

Are Israeli Stock Prices Too High?

Asher Blass

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The paper, prepared in January 1994 before the 1994 fall in stock prices, assembles an unprecedented and comprehensive collection of historic and current stock market data including the size of the Exchange, initial public offerings, returns and other indicators - to address the question of whether stock prices at the end of 1993 are too high. Similar to French and Poterba's 1991 study on Japan, I calibrate the changes in discount factors and growth expectations required to explain the rise of Israeli share values in 1992 and 1993 in a simplified Modigliani Miller type framework. Various proxies for actual changes in required returns and growth expectations are considered. The analysis indicates that the market run-up can be explained within the framework of a Miller-Modigliani growth model primarily by assuming that growth expectations have increased substantially. It is difficult, however, to find evidence to support that proposition.

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1. Introduction

Israeli Stock Market prices increased rapidly over the past several years. The stock market total return index which includes price appreciation, dividends and gains on reinvested dividends increased by 55 percent in 1991, 92 percent in 1992 and 40 percent in 1993. The real return, after deflating by the consumer price index was 31 percent in 1991, 76 percent in 1992, and 27 percent in 1993, while the total return in U.S. dollars was 36, 64 and 28 percent respectively. The value of an investment of 100 Shekel in Israeli stocks on January 1, 1991 was therefore worth 293 Shekel (at January 1991 prices) by the end of 1993.

The dramatic increases led many regulators to warn investors that the market continues to be relatively volatile and that serious declines are possible. The Governor of the Bank of Israel reportedly stated in a radio interview in February 1993 that he was *"concerned when he sees people...withdrawing their money from Provident funds to enter the Bourse...what is important for us are real investments, plants, employment (and) exports and not some financial bubble that continues and continues to increase."* Similarly, the Minister of Finance indicated at the time that *"Bourses do not work in one direction. There are ups and downs."* A member of Knesset said *"..on the day that the bubble bursts, financial stability will be threatened.."*

The concerns are highlighted by the fact that the Israeli run-up, particularly the 76 percent rise in 1992, was unusual

compared to many developed countries. For example, from 1816-1993, United States' annual real stock returns never rose by 76 percent in a single calendar year. While Japanese stock prices doubled in 1972, that was the only year since World War II in which stock return was greater than Israel's 1992 performance.

While Israeli stock prices have previously increased by annual real rates even greater than in 1992, subsequent declines were generally large enough to wipe out prior gains. Both in 1959 and 1960, total real annual returns were greater than 80 percent. After declining in 1961, stock prices continued to rise in 1962 and 1963 but returned to year-end 1959 real levels by the end of 1966. In 1972, real stock prices increased by over 70 percent, but gave up the entire gain and more by the end of 1974. Total return was 99 percent in the first eleven months of 1977 but returned to 1976 levels by December 1979. In 1982, total return exceeded 70 percent, however three-fifths of market value was wiped out in 1983 as industrial stocks declined precipitously in the first part of the year while bank stocks collapsed in October. These past events raise the question of whether, once again, a serious decline might lie ahead.

If stock prices are indeed too high, the consequences of an eventual market collapse could be greater than past collapses', because the relative size of today's market is larger than the past's. A crash could lead to a rash of bankruptcies, tightened credit, reduced investment and consumption. Moreover it might influence regulators to terminate the policy of foreign currency

liberalization under way if individuals and corporations transferred funds abroad in the wake of a collapse. Similarly, a collapse might derail the privatization process under the guise that "appropriate consideration cannot be received."

There are reasons to believe, however, that the present run-up might be different and supported by fundamental values. In particular, the large scale immigration that began in 1989 and prospects of a 'peace dividend' raise the possibility that the economy in general and corporate profits especially might increase rapidly for several years. Moreover, interest rates today are much lower than in the 1980's, providing further support for higher price levels.

This paper assembles an unprecedented and comprehensive collection of historic and current Tel Aviv Stock Exchange (TASE) data to address the question of whether stock prices are indeed too high. It is important to note that the claim that prices are "too high" suggests that the TASE is not an efficient market, at least not in "semi-strong" form. Semi-strong efficiency implies that prices reflect (ex-ante) all public information. If the TASE were semi-strong efficient, it would not be possible to argue that price levels were not consistent with 'fundamentals' - expected future profits, cash flow and dividends. In addition, the question of whether prices are too high is in some sense unanswerable because any time series of stock prices could be justified by an appropriate set of unobservable investor expectations about future unobservable variables. Although

expectations are unobservable, I calculate rates of increase in profits required to support the current price levels in a simplified Modigliani Miller type framework. We then discuss whether the required growth rates are plausibly attainable or alternatively, whether stock prices are "too high." I conclude that the rise in stock prices in 1992-1993 does not appear to be supported by fundamentals and that prices are in that sense indeed too high.

The paper is divided into five sections. Section 2 presents an overview of the Israeli Stock Market using data assembled for the first time. It reports the size of the Exchange, initial public offerings, returns and other indicators. Section 3 compares Israeli stock performance in recent years to other countries' market performance. I find that while the run-up in Israel might be unusual compared to developed countries' market performance, it is not unique in comparison to market behavior in less mature countries. Section 4 examines the expected growth rates required to support current price levels. Similar to French and Poterba (1991), I calibrate the changes in discount factors and growth expectations required to explain the rise of Israeli share values. Various proxies for actual changes in required returns and growth expectations are considered. I find that extremely optimistic and unsubstantiated assumptions about growth and discount rates are required to explain the 1992 and 1993 price run-ups. Conclusions are in Section 5.

2. Overview of the Israeli Equity Market

2.1 Chronology

Although an informal market for securities existed in Tel Aviv in the 1930's, it was not until 1953 that the Tel Aviv Stock Exchange (TASE) was officially established. Notwithstanding the rapid economic growth that prevailed during that time in Israel, market returns in the 1950's were abysmal (Figure 1). The TASE remained an insignificant factor in Israeli capital markets: total market value in December 1959 was equal to one half of one percent of Business Sector Gross Capital Stock (Figure 2). The Bank of Israel Annual Report 1959 (p. 296) explained the poor performance as being driven by stingy dividend policies and other reasons: "*Private saving was low...segments of the public and new immigrants were not acquainted with equity markets, certain groups viewed stock investments as ideologically disdainful..*"

From 1959 through 1960, real stock market prices more than tripled. The jump was attributed to dividend growth expectations, reduced corporate taxes, and a "*realization that shares were...underpriced*" (Bank of Israel Annual Reports 1959 & 1960). The increase in prices ushered in a period in which many corporations issued new equity and joined the TASE: The number of listed corporations increased from 17 to 81 from 1958 through 1964 as many of today's larger Israeli companies went public (Figure 3). In fact, equity offerings during 1960 were almost as large as total market value at the beginning of the year!

From 1964 through 1966, real stock prices declined by half. The decline was described as a "reaction to (previously) high price levels and the multitude of public offerings" and to have worsened with the deepening of the 1965-67 recession (Bank of Israel Annual Reports 1965, 1966).

The market moved sideways until 1972 when real share prices rose by 83 percent. The increase was believed to be "related to expansionary growth in the economy as a whole," "expectations of future profits," "high levels of capital imports directed to financial assets," and to "increased demand for financial assets that provide a hedge against inflation." (Bank of Israel Annual Report 1972). In 1973-74 share prices gave up their 1972 gains. The loss was attributed to tight monetary policies in the beginning of 1973 and heightened risks and low profits after the Yom Kippur War and Oil Shock. It was also believed that many investors substituted index linked bonds for equity when inflation accelerated (Bank of Israel Annual Reports 1973, 1974).

In 1975, 1976 and the first 11 months of 1977 shares rebounded, although profits didn't recover from 1973-74's decline. In 1979, share prices declined, but from 1980 through 1982 real prices more than tripled. The level of equity offerings, primarily those of large banks later found by the Bejsky Committee to have manipulated bank stock prices during this period, jumped dramatically in 1982 (Table 1), accounting for more than 35 percent of Business Investment (Figure 4). In 1983 real share prices declined by 68 percent. The government

responded by effectively nationalizing the banks, the shares of which previously represented three fifths of market value.

From 1984 until 1987, real stock prices increased gradually as inflation declined from approximately 450 percent in 1984 to annual rates of 16-20 percent. The market declined in 1987 along with most world equity markets and under-performed during much of 1988. Beginning in 1989 and especially from 1991 through 1993, stock prices rose to new heights, while Equity Offerings and number of listed companies grew dramatically.

2.2 Market Size and Returns

The TASE grew as share prices appreciated and as companies went public. This subsection provides background information.

a. *Market Indices and Macroeconomic Variables*

Figure 1 compares the rise of Israel GDP and the market index from 1950 to the present. Two stock indices are provided: one includes the value of reinvested dividends (referred to as the "total return index" or the "index with dividends"), while the other is a price index that does not include reinvested dividends (referred to as the "index without dividends" or the "stock price index"). It was necessary to construct both indices because the official Central Bureau of Statistics Stock Price Index (CBS Index) is a hybrid index: until 1977, cash dividends were not reinvested, while after that date they were. I

constructed the total return index by computing dividend rates for the first 27 years and adding these rates back into the CBS Index up until 1977, while using the existing CBS Index from 1977 to the present. The stock price index was computed by subtracting dividends from the CBS from 1977 to the present, while using the CBS for years prior to 1977. The Diagram indicates that neither index kept pace with GDP. The result provides an indication of stocks' poor performance because in most countries, total stock return over time is greater than GDP growth.

b. *Risk, Return and Alternative Investments*

Table 2 reports the distribution of annual inflation adjusted total returns from 1950-1992 in Israel. Table 3 provides a similar distribution for the United States from 1871-1992, while Figure 5 compares the Israeli distribution ("isr") to the U.S. distribution from 1871-1925 ("old_US"), the U.S. distribution from 1926-1992 ("new_U.S.") and Israeli industrial stock return distribution (ISR_IND). The results indicate that the annual returns in Israel are considerably more volatile.

I calculated the cumulative wealth of an investor who bought \$500 (1993 dollars) of Israel and American stocks every month since January 1950 until the end of 1992. If he bought Israeli stocks, he would have been worth \$1.6 million by the end of 1992, while if he had bought U.S. stocks, he would be worth \$1.2 million. If he were to invest continuously at a real rate of 3 percent he would have been worth only \$500,000. Figure 6

compares risk and return in both countries and suggests that the Israeli market was riskier without providing additional return.

c. Stock versus Real Estate Returns

Figure 7 compares a 1960 investment in a portfolio of apartments with rents reinvested in additional apartments to investments in the TASE and indexed deposits. Contrary to the beliefs of many Israelis, apartments do not provide relatively superior returns over time. Moreover, apartment holdings underperform riskless 6 percent guaranteed indexed deposits, which were available to many Israelis through provident and pension funds. While apartment prices are less volatile than stock prices, real estate holdings are less liquid than stocks and the transaction costs of purchasing and owning real estate are relatively high. Figure 8 tracks investments in Real Estate stocks, which provide more liquidity than owning real estate directly and highlights the risks in owning real estate stocks. In fact, the collapse in 1983 was so severe that it wasn't until 1993 that Real Estate stock investors were able to (barely) recover their losses.

d. The Rise in Overall Market Value

Listed securities' total real market value ("market value") grew much faster than the total return index, increasing at an annual compound rate of 20 percent from 1960 to 1993 reaching a total of 150 milliard N.I.S. at the end of 1993 or 175 milliard

including Israeli companies trading in the U.S. Market Value increases are attributable to four factors:

- a. the rise in the market index (without dividends);
- b. the cumulative initial value of public offerings;
- c. the cumulative rise in value of public offerings;
- d. a residual, presumably attributable to the market value of new listings not included in b. To explain, when a corporation goes public, it typically issues new stock, the value of which is included in b. However, reported market value also includes the value of the company's old shares, now trading for the first time. That value is not included in b, but included in d.

Much of the increase in market value is attributable to cumulative public offerings (b) and (c) as well as the residual (d). Figure 9 show that from 1984 through 1992, approximately 28 percent of the increase can be attributable to the rise in the index (a), 15 percent each to the cumulative value of new offerings (b) and the rise in value of offerings (c) while the 42 percent residual (d) apparently reflects the contribution of newly listed (but not newly issued) shares.

Figure 10 compares increases in Market Value to real variables such as Business GDP, Business Gross Capital Stock and Total Gross Capital Stock. The market value plots from 1984 through 1991 are presented in two versions: with and without the bank shares nationalized by the government and transformed, in effect, in to government bonds ("bank shares in the

arrangement"). Table 4 and Figure 11 depict the relative contributions of different sectors to total market value (not including "arrangement" bank shares) and indicates that the industrial, service & trade and real estate sectors have become increasingly important. In fact, industrial sector market value is more than one hundred times greater than it was in 1975, while industrial output is approximately only double its 1975 levels.

The growth in market value has been accompanied by increases in trading volume levels on the TASE (Figure 12). Market turnover rates in 1992, however, are much lower than the early 1980's levels (Figure 13) and are similar to those reported on the Tokyo and New York Stock Exchanges.

e. Market Value is Double Counted

Israeli reported market values are overstated in the sense that they are not adjusted for intercorporate share ownership, which causes a double counting of corporate shares. To illustrate this point, imagine that there are two firms Clal and Clal Industries ("Industries") and each owns 100 N.I.S. of (separate) physical plant funded by 100 N.I.S. of equity held by the public.¹ The total market value of the two firms equals 200 N.I.S. Imagine that Clal issues 50 N.I.S. new stock to the public, the proceeds of which are used to buy Industries' shares in the open market. The total reported market value has now risen to 250 N.I.S., because Clal's market value increased to 150

¹ The example is taken from French and Poterba (1991).

N.I.S., including 100 N.I.S. in plant and 50 N.I.S. in Industries shares while Industries' market value is unchanged at 100 N.I.S. In other words, half of Industries' assets are counted towards the equity of both Clal and Industries.

Figure 14 provides an example that further illustrates this point. Total market value includes both Property & Building Corp.'s ("P&B") and Hadarim Properties' ("Hadarim") market value. However, 66 percent of Hadarim's market value are already included in P&B's market value. P&B's market value is also double-counted because it is partially included in Discount Investments' market value. Moreover, if de-listed Discount Bank were to be sold to the public and relisted, its market value would then be added to overall market value, although its value is already partially reflected in P&B's, Discount Investments', Mehadrin's, Pri-or's and Ispro's market values. Preliminary estimates indicate that approximately 30% of market value is double counted in this fashion.

The double counting phenomenon implies that measures derived from reported market values tend to overstate the market's true importance. Figure 14 also shows the kind of ownership control exerted by the State and the large banks in many industries.

