus it's later economic growth. Japan's growth is similar to a growth company with Japan's infancy occurring in the 1970's, the abnormal growth occurring in the 1980's, and finally a slow-down in growth (or maturity) for the 1990's and on. I see no reason why The Gordon Growth Model cannot be applied to Japan's economy. Critics have for years referred to Japan's growth and business culture as

Japan's Real Gross Domestic Product In Percent Change From Prior Period



Sources: Japan 1992, Page 12 and The Wall Street Journal, 12/4/92, Page A6.

Exhibit 13 Japan's Real GDP.

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Japan



"Japan Incorporated". Japan has grown unlike any other country, maybe never to happen again.

CONCLUSION

The Japanese Nikkei Stock Market Average has taken some fatal blows. This thesis has outlined some probable contributing causes to The Nikkei's decline.

The Tokyo Stock Exchange is changing in at least four different respects. The lack of a formal bond market forces investors to exercise their warrants, driving down The Nikkei Average. The Nikkei is also trading at lower, more American, P/E ratios; resulting in a lower Nikkei. The Japanese brokerage houses are getting caught violating securities laws. And the entrant of American brokerage houses, the Japanese charge, causes the Nikkei to spiral.

The banking industry is another contributor to The Nikkei's fall. Banks made a tremendous number of bad loans, interest rates were kept too low during Japan's great expansion, and The Japanese Postal Savings System forced banks to make risky loans in order to compete.

Japanese blue chip firms also contributed to the fall in The Nikkei. A combination of sagging profits, lower production capacity utilization, and higher cost of capital has made these firms undesirable. Selling-off shares in these firms has driven down their stock price and hence The Nikkei Stock Market Average.

A changing Japanese society is another contributor to The Nikkei's fall. Japan's "lifetime employment" is breaking down, they are enjoying more leisure time, and

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experiencing a demographic change within the work place. All of the above changes indicate a more "American" Japanese society who are not as optimistic about future corporate profits, calling for lower P/E ratios and as a result, a lower Nikkei Stock Market Average.

The Nikkei will probably never be the same again. Sure, it may reach 38,915.87 once again, but probably not anytime soon.

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Japan



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Appendix A

The 30 Stocks Selected for The Dow Jones Industrial Average

Allied-Signal Company
Aluminum Company of America (ALCOA)
American Express Company
American Telephone and Telegraph (AT&T)
Bethlehem Steel
Boeing Company
Chevron Corporation
Coca-Cola Company
DuPont de Nemours, E. I. & Company
Eastman Kodak Company
Exxon Corporation
General Electric Company (GE)
General Motors Corporation (GM)
Goodyear Tire & Rubber Company
International Business Machines Corporation (IBM)
International Paper Company
McDonald's Corporation
Merck & Company
Minnesota Mining & Manufacturing Company (3M)
Navistar International
Philip Morris Company
Primerica
Procter & Gamble Corporation
Sears, Roebuck & Company
Texaco Incorporated
Union Carbide Corporation
United Technologies Company
USX Corporation
Westinghouse Electric Corporation
F. W. Woolworth & Company

Source: Barron's Finance & Investment Handbook, p.853.



Appendix B

The 225 Stocks Selected for The Nikkei Stock Market Average

Fishery

Kyokuyo Hoge, Ltd.
Nichiro Gyogyo Kaisha, Ltd.
Nippon Suisan Kaisha, Ltd.

Mining

Mitsui Mining Co., Ltd.
Mitsubishi Mining Co., Ltd.
Sumitomo Coal Mining Co., Ltd.
Furukawa Mining Co., Ltd.
Hokkaido Colliery & Steamship Co., Ltd.
Teikoku Oil Co., Ltd.

Foodstuff

Nippon Flour Mills Co., Ltd.
Nisshin Flour Milling Co., Ltd.
Dai-Nippon Sugar Mfg. Co., Ltd.
Taito Company, Ltd.
Meiji Sugar Mfg. Co., Ltd.
Nippon Beet Sugar Mfg. Co., Ltd.
Morinaga Confectionery Co., Ltd.
Meiji Seika Kaisha, Ltd.
Meiji Milk Products Co., Ltd.
Nippon Breweries, Ltd.
Asahi Breweries, Ltd.
Kirin Brewery Co., Ltd.
Takara Shuzo Co., Ltd.
Godo Shusei Co., Ltd.
Sanaraku-Ocean Co., Ltd.
Hohnnen Oil Co., Ltd.
Nisshin Oil Mills, Ltd.
Nikka Fats & Oils Co., Ltd.
Noda Shoyu Co., Ltd.
Ajinomoto Co., Ltd.
Nippon Reizo Kabushiki Kaisha

Textiles

Katakura Industry Co., Ltd.
Toyo Spinning Co., Ltd.
Kanegafuchi Spinning Co., Ltd.

