



ISE
Istanbul Stock Exchange



ISSN 1301-1642

Volume: 1 No: 1 January/February/March 1997

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The ISE Review

Quarterly Economics and Finance Review

On Behalf of the Istanbul Stock Exchange

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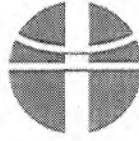
Reşat ADIGÜZEL

Editorial Production

Mi Medya İlişkileri

Printing

Atılım Defter Ambalaj Ltd.



The views and opinions in this Journal belong to the authors and do not necessarily reflect those of the Istanbul Stock Exchange management and/or its departments.

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The ISE Review

Volume 1

No 1

January/February/March 1997

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Preface

In this age of information, where success is measured by the speed of access to and efficient use of information, capital markets and securities exchanges are assuming and carrying out new responsibilities and functions in addition to their traditional tasks. The need for information and services to be accomplished becomes more valuable considering the dynamic structure and rapid economic development of our country.

Since its foundation in 1986, the Istanbul Stock Exchange has been striving to create an efficient capital market with equal access to information and protection of investors as primary concerns. In pursuit of this aim, the ISE is introducing a new publication, the ISE Review, that combines theoretical and empirical studies on capital markets. As we planned for the Journal, we hoped that it will meet the expectations of a broad range of people, from investors, researchers and analysts to economists, academicians as well as students and laymen with a scholarly interest in the subjects handled. The Journal will be published quarterly in both Turkish and English.

I am certain that the ISE Review will contribute to the efficient operation of the money markets and the whole economy with studies produced by scholars, specialists and professionals. Market participants will be able to benefit from the opinions and experiences of professionals and knowledge of scholars. In addition, the ISE Review will improve the recognition of Turkish capital markets and the ISE in the international arena.

The ISE is proud of completing its infrastructural requirements and hopes to help in the dissemination of information acquired in this process of development to the general public. I would like to thank all those who have contributed to the publication of the ISE Review as I also hope that the Journal reaches the success of the stock exchange it is named after.

Tuncay ARTUN
Istanbul Stock Exchange
Chairman and the Chief Executive Officer

Editorial

On its way towards becoming a fully developed market, the Istanbul Stock Exchange is now publishing a quarterly journal of economics and finance: the ISE Review. The Journal's primary aim is to encourage studies on capital markets and securities exchanges in order to prompt a field of debate and discussion in these broad subjects.

The content of the Journal is composed of three parts. Theoretical and empirical articles on general economy, finance, capital markets and securities exchanges constitute the first part. Issues for reinforcing and improving the development and efficient working of money markets are primarily examined in this analytical section.

The second part of the Journal provides regularly market statistics, enabling to measure and evaluate the performance of the Istanbul Stock Exchange. Also in this part, tables and graphs are given in order to offer a comparative examination of global markets and ISE performances as well as other developing markets.

The third part is dedicated to the review of books written on capital markets and stock exchange issues. The books that will be reviewed are contemporary, recently published possessing unique stature in the economic and finance literature.

I believe that the ISE Review will fill a gap in the finance literature in Turkey, attracting the interest of scholars, investors and other market participants. I am confident that the Journal will also help the ISE to carry out its main task of providing an efficient capital market and thus a secure environment for investors by supporting studies on economics and finance.

The ISE Review is prepared as a consequence of a fastidious and coherent team work with an objective to present a comprehensive publications to its readers. I wish that it will also contribute to the integration of the Turkish economy, its capital markets and the ISE with the rest of the world. Finally, I hope that the journal will be beneficial to readers, researchers and other interested parties serving as a source of current and up-to-date information.

Dr. Meral VARİŞ TEZCANLI
Managing Editor

A General Outlook of the Turkish Industry and Competitiveness of the Private Sector

B. Safa Ocak*

Abstract

The following article constitutes a speech delivered at the DEIK Conference in London on September 18, 1996. First, it draws a comparison between the 1980s, the decade of economic and financial liberalization and current economic conditions in Turkey. The effects of the Customs Union on Turkish industry since January 1996 have also been analyzed. Finally, banking, textile, ceramics, cement, food and iron and steel sectors are analyzed in terms of competitiveness within the context of harmonization of domestic industries with the European Union member countries.

I. Introduction

It is a great pleasure for me to be here today and have the opportunity to talk to you. The topic of my presentation is the “General Outlook of Turkish Industry and Competitiveness of Private Sector”. I shall start with some macro indicators as of end of '95 and some statistics of the *1996 World Competitiveness Report* and run through a sketch of Turkey's economic performance since 1963. I shall also present you with some comparisons to the year 1980 which is the year Turkey began to deregulate and liberalize its economy. Then, I shall quickly go through short synopses of six major industrial sectors, after which I shall leave the platform and I hope not with a sigh of relief from the audience.

*Paper submitted by B. Safa Ocak, General Manager of the Turkish Industrial Development Bank (TSKB), at a conference organized by DEIK in London on September 18, 1996.

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Table 1: Main Economic Indicators (1995)

GNP	\$ 165 billion
GNP growth rate	8.1%
Population	63 million
Inflation (WPI) (December to December)	65%
Exports	\$ 21,636 million
Imports	\$ 35,709 million
Foreign debt	\$ 73,572 million

To a Western eye, this table has a number of sore spots but even so, in 1995 the U.S. Department of Commerce has identified Turkey as one of the Best Emerging Markets (BEM), one of 10 countries most likely to develop rapidly through the year 2010. I feel they have a

Table 2: Growth Rates (%)

Real GDP growth	18
Real growth in industrial production	9
Real growth in agriculture	11
Real growth in commercial services	12
Growth in exports of goods and commercial services	14
Terms of trade index	4
Foreign investors (Attachment 1)	14
Tourism receipts	15
Change in overall productivity 1990-1995	13
International experience and senior managers	14
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reason, especially after a glance through Turkey's competitiveness scores in the *World Competitiveness Report*.

GNP per capita increased from \$250 in 1963, to around \$2,700 in 1995. During the same period, Turkey's exports to and imports from

the EU have grown 50-fold; as a ratio to respective totals, exports have fared from 60% to 51% and imports from 45% to 47%. Between 1980-1995, the Turkish economy grew by 95%; for the same period the OECD average total growth was 25%. Industry's share of GNP has increased steadily over the years. Although the economic crisis of 1994 had a detrimental impact on the industry, the sector quickly bounced back from the crisis, proving its resiliency. The industrialist relied increasingly on his own resources and shifted sales from domestic to international markets. In 1995, the domestic demand recovered and value added of the industry grew by 14%.

Since 1963, volume of Turkey's foreign trade has more than tripled and annual foreign investment grew by 10-fold. In volume in 1982, foreign investment totalled \$ 103 million, whereas it was \$1,016 million in 1993.

During the 1980's, the economy has successfully passed through two liberalization tests. Between 1984 and 1989, customs duties on a large number of imported goods were reduced. The local industry came stronger out of this, by pursuing a more efficient production policy and raising quality. This in turn led to an increase in exports as evidenced by the increase in the sales of refrigerators, car spare parts and even cars.

The Turkish industry is dominated by the private sector which accounted for 87% of the gross fixed investments in the industry in 1995. The involvement of the state is largely limited to the energy and communication sectors. The growth rate of value added of the industry is as follows:

In the last 15 years, total industrial production has risen by 159%. Most successful sectors include textiles and clothing, food, construction materials and consumer durables. In Turkey, the industry based on

Table 3: Value Added Rates of Industry (1990/1995, %)

1990	8.6
1991	2.7
1992	5.9
1993	8.2
1994	-5.7
1995 (Est.)	13.9

high technology, and research and development may still be weak. However, potential for higher value added products increases each year.

Based on the experience of my Bank (The Turkish Industrial Development Bank) over 50 years and through involvement with over 3,500 companies during their establishment and expansion, I can say, in confidence, that the present mind-set of the entrepreneur is geared to new technology, new markets, and new equity with an aim to increased competitiveness.

II. Customs Union

Needless to say, the Customs Union (CU) will not only increase trade between the respective parties but will also open up the way to diversified economic cooperation between Turkey and the EU in the CIS, countries and the Balkans. The Customs Union with the European Union is an important step in Turkey's emergence in international competition. The first and foremost impact will of course be integration of a 370 million people market under similar rules, regulations and practices. This harmonization of the general parameters should, in turn, produce positive competition among players to achieve better outcomes with increased efficiency. Over the last five years, EU countries have accounted for approximately 50% of Turkey's exports. Turkey sells \$11 billion worth of goods to EU members each year. Turkey's major trade partners, at present, are Germany, France and Italy. The Customs Union is expected to result in an expansion towards Belgium, Austria and Scandinavia. The new era should enable Turkey to easily enter into markets such as Portugal and Spain, where it has not been previously active. On the other hand, Turkey has strong ethnic, religious and cultural ties with neighboring countries and the Customs Union provides European countries with a potential stepping stone or partner for entry into invaluable surrounding markets.

III. Domestic Market

Turkey has a growing, dynamic domestic market with a population of 63 million. Thus, Turkey offers a growth market with a sufficient disposable income level, in almost any sector. Turkey also enjoys a large labor force with high productivity .

Until recently, Turkish investments were concentrated in an area stretching from Istanbul to Izmir, the more developed regions. However, in recent years entrepreneurs, with roots in agriculture or trade activity, are crossing over to the industry by way of large capital investments, and thus industrial production is ever expanding into far corners of the country such as Gaziantep and Kahramanmaraş on the east and southeast of the regional distribution.

IV. Banking

The banking sector, coupled with an advanced communication network, is presently able to support all economic activity, particularly with that of the EU. The Turkish banking system possesses a high-technology electronic infrastructure, sophisticated country-wide payment systems, a qualified workforce, high service quality and modern marketing principles. What adds on to all the potential is the advanced network of communication facilities. Turkey ranks eight in the world in communication facilities and infrastructure, according to the *World Competitiveness Report 1996*.

V. Competitiveness

The essence of worldwide development and competition today is to be aggressive yet to remain attractive, to be global in nature yet to respect the advantages of market proximity, and by so doing, to create added value for the consumer or customer. The rules of the game change frequently and the fundamental change in today's competitive environment is the unprecedented opening of geographical markets and industrial sectors. Being in the heart of a region, which produces nearly half of the world's trade, makes it essential for Turkey to adapt to new competition rules and continuously update its strategy.

In the decade of the 1980's, when the Turkish economy opened up to the outside world, Turkey encouraged the increase in the production of industrial goods, in which it has a comparative advantage. Generally speaking, Turkey has comparative advantage in terms of labor, geography and resources. Both labor and capital productivity exceed most developing and developed countries. Infrastructure enables any investment to operate comfortably in Turkey. With the dynamic surge ahead, many Turkish companies applied and continue

to apply to get an ISO 9000 standard for their products, as a testimony to their quality and marketability.

In the last three years, entrepreneurs have founded 148,000 companies in Turkey. In contrast, between 1965-1987, over 23 years, a total of only 142,340 companies were established.

Current objectives of the private sector vis-a-vis the changes brought about by the Customs Union are :

1. To increase the international competitiveness of existing production units through;
 - * Modernization and upgrading of technology,
 - * Going public, and
 - * Increased export orientation.
2. To adopt an international outlook with special emphasis on:
 - * International marketing and distribution,
 - * Investments in target markets, and
 - * Joint ventures with foreign capital, strategic or financial.

Turkey is competitive in many sectors, such as glass, food, ceramics, textiles and clothing, footwear, cement, some sub-sectors of iron-steel, aluminum, and copper. Now, I would like to focus on six major sectors, which might be of strategic interest and importance to potential investors, especially after the Customs Union.

5.1. Textiles

Textiles is the leading sector of the Turkish economy, and it began to grow rapidly in the 1980's, fueled by direct government incentives. In the last eight years, Turkey has risen from being 27th to third largest exporter of textiles to the EU. The broad range of products and the importance given to quality make the target of \$ 10 billion for the year 2000 highly likely to be achieved well before.

The sector accounts for 32% of Turkey's production of consumer goods, 12% of manufacturing industry and 9% of total production. Another important fact is that the sector is not influenced by internal cyclical disturbances, due to its export-oriented nature.

Today, Turkey is one of the leading international textile and clothing producers and exporters. The following particulars are important to note;

- it is the sixth largest cotton producer in the world.
- it has the second largest short staple yarn capacity in Europe, the

eighth largest in the world.

- it is the largest yarn producer in Europe, and the seventh largest in the world.
- it is the second largest clothing supplier to EU member states, with a 10.3% share (Germany is first with 15.3% market share).

The source of the textile industry's strength lies in the availability of low cost, skilled labor, abundant raw materials and a modern machinery base, with 40% of textile machinery and equipment less than five years old. Considering the fact that Turkey's cotton production is expected to increase by 50% with the completion of GAP (Southeastern Anatolia Project), and the positive effects of the Customs Union, one can expect more in this sector.

5.2. Ceramics

The sector's capacity ranks sixth in the world and third among the European countries. After the new investments, the sector's capacity for floor and wall tiles will reach 130 million m² which will enable Turkey to keep these ranks for a long time. The producers' goal is to increase exports from 25% to 60% in 10 years. It is estimated that this sector alone is going to reach a level of 3 billion to 4 billion dollars of exports by the year 2000. Among the advantages of the sector, latest technology, large production capacities and availability of high quality domestic raw materials can be counted. The only thing that can cast a shadow over the sector in global markets is the lack of a marketing image. Thus, the producers, well aware of this, are working on creating this reputation.

5.3. Cement

The cement industry occupies a prominent position in the nation's manufacturing sector. Turkey is ninth largest producer in the world and ranks second in Europe with Germany. Its annual production capacity is over 35 million tons, and this is expected to reach 45 million tons as Turkey anticipates to get a higher rank amongst the largest producers of cement in the world.

The abundant availability of raw materials and modern technology are the principal strengths of the sector as well as its medium and long-term growth potential. Privatization of nine of the 11 remaining state-owned cement enterprises has recently been completed. The major

weakness is relatively higher cost of energy in Turkey.

Cement demand is closely related to the real economic growth as population increases. Therefore, a 5% rise in GNP and population growth of around 2 % have laid out the sufficient environment for a long-term increase in the production and consumption of cement.

5.4. Food

Today, the food industry's share in production, its exports and added value created, make it one of the key sectors in Turkey. Turkey is one of the leading countries in agricultural production. Turkey's climate, its good soil and population structure are enough to ensure its place as an agriculturally self-sufficient country.

There are three important factors in the development of the sector ;

- use of modern technology in high capacity plants to produce quality products,
- determination of the supply policies of raw materials and handling of working capital requirements, and
- building strategic alliances.

In 1994, the sector had the largest share in the production of consumer goods with 14% of the total. In 1995, a total of \$1 billion worth of food industry investment incentive certificates were issued. It is expected, with new investments and with the continuing modernization of existing plants, the sector will grow steadily.

The continuing decline in the consumption of canned goods in Europe and the shift towards frozen foodstuffs will help to boost trade. Considering that the EU has a potential demand for 2.5 million tons of imports and Turkey currently supplying only 50,000 tons, the opportunity is there.

In addition, the "Southeastern Anatolia Project" (GAP) is expected to produce an increase in agricultural output, higher quality and investments in food processing in the region.

5.5. Iron and Steel

Turkey's drive for self-sufficiency in iron and steel goes back to the late 1930's. The government has encouraged investments in this field as reflected by the increase in the total production of crude steel from 2.5 million tons in 1980 to 13 million tons by the end of 1995. This volume

ranks Turkey as the 16th largest producer in the world. However, the consumption level is still below that level of industrialized countries. The iron and steel industry in Turkey consists of state enterprises representing 37%, and the private sector, contributing 63% to the total.

Total exports in 1995 were \$ 1.74 billion, equivalent to 6 million tons. The Turkish iron and steel industry is an active trader in long products market, exporting to 75 countries. Also 54% of exports is directed to Far Eastern countries of which 15% is to China, and also 13% to Middle East, 6% to North Africa, 4% to Central and South America, 4% to NAFTA countries, 2% to EU markets and 2% to other countries.

5.6. Glass

Worldwide glass production can be categorized in three major groups, flat glass (25% of total output by weight), glass packaging (65% of total output by weight), and tableware (5% of total output by weight).

The remainder consists of glass fiber (for insulation and reinforcement), and special glass, such as optical glass and industrial glassware. Turkey is competitive in all these categories.

Turkey's main glass producer is Şişecam A.Ş., which is also one of the largest producers in the world. Turkish glass production industry is very competitive, due to its high quality techniques, wide variety of products, and prices. Şişecam is continuously investing to keep abreast of modern technology and to increase its capacity. Total annual investment of the group, at present, is between \$250-\$300 million. In this respect, Şişecam already has taken all the necessary precautions to be competitive after the Customs Union. While Şişecam is strongly committed to maintaining its dominant domestic market share with high quality products, it also pursues growth through exports. Its exports totalled \$385 million in 1995.

VI. Conclusion

In spite of domestic and regional political distress and, as a result, a fluctuating macroeconomic performance, Turkey, nonetheless, has achieved continuous growth. Maybe, what John Barham of the Financial Times has said, summarizes the story of Turkey best; "Turkey's strength is an extraordinary ability to muddle through." To

which, I shall add, that behind that ability lies its unswerving determination not accepting to be left behind.

Industrial Turkey, despite its chronic political and economic problems, will enter strong into the next millennium with its highly resilient private sector, professional and high caliber management teams, a qualified workforce and an infrastructure which supports these assets.

Appendix 1: Foreign Investors

Country	Number of Firms	Foreign Capital (Billion TL)	% Share in Total Foreign Capital
France	185	11,322.1	16.5
Netherlands	166	10,869.9	15.9
Germany	591	9,169.7	13.4
USA	241	7,591.4	11.1
Switzerland	152	5,083.3	7.4
Japan	43	4,999.7	7.3
Italy	121	3,161.	4.6
UK	219	2,829.1	4.1
Canada	19	1,287.3	1.9
S. Korea	16	1,097.8	1.6
Others	1,533	11,108.0	16.2
Total	3,286	68,519.3	100.0

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Intercultural Bank Management in Israel

Yair E. Orgler^{*}

Abstract

With a population of 5.5 million and 15,000 US\$ per capita income in 1994, Israel is a headrunner among developing countries. Banking activities are led by the five largest banks representing 93% of total activities. Public sector still plays a dominant role in the banking sector, since after the 1983 banking share crisis, the government took control in the sector. This article studies Israel's banking sector, providing a historical, cultural and economic background. Within this context, corporate structure of the banking system and its public image as well as effects of future regional and regulatory developments with a special interest on privatization of the largest three banks constitute the topic of this article.

I. Introduction

Israel's population at the end of 1994 was 5.5 million, of which 4.4 million are Jews and the most of the remaining 1.1 million are Arabs -not including the Palestinian population of the West Bank and Gaza Strip. A great majority of the Jewish population immigrated to Israel from five continents and numerous other countries since it became an independent state in 1948, including over 600,000 immigrants who came since 1990 - mostly from the previous Soviet

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This article is first published in "Banking Cultures of the World," ed. Prof. Dr. Leo Schuster, Fritz Knapp. Verlag, Frankfurt am Main, 1996, pp. 179-196.

I am thankful to Dr. Asher Halperin and Professor Itzhak Swary for their helpful comments.

Union. Hence, Israel is a melting pot of people of vastly different cultures: from remote villages in Ethiopia and Yemen, the Atlas mountains in Morocco, the death camps of Nazi Germany and metropolitan cities in the Americas. They are united, though, by the Jewish consciousness.

The three largest banks are presently owned by the government, following the bank shares crisis of 1983, although serious efforts are being made to privatize them.

Given Israel's dynamic developments, the following section provides a historical, cultural and economic background, both prior to statehood (1948) and afterwards. Section three describes Israel's banking system (both local and multinational) and its public image. Section four presents the corporate culture of Israel's banks which is influenced by the national culture, by top management and by the various owners of each of the five large banking groups. The final section explores future regional and regulatory developments as well as the continued privatization process.

II. Historical, Cultural And Economic Background²

In less than two years, Israel will celebrate its 50th anniversary. During this period Israel was involved in five wars with its neighbour countries, in addition to numerous military confrontations that continue to this date. On the positive side, peace treaties have been signed with two Arab countries, Egypt and Jordan, and major progress has been made in establishing a Palestinian entity in the West Bank and Gaza Strip. Prior to becoming an independent state, the country (called Palestine) suffered directly and indirectly from the consequences of the two world wars. These developments had a significant impact on Israel's national and corporate culture. Hence, it is necessary to review and analyze the major historical, cultural and economic developments in order to understand the corporate culture of Israeli banks.

²This section is based, to a large extent, on Dr. Meir Heth's book, "*Banking in Israel Part One: Historical Survey*", The Jerusalem Institute for Israel Studies, Research Series No. 57, 1994 (Hebrew).

2.1. Developments Prior to Independence (1948)

Meaningful immigration to Palestine started in the late 19th century, when this region was still a part of the Ottoman Empire. By the end of World War I, when Palestine became a British mandate, its total population was 650,000, of which less than %10 were Jews. During that period, banking services were provided by several small private banks and by branches of two large European banks: Credit Lyonnais and the Imperial Ottoman Bank. However, the main development in the banking sector, which is indicative of the future corporate culture of banks in Israel, was the opening of the head office of the Anglo-Palestine Company in Jaffa in 1903.

The Anglo-Palestine Co. (APC) was founded in London in 1902 as a banking subsidiary of the Jewish Colonial Trust (JCT). The JCT was formed in 1899 in London at the initiative of Benjamin Seev Herzl, the founder of the Zionist movement. Its main objective was to serve as the financial arm of the Zionist movement while the main objective of APC was to provide banking services to the Jewish population in Palestine. Within several years, six branches of APC were opened in Jerusalem, Beirut (Lebanon), Hebron, Haifa, Zefat and Tiberias. In addition, APC initiated the opening, in Jewish settlements and villages, of credit cooperatives (45 by 1913) that were responsible for granting loans from funds provided by APC.

Although the Zionist nature of APC was well known, it provided professional banking services to both the Jewish and Arab population. In addition, it was managed, from the beginning, as a “for-profit” organization. Indeed, it was profitable almost every year from 1904 until today and was known for its stability early on, even withstanding a mini run on deposits in its Jerusalem branch in 1907.

The above characteristics were typical of many banking and credit institutions that were founded prior to the establishment of the state of Israel. These institutions were formed by various Jewish organizations for a variety economic, social and political reasons and purposes, but mostly to serve the Jewish population in an emerging Jewish state. Three of those are among the five largest banks in Israel today (including APC which is now called Bank Leumi le-Israel).

A second group of private banks, many of them very small and

short-lived, were established during the period of the British mandate (1919-1948). Many of these were formed in the 1930s by Jews who fled Germany when Hitler came to power. These people managed to bring with them some capital and they also had the professional experience and entrepreneurial spirit that were very different from the socialistic nature of the various Jewish organizations that have governed the Jewish population.

The British authorities, who hardly intervened in the formation and activities of banks in Palestine for many years as part of their colonial policy, introduced certain bank legislation and regulations in the middle and late 1930s. This was the result of a substantial increase in the number of banking institutions (over 120 in 1936) and the failure of some of the private banks.

During the Second World War, both the local economic activity and exports have increased substantially while imports were practically banned. These developments, coupled with a high rate of inflation (about 200% in six years), have resulted in a rapid growth of the banking sector. At the same time, the isolation of the country and its banking institutions have deepened due to international political and military developments. Partly due to these constraints, banks managed to develop fairly independent, professional and stable characteristics.

Shortly prior to independence (1948), the banking system consisted of three major groups.

- **Foreign Banks.** Of those the Anglo-Palestine Bank (previously called APC) was the largest. Although defined as a foreign bank because of its ownership, it was actually a local bank. In addition, the manager of this bank was very much concerned with the local economic and social issues being the financial arm of the Zionist movement which was about to achieve its goal, namely the establishment of an independent Jewish state. The two other large foreign banks were Barclays Bank, which also served as the official bank of the British authorities, and the Imperial Ottoman Bank. All three banks, with headquarters in London, were strongly influenced by the British tradition and conducted a fairly conservative business policy.
- **Local Banks.** These included banking institutions that were established by social and political organizations in order to serve

their members and their social and political goals. In addition, there were several small and medium size private Jewish banks with a clear profit orientation. Moreover, since most of their founders had a continental European background, these institutions acted more as universal banks. There were also two Arab banks that have expanded quickly in the 1940s and served the Arab sector which was largely separated from the Jewish sector.

- **Credit Cooperatives.** The Jewish credit cooperatives (which later merged with the large banks) have expanded into regular commercial banking activities while the Arab credit cooperatives concentrated on granting loans to the Arab population from funds obtained from the Barclays Bank. This, too, demonstrates the widening gap between the Jewish sector, which in 1947 represented one third of the population and the Arab sector.

Two additional points have to be mentioned concerning the nature of the banking system prior to the establishment of the state of Israel. First, banks have dominated almost all types of financial activities in Palestine. There was no capital market to speak of and other financial activities, except insurance, were handled directly by the banks or by their subsidiaries. Second, while the banks provided a fairly modern, independent and stable banking system for the new state, the currency and payment systems were closely controlled by the British authorities.

2.2. Developments After Independence

The first years of the new state of Israel were marked by two major events: the War of Independence in 1948 and the immigration of close to 700,000 people between 1948 and 1951, doubling the size of the Jewish population in four years. The financial needs created by the war represent the beginning of a very long period of huge funding needs for defense purposes. At the same time, it was necessary to absorb and support the new immigrants, most of them survivors of the Holocaust who had no financial means whatsoever. The combined effect of both developments created very large deficits both in the balance of payments and the domestic government budget. These shortages were covered by a variety of means including international support and severe local austerity measures. An

important part of the international support in the 1950s represented reparations and personal restitutions from West Germany for the government of Israel and the survivors of the Holocaust. Eventually, certain economic reforms, which involved some liberalization, as well as the contributions from the enlarged labor force resulted in rapid economic growth and improvement in overall economic conditions.

This pattern of major funding requirements caused by defense needs and the absorption costs of large numbers of new immigrants continued throughout the years at various levels of intensity and, to a certain extent, is still in effect today. The governments of Israel tried to cope with these issues with various means and periodic economic reforms. Some of these reforms were quite successful while others resulted in serious negative developments such as hyperinflation (close to 450% in 1948) and very small growth in the late 1970s and 1980s.

One of the main causes for these developments was a substantial control of the government in almost every aspect of economic financial activity. This basic approach, which was based on economic needs but mostly on a socialistic attitude to the role of the government, continued even after the shift of control in 1977 from Labor to the right-wing Likud party. Only in 1985, following six years of triple digit inflation, a most successful economic reform was enacted by a national unity government. Since that year, continued liberalization has gradually reduced the role of government in the economy although in certain areas it is still dominant.

The influence of these economic policies on the financial sector, in general, and the banking sector in particular has been very strong, at least until the mid-1980s. In effect, the degrees of freedom that could be exercised by the banks in certain business decisions were limited. A significant portion of credit was directed by the central bank (Bank of Israel) while usage of certain types of deposits was also dictated -on the top of extremely high reserve requirements. For instance, a large share of many long-term saving deposits had to be invested in government bonds while close to 100% of most foreign exchange deposits had to be deposited in the Bank of Israel. In certain areas, the commercial banks actually served as agents of the

government. Mortgage banks were even more constrained, allocating mortgage loans mostly to the populations designated by the Ministry of Building and Housing according to these rules were fully backed by the government. Hence mortgage banks were providing mostly a service function. While this is an extreme example, it explains why managerial strategies and policies in certain financial areas such as mortgage and provident fund managements have changed substantially since the 1985 economic and financial reforms.

The most drastic outcome of the government's controls of the capital market was the bank shares crisis of 1983. Since government bonds offered a safe investment with a high real return during a period of triple digit inflation, they have dominated the capital market and banks had serious difficulties in raising capital. The need of capital was caused by the rapid growth in bank activities due to the high rate of inflation, and by extremely high tax rates on nominal profits which turned, at times, into losses in real terms. These needs caused the banks to support the price of their shares so as to provide investors with a steadily increasing high real return on their shares. These activities continued for several years without serious efforts by the authorities to stop them. They eventually snowballed and resulted in a crisis in October 1983 when the government, in effect, took over the ownership of four of the five largest banks in Israel. To this date, despite continuous efforts to privatize the banks, the government still owns a majority share of the three largest banks which have over 80% of the market share while 25% of the fourth largest bank have recently been sold to private investors. While the government has not intervened all those years in the management of the nationalized banks, the bank shares crisis was a turning point of Israel's banking system. Its impact on banks' corporate culture will be further discussed in this section.

The tight regulation of the banking sector led to an increase in bank involvement in almost all other activities in Israel. As mentioned above, in the early years there were very few non-bank activities. As the capital and money markets started to evolve, the banks were quick in entering these new markets either directly or through subsidiaries. While they are not universal banks like the Japanese or German banks, possibly due to the British tradition, they are dominant, to this

day, in all financial sub-sectors in Israel except for insurance.

Another avenue of less restricted expansion was multinational bank activity. Considering the large proportion of foreign trade in Israel's economic activity as well as its geographic and political isolation, opening branches and subsidiaries abroad was a natural strategy. This was further justified by the potential market of the international Jewish population, especially in the U.S., South America and Europe. Because of these causes as well as tax consideration the four largest Israeli banks expanded rapidly abroad, mostly in the late 1970s and early 1980s. This expansion peaked in 1983 and, due to the bank share crisis and a variety of other reasons, has gradually declined since that year.

While Israeli banks were rapidly expanding abroad, there were no reciprocal foreign banking activities in Israel. None of the large multinational banks has ever opened an outlet in Israel with the exception of Barclays Bank which was present here since 1926 and gradually pulled out. Barclays finally sold its 50% share in the Barclays-Discount Bank in 1933 as part of its international strategy. A few smaller foreign banks had limited presence or joint ventures with Israeli banks but only for relatively short periods. Nowadays, only a tiny Polish bank, which was present in Israel for many years, still exists. In addition, seven Arab banks have been operating in the West Bank and Gaza Strip in 1994.

There were three major reasons for the lack of foreign banking activity in Israel: first, the Arab boycott, second, the high level of involvement of the government and the central bank, and third, the situation of the Israeli banking market, including over-branching, which left very little space for outside competitors. Thus, despite the willingness and even efforts by the authorities to attract foreign banks to Israel, the banking system was, and still is composed of local banks only. This phenomenon, coupled with the overall isolation of Israel from its neighbour countries explains the strong impact of national culture on bank culture.