2.3 Valuations

This subsection attempts to compare market performance with "fundamental" values, a series of ratios and rates calculated

from accounting data. Individual stock prices, fixed assets as well as other balance sheet and earnings data discussed below are computed from a Compustat-type database that I constructed from spliced accounting data (in a TASE program named "Ducas") and other TASE publications. It should be noted that accounting data does not necessarily correspond to economic data: an accounting cost is not always an economic cost, accounting revenue is not equivalent to economic revenue, and the book value of an asset does not correspond to its economic value. Moreover, firms' reported accounting earnings can be changed by adopting different accounting procedures for depreciation, valuation of inventory, the ways in which firms are merged, R&D expensing, tax liabilities and by timing the realization of gains and losses.

a. *Market Value Growth & Asset and Book Value Growth 1967-1993*

Figure 15 compares market value and fixed assets reported in listed companies' Annual Reports and indicates that market value has grown more rapidly than fixed assets. Figure 16 compare market and (equity) book value of all listed securities from 1967 through 1993, normalizing to 1985 book value. In 1985, market value was less than 60 percent of book, but by 1993, it was 250 percent of book (Figure 17). Figure 18 compares market value and total assets of all listed securities from 1967 through 1993, normalizing to 1985 total assets. Whereas market value in 1985 accounted for less than 9 percent of total assets, it reached 40 percent of total assets by the end of 1993.

b. *Profit Measures and Market Value 1985-1993*

Tables 5A-G provide a variety of valuation measures broken down by market sector that I calculated for TASE corporations from 1985-1993 - focusing on earnings, cash flow and dividends.

Table 5A presents price-earnings ratios and indicates that until 1990, profits were often negative or very close to zero. The P/E multiple reached 23 in 1993, which means that from 1991 through 1993 prices grew at a rate which was double that of the growth in current earnings. Return on equity (earnings divided by book value) grew from a negative figure in 1989 to 10.7 percent in 1991 (Table 5B), but didn't grow in the last two years even though the Ratio of Market to Book Value doubled (Table 5C).

Cash Flow is often considered a more accurate indication of profitability than earnings. The following example illustrates why that is so: Suppose Clal owns shares in Scitex and that Scitex issues additional stock to the public. Clal will record earnings equal to the product of a) the difference in price on the new offering of Scitex shares and the price Clal paid years earlier and b) the dilution of its shares in Scitex as a result of the offering. The earnings are recorded even though no cash was received by Clal, and Clal's Scitex holdings' market value may have actually declined since the year before. These earnings, however, will not be included in the Clal's cash flow.

Israel's 1993 Price-Cash flow ratio of 16 (Table 5D) is

high. The Price-Cash flow ratio was fairly constant from 1989 through 1991 but increased by 70 percent in 1992 and by an additional 35 percent in 1993.

Dividend rates (Table 5E) are low, especially in comparison to the late 60's and early 70's when rates approached double-digits (Figure 19). Dividend rates have fallen by half since 1990 and the decline is understated because the calculation includes extraordinary one-time dividends to incumbent shareholders paid by many firms going public.

In summary, changes in current profitability measures have not kept pace with the rise in stock prices in 1992-1993. Assuming markets are semi-strong efficient, that either suggests that investors became convinced in 1992-1993 that previously unattainable growth opportunities had become available to Israeli firms, or that investors began discounting future profits by lower rates. We address these questions in Section 4. First, we compare Israeli stock performance in recent years to the performance in other countries to determine whether the market run-up in Israel is unique.

3. Comparative Analysis

Here I compare TASE characteristics to those of other countries' and conclude that TASE performance is not unusual.

Table 6 compares Israel's market capitalization as a percent of GDP to other countries' and indicates that Israel's ratio is not unusual. Table 7 compares Israel's P/E and dividend yields and shows that other countries have higher PE's than Israel's. Table 8 describes market concentration: the Israeli 39 percent figure for the ten largest stocks is not unusual. Table 9 compares mean and standard deviations of TASE monthly total dollar return to other exchanges' during the last five years. The TASE mean is higher than most but lower than the Latin American index. Market volatility in U.S. dollars - comprised of market volatility in local currency, exchange rate volatility and the covariance between the two - is lower in Israel than most developing countries' and comparable to developed countries'.

Table 10 reports annual total dollar return statistics for Israel and a group of developing countries over a more extended period - 1980-1992. The Israeli mean is lower than average, while the geometric mean is higher - neither significantly, however. Israel's best year was not as good as that of most, while its worst was worse than the worst of the others, except Mexico. With the exception of Malaysia, Israel's market returns were the least volatile. Figures 20-22 contain further market performance comparisons.

4. Required Returns and Expected Growth

The apparent divergence in 1992 and 1993 between current fundamental factors such as earnings and cash flow on the one hand and stock price increases on the other hand leads me to consider two alternative considerations. First, the peace process (or other developments) may have led investors to believe that Israeli firms are now facing new and extraordinary growth opportunities. Second, the required return on equity (the return that investors require on equity investments) may have fallen as a result of a decline in either of its components: the riskless rate or the (equity) risk premium.

4.1 Growth and Required Returns in Infinite and Finite Horizon Models

Miller and Modigliani (1961) ("M-M") offer a convenient framework for considering the effect of expected growth and required returns on P/E ratios, assuming that accounting earnings reflect economic earnings. In their model, firms retain a fraction k of their earnings, distributing $1-k$ as dividends. The retained earnings are invested in projects that have a perpetual return of s , presumably larger than the required rate of return r . Earnings grow, therefore at a rate of $g=ks$. Within this infinite horizon framework,

$$(1) \quad P/E = (1-k)/(r-g).$$

In Figure 23 and the upper portion of Table 11, I use this relation, under the assumption that 25 percent of earnings are distributed (similar to actual figures - see Table 5F), to calculate the effects of required returns and growth on P/E ratios.

We see that a drop of one percent in the required return (from 8 to 7 percent for example if firm growth is equal to 6 percent) could explain the increase in the P/E ratio from 12 to 23 from 1991 to 1993. Similarly, an increase of one percent in the supernatural rate of return (which translates into a 3/4 of a percentage point increase in the perpetual rate of growth) could also explain the run-up. Thus, if we are willing to believe that new supernatural investment opportunities have become forever available to Israeli firms, the doubling of the P/E ratio from 1991 through 1993 can be explained by an unanticipated, once and for all decline of 1 percent in the required return or a similar increase in the perpetual growth rate.

If investment opportunities are available at s for only T years, the price-earnings ratio is estimated as

$$P/E = [1+kT(s-r)]/r.$$

Under the more realistic assumption that supernatural investment opportunities are available for only 10 years, the figures in Table 12 indicate either that required returns would

have to fall more or growth rates would have to rise faster to sustain the reported increase in P/E ratios. For example, if the long term growth rate is 6 percent, the required returns would have to decline from a little above 8 percent to a little more than 5 percent. As we indicated earlier that could happen if the riskless rate or the risk premium declined by 3 percent. Alternatively, if the required return was and continued to equal 7 percent, that would imply that the growth rates for the next 10 years increased from 3.7 percent to more than 11 percent!

The growth in the Price Earnings Ratio from 12 to 23 was actually moderated by the fact that earnings include realized one-time trading gains recorded by many firms. That means that growth expectations from operating activities needs to jump by even more than 7 percent! While it is difficult to isolate earnings derived from trading, it is useful to note that the more reliable Price to Cash Flow Ratio grew even faster than the P/E - reaching a level of 16 by the end of 1993. The Price to Cash Ratio in the Industrial Sector was 21 by the end of 1993. By comparison, the Price to Cash Ratio in the U.S. never exceeded 8 from 1975 through 1990, while Japan's ratio equalled 17-18 in the two years before the Nikkei's crash.

Assuming that supernormal profits are not available forever, the P/E increase (and even more so, the Price to Cash Flow Ratio) requires a substantial shift in required returns, expected growth rates or both. The next subsection provides suggestive evidence on movements in these variables.

4.2 Evidence on Changing Growth Expectations and Required Returns

a. Evidence on Growth Rates

"The National Budgets for 1992" prepared by the Bank of Israel, the Ministry of Economics and Planning and the Ministry of Finance in October 1991 estimated that average Israeli Business Sector growth rate for the next four years (including 1991) would equal 7.35 percent. The four year forecasts prepared the following year predicted a four year average of 6.4 percent for 1992-1995, while the forecast prepared in 1993 predicted a four year average of 6 percent for 1993-1996. The 1994 forecasts prepared predict average growth rates closer to 5 percent.

These forecasts do not support the view that accelerating growth expectations in Israel are responsible for the rise in the P/E ratios in 1992. As seen in the 10 year horizon model, growth expectations would have needed to jump by more than 7 percent to support the increase in P/E. Growth expectations, however, have declined in the last two years.

I also checked actual corporate earnings growth rates between 1985 and 1993 to see how they compared to required growth rates as calculated in the M-M model. Since the model calculates growth generated by investing retained earnings, I limited the analysis to firms that didn't expand through equity offerings. I found that after growing rapidly from 1985 through 1989, annual

earnings and cash flow growth averaged 4-5 percent over the past four years. The figures hardly support the proposition that annual growth rates are likely to reach 11 percent.

b. *Evidence on Required Equity Returns*

Is there evidence to suggest that required returns declined in 1992 and 1993, thereby contributing to the P/E's rise? In order to answer the question, recall that required returns are not observable and consist of two components: the required real riskless return and the risk premium. The required real riskless return in Israel is observable, in contrast to other countries, because long term government bonds are indexed to inflation, obviating the need to deflate a nominal yield by unobservable expected inflation rates.

The real yield to maturity on 10 year government bonds was 2 percent at the end of 1992 compared to 3.2 percent at the end of 1991 but rose to 2.5 percent at the end of 1993. Referring back to Table 12, if the risk premium were equal to 5 percent, the required return would have been 8.2 percent at the end of 1991. That would have corresponded to a P/E of 12 and a 6 percent growth rate. When the riskless rate dropped to 2 percent at the end of 1992, the required return holding the risk premium constant at 5 percent would have declined to 7 percent. Holding growth expectations constant, that should have translated to a P/E of 15.4 - not 20. To support a P/E of 20, growth expectations would have had to increase by 3 percent. There is

no evidence to suggest that growth expectations shot up that much. Moreover, since yields rebounded by the end of 1993 while the P/E was 23, growth expectations would have needed to increase by about 6.75 percentage points to 12.75 percent. There is no evidence to support expectations of that kind.

The jump in stock prices could also be justified if required returns fell because of a once and for all decline in the risk premium. If the risk premium declined from 5 percent in 1991 to 4 percent in 1992 and continued to decline to 2.5 percent at the end of 1993, that would be sufficient to explain the P/E increase (assuming there were no one-time trading gains, which would require a steeper decline). Risk premia so low, however, are not observed in other countries. Required equity risk premia could be lower in Israel if investors expect a systematic real appreciation of the Shekel. While U.S. approval of \$10 billion loan guarantees might have theoretically led investors to expect a real Shekel appreciation, there is little empirical evidence suggesting that investors in 1992-1993 indeed expected additional real Shekel appreciation. While rising stock prices could have been explained by increased leverage or high debt to equity ratios, the ratio of long term liabilities to book equity has, in fact, declined from 1990 to 1993 (Table 5G).

5. Conclusions

The analysis indicates that the 1992-1993 run-up can be explained within the framework of a M-M model primarily by assuming that growth expectations have increased substantially. It is difficult, however, to find evidence for that proposition.

An alternative explanation for the market run-up is that Israeli corporations own many hidden or understated assets such as R&D know-how and scarce land and that these assets became increasingly valuable in 1992 and 1993. Accordingly, asset appreciation can explain much of the TASE run-up. However, the argument is not complete because corporations retain assets as investments or as inputs to production because of their potential contributions to earnings. If the growth in asset values was rational, it should reflect increased contributions to earnings. Earnings growth is indeed the explanation I considered for rising stock prices. If sufficient earnings are not generated, that could mean that the hidden assets aren't particularly substantial. Alternatively, if hidden assets are substantial and include real estate that appreciated significantly without generating additional earnings or cash flow, that raises questions about the valuation of Israeli Real Estate as well.

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Tel Aviv Stock Exchange publications

Table 1: Public Offerings (mil. N.I.S. - Dec 1993 prices)

	Total	Banks	Mortgage & Finance	Insurance	Trade & Services	Real Estate & Oil	Industry	Investment
1975	832	709	43	31	0	16	34	0
1976	603	484	42	15	22	2	39	0
1977	2,639	1,847	177	132	21	50	327	85
1978	2,145	1,274	172	110	6	148	244	191
1979	443	280	9	25	10	24	68	28
1980	1,355	953	83	78	36	96	49	60
1981	2,611	1,688	77	45	12	178	279	331
1982	4,297	1,938	140	212	177	486	793	551
1983	1,373	355	112	78	104	249	305	169
1984	222	23	0	13	18	73	50	46
1985	201	25	0	49	0	0	96	31
1986	292	0	0	16	84	68	57	69
1987	1,046	33	0	91	161	143	490	128
1988	506	13	28	44	56	113	218	36
1989	1,212	0	26	97	99	409	550	31
1990	1,413	14	37	61	367	422	370	141
1991	2,154	15	6	43	517	561	949	64
1992	4,960	194	33	147	661	888	2,188	850
1993	8,891	1,457	110	192	1,647	1,907	2,341	1,220

- 22 -

Table 2

**Frequency Distribution of Israel Inflation-Adjusted Total Stock Return,
1950-1992***

Annual Total Return	Total	1950- 1959	1960- 1969	1970- 1979	1980- 1992
-75 to -65	1	0	0	0	1
-65 to -55	0	0	0	0	0
-55 to -45	0	0	0	0	0
-45 to -35	1	1	0	0	0
-35 to -25	1	0	0	1	0
-25 to -15	6	1	3	2	0
-15 to -5	5	2	1	1	1
-5 to 5	5	1	1	1	2
5 to 15	6	3	0	1	2
15 to 25	6	1	3	2	0
25 to 35	5	0	1	1	3
35 to 45	0	0	0	0	0
45 to 55	1	0	0	0	1
55 to 65	1	0	0	0	1
65-75	1	0	0	0	1
75-85	3	0	1	1	1
85-95	1	1	0	0	0
Total	43	10	10	10	13
Average	11.9	5.1	9.8	9.2	20.8
Geometric Average	6.5	0.9	5.9	4.9	12.7
S.D.	34.1	32.0	31.0	32.0	37.6

* Source: Bank of Israel.

Table 3

Frequency Distribution of U.S. Inflation-Adjusted Total Stock Returns,
1871-1925 and 1926-1992*

Annual Total Return	Inflation Adjusted		
	1871- 1925	1926- 1992	Combined
-45 to -35	1	2	3
-35 to -25	1	1	2
-25 to -15	3	4	7
-15 to -5	6	9	15
-5 to 5	14	13	27
5 to 15	11	8	19
15 to 25	10	17	27
25 to 35	7	7	14
35 to 45	1	4	5
45 to 55	0	2	2
55 to 65	1	0	1
Total	55	67	122

* from Jones, Charles P., "A Comparison of Common Stock Returns," *Journal of Business* 1987, vol. 6, no. 2, 239-255.

