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EVOLUTION OF BUSINESS GROUPS IN ISRAEL: THEIR IMPACT AT THE LEVEL OF THE FIRM AND THE ECONOMY

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The paper, which is based on a newly constructed and unique database, examines the emergence, ownership structure, diversification, evolution and economic activity of business groups in Israel whose development over the years occurred against the background of government activity in the business sector and the financial markets, the rapid expansion of the economy, geopolitical shocks and the extremely unusual replacement of the ruling elites.

Using panel data on 650 public companies from 1995 to 2006, we identify twenty major business groups controlling about 160 listed companies and close to a half of total stock market capitalization, while the 10 largest groups' segment of the market capitalization is among the largest in the western world and amounts to 30 percent. These groups are family-controlled and highly diversified across different industries with common pyramidal structure of ownership: roughly 80 percent of all group-affiliated companies belong to business pyramids. Business groups are dominant especially in the financial sector, where half of banks and insurance companies are group-affiliated. Finally, using both stock market-based measures (Tobin's Q), and accounting measures of profitability (e.g. ROA), we find that group affiliation has no significant impact on accounting profitability, but it is associated with lower market valuation. In part, this seems to be due to conflicts between controlling and minority shareholders; and in part, this may reflect the fact that in a developed economy, where external markets are well-developed, business groups have no advantage in allocating resources internally. The reasons for their existence appear to have more to do with prestige, political ties, family considerations and other factors than with economic efficiency.

1. INTRODUCTION

The existence of a fundamental conflict between the manager of a company and the shareholders, known as the agent problem, is an issue covered by classical finance theory. According to that theory, the distinction between the ownership of a company and the control over it could create potential conflicts of interest and detract from the firm's

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performance and the investors' welfare. The phenomenon naturally results from differing objectives; from the difference in the benefit function of the company's manager and its owners – the investors. While the company's manager is likely to direct his efforts at maximizing his personal gains, whether these are tangible as in the case of salary and benefits[1] or intangible, such as increasing and utilizing goodwill, the investors' benefit is directly dependent on the company's performance, meaning that their first priority is to maximize the company's profits[2].

Since the middle of the last century, the issue of the agent problem as a whole and agent costs in particular has been the subject of research on finance and business strategy. Based on the prevailing assumption of the existence of companies with a diversified holding structure (held by a large number of investors) like corporations in the USA (Berle and Means [1932]), many authors have tried to find a "panacea" for reducing agent costs, offering various solutions for ensuring a convergence of interests between company managers and the benefit of the investors. These solutions included: the use of "golden parachutes"[3] (Grossman and Hart [1986], Lambert and Coase [1960] and Larcker [1985]); conditioning managers' remuneration on the firm's long-term performance (by means of options, for example); or the extensive use of dividend distribution (Jensen [1986])[4]. Several studies (Jensen and Meckling [1976]; Dalton, Daily, Johnson and Ellstrad [1999]; Shleifer and Vishny et al [1986]) proposed another alternative and claimed that the agent problem can be solved by creating cores of controlling owners holding a large proportion of the voting rights[5]. This is because the concentration of control among a defined group of shareholders should facilitate close supervision and the owners' active involvement in the management of the company, and thereby reduce the impact of discretionary decisions by the manager and his misuse of company resources[6]. It should be noted that these studies, whether intentionally or not, subject to an empirical test the very existence of companies with a diversified ownership structure. Their findings raise serious doubts regarding the assumption of ownership diffusion which has been at the forefront of economic thinking for two generations. Ironically, their findings met with little success in the face of theoretical and practical challenges: Firstly, it transpired that the formation of a core of control actually aggravates the agent problem. This is reflected by the controlling core exploiting the

[1] See Morck, Wolfenzon and Yeung 2005; Anderson and Reeb 2003; Morck, Shleifer and Vishny 1988.

[2] The extent of the conflict of interests between the parties is obviously dependent on diffusion of the company's ownership – diversification of the investors' holdings. Extensive diversification implies an increase in the power of the managerial echelon and investors' inability to organize themselves.

[3] An idea based on the "Coase trial".

[4] According to this idea, extensive dividend distribution will have the effect of reducing the cash reserves available to the company's manager and thereby prompt managers to raise external sources, which will subject their performance to examination by the market.

[5] Contrasting with these studies is the approach of Holmstron and Tirole, whereby increasing the ownership concentration could adversely affect the firm's performance because of its negative impact on market mechanisms. Under this approach, market discipline can act in two ways: by means of the hostile takeover or via market prices, which reflect all the information available on the firm. Although a small number of articles did succeed in empirically proving the existence of market discipline, it was found to have less effect on market mechanisms than the control mechanisms of owners with large holdings.

[6] Similar results can be found in studies where the company manager's share of ownership increases, which has the effect of increasing the relationship between his personal benefit and the firm's performance.

existence of a small number of investors. Secondly, at the end of 1980s Shleifer and Vishny (1988) and Stulz (1988) found evidence of another variation of the agent problem – the entrenchment problem, whereby high concentration of the holdings in a company could lead to the increased entrenchment of the controlling managerial echelon and to biased allocation of the company's sources. Thirdly, focusing the discussion on an extensive dispersal of holdings and a core of control is wrong and reveals that the basic assumption of most authors is also wrong: In empirical studies it was found that cores of control are not heterogeneous and that their owners tend to control a large number of companies.

The issue of homogeneity in the concentration of control was exposed in the famous study of La Porta, Lopez De Silanes, Shleifer and Vishny (1999), which is regarded as one of the key elements in the new research stream[7]. Their study challenged conventional finance thinking by presenting systematic evidence of the existence of ultimate owners of control (unique, identifiable owners of control) in most countries of the world[8], and pointed to a metamorphosis in the form of ownership of companies outside of the English-speaking world. Based on a sample of 27 countries, it was found that business firms are controlled by ultimate owners, mostly families, which often fulfill managerial functions as well[9]. It was found *inter alia* that these owners achieve extensive control in a number of companies by using a unique ownership structure in the form of a pyramid, which makes it possible to achieve control with a limited amount of capital[10]. This resulted in wide-scale discussion – even if not explicitly – of the existence of business groups – a special form of organization between market and firm or in other words, a collection of companies which by definition constitute separate legal entities that are interconnected by means of formal relationships (holdings) and by informal relationships such as family, business or social ownership ties.

Little time elapsed before a flood of evidence showed that business groups form an integral part of the life of the market in most of the world's countries. These groups exist in developing markets such as India and Pakistan, Brazil, Chile and Argentina, Indonesia, South Korea and Thailand, and can also be found in developed countries in continental Europe such as the Italy, France, Germany and Belgium as well as the Scandinavian countries (Norway and Sweden). Business groups worldwide differ in many parameters: level of sector diversification, owners' identity, holding structure, finance sector involvement, reasons for their evolution such as cultural, historical and political elements, and the manner in which they have developed and their reliance on capital-government relationships[11].

[7] Leff (1976), Yafeh and Khana (2007). Initial evidence of control grouping by ultimate owners and attainment of control in a large number of companies came from studies on corporate governance in Germany and Japan (Berglof [1992]; Prowse [1985]; Granvotter [1992]; Kester [1994]; Edwards and Fisher [1994]; and Perotti [1994]).

[8] For a precise definition, see La Porta et al (1999).

[9] It should be emphasized that the main contribution of La Porta et al is not in coping with the economic implications of the new finding, but in providing a revolutionary viewpoint on the definition and structure of the ownership of a modern business corporation.

[10] Twenty forms of control structure are described in the study.

[11] In China for example, business groups are notable for broad sector diversification and heavy reliance on close contacts with the government rather than with specific families.