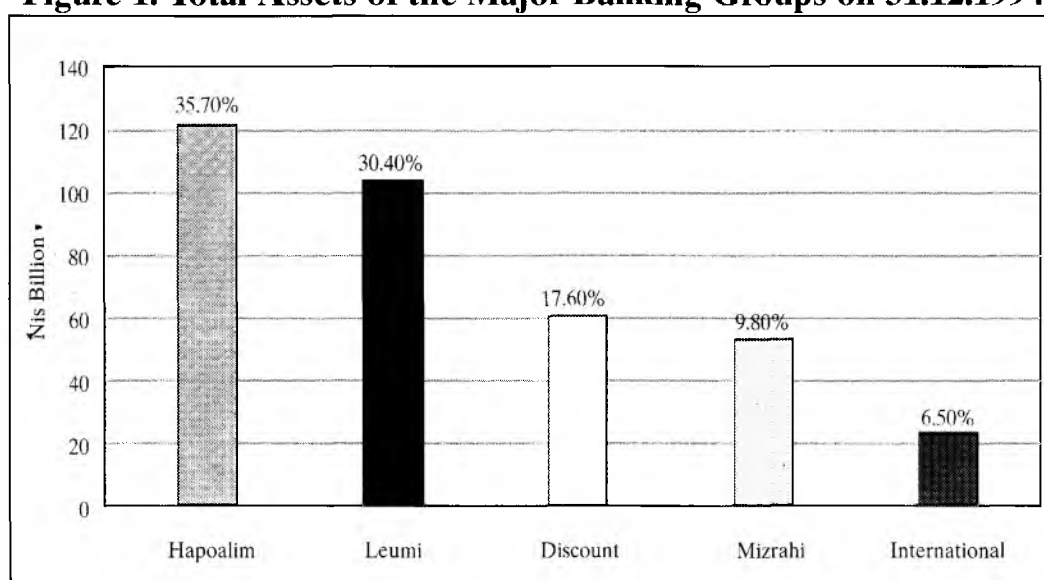
III. Israel's Banking System³

3.1. Structure

At the end of 1994, there were 24 commercial banks in Israel. Of this

total, the five largest banking groups (including 14 of the banks) maintained over 93% of total assets. Among them, the two largest (Bank Hapoalim and Bank Leumi le-Israel)⁴ had over 66% of the total assets of the five groups, as shown in Figure 1. The high level of concentration is also evidenced by the Herfindahl index which was over 0.3 for total assets between the early 1990's⁵. In recent years, due to a relatively faster growth of the three smaller banking groups, the

Figure 1: Total Assets of the Major Banking Groups on 31.12.1994



Source: Bank of Israel

³The data in this section was obtained from "Annual Information on the Banking Corporations 1990-1994"; from the 1994 Annual Report of the Israel Banking System, both issued by the Supervisor of Banks, Bank of Israel; and from previous issues of the same publications.

⁴ The groups are called by the parent banks which are the largest and, by far, the dominant banks in each group.

⁵ The Herfindahl index measures the level of concentration and is defined as

$$H = \sum_{i=1}^N \left(\frac{A_i}{\sum A_i} \right)^2$$

where A_i is total assets (or any other balance sheet item such as credits or deposits or even the number of branches) of bank i and N is the total number of banks (or bank groups).

level of the Herfindahl index for total assets has gradually declined. The total number of offices, which has peaked in 1983, has slightly declined and stood at 1,086 at the end of 1994. Given a total population of over 5.5 million at the same time, this represents an average of about 5,100 people per office. It should be noted that the level of branch concentration is lower than asset concentration since medium size banks have relatively more branches. Also, branches have been used for many years as entry barriers into new locations. Only in the last 10 years there has been some consolidation of branches, especially by the large banks, as part of increased use of technology and in order to save operating costs.

Despite the high level of concentration, there are clear signs that competition is increasing in recent years. This can be observed from a decline in interest rate margins, an increase in financial instruments offered by the banks and higher advertising expenses. Still, the Bank of Israel believes that measures should be taken to further increase competition in the banking industry. For this purpose, it recommended that some of the banking subsidiaries will be split off this parent bank as of the privatization process. Also efforts are made by the Bank of Israel to reduce the banks' ownership of non-financial business in order to avoid excessive concentration in non-bank industries.

It is important to note that the three largest banks are still owned by the government in 1995 as a result of the bank shares crisis of 1983 while the privatization of the fourth largest bank has begun in 1994 and continues in 1995. During the 12 years in which the government directly and indirectly held the shares of these banks, it has not intervened at all in their management. Only in the last two years, it has exercised its rights to appoint members of the banks' boards of directors. But even this step was carried out indirectly by public committees headed by retired judges.

3.2. Nature of Activities

3.2.1. Local Activities

Local bank activities can be divided into three broad categories:

- a) Traditional commercial bank activities, i.e., receiving deposits

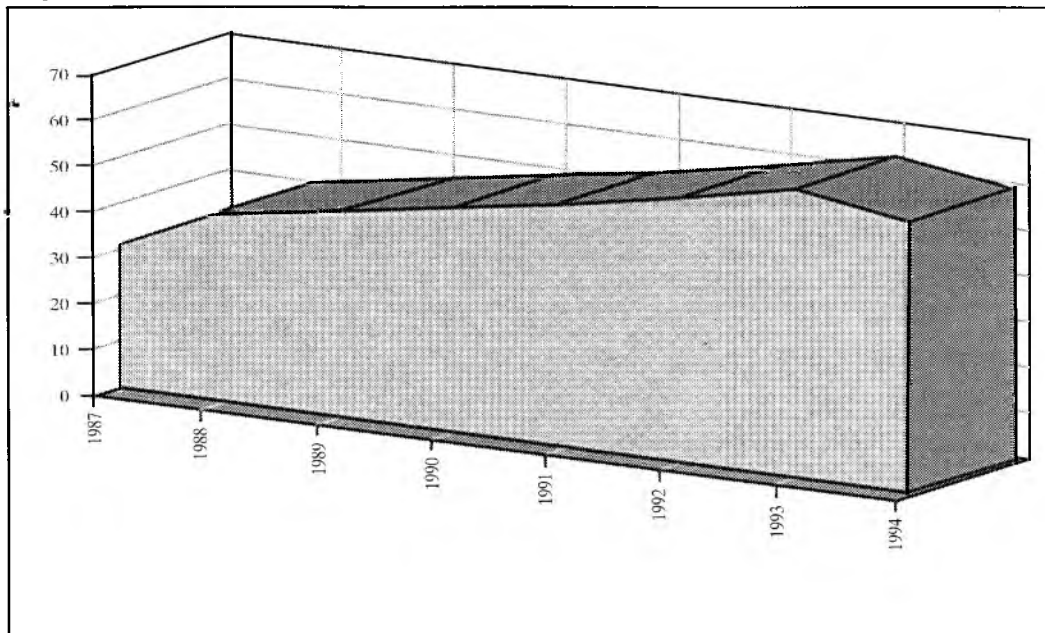
and lending.

b) Fee business which includes a large variety of activities and especially those associated with the capital market such as underwriting, brokerage and management of mutual funds and provident funds, as well as foreign exchange transactions.

c) Investments in equity of non-bank companies.

The first activity was, and still is, the most important one. Moreover, the proportion of "free" intermediation, that is, banking intermediation that is not associated with, nor directed by the authorities, has increased substantially since the 1985 economic reform.

Figure 2: Proportion of Free Bank Intermediation (Total Assets)



Source: Bank of Israel

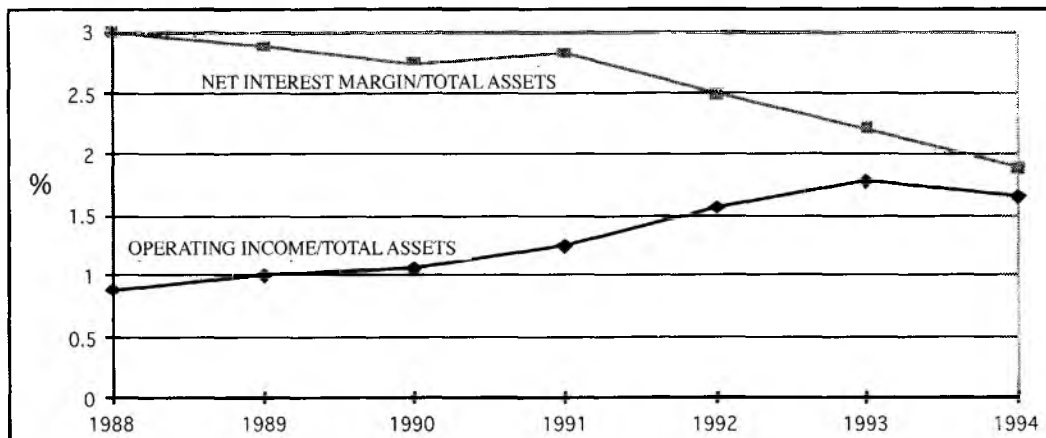
As shown in Figure 2, the ratio of "free" intermediation to total bank intermediation has doubled from about 30% in 1987 to about 60% in 1994.

Another major impact on regular banking activities has been the substantial growth in the capital market, both in terms of new issues and the volume of trade. As a result the proportion of the public's total financial assets that was held in the form of deposits in the banks has declined from 57% in 1990 to 42% in 1994. Nevertheless,

the amount of total public deposits in the banks has increased by close to 9% (in real terms) during the same period. The proportion of bank credits to total credits has remained fairly stable at about 77% during that period. However, increased competition from the capital market and among banks over the "free" portion of banking activities has resulted in decline in the overall interest rate margins from 2.5% of total credits to the public in 1990 to 1.9% in 1994.

The decline in interest rate margins, combined with an increased activity in the capital market, has caused an increase in the fee business, a development that is similar to what happened in many other countries. While the ratio of the financial margin to the total assets has declined from about 3% in 1988 to about 2% in 1994, the ratio of operating income to total assets has increased from about 0.9% to about 1.6% during the same period (see Figure 3). Another indication of this development is the proportion of operating

Figure 3: Ratio of Net Interest Margin and Total Operating Income to Total Assets



Source: Bank of Israel

expenses covered by operating income which increased from 38% in 1988 to 69% in 1993. This ratio declined to 59% in 1994, mostly because of a sharp decline in capital market activity.

The above information indicates that the main source of income that compensates for the decline in revenues from the traditional banking activities is the capital market which is one of the reasons

for that decline⁶. This raises major issues of potential conflicts of interest, especially between the role of a bank as a lender and its role as an underwriter, broker and the manager of various investment funds. This problem has been highlighted by a national inquiry committee that was established after the bank shares crisis and recommended, among other things, to completely ban the banks from most capital market activities⁷. Some of these activities, such as underwriting, have, by now, been transferred by most banks to wholly owned subsidiaries. Still, the authorities continue this process by legislation and issue regulations affecting other areas such as financial consulting and management of mutual funds and provident funds.

The third area of direct equity ownership of non-financial corporations, which is the most obvious from the universal banking perspective, is not very common in Israel and is practised only by some of the banks, especially by Bank Hapoalim. Present legislation requires that banks reduce their shareholdings in individual non-banking companies to no more than 25% by the end of 1996 and that total sum of such holdings will not exceed 25% of the banks' capital. Here, again, efforts are made by the authorities to further reduce such holdings in the fear of increased concentration in the Israeli economy due to the size and influence of the large commercial banks.

3.2.2. Multinational Activities⁸

By multinational banking, we mean activities that are performed by direct outlets such as branches and subsidiaries in foreign countries, unlike international transactions that are carried out from the home office. There have been several motives for the rapid expansion

⁶See Yair E. Orgler, "*The Banking System and the Capital Market: Competition or Cooperation*", Quarterly Banking Review, March 1995, pp. 48-61 (Hebrew).

⁷A special issue (No. 99, April 1987) of the Quarterly Banking Review of the Association of Banks in Israel has been devoted to this topic.

⁸This section is based on my 1979 study for the Israel Supervisor of Banks on Multinational Banking - The Israel Experience; on updates from the annual reports of the Israel Supervisor of Banks and my paper, "*Multinational Banking Activities by Israel Banks*," Quarterly Banking Review, March 1995, pp. 21-26 (Hebrew).

abroad by the Israeli banks in the 1970s and early 1980s.

- Following the customers. Due to Israel's high proportion of foreign trade relative to GNP, many Israeli exporters and importers need banking services abroad. The over all preference of these corporations, including the largest ones, is to carry out their overseas banking activities with the branches and subsidiaries of Israeli banks. This is caused by economic reasons and by social reasons such as familiarity with bank officials and language barriers in certain countries.
- Direct access to international and financial markets. Because of Israel's isolation for many years and the absence of large foreign banks, Israeli banks were interested in a direct presence in major financial markets such as New York, London and Zurich.
- Direct access to Jewish population in the diaspora. The objective of this ethnic motive was mostly to obtain foreign currency deposits from this population and also to establish contacts that could be useful during visits of these customers in Israel.
- Tax considerations. Until 1982, when corporate tax laws changed by adjusting revenues, expenses, investments and capital for inflation, it was more profitable to invest in foreign outlets than in financial assets in Israel itself.

Due to these main motives and several others, such as saturation in the home banking market and heavy regulation, multinational banking activities expanded rapidly and peaked in 1983. For a variety of reasons, including the 1983 bank shares crisis and heavy losses from bad loans in the early 1990s, the level of multinational banking activity has gradually declined, both in the number of outlets and asset size. By the end of 1994, there were 112 outlets abroad (subsidiaries, branches and representative offices) compared with 143 in 1983 while total assets in current values declined from \$21.0 billion during the same period.

3.3. Image

The common cliché about bank image is that "people love to hate banks." This is explained, inter alia, by the need to ask for bank credit for which the customer pays interest at a rate much higher than the one he or she is being paid on deposits and by misunderstanding the role of banks in the economy. Consequently, banks carry out campaigns to

improve their image. A major campaign for this purpose was carried out by the Israel Banking Association in the late 1970s in which the main slogan was: "Banks are the economic oxygen of the country."

A detailed study that has followed the campaign but had much broader objectives than to evaluate its success, started from the premise that the image of banks is not uniform⁹. The underlying assumption was that banks have many positive attributes, some of which are viewed while others are viewed negatively by the public. A nationwide survey that included personal interviews with a representative sample of 1,210 adults were asked to rank 16 attributes on a seven point scale. By using factor analysis in evaluating the results, it was found that the attributes can be grouped in two main factors, one of which is viewed positively while the other is viewed negatively:

- Customer benefit factor which consists of advice, efficiency, safety, politeness, fairness and the perceived effect of banks on the economy, in order of association with the factor. All these attributes were viewed positively which demonstrated that the public believed that banks provide good advice, are efficient, safe, polite, fair and beneficial to the economy.
- Bank benefit factor which contains attributes that are considered to benefit the banks and which were negatively viewed. Consumers felt that banks pay salaries that are too high, charge too much interest and fees and are too profitable. Consequently, the respondents favored additional government control over banks.

While these results may seem to be conflicting, they are not inconsistent. For instance, it is quite logical that banks charge high fees since they provide good services and that they are profitable because of their efficiency.

IV. Corporate Culture of Israel's Banks

4.1. National Impact

As demonstrated in section 2, the development of banks in Israel was strongly influenced by national events and closely controlled by

⁹This study was performed by L. Mandell, R. Lachman and Y. Orgler. The results were published both in Hebrew and in "*Interpreting the Image of Banking*," Journal of Bank Research (Summer 1981), pp.96-104.

authorities. Given the true difficulties facing the country for many years, this created a strong identity at the banks with national goals. For instance, when Israel became independent at the end of the British mandate, which had complete authority over the currency and monetary policy. Bank Leumi le-Israel (then APC) took upon itself many of the responsibilities of a central bank -until the Bank of Israel was founded in 1954.

The Israeli banks were very useful in raising foreign deposits and lines of credit during periods of severe shortages of foreign currency. They also served as local government agents in numerous economic plans and financial projects. Given the banks' size, geographic distribution of outlets and relative efficiency, it would have been very difficult to carry out these projects without their direct involvement and support, especially at the early years of statehood.

The contribution of the banks in performing national assignments, combined with their large size, gave them substantial influence and power. To this date, the presidents or chairmen of the large commercial banks are members of the Bank of Israel's advisory board which advises the Governor of the Central Bank on issues such as monetary policy and foreign exchange policy. Likewise, top bankers have direct access to governmental ministers, members of the Knesset (Israeli Parliament) and top rank government officials. This, by the way, is true also for other large corporations due to their size relative to the entire economy.

It has to be emphasized that, although the four largest banks have, in effect, been owned by the government since 1983, this has not affected directly the corporate culture of these banks. On the other hand, corporate culture has been affected by legislation and regulation that were issued following the bank shares crisis. For instance, regulations that were issued following, in general, and to outside directors, in particular, or legislation designated to avoid potential conflicts interest in bank activities.

4.2. Owners' Impact

As indicated in Section 2, a majority of the large Israeli banks were established by social and political organizations, had unique characteristics and had some direct or indirect influence, for many years, on

the affiliated bank culture. It is interesting to present some highlights of these aspects for each of the five large banks.

Bank Leumi le-Israel (meaning National Bank of Israel) which has started operations in Jaffa in 1903 as the Anglo-Palestine Company has been indirectly controlled until 1983 by the World Zionist Movement. Most of the time, this organization had no or little influence on top management. Still, the spirit and objectives of the Zionist movement have affected the bank strategy and business culture for many years. An example of this attitude, in addition to the ones mentioned in previous sections, is the bank's leading role in multinational activities. A major rationale for this strategy was to be the banker of the bank's subsidiaries - the Arab Israel Bank, specializing in serving the Arab population in Israel.¹⁰

Being the oldest and until 1986 also the largest bank in Israel, helped Bank Leumi le-Israel (BLL) attract, early on, the more affluent part of the population as well as many of the large privately and publicly owned corporations. In addition, it was a pioneer and leader in many banking activities such as foreign exchange transactions and capital market activities. For instance, large shares of personal restitutions from Germany were deposited at BLL because many of the immigrants who fled Germany in the 1930s were customers of the bank. Another example is the mutual fund industry which was started by BLL and in which it has been an undisputed leader for many years. In 1986, BLL was surpassed by Hapoalim in terms of total assets. Still, it is considered a very sound, stable and conservative bank indicated by a public survey that was conducted by MBA students of Tel Aviv in 1990. Using animal images, the bank was likened to an elephant or a lion by a majority of the respondents.

Bank Hapoalim (meaning the Workers' Bank) was established in 1922 by the Histadrut, the federation of labor unions in Israel (then Palestine). The Histadrut has been unique in establishing a variety of economic organizations, cooperatives and corporations in industry, transportation, health services, trade, insurance and banking in addition to its leading role and tremendous influence, for many years not

¹⁰Two other banks have a relatively large proportion of Arab customers: the Mercantile Discount Bank, which follows the tradition of Barclays Bank, and the Bank of Jerusalem for Development and Mortgages.

only in labor relations but also in politics and government. Bank Hapoalim was the financial arm of this organization until 1983. From establishment until the early 1970s, Bank Hapoalim has concentrated on serving the various Histadrut organizations, on the one hand, and a large portion of the working class, on the other. It was considered a bureaucratic and inefficient organization and was closely identified with the Histadrut.

Since the early 1970s, due to a change in top management, the bank became much more aggressive and gradually changed both its image and position in the banking industry. It took advantage of its affiliation with leading organizations such as Kupat Holim, by far the largest sick-fund in the country; Solel Boneh, the largest construction company; Koor, the largest industrial concern; Egged and Dan, the largest bus cooperatives, as well as most of the agricultural organizations and the Kibbutzim (cooperative settlements). At the same time, it has substantially modernized its services and took advantage of its large household consumer base. It expanded into all areas of banking, including those in which it had little expertise before, such as foreign exchange and capital market activities.

Due to the above changes, Bank Hapoalim grew substantially and, in 1986, became the largest bank in Israel. At the same time, it also suffered from huge amounts of bad loans to many of the Histadrut affiliated organizations as well as the agricultural sector. These organizations went through long periods of economic distress, largely because of poor management and the high level of inflation from the late 1970s to mid-1980s. While Bank Hapoalim was managed quite independently during this period, it could not escape its deep-rooted contacts and responsibility for the troubled organizations, let alone the fact that little could be done to save many of the bad loans. It is interesting to note that, despite its past affiliation with the Histadrut, it is run efficiently and labor relations at Bank Hapoalim have been among the best in the system. Moreover, the salaries of its top management were, by far, the lowest among the large banks until recently. In the public opinion survey mentioned above, Bank Hapoalim was likened to a bear or an elephant.

The Israel Discount Bank was founded by Mr. Leon Recanati in 1935. The bank was closely controlled by the Recanati family until

the mid-1980s and the family made it clear that, if at all possible, it would like to purchase it back from the government. This bank was managed from the beginning as a typical profit-oriented private bank. It was also universally oriented, establishing in 1961 a wholly-owned subsidiary which invested in equity of non-financial firms. In a pioneering organizational change that took place in 1973, the control of the investment company was transferred to the bank's holding company.

The Israel Discount Bank has traditionally been a middle market bank. It is noted for its conservative approach which is evidenced in its relatively low ratio of loans to deposits, consequently also less bad loans. A typical example of this approach is its New York subsidiary which is the largest and most profitable of all the overseas outlets of Israeli banks. In its early years, the bank was considered to be geared to serve the Sephardic Jewish population (Jews who immigrated from the Middle East, Asia and North Africa). In the public opinion survey, it was likened to a bull or a bear.

The United Mizrahi Bank was formed in 1969 through a merger of the Mizrahi Bank (founded in 1925) and Hapoel Hamizrahi Bank which originated as a credit cooperative. The present bank and its two predecessors have a Jewish religious orientation. Both of the original institutions were founded by religious Zionist and social organizations with the purpose of serving the financial needs of their members. Most of the employees are religious and the bank has a special appeal to this segment of the population although it has a much broader customer base.

The United Mizrahi Bank developed special expertise in capital market activities and its market share in this area is much larger than its share in credits and deposits. Consequently, its profits are strongly affected by the level of activity of the capital market. The bank is also known for its advanced computer services. Its multinational activity has been small, yet it suffered relatively large losses due to bad loans.

In late 1994, 26% of the shares of United Mizrahi Bank were sold by the government to a group of private investors who have an option to buy 25% more. For the first time, both the chairman and the president of the Bank are not religious people. It would be

interesting to observe how this will affect the Bank's culture although it is expected that the bank will not abandon its special market niche. In the public opinion survey, this bank was also likened to a bull or bear.

The First International Bank of Israel (FIBI) was formed in 1972 through a merger of the Foreign Trade Bank (1956) with Export Bank (1935) with an investment by the First Pennsylvania Bank and the Israeli government. The foundation FIBI was initiated by the Minister of Finance and supported by the government with the objective of increasing competition in the banking sector. Over the years, the bank was controlled by different groups of investors, both from Israel and abroad but overall it could be classified as the most truly publicly held bank in Israel. Partly because of this and mainly due to a strong top management position, this bank was not involved in the 1983 bank shares crisis. In 1990, a controlling share of the bank's holding company was bought by the Safra family.

Being the youngest and the smallest of the five large banking groups in Israel, FIBI had to establish its position in the system. This was achieved by a dynamic and innovative strategy, including the introduction of new financial services. Its multinational activity has been minimal, thus avoiding losses which have negatively affected the performance of most of the large banks. FIBI's return on equity was, for many years, the highest of the large banks. In the public opinion survey, it was likened to a panther.

4.3. Management Impact

Top management always had a strong impact on the corporate culture of Israel's banks. As the bank was owned by social organizations, this was due to the weak control and limited involvement of the governing bodies. At the privately controlled banks, this was due to the explicit choice of the controlling shareholders. In addition, the influence of the banks' boards of directors was rather limited, at least until the mid-1980s. Thus, while following the social or profit motives of the owners, the personal impact of powerful bank presidents can be easily detected. For instance, emphasis was placed on size and market share rather than profits at two largest banks in the 1970s and early 1980s. Or, focus was on the level and the nature of overseas

expansion by certain banks. Another example is the great respect for the Recanati family at the Israel Discount Bank for over 50 years.

Another point that is worth mentioning is that many of the banks' top managers have previously been high ranking officials of the government or the central bank. For instance, at the end of 1995, all six presidents and chairmen of the three largest Israeli banks belonged to this category. While most of them have been in the present position or in other managerial positions in the private sector for many years, there is an influence of this background on bank corporate culture.

It is interesting to note that, despite the strong position of top management, labor unions have been and still are very powerful at most of the large banks, including the ones that are privately owned. This is due to the historically strong position of labor unions in Israel in general, the size of the banks and the high level of concentration which made strikes a potential threat to the country's payment system. The powerful position of the unions has badly affected banks' efficiency in many ways, especially in their ability of firing and even hiring employees. In periods of rapid technological and financial innovation, the consequences of these limitations are severe.

V. Trends and Expected Developments

5.1. Regional

The recent political developments in the Middle East have not directly affected the banking system nor are they expected to have a direct impact in the foreseeable future. This is because both private and commercial customers in the region prefer to conduct their business with banks of the same culture. For instance as Israeli banks have closed their branches in the West Bank and Gaza Strip, even prior to the present accord, due mostly to security reasons, their place was taken by one local Palestinian bank, one Egyptian bank and four Jordanian banks. Nevertheless, all the banks in the region are expected to benefit from increased economic activity and from more involvement of large multinationals that are already entering the region because of its potential. Increased presence of multinational corporations is evident, especially in Israel which they

have avoided in the past because of the Arab boycott.

Another issue with strong regional connotations, that has been raised many times, is the possibility of establishing an off-shore financial center in Israel. The idea has been raised because of the high level and availability of personnel, computer systems and communication facilities. In the past, this idea was considered impractical because multinationals were not expected to open outlets in such a center because of the Arab boycott. Nowadays, given the changes in the area, this constraint is much less binding.

5.2. Regulatory

In recent years, both deregulation and new regulations have been taking place simultaneously and they are expected to continue in the future. Deregulation was especially effective in the monetary and foreign exchange areas. Examples include the elimination of directed credits (for exports and imports), substantial reduction of reserve requirements and relaxation of various limitations on borrowing and investing abroad. The relaxation of foreign exchange regulations, together with the regional developments mentioned above, have increased the availability of credits and investments from foreign investment banks and other large multinationals. Overall, deregulation has removed bureaucratic barriers, increased competition and helped reduce interest rates and the level of inflation.

Increased regulation is being introduced in various areas related to capital market activities such as mutual fund and provident fund management and financial consulting. The objective of these regulations are two-fold: first, to prevent potential conflicts of interest of commercial banks that directly or indirectly are involved in underwriting, lending, fund management, brokerage and financial consulting. Second, to regulate other financial institutions that, up to now, have hardly been regulated. Overall, banks vigorously object to many of these new regulations, claiming they are exactly in the opposite direction to the deregulation taking place in other countries.

Another area which is subject to tighter regulation and, consequently to sharp debate is direct investment by banks in real

estate. Both the Ministry of Finance and the Bank of Israel demand tighter limitations on such investments, fearing increased concentration, while the banks strongly object. This particular issue has reached the level of the Prime Minister who recently appointed a special committee to investigate it and recommend potential reductions in the maximum level of such holdings. In the meantime, these acts may slow the privatization process since they could reduce the value of the privatized banks.

5.3. Privatization

As mentioned in Section 2.2., the government owns most of the shares of the three large banks. Yet, it has made clear its strong preference for selling its holdings. It has been decided to sell first a controlling share of at least 20% to groups of investors approved by the Bank of Israel. Because of several reasons, including the large size of the necessary investment and some attached limitations, it has been very difficult to locate adequate investors. At the moment, Bank Hapoalim is in the process of evaluation by two potential groups of investors.

Another idea to speed up the privatization process is to distribute free options to all Israeli citizens and allow them to purchase bank shares at reduced prices even before a controlling share of equity is sold. Whatever the method, it is expected that, in the future, all three banks will be out of government control. It is expected that once privatization is completed, the large banks will be even more competitive and market-oriented than they are today.

Can Noise Traders Survive? Evidence from Closed-End Funds

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Abstract

This study[†] presents the results of the first direct empirical tests of the De Long, Schleifer, Summers, and Waldmann noise trader model. The two key propositions of the model are that: (1) noise trader risk is systematic and (2) it is priced in the market. The results presented in this paper do not provide support for either of these propositions. The risk associated with fluctuations in closed-end fund discounts or premiums is, to a large extent, diversifiable and investors who hold closed-end funds do not earn an additional risk premium for shouldering the so-called "noise trader risk." Furthermore, our results suggest that noise traders are driven from the market by rational investors who trade against them. We also do not find a significant relation between proxies for individual investor sentiment and closed-end fund discounts.

I. Introduction

In a recent article, De Long, Schleifer, Summers and Waldmann (DSSW, 1990) propose a model of asset markets in which the actions of irrational noise traders can drive security prices away from their fundamental values for prolonged periods of time. In contrast to arguments of Freidman (1953) and Fama (1965), DSSW (1990, p. 703) claim that sophisticated arbitragers may not drive noise traders from the market because: "The unpredictability of noise traders' beliefs

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^{*} We gratefully acknowledge helpful comments and suggestions of Keith Brown, Wayne Ferson, Lillian Ng, Thomas Shively and Charles Trzcinka. Needless to say, all remaining errors are our responsibility.

creates a risk in the price of the asset that deters rational arbitragers from aggressively betting against them. As a result, prices can diverge significantly from fundamental values even in the absence of fundamental risk. Moreover, bearing a disproportionate amount of risk that they themselves create enables noise traders to earn a higher expected return than rational investors do.” The two key conditions of the noise trader model: (1) noise trader risk is non-diversifiable and (2) therefore, commands a risk premium and are both directly testable propositions.

We employ closed-end fund share prices to test these propositions. Closed-end funds are investment companies with a fixed capitalization of shares that are traded in the secondary market. While the shares of some funds command a premium, closed-end funds typically trade at substantial discounts (frequently in excess of 20 percent) from their net asset values. Moreover, the size of the discounts changes over time and the historical time-series of discounts seem to contain useful information for predicting their future levels.¹ DSSW (1990) claim that, if noise traders constitute a significant fraction of the investors holding the shares of closed-end funds, but not the underlying assets of the funds, then randomly changing ebullience of these traders may explain the time-series behavior of the discounts or premiums. In addition, if we assume that sensitivity to noise traders’ whims varies across funds, then the noise trader model may also explain cross-sectional variation in discounts.

Since easily measurable return series exist for both the underlying assets, closed-end funds offer a unique opportunity to test the noise trader model- a model that theoretically applies to all securities. Given DSSW’s presumption that noise traders hold a more significant proportion of closed-end fund shares than of the underlying fund portfolios, this argument implies that investors who hold shares of closed-end funds should earn average ex post risk premiums that are more than commensurate with the fundamental risks of the funds’

¹ Although the puzzling behavior of the prices of closed-ends funds shares has received scholarly attention over the years, none of the proffered hypotheses taken individually or collectively proved to be capable of explaining both the time-series and the cross-sectional behavior of the discounts and premiums. Rozeff (1911) presents an excellent critical review of the popular explanations for the closed-end fund conundrum.

portfolios because the higher ex ante return required for the systematic risk associated with the random swings in discounts would ultimately leave an imprint in realized returns.