Table 4 - Distribution of Market Value by Sector 1974-1993

	BANKS	FINANCE & MORTGAGE	INSURANCE	TRADE & SERVICES	REAL ESTATE & OIL	INDUSTRY	INVESTMENT
1974	50.55	16.18	1.10	2.60	5.19	8.99	15.38
1975	51.15	17.92	1.20	2.70	4.70	9.71	12.61
1976	52.15	15.28	1.70	2.50	4.10	11.79	12.49
1977	60.98	15.37	2.59	1.90	3.99	9.68	5.49
1978	60.98	9.13	2.81	1.20	5.72	8.43	11.74
1979	72.40	6.70	1.60	0.90	2.90	5.60	9.90
1980	64.40	5.80	2.20	1.90	4.30	12.10	9.30
1981	65.80	4.01	1.60	2.01	4.31	11.94	10.33
1982	42.96	4.63	3.92	4.73	11.47	17.10	15.19
1983	9.98	11.28	4.39	6.69	12.38	40.02	15.27
1984	7.59	9.09	4.20	6.69	13.99	43.06	15.38
1985	4.30	7.90	3.70	7.20	12.00	49.80	15.10
1986	4.50	6.79	4.50	8.99	14.89	44.56	15.78
1987	5.20	6.60	3.70	10.00	14.10	43.00	17.40
1988	5.20	7.70	4.60	9.30	14.80	41.60	16.80
1989	4.00	7.20	5.80	9.60	20.40	36.70	16.30
1990	3.00	6.99	4.40	17.88	15.58	34.57	17.58
1991	3.40	4.80	3.60	16.20	14.60	39.30	18.10
1992	3.70	3.60	3.10	13.40	11.40	45.30	19.50
1993	10.51	2.22	2.86	15.27	14.97	37.08	17.08

Table 5A - Price Earnings Ratio 1985-1993

	Banks	Finance	Insurance	Services	Real Estate	Industry	Inv. Holdings	Oil	Total
1985	7	NA	25	-22	-4	13	-51	-6	126
1986	10	23	35	15	-11	18	15	-24	25
1987	5	9	-9	19	28	-12	15	-23	319
1988	8	-17	15	24	48	-8	31	29	-31
1989	-55	11	12	19	20	-7	16	-63	-63
1990	10	18	9	18	29	25	15	-10	19
1991	10	25	31	17	10	10	15	-72	12
1992	15	43	72	21	26	18	17	-422	20
1993	15	16	17	30	47	24	17	-51	23

Table 5B - Return on Book Equity (%) 1985-1993

	Banks	Finance	Insurance	Services	Real Estate	Industry	Inv. Holdings	Oil	Total
1985	5.6	NA	3.0	-3.1	-16.5	4.4	-0.8	-9.5	0.4
1986	5.1	3.6	3.6	6.5	-10.9	3.9	4.7	-5.4	3.0
1987	12.7	9.9	-13.4	5.7	3.6	-6.4	5.6	-4.0	0.3
1988	5.6	-4.5	5.4	2.7	1.2	-7.3	1.7	2.7	-1.9
1989	-1.3	11.0	12.5	5.5	6.3	-14.5	5.6	-2.4	-1.7
1990	5.7	7.0	13.2	5.3	3.8	4.2	6.1	-13.4	5.2
1991	8.1	4.4	4.5	6.9	12.6	15.3	8.7	-2.7	10.7
1992	10.6	4.7	3.6	8.5	7.2	13.6	12.0	-0.4	10.9
1993	8.9	12.2	17.5	8.1	6.8	10.6	17.0	-5.9	10.5

Table 5C - Price (Market Value) to Book Ratio 1985-1993

	Banks	Finance	Insurance	Services	Real Estate	Industry	Inv. Holdings	Oil	Total
1985	0.40	0.78	0.77	0.68	0.59	0.59	0.43	0.53	0.57
1986	0.49	0.80	1.27	0.98	1.19	0.70	0.70	1.30	0.77
1987	0.69	0.87	1.18	1.07	1.02	0.80	0.84	0.94	0.86
1988	0.46	0.77	0.80	0.66	0.56	0.61	0.54	0.77	0.60
1989	0.72	1.22	1.54	1.05	1.24	1.05	0.91	1.55	1.05
1990	0.58	1.26	1.19	0.98	1.12	1.06	0.94	1.27	1.01
1991	0.83	1.11	1.41	1.20	1.26	1.49	1.29	1.93	1.31
1992	1.58	1.99	2.61	1.78	1.90	2.48	2.06	1.85	2.14
1993	1.35	1.93	2.97	2.42	3.19	2.51	2.91	3.01	2.39

Table 5D - Price Cash Flow Ratio 1989-1993

	Banks	Finance	Insurance	Services	Real Estate	Industry	Inv. Holdings	Oil	Total
1989	2.1	7.0	4.1	11.8	17.9	5.3	8.7	-93.2	6.4
1990	2.5	6.1	-28.2	4.3	30.3	5.0	9.3	-27.9	6.3
1991	3.8	5.2	12.2	3.2	-104.0	6.4	12.6	-26.4	6.7
1992	11.0	12.3	4.3	6.1	64.2	11.3	18.5	-13.9	11.5
1993	6.2	11.1	9.7	11.2	87.3	20.6	21.4	-31.7	15.6

Table 5E - Dividend Yield 1985-1993

	Banks	Finance	Insurance	Services	Real Estate	Industry	Inv. Holdings	Oil	Total
1985	NA	NA	2.3	0.2	0.1	1.1	0.0	0.0	0.7
1986	NA	0.0	1.6	0.4	0.1	2.4	0.0	0.0	1.3
1987	2.5	1.4	1.1	0.6	0.4	1.9	0.3	0.0	1.2
1988	0.0	1.9	3.8	1.5	0.8	2.3	0.3	0.0	1.6
1989	3.3	0.0	3.9	0.9	0.9	1.6	0.2	0.0	1.3
1990	0.9	0.0	3.4	1.5	2.6	3.6	0.6	0.0	2.1
1991	1.1	0.0	1.8	2.9	2.4	2.3	0.3	0.0	1.9
1992	2.7	1.8	1.0	1.7	2.3	1.3	0.3	0.0	1.3
1993	1.7	0.0	1.1	1.3	1.8	0.8	0.4	0.0	1.0

Table 5F - Dividends as a Percentage of Net Earnings 1985-1993

	Banks	Finance	Insurance	Services	Real Estate	Industry	Inv. Holdings	Oil	Total
1985	NA	NA	58	-4	-0	14	0	0	1136
1986	NA	0	56	6	-1	43	0	0	35
1987	14	13	-10	12	10	-24	4	0	989
1988	0	-33	56	37	38	-19	10	0	-49
1989	-182	0	48	17	18	-12	4	0	-79
1990	9	0	31	27	76	91	9	0	41
1991	12	0	55	51	24	22	5	0	23
1992	41	78	69	37	62	24	5	0	26
1993	26	1	19	38	87	20	8	0	23

Table 5G - Long Term Liabilities as a Percentage of Long Term Liabilities and Book Equity 1985

	Banks	Finance	Insurance	Services	Real Estate	Industry	Inv. Holdings	Oil	Total
1985	NA	NA	NA	26	27	37	NA	NA	35
1986	NA	NA	NA	23	31	38	NA	NA	36
1987	NA	NA	NA	25	22	41	NA	NA	37
1988	NA	NA	NA	25	27	42	NA	NA	38
1989	NA	NA	NA	25	31	47	NA	NA	41
1990	NA	NA	NA	58	38	41	NA	NA	47
1991	NA	NA	NA	56	38	34	NA	NA	43
1992	NA	NA	NA	50	40	26	NA	NA	36
1993	NA	NA	NA	45	46	25	NA	NA	36

Table 6

Market Capitalization as percent of GNP
for Selected Countries 1983-1992

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
AUSTRALIA	28	21	19	26	27	35	33	23	31	26
AUSTRIA	2	2	7	7	6	7	18	17	16	12
BELGIUM	12	15	26	34	31	41	54	39	42	
CANADA	44	41	43	47	54	51	55	44	47	44
DENMARK	20	15	27	21	21	29	40	31	43	29
FINLAND	8	8	11	17	22	29	27	17	11	11
FRANCE	7	8	15	21	19	26	38	29	32	27
GERMANY	13	13	30	29	19	21	31	25	25	20
HONG KONG	60	74	103	140	115	134	121	116	148	179
ISRAEL	7	8	10	14	15	9	16	19	21	46
ITALY	5	5	10	23	18	19	22	18	17	12
JAPAN	48	53	73	92	116	134	152	99	93	65
NETHERLANDS	25	25	47	48	40	50	69	52	58	54
NEW ZEALAND	0	10	10	22	16	14	12	8	12	11
NORWAY	9	11	18	15	14	16	29	25	21	16
SINGAPORE	90	64	60	91	90	97	122	97	117	104
SOUTH AFRICA	85	36	22	34	40	29	22	21	16	17
SPAIN	7	9	12	21	25	27	33	23	28	17
SWEDEN	28	20	28	49	61	76	76	44	35	23
SWITZERLAND	33	25	56	93	119	117	118	103	102	93
J.K.	49	55	70	77	97	91	97	88	99	79
U.S.	55	49	57	62	57	57	67	56	73	80

Sources: Emerging Markets, International Financial Statistics,

Hong Kong Monthly Digest of Statistics.

Note: GDP figures were used for Finland and Hong Kong.

Price Earnings Ratio and Dividend Yields - End of 1992

Market	Price Earnings Ratio	Dividend Yield (%)
<i>Latin America</i>		
Argentina	38	1.93
Brazil	^a	0.68
Chile	13	3.82
Colombia	28	1.89
Mexico	12	0.99
Venezuela	16	0.98
<i>East Asia</i>		
Korea	21	1.81
Philippines	14	1.02
Taiwan, China	17	1.77
<i>South Asia</i>		
India	34	0.73
Indonesia	12	2.06
Malaysia	22	2.36
Pakistan	22	2.55
Thailand	14	2.62
<i>Europe/Middle East/Africa</i>		
Greece	7	11.02
Jordan	14	2.51
Nigeria	9	5.10
Portugal	9	4.68
Turkey	7	8.14
Zimbabwe	2	6.13
<i>IFC Regionals</i>		
ICF Composite	18	1.92
Latin America	18	2.18
Asia	19	1.89
<i>Developed Markets^b</i>		
France	16	3.50
Germany	14	3.90
Japan	39	1.00
United Kingdom	20	4.50
United States	23	2.90
World	23	2.80
Israel	20	1.30

^a Loss^b Source for developed markets: MSCI.

Table 8
Market Concentration of Ten Largest Stocks^a

Market	Share of market capitalization held by ten largest stocks, end 1992
Latin America	
Argentina	69
Brazil	29
Chile	54
Colombia	79
Mexico	32
Venezuela	60
East Asia	
Korea	31
Philippines	52
Taiwan, China	30
South Asia	
India	23
Indonesia	39
Malaysia	31
Pakistan	23
Thailand	29
Europe/Middle East/Africa	
Greece	44
Jordan	49
Nigeria	49
Portugal	31
Turkey	40
Zimbabwe	37
Developed Markets^b	
Canada	31
France	29
Germany	40
Japan	17
Switzerland	54
United Kingdom	24
United States	15
Israel	39

Source: Emerging Markets 1993, Bank of Israel

^a Stocks in the IFC Global Composite Index, relative to the total stock market.

^b At April 1992: MCSI Perspective, May 1992.

Table 9
Monthly Total Return in US \$ - January 1988-December 1992

Market	Mean (%)	Standard Deviation (%)
<i>Latin America</i>		
Argentina	8.06	34.22
Brazil	4.50	23.22
Chile	3.48	7.44
Colombia	3.35	10.49
Mexico	4.69	10.58
Venezuela	2.79	14.43
<i>East Asia</i>		
Korea	1.05	9.13
Philippines	1.51	9.25
Taiwan, China	1.68	15.10
<i>South Asia</i>		
India	2.10	11.10
Indonesia	-1.02	9.40
Malaysia	1.62	6.14
Pakistan	2.13	8.11
Thailand	2.56	8.25
<i>Europe/Middle East/Africa</i>		
Greece	1.42	14.56
Jordan	0.62	5.30
Nigeria	1.21	8.04
Portugal	-0.65	7.41
Turkey	0.90	19.54
Zimbabwe	-0.38	7.87
<i>IFC Regional Indexes</i>		
Composite	1.41	6.69
Latin America	3.40	9.19
Asia	1.24	7.96
<i>Developed Markets</i>		
United States	1.30	3.87
EAFE	0.30	5.80
Europacific	0.29	5.95
Israel	2.25	5.34

Source: Emerging Markets 1993, Bank of Israel
60 observations

Table 10 - Annual and Total \$ Return in Israel and Selected Emerging Markets for 1980-1992

	Argentina	Brazil	Chile	Mexico	Venezuela	Korea	Taiwan	Malaysia	Greece	Portugal	Israel	MEAN
MEAN	40	31	31	34	79	20	37	12	14	31	27	32
GEOMETRIC MEAN	9	12	18	18	23	14	22	11	1	11	18	14
STD	120	87	58	57	201	41	59	19	61	89	37	74
MAX	397	170	155	108	602	113	121	44	152	224	84	197
MIN	-61	-68	-55	-75	-42	-38	-51	-14	-53	-30	-69	-50
OBS	13	13	13	13	8	13	8	8	13	6	13	11

Table 10A - 1992 data in Israel and Selected Emerging Markets

	Argentina	Brazil	Chile	Mexico	Venezuela	Korea	Taiwan	Malaysia	Greece	Portugal	Israel	MEAN
Market Value (bil \$)	18.6	45.3	29.6	139.1	7.6	107.4	101.1	94.0	9.5	9.2	29.6	53.7
Tot. Volume (bil \$)	15.7	20.5	2.0	44.6	2.6	118.1	240.7	21.7	1.6	3.5	14.7	44.0
GDP (billion \$)	228.8	394.2	37.9	333.8	61.1	296.8	198.1	47.9	67.5	84.0	64.9	165.0
POPULATION	33.1	156.3	13.6	89.5	20.3	43.7	18.0	18.8	10.1	9.9	5.1	38.0
GDP/POP	6,912	2,522	2,786	3,728	3,019	6,799	11,007	2,547	6,708	8,530	12,725	6,117
MARKET CAP./GDP (%)	8.1	11.5	78.2	41.7	12.4	36.2	51.0	196.3	14.1	11.0	45.7	46.0
Volume/Value (%)	84.1	45.3	6.8	32.1	34.6	108.1	238.0	23.1	16.9	37.5	49.6	61.5

Sources: Emerging Markets and Bank of Israel

Table 11
P/E Ratios as Functions of Required Returns and Growth Rates
Infinite Horizons

s	g	r					
		5	6	7	8	9	10
3	2.25	9.1	6.7	5.3	4.3	3.7	3.2
4	3.00	12.5	8.3	6.3	5.0	4.2	3.6
5	3.75	20.0	11.1	7.7	5.9	4.8	4.0
6	4.50	50.0	16.7	10.0	7.1	5.6	4.5
7	5.25		33.3	14.3	9.1	6.7	5.3
8	6.00			25.0	12.5	8.3	6.3
9	6.75			100.0	20.0	11.1	7.7
10	7.50				50.0	16.7	10.0
11	8.25					33.3	14.3
12	9.00						25.0