Dai Nippon Spinning Co., Ltd.
Fuji Spinning Co., Ltd.
Nisshin Cotton Spinning Co., Ltd.
Nitto Boseki Co., Ltd.
Omikenshi Spinning Co., Ltd.
Japan Wool Textile Co., Ltd.
Daito Woolen Spinning & Weaving Co., Ltd.
Teikoku Sen-i Co., Ltd.
Japan Textile Mfg. Co., Ltd.
Teikoku Rayon Co., Ltd.
Toyo Rayon Co., Ltd.
Toho Rayon Co., Ltd.
Mitsubishi Rayon Co. Ltd.
Kurashiki Rayon Co., Ltd.
Asahi Chemical Industry Co., Ltd.

Pulps & Papers

Kokoku Rayon & Pulp Co., Ltd.
Sanyo Pulp Co., Ltd.
Nippon Pulp Industry Co., Ltd.
Kokusaku Pulp Industry Co., Ltd.
Tohoku Pulp Co., Ltd.
Oji Paper Co., Ltd.
Honshu Paper Mfg. Co., Ltd.
Jujo Paper Mfg. Co., Ltd.
Mitsubishi Paper Mills, Ltd.
Hokuetsu Paper Mills, Ltd.

Chemical

Toyo Koatsu Industries, Inc.
Nitto Chemical Industry Co., Ltd.
Showa Denko K. K.
Sumitomo Chemical Company, Ltd.
Shin Nippon Chisso Hiryo, K. K.
Mitsubishi Chemical Industries, Ltd.
Nissan Chemical Industries, Ltd.
Rasa Industries, Ltd.
Nippon Soda Company, Ltd.
Toyo Soda Manufacturing Co., Ltd.

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Toa Gosei Chemical Industry Co., Ltd.
Electro Chemical Industrial Co., Ltd.
Shin-etsu Chemical Industry Co., Ltd.
Nippon Carbide Industries Co., Ltd.
Nippon Chemical Industrial Co., Ltd.
Mitsui Chemical Industry Co., Ltd.
Kyowa Hakko Kogyo Co., Ltd.
Mitsubishi Edogawa Chemical Co., Ltd.

Nippon Synthetic Chemical Industry
Co., Ltd.
Ube Industries, Ltd.
Nippon Kayaku Co., Ltd.
Asahi Electro-Chemical Co., Ltd.
Nippon Oils and Fats Co., Ltd.
Sankyo Company, Ltd.
Takeda Chemical Industries, Ltd.
Fuji Photo Film Co., Ltd.
Konishiroku Photo Industry Co., Ltd.

Petroleum & Coal-Products

Nippon Oil Company, Ltd.
Showa Oil Co., Ltd.
Maruzen Oil Company, Ltd.
Mitsubishi Oil Company, Ltd.
Toa Nenryo Kogyo Kabushiki Kaisha

Rubber Products

Yokohama Rubber Co., Ltd.

Glass, Ceramics & Other

Earthen Ware

Asahi Glass Co., Ltd.
Nippon Sheet Glass Co., Ltd.
Nihon Cement Co., Ltd.
Iwaki Cement Co., Ltd.
Onoda Cement Co., Ltd.
Nippon Toki Kaisha, Ltd.
Toyo Toki Co., Ltd.
NGK Insulators Ltd.
Shinagawa Fire Brick Co., Ltd.
Tokai Electrode Mfg. Co., Ltd.
Nippon Carbon Co., Ltd.

Primary Metal Products

Yawata Iron & Steel Co., Ltd.
Fuji Iron & Steel Co., Ltd.
Kawasaki Steel Corporation
Nippon Kohan Kabushiki Kaisha
Sumito Metal Industries, Ltd.
Kobe Steel Works, Ltd.
Japan Special Steel Co., Ltd.
Mitsubishi Steel Co., Ltd.
Nippon Stainless Steel Co., Ltd.
Nippon Metal Industry Co., Ltd.
Nippon Yakin Kogyo Co., Ltd.
Tekkosha Company, Ltd.
Nippon Electro-Metallurgy Co., Ltd.
Kubota Iron & Machinery Works, Ltd.
Japan Steel Works, Ltd.

Non-Ferrous Metal Products

Nippon Light Metal Company, Ltd.
Mitsui Mining & Smelting Co., Ltd.
Toho Zinc Co., Ltd.
Mitsubishi Metal Mining Co., Ltd.
Nippon Mining Company, Ltd.
Sumitomo Metal Mining Co., Ltd.
Dowa Mining Co., Ltd.
Shimura Kako Co., Ltd.
Furukawa Electric Co., Ltd.
Fujikura Cable Works, Ltd.
Showa Electric Wire & Cable Co., Ltd.