In this study, we test these important implications of the noise trader model on a large sample of closed-end funds during 1965-1990. The results of our analyses do not support the implications of the DSSW model. The evidence shows that a large fraction of the risk caused by random changes in discounts is easily diversifiable and owners of closed-end funds appear to earn average risk premiums that are commensurate only with the systematic risks of the funds' underlying portfolios. Our results also suggest that noise traders are driven from the market since sophisticated investors appear to capitalize on deviations from fundamental values. Moreover, we do not find a statistically significant relationship between the monthly discount-induced returns of closed-end funds and IPO activity or other frequently used proxies for individual investor sentiment. Our study represents the only direct test of the DSSW model. Previous studies such as those by Zweig (1973), Malkiel (1977), Lee, Schleifer and Thaler (1991), Chopra, Lee, Schleifer and Thaler (1993a, 1993b) and Chen, Kan and Miller (1993a, 1993b) are tests of the investor sentiment hypothesis, rather than being direct tests of the DSSW model which states that irrational investors are not driven from the market (i.e., investor sentiment risk is priced).

The balance of the paper is organized as follows: in Section I, we provide a brief summary of the DSSW noise trader model and specify its testable implications for closed-end funds. Section II describes our methodology and the data. In Section III, we report the results of the empirical tests that address the nature of the risk imparted by fluctuating discounts, and examine the returns garnered by the funds' shareholders. Section IV presents the results of the analyses that deal with return predictability and the relationship between noise traders and sophisticated investors. In Section V, we examine the investor sentiment hypothesis tested by previous authors and reconcile the results of our tests with those of previous studies. Finally, the paper closes with a summary of our findings and conclusions.

II. The Noise Trader Model

De Long, Schleifer, Summers and Waldmann (1990) assume that securities markets contain two types of traders: (1) rational or sophisticated investors; and (2) irrational investors who trade on overly bullish or bearish investment sentiments. They also assume that changes in the sentiments of noise traders are cross-sectionally correlated and therefore, actions of individual traders do not cancel each other out. Furthermore, unpredictable changes in the sentiments of noise traders are not confined to the prospects of a particular asset. They permeate the securities market. However, the influences of noise traders' actions on the prices of securities need not to be uniform. The prices of assets that are heavily owned by irrational investors (relative to the positions of sophisticated investors) would tend to be more responsive to the random shifts in investor sentiment and would diverge from their fundamental values.

A key element of the DSSW analysis is that sophisticated investors are assumed to have relatively short investment horizons and cannot fully arbitrage deviations of securities prices from their fundamental values. This is because arbitragers face the risk that noise traders' sentiment changes unpredictably and instead of reverting to its mean may move against them at the time sophisticated traders have to unwind their arbitrage positions. In other words, DSSW claim that random shifts in noise traders' sentiment are a source of non-diversifiable risk that commands a risk premium in the securities market.

By postulating changing investor sentiment as an additional source of systematic risk, the noise trader model implies that securities in which irrational investors are active will tend to trade at prices below their fundamental values. Moreover, the model predicts that noise traders can earn higher rates of return than sophisticated investors if they concentrate their holdings on securities that have a higher propensity to be affected by the vagaries of investor sentiment.

The noise trader model provides a plausible explanation for the puzzling explanation of discounts and premiums on closed-end funds. If one is willing, suggested by DSSW (1990), to make the assumption that individual investors as a group constitute a good proxy for the "noise traders" in their theory, then the differences between the prices

² For example, see Weiss (1989).

of the funds' shares and the net asset values of their portfolios can be attributed to changes in the sentiment of individual investors. Individuals hold a much larger fraction of the outstanding shares of closed-end funds than institutional investors.²

The assets in the funds' portfolios, on the other hand, are likely to be less sensitive to ebullience of individual investors. The net asset values would tend to approximate the fund's fundamental values. According to the noise trader model, a typical closed-end fund shares would sell at a discount from its net asset value because the fund's shares are subject to larger systematic risk than its underlying portfolio. The theory also asserts that unpredictable changes in the irrational beliefs of individual investors would produce random fluctuations in discounts and premiums, which constitute a source of non-diversifiable risk and, therefore, command a risk premium in the market.

III. Components of Closed-End Fund Returns

3.1. Methodology

The rate of return garnered by investors who hold shares of a closed-end fund can be partitioned into two components: the return on the fund's assets and the return that arises from changes in discounts and premiums. More specifically, as shown in Appendix A, the continuously compounded return on a fund's shares is equal to the sum of the continuously compounded return on the fund's assets and the continuously compounded return that is spawned by the changes in discounts and premiums. That is,

$$\ln(1 + R_i) = \ln(1 + R_N) + \ln \left[\frac{k_{t+1}N_{t+1} + D_{t+1}}{k_t N_{t+1} + k_t D_{t+1}} \right] \quad (1)$$

where R_i and R_N are the single period rates of return from t to $t+1$ on a closed-end fund's shares and its portfolio, respectively. N_t and D_t are the net asset value and dividends per share at time t .³ k_t is the ratio of share price to net asset value at time t . Alternatively, $k_t - 1$ is the percentage discount at time t .

³ Net asset value is the value of the underlying portfolio after management fees and other fund expenses are deducted.

It is important to note that the last term on the right-hand side of (1) is driven primarily by changes in discounts and premiums. It captures the effects of changes in investor sentiment on the share prices of closed-end funds that is posited by the noise trader model of DSSW when R_N is unaffected by irrational sentiment. For example, in a period in which the fund does not make any distribution, the value of the last term is solely determined by the changes in discounts and premiums. When a fund is selling at a discount (premium), and a distribution is made, the last term will be positive (negative) if the discount or premium remains unchanged. This reflects the advantage (disadvantage) of buying dividend-paying securities at a discount (premium). However, if a dividend is paid while a fund's shares are trading at a discount, and both the net asset value of the fund and its share price fall by the amount of the dividend, then the discount will increase and there will be no advantage to buying the dividend-paying closed-end fund at a discount.⁴ The return generated by the change in the discount (the last term in (1)) will be zero.

3.2. Data

To test the implications of the noise trader hypothesis, we constructed a time series of continuously compounded returns on the shares (share return), on the underlying assets (NAV return) and the returns generated by changes in discounts or premiums (discount return) for a sample of closed-end funds. The necessary information for constructing the return series came from three sources. Returns on the shares of closed-end funds were obtained from the Center for Research in Security Prices (CRSP) daily files. Data on the net asset values and the corresponding discounts or premiums were collected from *The Wall Street Journal* or *Barron's* for the Friday closest to the end of each calendar month.⁵ In general, the observations on

⁴ This increase is labeled as the "ex-dividend effect" by Bonser-Neal, Brauer, Neal and Wheatley (1990).

⁵ In general, *The Wall Street Journal* publishes the net asset value, share price and discount for Friday's close on Monday for equity funds and on Wednesdays for bond funds. In most cases, the Friday closing price closest to the month-end was chosen to represent end-of-month values. However, in the case of December, the closest Friday to month-end December was used, to ensure that any January seasonality was captured in the "quasi-January" return.

monthly net asset values and discounts were within three calendar days of the month-end. Information about the funds' dividends and ex-dividend dates was obtained from Moody's Dividend Record and Standard and Poor's Dividend Record.⁶

The daily returns on funds' shares were converted to "monthly" returns by setting the beginning and end of each month on the Friday closest to the calendar month-end. This procedure ensures that the "monthly" share returns are measured contemporaneously with the "month-end" data on net asset values and discounts. The information on share returns, net asset values, dividends and discounts were used to calculate the discount return and the return on the underlying portfolios of the funds⁷

For reason that will become apparent in our discussion of the statistical analyses, a fund had to have minimum of five years of monthly data to be included in the sample. The Wall Street Journal and Barron's started to publish information on the net asset values

⁶The Center for Research in Security Prices (CRSP) considers dividends to be distributed on the CRSP tapes on the ex-dividend date. Furthermore, AICPA's Audits of Investment Companies (1987) guide notes that most closed-end investment companies record the distribution liability on the ex-dividend date. Therefore, distributions should be impounded into share returns (CRSP data) and net asset values (The Wall Street Journal data) on the same date. The hand-gathered data was checked to ensure its validity. For example, when inputting net asset values and share prices from The Wall Street Journal information, an implied discount was calculated automatically which was compared to the reported discount. In addition, filters were run on all of the data to check for outliers which were then re-evaluated to ensure validity. Occasionally, a fund would not have data available for a particular week. In such cases, the next Friday closest to month-end was used for net asset value and discount information. If that Friday's information was also missing, the Friday in the other direction was used as a proxy for quasi-month-end data. If information was unavailable for a fund within one week from the quasi-monthend, the observation was coded as missing.

⁷The data was filtered to eliminate the known systematic behavior of closed-end funds around their initial public offerings and/or restructurings. Weiss (1989) and Peavy (1990) have documented the peculiar behavior of closed-end fund share returns around their initial public offerings. Similarly, Brauer (1984) and Brickley and Shallheim (1985) found that when funds restructure, the discounts are eliminated as share price moves to (approximately) net asset value. Specifically, no fund is included in the analysis in the six months prior to the open-ending announcement. For funds which do not open-end, but otherwise drop from the sample (either through a merger with an operating company or any other unspecified reason), the returns are ignored in the six months prior to the action.

and discounts of closed-end funds in July 1965. The sample contains 57 closed-end funds over the period from July 1965 to December 1990.⁸ All of the 57 funds were not in operation throughout the whole time period. The number of funds in the sample increases from a minimum of 17 during 1965-1970 to a maximum of 48 funds in the years 1976 and 1977. There is a total of 10,658 monthly observations on 25 bond funds, 15 diversified stock funds, three non-diversified stock funds and 14 specialized or international funds.⁹ The sample of closed-end funds and their classification as assigned by Wiesenberger's Investment Companies Services is provided in Appendix B. Descriptive statistics on the monthly share, net asset values and discount returns of the sample of closed-end funds are reported in Table 1.

Table 1: Descriptive Statistics for Monthly Returns
(in percent per months)

Variable (n=10,658)	Maximum Value	Upper Quartile	Median	Lower Quartile	Minimum Value	Mean
Share Return	51.58	3.64	0.74	- 2.12	- 69.31	0.81
NAV Return	61.26	2.78	0.76	-1.19	-91.69	0.76
Discount Return	63.38	2.38	-0.00	-2.32	-78.45	0.06

Note: Share return refers to the return on the closed-end fund shares. NAV return refers to the return earned on the portfolio of securities held by the fund. Discount return refers to the return due to changes in the closed-end fund discounts or premiums. The returns are measured on a continuously compounded basis as shown in equation (1).

⁸ Cyrups Corporation technically met the requirements for inclusion in the sample. However, the fund was excluded because of the extremely small (even negative) net asset values which imply very large (infinite) premiums. Similarly, American South Africa (ASA Ltd.) technically appeared to meet the requirements for inclusion. However, (as noted in Bonser-Neal, Brauer, Neal and Wheatly (1990)) the reported net asset values for ASA are converted into U.S. dollars at the South African government controlled commercial exchange rate, not the free-market rate. Therefore, ASA was excluded from the final analysis.

⁹ Classifications were taken from Wiesenberger's Investment Companies. For funds that switch classification (e.g. non-diversified fund becoming diversified fund), the majority classification was used to compute these figures. International funds were included as specialized funds regardless of Wiesenberger's classification (the nearl international funds were often classified as diversified funds by Wiesenberger's).

IV. Diversifiability of Return Variability Associated with Discounts

The noise trader model asserts that the variability of returns induced by random changes in investor sentiment is non-diversifiable and, therefore, commands a risk premium in the market. If the returns induced by changes in discount or premiums are propelled by non-diversifiable vagaries of investor sentiment while the returns on the funds' assets move according to their fundamentals (or are influenced by irrational beliefs of noise traders to a lesser degree), then the required rates of return on the funds' shares would be larger than the expected returns on the funds' portfolios. Therefore, the noise trader model implies that over reasonably long time periods, investors who hold closed-end funds' shares would actually earn larger returns than the returns generated by the underlying assets of the funds. This incremental return would constitute compensation for bearing systematic investor sentiment risk. Thus, a direct test of the noise trader theory can be framed in terms of the investment performance of the funds' shares vis-a-vis the performance of the underlying portfolios. The theory predicts that the shares of the closed-end funds would yield larger returns adjusted for fundamental risks than the underlying assets. On the other hand, the data would lead to rejection of the noise trader hypothesis as an explanation for the closed-end fund puzzle if the investment performance of the funds' portfolios over relatively long time periods is at least as good as the performance of the funds' shares.

A second test suggested by the theory is that returns induced by changes in discounts or premiums should be highly correlated across funds. If they are not, then the noise trader risk is not systematic and should be easily diversifiable. The results of these empirical tests are presented next.

4.1. Investment Performance of Funds' Shares

One of the insightful features of DSSW's (1990) theory is that noise traders can systematically earn higher returns than professional investors and may, therefore, survive in the market. The model specifically posits that noise traders would be compensated for incurring investor sentiment risk—a risk they create by their own actions based on irrational beliefs. Thus, according to the theory, shareholders of closed-

end funds should garner returns that they are typically larger than the risk-adjusted returns on the funds' portfolios. We test this hypothesis first by comparing the raw returns (unadjusted for risks) on the funds' shares and the returns on the underlying portfolios of the funds. The noise trader model predicts that the realized raw returns on the shares would be larger than the returns on the funds' assets unless the shares have lower systematic risks than the funds' portfolios.

A potentially complicating factor arises from the supposition that investors who buy closed-end funds at discounts should earn larger realized returns than investors in the underlying portfolio due to the "extra" dividend yield. Clearly, this cannot hold over the entire life of a closed-end fund since closed-end funds initially sell at premiums (i.e., they are load funds) and liquidate at net asset value. However, if we assume some investors wait until funds are selling at a discount than the issue, some investors wait until funds are selling at a discount to enter a market, then the issue becomes the relative importance of the "extra" dividend yield versus changes in the discount. A simple and intuitive measure of the extra dividend yield for closed-end fund shares (dividend/price) and the dividend yield for the underlying portfolio (dividend/NAV). Over our sample period, the monthly mean difference is 0.00056 with a variance of 0.000011832. In contrast, the absolute value of the discount change return, i.e., the additional share return induced by changes in discounts, is 0.0239 with a variance of 0.001287.¹⁰ The average magnitude (variance) of the discount changes outweighs the small difference in dividend yields by 5,900% (10,900%). Thus, the difference in dividend yields is relatively meaningless compared to the relative importance of innovations in discounts.

Table 2 presents the results of three statistical tests comparing raw share and net asset value returns. The extremely small values of t- and z- statistics fail to reject the null hypothesis that the average realized return on the funds' shares is equal to the return on the funds' portfolios. Clearly, the "extra" dividend yield does not significantly affect the return differences over long periods of time.¹¹

To frame a more refined test, we estimate Jensen's (1968)

¹⁰Specifically, the discount change return is equivalent to the discount return absent in any dividends.

¹¹In addition, it is important to note that the "extra" dividend yield is negative for funds selling at a premium.

Table 2: Statistical Tests for Difference in Share and Net Asset Value Returns

	Difference in Means (1) t-stat (p-value)	Median Test (2) z-stat (p-value)	Paired T-test (3) t-stat (p-value)
All Funds	0.75 (0.45)	- 0.36 (0.72)	1.18 (0.24)
Bond Funds	0.19 (0.85)	0.50 (0.61)	0.28 (0.78)
Div. Stock Funds	0.35 (0.72)	- 0.55 (0.58)	0.57 (0.57)
Non-Bond Funds	0.74 (0.46)	- 0.77 (0.44)	1.19 (0.23)

Note: This table reports the results of three tests: 1) difference in means for closed-end fund share returns and net asset value returns, 2) median test for share and net asset value returns and 3) paired t-test for difference in share and net asset value returns.

1. The test examines assets in the mean share return from the mean net asset value return.
2. The test pools share and net value returns, then examines the number of times share returns are greater than the number of times net asset value returns are greater than the median return. For all fund analysis, share returns are greater than the median in 5,316 cases and net asset values are greater than the media.
3. The test examines if the mean discount return (share return less net asset value return) differs from zero. As reported in Table 3, the mean discount return (for all fund analysis) .00056 per month

measure of investment performance as the conditional multi-beta asset pricing model originated by Ferson and Harvey (1991). For the shares of each fund, we generate two estimates of Jensen's alpha. The first estimate is based on the assumption that risk premiums of economic factors vary over time but the fund shares' sensitivities to the factors (betas) remain constant. The second estimate is obtained from a model where both risk premiums and betas change over time.

Our analyses are based on the same economic risk variables that were used by Ferson and Harley (1991). Specifically, our model includes the following economic factors: (1) the excess return on the

CRSP value-weighted monthly index (XVW); (2) seasonally adjusted monthly real per capita growth of personal consumption expenditures for non-durables (CGNON); (3) the difference between the monthly returns on low grade bonds and long-term U.S. government bonds (PREM); (4) monthly changes in the difference between the average yield of a 10-year Treasury bond and a three-month Treasury bill (ASLOPE); (5) the unexpected rate of inflation (UI); and (6) the difference between the return on a one-month Treasury bill and the monthly rate of inflation (REALTB).¹² Previous empirical studies on asset returns have documented that these economic factors command non-zero risk premiums.¹³

Following Ferson and Harley (1991), we use a three-step procedure to estimate betas and factor risk-premia. First, we estimate monthly factor betas for size, industry, and bond portfolios with data from previous 60 months. The size portfolios are based on value-weighted returns of the NYSE stocks. Industry portfolios are also based on NYSE stocks and they are value-weighted. These 12 portfolios are formed by grouping NYSE stocks according to 2-digit SIC codes. Finally, we generate time-series of returns on three bond portfolios. The returns on two bond portfolios—a long term government bond and a Treasury bill with the closest maturity to six months—are constructed from CRSP data. The third portfolio contains corporate bonds. We use Ferson and Harvey's data on corporate bond returns and extend their return series to the end of 1990 by using the returns on the Salomon Brothers Corporate Bond Index.¹⁴ The data on the

¹²XVW and SLOPE are essentially extensions of the Ferson and Harvey (1991) data (source CRSP and Federal Reserve Bulletin, respectively). CGNON differs from Ferson and Harvey data primarily by its source - Citibase vs. Commerce Department. Similarly, REALTB was extended with Citibase inflation data and CRSP T-bill return data. UI was generated from a time-series model on inflation (following Ferson and Harvey) for the period 1959:9-1990:12. PREM was extended with Merrill Lynch's All High Yield Bond Return Index. We thank Martin Fridson, Eud Ronn and Merrill Lynch for providing us with this data.

¹³As noted in Ferson and Harvey (1991), see Floger, John and Tipton (1981), Chan, Chen and Hsieh (1985), Chen, Roll and Ross (1986), Sweeney and Warga (1986), Shanken and Weinstein (1987) and Burmeister and McElroy (1988) for an analysis of these variables.

¹⁴We thank Wayne Ferson for providing us with the data from his study. See Ferson and Harvey (1991) for a further discussion of their data. We thank Lori Glickman-Laueano and Salomon Brothers for providing us with the corporate bond returns.

monthly returns of these 25 portfolios span May 1959-December 1990. In the first stage of the analysis, we estimate the sensitivities of these portfolios to the six economic factors by the following regression:

$$R_{it} = \alpha + \sum_{j=1}^6 \delta_{jt} \beta_{ij,t-1} + \varepsilon_{it} \quad (2)$$

where R_{it} is the excess return on portfolio i in month t and δ_{jt} is the value of economic variable j in month t . $\beta_{ij,t-1}$ is the time-varying beta estimate for portfolio i , economic variable j and month t . The second stage entails running a cross-sectional regression between excess returns of size, industry, and bond portfolios and their estimated betas. In other words, the coefficients of the following regression model are estimated each month:

$$R_{it} = \lambda_{0t} + \sum_{j=1}^6 \lambda_{jt} \beta_{ij,t-1} + \varepsilon_{it} \quad (3)$$

where $\beta_{ij,t-1}$ is the beta estimated in the time-series regression (2). λ_{jt} is the estimated realized risk premium associated with economic variable j for month t . Finally, in the third state we estimate the following time series regression of excess returns on closed-end fund shares on the economy-wide risk premiums to obtain unconditional beta estimates and the Jensen's alpha for each fund:

$$R_{it} = \alpha_i + \sum_{j=1}^6 \lambda_{jt} \beta_{ij} + \varepsilon_{it} \quad (4)$$

where R_{it} is the excess share return, λ_{jt} is the estimated risk premium associated with economic variable j at time t and α_i is the estimated abnormal return (ignoring investor sentiment risk) for a shareholder of closed-end fund i .

To allow for changes in betas over time, we repeat the procedures with rolling betas. Specifically, we estimate 60-month ($t = -1, \dots, -60$) moving betas for each fund. The regression is identical to the one shown in (2) except instead of size, industry and bond portfolios we use returns on the closed-end funds' shares and in place of the values

of the economic factors we insert the estimated risk premiums that were obtained from equation (3). The portion of the excess returns not explained by variation in fundamental risk factors is given by the difference between realized excess returns on the funds' shares and, the return estimated from the model. Thus, the monthly investment performance of the shares of each fund can be calculated by the following equation:

$$\alpha_{it} = R_{it} - \sum_{j=1}^6 \lambda_{jt} \beta_{ij,t-1} \quad (5)$$

The average of the monthly coefficients, α_{it} provides for and estimates each fund's abnormal return adjusted for both the α_{it} time-variation in betas and the risk premiums associated with fundamental risks in the economy. If investors in closed-end fund shares typically earn a risk premium for the investor sentiment risk they bear, then the average should be significantly positive.

The monthly averages of the versions of Jensen's alpha coefficients for individual funds are provided in Appendix C with averages aggregated for all funds and across fund types reported in Table 3. The results indicate that the average Jensen's alpha is not significantly different from zero for both the time-varying beta and the constant beta models for all funds and for the three fund types. In fact, as shown in Appendix C, for the individual funds the performance measures based on time-varying betas, risk premiums are not significantly different from zero at the 0.05 probability level. Similarly, the Jensen's alphas computed from the constant beta model are not significantly different from zero for most of the funds. The only two statistically significant performance measures are wrong since they are negative. More important, the data does not reject the null hypothesis that the Jensen's alpha of a closed-end fund share is equal to the alpha of the fund's underlying portfolio (i.e., alpha estimated from NAV returns) for any of the funds in our sample.¹⁵ These

¹⁵We estimated the alphas for the underlying portfolios of the funds and the discount return (the discount return alpha is simply the difference between the share return and net asset value return alphas). The alphas of the funds' portfolios were not significantly different from zero. The results indicate that the funds' assets garnered average risk premia that were commensurate with their sensitivities to the fundamental economic risk factors. Furthermore, in no case did the abnormal share return differed significantly from the abnormal net asset value return (i.e., in case if the discount return alpha differs significantly from zero at traditional levels). To conserve space, we do not report these results. They are available from the authors upon request.

results indicated that if the fund's discounts or premiums are indeed driven by investor sentiment, the risk associated with the whims of investor sentiment does not command a detectable risk premium.

**Table 3: Average Abnormal Return-Passive Strategy
(Average t-statistic)**

	α_1	α_2
All Funds	-0.0045 (-0.47)	-0.002 (-0.51)
Bond Funds	-0.0030 (-0.81)	-0.0032 (-0.98)
Stock Funds	-0.0058 (-0.17)	-0.0008 (-0.08)
Diversified Stock Funds	-0.0085 (-0.60)	-0.0007 (-0.19)

Average Jensen coefficients are presented for closed-end fund shares. α_1 is estimated with time-varying betas; α_2 is estimated with constant betas.

Fund Jensen coefficients based on time-varying betas estimated from computing the mean of the difference between the realized return and the portion of return explained by risk:

$$\alpha_{it} = R_{it} - \sum_{j=1}^6 \lambda_{jt} \beta_{ij,t-1} \quad \alpha_{it} = \frac{\sum_{t=1}^T \alpha_{it}}{T}$$

Jensen coefficient based on constant betas are estimated from the following regression:

$$R_{it} = \alpha_{2i} + \sum_{j=1}^6 \lambda_{jt} \beta_{ij} + \varepsilon_{it}$$

The mean coefficient across funds are reported in the table.

The results of these tests are consistent across all fund types in our sample. In short, regardless of how one frames the test, the data on closed-end funds do not provide any evidence that the risk created by actions of noise traders commands a risk premium.¹⁶

¹⁶ The results of our analyses of the investment performances of individual closed-end funds with Thompson's (1978) findings. In evaluating investment performances of 23 funds in his sample, Thompson uses the two-parameter CAPM as the benchmark and reports that none of the funds in his sample has outperformed the benchmark.

4.2. Discount Return Correlations

If the return variability induced by changes in discounts or premiums is diversifiable, it would not command a risk premium. The noise trader theory claims that variability of discount-induced returns constitutes a systematic risk which implies that these returns would be highly correlated across funds. However, our data on closed-end funds do not reveal any reliable evidence of a risk premium associated with random movements in the funds' discounts. Thus, our results suggest that most of the variability in the discount returns may be fund specific and therefore diversifiable.

To determine whether the results induced by discounts or premiums fluctuate systematically across funds, we estimate the Pearson pairwise correlation coefficient for the discount returns of all the funds in our sample.¹⁷ While a more detailed set of results on individual funds is presented in Appendix D, we summarize the average observation-weighted correlation coefficients by different fund groups in Table IV.¹⁸ Not surprisingly, pairwise correlations tend to be higher within a class of funds than across different types of closed-end funds.¹⁹ For example, the average pairwise correlation among bond funds is 0.26. On the other hand, the average correlation between bond and stock funds is only 0.11. The average pairwise correlation of discount returns across all funds in our sample is less than 0.16.

These low correlation coefficients raise questions about non-diversifiability of the investor sentiment risk. However, comparisons of the discount-driven return volatilities of individual funds with the return variability of portfolios of funds would lead to more definitive conclusions. Accordingly, we calculate the variance of the discount-induced returns on an equally-weighted portfolio

¹⁷ Virtually all previous studies on closed-end funds have focused on the level of discounts (or average discounts) and changes in discounts. For investors, the relevant variables are the effect of discounts or premiums on the rate of return of a fund's shares and its systematic risk -not the level of the discount. Correlations of discounts or changes in discounts across different closed-end funds may produce inaccurate conclusions about the potential diversifiability of the risk that are caused by random changes in investor sentiment. Consequently, the analysis is based on the return from changes in discounts.

¹⁸ Since overlapping periods vary across funds, observation-weighting is used to calculate "averages". For example, if a fund has 100 overlapping observations with fund A and 50 with fund B, the fund B correlation will be given half the weight of the fund A correlation in computing the average.

¹⁹ Pairwise correlations for all funds are available from the authors upon request

Table 4: Observation-Weighted Discount Return Correlations

	All Funds	Bond Funds	Stk funds	Div Stk	Spec Stk
All Funds	0.1554	0.1929	0.1188	0.1244	0.1135
maximum	0.2654	0.3668	0.2469	0.2638	0.2300
minimum	-0.1046	-0.1672	-0.1008	-0.1710	-0.0506
Bond Funds	0.1929	0.2624	0.1147	0.0996	0.1278
maximum	0.2654	0.3537	0.1798	0.1957	0.2300
minimum	0.0874	0.1057	0.0362	0.0031	0.0575
Stk Funds	0.1188	0.1147	0.1223	0.1437	0.1001
maximum	0.2652	0.3668	0.2469	0.2638	0.2300
minimum	-0.1046	-0.1672	-0.1008	-0.1710	-0.0506
Div Stk	0.1244	0.0996	0.1437	0.1810	0.105
maximum	0.2651	0.3668	0.2469	0.2638	0.2300
minimum	-0.1046	-0.1672	-0.0212	-0.0794	0.0351
Spec Stk	0.1135	0.1278	0.1001	0.1054	0.0954
maximum	0.2137	0.2913	0.1630	0.2116	0.2168
minimum	-0.0389	-0.0884	-0.1008	-0.1710	-0.0506

Note: Observation-weighted average correlations for the return due to changes in discounts and premiums are summarized by fund type¹⁰. In addition, the observation-weighted minimum (and maximum) average correlations for a specific fund within the classification is reported. For example, the observation-weighted average discount return correlation of bond funds with diversified stock funds was 0.0996. The bond fund "1838 Bond-Deb." (Federated) had the lowest (highest) observation-weighted average correlation with diversified funds at .0031 (.1957). Stock funds include all non-bond funds.

¹⁰ Since overlapping periods vary across funds, observation-weighting is used to calculate "averages".

¹¹ Classifications taken from Wiesenberger's. In some cases, funds changed classification; in such cases the dominant classification was used.

of all the closed-end funds (naive diversification) in our sample. It is equal to 0.000299. For comparison, the average variance of the discount returns of individual funds is 0.003033. These estimates indicate that, even with a naive investment strategy, sophisticated arbitragers can typically diversify away over 90 percent of the fund-specific variability in discount returns. The opportunities for diversification are equally plentiful even if traders were to confine their investment positions only to specific fund types. While the average variance of the discount returns of bond funds is 0.001188, the variance of an equally-weighted portfolio of bond fund is 0.000377. Similarly, the average variance of diversified stock funds and the variance of an equally-weighted portfolio of diversified stock funds are 0.002983 and 0.000507, respectively. For specialized closed-end funds, the average fund variance is 0.005449, while the variance of an equally-weighted portfolio of specialized funds is 0.001439. Of course, there is no reason to expect that arbitragers would limit their positions to specific fund groups or use a naive diversification strategy to profit from irrational actions of the noise trader.

These results are consistent with our findings in the previous section. If the risk associated with random changes in discount or premiums can be diversified away, it would not command a premium in the market. Indeed, our analyses did not disclose a measurable risk premium that can be attributed to investor sentiment risk.

V. Predictability of Returns

A key proposition of the noise trader model is that sophisticated traders who have short investment horizons cannot fully arbitrage the deviations of close-end share prices from their fundamental values. As DSSW (1990, p. 727) claim: "Betting against such perceived mispricing requires bearing a lot of risk. Even if the price is too high now, it can always go higher in the short run, leading to the demise of an arbitrageur with limited resources or a short time horizon." Needless to say, it is virtually impossible to empirically determine the investment horizons of sophisticated investors. However, the time series behavior of share, net asset value, and discount returns (the rates of returns given in equation (1)) provide useful information about the ability of sophisticated investors to offset the irrational positions of noise traders.

To examine the predictability of each of the three returns separately, we employ the methodology originated by Jegadeesh (1990). Jegadeesh's method of estimating serial correlations with a cross-sectional multivariate

regression has two important advantages over conventional univariate time series analysis and variance ratio tests. First, the procedure does not require long time-series data on individual funds. Thus, all closed-end funds that have been in operation for 60 months or longer can be included in the analysis. Second, the method avoids the difficulty associated with an aggregating serial correlation estimates across funds when the parameter estimates are cross-sectionally correlated.

Suppose that the return on shares of the *i*th closed-end fund in time period *T* consists of unconditional expected and unexpected components:

$$\tilde{R}_{it} = E(R_i) + \tilde{\eta}_{it} \tag{6}$$

where $E(R_i)$ is an unbiased estimate of the unconditional expected return of security *i* obtained from a time interval that excludes period *t*-*J* through *t**, and $\tilde{\eta}_{it}$ is the unexpected return.²⁰

If historical returns contain useful information for predicting future return, the slope coefficients of the following cross-sectional regression equation would be significantly different from zero (see Jegadeesh, 1990 for proof).

$$\tilde{R}_{it} - E(R_i) = a_{0it} + \sum_{j=1}^6 a_{jt} R_{it-j} + \tilde{u}_{it} \tag{7}$$

The serial correlations in funds' portfolios can also be estimated by replacing the corresponding share returns with the returns on funds, net asset values in equation (7).²¹ Similarly, the predictability of changes in investor sentiment can be determined by estimating the regression equation with discount-driven returns instead of share returns.