Many names have been given to business groups worldwide, but whether these are Korean *chaebols*, Japanese *keiretsu*, Indian *business houses* or European *concerns*, they all have a single common denominator: they have completely changed the standard concept of the firm as an economic unit and have thereby became relevant to almost every issue of economic debate. These may be issues of growth and development, corporate finance, organizational structure, competitiveness, concentration and coping with financial crises. But come what may, an analysis of the impact of business groups is of major importance. Despite the weight of evidence however, our understanding of the business groups at this stage and their impact on the economy at the micro and macro level is severely lacking. This state of affairs is increasing the importance of a solid theoretical and empirical base and the comparison of findings between different countries. An extensive analysis of the issue of business groups is likely to clarify complex economic questions and thereby contribute to an understanding of their future implications.

This present study focuses on business groups in Israel, the history of their development, their structure and their impact at the single company level and the macroeconomic level. The choice of Israel as a focus for empirical research is not a random choice, and results from a number of unique components of Israeli groups and the desire to place them in a broad perspective. Firstly, Israel is counted among the group of developed economies notable for a lack of systematic evidence on the function and impact of business groups. Secondly, the characteristics and activity of business groups in Israel are a major source of interest due to their very existence against the background of stable financial institutions and a developed capital market, which conflicts with the conventional concept presented by La Porta et al (1999), whereby a concentrated ownership structure and a large number of control groups is explained by the absence or weakness of the system for the enforcement of investors' rights. Moreover, the case of Israel is a unique platform for researching numerous elements connected directly or indirectly with the issue of business groups worldwide. This is because of the local history of the development of firms and business groups, government involvement in economic activity, close reciprocal relationships with the banking system, the frequent replacement of the ruling elites, major changes in capital market legislation[12] and the country's rapid economic development. We believe that an in-depth analysis of this entire range of issues in Israel could enrich our understanding of the function and contribution of business groups, and could serve as an indicator of their future development in other countries and in the emerging markets in particular.

This study is based on a collection of data gathered from 650 companies traded on the Tel Aviv Stock Exchange between 1995 and 2005. The objective of the study is to identify the existence of business groups in Israel, to characterize their ownership structure and their affiliation to the business groups, and to examine the extent of their sector dispersal, their integration with financial institutions and their impact on the performance of publicly-traded companies. It should be noted that since this is the first time a study of the present type and on the present scale has been conducted in Israel, we are unable to compare it with previous findings.

[12] The reforms in the capital market and the legislation abolishing the distinction in equity between voting rights and capital rights.

The study is comprised as follows: In the second part, we will review the theory of business groups and empirical evidence relating to their impact on companies' performance. In the third part, we will conduct an extensive historical review of the development of business groups in Israel. In the fourth part, we will present the special sample which we used for the purpose of statistical tests, and the empirical methodology and principal hypotheses employed. In the fifth part, we will conduct an econometric analysis of the data. Our conclusions and summary will appear in the last part.

2. REVIEW OF THE LITERATURE AND THEORY OF BUSINESS GROUPS

Before discussing the theory of business groups and their impact on firms' performance, the term business group itself should be formally defined. An extensive review of the literature shows that this is a far from simple task, as noted by Ghemawat and Khana (1998): the definition of business groups varies from country to country and from author to author. Granovetter (1994) for example, defines a business group as "a collection of companies that are interconnected in various ways and not necessarily formally". Powell and Smith-Doer (1994) refer in their extensive review to the groups as "a network of companies that cooperate among themselves over time", and Strachan (1976) defines them as "a long-term association of companies and their managers". Due to the multitude of definitions, order was established by adhering to the broad concept of a business group that was first mentioned by Leff (1978), whereby a business group is "a group of companies, which conduct business activity in different markets under a single administrative and financial control and are interconnected by relationships of mutual confidence, on the basis of a common personal, ethnic or business background"[13].

This definition indicates that business groups are not homogenous by nature in view of the conditions and environments in which they are created, their reliance on different types of contractual association[14] and the manner in which they differ in accordance with the prevailing system of corporate governance. As a result, business groups also differ in their economic impact: they may contribute to the development of the markets by filling the niche of undeveloped economic institutions. However, they may harm economic development by increasing their monopolistic power, by their inefficient exploitation of resources and by hindering technological development[15]. Nevertheless, it is widely agreed that it is impossible to precisely define the status of the business groups in the economy. Should we relate to business groups as the paragons or as parasites? The answer would appear to vary from country to country as well as from group to group[16].

The literature emphasizes a broad spectrum of advantages and disadvantages inherent in the existence of business groups and companies' affiliation to them. The advantages are usually attributed to the intermediation function which business groups fulfill in creating

[13] Like Leff, other authors and policy-makers emphasize the importance of the formal and informal socio-economic relationships between the companies belonging to business groups.

[14] See Morck (2005).

[15] See Morck (2000).

[16] Khanna and Yafeh(2007)

"intra-group markets" and financial markets in particular. By affiliating to business groups, companies are likely to improve their status relative to that of unaffiliated companies due to the creation of intra-group integration and a common identify, which enables an affiliated company to benefit from a range of products which external markets are unable to supply or that are otherwise expensive. For example, the existence of business groups is likely to be of particular benefit for small companies with a high growth potential, or for companies that have difficulty in raising capital or are in a state of financial distress. As previously implied, the business groups' success in their function as intermediaries is dependent on the level of inefficiency of external markets – a state typical of markets in their initial stages of development (Amdsen [1989]; Aoki [1990]). The hypothesis of concentration of business groups in developing countries is clearly supported by empirical evidence (Chang, Khanna and Palepu [1999]). The major importance of the economic function of business groups and intra-group markets against the previously mentioned background lies in their contribution to the efficient allocation of capital relative to external markets (Stein [1997]), to reducing transaction costs, to reducing risks (Khanna and Yafeh [2005), and to protecting the firms affiliated to these groups from financial crises and bankruptcy (Kim [2004]), even if this function can be attributed to the desire to maintain the group's general reputation (Goplan, Nanda and Seru [2005]). It should be noted however that financial and informational intermediation are not the sole or main function in many groups, and the achievement of efficiency in the financial markets by means of the activity of business groups should not be taken as an *a priori* assumption (Khanna and Palepu [1999a]; Khanna and Rivkin [1999b]). Business groups may fulfill several other functions as well, with such positive implications as the creation of markets for workers and managers and their efficient allocation among sectors and firms, or technological advance (Classens, Djankov and Lang [2000]; Hobday [1995]). To conclude, the conclusion arising from the above discussion is that affiliation to a business group can favorably affect firms' performance, the probability of their survival over time and economic activity as a whole.