Table 12
P/E Ratios as Functions of Required Returns and Growth Rates
10 Year Horizon

s	g	r					
		5	6	7	8	9	10
3	2.25	17.0	12.9	10.0	7.8	6.1	4.8
4	3.00	18.5	14.2	11.1	8.8	6.9	5.5
5	3.75	20.0	15.4	12.1	9.7	7.8	6.3
6	4.50	21.5	16.7	13.2	10.6	8.6	7.0
7	5.25	23.0	17.9	14.3	11.6	9.4	7.8
8	6.00	24.5	19.2	15.4	12.5	10.3	8.5
9	6.75	26.0	20.4	16.4	13.4	11.1	9.3
10	7.50	27.5	21.7	17.5	14.4	11.9	10.0
11	8.25	29.0	22.9	18.6	15.3	12.8	10.8
12	9.00	30.5	24.2	19.6	16.3	13.6	11.5
13	9.75	32.0	25.4	20.7	17.2	14.4	12.3
15	11.25	35.0	27.9	22.9	19.1	16.1	13.8
17	12.75	38.0	30.4	25.0	21.0	17.7	15.3

FIGURE 1 - Israel Stock Market and GDP
1950-1994 (Real Terms, 1950=100)

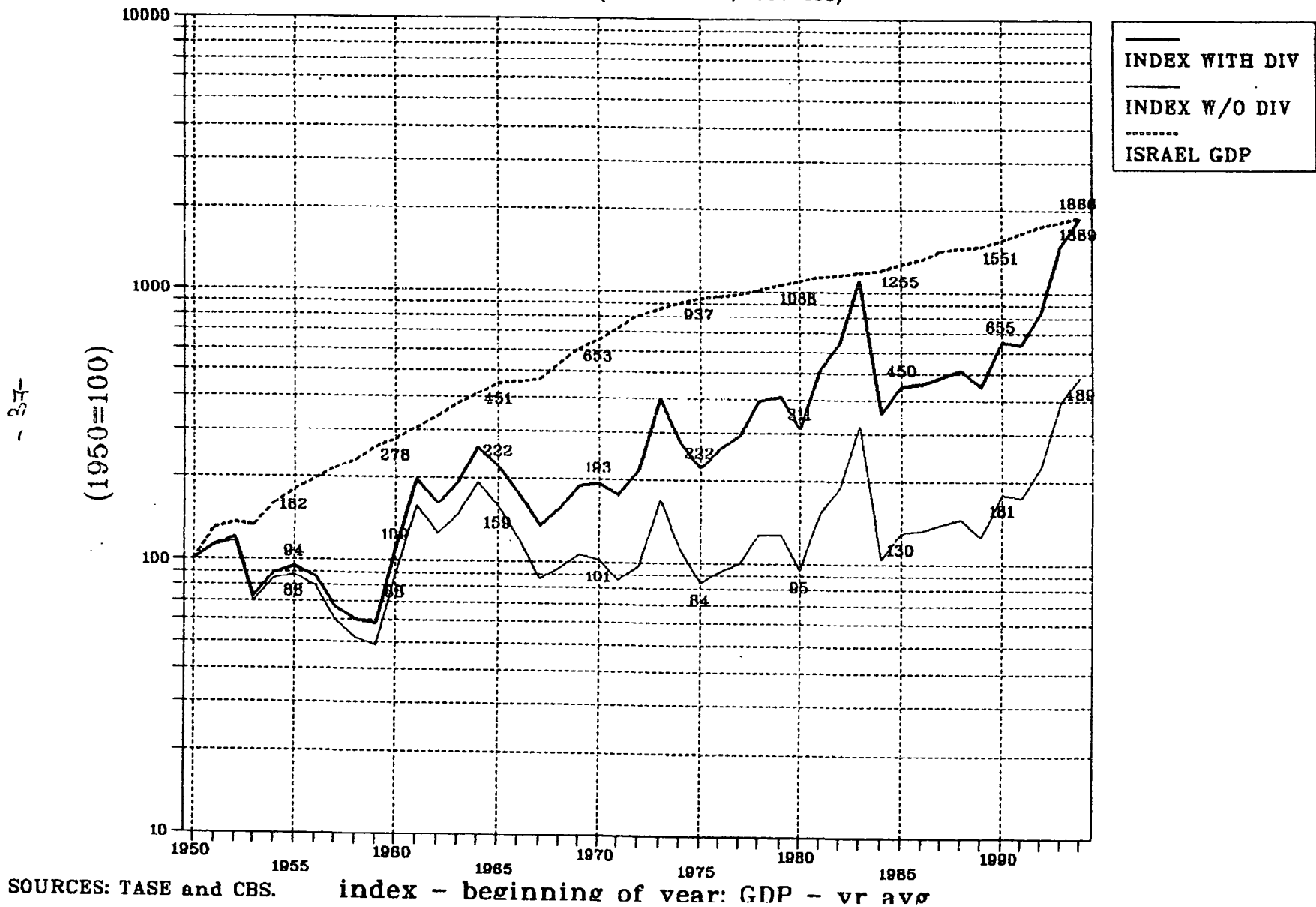


Figure 1A - Total Return & GDP Growth
1959-1993

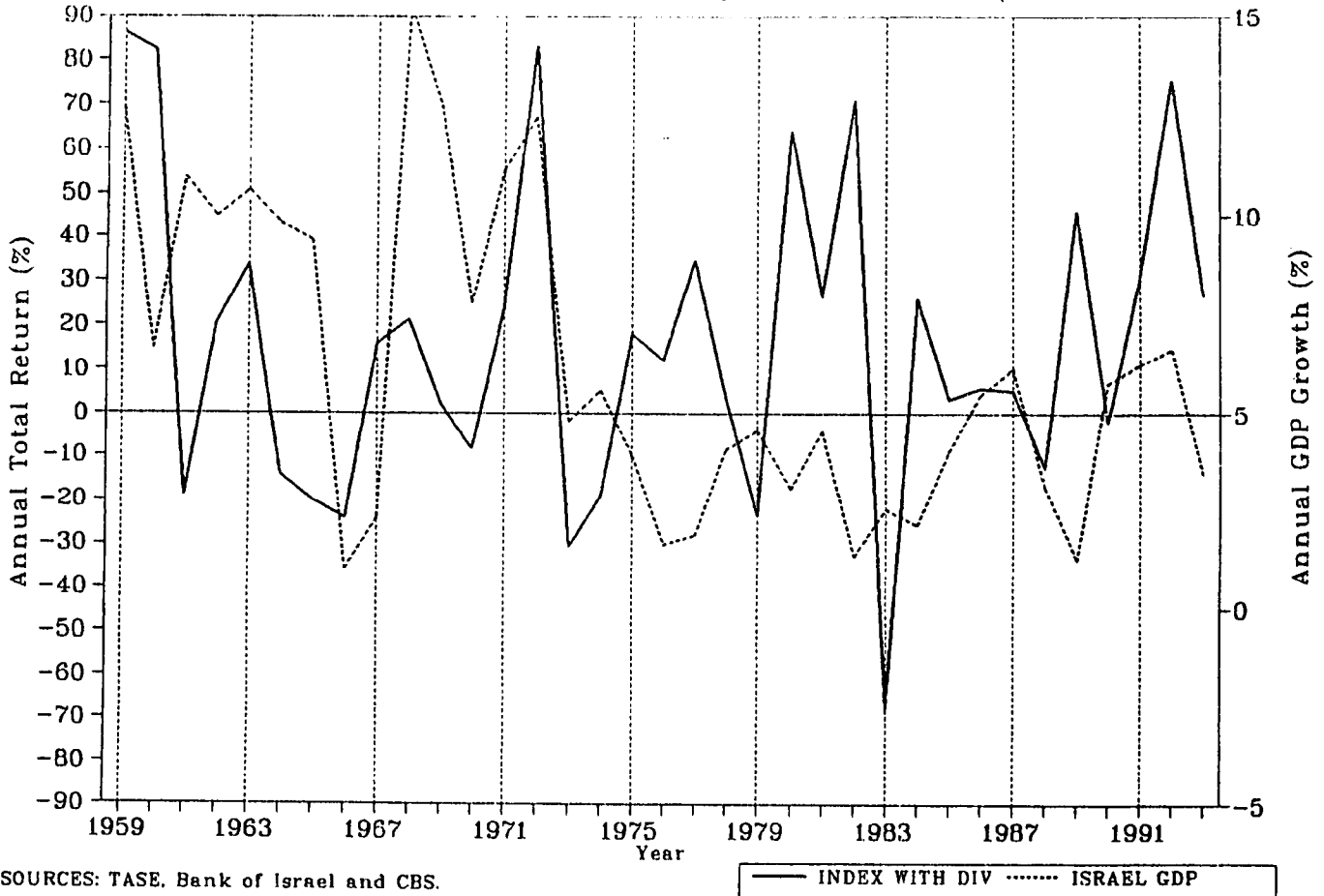