Other Metal Products

Toyo Seikan Kaisha, Ltd.
Tokyo Rope Mfg. Co., Ltd.

Machinery

Niigata Engineering Co., Ltd.
Komatsu Mfg. Co., Ltd.
Ebara Mfg. Co., Ltd.
Nippon Piston Ring Co., Ltd.
Nippon Seiko K. K.
Toyo Bearing Mfg. Co., Ltd.
Koyo Seiko Co., Ltd.
Fujikoshi Steel Industry Co., Ltd.

Electric Machinery

Hitachi Ltd.

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Tokyo Shibaura Electric Co., Ltd.
Mitsubishi Electric Mfg. Co., Ltd.
Fuji Electric Mfg. Co., Ltd.
Meidensha Electric Mfg. Co., Ltd.
Nippon Electric Co., Ltd.
Matsushita Electric Industrial, Ltd.
Yokogawa Electric Works, Ltd.

Transportation Machinery

Mitsubishi Shipbuilding & Engineering
Co., Ltd.
Mitsubishi Nippon Heavy Industries, Ltd.
Hitachi Shipbuilding & Engineering Co.,
Ltd.
Uraga Heavy Industries Co., Ltd.
Shin-Mitsubishi Heavy Industries, Ltd.

Ishikawajima Harima Heavy Industries,
Ltd.
Kisha Seizo Kaisha, Ltd.
Japan Rolling Stock Mfg. Co., Ltd.
Nissan Motor Co., Ltd.
Isuzu Motors, Ltd.
Toyota Motor Co., Ltd.
Hino Motors, Ltd.
Tokyo Hatsudoki Co., Ltd.
Miyata Works Co., Ltd.

Precision Machinery & Instruments

Nippon Kogaku K. K.
Canon Camera Co., Inc.
Citizen Watch Co., Ltd.

Miscellaneous Manufacturing

Akimoku Kogyo Co., Ltd.
Toppan Printing Co., Ltd.
Dai Nippon Printing Co.
Nippon Musical Instruments Mfg. Co.,
Ltd.

Commercial

C. Itoh & Co., Ltd.
Marubeni-Iida Co., Ltd.
Mitsui Bussan Kaisha, Ltd.
Meiji Trading Co., Ltd.

Mitsubishi Shoji Kaisha, Ltd.
Mitsukoshi, Ltd.
Toyoko Co., Ltd.
Matsuzakaya Co., Ltd.
Maruzen Company, Ltd.

Banking & Insurance

Nippon Kangyo Bank, Ltd.
Bank of Tokyo, Ltd.
Mitsui Bank, Ltd.
Fuji Bank, Ltd.
Sumitomo Bank, Ltd.
Mitsui Trust & Banking Co., Ltd.
Mitsubishi Trust and Banking Corporation
Japan Securities Finance Co., Ltd.
Tokio Marine & Fire Insurance Co., Ltd.
Taisho Marine & Fire Insurance Co., Ltd.
Yasuda Fire & Marine Insurance Co.,
Ltd.

Real Estate

Mitsui Real Estate Co., Ltd.
Mitsubishi Estate Co., Ltd.
Heiwa Real Estate Co., Ltd.

Land Transportation

Tobu Railway Co., Ltd.
Seibu Railway Co., Ltd.
Tokyo Electric Express Railway Co., Ltd.
Keihin Electric Express Railway Co., Ltd.
Odakyu Electric Railway Co., Ltd.
Keio Teito Electric Railway Co., Ltd.
Keisei Electric Railway Co., Ltd.
Nippon Express Co., Ltd.

Marine Transportation

Nippon Yusen Kabushiki Kaisha
Osaka Mercantile Steamship Co., Ltd.
Nitto Shosen Co., Ltd.
Mitsui Steamship Co., Ltd.
Yamashita Steamship Co., Ltd.
Kawasaki Steamship Co., Ltd.
Nissan Kaiun Kaisha, Ltd.
Ino Kaiun Kaisha, Ltd.

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Mitsubishi Shipping Co., Ltd.
Tokai Steamship Co., Ltd.

Warehousing

Mitsubishi Warehouse Co., Ltd.
Mitsui Warehouse Co., Ltd.
Mitsui Wharf Co., Ltd.

Utility

Tokyo Electric Power Co., Inc.
Kansai Electric Power Co., Inc.
Tokyo Gas Co., Ltd.
Osaka Gas Co., Ltd.

Service

Shochiku Co., Ltd.
Toho Co., Ltd.
Daiei Motion Picture Co., Ltd.
Toei Motion Picture Company
Nikkatsu Corporation
Korakuen Stadium Co., Ltd.
Tokyo Kaikan Co., Ltd.

Source: Japan Stock Exchange Manual
p. 376-380.