Using monthly data, we estimate the regression equation separately for each component of equation (1). To capture both short- and long-term dependencies in closed-end fund returns, the difference between the realized

²⁰ We also examined $E(R_i)$ with the multi-beta conditional pricing model of Ferson and Harvey (1991) where $E(R_i)$ is allowed to change each month. Since the results are very similar, we only present findings from the simpler model.

²¹ Some closed-end funds specialize in holdings of restricted securities. In these cases, net asset values are determined by the board of directors. Such asset values may be stale or inaccurate, causing net asset values appear to exhibit patterns of serial correlations due to improper valuation. Likewise, international funds may suffer from a similar non-synchronous trading problem.

and expected return in month T is regressed on the realized returns of three previous months, and the monthly return two and three years prior to month t . Algebraically, the regression model has the following functional form:

$$\tilde{R}_{it} - E(R_i) = a_{0t} + \sum_{j=1}^3 a_{jt} R_{it-j} + a_{4t} R_{it-24} + a_{5t} R_{it-36} + \tilde{u}_{it} \quad (8)$$

where $E(R_{it})$ is the mean monthly share, net asset value or discount return of fund i in the sample period $t+1$ to $t+24$.

The coefficients of the cross-sectional regression model are estimated each month for 246 months. The number of funds used in the monthly regression changes over time because all 57 funds were not in operation throughout 1965-1990. Following the methodology of Fama and MacBeth (1973), the averages of the monthly regression coefficients over the whole sample period are evaluated. Given the widely documented anomalies associated with securities returns in the first month of the calendar, we repeat the procedure separately for January on February-to-December returns.

Table 5 presents the estimated coefficients of equation (8), the t -statistics and average adjusted R^2 's for monthly returns on closed-end funds, net asset values returns, and the returns that are induced by changes in discounts or premiums.²² The t -statistics of the coefficients are calculated by the following formula:

$$t(\hat{a}_j) = \frac{\bar{a}_j}{s(\hat{a}_j) / \sqrt{n}} \quad (9)$$

where n is the number of estimates of each coefficient.

The results indicate that the monthly returns on closed-end fund shares exhibit highly significant negative correlation with their returns in the two preceding months. While the t -statistics of the slope coefficients for returns in month $t-1$ and $t-2$ show that both coefficients are significantly negative at the 0.01 probability level, the serial correlation between adjacent monthly returns appears to be particularly strong.²³ It is also evident that the serial correlations are not a product of anomalous securities returns in January. The results remain virtually unchanged when January observations are excluded from the analysis.

²² For share and net asset value returns, the analysis is performed based on excess (i.e., adjusted for the risk-free rate) returns. Since the return due to changes in the discount or premium is the difference between share returns and net asset value returns, there is no need to adjust for the risk-free rate.

Thus, it is safe to conclude that the returns on closed-end fund shares exhibit predictable reversions over relatively short time periods.

When the two components of share returns are analyzed separately, it becomes clear that the negative serial correlations in the returns of fund shares are driven by the returns that arise from the monthly fluctuations in discount and premiums. In the regression of net asset value returns, only the 36-month lagged return is statistically significant and its coefficient is positive. Although this result conflicts with much of the previous evidence on long-term mean reversion in portfolio and index returns, it is consistent with Jegadeesh's (1990) findings with individual securities. In any event, the results clearly indicate that short-term mean reversion in the returns on the funds' shares are not caused by the behavior of the returns on the funds' portfolios. In contrast, as the data in the bottom panel of the table show, the first three slope coefficients of the regression equation based on discount returns are significantly negative. In other words, the returns included by the fluctuations in discounts and premiums are the principal source of predictability in the returns on closed-end funds' shares. The monthly discount returns are partially predictable from their relatively short history (three months). Both the magnitudes of the coefficients of the lagged returns and their t-statistics decline monotonically. The return in month $t-1$ has the greatest impact and predictive power for month t returns.

We should note that the cross-sectional regression model in (8) is based on the assumption that the serial correlation coefficients at various lags are the same for all types of funds. However, the bias that may be introduced by this assumption does not appear to be serious. As shown in Table 6, the principal implications of our results remain unchanged when we estimate the regression separately for three different fund groups in our sample. The short-term predictability in the discount-included returns is common to all three fund groups.

²³These results are qualitatively very similar to the auto-regression coefficients estimated for individual funds with a time-series model. The first and second order auto-correlation coefficients of discount returns are uniformly negative for all 57 funds, with first order auto-correlation being statistically significant at the 0.05 level for 45 closed-end funds and the second order auto-correlation coefficient being statistically significant for 23 funds. Fisher's pooling test based on the t-statistics of the auto correlation coefficients of all 57 funds at lags of 1, 2, 3, 24 and 36 months produce Chi-square statistics that are significant at the 0.0001 probability level for lags of 1, 2 and 3 months. The chi-square statistics for lags of 24 and 36 months are not statistically significant.

Table 5: Monthly Regression Results

$\tilde{R}_{it} - E(R_i) = \alpha_{0t} + \sum_{j=1}^3 a_{jt} R_{it-j} + a_{4t} + R_{it-24} + a_{5t} R_{it-36} + \tilde{u}_{it}$							
Lag		1	2	3	24	36	
	$\hat{\alpha}_0$ (t-stat)	\hat{a}_1 (t-stat)	\hat{a}_2 (t-stat)	\hat{a}_3 (t-stat)	\hat{a}_4 (t-stat)	\hat{a}_5 (t-stat)	Adj.R ²
Closed-End Fund Share Return							
Jan.-Dec.	-0.0014	-0.2200	-0.0784	-0.0387	0.0141	0.0267	0.2053
n=246	(-0.45)	(-9.59)	(-3.41)	(-1.71)	(0.55)	(1.10)	
Jan.	0.0291	-0.3795	-0.1637	-0.1533	0.0874	-0.0595	0.2676
n=20	(2.35)	(-7.46)	(-1.50)	(-2.04)	(1.16)	(-1.01)	
Feb.-Dec.	0.0041	-0.2059	-0.0708	-0.0286	0.0076	0.0343	0.1998
	(-1.32)	(-8.45)	(-3.06)	(-1.20)	(0.28)	(1.33)	
Net Asset Value Return							
Jan.-Dec.	-0.0009	-0.0331	-0.0080	-0.0064	-0.0274	0.0799	0.4259
n=246	(-0.34)	(-1.03)	(-0.25)	(-0.20)	(-0.86)	(2.70)	
Jan.	0.0089	-0.2122	-0.1098	-0.0169	0.0907	0.1339	0.4548
n=20	(0.88)	(1.61)	(-1.05)	(-0.13)	(0.68)	(1.12)	
Feb.-Dec.	0.0017	-0.0173	0.0010	-0.0054	-0.0378	0.0751	0.4233
	(-0.65)	(-0.53)	(0.03)	(-0.17)	(-1.17)	(2.46)	
Return Due to Changes in Discount/Premium							
Jan.-Dec.	-0.0001	-0.3089	-0.1720	-0.0818	0.0480	0.0107	0.1641
n=246	(-0.04)	(-14.7)	(-7.88)	(-4.45)	(2.39)	(0.52)	
Feb.-Dec.	0.0304	-0.3982	-0.2498	-0.2167	0.1845	-0.0803	0.2246
n=20	(4.52)	(-7.21)	(-2.87)	(-4.03)	(3.07)	(-1.29)	
Feb.-Dec.	0.0028	-0.3009	-0.1652	-0.0699	0.0359	0.0188	0.1587
	(-1.89)	(-13.5)	(-7.34)	(-3.63)	(1.70)	(0.87)	

Note: The coefficient estimates presented below are average estimated coefficients generated from performing the cross-sectional regression on closed-end fund share returns and its component parts: net asset value returns and the return due to changes in the discount and premium. $E(R_i)$ is estimated as a moving average return on fund i for the period $t+1$ to $t+24$. The number of regression performed i.e. the number of J 's averaged is given as n . t -statistics appear in parantheses.

Table 6 : Monthly Regression Results for the Discount Returns of Different Closed-end Fund Groups (January-December)

$R_{it} - E(R_t) = a_{0t} + \sum_{j=1}^3 a_{jt} R_{it-j} + a_{4t} R_{it-24} + a_{5t} R_{it-36} + \tilde{u}_{it}$						
Lag	1	2	3	24	36	
\hat{a}_0 (t-stat)	\hat{a}_1 (t-stat)	\hat{a}_2 (t-stat)	\hat{a}_3 (t-stat)	\hat{a}_4 (t-stat)	\hat{a}_5 (t-stat)	Average Adj. R ²
Bond Funds (n=149)						
0.0014 (0.92)	-0.4867 (-17.0)	-0.2829 (-8.71)	-0.1123 (-4.41)	0.0025 (0.13)	-0.0021 (-0.10)	0.2065
Stock Funds (n=246)						
-0.0005 (-0.26)	-0.2721 (-10.3)	-0.1416 (-4.84)	-0.0570 (-2.27)	0.0791 (2.89)	0.0091 (0.31)	0.1267
Diversified Stock Funds (n=237)						
0.0023 (0.66)	-0.2461 (-3.15)	-0.1754 (-2.26)	-0.0676 (-1.01)	0.2269 (3.03)	0.0616 (1.01)	0.1225

DSSW suggest that, when prices deviate from fundamental values, rational arbitragers will take offsetting positions. However, the sophisticated investors will not take so large a position as to drive prices fully back to their fundamental value because of their aversion to systematic noise trader risk. The results presented in Table 5 seem to support this proposition: share prices may be mean-reverting because rational investors are offsetting the irrational positions of individual investors. In addition, we examine if rational investors could expect to earn positive abnormal returns by exploiting the mean-reversion in discount returns. Thompson (1978) demonstrates that a simple strategy based on discount-weighted portfolios of closed-end funds can exploit the negative auto-correlation in discounts and produce statistically significant positive gross abnormal returns. In Table 7, we repeat Thompson's discount-weighted strategy for our sample of funds. We also present two new strategies based on the results given in Table 5 to exploit the mean-reversion in

discount returns. The $E(\Delta\text{Discount})$ Moving strategy employs a moving window of 60 ex ante coefficients ($t-1$ to $t-60$) estimated in equation (8) to predict which funds will have positive returns over the next month and weights those funds in proportion to their predicted return. The $E(\Delta\text{Discount})$ Learning employs a similar strategy but uses the average of all previously estimated coefficients (i.e., the window increases by one observation each month). Again, funds with expected positive discount re-

Table 7: Active Trading Strategies

Strategy	Jensen's alpha (t-statistic)	Beta	Adj. R ²	Std. Deviation
E($\Delta\text{Discount}$) Moving	1.2155% (4.75)	0.7219 (4.75)	0.4611	0.0502
E($\Delta\text{Discount}$) Learning	1.2362 (4.81)	0.7164	0.4574	0.0500
Discount- Weighted CRSP Value- Weighted	0.7334 (4.07)	0.8258	0.6945	0.0467
			0.0471	

Note: The results of three active closed-end fund trading strategies are presented above. The $E(\Delta\text{Discount})$ Moving strategy uses the coefficient generated from the regression over the previous 60 months. $E(\Delta\text{discount})$ Learning strategy uses the coefficient generated over all previous months (e.g., the 61st month would use the coefficient estimated from $t=1$ to $t=60$ while the 62nd month would use the coefficient estimated from $t=1$ to $t=61$). In both cases, funds with predicted positive discount returns are weighted in proportion to their expected discount return. Thompson's (1978) discount-weighted strategy is also employed. In this case, all funds selling at a discount are weighted in proportion to their discounts. All strategies re-balance portfolios monthly.

The results presented in Table 7 suggest that an abnormal return of over 14% per annum could be earned by exploiting the mean-reversion in discount returns. A cursory review would tend to support the DSSW noise trader model -there appears to be sample opportunity to exploit mean-reversion in discount returns that is not being exploited- presumably because of sophisticated investors' aversion to systematic noise trader risk. However, a more careful analysis suggests the results may not be consistent with the noise trader model. First, we must consider the costs of employing such

strategies. Pontiff (1993) estimates that the average bid-ask spread for a large sample of closed-end funds is between 1.63% and 2.12%. Since the estimated ask-bid spread is slightly larger than the monthly abnormal return, it appears that sophisticated investors have taken offsetting positions to the point of their marginal costs. Second, and more important, if we assume the mean-reversion is driven by sophisticated investors offsetting the positions of noise traders, then noise traders must be losing money on these offsetting trades.²⁴ Combine this with our knowledge that passive closed-end fund investors are not compensated for bearing investor sentiment risk (see Tables 2 and 3) and the implication is that noise traders must be incurring net losses in wealth. This contradicts the primary point of the DSSW model -the ability of noise traders to survive by being compensated for the risk they create. We find no evidence that noise traders are being compensated for noise trader risk. In fact, our results suggest they are losing wealth.^{25, 26}

VI. Investor Sentiment Hypothesis

6.1. Individual Investors and Closed-end Fund Discounts

The DSSW noise trader model is a special case of the investor sentiment hypothesis. The investor sentiment hypothesis suggests that prices deviate from fundamental values according to the whims of irrational investors. The noise trader model extends the hypothesis with the idea that the vagaries of

²⁴ As pointed out by DSSW (1990, p. 715), "Because noise traders' misperceptions are stochastic, they have the worst possible market timing. They buy the most of the risky asset just when other noise traders are buying it, which is when they are most likely to suffer a capital loss."

²⁵ It is important to recognize closed-end funds as a closed system. If closed-end fund shareholders garner an extra dividend yield when funds are selling at a discount, it is only at the expense of either a previous or future shareholder (i.e., there is not a money machine). Similarly, the original source of the "extra return" in the DSSW model is a price drop in the asset when noise traders are introduced to the model. DSSW (1990 footnote 7) suggest, "In practice, the cost of future noise trader risk in a security will be paid by the entrepreneur." Clearly, such a scenario cannot hold for closed-end funds since closed-end funds originally sell at premiums (i.e., they are load funds). However, since our sample does not include returns from the first six months of a fund's life (when most funds move to discounts), the data is well suited to test the model.

²⁶ It is possible that noise traders could survive without being compensated for noise trader risk even if they are losing in trades with rational investors. Specifically, consider the case in which the return on the asset is greater than the loss due to market timing traders. Although noise trader wealth would not grow as fast as the wealth of the sophisticated investors, noise traders would survive.

these noise traders is systematic and priced and, therefore, noise traders may not be driven from the market. As noted by DSSW (1990, 705), "All the main results of our paper come from the observation that arbitrage does not eliminate the effects of noise because noise itself creates risk."

In the preceding sections, we provide results of direct tests of the DSSW noise trader hypothesis. We find no evidence in support of this hypothesis. In contrast, Lee, Schleifer and Thaler (1991) and Chopra, Lee, Schleifer and Thaler (1993a, 1993b) provide a series of direct tests of the investor sentiment hypothesis (indirect tests of the noise trader model) and conclude that their evidence supports the hypothesis.²⁷ Specifically, they document that discounts on closed-end funds tend to move together, and that changes in discounts over time appear to be negatively correlated with the returns on small-firm stocks, which are also owned primarily by individual investors and are likely to be susceptible to the vagaries of investor sentiments. They also report that typically greater numbers of initial public offerings of common stocks (IPOs) are brought to the market when the discounts on seasoned funds are low. Based on these results, Lee, Schleifer and Thaler conclude that the discounts on closed-end funds are caused by investor sentiment. Chen, Kan and Miller (1993a, 1993b) dispute Lee, Schleifer and Thaler's interpretation of their evidence regarding the co-movement between fund discounts and small firm returns. Chen, Kan and Miller assert that, "Measured properly, the co-movement between fund discounts and small firm returns is neither strong enough, nor robust enough to support their common sentiment story."²⁸ Neither study tests whether investor sentiment risk is priced. Given that our tests of the DSSW noise trader hypothesis find no support for the conjecture that the risk of common investor sentiment is priced, we also test for a relation between proxies for investor sentiment and closed-end fund discounts. Proxies for investor sentiment can be derived from activities of individual investors. Unfortunately, the data on the buy and sell transactions of closed-end funds by different groups of investors that would be required for a clean test of this hypothesis are not available. Instead, we examine the relationship between discount returns and four different variables that serve as reasonable proxies for the sentiment and trading activities of individual investors. Specifically, we use (1) the ratio of open-end mutual

²⁷ Zweig (1973) and Malkiel (1977) also examine closed-end funds for evidence of investor sentiment.

²⁸ Chopra, Lee, Schleifer and Thaler (1993a, 1993b) contend their interpretation is correct, however.

fund sales to redemptions [S/R]; (2) the ratio of net sales (i.e., sales minus redemptions) of open-end mutual funds to total fund assets [NSAL]; (3) the monthly percentage changes in the 10-day average of ratio of total odd-lot purchases to odd-lot sales [Δ PS] and (4) the returns on the equally-weighted portfolio of stocks that fall into the smallest size category on the NYSE.²⁹

To examine whether these proxies for individual investor sentiment can explain the discount returns on closed-end fund shares, we use the Fama-MacBeth (1973) two step cross-sectional regression methodology.³⁰ First, for each fund we generate time-series estimates of “investor sentiment betas.” These estimates are generated by the following regression for each fund in each month:

$$R_{it} = \alpha_i + \delta_{si} \beta_{si} + \varepsilon_{it} \quad (10)$$

where, the left-hand side of equation (10) is fund i 's discount return for period t . δ_{si} is the value of the investor sentiment variable for month t ($t = -1, \dots, -60$) and β_{si} is the estimated “investor sentiment beta” for fund i , month t .³¹ In the second step, discount returns of the funds are regressed on their estimated investor sentiment betas cross-sectionally in each month as shown below:

$$R_i = \lambda_0 + \lambda_s \beta_{si} + \varepsilon_i \quad i = -1, \dots, N \quad (11)$$

where λ_s is the risk premium associated with sensitivity to individual investor

²⁹ See Malkiel (1977) and Lee, Schleifer and Thaler (1991) for discussions of the first two investor sentiment proxies. See Lakonishok and Maberly (1990) for discussion of odd-lot trading as a proxy for the activity of individual investors. Small firm equities, which tend to be more heavily owned by individuals, have also been used as a proxy for individual investor sentiment by Lee, Schleifer and Thaler.

³⁰ Only one proxy is included in any regression because each variable is attempting to measure the same underlying construction (individual investor sentiment). Four additional investor sentiment proxies were also examined: 1) the ratio of odd-lot purchases to odd-lot sales (rather than percentage change), 2) the ratio of total odd-lot sales to odd-lot short sales, 3) the percentage change in the ratio of odd-lot sales to odd-lot short sales and 4) the difference between the returns on the smallest and largest NYSE deciles. These additional investor sentiment proxies produced the same conclusions.

³¹ The discount return was also examined for evidence of a non-zero investor sentiment risk premium on the portion of return not explained by variation in the economic variables (i.e., the two-step procedure is repeated on the residual from a regression of discount returns on economic variables). The results remained virtually the same.

sentiment for month t . Table 8 presents the results of the cross-sectional regressions. The data reported in the table are the averages of the monthly coefficients, the associated t -statistics, and the average R^2 of the regressions. When the results for the whole sample are examined, we do not find a significant relationship between any of the first three proxies we use to gauge the sentiment of individual investors and the discount returns of the closed-end funds. None of the slope coefficients are significantly different from zero. In fact, the coefficients have the wrong sign during 11 months of the year. However, when we examine January data separately, we do observe a significant positive relationship between discount returns and the variables that represent proxy for trading activities of individual investors. All three slope coefficients are positive and two of them, the coefficient of S/R and ΔPS , are statistically significant at conventional probability levels.

The estimated coefficients of the regression between discount-induced returns of the funds and their sensitivities to the movements of small-firm stocks are also reported. The noise trader model predicts that discount-induced returns of the funds should be positively related to their sensitivity to the whims of individual investor sentiment, which may be captured by the returns on small firm stocks. Although the t -statistics of the slope coefficients in the Size 1 regression is positive and relatively large in January (1.35), the coefficient has the wrong sign and a small t -statistic during February to December. The average adjusted R^2 of the 226 monthly regressions that exclude the month of January is less than five percent.

While the results of these analyses are consistent with the proposition that trading activities of individual investors may have some effect on the discounts of premiums of closed-end funds at the beginning between the same variables during the remaining 11 months of the year raises questions about the predominance of noise traders' sentiment as the underlying cause of randomly fluctuating discounts of premiums on closed-end fund shares.

Our cross-sectional Fama-MacBeth methodology is a more stringent test of the investor sentiment hypothesis than the Lee, Schleifer, and Thaler (1991) time series approach because it differentiates among individual funds that are more or less sensitive (measured by their sentiment betas) to the vagaries of investor sentiment.³² Time series correlations with equally-or

³² A potential problem with the methodology is the power of the model to identify an investor sentiment risk premium. MacKinlay (1987) shows that the power to identify a second factor depends, to a large extent, on the variance of the second factor. See MacKinlay for a complete discussion.

Table 8 : Investor Sentiment Risk Premiums

$R_{it} = \lambda_{0t} + \lambda_{st}\beta_{i,t-1} + \varepsilon_{it}$												
	S/R			NSAL Smallest			DPS			Smallest 1 /IO Size Size 1		
	λ_0	λ_2	Ave. R ²	λ_0	λ_2	Ave. R ²	λ_0	λ_2	Ave. R ²	λ_0	λ_2	Ave. R ²
Jan.-Dec. n = 246	0.005 (0.38)	-0.0368 (-0.57)	0.0364	0.0004 (0.33)	-0.0012 (-0.74)	0.0381	-0.0000 (-0.01)	0.0055 (0.31)	0.0204	0.0001 (0.10)	0.0026 (0.32)	0.0505
Jan. n = 20	0.0313	0.5765 (4.77)	0.0519 (2.05)	0.0307	0.00969 (4.56)	0.0638 (1.61)	0.0210	0.2774 (5.33)	0.0910 (3.12)	0.0292	0.0543 (5.97)	0.0734 (1.35)
Feb.-Dec.- n = 226	-0.0022	-0.0911 (-2.03)	0.0351 (-1.41)	-0.0022	-0.0021 (-1.98)	0.0359 (-1.31)	-0.0019	-0.0185 (-1.43)	0.0141 (-1.10)	-0.0024	-0.0019 (-1.88)	0.0484 (-0.24)

The coefficient estimates presented above are the average coefficients generated from cross-sectional regressing closed-end fund discount returns on their estimated (60 month rolling) betas. The regressions are repeated for four different investor sentiment variables: (1) the ratio of mutual fund sales to mutual fund redemptions (S/R); (2) the ratio of net mutual fund sales to total fund assets (NSAL); (3) monthly percentage change in the ratio of odd-lot purchases to odd lot sales (Δ PS); and (4) the returns on the equally-weighted portfolio of stocks that fall into the smallest size decile on the NYSE.

value-weighted discount returns and investor sentiment proxies are less precise tests because the correlation may be dominated by a relatively small number of funds that are affected by the sentiment factors. This conjecture is supported by the evidence in Table 9 in which the relation between small stock returns and closed-end funds is presented. In this table are shown the Pearson pairwise correlations between the investor sentiment variables and the discount-induced return equally-weighted across funds. The correlations are computed across the 1965-1990 time period for all months, for January only, and for all months excluding January. When the correlations include all months, the sole significant relation is between the discount return and the return on small stocks. Lee, Schleifer, and Thaler found a similar relation.³³ They documented a relation between monthly changes in the discount of a portfolio of closed-end funds (value-weighted) and the monthly returns of size-grouped portfolios of NYSE stocks after controlling for the monthly returns on a value-weighted portfolio of NYSE stocks. Chen, Kan and Miller (1993) argue that when net asset value is considered, the marginal explanatory power of the size portfolios is not more than 4 percent of the variance in the closed-end fund returns for any of the 10 size-grouped portfolios.

Although in testing for the robustness of their results Lee, Schleifer, and Thaler considered whether the result could be due to holdings of small firms by the closed-end funds, they did not consider the fact that many closed-end funds are themselves "small" firms. To test whether the relation between the decile 1 size-based portfolios and closed-end fund discount is simply due to the fact that most closed-end funds rank below the median in NYSE stocks' market value capitalization, we divide our sample into "large" and "small" closed-end funds. The "large" closed-end funds are defined to be those funds listed on the NYSE whose equity value would place them above the median equity value for all NYSE-listed firms. The closed-end funds are defined as "small" funds in our sample. The results are shown in Table 9. The majority of closed-end funds have equity value for NYSE-listed stocks. Outside of January, the discount returns of the larger closed-end funds do not have a significant correlation with small firm returns.³⁴

³³ It is important to keep in mind, however, that asset correlation is a test of the investor sentiment hypothesis (whether investor sentiment drives returns) not the noise trader model (whether investors are compensated for bearing investor sentiment risk).

³⁴ The "large" and "small" funds do not vary significantly in terms of their institutional holdings as shown in Appendix E. Thus, these results are not due to the possibility that "small" funds have less institutional ownership and thus are more affected by investor sentiment than "large" funds.

Table 9: Discount Return Correlations/(p-value)

	S/R	NSAL	DPS	Decile 1
January-December (n = 306)				
All Funds	0.0553 (0.34)	0.0293 (0.61)	0.0049 (0.93)	0.3642 (0.01)
Small Funds	0.0547 (0.34)	0.0253 (0.66)	-0.0181 (0.75)	0.3710 (0.01)
Large Funds	0.0634 (0.27)	0.0012 (0.98)	-0.0178 (0.76)	0.1310 (0.03)
January Only (n = 25)				
All Funds	0.0237 (0.91)	-0.1734 (0.41)	-0.1483 (0.48)	0.7044 (0.01)
Small Funds	0.1026 (0.63)	-0.1765 (0.39)	-0.1651 (0.43)	0.6836 (0.01)
Large Funds	-0.0577 (0.78)	-0.1545 (0.46)	-0.1752 (0.40)	0.6008 (0.01)
February - December (n = 281)				
All Funds	0.0342 (0.57)	0.0679 (0.26)	0.0811 (0.18)	0.1056 (0.08)
Small Funds	0.0194 (0.75)	0.0675 (0.26)	0.0578 (0.33)	0.1051 (0.08)
Large Funds	0.0654 (0.28)	0.0180 (0.76)	0.0167 (0.78)	-0.0451 (0.46)

We do not find evidence that closed-end fund discounts are significantly related to any investor sentiment proxy.³⁵ Consistent with the lack of support of our direct tests of the noise trader hypothesis, our indirect tests also do not support the hypothesis.

³⁵ We also investigated the possibility of a lagged relationship between investor sentiment proxies and closed-end fund discounts and found no evidence of lagged relations over one, two, or three months.

6.2. IPO Activity and Closed-end Funds' Discounts

Using the IPO data compiled by Ibbotson, Sindelar and Ritter (1988), LST (1991) report that IPO activity typically increases when the discounts on closed-end funds dwindle. Since individual investors are the principal purchasers of unseasoned new issues of common stocks, they view the negative correlation between the level of discounts and the subsequent IPO activity as evidence that is consistent with the implications of the investor sentiment hypothesis. However, as Ibbotson, *et al* document, IPO activity (measured by the number of offerings brought to the market) exhibits high first order auto-correlation. Because of the auto-correlation in monthly data, LST (1991) examine annual data. Since typical IPO registration (from submission to the effective date) takes about 30 days, we test for the relation over a two-month lag to allow for organization time.³⁶ To solve the monthly auto correlation problem, we adjust for auto-correlation in the regressions employing monthly data. Specifically, we estimate the following regressions with monthly data from July 1965 through December 1990.³⁷

$$\begin{aligned} (IPO)_t &= \alpha + \beta D_{t-2} + e_t \\ (\Delta IPO)_t &= \alpha + \beta D_{t-2} + e_t \end{aligned} \tag{12}$$

where, $(IPO)_t$ is the number of IPOs brought to the market in month t , D_{t-2} is the equally-weighted average discount of the closed-end funds in our sample at the end of month $t-2$. For the analyses in this section, the discount of each fund is measured by 100 times the ratio of the difference between a fund's net asset value and share price to its net asset value. We estimate this regression with versions of D_{t-2} . The first version is based on the average discount (and discount-induced return) of the full sample of closed-end funds. The second version repeats the regressions including only diversified stock funds.

³⁶ We also estimate the regressions with one- and three-month lags. The results remain essentially unchanged.

³⁷ We are grateful to Jay Ritter for providing us with his data on the number of IPOs brought to the market each month during January 1960-June 1992. An updated analysis of IPO activity and initial returns is presented in Ibbotson, Sindelar and Ritter (1993).

Table 10: Relationship Between Monthly Number of Initial Public Offerings of Common Stock and Closed-End Fund Discounts (July 1965-December 1990)

Durbin-Dependent	α	$t(\alpha)$	β	$t(\beta)$	R^2	Watson Variable ^a
		Independent Variable: Dt-2 (includes all funds)				
(IPO) _t	30.076	5.530	-0.7534	-2.263	0.017	1.982
		Independent Variable: Dt-2 (includes diversified funds only)				
(IPO) _t	28.423	5.061	-0.325	-1.281	0.0054	2.004
		Independent Variable: Dt-2 (includes all funds)				
(DIPO) _t	0.110	0.190	-0.0184	-0.311	0.0003	2.001
		Independent Variable: Dt-2 (includes diversified funds only)				
(DIPO) _t	-0.133	-0.214	0.0147	0.316	0.0003	2.001

Note: The results of four regressions are presented above. Monthly IPO activity has been adjusted for first- and second-order auto-correlation. Changes in monthly IPO activity has been adjusted for first-order auto-correlation.

The auto-correlation-adjusted estimates of the coefficients and the associated regression statistics are presented in Table 10. The results show that when the persistence in monthly IPO activity is accounted for, the relationship between public offerings of common stock and closed-end fund is weak. Only the relationship between public offerings and the average discount from all funds is statistically significant at traditional levels. We suggest that the diversified stock fund regression is a better test since the discount or premium on diversified stock funds should best represent irrational investors' sentiment of common stock offerings. In any event, monthly data that span almost a quarter of a century indicate that the relationship between closed-end fund discounts and IPO activity--regardless of how it is measured--is tenuous. Thus, it is questionable that the monthly variations in closed-end fund discounts (premiums) and IPO volumes are driven by the same forces.

VII. Conclusion

This study provides the first direct empirical tests of the De Long, Schleifer, Summers and Waldmann noise trader hypothesis. The two key conditions of the noise trader model are that: (1) investor sentiment risk is systematic; and

(2) therefore, commands a risk premium. The results of our tests do not support these propositions. Specifically, we find that most - if not all - of the risk associated with random changes in discounts or premiums is diversifiable and there is no evidence that shareholders of closed-end funds actually garner a risk premium for the return variability induced by fluctuations in discounts or premiums. Moreover, our results suggest that noise traders are driven from the market by sophisticated investors taking offsetting positions to the point of their marginal costs. We also find, counter to Lee, Schleifer, and Thaler, that closed-end fund discounts are not related to proxies for individual investor sentiment.