FIGURE 2 - Market Value as a Ratio of
Bus. GDP & Bus GrCapStck 1960-1993

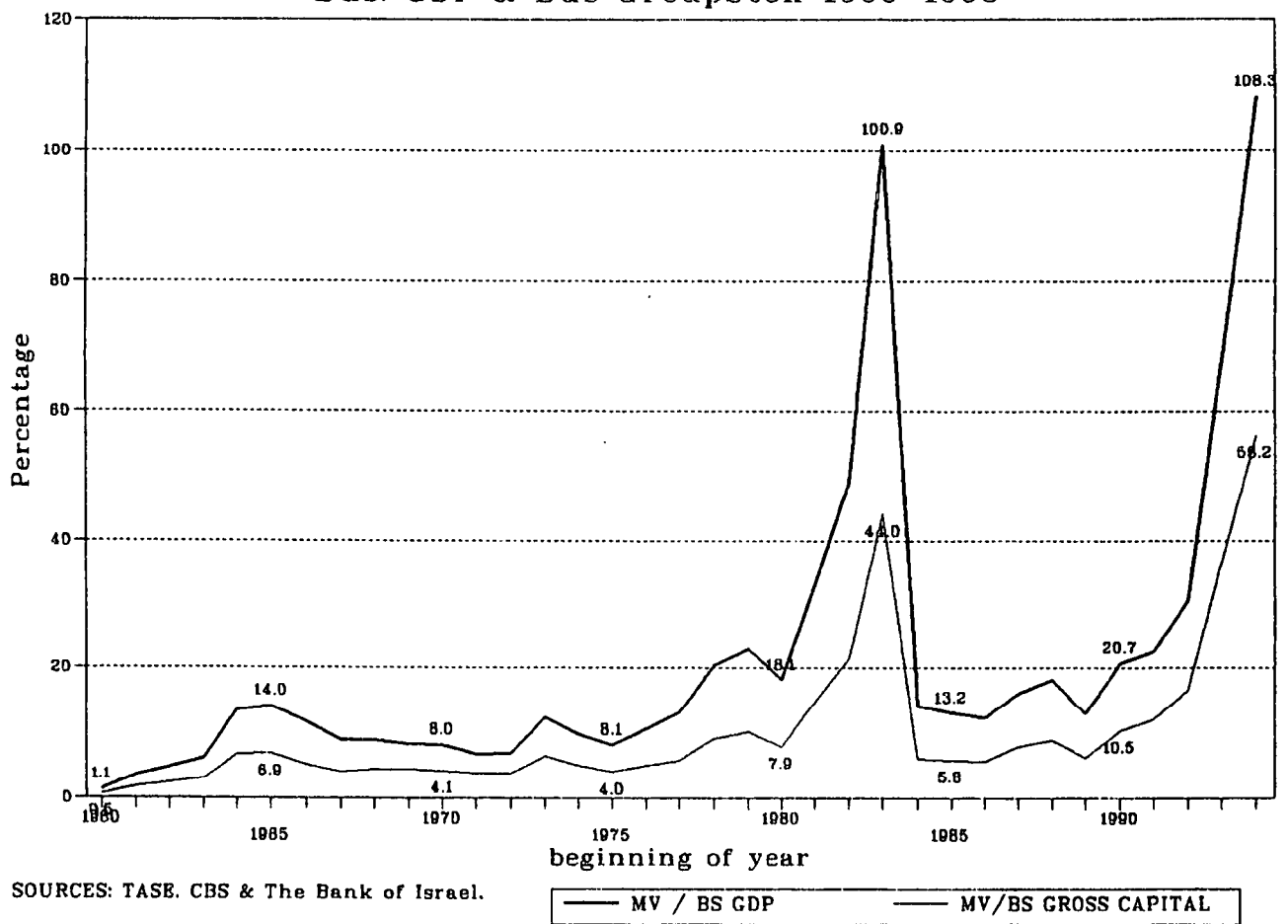


Figure 3 - Number of Publicly Traded Companies on TASE by Sector 1951-1993

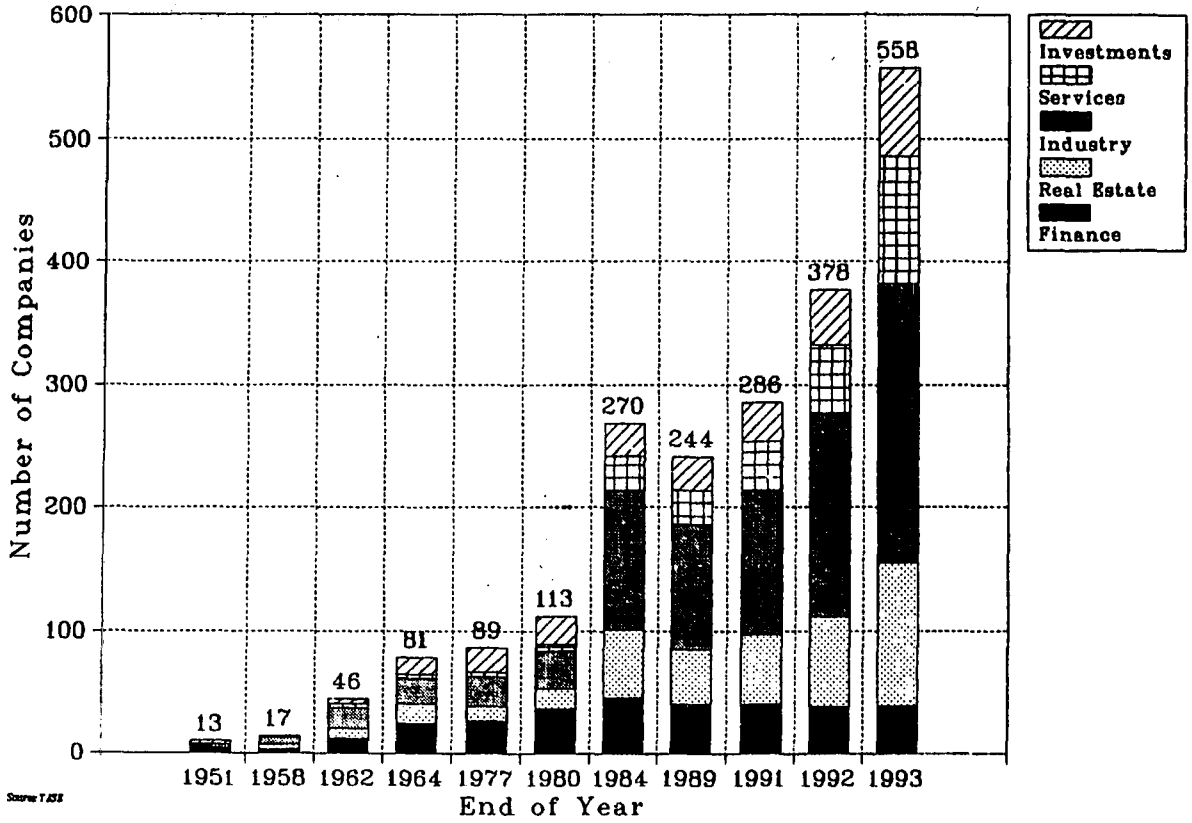
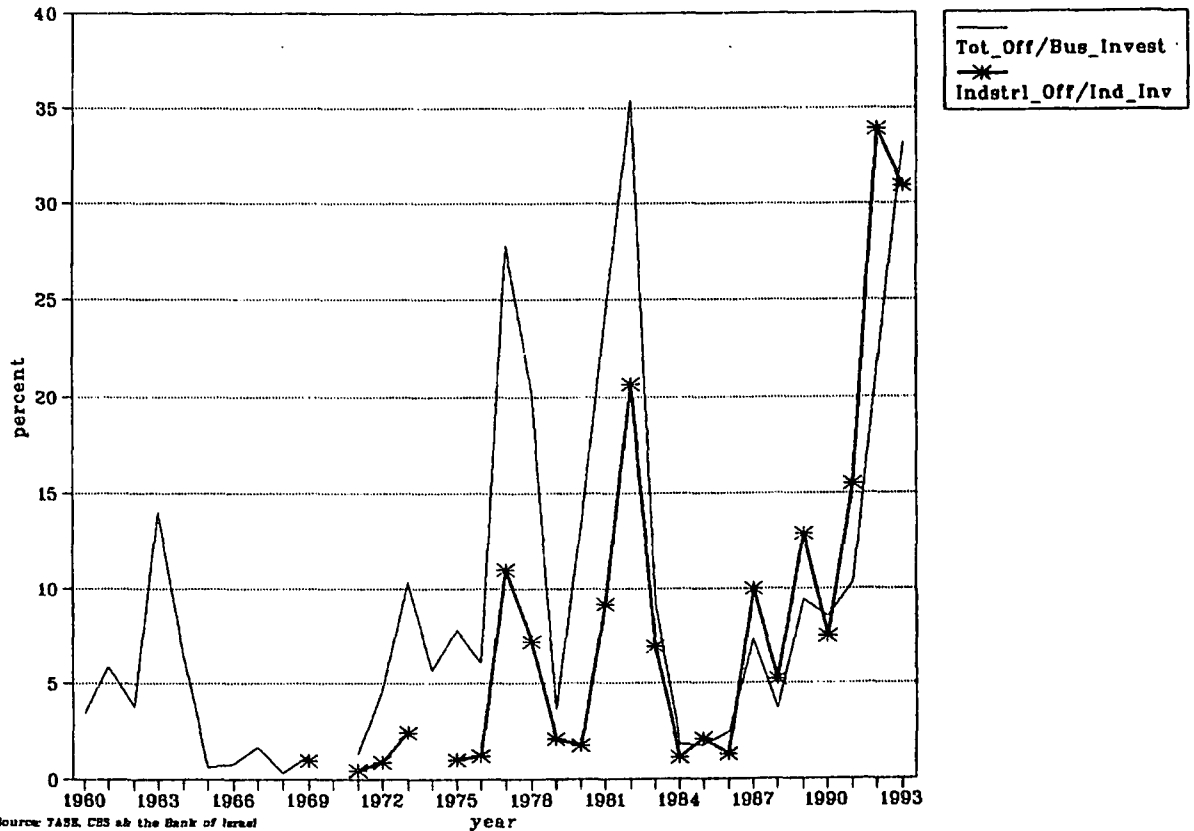


Figure 4 - Equity Offerings as a Ratio of Real Investments



Source: TASE, CBS and the Bank of Israel

Figure 5 - Annual Total Return Dist.:
Israel, US and Israel Industrials

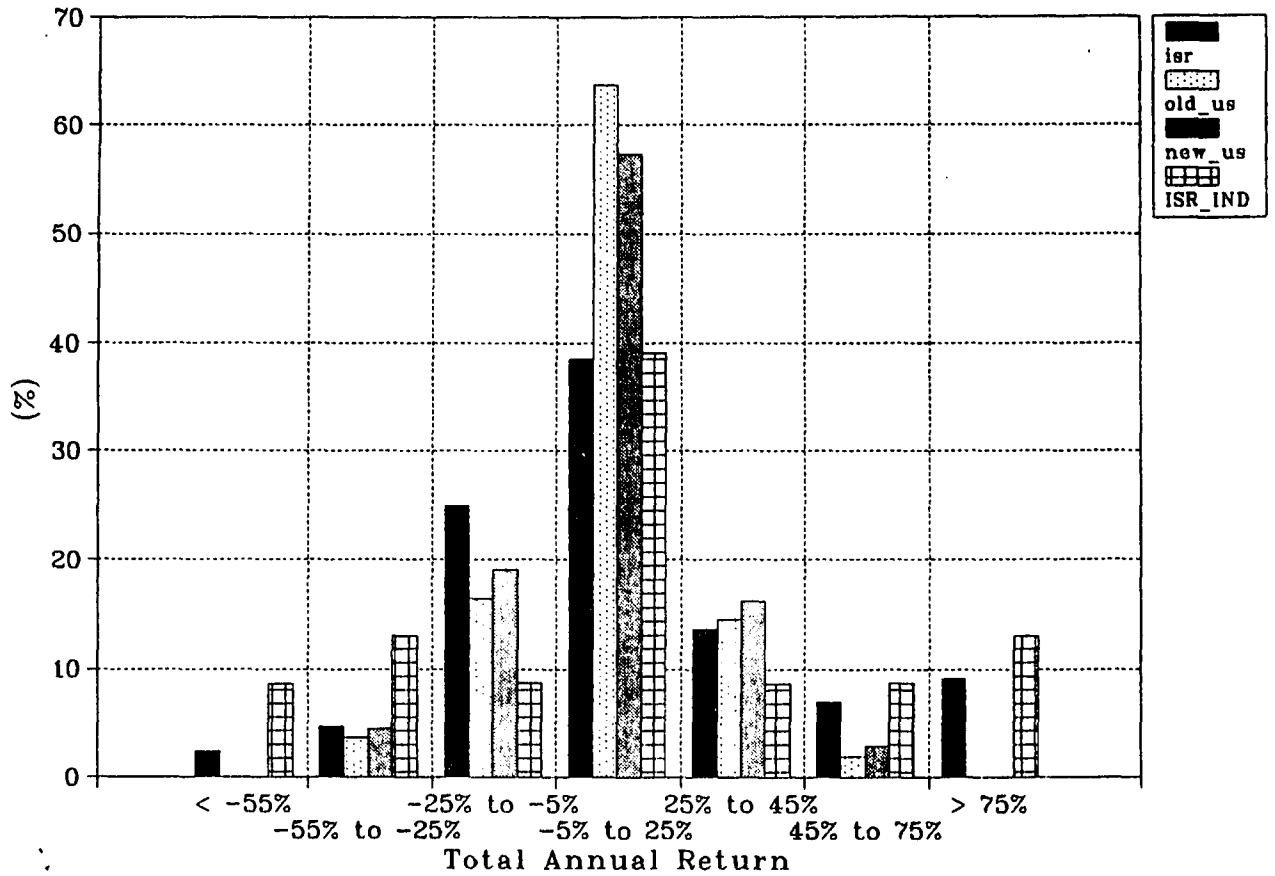


Figure 6 - Real Returns and Risk
US & Israel 1950-1993

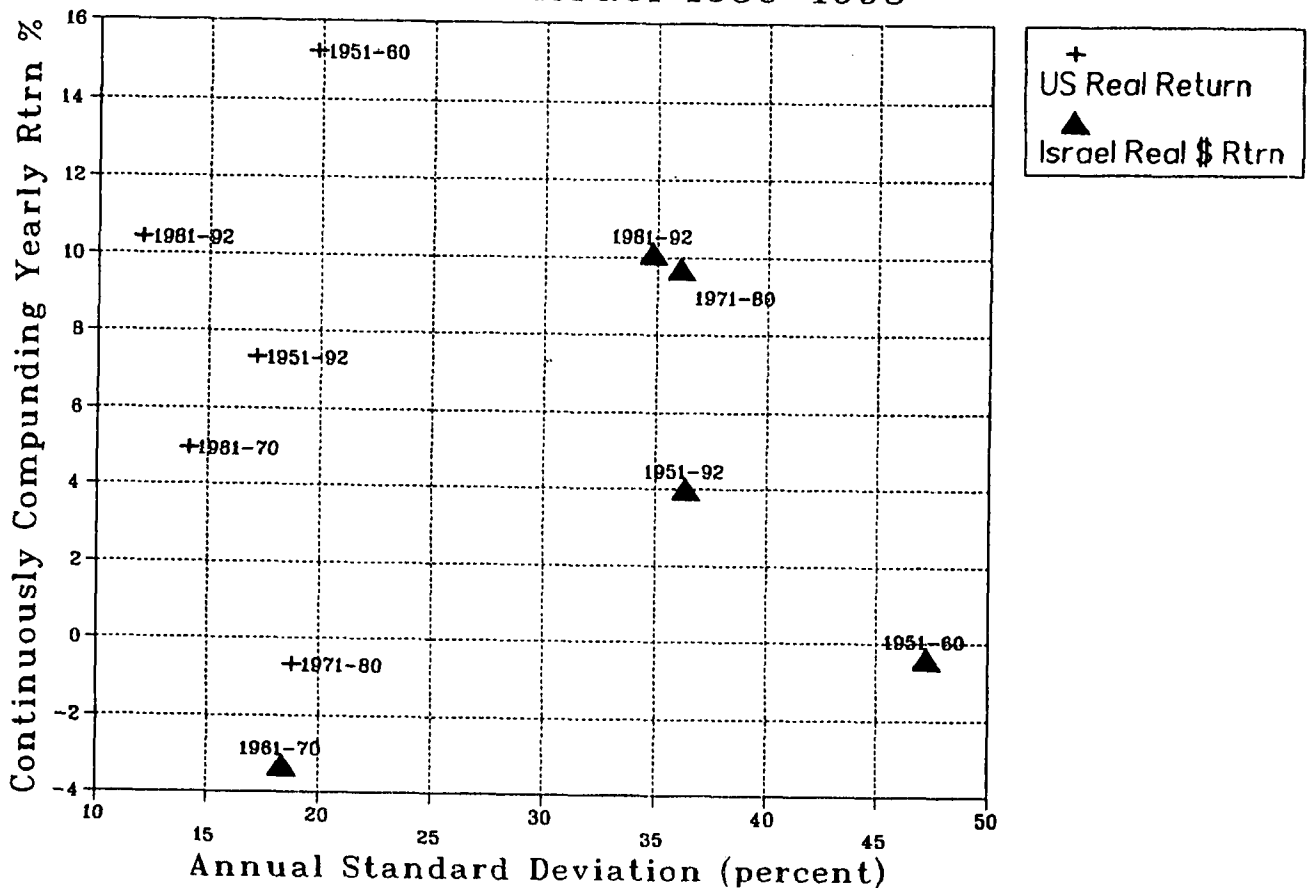
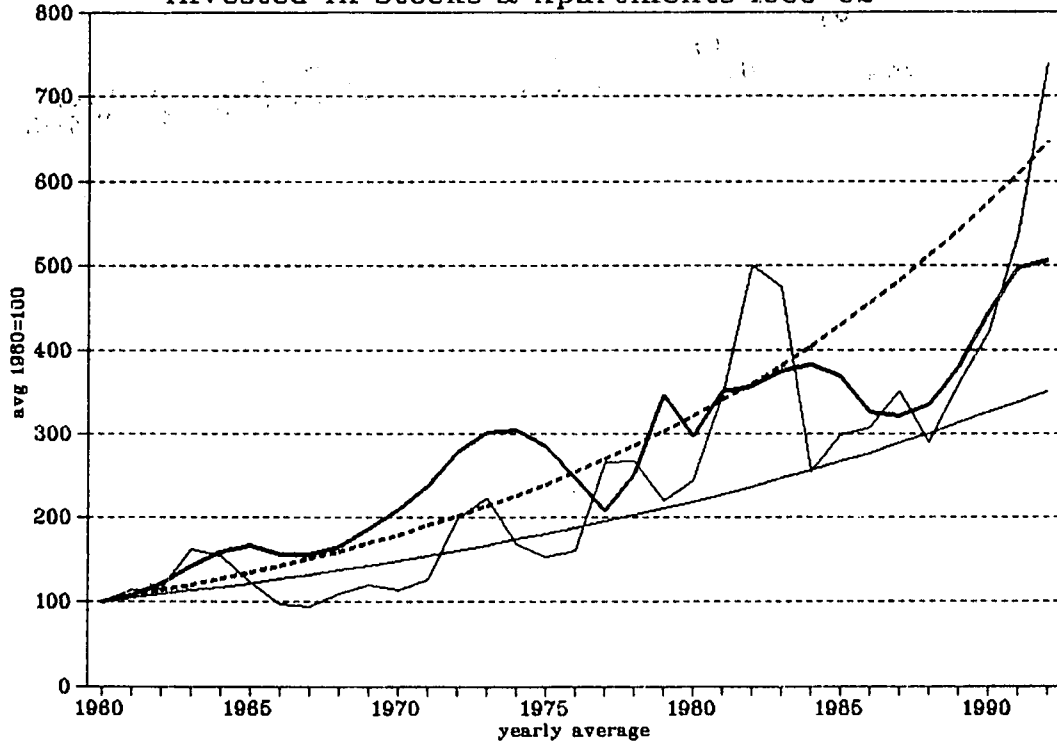


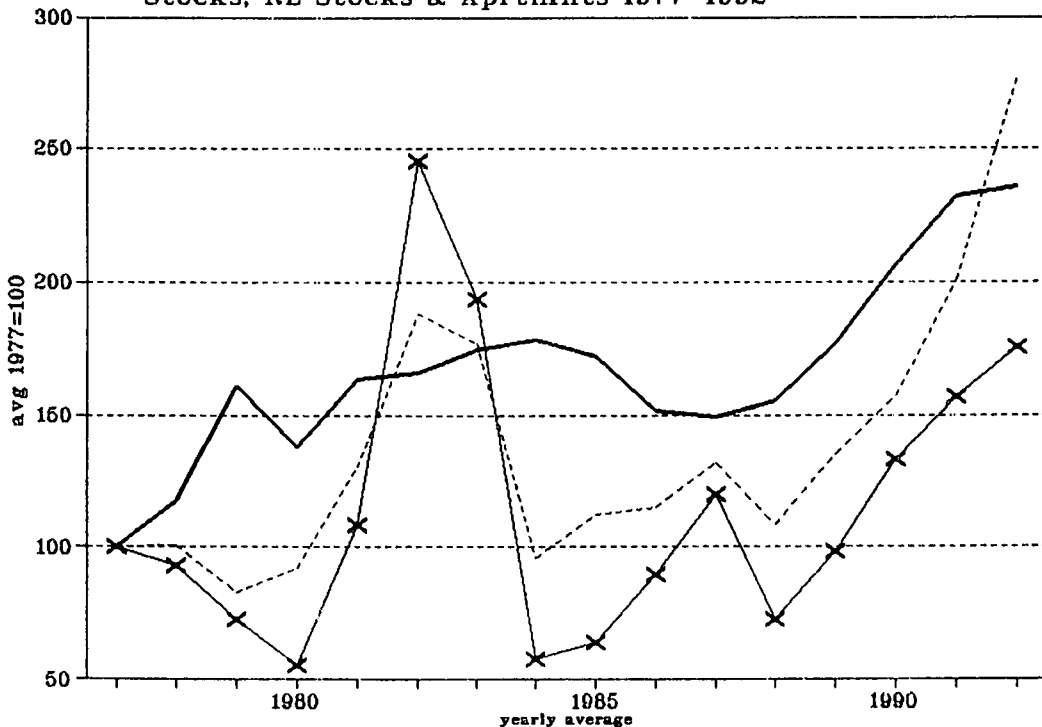
Figure 7 - Market Value of 100 N.I.S. Invested in Stocks & Apartments 1960-92