Finance theory and empirical evidence do however present the negative side of business groups as well. During the last decade, discussion of the disadvantages of business groups has almost entirely focused on the issue of ownership, structure and the diversification of holdings within the group and the extent of their impact on the affiliated companies. At the forefront of this debate are questions relating to the creation of the agency problem, exploitation of the existence of the investor minority and the adverse effect on the efficiency of the markets. Those opposing the existence of business groups claim that the groups' complex structure[17], which includes the use of a pyramidal holding structure[18], together with the existence of intra-group markets, can exacerbate the agent problem at affiliated companies compared with unaffiliated companies. This claim is based on three factors: Firstly, a pyramidal ownership structure and the concentration of ownership among a small number of individuals, mainly families and financial elites, makes it possible to control most companies at a relatively low investment or in other words, facilitating a broad separation between owners and control – which is the crux of the agent problem. This leads

[17] Cross-holdings and dual-listed shares.
[18] Almeida and Wolfenson (2006).

to the potential exploitation of the investor minority by the owners of the core of control. An example in this respect is the transfer of resources for specific important projects to the company's principal owners, at the expense of projects that increase the benefit to the other investors. Secondly, the high concentration of control at companies affiliated to business groups facilitates the creation of a business and political lobby for the owners of the groups, while leading to decreased risk-taking and increased entrenchment. The implications of the entrenchment problem are far-reaching and due to business groups' extensive diversification, could be reflected by a slower rate of growth in the economy (Morck [2000]). Thirdly, the internal system of business groups provides fertile ground for the creation of the "tunneling" effect[19], which is expressed by the transfer of resources from the companies at the base of the pyramid to the companies at the apex. In order to be effective, these transfers are usually based on complex stratagems and take the form of sales of products and services at artificial prices or the granting of loans at preferential terms to a company at the top of the pyramid. Tunneling can be regarded as a meeting point of the standard agent problem and the entrenchment problem, where their simultaneous effect is likely to be reflected by the persistent exploitation of the pyramid by the entrenched owners of the group, who thereby achieve complete control although their actual holdings are minimal. The three factors mentioned here have an adverse effect on firms' corporate governance, their value and on the wellbeing of the investors and the markets.

Empirical evidence of business groups' impact on the performance of affiliated companies and their comparison with unaffiliated companies is mixed and far from convincing. The groups' contribution to reducing restrictions and to protecting companies from financial distress and an increase in the cost of raising capital were examined in the case of Japan. Hoshi, Kayshap and Scharfstein (1990) found that Japanese companies affiliated to business groups with close ties to financial institutions invest and sell more products than unaffiliated companies during periods of financial distress. Hoshi, Kayshap and Scharfstein (1991) analyzed the effect of affiliation to groups associated with the principal banks in Japan, and found that affiliated companies suffer less from problems of lack of information and incentives and sensitivity of investment volume to a low level of liquidity. Perotti and Gelfer (199, 2000) found that financial institutions groups (FIGs) in Russia allocate capital among affiliated companies more efficiently than external markets. Khanna and Palepu (1999b) found that the intermediation quality indices of business groups in Chile and India in the areas of production, the labor market and the capital market are positively correlated with the accounting indices and financial indices of the companies' performance.

Other studies point to a mixed effect of affiliation to business groups on companies' value or performance. Khanna and Palepu (2000) studied the performance of business groups in India, and found a non-linear relationship between the accounting indices and the equities market indices, and the size of the business group – the greater is the groups' dispersal among different industries, the poorer is the companies' performance. However, when a business group reaches its optimum size, firms' performance improves significantly. When the findings show that affiliated companies' performance exceeds that of unaffiliated

[19] Johnson et al. (2000).

companies, the authors do not find a significant systematic difference in the sensitivity of investments to cash flow in accordance with the companies' affiliation, thereby ruling out a relationship between the wealth effect and the existence of intra-group financial markets. Lins and Servaes (1999) note that the performance of affiliated companies is inferior to that of unaffiliated companies and the existence of a risk premium is evident (2002).

Other studies show that agent costs fulfill an important function in determining profit and loss as the result of affiliation to business groups, especially in the case of costs relating to conflicts of interest between the controlling core and the investor minority in a company. Bae, Kang and Kim (2002) found that the controlling core use the acquisition of new companies and their merger within Korean groups (*chaebols*) to increase their personal gains at the expense of the investor minority – a finding consistent with the tunneling assumption. Based on data for companies in India, Bertran, Mehta and Mullainathan (2002) also found that the ultimate owners use the groups in order to transfer resources from the investor minority: A positive shock on the profits side of companies located at low levels of the holding pyramid reverberates up to the apex, but not *vice versa*. Classens et al built an index for distinguishing between voting rights and equity rights for a number of holding pyramids in the Far East, and found that this index is positively correlated with a low Tobins Q. Johnson et al (1999) showed that the stock indexes at a time of financial crisis in the Far East fell heavily in countries with a weak system of protection for investors' rights – a finding which they believe indicates the possibility of thefts by the managerial echelon in a crisis period. Morck et al (1998) noted that pyramids in Canada react to a decline in the growth rate.

There are also findings that point to market discounting of the accounting performance of affiliated companies, which is indicative of investors' underassessment of those companies due to the possibility of future exploitation of their resources[20].

To conclude: Much evidence exists that the investor minority in the business groups are exploited, concurrent with the groups' contribution to increasing the efficiency of the markets. It should be realized however that the arguments for and against the existence of business groups and their contribution to market activity are based on strong assumptions of market inefficiency and a lack of stable financial institutions. In addition, the exploitation of the investor minority is dependent on the weakness of legislation relating to the capital market and the protection of the rights which those investors possess. These preconditions are certainly relevant to the majority of young economies and the emerging markets. But can those arguments be used to cope with evidence of the existence of business groups in developed markets with stable financial systems, and to analyze their impact at the level of the single firm and the entire economy? An adequate answer has yet to be found to this question[21].

In this study we attempt to shed light on issues relating to the existence of business groups and their impact on the performance of companies in the Israeli economy. From an international perspective, the Israeli economy conforms to the definition of the developed

[20] Khanna and Palepu (1999, a, c).
[21] Evidence from France, Germany and Japan.

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Table 1
Indices of Economic, Financial and Political Development

Country	GDP per capita (PPP adjusted)	Domestic Market Cap. (mil $)	Market Cap to GDP	Number of Listed Firms	Ownership concentration Average (percent of equity held by largest shareholder	IPOs (mil $)	Turnover velocity (turnover/market cap)	Democracy Score (1-10)	Corruption index (1-10)	Doing business world rank	Investor protection	Efficiency of the judiciary
Argentina	17,559	47,590	27%	104	53%	NA	11%	5	6	109	6	6
Brazil	10,637	474,647	50%	381	57%	2,028.53	43%	5	6	122	4	6
Chile	13,745	136,493	114%	246	45%	485.80	15%	3	5	33	5	7
Germany	33,561	1,221,106	40%	764	48%	4,857.05	149%	10	9	20	5	9
Greece	30,731	145,121	54%	304	67%	1,568.63	49%	7	7	100	3	7
Hong Kong	41,614	1,054,999	528%	1135	54%	21,291.36	50%	0	9	4	9	10
Hungary	21,040	32,576	25%	44	61%	6.84	74%	2	8	45	7	na
India	4,183	553,074	54%	4763	40%	1,318.88	76%	8	5	120	7	8
Ireland	47,169	114,086	57%	66	39%	1,262.58	59%	10	9	8	9	9
Israel	31,560	122,578	74%	606	59%	526.73	46%	9	8	29	9	10
Italy	32,319	798,073	43%	282	58%	12,904.62	160%	10	6	53	6	7
Japan	34,024	4,572,901	73%	2351	18%	NA	115%	10	9	12	8	10
Mexico	11,880	239,128	25%	326	64%	563.15	27%	1	5	44	5	6
Peru	7,410	24,140	25%	224	56%	NA	10%	4	5	58	7	7
Philippines	5,738	39,818	34%	237	57%	543.00	20%	3	3	133	7	5
Poland	16,599	93,602	24%	241	43%	512.64	39%	2	7	74	9	NA
Singapore	36,286	257,341	197%	686	49%	3,906.75	48%	2	8	1	9	10
South Korea	25,840	718,011	52%	1616	29%	2,182.77	207%	3	5	30	7	6
Spain	29,148	959,910	82%	NA	51%	7,771.27	161%	7	7	38	4	6
Switzerland	40,590	935,448	210%	400	41%	2,670.29	115%	10	10	16	4	10
Taiwan	32,490	476,018	124%	696	18%	170.15	131%	1	7	50	4	7
Thailand	9,714	123,885	69%	504	47%	1,052.46	81%	4	5	15	6	3
Turkey	9,816	161,538	31%	304	59%	1,757.44	170%	7	5	57	5	4
UK	37,328	3,058,182	127%	3091	19%	31,168.97	110%	10	9	6	7	10
USA	44,765	13,310,592	108%	2270	23%	44,115.54	99%	10	9	3	9	10

markets, with one of the world's most advanced systems for protecting the investor minority, and with stable financial and government institutions (see Table 1). However, the holding structure of most Israeli companies is notable for high concentration and the extensive involvement of a limited number of controlling business groups. Most of these business groups are managed by a number of families or individuals, and the groups' structure is pyramidal. Israel's case is included in a series of studies on the activity of business groups in the developed markets that began to be published recently and provide a special forum for enriching knowledge in this area.