Appendix A

The continuously compounded return on closed-end fund shares can be written as the sum of the continuously compounded return on the net asset values and the continuously return due to the presence of discounts and premiums. Let:

P_0 = price per share of closed-end fund share at time 0

P_1 = price per share of closed-end fund share at time 1

N_0 = net asset value per share at time 0

N_1 = net asset value per share at time 1

D_1 = distributions per share between time 0 and 1

$k_0 = P_0/N_0$, $k_0 - 1$ = % discount or premium at time 0

$k_1 = P_1/N_1$, $k_1 - 1$ = % discount or premium at time 1

Then the return to the closed-end fund i shareholder is given by:

$$1 + R_i = \frac{k_1 N_1 + D_1}{k_0 N_0} \quad (1)$$

where R_i is the discrete return from time $t=0$ to $t=1$. Similarly, the return on the net asset value of the fund is given by:

$$1 + R_N = \frac{N_1 + D_1}{N_0} \quad (2)$$

where R_N is the discrete return from time $t=0$ to $t=1$. Equation (1) can be

rewritten as:

$$(1 + R_i) = (1 + R_N) \left[\frac{k_1 N_1 + D_1}{k_0 N_1 + k_0 D_1} \right] \quad (3)$$

Taking natural logs yields:

$$\ln(1 + R) = \ln(1 + R_N) + \ln \left[\frac{k_1 N_1 + D_1}{k_0 N_1 + k_0 D_1} \right] \quad (5)$$

Appendix B

Sample of Closed-End Funds

Name ^a	Type ^{**}
The Adams Express Company	Diversified
American Capital Bond Fund	Bond
(American General Bond Fund)	
American Capital Convertible	Specialized
AMEV Securities	Bond
(St. Paul Securities)	
Baker, Fentress & Co.	Diversified
Bancroft Convertible Fund	Specialized
Bergstorm Capital Corp.	Specialized
(Claremont Capital Corp.)	
(Diebold Venture Capital Corp.)	
Bunker Hill Income Securities	Bond
Carriers & General Corp.	Diversified
Castle Convertible Fund	Specialized
(C.I. Convertible)	
Central Securities Corp.	Non-Diversified
Chase Convertible Fund of Boston	Specialized
Circle Income Shares	Bond

^a Earlier names appear in parentheses.

^{**} Types are taken from Weisenberger's Investment Companies. However, all international funds were considered specialized regardless of Weisenberger's classification (i.e., in earlier years, Weisenberger's often classified international funds as diversified). In some cases, funds changed classification. In such cases, the dominant classification was used.

CNA Income Shares	Bond
Current Income Shares	Bond
The Dominick Fund, Inc. (National Bond and Share)	Diversified
1838 Bond-Debenture Trading Fund (Drexel Bond-Debenture Trading Fund)	Bond
Energy and Utility Shares (Drexel Utility Shares)	Specialized
Excelsior Income Shares	Bond
Federated Income & Private Placement	Bond
Fort Dearbon Income Securities	Bond
General American Investors	Diversified
John Hancock Income Securities	Bond
John Hancock Investors	Bond
Hatteras Income Securities	Bond
INA Investment Securities	Bond
Independence Square Income Securities	Bond
Intercapital Income Securities (Standard and Poor's Intercapital Income Securities)	Bond
International Holdings Corporation	Diversified
Interwest Corporation* (Overseas Securities Co. , Inc.)	Diversified
Japan Fund	Specialized
The Korea Fund	Specialized
Lincoln National (Lincoln National Direct Placement)	Bond
Madison Fund, Inc.	Diversified
MassMutual Income Investors	Bond
The Mexico Fund	Specialized
Montgomery Street Income Securities	Bond
Mutual of Omaha Interest Shares	Bond
National Aviation and Technology (National Aviation Corporation)	Specialized

*It was a closed-end fund when the name was Overseas Securities.

Nautilus	Diversified
New America Fund (Fund of Letters, Inc.)	Specialized
Niagara Share Corp.	Diversified
Pacific American Income Shares	Bond
Petroleum & Resources Corp. (Petroleum Corp. of America)	Specialized
RET Income Fund (The REIT Income Fund)	Specialized
The Salomon Brothers Fund, Inc. (The Lehman Corp.)	Diversified
Source Capital, Inc. (SMC Investment Corp.)	Diversified
Standard Shares, Inc.	Non-Diversified
State Mutual Securities	Bond
Sterling Capital Corp. (The Value Line Development Capital Co.)	Specialized
Surveyor Fund (General Public Service)	Diversified
Transamerica Income Shares	Bond
Tri-Continental Corp.	Diversified
United Corp.	Non-Diversified
U.S. & Foreign Securities Corp.	Diversified
USLIFE Income Fund, Inc.	Bond
Vestaur Securities Fund, Inc.	Bond

Appendix C

Jensen Coefficients

The data present the investment performance of fund shares as measured by Jensen coefficients. α_1 is generated with time-varying betas^{*}; α_2 is generated with constant betas^{**}.

Fund	α_1	α_2
BOND FUNDS		
AMEV Securities (n=206) ^{***}	-0.0016 (-0.51)	-0.0025 (1.02)
American Capital Bond Fund (n=146)	-0.0044 (-1.51)	-0.0024 (-1.02)
Bunker Hill Income Securities (n=191)	-0.0035 (-1.01)	-0.0035 (-1.30)
CNA Income Shares (n=205)	-0.0022 (-0.66)	-0.0029 (-1.01)
Circle Income Shares (n=169)	-0.0050 (-1.34)	-0.0045 (-1.43)
Current Income Shares (n=194)	0.0027 (0.83)	-0.0008 (-0.31)
1838 Bond-Debenture (n=224)	-0.0031 (-1.05)	-0.0029 (-1.1)
Excelsior Income Shares (n=205)	-0.0038 (-1.41)	-0.0047 (-1.86)

^{*} Jensen coefficients based on time-varying betas are generated from computing the average of the realized return less the portion of return explained by risk:

$$\alpha_{it} = R_{it} - \sum_{j=1}^6 \lambda_{jt} \beta_{ij,t-1} \quad \alpha_{it} = \frac{\sum_{i=1}^T \alpha_{it}}{T}$$

^{**} Jensen coefficient based on constant betas are generated from the following regression:

$$R_{it} = \alpha_{2i} + \sum_{j=1}^6 \lambda_{jt} \beta_{ij} + \varepsilon_{it}$$

^{***} Reported n is for unconditional betas. For conditional betas, 60 previous observations are needed to estimate betas; therefore, the number of observations used in estimating 1 is equal to n-60.

Fund	α_1	α_2
Federated Income & PP (n=89)	0.0079 (0.74)	-0.0010 (-0.17)
Fort Dearborn Income Securities (n=209)	-0.0015 (-0.51)	-0.0025 (-0.96)
John Hancock Income Securities (n=208)	-0.0059 (-1.81)	-0.0049 (-1.71)
John Hancock Investors (n=228)	-0.0022 (-0.79)	-0.0018 (-0.73)
Hatteras Income Securities (n=204)	-0.0042 (-1.26)	-0.0029 (-1.01)
INA Investment Securities (n=209)	-0.0030 (-0.96)	-0.0040 (-1.46)
Independence Square (n=216)	-0.0039 (-0.93)	-0.0035 (-0.99)
Intercapital Income (n=192)	-0.0013 (-0.34)	0.0034 (-1.18)
Lincoln National (n=111)	-0.0040 (-1.05)	0.0037 (1.28)
Massmutual Income (n=162)	-0.0007 (-0.15)	-0.0039 (-1.22)
Montgomery Street (n=208)	-0.0055 (-1.47)	-0.0034 (-1.17)
Mutual of Omaha (n=221)	-0.0038 (-1.34)	-0.0033 (-1.32)
Pacific American (n=207)	-0.0001 (-0.04)	-0.0020 (-0.79)
State Mutual (n=192)	0.0005 (0.16)	-0.0012 (-0.48)
Transamerica (n=169)	0.0011 (0.28)	-0.0012 (-0.74)
USLIFE (n=210)	-0.0009 (-0.26)	-0.0030 (-0.96)
Vestaur (n=163)	-0.0033 (-0.65)	-0.0016 (-0.57)

Fund	α_1	α_2
DIVERSIFIED STOCK FUNDS		
Adams Express (n=306)	0.0012 (0.40)	0.0009 (0.35)
Baker, Fentress & Co. (n=216)	0.0001 (0.02)	-0.0037 (-0.57)
Carriers & General (n=154)	-0.0032 (-0.72)	-0.0055 (-1.68)
Dominick (n=105)	-0.0036 (-0.36)	-0.0016
General American (n=306)	-0.0001 (-0.02)	-0.0013 (0.50)
International Holdings (n=111)	-0.0005 (-1.22)	-0.0124 (-0.12)
Interwest (n=235)	-0.0108 (-1.29)	-0.0144 (-2.89)
Madison (n=195)	-0.0040 (-0.78)	-0.0000 (-0.01)
Nautilus (n=61)	-0.0852 (.)	0.0068 (0.52)
Niagara Share (n=306)	0.0006 (0.20)	0.0011 (0.44)
Salomon Brothers (n=306)	-0.0002 (-0.80)	-0.0000 (-0.1)
Source Capital (n=124)	-0.0031 (-0.63)	0.0042 (1.17)
Surveyor (n=92)	-0.0065 (-0.98)	-0.0015 (-0.37)
Tri-Continental (n=306)	-0.0001 (-0.05)	0.0000 (0.25)
US & Foreign (n=217)	-0.0036 (-0.93)	-0.0020 (-0.70)

Fund	α_1	α_2
SPECIALIZED, NON-DIVERSIFIED AND INTERNATIONAL FUNDS		
American Cap Convertible (n=216)	-0.0016 (-0.44)	-0.0012 (0.39)
Bancroft Convertible (n=223)	-0.0023 (-0.61)	-0.0007 (-0.20)
Bergstorm Capital (n=236)	0.0053 (0.99)	0.0014 (0.30)
Castle Convertible (n=223)	0.0027 (0.72)	0.0009 (0.25)
Central Securities (n=221)	-0.0021 (-0.54)	-0.0007 (-0.21)
Chase Convertible (n=223)	-0.003 (0.17)	-0.0046 (-0.66)
Energy & Utility (n=97)	-0.0050 (-0.50)	-0.0046 (-0.71)
Japan (n=257)	0.0023 (0.39)	0.0071 (1.38)
Korea (n=73)	-0.0513 (-1.32)	0.0015 (0.09)
Mexico (n=99)	-0.0237 (0.61)	0.0126 (0.89)
National Aviation (n=147)	-0.0120 (-1.33)	-0.0067 (-1.16)
New America (n=127)	0.0010 (0.14)	0.0074 (1.28)
Petroleum & Resources (n=306)	0.0036 (0.99)	0.0018 (0.60)
RET Income (n=83)	0.0095 (0.29)	-0.0338 (-2.12)
Standard Shares (n=136)	-0.0031 (-0.39)	-0.0014 (-0.28)
Sterling Capital (n=104)	-0.0004 (-0.03)	-0.0158 (-1.73)
United Corp. (n=142)	0.0034 (0.41)	0.0020 (0.40)

Appendix D
Observation-Weighted^a Average Discount Return Correlations (by fund)

	All Funds	Bond Funds	Stk Funds	Div Stk	Spec Stk
Bond Funds					
AMEV	0.2300	0.2747	0.1795	0.1646	0.1924
Am Cap	0.2216	0.3252	0.1193	0.1260	0.1132
Bunk. Hill	0.1583	0.2272	0.0767	0.0589	0.0922
CNA Inc	0.2091	0.2830	0.1254	0.1213	0.1289
Circle	0.1157	0.1630	0.0559	0.0542	0.0575
Current	0.1303	0.1954	0.0539	0.0047	0.0965
1838	0.2055	0.2303	0.1798	0.1957	0.1659
Excelsior	0.1771	0.2229	0.1253	0.0813	0.1613
Federated	0.1418	0.2411	0.0362	0.0031	0.0654
Ft Dearb	0.2259	0.2687	0.1718	0.1777	0.1786
JH Inc	0.2654	0.3454	0.1761	0.1632	0.1871
JH Inv	0.1918	0.2939	0.1005	0.0846	0.1144
Hatteras	0.1782	0.2506	0.0959	0.1031	0.0898
INA Inv	0.2367	0.2951	0.1716	0.1582	0.1831
Indep	0.1522	0.2053	0.0951	0.0999	0.0911
Intercap	0.2309	0.3537	0.0877	0.0495	0.1213
Lincoln	0.0874	0.1057	0.0618	0.0584	0.0650
MassMut	0.2366	0.3120	0.1567	0.1088	0.1979
Mont	0.2277	0.3149	0.1303	0.1214	0.1380
Mutual	0.2167	0.2894	0.1405	0.1315	0.1484
Pacific	0.2045	0.2594	0.1428	0.1253	0.1579
State Mut	0.1748	0.2604	0.0738	0.0707	0.0764
Transam	0.2023	0.3067	0.0703	0.0499	0.0890
USLIFE	0.1173	0.1790	0.0489	0.0097	0.0824
Vestaur	0.1834	0.2810	0.0590	0.0243	0.0907

^aSince overlapping periods vary across funds, observation-weighting is used to calculate "averages". For example, if a fund has 100 overlapping observations with fund "A" and 50 with fund "B", correlation will be weighted half as important as fund "A" correlation. Classifications were taken from Weisenberger's. In some cases, funds changed classification; in such cases the dominant classification was used.

Appendix D
Observation-Weighted Average Discount Return Correlations (by fund)

	All Funds	Bond Funds	Stk Funds	Div Stk	Spec Stk
Stock					
Adams Exp	0.1606	0.1651	0.1567	0.2067	0.1078
Baker Fen	0.1799	0.1820	0.1773	0.1799	0.1754
Carriers	0.0971	0.0390	0.1204	0.1397	0.0985
Dominick	0.1504	-0.0282	0.1691	0.2151	0.0952
Gen Amer	0.1182	0.1004	0.1338	0.1925	0.0762
Int Hold	0.2651	0.3668	0.2469	0.2587	0.2300
Interwest	0.0418	0.0008	0.0714	0.0741	0.0685
Madison	0.0798	0.0546	0.0942	0.1318	0.0545
Nautilus	-0.1046	-0.1672	-0.0212	-0.0794	0.0351
Niagara	0.0613	0.0107	0.1054	0.1474	0.0643
Salomon	0.1804	0.1609	0.1975	0.2638	0.1326
Source	0.0778	0.0438	0.1297	0.1958	0.0730
Surveyor	0.1571	-0.1440	0.1679	0.2013	0.1045
Tri-Con	0.1369	0.1340	0.1394	0.2077	0.0725
US & For	0.2023	0.1892	0.2108	0.2157	0.2057
Specialized					
Amcap Cnv	0.1212	0.1587	0.0767	0.1116	0.0436
Bancroft	0.1456	0.1501	0.1404	0.1671	0.1150
Bergstrom	0.0751	0.0913	0.0573	0.0374	0.0772
Castle	0.0902	0.0890	0.0917	0.0895	0.0937
Central	0.1646	0.1660	0.1630	0.2116	0.1165
Chase	0.2137	0.2913	0.1459	0.1189	0.1692
Energy	0.1413	0.1518	0.1322	0.1231	0.1397
Japan	0.1300	0.1725	0.0974	0.0731	0.1279
Korea	-0.0389	-0.0010	-0.1008	-0.1710	-0.0325
Mexico	0.1069	0.1716	0.0059	-0.0575	0.0723
Nat Avia	0.1812	0.2532	0.1551	0.1118	0.2168
NewAmer	0.0958	0.0967	0.0949	0.1199	0.0719
Petroleum	0.1321	0.1219	0.1409	0.1838	0.0885
RET Inc	-0.0365	-0.0884	0.0109	0.0877	-0.0506
Standard	0.1299	0.0820	0.1441	0.1540	0.1291
Sterling	0.1121	0.1021	0.1202	0.0749	0.1596
United	0.0134	0.0649	-0.0043	0.0165	-0.0346

Appendix E

CEF Institutional Holdings

	Fraction Institutional			Capitalization		Decile	
	n	Mean	Median	Mean 1973	Median	Mean	Median
Large Funds	5	0.39%	0.01%	408980	495300	7.6	8
Small Funds	10	2.81%	0.04%	101918	113150	3.7	4.5
1973							
Large Funds	12	0.15	0	200531	159700	6.5	6
Small Funds	22	1.54%	0.00%	59655	55470	3.90	4
1978							
Large Funds	8	1.13%	0.86%	235350	179900	6.75	6.5
Small Funds	30	2.21%	0.36%	34240	67225	3.96	4
1983							
Large Funds	3	2.51%	2.59%	685167	792100	7.33	8
Small Funds	36	4.35%	1.06%	101661	73470	2.87	3
1988							
Large Funds	5	7.76%	2.48%	574540	498600	6.6	6
Small Funds	30	2.52%	0.67%	99122	87890	3.22	3

Note: Institutional holdings are from Standard and Poor's Security Owners Stock Guide (SOSG). Large funds are those listed on the NYSE whose equity value would place them above the median equity value for all NYSE-listed firms. Small funds are defined as all other funds in our sample. Decile data is for NYSE funds only. The reported "n" refers to the number of funds with CRSP decile data. The n for institutional holdings may be slightly less (a few small funds were not listed in SOSG).

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P/E Ratio and the Dividend Yield as Forecasting Tools in the Istanbul Stock Exchange

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Abstract

We investigate the ability of average market price-earnings (P/E) ratio and dividend yield as predictors of future returns at the Istanbul Stock Exchange during the 10-year period between 1986-1995. We examine the returns on the ISE Composite Index followed by periods of P/E ratio and dividend yield quintiles ranging from low to high. We find that 3-month, 6-month and 12-month returns following periods of low P/E ratios and high dividend yields are significantly higher than those after periods of high P/E ratios and low dividend yields. In terms of real returns, low P/E period and high dividend yields are followed by positive returns over all horizons, whereas real returns are negative subsequent to periods with high P/E ratios and low dividend yield. A market timing strategy based on switching between bonds and stocks according to the level of P/E ratios and dividend yields is tested. We find that performances of those portfolios are superior to controlled portfolios that are divided between bonds and stocks.

1. Introduction

The question of whether stock market returns can be predicted from variables like dividend yields, earnings multiples or from past returns has been an interesting avenue of research. Both academicians and practitioners of the field were involved in this investigation, obviously with dissimilar motives. Academic interest

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in the topic is largely due to concerns for testing the efficient market hypothesis, whereas for the practitioners the motive has been the search for profitable trading strategies.

The objective of this paper is to investigate the ability of average price-earnings (P/E) multiples and dividend yields as a predictor of future returns at the Istanbul Stock Exchange (ISE) during the 10-year period between 1986-1995. To this end, we group the observed monthly P/E ratios and dividend yields into quintiles, and follow the nominal and real market return during the next 3-month, 6-month and 12-month periods. We also test an asset allocation strategy between stocks and bonds based on P/E and D/P ratios. Our findings indicate that low (high) P/E and high (low) D/P periods are followed by high (low) real and nominal returns during the period under examination. The asset allocation strategy derived from this finding yields a higher return at lower risk compared to naive portfolios of stocks and bonds. Hence, we conclude that P/E and D/P ratios can provide valuable signals for market timing that, in turn, could lead to a better asset allocation.

Following the earlier research in the 1960s and the 1970s, which, in general, support the view that stock returns could not be predicted, more recent studies suggest that medium-to long-term stock returns can be explained by variables like dividend yields, price-earnings multiples, term premiums, default premiums and past returns. For example, Fama and French (1988) find out that dividend yield can explain 25% of the variation in real returns in the NYSE over the 1941-86 period. Explanatory power increases with investment horizon, and it is very low for short periods ranging from a month to a year. Earnings multiple can explain less variation than the dividend yield. However, Campbell and Shiller (1988) argue that forecasting power of P/E ratio improves if earnings are averaged over 10-30 years. In another study, Fama and French (1989) report that default spreads and term spreads, as well as the dividend yield can predict future excess returns on stocks and corporate bonds. All these findings seem to contradict the efficient markets hypothesis. However, as Fama (1991) argues, return predictability is a result of changing expected returns over time; hence, it does not necessarily rule out market efficiency. Ferson and Harvey (1991)

investigate the sources of predictability in stock returns and find that changes in expected returns and risk sensitivities (betas), rather than inefficiencies like fads, can help explain predictable components of returns.

For the practitioner in the market, return predictability would seem like nothing but good news. However, Balvers, Cosimano and McDonald (1990), in their general equilibrium model which yields predictable stock returns, suggest that this result does not bring excess profit opportunities, since advantages of predictive ability are offset by fluctuations in consumption patterns. Empirically, Fuller and Kling (1994) find no evidence of improved market timing ability through employment of return prediction models. Their finding is not surprising in the light of the "poor statistical power" of those models as pointed out by Fama (1991). Bleiberg (1994) adopts a different approach using market P/E ratios in developing an asset allocation strategy. He groups levels of historical P/E ratios into quintiles and suggests some market timing signals to allocate between stocks or bonds in an out-of-sample period. His strategy does not lead to excess returns. In this paper, we employ an approach similar to that of Blieberg (1994). We not only include the market P/E ratio, but the dividend yield as well. The rest of the paper is organized as follows: Section 2 describes the data. Empirical evidence is provided in Section 3, while Section 4 concludes the paper.

2. The Data

We use the month-end values of the Istanbul Stock Exchange Composite Index to obtain the stock market returns. We also compute real stock returns by substituting the real levels of the index obtained by deflating the nominal index by the Consumer Price Index of the State Institute of Statistics. For bond returns, we use the average interest rate on 3-month, 6-month and 12-month Treasury bills realized in the Treasury auctions in that month. The average price-earnings ratio (P/E), as well as the dividend yield (D/P) for the market are taken from the Annual Factbook of the Istanbul Stock Exchange (1995). The ISE used to compute the P/E multiple as the ratio of closing price to the most recent year's

earnings per share until 1993, when listed companies started to disclose interim financial statements. After 1993, P/E ratios for the first six months use previous year's earnings, whereas, for the remainder of the year, earnings from the second half of the previous year to the end of the first half of the current year are employed. Dividend yields are based on the most recent annualized dividend payments.

Plots of the real levels of the index, as well as the P/E and D/P ratios are shown in the three panels of Figure 1 respectively. The market reached its peak level in real terms in August 1990. The P/E ratio had its lowest level in 1988 and reached its highest value in its history in 1990. Dividend yield in the ISE was lowest in 1988 and 1993. The peak in dividend yield was observed in 1991 and 1994.

3. Empirical Evidence

3.1. Predicting Nominal and Real Stock Returns

We first compute 3-month, 6-month and 1-year nominal and real returns in the market by taking each month t as the starting month. Hence, for every month t in our sample we find nominal returns, $R_{t,t+j}$, and real returns, $R_{t,t+j}$, for $j=3, 6,$ and 12 in the following manner:

$$R_{t,t+j} = \frac{I_{t+j} - I_t}{I_t}$$

where I_t and I_{t+j} denote the levels of the ISE Composite Index in months t and $t+j$, respectively. Real returns are derived similarly. In this manner, it is possible to see what the returns (real and nominal) would have been over the subsequent 3, 6, and 12 months if we had invested in the stock market in month t . In Figure 2, we present the scatter plots of P/E ratios versus subsequent 3-month and 12-month real returns. As we might expect, 3-month returns are highly dispersed around the mean, whereas 12-month subsequent returns are visibly related with the P/E ratio.

We then rank the monthly average P/E ratios and dividend yields over the 10-year period and group them into quintiles. In each

Figure 1

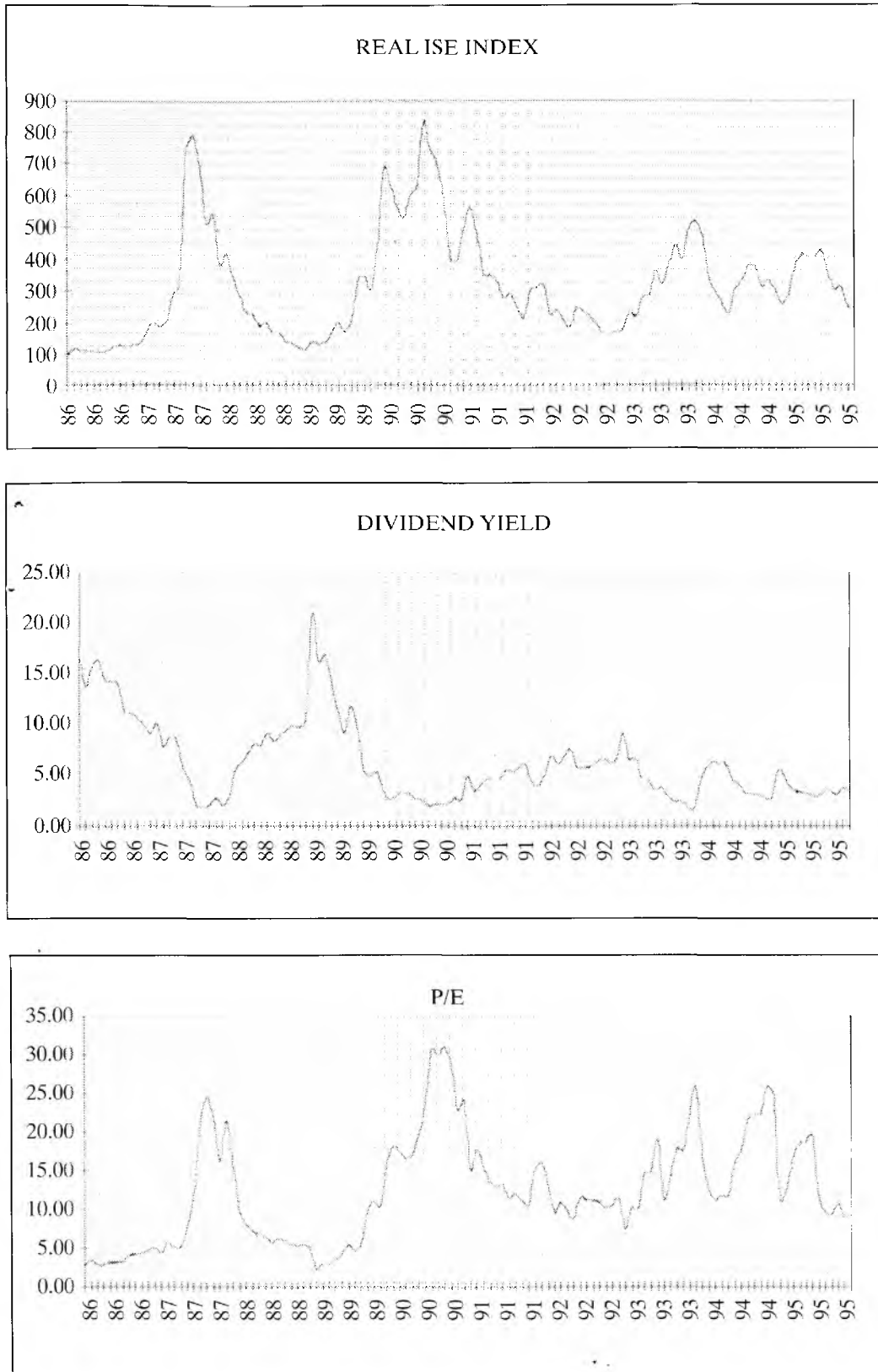
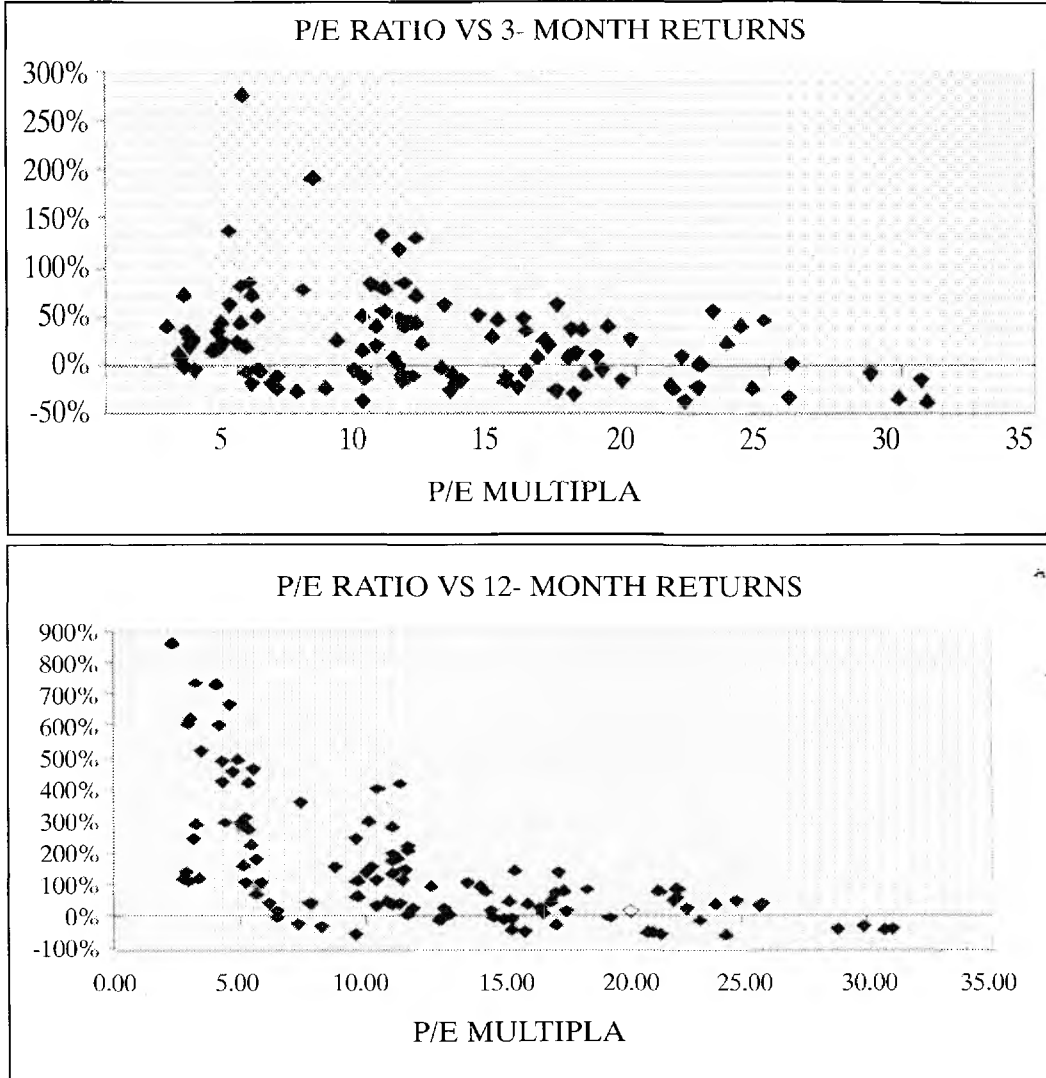


Figure 2**Table 1. P/E and Dividend Yield Quintiles**

Quintile	P/E Ratio			Dividend Yield		
	Low	High	Aver.	Low	High	Aver.
1	2,37	5,34	3,96	1,65	3,06	2,40
2	5,50	10,17	7,86	3,07	4,48	3,55
3	10,26	12,75	11,28	4,49	6,06	5,26
4	13,03	17,95	15,71	6,07	9,15	7,40
5	18,57	30,99	23,26	9,17	20,89	12,86

quintile, there are 24 observations of earnings multiples and dividend yields. The upper and lower bounds as well as the average values of each P/E and D/P quintile are shown in Table 1. Average nominal returns in the stock market corresponding to P/E ratios in each quintile over a horizon of 3, 6 and 12 months are shown in Table 2. Bottom quintile of P/E and top quintile of D/P yields very low or even negative average nominal returns over all investment horizons. In other words, after observing a low P/E ratio, or a high dividend yield, subsequent returns are higher. Other quintiles do not exhibit much difference over the three-month period. However, 6-month and 12-month returns increase with higher (lower) quintiles of P/E multiples (D/P). It is clear that Turkey's experience of high inflation during the period under examination distorts the picture as investment horizon increases. Therefore, we repeated the same analyses with real stock returns. Results are presented in Table 3. High P/E ratios and low dividend yields result in negative real returns over all

Table 2. Nominal Returns

		Average return over subsequent			Percentage of positive returns		
	Quint.	3-month	6-month	12-month	3-month	6-month	12-month
	1	43,28	126,33	402,23	87,50	100,00	100,00
	2	22,02	65,29	140,47	50,00	60,00	80,00
P/E	3	42,54	68,48	151,24	75,00	90,00	100,00
	4	10,57	14,13	32,36	52,17	60,87	65,22
	5	-0,37	7,45	6,81	47,62	47,62	52,38
	1	0,94	-2,32	-2,68	45,45	36,36	45,45
D/P	2	11,12	24,31	54,33	68,75	81,25	75,00
	3	37,84	49,83	74,78	50,00	77,27	86,36
	4	33,11	78,68	154,86	66,67	66,67	87,50
	5	32,38	118,44	425,12	83,33	100,00	100,00
	Average	23,47	55,81	151,62	62,96	72,22	79,63

Table 3. Real Returns

	Quint.	Average return over subsequent			Percentage of positive returns		
		3-month	6-month	12-month	3-month	6-month	12-month
P/E	1	32,10	91,79	244,79	91,67	100,00	100,00
	2	9,83	33,14	47,22	50,00	40,00	65,00
	3	23,71	26,69	42,33	72,73	72,73	65,00
	4	-4,02	-13,47	-28,27	41,67	25,00	8,70
	5	-13,73	-21,82	-42,01	29,17	25,00	0
D/P	1	-13,37	-28,46	-46,83	31,82	18,18	0
	2	-4,20	-7,93	-17,61	43,75	43,75	18,75
	3	21,91	14,36	0,18	50,00	50,00	31,82
	4	20,60	46,03	51,50	62,50	54,17	75,00
	5	20,24	80,87	258,58	83,33	95,83	100,00
Average		9,45	22,86	56,79	55,56	53,70	48,15

investment horizons. Lowest (highest) P/E (D/P) quintiles produce very high average real returns over 6 and 12 months. Proportions of positive returns in each quintile are also indicated in Tables 2 and 3. Extreme quintiles in each case have very high predictive power. If the P/E ratio is in the lowest quintile, or dividend yield is at its highest group, subsequent stock market returns, nominal and real, are overwhelmingly positive. The opposite is true for the other extremes. The picture is mixed in between quintiles, although there exists a clear direction in the percentage of positive observations. In short, both P/E ratio and dividend yield have some forecasting ability in the Turkish market. This forecasting power increases at extreme values of those variables, and over longer investment horizons.