— total return apt. — total return stocks indexed deposits 8 — indexed deposits 4

Source: TASE, CBS & Bank of Israel

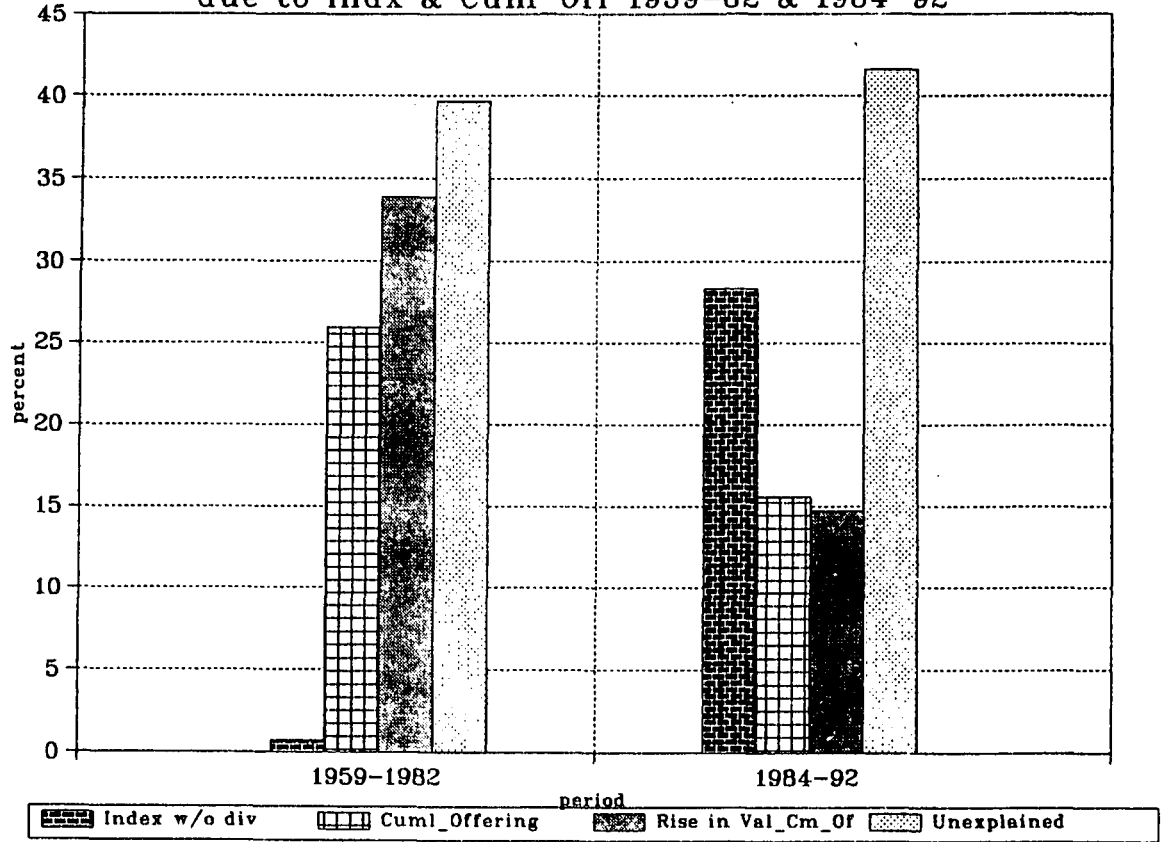
Fig. 8 - Mrkt Vl of 100 NIS invested in Stocks, RE Stocks & Aprtmnts 1977-1992



— total return apt. total return stocks —x— tot ret R.E. Stocks

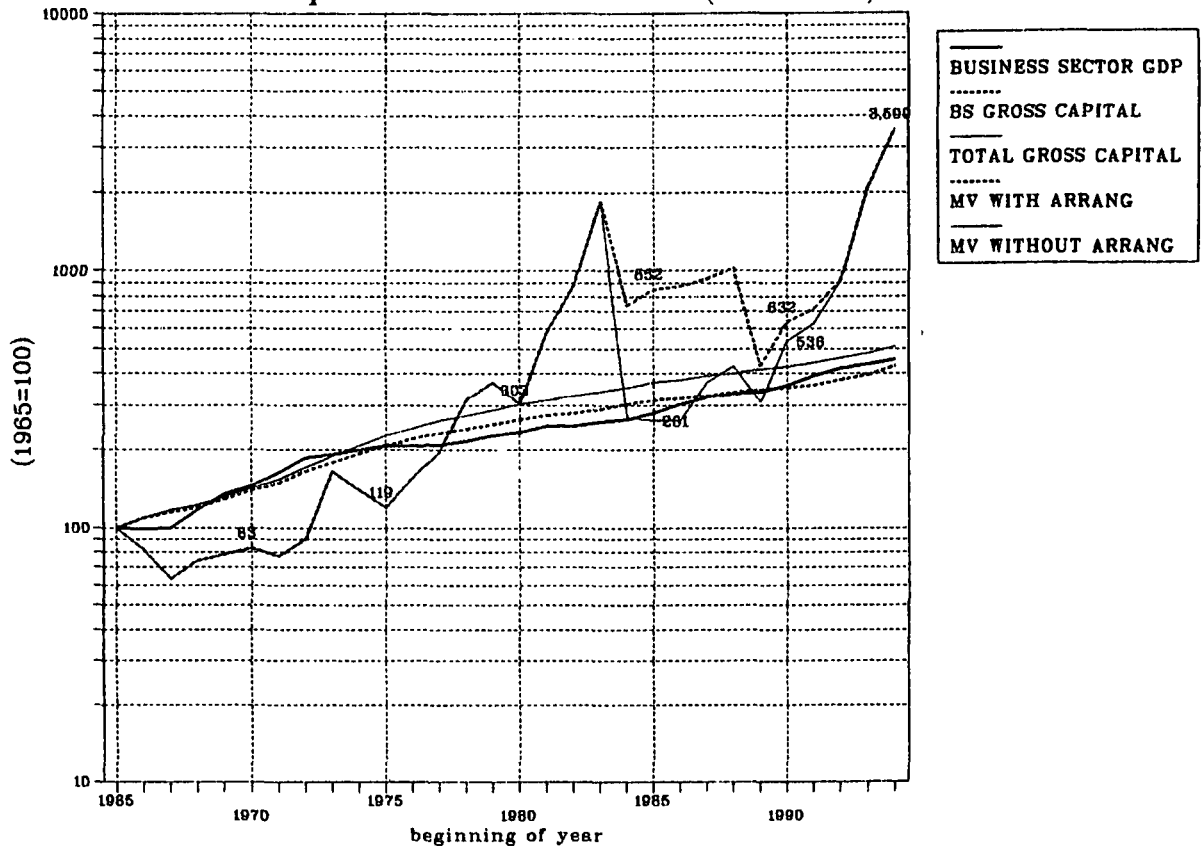
Source: Same as Figure 7

Figure 9 - Dstrbtn of RI Mkt Val Incrs due to Indx & Cum Off 1959-82 & 1984-92



Source: TASE & Bank of Israel

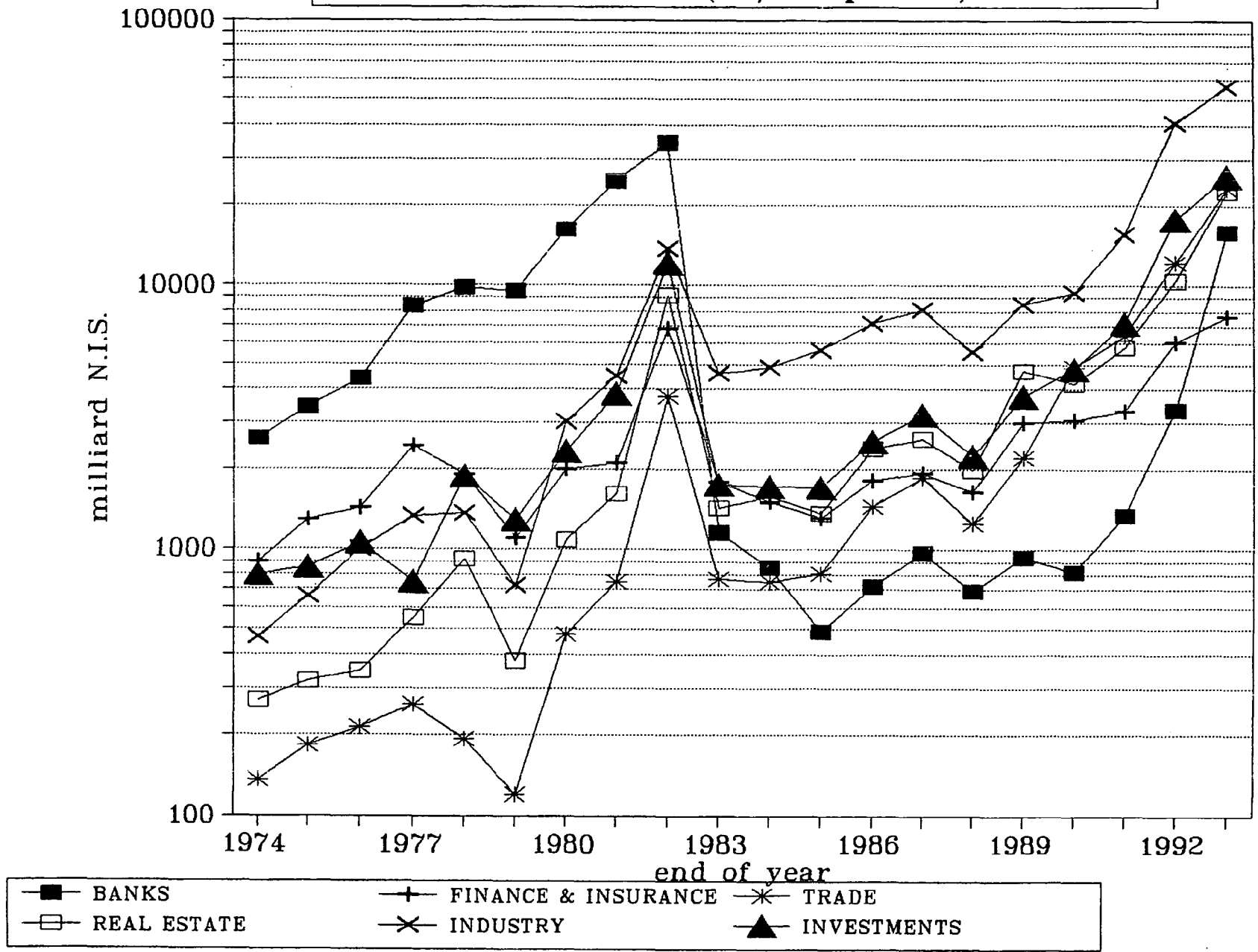
Figure 10 - Market Value, Bus GDP & Capital Stock 1965-1993 (1965=100)



SOURCES: TASE, CBS and The Bank of Israel.

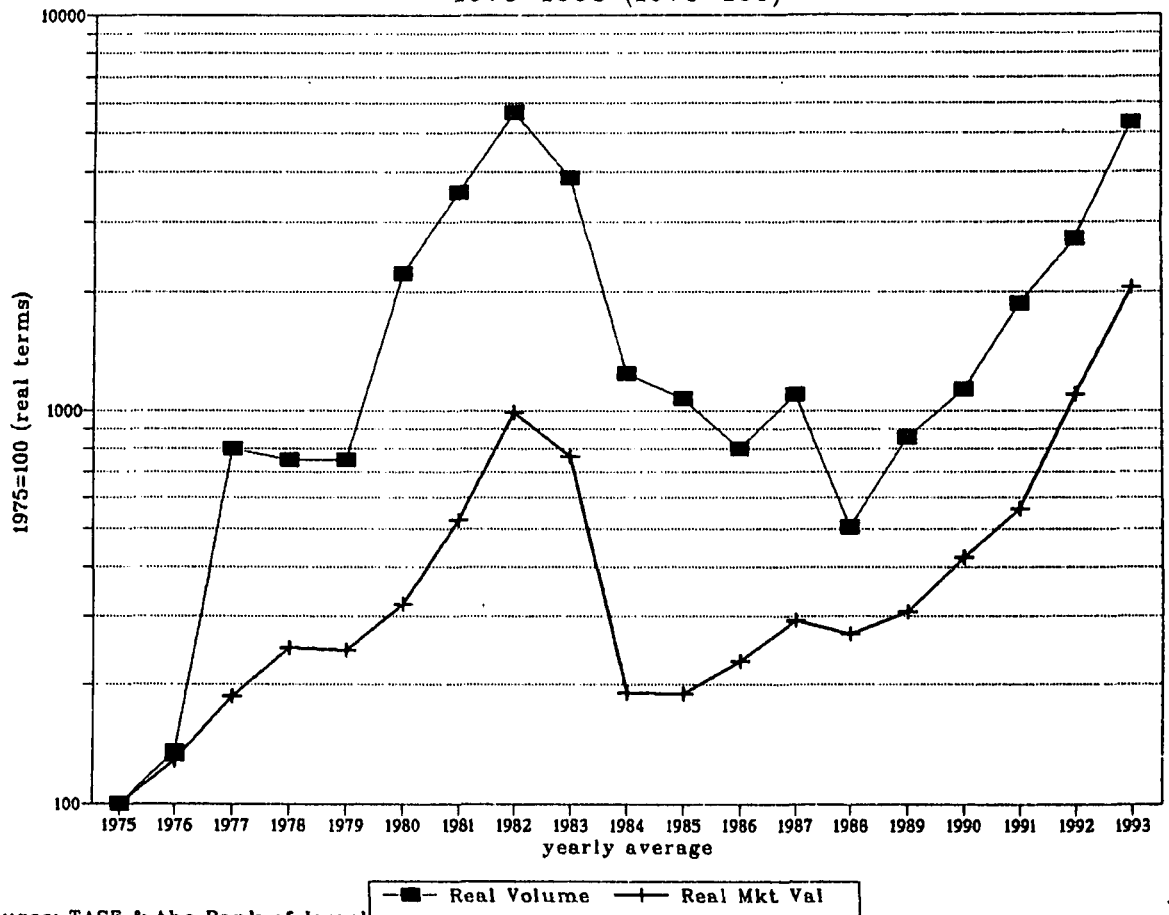
Figure 11 - Market Value by Sector
1974-1993 (12/93 prices)