3. HISTORICAL REVIEW FROM THE 1950S TO THE PRESENT[22]

A historical perspective is necessary for a broad understanding of the micro and macro economic impact of business groups, their operating environment and their level of interaction with other economic units, in order to identify the unique elements of the groups and then, to include them within the scope of an economic analysis. The history of the development of business groups in Israel, or as they called there, ownership groups, is replete with turnarounds. Their character, the extent of their dispersal and their economic power have been affected at different times by intensive government involvement in the ownership map (the initial years of the state and the mid-1980s), by the replacement of the ruling elites (the 1970s and the 1990s), by security and financial crises, by far-reaching economic reforms (the stabilization program of the mid-1980s), and by demographic processes (the mass immigration of the 1990s). The purpose of the present review is to focus on the main points in the history of business groups in Israel.

The early years of Israel's existence can be characterized as a period of blurred areas of responsibility among the institutions and leadership of the ruling party, the state, national institutions and the Histadrut. The lack of distinction between the state and the ruling leadership created a situation where government intervention on a massive scale was apparent in almost every area of economic activity, with a clear preference for control of national resources by the state – which immediately created a highly concentrated system. Many firms and business enterprises at the time were established and controlled by three principal ownership groups: the Israel Government, the Jewish Agency and the "Histadrut" (Labor Federation).

Different periods can be discerned with respect to government policy regarding investment and the attainment of control in companies: Until the mid-1950s, under an agenda of nationalization of natural resources, water, land and services on which the security of the state is dependent, the government mainly invested in the establishment of a number of companies for the exploitation of natural resources and utilities enterprises. During the years 1956-57, government policy changed regarding the assurance of controlling rights in companies that were lent additional sums of money. At the end of the 1950s, the government established a large number of investment companies, via which it helped manufacturing plants and entered into oil transactions on a large scale. From 1962,

[22] This review is based partly on the studies of Aharoni and Maman (1976,2000,2002).

the government's business activity expanded – via the use in a legal manner of a corporation for conducting various activities, including the establishment of construction and housing companies, banks, an insurance company and companies for the encouragement of various industries, for the extension of loans to enterprises, and regional development or housing – resulting in increased government influence, and the diversification of its activity to all sectors of the economy. During the same period, many companies that had difficulty in fulfilling their obligations were transferred to state ownership. In later years, these companies were sold to private investors and to other ownership groups.

During the initial years of its existence the policy of the Jewish Agency, which was the operational arm of the World Zionist Federation, resulted from what was known as its status as "the government in making". In this period, the Jewish Agency concentrated under its control extensive financial functions via Bank Leumi Le-Israel (the former Anglo Palestine Bank), invested together with the state in the economy's infrastructure enterprises, in agriculture (Yakhin and Mekorot), in cargo transportation (Zim) and in construction (Rasco). When the State of Israel was established, the Jewish Agency's extensive resources were directed at the absorption of mass immigration to Israel. This had the effect of reducing the capital sources available to the Jewish Agency, with the result that it had to gradually decrease its share in most of the enterprises which it owned. The Jewish Agency's ownership of many companies passed in various forms to the state or was dispersed between the other partners, such as the Jewish National Fund and Hevrat Haovdim.

Hevrat Haovdim of the General Federation of Labor was established following an agreement with Achdut Haaovda and Hapoel Hatzair that was signed back in 1920. Following its establishment, the Histadrut began to set up independent economic enterprises. Bank Hapoalim was founded in 1921. Two years later, the Solel Boneh company was established. This company assumed the function of the directorate for public works and construction in Israel. Hevrat Haovdim was intended to synergize Zionism and socialism and to serve as "an entity for the creation of a national economic circle". Over time, the institution's ideology became blurred by having to cope with varying objective conditions. As a result, the gap closed between the declared ideology of a utopian nature and actual economic necessities. In any event, the policy of Hevrat Haovdim was dictated by two main objectives: Zionism and socialism, with a preparedness to regard profitability as a necessary compulsion rather than as a final objective. For this reason, Hevrat Haovdim entered into business activity that was intended to increase the wellbeing of the Hebrew worker and to provide him with a place of work, while serving the interests of the national movement. Due to this policy, close cooperation existed between the Histadrut and the Jewish Agency for the construction of infrastructure enterprises of economic, security and political importance. The ownership group of the Histadrut included 2,000 economic units and accounted for an estimated 8.4 percent of the number of employed persons in the economy in the mid-1960s. Under the ownership of Hevrat Haovdim were such companies as Solel Boneh, Koor, Choma, Shikun Haovdim, Teus Azori Pituach, Yahkin Chakal, Hasneh, Bank Hapoalim and cooperatives such as Mashbir Mercazi and Tnuva. It is interesting to note that the management team of the companies owned by the groups in the

government sector was almost entirely comprised of politicians close to the government or former senior IDF officers. Given the lack of professional managers, the rotation of managers in these groups was internal only.

Apart from the three previously mentioned groups, nine groups under private sector ownership existed in this period. These included small enterprises owned by a single family or a partnership of several families. While the Histadrut and the government were guided by national interests, the fundamental guideline for the private owners was the necessity of making a profit. Most of the founders (like the managers) of those privately owned groups originated from West European countries and brought with them the capital and professional experience which they had acquired abroad. The privately owned groups' range of activities encompassed most industries: banking and insurance (the Bank Discount group, owned by the Recanati family, the Elron family and the Nachum Zeev and Williams group), industry and trade (Central Company for Trade and Investment Ltd., the Meir group and the Sacharov group), construction (Africa Israel Investments and PIC – Israel Economic Corporation), tourism (the Miami group) and many other industries. From many aspects, the diverse private sector owned groups were similar in their form of activity to the government, Jewish Agency and Histadrut owned groups. These too owned sources of finance from abroad and held an investment portfolio diversified among the different industries in the economy. It should be noted that the interests of the different ownership groups frequently coincided. This was particularly apparent from the joint establishment of dominant companies (Clal, Industrial Development Bank, Eilat Pipeline Company, Delek and the Israel Corporation), which via investments in numerous companies in the economy effectively formed the gravity centers of economic activity in Israel[23].

A vertical (pyramidal) holding structure was not common at the time, possibly due to the symbiotic nature of the relationships between the government and the business sector which led to a preference for cross holdings. The government, which effectively dictated the course of the business groups' development, had no interest in economic profits and relied on the experience of professional managers in order to promote economic growth. Concurrently, private sector business groups, in cooperation with the government in the same centers of gravity, diversified their financial portfolios and avoided high personal expenses on the basis of artificial government insurance. The business elite were incapable of leading, and displayed no desire to lead Israel's economic development and in many cases, actually called for government intervention (Bichler [1996]). As distinct from the previously mentioned cooperation, no evidence was found of socio-economic relationships between the private sector business groups in the 1950s and 1960s.