3.2. Predicting the Equity Premium

P/E ratio and dividend yield can predict medium-to long-term stock

returns, both real and nominal. Does that also mean that they can predict the performance of the stock market relative to the bond market? An affirmative response would mean a valuable signal for asset allocation between these two major categories of assets. We repeated a similar analysis, this time using the difference between stock returns and bond returns, i.e. the equity premium, over 3-month, 6-month and 12-month periods. To find the equity premium for a particular period in month t , we subtract the interest on the treasury bill with that maturity from the stock market return over the same period. For example, 3-month equity premium in month t is the difference between stock return over the subsequent three months and the interest rate on a 3-month Treasury bill auctioned in that month.

The results for comparison of stock returns with bonds are given in Table 4. The average equity premiums that correspond to different quintiles of P/E multiples and dividend yields are indeed similar to the real returns. Following months with low P/E ratios and

Table 4. Equity Premium

		Average return over subsequent			Percentage of positive returns		
	Qui.	3-month	6-month	12-month	3-month	6-month	12-month
P/E	1	31,34	100,72	347,23	83,33	91,67	100,00
	2	7,22	35,08	76,25	45,00	40,00	60,00
	3	23,20	27,18	63,89	65,00	75,00	60,00
	4	-6,33	-21,70	-45,56	34,78	26,09	8,70
	5	-15,55	-26,36	-68,90	28,57	23,81	0
D/P	1	-12,42	-30,66	-68,28	31,82	18,18	0
	2	-8,03	-17,92	-40,39	37,50	37,50	12,50
	3	20,15	12,85	-2,29	50,00	54,55	31,32
	4	17,21	44,88	83,49	54,17	54,17	70,83
	5	20,20	92,12	368,19	79,17	87,50	100,00
Average		7,86	22,49	80,01	51,85	51,85	46,30

high dividend yields, equity premiums are positive. Otherwise, bond returns turn out to be higher. Percentage of positive equity premiums do not follow a remarkable pattern in quintiles 2, 3 and 4, especially for periods of 3 months and 6 months. Only 12-month equity premiums have a clear pattern across different quintiles.

3.3 P/E and Dividend Yields as an Investment Strategy

Given the presence of predictive ability of P/E ratio and dividend yield in the Istanbul Stock Exchange, the practical question that comes to mind is whether such a result could produce a profitable asset allocation strategy. To test that implication, we divided the sample period into two segments. The first period from 1986 to the end of 1992 is taken as the estimation period during which upper and lower levels of the P/E ratio and dividend yield quintiles are determined. We then use the second period between 1993 and 1995 to test an asset allocation strategy between stocks and bonds where the decision to shift between these two classes of assets are based on observed P/E ratio and dividend yield at that time. Keeping the length of our forecast period and convenience of three-month Treasury bills resulting from their availability for investing in mind, we chose to reevaluate our asset allocation decision quarterly. Hence, at the beginning of each quarter after 1993, we update our portfolio between stocks and 3-month Treasury bills according to the signals from the average market P/E ratio (dividend yield). Similar to the method utilized by Blieberg (1994), we look at the P/E ratio (or dividend yield) at the beginning of the quarter. If it falls in the third quintile, we allocate our funds equally between stocks and bills. Otherwise, we increase or decrease the proportion of stocks in the portfolio by x percent and simultaneously change the proportion of bills by the same amount, for every quintile difference of the observed P/E (D/P) from the third quintile. For example, if at the beginning of the quarter we observe a P/E value in quintile 2, we invest $50+x$ percent in stocks and $50-x$ percent in bills. We would have invested $50+2x$ in stocks and $50-2x$ percent in bills, assuming a P/E value in quintile 1. The value of x , the incremental proportion of investment in each asset category is taken as 5%, 10%, 15%, 20% and 25% in five different trials. When x is 25%, our investment

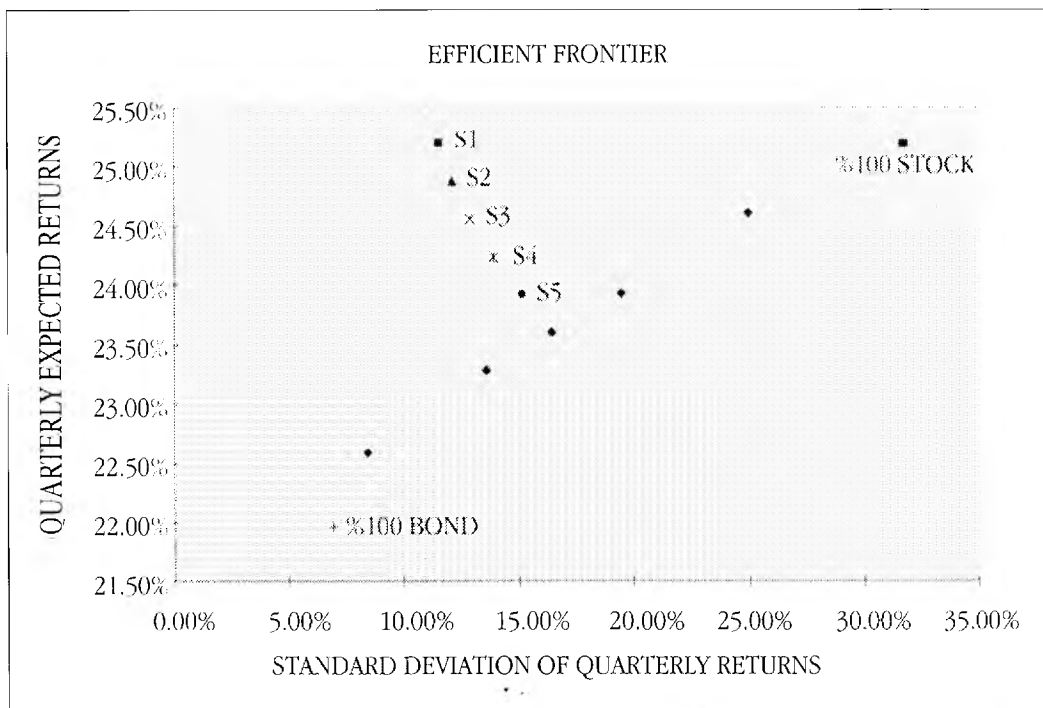
strategy is most aggressive. In that case, when we observe a very low P/E value, i.e. a value in the first quintile, we invest entirely in stocks, whereas a very high P/E ratio in the fifth quintile would shift all funds into Treasury bills. On the other hand, a value of 5% for x represents the most conservative strategy. For a given level of the incremental proportion of investment x , we revise our portfolio every quarter according to the observed P/E (D/P) value and we compute the average quarterly return and standard deviation of returns for the forecast period between 1993-1995. Hence, we obtain five pairs of average quarterly returns and standard deviations, one for every level of x . The average returns and standard deviations for asset allocation strategies based on P/E ratios and dividend yields are presented in Table 5. In both cases, the most aggressive strategy with $x=25\%$ has the highest average quarterly return with lowest standard deviation. The average quarterly returns are 25.68% and 25.20% for P/E and D/P based strategies, respectively. The quarterly standard deviations are slightly above 11%. More conservative strategies yield somewhat lower returns with increased variation. Performance of P/E and dividend yield strategies are almost identical. We have to note that, during the forecast period, the observed P/E ratios fall in quintiles 3, 4, and 5. These values prompt more investment in bills. Hence, no portfolio is invested more than 50% in stocks at any time. Strategies based on dividend yields produce a similar outcome.

Table 5. Performance of P/E and D/P-based Investment Strategies

		Strategy 1 ($x=25\%$)	Strategy 2 ($x=20\%$)	Strategy 3 ($x=15\%$)	Strategy 4 ($x=10\%$)	Strategy 5 ($x=5\%$)
P/E	Av. Ret.	25,68	25,26	24,85	24,43	24,02
	Std. Dev.	11,26	11,75	12,57	13,67	14,98
D/P	Av. Ret.	25,20	24,88	24,56	24,24	23,92
	Std. Dev.	11,55	12,10	12,91	13,94	15,13

In order to compare the performance of asset allocation strategies with a naive buy-and-hold strategy, we created seven portfolios composed of bills and shares. The first portfolio contains only Treasury bills, and the last one is made up of entirely stocks. In between, we have portfolios of both asset categories in changing proportions. Ex post efficient frontier of these naive portfolios are depicted in Figure 3. The portfolio that consists of bonds only had an average return of 21.97% per quarter, with a standard deviation of 6.96%. The stock portfolio's quarterly average return was 25.23%, but its high volatility is easily seen from its standard deviation of 31.92%. The average return of the equal weighted portfolio of bills and stocks is 23.60%, and as a result of diversification, standard deviation is 16.46%. In Figure 3, we also plotted average return and standard deviations of our P/E generated portfolios. These portfolios strictly dominate five of the seven naive portfolios. They have less risk and higher return. Only the naive portfolio consisting of all Treasury bills and the one next to it with a heavy investment (81%) in bills, have lower standard deviations together with lower average returns, hence strict dominance does not apply to them. We would like to remind the

Figure 3



readers that the number of occurrences of low P/E quintiles and high dividend yields is nil. Therefore, our trading rule did not have an opportunity to issue a signal to invest heavily in stocks. We believe that, if such were the case, the overall return of investment strategies would have been much greater.

4. Conclusions

In this study, we investigated whether average market P/E ratio and dividend yield can be used as a forecasting tool for medium-to long-term returns in the Istanbul Stock Exchange. Overall results look promising for the investors. Both P/E and dividend yield have predictive ability for returns in the subsequent three to 12 months. The real and nominal returns are very high following periods of very low P/E ratios and very high dividend yields. Similarly, stock market performance is remarkably poor after observing very high P/E ratios and very low dividend yields. To test if we can employ this finding for an asset allocation strategy, we used the forecasts during an out-of-sample period where we assumed our hypothetical investor would shift between stocks and Treasury bills. This asset allocation strategy strictly dominates most naive portfolios of stocks and bills in terms of mean and variance of returns.

The findings of our study agree with the literature on long-term return predictability. Very interestingly, the results of Blieberg (1994) using S&P 500 index data were quite similar to ours. However, Blieberg's model does not perform well in the out-of-sample period. Hence he concludes that P/E multiple is a useful valuation tool, but lacks forecast power for the investor. Performance of the same asset allocation strategy in the Turkish market is much stronger. Unfortunately, during the three-year period in which we tested the strategy, P/E ratio and dividend yields did not signal any bull market. Whatever the premium, our asset allocation strategy realized over the naive buy-and-hold portfolio is made possible by moving out of the stock market during some brief periods of bear markets. In that regard, P/E ratio and dividend yield were good indicators for market timing before the bear markets. Yet, we do not know how it would perform in a longer test period when there are more ups and downs in the stock market.

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Integration Versus Segmentation: The Istanbul Stock Exchange^a

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Abstract

The purpose of this paper is to analyze the integration versus segmentation issue for the Istanbul Stock Exchange vis-a-vis global developed markets. Two different classes of information variables were used. These are global and local variables. Global variables are the return of the world market portfolio, dividend yield of S&P 500 stock index, U.S. term structure premia, and U.S. default risk yield spread. Local variables are the returns, price earning ratios and dividend yields of the Istanbul Stock Exchange portfolio. The sample for all the information variables includes the period from January 1989 to December 1993. Our results suggest that it is possible to estimate future behavior of the Istanbul Stock Exchange returns by using local information variables. We also found out that the Istanbul Stock Exchange is completely segmented with developed countries' stock markets during the time period mentioned above.

I. Introduction

In recent years, the issue of integration versus segmentation in international financial markets has crucial implications for global portfolio selections. Recently, the presence of market segmentation in some of the emerging equity markets forced investors to include them in their global portfolio so that they could utilize higher returns in these countries. In general, the stock markets can be either completely integrated, or completely segmented or partially

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^a We are indebted to Hakan Yılmaz, Ph.D., of the Administrative Sciences Faculty of Bosphorus University, for his invaluable review and contributions to this text.

integrated (or segmented). If markets are completely integrated, then assets with the same risk have identical expected returns regardless of the market in which they are sold. On the other hand, with segmentation, international portfolios display greater risk-adjusted performance because the risk can be diversified.

In this paper, we examine the integration versus segmentation question for the Turkish equity market in a globally developed market portfolio. According to the Capital Asset Pricing Model which was developed by Mossin¹, Lintner², and Sharpe³, the risk that the investors face is the unpredictability or variability of the returns. The total risk of the portfolio can be divided into two components: systematic risk (or market risk) and unsystematic risk (or specific risk). Systematic risk refers to that portion of total variability of returns caused by factors affecting the prices of all securities, e.g., political, economic factors that are unmanageable and external in their effect on all securities. On the other hand, unsystematic risk refers to factors that are internal and “unique” to the industry or company, e.g., management capability, consumer preferences, labor strikes, etc. Notably, specific risk can be eliminated or reduced by proper diversification, whereas it is not possible to get rid of the overall market risk even with extensive diversification.

We analyze the issue of segmentation versus integration for Istanbul Stock Exchange stocks relative to a world market portfolio which is consisted only by the developed market portfolios.⁴ We assume that foreign investors could easily access the Turkish market as well as Turkish investors do foreign markets. If the Istanbul Stock Exchange is completely segmented with the world market portfolio, then only diversifiable (nonsystematic) risk, e.g., the Turkish domestic systematic risk should determine the pricing of assets.

¹ Jan Mossin, “Equilibrium in a Capital Asset Market,” *Econometrica*, October 1966.

² John Lintner, “The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets,” *Review of Economics and Statistics*, February 1965.

³ William Sharpe, “Capital Asset Prices: A Theory of Market Equilibrium,” *Journal of Finance*, September 1964.

⁴ The developed market portfolios include the countries such as Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the UK and the U.S.

II. Data

There are two different classes of information variables; global and domestic. Global variables are the world market portfolio returns, the dividend yields of the Standard and Poor's Stock Index, the U.S. term structure premia, and the U.S. default risk spread yield. These variables capture the business cycle in the world market. The rates of return on the world market portfolio were taken from the Financial Times Actuaries (FTA). The returns in the FTA were computed as the market capitalization weighted average of returns for all included countries. Dividend yields of Standard and Poor's Stock Index were identified from the Standard and Poor's Current Statistics. We computed the U.S. term structure premia as the difference between ten-year U.S. bond yield and the yield on three-month U.S. Treasury bill, published in the Wall Street Journal. The U.S. default risk spread yield was derived from Moody's "Baa" and "Aaa" rated bond yields.

Local variables, on the other hand, are Turkish equity returns in U.S. dollars, price-earning ratios, and local dividend yields. All the domestic variables are furnished by the International Finance Corporation of the World Bank. Our sample for all the information includes monthly data for the period from January 1989 to December 1993.

Auto-correlations of the Turkish monthly returns are provided in Table 1. While the first-order auto-correlation of the returns is not significant for the first lag, there is a significant auto-correlation for the second, third and fourth lags at the 5% level of significance. According to both Arch and White tests' results we reject the null hypothesis of homoscedastic error terms at 5% level of significance, where error terms are heteroscedastic.

Table 1: Auto-correlations of the Turkish Stock Returns

	Lag 1	Lag 2	Lag 3	Lag 4
Durbin h Test	1.331	4.596	6.788	8.045
ρ value	0.190	0.955	0.934	0.936

III. International Capital Asset Pricing Model

The International version of CAPM indicates that the risk can be lowered by including different country assets in portfolios. If the market movement of an

individual country is independent from other countries', then any fund manager can reduce the market risk of the portfolio by diversifying its exposure to a number of different equity markets around the world.

If Z_{it-1} ⁵ is the vector of local information variables that are available to the investors at time t-1, then⁵

$$E[r_{it}|Z_{it-1}] = \beta_i E[r_{wt}|Z_{it-1}] \quad (1)$$

where

- R_{it} : return on the local market portfolio i at time t,
- R_{wt} : return on the world market portfolio of risky assets,
- R_{ft} : risk-free rate of interest (observable at time t-1, T-bill rate),
- $r_{it} = R_{it} - R_{ft}$: risk premium on the local market portfolio, and
- $r_{wt} = R_{wt} - R_{ft}$: risk premium on the world market portfolio.

β_i , is the conditional covariance between the return on local market and the world market portfolio divided by the conditional variance of the world market portfolio return: $\beta_i = \frac{\text{COV}(r_{it}, r_{wt})}{\text{var}(r_{wt})}$

Equation (1) implies that expected return on the local market portfolio is proportional to the expected return on the world market portfolio. Beta is the coefficient of this proportionality.

In our model, conditional expectations are linear on information variables. The model is conditional in the sense that predetermined information is allowed to affect the expected returns. The conditional expectation of the local market asset returns are linear function of the local information variables, which is formulated as follows:

$$r_{it} = Z_{it-1} \delta_i + e_{it} \quad (2)$$

Z_{it-1} is the investors' forecast error for the return on local market portfolio. δ_i is the set of time invariant weights that the investor

⁵ Local market portfolio is the portfolio created by the International Finance Corporation which includes the stocks traded only in the Istanbul Stock Exchange (ISE).

uses to derive the conditional expected returns. Under the assumptions that error terms are normally distributed with mean zero, then the expectation of returns will be as following:

$$E[r_{it}|Z_{it-1}] = Z_{it-1}\delta_i \quad (3)$$

The error terms are the difference between actual and expected returns which can be written as:

$$e_{it} = r_{it} - E[r_{it}|Z_{it-1}] \quad (4)$$

Similarly, the investors' forecast error for the return on the world market portfolio (e_{wt}), can be defined as:

$$e_{wt} = r_{wt} - E[r_{wt}|Z_{wt-1}] \quad (5)$$

where Z_{wt-1} is the global information variables that are available to investors and δ_w is the time invariant coefficients.

IV. Integration versus Segmentation

We consider two extreme cases, namely complete integration and complete segmentation. If the markets are completely integrated, substituting the definition of beta into equation (1) gives the following equation:

$$E[r_{it}|Z_{it-1}] = \frac{Cov[r_{it}, r_{wt}|Z_{wt-1}]}{Var[r_{wt}|Z_{wt-1}]} E[r_{wt}|Z_{wt-1}] \quad (6)$$

Rearranging equation (6) will give us the following equation:

$$E[r_{it}|Z_{it-1}] = \frac{E[r_{wt}|Z_{wt-1}]}{Var[r_{wt}|Z_{wt-1}]} Cov[r_{it}, r_{wt}|Z_{wt-1}] \quad (7)$$

Equation (7) implies conditional asset pricing restriction. If the markets are completely integrated, the conditional version of the Capital Asset Pricing Model restricts the conditionally expected return of local market portfolio to be proportional to its covariance

with the world market portfolio. The proportionality factor is the world price of covariance risk, which is defined as the expected return per unit of covariance risk. Equation (7) can also be rewritten as:

$$E[r_{it}|Z_{it-1}] = \lambda_w Cov[r_{it}, r_{wt}|Z_{wit-1}] \quad (8)$$

where $\lambda_w = \frac{E[r_{wt}|Z_{wt-1}]}{Var[r_{wt}|Z_{wt-1}]}$ is the proportionality factor.

On the other hand, if the markets are completely segmented, the expected return on the local market portfolio is no longer proportional to the covariance but the variance of individual country itself. This can be written as follows:

$$E[r_{it}|Z_{it-1}] = \lambda_i Var[r_{it}|Z_{it-1}] \quad (9)$$

In completely integrated capital markets, investors can diversify local market portfolio risk by holding stocks of foreign countries; as a result, the expected returns are not necessarily affected by the country's domestic risk (variance). However, in completely segmented capital markets, the domestic risk is the only relevant measure of the country's total risk. If the local market portfolio's expected return can be explained only by the variance of the domestic portfolio itself, then the market is completely segmented from the world market portfolio. On the other hand, the country is completely integrated to the world market portfolio if only the covariance between the local and the world market portfolio returns explains the local market portfolio's expected returns. The model which tests complete integration versus complete segmentation should let returns be a function of both variance and covariance.

V. Estimation and Test Methodology

In this model, we assume time varying expected returns and risks (variances and covariances). The variances are calculated monthly

by using the ARCH (Auto Regressive Conditional Heteroscedastic) model. The conditional Arch variances are modeled as follows:

$$h_{it} = \alpha_0 + \alpha_1 \sum_{q=1} e_{it-q} e_{it-q} \quad (10)$$

where α_0 and α_1 are the coefficients of the minimum variance. The covariances, on the other hand, are simply the multiplication of the residuals obtained from equations (4) and (5). Using these variance and covariances, we calculate monthly expected returns. Conditionally expected returns in any country are affected by their covariance with a world benchmark portfolio and by the variance of the country return.

In a perfectly integrated market, only covariance counts. In other words, covariance is priced, not variance. That is, in integrated capital markets, investors can diversify local country variance by holding stocks from many countries. As a result, increases in the country variance (which might be caused by local factors) do not necessarily increase expected returns. In segmented markets, the variance is the relevant measure of the country risk. If variance explains more of the cross-section of expected returns than covariance, this suggests that many of these markets are not integrated.

A model which tests complete integration versus complete segmentation should let both covariance and variance to enter the pricing of assets.

$$r_{it} = \gamma_0 + \gamma_1 Cov[r_{it} r_{wt} | Z_{wit-1}] + \gamma_2 Var[r_{it} | Z_{it-1}] + e_{it} \quad (11)$$

A test of integration versus segmentation by using equation (11) will test $\gamma_2 = 0$ against the alternative that it is positive. If we do not reject the null hypothesis, then markets are completely integrated. On the other hand, the test of segmentation versus integration will test $\gamma_2 = 0$ against the alternative that it is positive. If we do not reject the null hypothesis, then markets are completely segmented.

VI. Empirical Results

In Table 2, we estimate a regression in the form of equation (3). We regress Turkish stock returns on a variety of forecasting variables such as previous returns, price-earning ratios and dividend yields. We report coefficients with t-statistics in parentheses for the whole sample. The coefficient of determination implies that the explanatory variables in the regression explains 90 percent of the change in the Turkish stock returns.

Table 2: Regression of Turkish Returns on Local Information Variables⁶

β_0	β_1	β_2	β_3	R^2
152,11 (-0,32)	1,00 (-13,59)	-13,66 (-0,72)	15,68 (-0,24)	0.90

In addition, we regressed Turkish excess returns on local and global information variables. This enables us to see whether developed market variables have any ability to predict excess returns of the Istanbul Stock Exchange portfolio. The results indicate that the Turkish stock returns cannot be predicted by the global information variables. We reject the hypothesis that only global variables together can explain the changes in the Istanbul Stock Exchange returns; according to our tests, when we add global variables increase, the explanatory power is insignificant.

In Table 3, we estimate a regression in the form of an equation (11). Test of integration is given by the coefficient of variance whereas test of segmentation is explained by the coefficient of covariance. At the 95% confidence level, the hypothesis of complete integration is rejected; at the same time hypothesis of

⁶Results are based on monthly data starting from 1989:01-1993:12 (60 observations). Turkish returns are calculated monthly by International Finance Corporation of the World Bank.

complete segmentation is accepted. It appears that the Istanbul Stock Exchange is completely segmented from developed market portfolio.

Table 3 : Test of Integration Versus Segmentation

Integration Test ⁶	Segmentation Test ⁷
5.382	1.046

VII. Conclusion

In this paper, we have studied Turkish equity market integration versus segmentation with the developed equity markets. Our main results are as follows:

First, it is possible to forecast the changes in Turkish stock returns using sets of domestic variables. The domestic price-earning ratio has a generally negative effect on excess stock returns, while the lagged return and dividend yield have a positive effect. The lagged returns have the highest explanatory power among these variables. This also supports the hypothesis of positive auto-correlation of returns. Second, there is evidence that global variables cannot explain the changes in the Turkish stock returns in our sample period. This also supports our result of complete segmentation. Third, the Turkish stock market is completely segmented during the 1989-1993 time period. Our results should help to conduct the research on the causes of changing expected stock returns in Turkey.

⁷For the test of segmentation is tested against:

$$r_{it} = \gamma_0 + \gamma_1 Cov[r_{it}r_{wt}|Z_{wit-1}] + \gamma_2 Var[r_{it}|Z_{it-1}] + e_{it}$$

Despite the accuracy of the above equation, we have tested the below equation:

$$R_{it} = \gamma_0 + \gamma_2 Var_{t-1}[r_{it}|Z_{it-1}] + e_{it}$$

⁸ For the test of market integration is tested against:

$$r_{it} = \gamma_0 + \gamma_1 Cov[r_{it}r_{wt}|Z_{wit-1}] + \gamma_2 Var[r_{it}|Z_{it-1}] + e_{it}$$

Despite the accuracy of the above equation, we have tested the below equation:

$$R_{it} = \gamma_0 + \gamma_1 Cov_{t-1}[r_{it}r_{wt}|Z_{wit-1}] + e_{it}$$

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ISE Market Indicators

STOCK MARKET									
	Number of • Companies	Traded Value				Market Value		Dividend Yield	P/E Ratios
		Total		Daily Average		TL	US\$		
		<u>TL</u> <i>Billion</i>	<u>US\$</u> <i>Million</i>	<u>TL</u> <i>Billion</i>	<u>US\$</u> <i>Million</i>	<u>TL</u> <i>Billion</i>	<u>US\$</u> <i>Million</i>		
1986	80	9	13	0.03	0.05	709	938	9.15	5.07
1987	82	105	118	0.42	0.47	3,182	3,125	2.82	15.86
1988	79	149	115	0.59	0.45	2,048	1,128	10.48	4.97
1989	76	1,736	773	6.81	3.03	15,553	6,756	3.44	15.74
1990	110	15,313	5,854	61.99	23.70	55,238	18,737	2.62	23.97
1991	134	35,487	8,502	143.67	34.42	78,907	15,564	3.95	15.88
1992	145	56,339	8,567	224.46	34.13	84,809	9,922	6.43	11.39
1993	160	255,222	21,770	1,037.49	88.50	546,316	37,824	1.65	25.75
1994	176	650,864	23,203	2,572.58	91.71	836,118	21,785	2.78	24.83
1995	205	2,374,055	52,357	9,458.39	208.59	1,264,998	20,782	3.56	9.23
1996	222	1,880,145	25,980	10,162.95	140.43	2,542,240	28,043	3.51	9.74
1996/Q1*	206	774,606	12,075	13,128.92	204.66	2,213,410	31,480	4.02	11.84
1996/Q2	214	631,867	8,357	10,358.47	137.00	2,380,029	29,390	3.73	12.53
1996/Q3	222	473,672	5,548	7,287.27	85.35	2,542,240	28,043	3.51	9.74

*Q = 3- month period

Closing Values of the ISE Index (Composite Jan. 1986=100)						
	TL Based			US\$ Based		
	Composite Index	Financial Index	Industrial Index	Composite Index	Financial Index	Industrial Index
1986	170.86			131.53		
1987	673.00			384.57		
1988	373.93			119.82		
1989	2,217.66			560.57		
1990	3,255.75	3,255.75	3,255.75	642.63	642.63	642.63
1991	4,369.15	3,355.42	4,962.74	501.50	385.14	569.63
1992	4,004.18	2,433.51	4,914.50	272.61	165.68	334.59
1993	20,682.89	19,189.85	22,288.30	833.28	773.13	897.96
1994	27,257.14	22,964.30	30,473.52	413.27	348.18	462.03
1995	40,024.57	30,003.93	46,247.16	382.62	286.83	442.11
1996	72,452.91	64,593.45	79,281.77	465.08	414.63	508.91
1996/Q1*	67,045.18	59,793.46	73,614.72	554.88	494.86	609.25
1996/Q2	70,489.22	59,940.13	78,533.85	506.52	430.72	564.33
1996/Q3	72,452.91	64,593.45	79,281.77	465.08	414.63	508.91

*Q = 3- month period

BONDS AND BILLS MARKET

Outright Purchases and Sales Market

	Public Securities Traded Value				Private Securities Traded Value			
	Total		Daily Average		Total		Daily Average	
	<i>TL</i> <i>Billion</i>	<i>US\$</i> <i>Million</i>	<i>TL</i> <i>Billion</i>	<i>US\$</i> <i>Million</i>	<i>TL</i> <i>Billion</i>	<i>US\$</i> <i>Million</i>	<i>TL</i> <i>Billion</i>	<i>US\$</i> <i>Million</i>
1991	1,476	312	10.85	2.30	--	--	--	--
1992	17,955	2,403	71.54	9.57	22	3.18	0.09	0.01
1993	122,738	10,718	498.94	43.57	120	9.98	0.49	0.04
1994	269,940	8,828	1,066.95	34.89	52	3.55	0.21	0.01
1995	739,942	16,509	2,936.28	65.51	--	--	--	--
1996	1,670,719	22,077	8,934.33	118.06	--	--	--	--
1996/Q1*	434,010	6,777	7,114.92	111.10	--	--	--	--
1996/Q2	540,243	7,121	8,856.45	116.74	--	--	--	--
1996/Q3	696,465	8,179	10,714.85	125.82	--	--	--	--

*Q= 3- month period

ISE GDS Price Indices (December 25-29, 1995=100)				
TL Based				
	30 Days	91 Days	182 Days	General
1996	102.85	108.19	114.67	108.58
1996/Q1*	101.65	105.59	112.09	105.26
1996/Q2	103.04	108.43	114.37	108.09
1996/Q3	102.85	108.19	114.67	108.58
US\$ Based				
1996	67.13	70.61	74.84	70.87
1996/Q1*	85.54	88.86	94.32	88.58
1996/Q2	75.29	79.22	83.56	78.98
1996/Q3	67.13	70.61	74.84	70.87

*Q= 3- month period

ISE GDS Performance Indices (December 25-29, 1995=100)			
TL Based			
	30 Days	91 Days	182 Days
1996	184.91	198.31	215.83
1996/Q1*	126.34	131.13	138.75
1996/Q2	153.86	162.85	172.31
1996/Q3	184.91	198.31	215.83
US\$ Based			
1996	120.69	129.43	140.87
1996/Q1*	106.32	110.35	116.76
1996/Q2	112.42	118.99	125.90
1996/Q3	120.69	129.43	140.87

*Q= 3- month period

Repo- Reverse Repo Market				
Repo- Reverse Repo Traded Value				
	Total		Daily Average	
	<i>TL Billion</i>	<i>US\$ Million</i>	<i>TL Billion</i>	<i>US\$ Million</i>
1993	59,009	4,794	275.74	22.40
1994	756,683	23,704	2,990.84	93.69
1995	5,781,776	123,254	22,943.56	489.10
1996	11,484,102	152,267	61,412.31	814.26
1996/Q1*	2,899,673	45,246	47,535.62	741.74
1996/Q2	4,170,337	54,966	68,366.18	901.08
1996/Q3	4,414,092	52,055	67,909.11	800.85

*Q= 3- month period

Global Capital Markets

Countries which have developed economies are also considered to have developed financial markets. With the same criteria, and using per capita income level, while the United Nations and the OECD classify economies, the IFC groups capital markets as “developed” or “emerging.” According to the IFC, those countries with minimum US\$8,955 per capita income as of 1994 are defined as developed markets. In this respect, developing economies’ markets and emerging markets are used interchangeably. However, it should be noted that some capital markets in developing economies can be more developed, in technical terms, than those in developed economies.