-45-



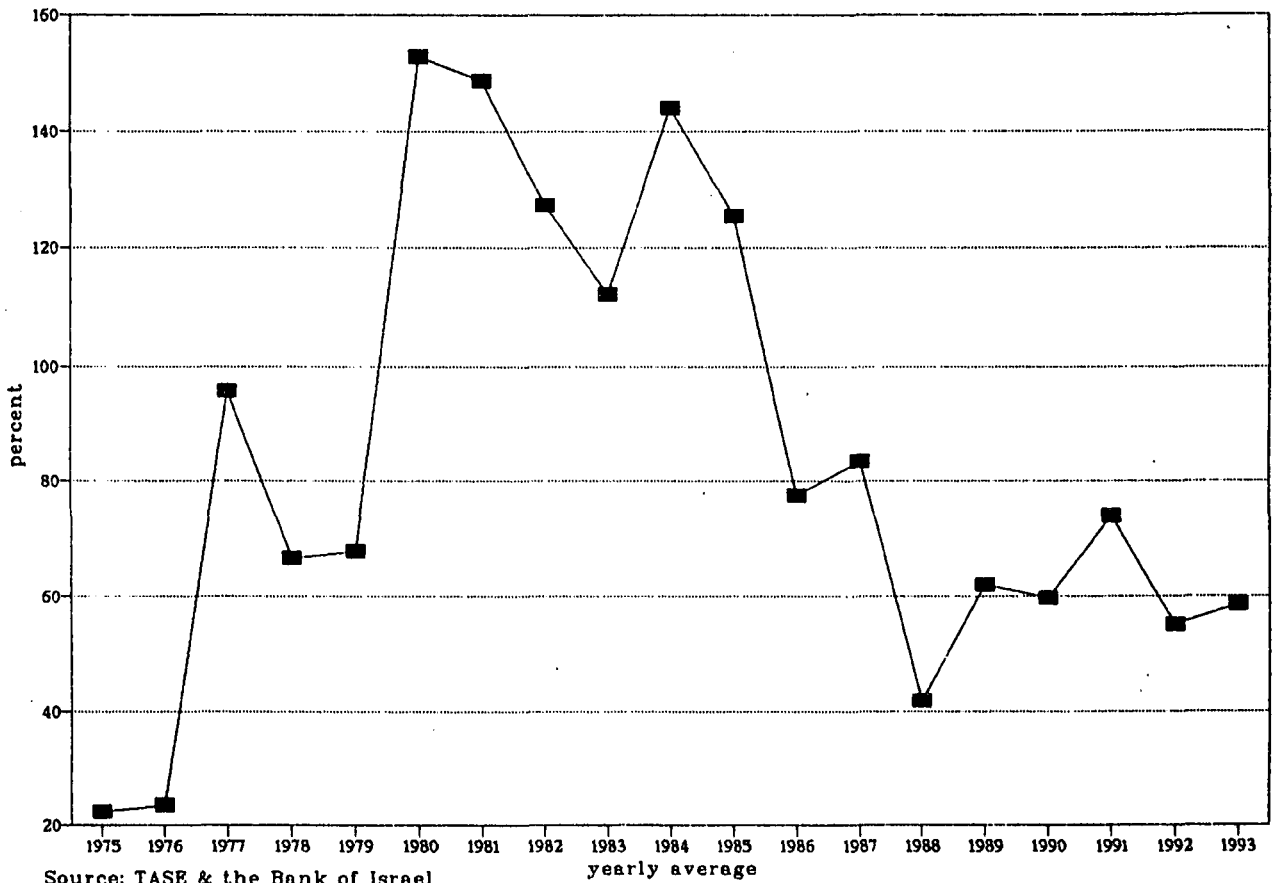
- BANKS
- + FINANCE & INSURANCE
- * TRADE
- REAL ESTATE
- × INDUSTRY
- ▲ INVESTMENTS

Figure 12 - TASE Market Value & Volume
1975-1993 (1975=100)



Source: TASE & the Bank of Israel

Figure 13 - Volume as a % of Value
1975-1993



Source: TASE & the Bank of Israel

figure 14

Cross Ownership of Listed Shares - An Example

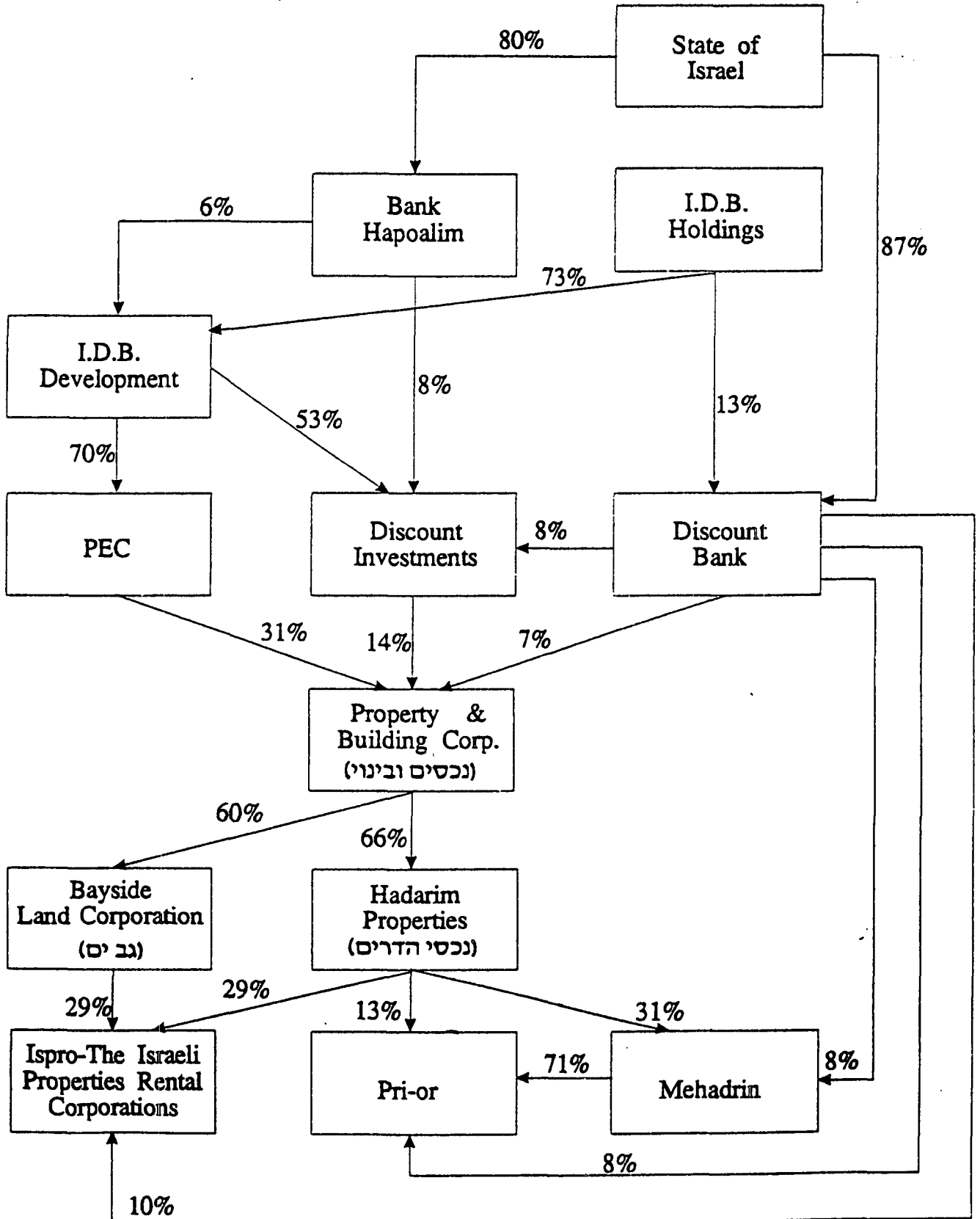
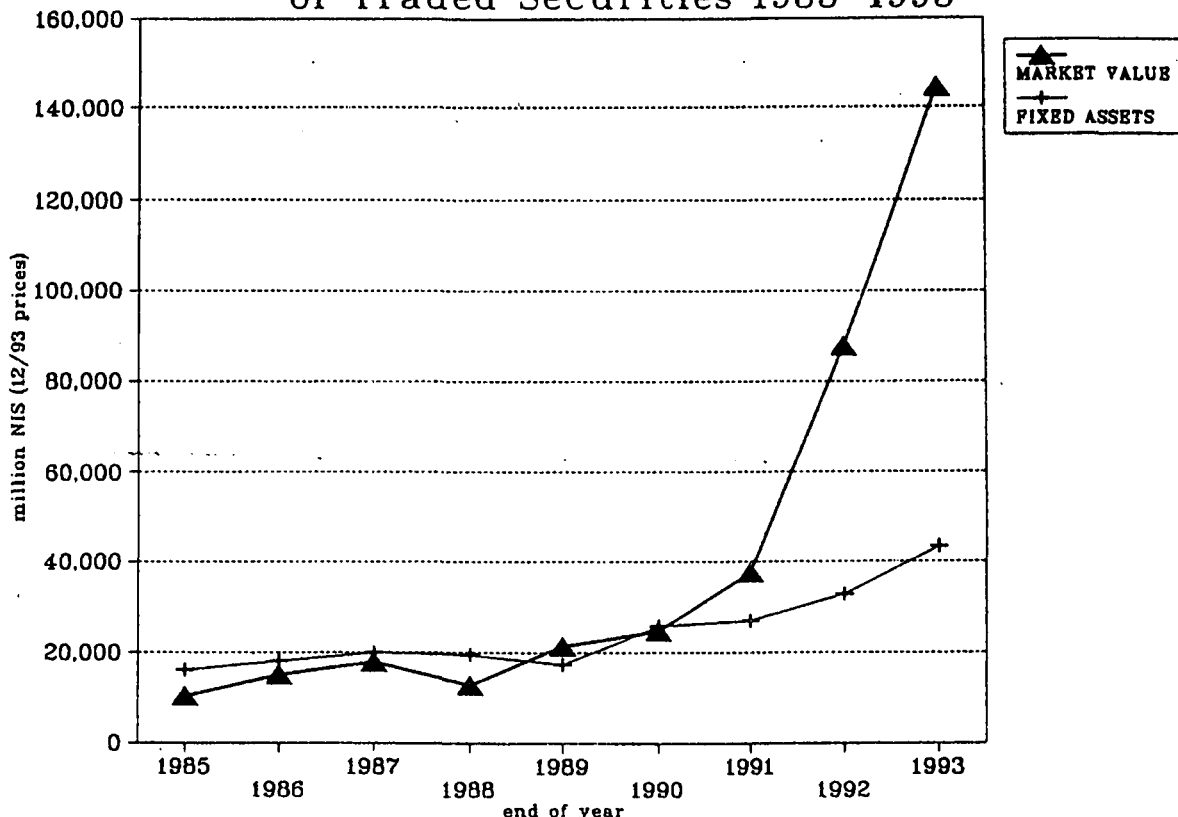
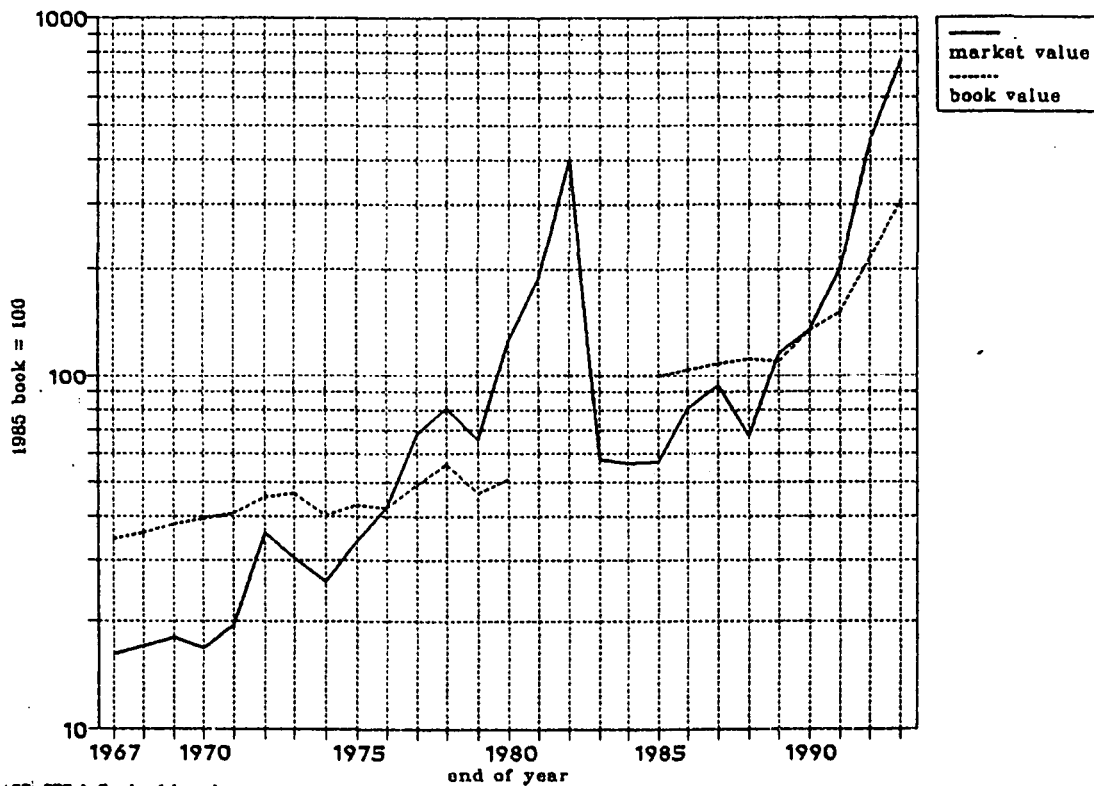