The depreciation of the early 1960s and the recession that began in 1996 had a major impact on the composition of the ownership groups in Israel. As the management of private firms passed from generation to generation, old quarrels within the controlling families and between the business partners intensified. Those years were notable for a wave of corporate sell-offs and a change in the ownership map in Israel. Private sector companies in Israel were sold mainly to the owners of the required resources, whether these were foreign and local investors, or concerns belonging to the Hevrat Haovdim or the working settlements.

[23] As an example, in 1973 Clal controlled over 100 companies.

These processes led to the eventual creation of a dual system in the economy, whereby many small businesses existed alongside a number of large and concentrated firms (50 in all). It is thereby possible to conclude that the recession of the 1960s marked the first turning point in the emergence and control of business groups in Israel, the increase in concentration and the polarization in the economy.

The increased economic power of many business groups at the end of the 1960s was achieved primarily due to the large growth in defense industry activity resulting from military confrontations with neighboring countries. Most of the defense companies were major components of the state-owned business groups or off the large holding groups (IDB had holdings in Elbit, Iscar and Koor, a controlling stake in Tadiran, Soltam and Telrad; Clal owned Urdan and Vulcan Industries). Growth in Israel, which was largely based on the defense industry between the end of the 1960s and after 1973, therefore favored the rapid development of these groups. The central role of the business groups strengthened even during the period of high inflation: As distinct from the accepted concept of the "lost wealth" of the Israeli economy from 1974 to 1984, it is precisely that period which is regarded as the business groups' golden age. This is because of the expansion of the defense and financial sectors, which at the time formed the very core of most of the groups. As an example, the three largest banks (Leumi, Hapoalim and Discount), which belonged to the principal ownership groups, nearly doubled their share of GNP in the five years from 1975 and their profits quadrupled in that period.

But the business groups were not spared the effect of the "gray" period: In the mid-1980s, most of them suffered from a crisis, for two main reasons. Firstly, the bank crisis of 1983 led to the transfer of control at most of them to the state. Secondly, the 1985 stabilization program, which was reflected by a large cut in the defense budget concurrent with the slump in world arms markets, led to a serious decline in the profitability of companies in the defense industry. However, the crisis that plagued the business groups in Israel was short-lived and paradoxically, brought about a renaissance period in the development of the groups.

In the years following the stabilization program, it was generally agreed that a drastic change in the economy's pattern of behavior was necessary. The stabilization program, which won nationwide support, changed policy-makers' thinking regarding the most suitable *modus operandi* for the Israeli economy. As a result of the privatization program, government ownership in the business sector fell from 27 percent in 1985 to 6 percent in 1995. Most of the companies that were privatized were rapidly transferred to the controlling business groups. For example, Israel Chemicals (which controlled most of Israel's mineral resources) passed into the ownership of the Eisenberg family. The ownership of Shikun U'pituach, the leading real estate company, was divided up between Clal, the Eisenberg family and Bank Hapoalim, and there were many other such examples. The government monopoly of high-tech firms in the defense sector was heavily eroded as well. This was after Israel Aircraft Industry had to dismiss many engineers in 1987. These engineers then went on to establish a number of private high-tech and science-based enterprises. Business groups purchased part of the new companies and also managed to expand during the period of mass immigration, which (apart from creating a real estate bubble) resulted in the need to

absorb new employees[24]. This business expansion was accompanied by the large-scale replacement of ownership at the business groups and a change in their holding distribution.

At the end of the 1990s, none of the ownership groups continued to operate on the scale of the 1960s and 1970s, and hardly any of them still exist or at least not under the same ownership. Concurrent with the privatization process and the large decrease in government involvement, major changes occurred at part of the Histadrut's ownership group. After the group's share of net national product had risen from 18 percent in 1953 to 23 percent in the 1960s and 1970s, its share dipped to 14 percent at the beginning of the 1990s and to a few percent at the beginning of the millennium. Most of the concerns were sold to private entrepreneurs and the workers' enterprises underwent revolutionary changes. The Jewish Agency group was also left without any large-scale control of businesses. As a result, the center of gravity of that group – Rasco, which had owned numerous subsidiaries, principally Electra and Telco – became a "granddaughter company" of Arad, owned by the Eisenberg family and the Gesuntheit and Shpitzer families. Electra passed into the ownership of the Zelkind family.

As early as the mid-1960s the private sector was left with only two out of nine initial groups. Bank Alran, owned by the Alran family, was sold to Bank Feuchtwanger, which was then owned by the Epstein family, and these two banks were eventually merged within Bank Leumi Le-Israel. The Bank Discount group underwent a major facelift: Bank Discount initially passed into state ownership and its investments in other industries via IDB were sold by the Recanati and Karso families to the Dankner family. The Israel Central Trade Company became part of Clal. The Nachum Zeevi group ceased to operate back in 1974, when most of its assets were transferred to an Israeli bank (British-Israel Bank). The Meir and Sacharov families' business activity decreased to a major extent and the PIC group became part of IDB.

Of the five largest banks – Hapoalim, Leumi, Discount, Mizrahi and First International – only the latter was controlled by a family (the Safra family). The other four were controlled by the State of Israel following the bank shares collapse of 1983. As part of the effort to privatize the state's holdings in the banking system, the control in Bank Mizrahi was sold to the Ofer and Mozi Wertheim families, and the control in Bank Hapoalim was purchased by the Arisson and Dankner families. As for the large holding companies[25]: IDB, the Israel Corporation, Koor and FIBI were sold to the following new owners respectively: the Dankner group, the Ofer family, the Claridge group under the control of Charles Bronfman, the Liberman family and Tsadik Bino. Other power centers have expanded as well: The Elco group (owned by Gershon Zelkind) purchased Shekem and Electra, the Fishman group (which also owns Industrial Buildings and the Jerusalem Economic Corporation) purchased in the privatization program Yediot Aharanot and Arutzei Zahav,

[24] The reference is to Nesher, Koor and Clal.

[25] It should be noted that the ownership and business group map in Israel does not include conglomerates that are not holding groups. At nearly all of them the business elite has been in control for less than 30 years. The Iscar group is controlled by its founders Steff Wertheim and his son Eithan; Strauss and Elite are controlled by the Strauss family; Delta is controlled by Dov Lautman; Osem is controlled by the Propper family and Delek is owned by Yitzhak Teshuva.

Dudi Weissman and Shraga Biran (Dor Alon) purchased Blue Square, Lev Levaiev, after his decisive success in diamond transactions, took over Africa Israel.

The ownership chart of the economy shows that towards the end of the 1990s, the ownership was replaced at a substantial proportion of the large companies. Facilitating the ownership replacement were the large amounts of credit that were taken by the buyers with the assurance of large dividend payments in the future as security. The companies that underwent a transfer of ownership were: Bezeq (to Zeevi and in 2005 to the Saban family), Bank Hapoalim (to Arisson), Bank Mizrahi (to the Ofer and Wertheim families) and Union Bank (to Shlomo Eliyahu, the Levinsky family and Yehoshua Landau), Clal Trading (to Zeevi), the Israel Corporation (the Eisenberg family sold their controlling stake to the Ofer family in 1999), the Sonol fuel company and the Tambour paint factory (to the Borowitz family), the Delek fuel company (to Yitzhak Teshuva), Yediot Aharonot (Fishman) and the cable TV companies. Also sold were FIBI, which Tsadik Bino, and the Liberman family purchased from the Safra family, and IDB Holdings which was purchased by Danny Dankner from the Recanati and Karso families (a transaction levered by Bank Leumi and Mivtachim). Since the unique structure of the business groups remained largely unchanged, the holding pyramids remained prominent features of Israel's economic landscape. Most of the new owners were entrepreneurs who had built up their business activity over the years, exploited their know-how and preferential business strategy and in many cases, also based themselves on capital that was accrued or inherited abroad. Some of them prospered as a result of the rapid development of high-tech industry worldwide and especially in Israel. But due to alternative venture capital options and the existence of global markets, these entrepreneurs preferred to manage individual companies rather than invest in the establishment of business groups in the area of high tech.