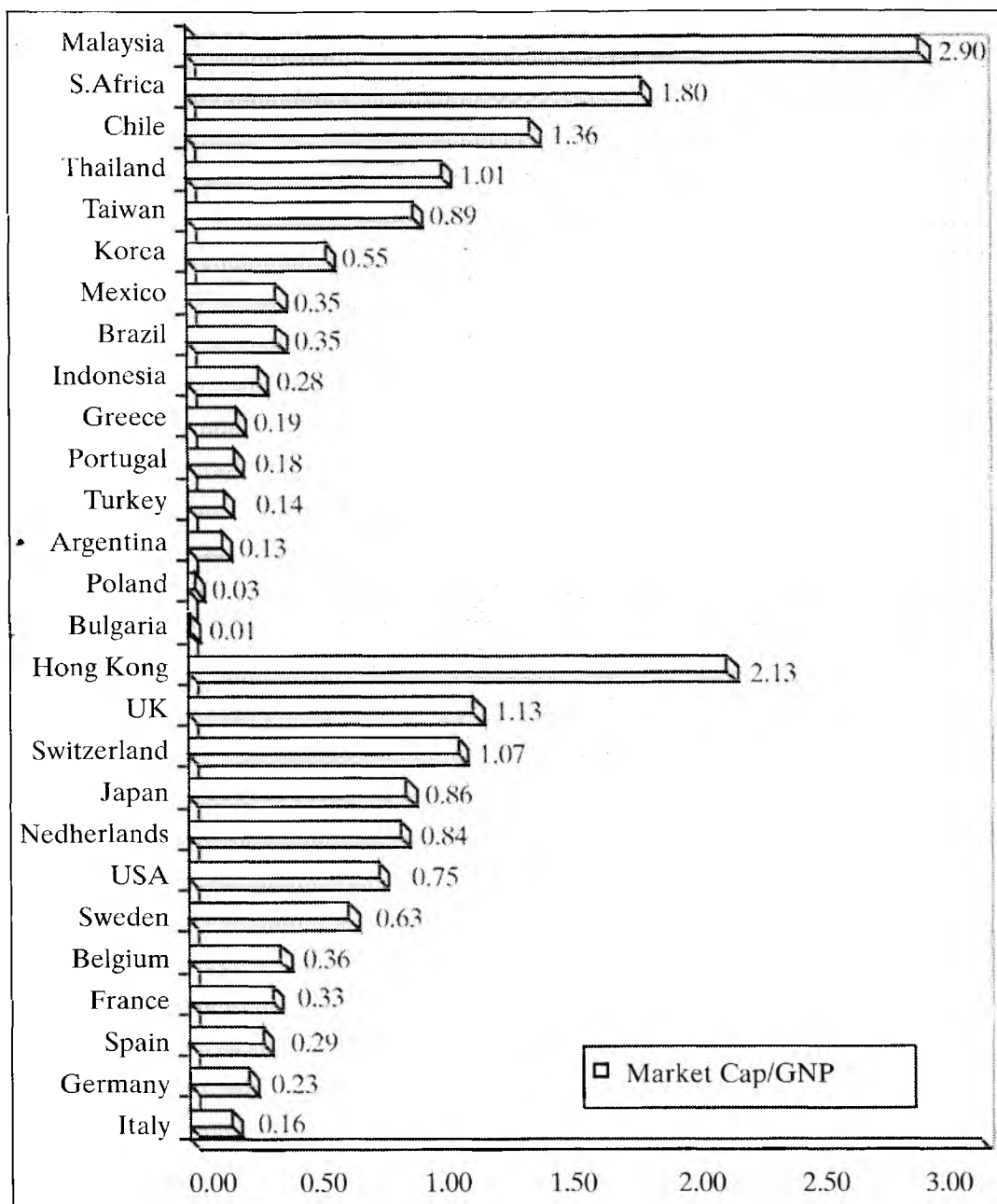
With regard to the IFC’s classification, there were 165 medium and/or low income countries in 1995. Total market capitalization of these countries was US\$1,900 billion representing 10.7 % of combined world markets.

Main findings and some basic aspects of global capital markets and the Istanbul Stock Exchange (ISE) from the following tables and graphics are summarized below.

- A glance at the IFC Emerging Markets Index reveals that emerging markets do not yield abnormal returns in comparison with developed markets.
- Global investors can transfer their portfolio investments among markets in the short run. This, in turn, causes a risk for emerging markets as well. The increase in direct investment achieved in developing countries is reflected on their market capitalization in the long run, where portfolio investments, and the so-called “hot money”-do not necessarily help to a sustainable growth.
- As a significant proxy for market depth, market capitalization dramatically increased both in 1989 and 1993 that followed capital market crisis. The change in ISE indices confirm this development. On the other hand, the Gulf Crisis in 1990 and the economic crisis in Mexico in 1994 were reasons of enormous significance leading to the declines in capital markets.
- Despite the fact that the number of traded in emerging stock markets rose in 1995, the market value and trading volume declined due to high risk-return profile investors can invest in and out their funds in emerging markets.

- Developed capital markets are the headrunners in terms of market capitalization and trading volume. As an emerging market, the ISE, was ranked 20th in 1995 in terms of the trading volume that confirmed its dynamic growth. Besides, turnover ratio was the highest among emerging markets in the same year.
- Cross-borders investors take the country risk into account in structuring international portfolios. Because of the differences in pricing, they are inclined to invest in different countries. As P/E ratios change approximately between 9 to 30 for different emerging markets, it can be inferred that companies reach very different market values with respect to the net profit that they offer to the shareholders. For instance, share holders in a Brazilian company earned from capital gains rather than companies' dividend payments. In case of Turkey, the said ratios (P/E) during the period of 1995-96, was relatively low and stable. Being a consequence of the 1994 economic crisis, the situation presents not only weakened image for markets but also potential gains for investors.
- Regional and international integration influences stock market performances directly or indirectly. However, the reflection of global developments on each market can be different. It is clear that, countries in the same economic bloc or union have similar characteristics in general.

Stock Markets' Importance In the National Economy



Note: The capitalization of stock market is the total market value of all listed and traded companies in the country's stock exchange or exchanges.

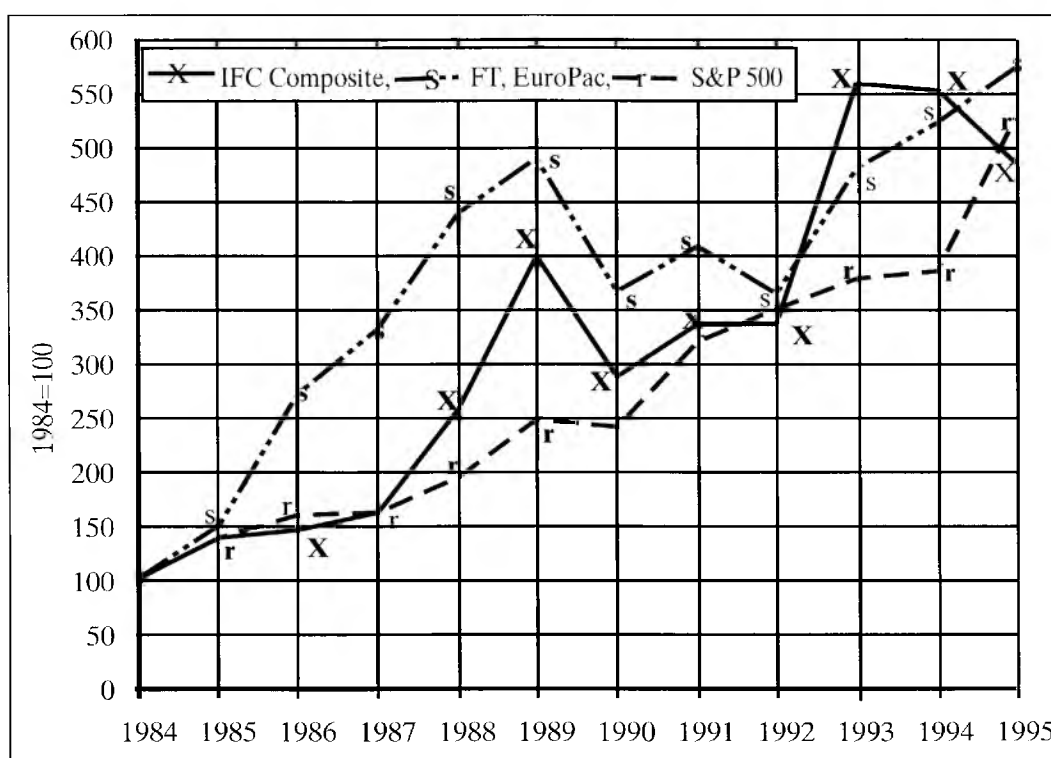
Source: IFC Emerging Stock Markets Factbook 1996; World Equity, June 20, 1995; World Economic Atlas, 1995, IFC June 1995.

Market Capitalization (USD Million, 1986-1995)

	Global	Developed Markets	Emerging Markets	ISE
1986	6,514,199	6,275,582	238,617	935
1987	7,830,778	7,511,072	319,706	3,221
1988	9,728,493	9,245,358	483,135	1,135
1989	11,713,683	10,975,622	738,061	6,783
1990	9,393,545	8,782,267	611,278	19,065
1991	11,290,494	10,435,686	854,808	15,703
1992	10,833,177	9,949,721	883,456	9,931
1993	13,963,831	12,377,034	1,586,797	37,496
1994	15,154,292	13,241,841	1,912,451	21,605
1995	17,787,883	15,892,174	1,895,709	20,772

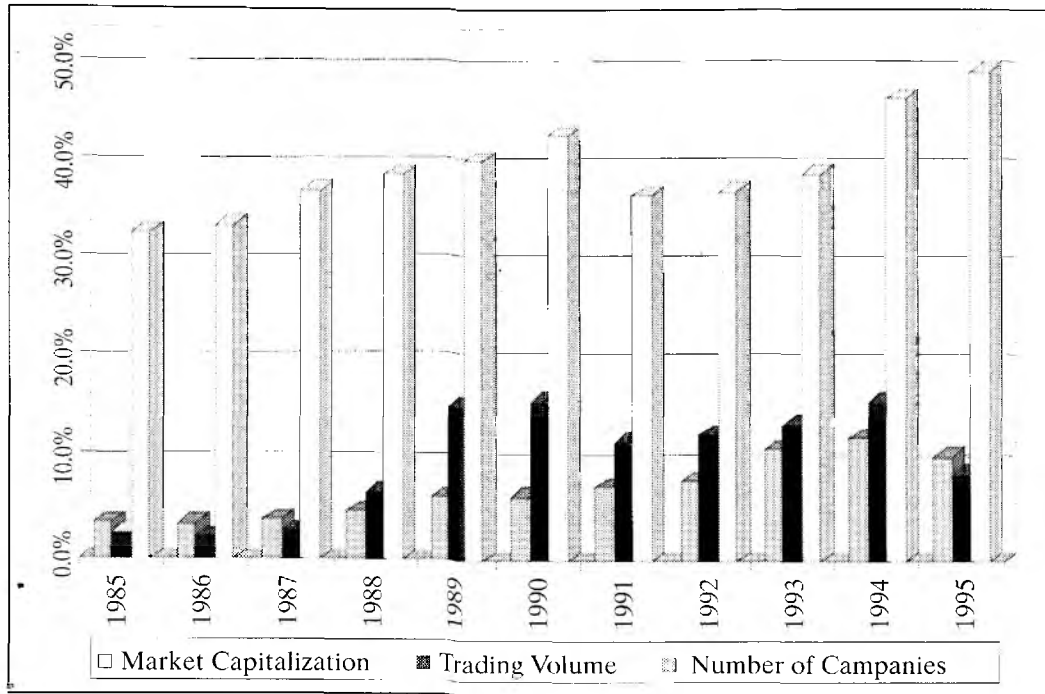
Source: IFC Factbook 1996, pp, 16-17,

Comparison of Markets' Indices (1984-95)



Source: IFC Factbook 1996, p. 43.

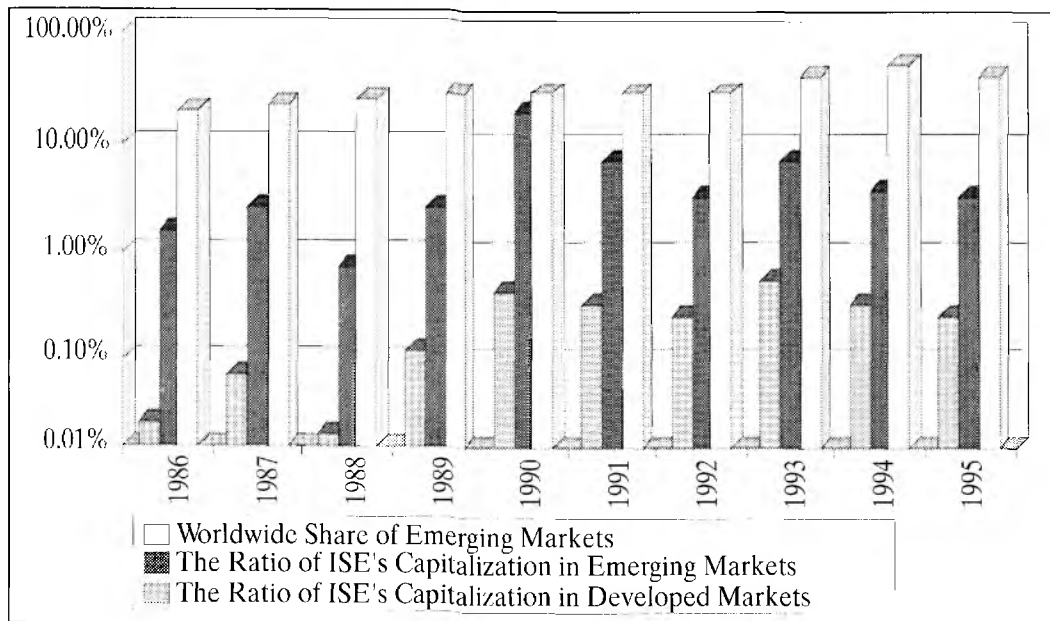
Worldwide Share of Emerging Capital Markets (1985-1995)



Source: IFC Factbook 1996, pp. 16-23.

Note: The number of traded companies in emerging markets dramatically increased until 1995 and the worldwide share reached 50%. On the other hand, their share in global capitalization is relatively very low since the average size of the companies are significantly smaller.

The ISE's Share in World Markets (1986-1995)



Source: IFC, 1996.

Capital Markets Ranked by Main Indicators (1995)

	Turnover Ratio		Market Returns		Capitalization		Trading Volume	
		(%)		(%)		(USD bn)		(USD bn)
1	Turkey	226.0	Ivory Coast	140.8	USA	6,858	USA	5,109
2	Germany	211.4	Iran	124.3	Japan	3,667	Japan	1,232
3	Taiwan	174.9	Trinidad	69.5	England	1,408	Germany	1,147
4	France	146.6	Cyprus	61.5	Germany	577	England	1,020
5	China	115.9	Sweden	42.9	France	522	France	729
6	Korea	97.8	Namibia	40.3	Swit.	434	Taiwan	383
7	USA	85.7	Kuwait	39.5	Canada	366	Swit.	310
8	Swit.	84.4	Sweden	35.0	Nether.	356	Nether.	248
9	Austria	78.3	USA	34.1	Hong Kong	304	Korea	185
10	England	77.1	Tunisia	30.4	S.Africa	381	Canada	184
11	Nether.	75.1	Nether.	25.7	Australia	245	Hong Kong	107
12	Poland	71.5	Spain	25.2	Malaysia	223	Australia	98
13	Slovenia	70.5	Belgium	24.2	Italy	210	Sweden	93
14	Slovakia	69.9	Ireland	23.9	Spain	198	Italy	87
15	Honduras	62.0	Paraguay	19.2	Taiwan	187	Brazil	79
16	Sweden	61.6	Hong Kong	18.9	Korea	182	Malaysia	77
17	Armenia	61.0	England	18.3	Sweden	178	Singapore	60
18	Norway	58.6	S.Africa	14.8	Singapore	148	Spain	60
19	Ireland	56.7	Canada	14.7	Brazil	148	Thailand	57
20	Canada	53.5	Denmark	14.7	Thailand	142	Turkey	51

Source: IFC, 14, 15, 24.

Note : Turkey is in the 57th with 13.4 % in terms of market return, and 38th in terms of market capitalization.

Trading Volume (USD billion, 1986-95)

	Global	Developed	Emerging	ISE	Emerging Global	ISE Emerging
1986	3,573,570	3,490,718	82,852	13	2.32%	0.02%
1987	5,846,864	5,682,143	164,721	115	2.82%	0.07%
1988	5,997,321	5,588,694	408,627	101	6.81%	0.02%
1989	7,468,215	6,302,687	1,165,528	798	15.61%	0.07%
1990	5,512,129	4,617,688	894,441	5,841	16.23%	0.65%
1991	5,016,379	4,410,855	605,524	8,571	12.07%	1.42%
1992	4,778,429	4,165,501	612,928	8,191	12.83%	1.34%
1993	7,702,502	6,633,684	1,068,818	23,242	13.88%	2.17%
1994	10,085,703	8,445,585	1,640,118	21,692	16.26%	1.32%
1995	11,666,260	10,632,763	1,033,497	51,392	8.86%	4.97%

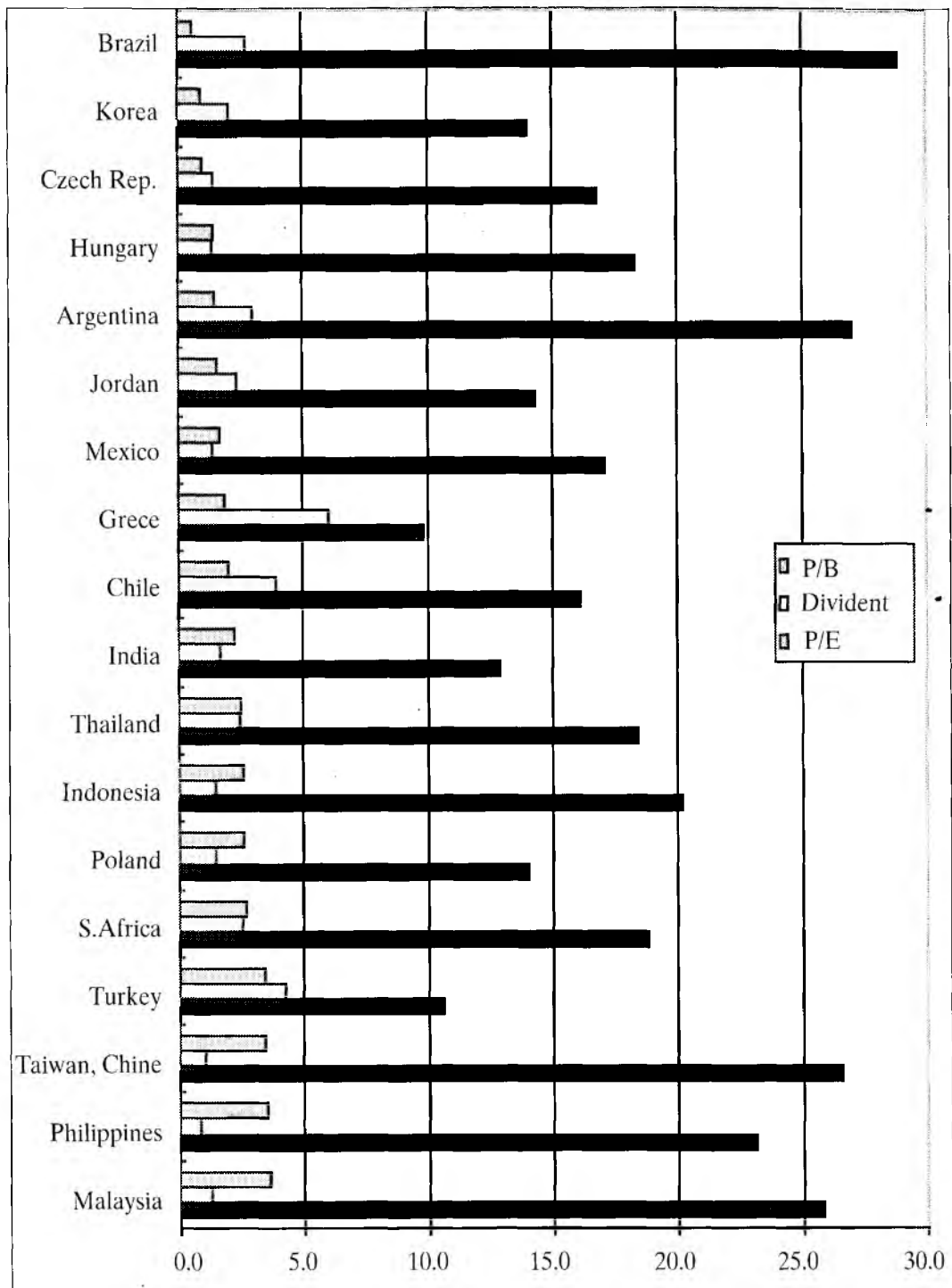
Source: IFC Factbook 1996, pp, 20-21.

Number of Traded Companies (1986-95)

	Global	Developed	Emerging	ISE	Emerging Global	ISE Emerging
1986	28,173	18,555	9,6184	0	34.14%	0.42%
1987	29,278	18,265	11,013	50	37.62%	0.45%
1988	29,270	17,805	11,465	50	39.17%	0.44%
1989	29,486	17,478	12,008	50	40.72%	0.42%
1990	28,918	16,403	12,515	110	43.28%	0.88%
1991	25,951	16,315	9,636	134	37.13%	1.39%
1992	27,586	17,227	10,359	145	37.55%	1.40%
1993	28,768	17,431	11,337	152	39.41%	1.34%
1994	36,078	19,064	17,014	176	47.16%	1.03%
1995	38,864	19,467	19,397	205	49.91%	1.06%

Source: IFC Factbook 1996, pp. 22, 23.

Comparison of Markets' Performances (1996)



Source: IFC, 1996;

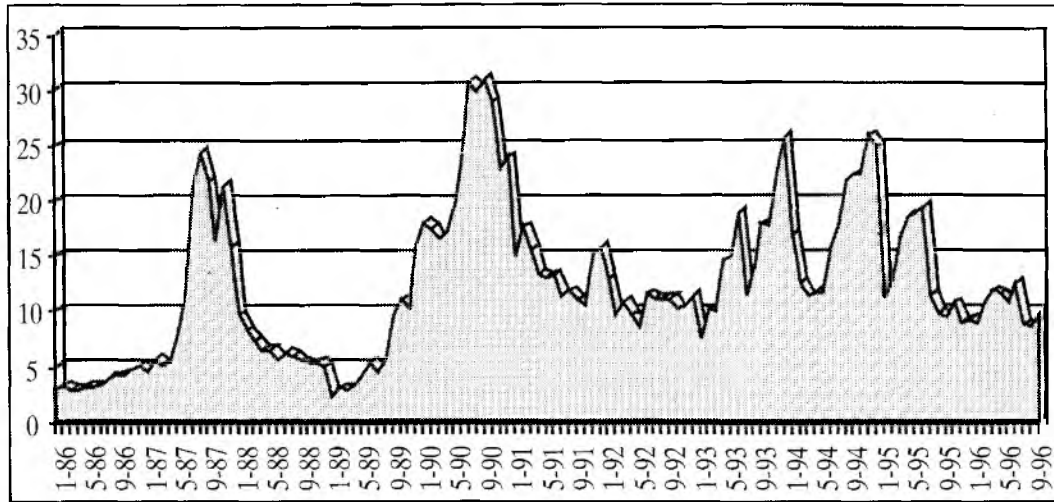
Notes: P/B= Market Value (Price)/Book Value; P/E = Price/Earnings.

Price-Earnings Ratios in Emerging Markets (1992-1996)

Markets	1992	1993	1994	1995	Sep. 1996
Brazil	-24.4	12.6	13.1	36.3	28.9
Argentina	38.0	41.9	17.7	15.0	27.0
Taiwan	16.6	34.7	36.8	21.4	26.6
Malaysia	21.8	43.5	29.0	25.1	25.8
Philippines	14.1	38.8	30.8	19.0	23.1
Indonesia	12.2	28.9	20.2	19.8	20.2
S.Africa	13.2	17.3	21.3	18.8	18.9
Thailand	13.9	27.5	21.2	21.7	18.4
Hungary	-	52.4	-55.3	12.0	18.3
Mexico	12.3	19.4	17.1	28.4	17.1
Czech Rep.	-	18.8	16.3	11.2	16.8
Chile	13.0	20.0	21.4	17.1	16.1
Jordan	14.5	17.9	20.8	18.2	14.3
Korea	21.4	25.1	34.5	19.8	14.0
Poland	-	31.5	12.9	7.0	14.0
India	33.7	39.7	26.7	14.2	12.9
Turkey	6.9	36.3	31.0	8.4	10.6
Greece	6.9	10.2	10.4	10.5	9.8

Source: IFC Factbook 1996, pp. 129-233.

ISE's Price-Earnings Ratio (1986-1996)



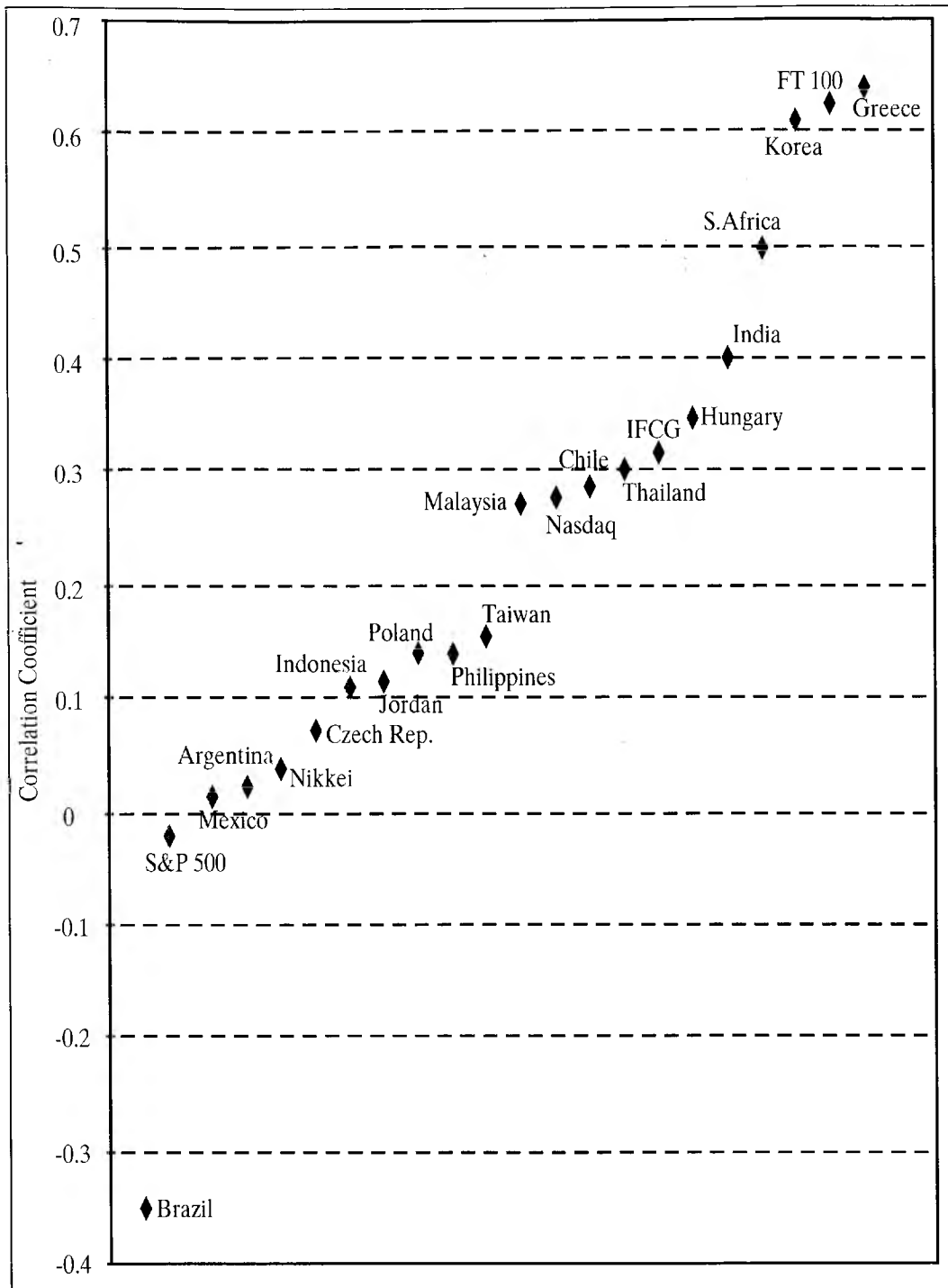
Source: ISE Monthly Bulletin, August 1996.