Figure 15 - Market Value & Fixed Assets of Traded Securities 1985-1993



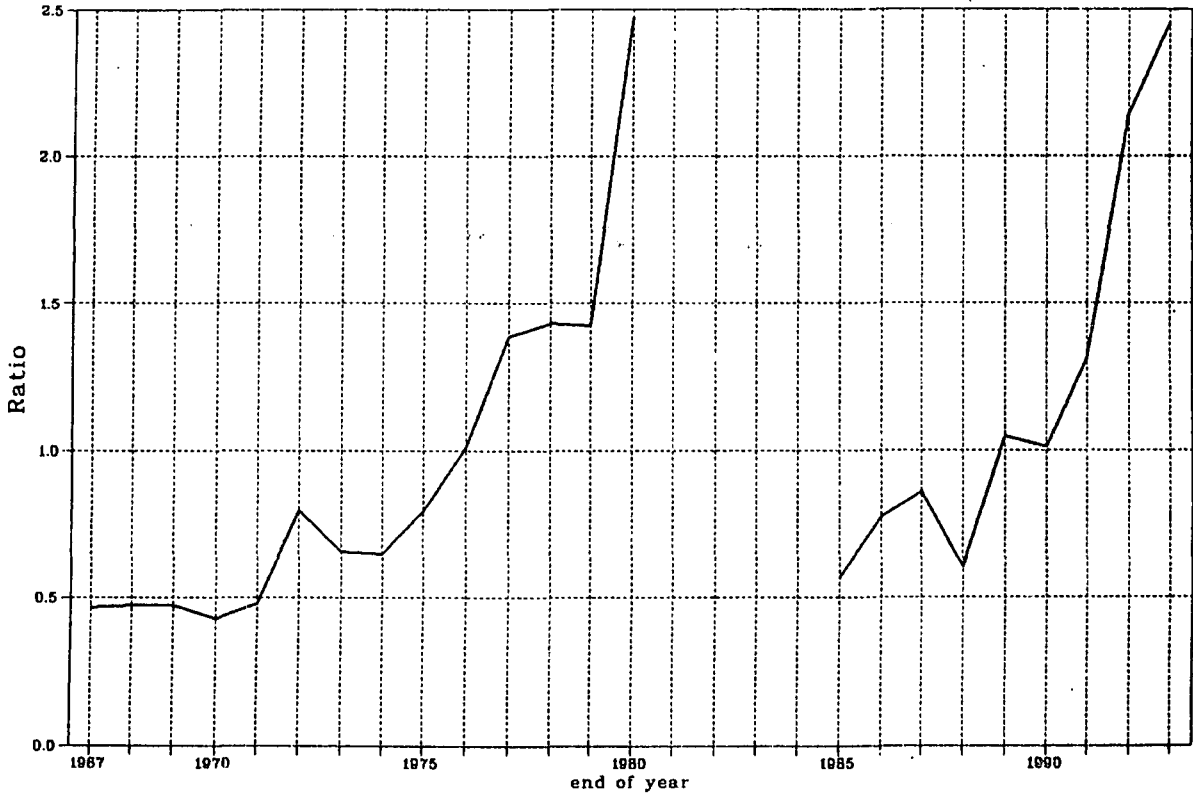
Source: Bank of Israel and TASE; Market Value excludes convertible bonds

Figure 16 - Real Market & Book Value (Book Dec '85=100)



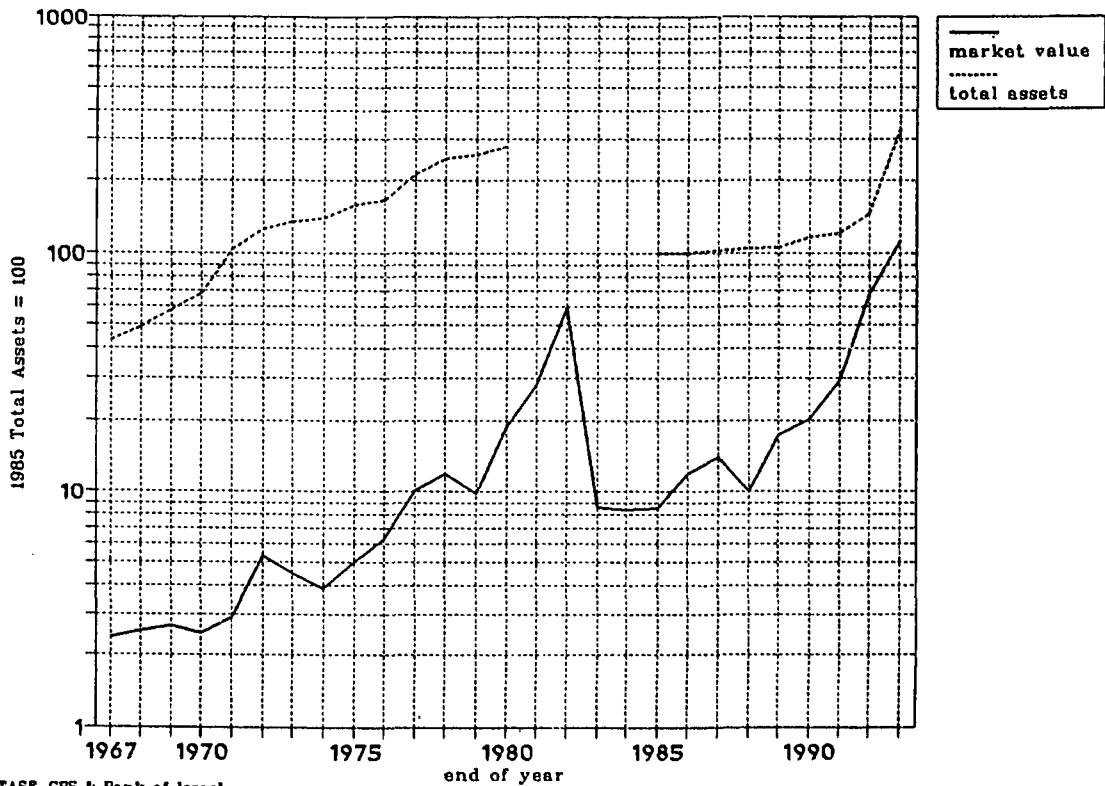
Sources: TASE, CBS & Bank of Israel

Figure 17 - Market To Book Ratio of Traded Securities



Sources: TASE, CBS & Bank of Israel

Figure 18 - Market Value & Total Assets of Traded Securities (Assets De85=100)



Sources: TASE, CBS & Bank of Israel

Figure 19 - Dividends a a Ratio of Mkt Value and GDP 1960-1993

-48-



Source: TASE & the Bank of Israel

Fig. 20 - Market Value of \$100 Invested in Israel & Global Markets 1984-1992

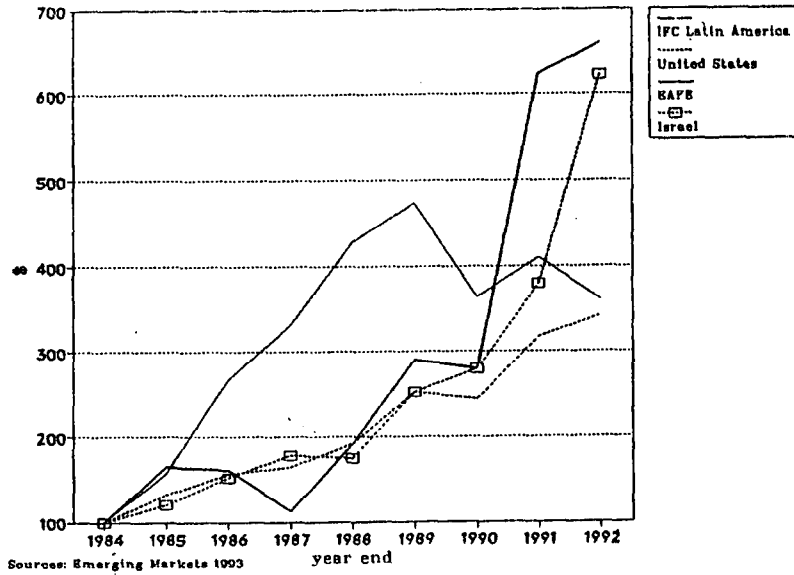


Fig. 21 - Market Value of \$100 Invested in Israel & S. American Markets 1979-92

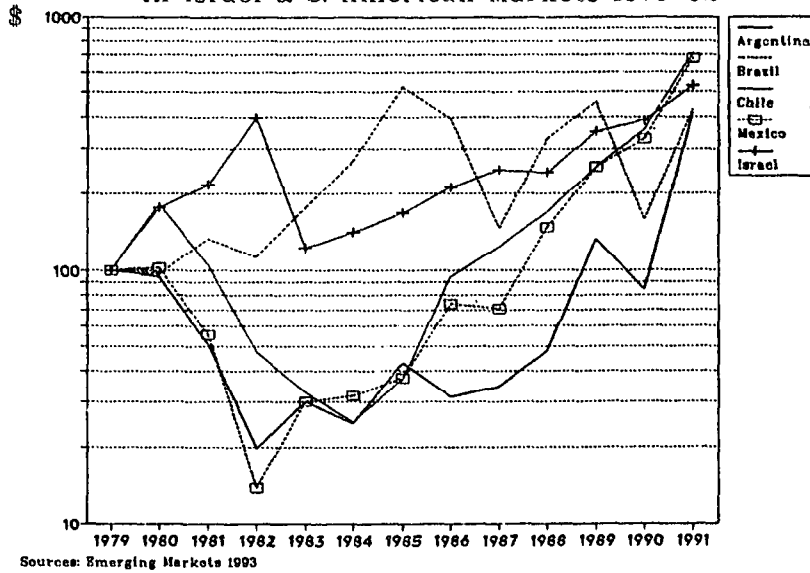


Fig. 22 - Market Value of \$100 Invested in Israel and the Pacific Rim 1984-1992

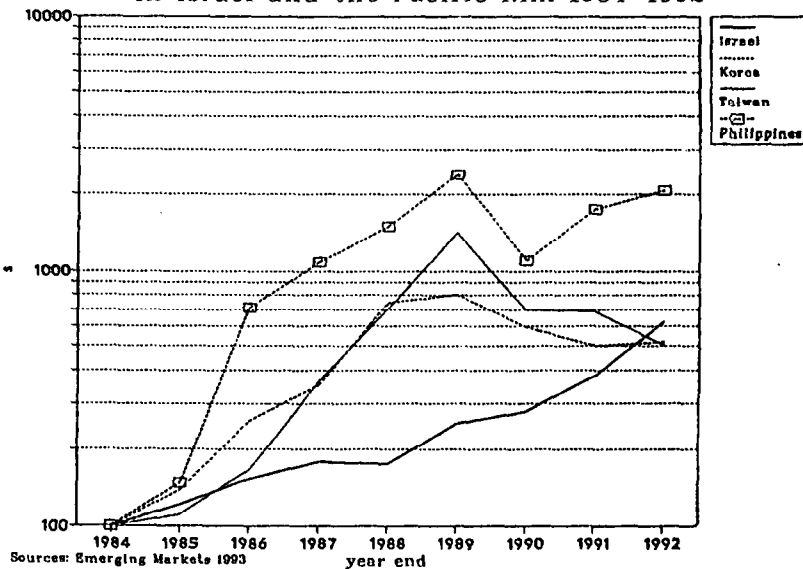


Figure 23 - Supernormal Infinite Return
& Required Returns for P/E's of 12 & 23

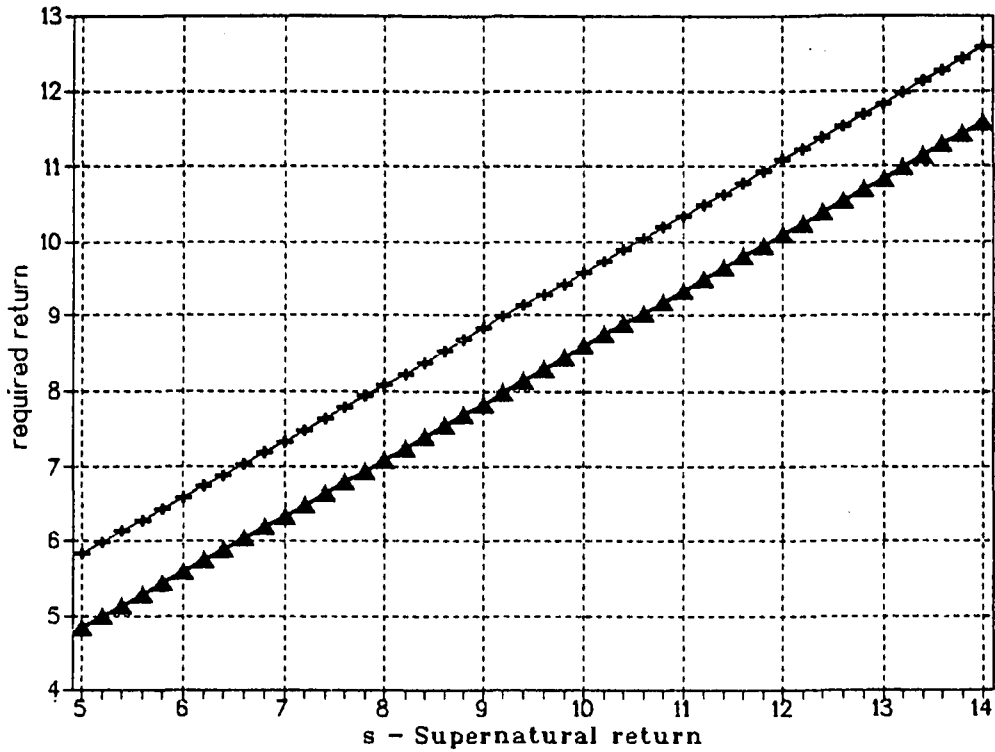
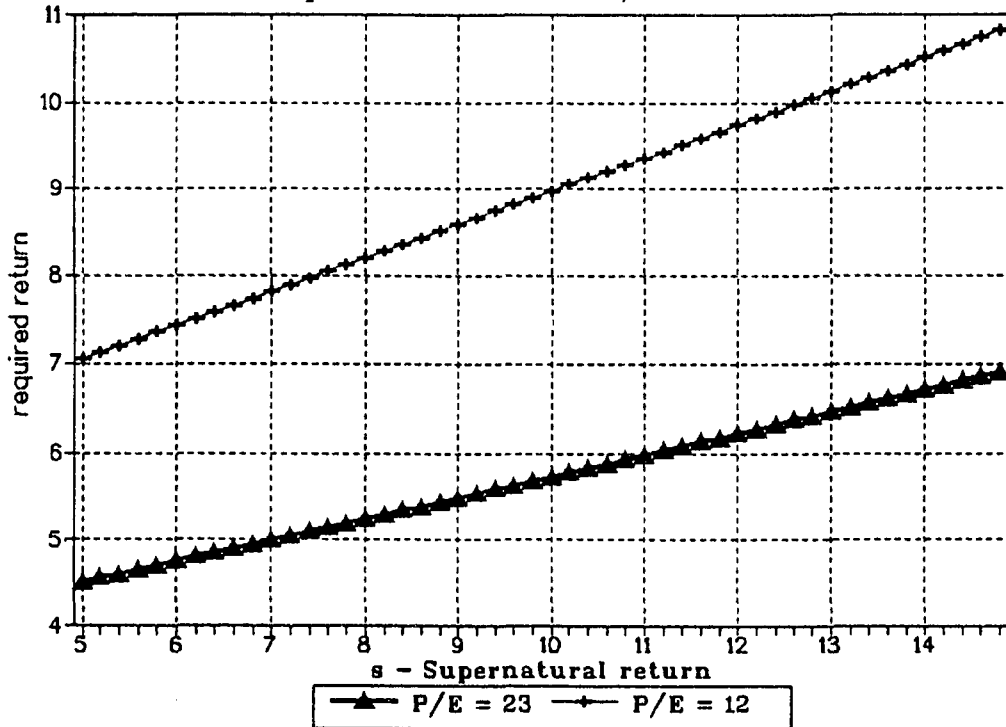


Figure 24 - Supernormal 10 year Returns
& Required Returns for P/E's of 12 & 23



The diagrams are calculated assuming that 25 percent of earnings are distributed as dividends

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