Unlike their predecessors, the new business groups increased their foothold in the Israeli economy by means of a widespread network of reciprocal relationships and social relationships (joint directorships in affiliated companies). The new groups also expanded their activity to outside of Israel. During the 1990s, the new owners of the business groups gradually consolidated themselves and increased their interests in different areas, gaining control of real estate companies, media (TV, newspaper and radio) companies and holding companies, in line with the control preferences typical of the owners of the old groups. The old elites were replaced by new elites and at the end of the 1990s, a new era in the history of business groups in Israel began.

The table data and an extensive historical review reveal a number of main points characteristic of the business groups in Israel and the discussion of their impact on the present and future performance of the economy. Firstly, the high substitutability of the controlling owners is apparent: The owners of the controlling groups in the business sector were replaced 3 times within 50 years. The fact that most of the controlling groups are owned by a (relatively small) number of families is indicative of the relatively low stability of the financial system. Moreover, it makes the control, ownership and performance of the firms, as well as the investors' wellbeing, dependent on the nature of the relationships within the families; on the strategy and preferences of a limited number of individuals. Secondly, a historical analysis shows that a close network of reciprocal relationships exists between the banking sector and the business groups. This phenomenon in itself requires an

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Table 2
Evolution of Business Groups in Israel

Period	Group	Sector	Activity areas	Management	Principal companies	Since	Comment
1950 and 1960s	***Israel Government***	*Government*	*All industries*	*Party members*	*El Al , Israel Railways, Bezeq, Israel Electric Corporation, Bank Leumi, Rasco, Zim, Mekorot, Koor, Bank Hapoalim, Solel Boneh, Tnuva, Hamshbir*	*1948*	Large ownership groups
	Jewish Agency	*Government*	*All industries*	*Senior organization members*		*1920*	Part of the global Zionist movement
	Histadrut	*Government*	*All industries*	*Senior organization members*		*1920*	2,000 group-owned companies, 8.4% of the labor force
	Bank Alran	*Private*	*Banking and finance*	*Family members*	*Bank Alran*	*1934, immigrants from Germany*	Period of: Direct and indirect government intervention in the Israeli economy
	Discount group	*Private*	*Banking and finance*	*Family members + professional managers*	*Bank Discount, Mercantile Discount Bank*	*1935, immigrants from Greece*	
	Israel Central Company for Trade and Investment	*Private*	*Industry, trade, banking and finance, construction*	*Family members + professional managers*	*Urdan, Swiss-Israel Bank*	*1944, partnership*	Rapid growth and development of main conglomerates
	Africa Israel Investments	*Private*	*Construction, insurance, industry*	*Professional managers*	*Migdal*	*1934, immigrants from South Africa*	Close network of relationships between the government and the business groups by means of transverse holdings
	Nachum Zeev and Willians group	*Private*	*Finance, industry*	*Family members + professional managers*	*Britain-Israel Bank*	*1937, immigrants from Britain*	
	Miami group	*Private*	*Hotels, oil, trade, industry*	*Professional managers*	*King David Hotel Tubes*	*1949, partnership*	
	Meir group	*Private*	*Investment*	*Family*	*Meir Holdings group, Shalom Tower*	*1921, immigrants*	
	Sakharov group	*Private*	*Industry,construction, insurance*	*Family*	*Saar*	*1904*	

Table 2 (cont.)

Period	Group	Sector	Activity areas	Management	Principal companies	Since	Comment
	PIC	*Private*	*Construction, industry, trade*	*Professional managers*	*Gav Yam*	*1921, Jews from USA*	
	Main conglomerates: Clal, Israel Corporation, Delek Israel, Eilat Tubes was established in cooperation between the government sector and business groups in the private sector. These conglomerates were comprised of a large number of companies, and were involved in all principal industries and were effectively centers of gravity of the Israeli economy.						
1960s and 1970s	***Israel Government***	*Government*	*All industries*	*Same as previous years*	*Holdings of Jewish Agency, Koor, Bank Hapoalim*	*1948*	A period of a dual economy: 50 large companies were "surrounded" by a large number of small businesses. A period of extensive (direct and indirect) government support of existing+ groups. Business groups increased their holdings in the Israeli economy due to the rapid growth of the defense and finance sectors.
	Histadrut	*Government*	*All industries*	*Army officers, politicians*		*1920*	
	IDB (Recanati and Karseo families) (former Discount group)	*Private*	*Extensive industry diversification*	*Family members + professional managers*	*PIC, Bank Discount, Elbit*	*1970*	
	Eisenberg group	*Private*	*Investments, real estate, shipping*	*Family*	*Israel Corporation, Zim, Israel Chemicals*	*1968*	
Economic crisis, hyperinflation period, bank shares crisis – most banks went into state ownership following the stock market collapse of 1983. Privatization of the banking system began in 1991. The stabilization program was followed by, the privatization of state owned companies, liberalization and mass immigration from the former Soviet Union –all of which had the effect of changing the ownership map in Israel and providing the ground for the emergence of new groups.							
	IDB (Dankner group)	*Private*	*Extensive industry diversification*	*Family+professionals*	*Clal, Discount Investment,Koor*	*1970,2003*	A period of economic expansion based on immigration from the former Soviet Union and high-tech growth. All the new owners of
	Africa Israel (Levaev group)	*Private*	*Real estate, investment*	*Family+professionals*	*Africa Israel*	*1996*	

Table 2 (cont.)

Period	Group	Sector	Activity areas	Management	Principal companies	Since	Comment
1990s	***Ofer group***	*Private*	*Banking, industry, shipping, hotels*	*Family+professionals*	*Zim, Israel Chemicals, Bank Mizrahi*	*1999*	the business groups are independent entrepreneurs who managed to take over the businesses by means of large-scale levered transactions. Controlling families increased their control by means of an extensive network of social relationships and control of media centers.
	Delek group	*Private*	*Real estate, oil*	*Family+professionals*	*Delek*	*1991-1994*	
	Fishman group	*Private*	*Industry, real estate, telecom*	*Family+professionals*	*Jerusalem Economic Corporation*	*1989*	
	Arisson group	*Private*	*Banking and finance, real estate*	*Professionals*	*Bank Hapoalim*	*1991-99*	
	Ilan Bronfman group	*Private*	*Banking food*	*Family+professionals*	*Bank Discount, Blue Square*	*1989*	
	Bino group	*Private*	*Oil, real estate, banking*	*Professionals*	*Paz, FIBI*	*1999*	
	Nimrodi group	*Private*	*Real estate, media, hotels*	*Professionals+family*	*ILDC, Maariv*	*1989-92*	
Other groups: Saban, Hamburger, Borowitz, Zelkind, Katz – all of them private, with extensive industry diversification and a vertical ownership structure.							

extensive analysis and is directly connected to the level of resilience and stability of the banking system in Israel and as a result, to the entire financial system. Thirdly, the broad-ranging network of inter-group relationships raises numerous questions regarding the Israeli economy, relating to such issues as: an equilibrium level of efficiency characterized by a large number of business groups and their dispersal among the principal industries and the private sector, the level of efficiency of the financial markets, the allocation of sources, growth and the economy's resilience in the face of various shocks. In view of the rapid process of privatization in the Israeli economy and the transfer of ownership at the majority of economic units to a small number of controlling owners, reference must be made to the definition of the present market from the theoretical and practical aspects. These and many other questions pose a challenge to conventional thinking. At this stage however, we have chosen to focus on the identification and characterization of business groups in Israel and their impact at the micro level on single firms

4. CONSTRUCTION OF THE SAMPLE

For the purpose of this study, we built a special sample containing quarterly data on 650 companies listed on the Tel Aviv Stock Exchange between 1995-2005. The starting date for the data was chosen for the following reasons: Firstly, ownership data reported to the stock exchange and the Securities Authority are not available in the form of electronic spreadsheets before 1995, and the information prior to that year is relatively sparse. Secondly, due to system limitations we are unable to calculate financial values for most of the companies before the period reviewed. At the initial stage therefore, this data bank includes all publicly-traded companies on which full ownership, financial and accounting data were available as of January 1995.