Market Value/Book Value Ratios (1992-1996)

Markets	1992	1993	1994	1995	Sep. 1996
Malaysia	2.5	5.4	3.8	3.3	3.6
Philippines	2.4	5.2	4.5	3.2	3.5
Taiwan	2.1	3.9	4.4	2.7	3.4
Turkey	1.3	7.2	6.3	2.7	3.4
S.Africa	1.4	1.8	2.6	2.5	2.7
Poland	-	5.7	2.3	1.3	2.6
Indonesia	1.6	3.1	2.4	2.3	2.6
Thailand	2.5	4.7	3.7	3.3	2.5
India	4.7	4.9	4.2	2.3	2.3
Chile	1.7	2.1	2.5	2.1	2.0
Greece	1.7	1.9	1.9	1.8	1.9
Mexico	2.0	2.6	2.2	1.7	1.7
Jordan	1.6	2.0	1.7	1.9	1.6
Argentina	1.2	1.9	1.4	1.3	1.5
Hungary	-	1.6	1.7	1.2	1.4
Czech Rep.	-	1.3	1.0	0.9	1.0
Korea	1.1	1.4	1.6	1.3	0.9
Brazil	0.4	0.5	0.6	0.5	0.6

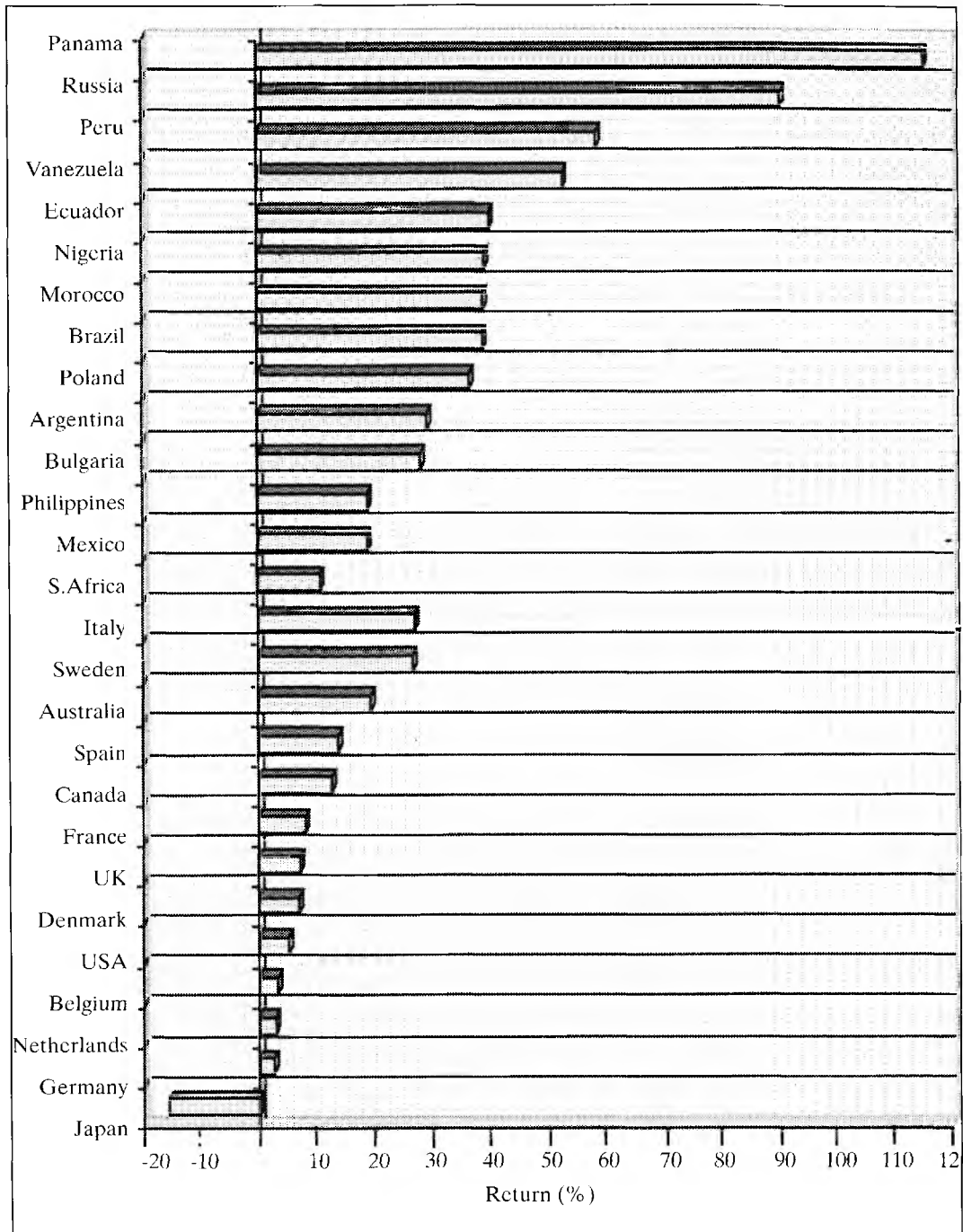
Source: IFC Factbook 1996, pp. 129-233.

Return Index Correlation of the ISE (1995)



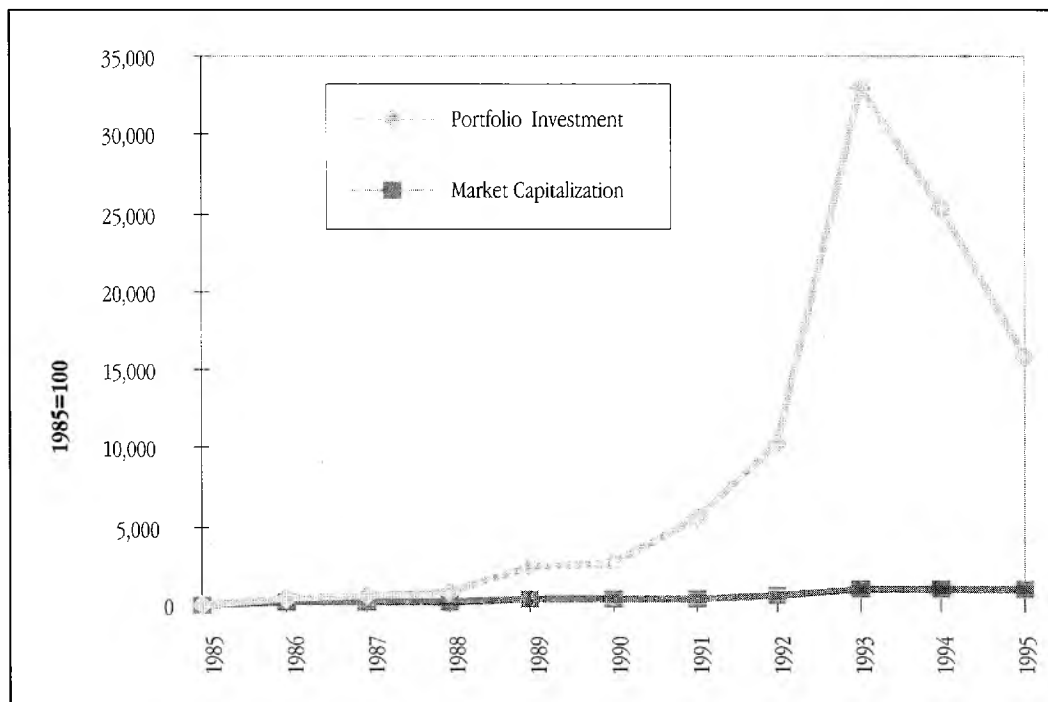
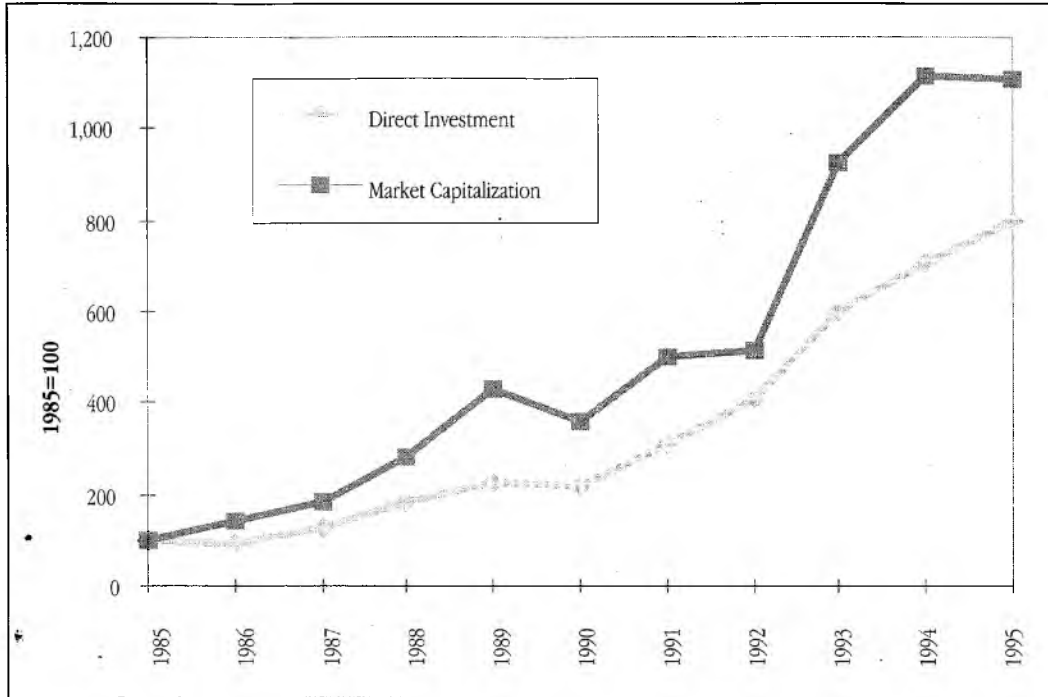
Note: The correlation coefficient is between -1 and +1. If it is zero, for the given period, it is inferred that there is no linear relation between the two series of returns. For instance, the monthly correlation coefficient between the ISE and Mexico in 1995 indicates there is no significant relation between those markets in terms of returns. For monthly returns see. IFC, Factbook 1996, 129-233.

Countries Ranked by Returns in Bond Markets (1996)



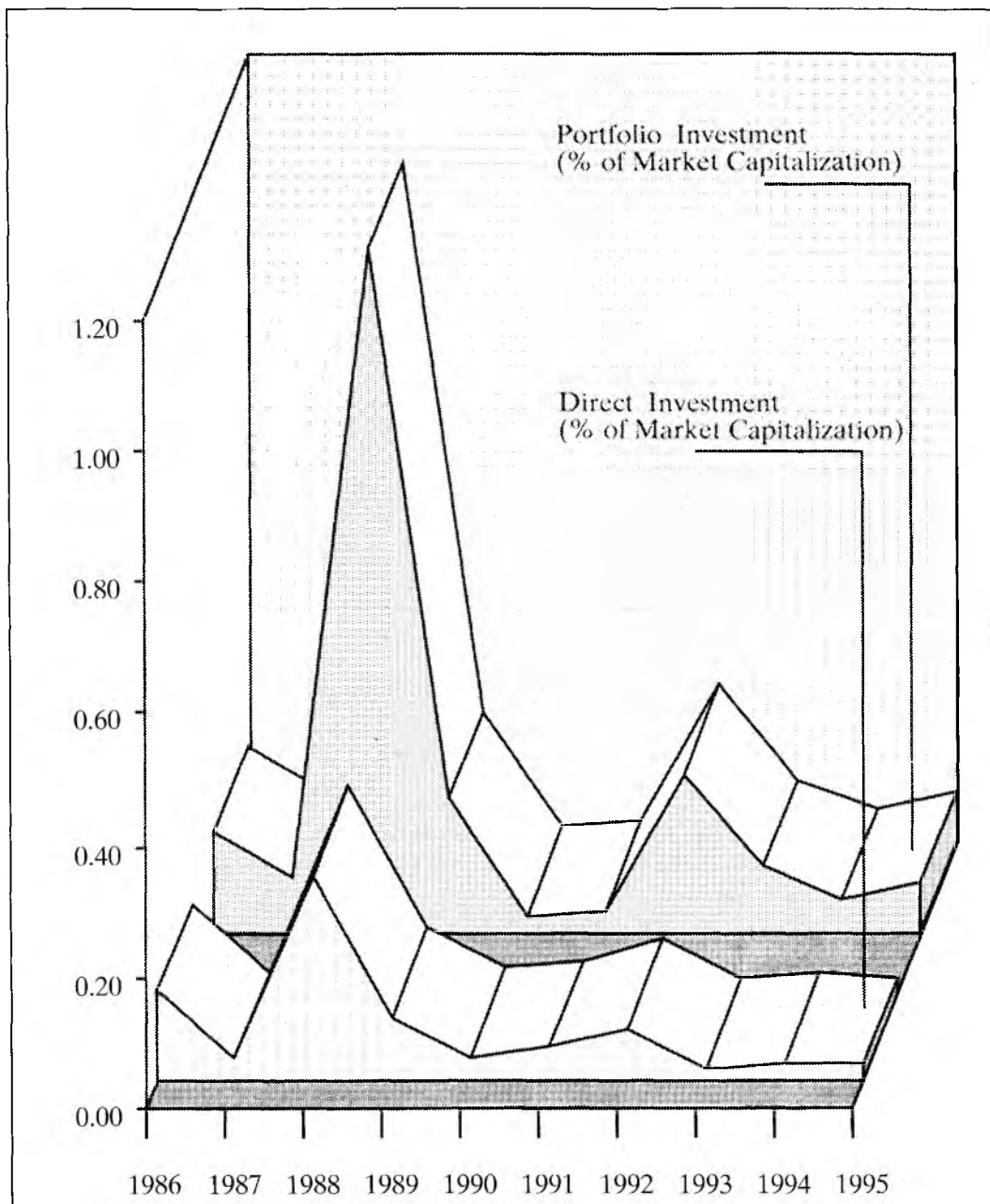
Note: The data based on government bonds in developed markets are given by JP Morgan Securities Inc. as of March 1996 for 12-month return indexes. Besides, the data based on government bonds in emerging markets presents the annual return indexes of those bonds of which are included in the EMBI Index by JP Morgan Securities Inc. and which mature at the end of 1996. See. *World Equity*, No. 34, September 1996, pp. 22-23.

Foreign Investment and Market Capitalization in Emerging Markets (1985-1995)



Source: IFC Factbook 1996, pp. 6-23.

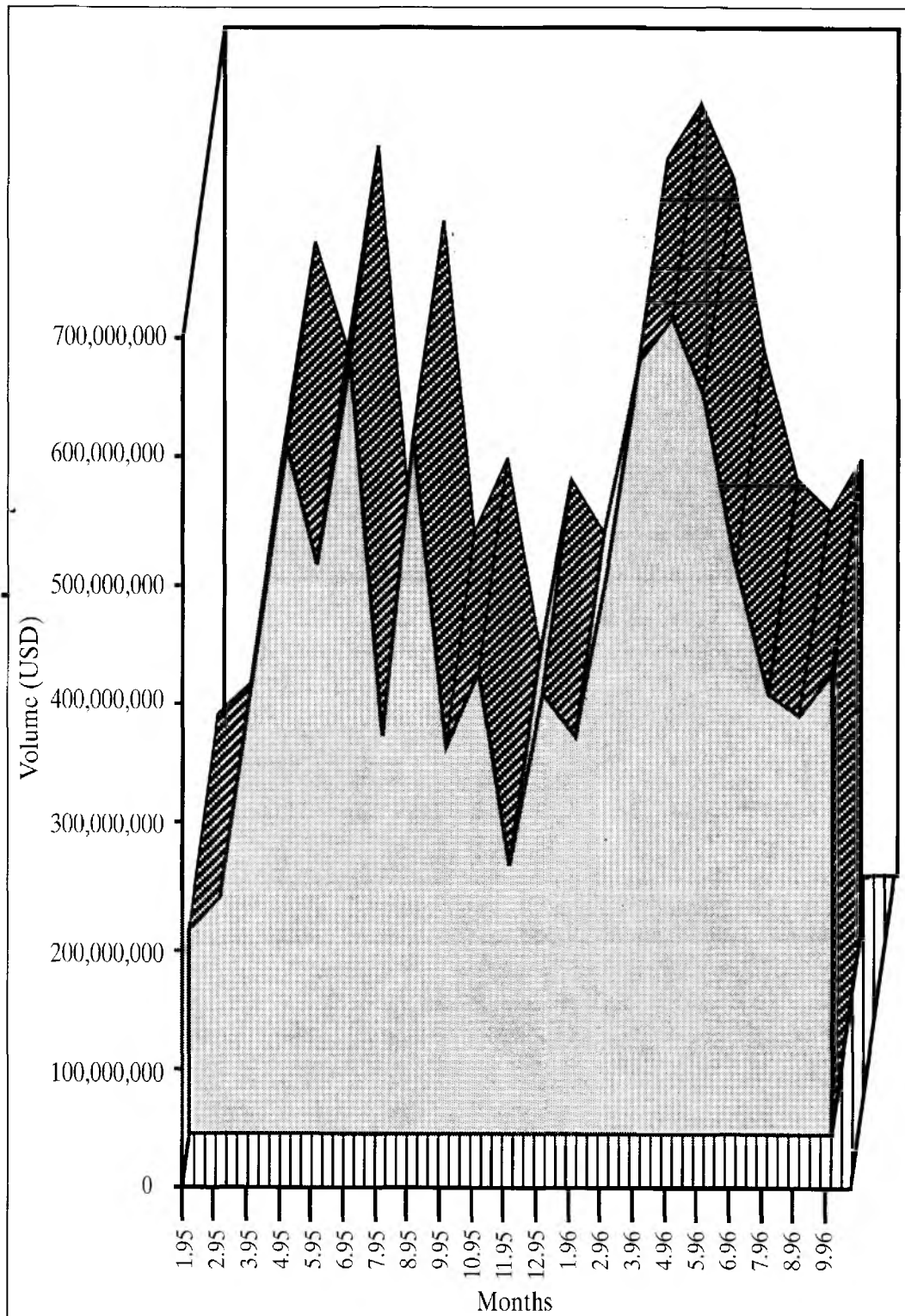
Foreign Investment as a Percentage of Market Capitalization in Turkey (1986-1995)



Source: SPO (DPT), Main Economic Indicators, July 1996, p. 47; SPO, Economic and Social Indicators 1950-1995, p. 36; ISE's Monthly Bulletins.

Note : The foreign investment value is a cumulated total of investments throughout the year. Market capitalization, whereas, is given as of the year-end.

Foreigners' Share in Trading Volume of the ISE (1995-1996)



Note: The trading volumes comprise both the stock and bond transactions.

Book Reviews

"Financial Liberalization and Investment," Kanhaya L. Gupta; Robert Lensink., Routledge: London, 1996. Pp.xii+183.

Investigative works on financial liberalization and investments in developing countries have drawn much attention in the last two decades.

In this book, titled *"Financial Liberalization and Investment,"* economic models and mechanisms pertaining to developing countries are grouped into two sets: others based on optimizing models and others based on non-optimizing frameworks.

This book concentrates basically on the effects of foreign investments in developing countries, reserve requirements and credit needs to meet the budget deficit, the implications of financial repression for raising government revenues, and the role of informal credit markets.

In the study, financial liberalization is analyzed within the context of its three aspects. These are the effects of the interest rate deregulation on investment, the consequences of the allocative efficiency of investment and the impact of banking efficiency on investment.

Not only the works on foreign aid and economic growth in developing countries hold a good deal in literature, but also the IMF/World Bank grant loans on the adoption of financial deregulation policies. However, there have been no optimizing or non-optimizing models on implications of the financial liberalization and on foreign financial assistance. This study contributes significantly to the structural adjustment programs by considering both sides.

The search is distinguished from the related existing literature¹ in that the financial model presented and expanded here allows the creation of an exquisite role of wealth effects, effects of portfolio changes and crowding out simultaneously.

¹See Wijnbergen (1983) for the informal credit markets; Morisset (1993) for the crowding-out effect; McKinnon (1973) for non-optimizing models; and Romer (1986), and Lucas (1988) for non-optimizing models.

Giving the scope and a brief outline in the first chapter, the authors constitute the foundation for the study in Chapter 2 by specifying a base model to analyze the effects of interest rate liberalization on private investment. The model is based on the work of Owen (1981) and Morisset (1993) that the former presumes a stock-adjustment process and the latter considers physical assets and government bonds as being exact substitutes in the private sector's portfolio. Despite the advanced level of mathematics, the appendix are useful for the readers to understand basic models.

Chapter 3 is devoted to the budget deficit and the effects of foreign aids. The model including the deficit should be taken into account since it would help to discuss how an interest rate deregulation affects government investment and private credits.

In establishing a general macroeconomic model step by step, Chapter 4 focuses on the role of informal financial markets beyond the formal sector. The model in this chapter are extended regarding to the efficiency level of informal financial markets. this approach gives a chance to consider the concepts of consumption, investment and the portfolio selection simultaneously.

Chapter 5 discusses growth with the allocative efficiency. Galbi's (1977) model, based on neoclassical approach, is given and then used for the extended model. Distinguishing the formal and informal banking, the chapter deals with the measurement of the effects of allocative efficiency.

The interaction of the efficiency in banking sector and the private investment is the focus of Chapter 6. Referring to Çapoğlu's work on Turkey, the authors discuss the measurement of the spread between the deposit rates and the cost of loans. Moreover, the model derived here is based on the assumption that the non-bank private sector is not credit constrained²

Chapter 7 benefits from the theoretical models given in Chapter 2, 3 and 4. It provides simulation strategy that enables to make empirical studies. The simulation results for the model enforces both the sensivity of the welfare structure effect on the model and the sensivity of the private investments.

The unforeseen results of tight fiscal policies pursued by developing countries constitutes the focus of Chapter 8. This chapter also

includes the effects of fiscal repression on inflation, investment and consumption on the basis of the modified model.

The models on financial liberalization based on a prominent literature are presented in a simple and less complex manner so that the points incorporated with the text should be useful for a wide spectrum of interested people.

Gupta and Lensink conclude that, "interest rate deregulation is not the panacea... But, at the same time, financial repression seems to have identifiable costs too." In summary, the assertive views concerning financial deregulation, in general, and interest rate deregulation, in particular, are simply not warranted.

The book stands out as an important supplemental source of information for researchers and policy makers in the field of finance, economic growth considerations, and modeling.

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The Integration of International Capital Markets: Theory and Empirical Evidence, Haluk AKDOĞAN, Edward Elgar Publ., 1995, pp. xii + 189.

Although various classical economists like Adam Smith and John Stuart Mill have adequately referred to free trade between nations in their various works, the subject of “integration in the world economy” had an insignificant place in economic literature until Paul Samuelson mentioned it in the context of factor prices in the 1940s. Since Samuelson captured our attention on the matter, under the international trade theory multi-dimensional researches on “integration” constitutes a voluminous literature.

Akdoğan’s book, titled “The Integration of International Capital Markets,” is a distinguished study surveying the sub-title of “integration of capital markets,” which occupies a substantial place in the field of integration, with solemn empiric tests and analysis.

Just like Balasa, who titled in his known book “The Theory of Economic Integration” in 1961 tackled the issue, Akdoğan defines integration and its opposite, segmentation, as a prevalent situation. It, indeed, would not be erroneous to consider the relations between the global capital markets as different stages of integration in a given time span. In today’s complex world, displaying different stages of integration like the customs unions, common markets, economic unions and unifications de facto and de jure are under effect, organizations like the EU, EFTA and NAFTA gain on added importance. Using asset evaluation techniques as a base to question the presence of integration, Akdoğan concentrates on the approach of a “single price rule”, which argues that goods and factors should have the same price level in integrated markets with the exception of transfer expenses.

In the first chapter of the book, the author provides a clear definitions of the concepts of the models he developed in order to inspect the integration in the financial markets. Empirical techniques and international integration comparison tests take place in second and third chapters.

Sharpe-Lintner’s capital assets’ pricing model (CAPM) and Roll-Ross’s arbitrage pricing model (APM) constitute the main theories used in the study. In case of price establishments in line with systematic risk regarded as in an international character, markets can be considered

integrated. Likewise, in cases of pricing with the effects of local factors, we can perceive the presence of segmentation between the markets.

In the empirical models which consider the distinction between developed and developing capital markets, integration attempts between the EU countries are tested with special interest. Substantial levels of lifted barriers and plans to lift the remaining abstraks during the integration process among the EU countries give an appropriate opportunity for the test of regional integration. In spite of the institutional developments in the field of integration in the EU, there has been no calculation of the capital market integration employing an empirical test up to now. This increases the importance of Akdoğan's analysis.

One of the most important findings of the study, which reveals that financial liberalization within the context of international integration of capital markets has not developed at the same level across the world, is that efforts remain limited to certain with geographical regions. Integration attempts enabling the free movement of capital or removing the barriers restricting trade causes segregationist applications such as the unequal taxation of foreign investors and thus negatively affecting the global integration of capital markets. The study of Akdoğan proves that limitations imposed on capital are important sources of segmentation.

The integration-segmentation analysis that guide fund managers in their portfolio diversification strategies are also important from the point of view of firms willing to reduce capital costs by providing funds via international capital markets. We sincerely recommend this work to the attention of our capital market as a useful source for all researchers interested in the subject of integration. Academicians, finance students, portfolio managers and entrepreneurs trying to attract foreign investment will find ample guidance and inspiration in its content.

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Pension Power: Understand and Control Your Most Valuable Asset.
Debbie Harrison, John Wiley & Sons Ltd., 1995, Pp. xiv + 322.

Written by Debbie Harrison, "Pension Power: Understand and control your most valuable asset," includes highly detailed and practical information on the British private pension system. For all these reasons, the book constitutes a reference work for a large interest group ranging from employees, to retirees, fund managers and employers. As Julian Farrand mentions in the preface, if all concerned decision makers and the interested people in the pension sector had read this book, there would have been almost no need for the people who serve as ombudsman.

The book focusing on the finance of retirement mechanisms take place in the early pages, includes 6 section. Harrison describes advisory services and authorized mediation mechanism under first section, while social security system and public pension funds constitutes the main themes of second section. Third section consists the private corporate plans, workers' top-up contributions, transfers between plans and schemes for high earners. Harrison evaluates the subjects of individual retirement plans, private plans for small companies and annuity systems under the fourth section. Highly detailed areas of working abroad and retiring abroad are taken into consideration under the fifth section.

Investment options and fund management principles of pension are focus areas of the sixth section. This last section also includes the fields of responsibilities of trustees, selection and inspection of fund managers, performance calculations and custody of the fund assets.

As it may be seen, Harrison's study has a remarkably comprehensive body. Nevertheless, subjects mentioned in it are not limited with these headings. There

are immense areas in the book such as pension income for the remaining family members after the death of a plan member, or pension system comparisons between European Union members. It is also possible to find detailed information and addresses of the pension institutions, which are mentioned in the text, and a comprehensive glossary, which contains almost every important term related to pensions.

Plain and fluent language constitutes the most significant feature of the book. Especially in the explanations of most complicated and technical matters, clear and simple definitions of Harrison, distinguish the Pension Power from other technically written ones.

Although there has not been a private retirement plan system in Turkey at the moment, we will witness a rapid development in this area during the forthcoming years. If we keep this point in mind, getting informed about British implementations, which are the most developed and comprehensive in the EU, would be highly illuminating for the interested circles. In our sincere opinion, British private system along with its 11 million members (%50 of the working people in the U.K.) constitutes a vulnerable sample and reference point for the countries that are planning to establish a new retirement income system or improve the existing one.

With these ideas in our mind and considering the deep dilemma of the Turkey's social security system, I would like to draw the attention of Turkish finance world to this powerful book.

ISE PUBLICATIONS		
I-PERIODICALS	ISSN/ISBN	DATE
Weekly Bulletin	ISSN 1300-9311	
Monthly Bulletin	ISSN 1300-9303	
Monthly Bulletin *	ISSN 1300-9834	
Quarterly Bulletin (January-September '96/3)	ISSN 1300-9826	
Annual Factbook 1995 *	ISSN 1300-9281 and ISBN 975-8027-03-4	1996
Quarterly Bulletin of Newly Trading Stocks at the ISE		1995
Sectoral Analysis of Companies Trading at the ISE		1995
Yearbook of Companies 1996*	ISSN 1301-1057 and ISBN 975-8027-13-1) (Vol.1 No:ISBN 975-8027-14-X) (Vol.2 No:ISBN 975-8027-15-8)	1996
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Objectives and Contents

The ISE Review is a journal published quarterly by the Istanbul Stock Exchange (ISE). Theoretical and empirical articles examining primarily the capital markets and securities exchanges as well as economics, money, banking and other financial subjects constitute the scope of this Journal. The ISE and global securities market performances and book reviews will also be featuring, on merits, within the coverage of this publication.

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Articles sent to the ISE Review will be published after the examination of the Managing Editor and the subsequent approval of the Editorial Board. Standard conditions that the articles should meet for publication are as follows:

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8. The main text should be arranged in sequentially numbered sections. The first section should be titled "Introduction", while the last section should be titled "Conclusion" as the others should be titled and numbered with a second digit (2.1, 3.2 and so on). Using boldface is necessary to indicate headings.
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²Hoel, P.G., Port, S.C. "*Introduction to Probability Theory*", Houghton Mifflin Company, US, 1971, p. 241.
 - Books with more than three authors:
³Mendenhall, W., et al., "*Statistics for Management and Economics*". Sixth Edition. WPS Kent Publishing Company. Boston. 1989, p.54.
 - Articles:
⁴Harvey, Campbell R., "*The World Price of Covariance Risk*". The Journal of Finance, Vol.XLVI, No.1, March 1991, pp.11-157.
 - Publications on behalf of an institution:
⁵*Federal Reserve Bulletin, Washington, 1992-1993-1994.*
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