The sample was collected from a number of sources:

1. Companies' financial reports, including data on firm's characteristics such as: profitability, extent of activity, operating environment (industry, sub-industry and level of expenditure (including R&D expenses).

2. Ownership data for publicly-traded companies, including data on ownership concentration and the percentage holding in them of the principal shareholders (parties at interestwith a holding of over 5 percent). At a large proportion of the companies, the percentage holding of senior-office holders (which must be reported under Securities Authority directives even if their holding does not exceed 5 percent) was included.

3. Ownership data for private companies, including data on all the owners of holdings in private companies according to the type of equity holding (such preference shares, founders' shares, and ordinary shares). These data were gathered from the companies' reports to the Companies Registry.

4. Stock exchange trading data that were gathered in order to calculate financial values, such as ROE, TQ and the yields on the shares of the listed companies. Also recorded was the complete composition of the Tel Aviv 100 index from 1995 (a distinction between blue chip companies and the other listed companies) for the purposes of statistical examination and econometric analysis.

5. Data on family ties between owners of holdings in publicly-traded companies were gathered from the list of interested parties that is reported directly to the stock exchange and the Securities Authority. The authority's regulations require family ties between interested parties in a held company to be reported. Other potential relationships were derived from an analysis of various media sources (press records, the Internet, D&B and the BIS).

At the first stage of the data analysis we attempted to identify the ultimate owners (individuals) in every publicly-traded company in our pool as of a specific date. For this purpose, we defined a controlling owner as a shareholder holding at least 25 percent of the company's capital when this holding exceeds the amount of the two second largest owners' holding[26]. This definition made it possible to filter the ownership data. As a result, 7,300 potential owners of control were identified in publicly-traded companies. These owners' identity was extremely heterogeneous, and included individuals (47 percent), private companies (22 percent), trusts and partnerships (2 percent), foreign owners (individuals and firms) and government ownership. At the second stage, we chose to focus on identifying the owners of private companies and classifying them by ownership identity. For classification purposes, we decided to use a methodology similar to that of La Porta et al (1999) and defined five principal ownership groups: (1) a single or family owner; 2) a private corporation with a diversified ownership; (3) government ownership; (4) joint ownership (trusts, partnerships); (5) foreign ownership. Companies which we were unable to attribute to one of these categories or for which no controlling owners were found under the restriction which we had imposed, were attributed to a group of companies without ultimate ownership – widely diversified holding ownership[27]. At the next stage we transposed the ownership data of private companies with those of publicly-traded companies, identified family relationships between individuals and made a final classification of all controlling owners to the previously mentioned identity categories. At the concluding stage, we examined the distribution of the holdings of the controlling owners and defined a business group according to the number of companies under the same ownership on a specific date. A business group was defined when more than one publicly-traded company (2 or more) was found to be under the control of the same economic unit. As a stronger alternative, we chose to define as a large business group a case where more than 2 publicly-traded companies were under the same control. Ownership data that included the following parameters: direct and indirect holding percentages, an ownership concentration index (Herfindahl index), affiliation to a business group and the type of affiliation by identity group, information on the holding of a company within a pyramidal structure, and the level at which control is achieved – were input into a Dukas financial report and stock exchange data bank ("Dukas" – similar to the American "Compustat"). Quarterly balance sheet data were thereby obtained for each company in the data bank, the company's age was calculated according to the IPO date and company performance indices were calculated. The latter included Tobin's Q, ROE, ROIC, ROA, rate of income growth, yield on the company's stock, financial leverage and other accounting data.

[26] This definition is similar to the Banking Supervision Department's definition of an ultimate owner regarding the requirement for identifying large borrowers.

[27] These companies still have parties at interest and high concentration.

After conducting data verification procedures and deducting outliers, a final pool was compiled which contained quarterly information over 11 years on an average of 650 publicly-traded companies. Some 27,000 quarterly company observations were included in the financial non-balanced data panel.

a. Description of the model and statistics of the variables

Table 1 presents data on the control distribution at every firm with a unique controlling owner. These firms account for 66 percent of all the firms in the sample for the years 1995 to 2005. The proportion of companies in the Tel Aviv 100 index (the 100 largest companies) averaged 70 percent. It can be seen from the table that most firms in Israel are under the control of an individual or family (an average of 74 percent). Apparent over the years is a shift from state control to control by partnerships or trusts. As we described it in the historical review, this phenomenon is in keeping with the transfer of control of the banks from the government to families or partnerships. Although no banking institution in Israel is defined as having a unique controlling owner, in most cases families' or partnerships' holdings in Israeli non-financial corporations are directed via the banks, enabling them to achieve control of them.

Table 1
Distribution of Control by Identity of Owner (percent)

Year	Family/Individual	Widely-Held	State	Trust	Foreign
1995	72	7	6	10	5
1996	74	6	6	10	4
1997	73	6	3	12	6
1998	76	6	2	11	5
1999	75	6	2	12	5
2000	75	7	2	12	4
2001	76	6	2	13	3
2002	74	5	2	14	5
2003	71	5	6	14	4
2004	75	5	3	14	3
2005	74	5	1	17	3
2006	74	6	1	17	2

Since the data in Table 1 are relevant for only two thirds of the companies in the sample, we calculated the holding distribution according to the type of control within each observation. A final weighting from this calculation shows that 50 percent of Israeli companies are controlled by individuals or families, 34 percent were defined as a company with a highly diversified holding structure (without control by a unique owner). A comparison of these findings with their international counterparts[28] shows that from the aspect of holding structure by type of control, Israel is positioned together with the emerging markets – such as the Far East markets – and differs from most western countries.

[28] Faccio and Lang (2002), Claessens, Djankov and Lang (2000).

A definition of a business group on the basis of a holding in two or more publicly-traded companies reveals that according to the data, 26 percent of the companies are affiliated to a business group. Like the data trend obtained previously, the percentage of companies in the Tel Aviv 100 index that belong to business groups is much higher, and averages 52 percent. The companies in the Tel Aviv 25 index (which accounts for 75 percent of stock exchange tradability) are mostly controlled by business groups. The definition of large groups (3 or more publicly-traded companies) does not change the substance of the previous findings. Although only 16 percent of the companies are defined as affiliated under this classification, the majority of large companies in the economy (42 percent – on the Tel Aviv 100 and almost all the companies from the Tel Aviv 25 lists) are still defined as affiliated to business groups. According to the first definition of business groups, 50 groups operated in Israel during the years 1995-2006, and the number of large groups averaged 20.

An interesting fact can be derived from Figure 1: Despite the relatively stable number of business groups in the last decade, their market segment declined during that decade and until last year, apparently because of the characteristics of the affiliated companies. However, the unique nature of the Israeli capital market requires a wider observation of market segment data. This is due to the tradability of the Teva company, which, in certain periods, has accounted for up to 20 percent of the total market capitalization. As is well-known, the holding structure in this company is completely diversified, resulting in a downward bias in the proportion of the business groups. The data exclusive of Teva (the upper series in the graph) shows that large groups held an average of nearly 50 percent of the value of the entire market during the sample period. Moreover, 10 large groups – all of them under family ownership – were identified, indicating that their proportion of nearly 30 percent is among the highest in the western world (Figure 2).

Figure 1
Groups/Market Segment

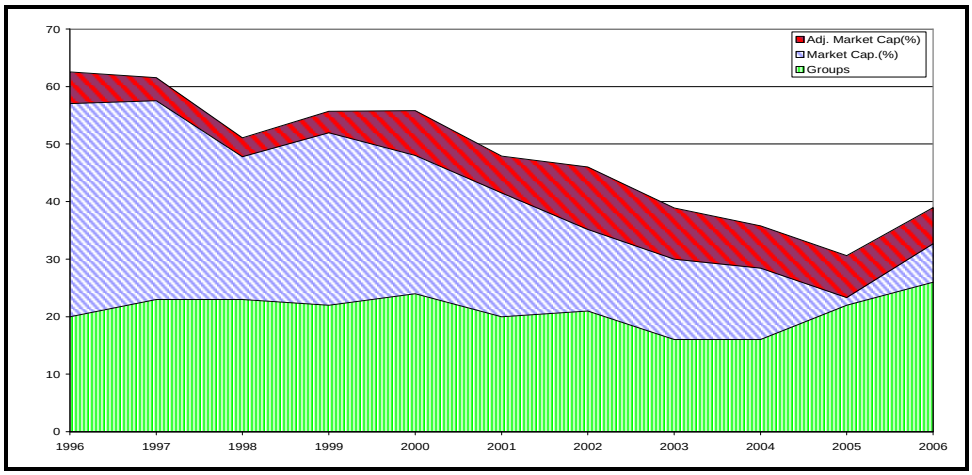
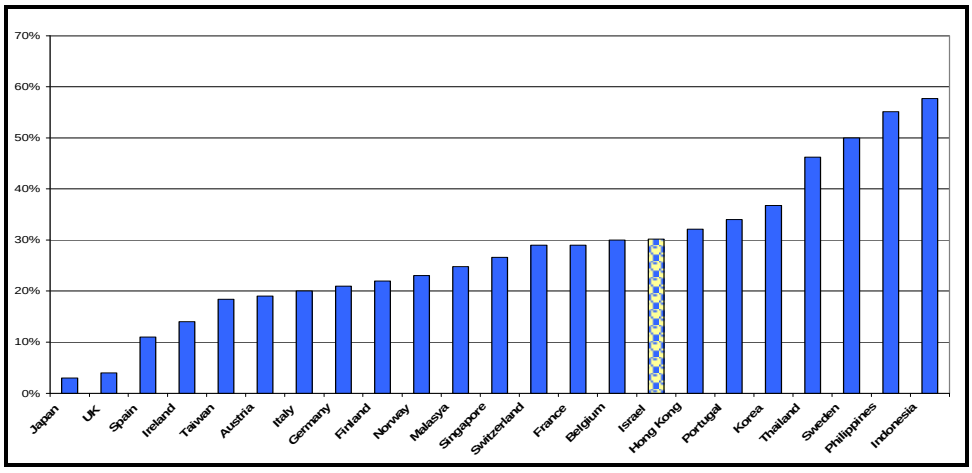


Figure 2
Holding of 20 Largest Families
(percent of market value)



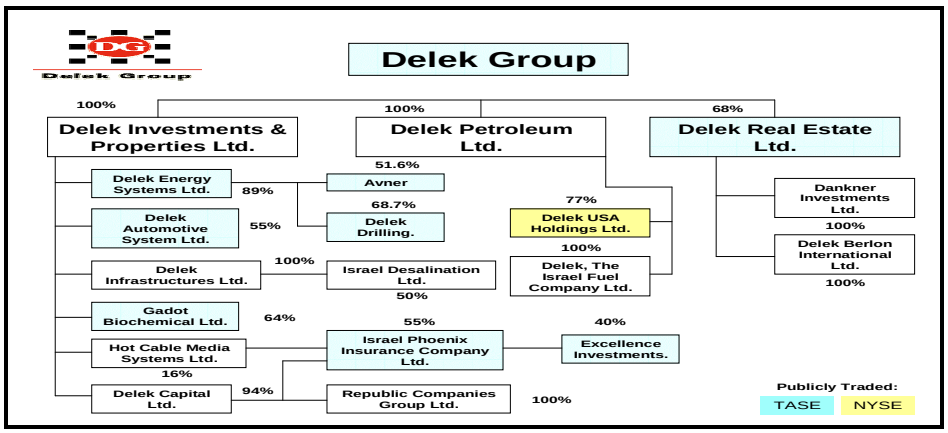
SOURCE: Faccio and Land (2002) for European countries, and Claessens et al (2000) for Far East countries.

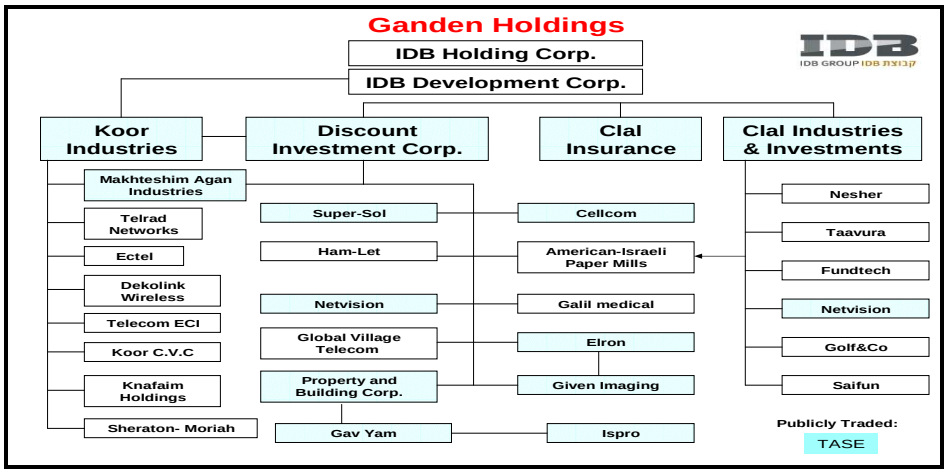
The business group's structure is another topic of the discussion relating to the groups in Israel and worldwide. Unlike most other countries, the issue of dual shares (capital rights and voting rights) has not been possible since the 1990s. Amendment 11 of the Securities Law of 1988 greatly reduces the ability to use surplus voting rights as a means for retaining control, and this may possibly encourage the use of the pyramidal structure. According to the findings of this study, approximately 21 percent of companies listed for trading in Israel are under a pyramidal control structure (see Figure 4, for example). In itself, this figure is unexceptional: The average proportion of companies under a pyramidal holding structure in Europe and the Far East amounts to 10 percent and 48 percent respectively[29]. However, 80 percent of companies affiliated to business groups are held under this structure[30]. The maximum level at which a publicly-traded company in Israel is held is 7, implying that the control in it is achieved by holding no less than six other companies. Another interesting parameter is the spread between control rights and equity rights which is attained by the controlling owners in a pyramidal structure. By multiplying the holding percentages in equity via companies in the pyramidal chain (see Morck [2004]), it was found that the spread at a company held via a chain of another 6 publicly-traded companies amounts to 97 percent. In other words, a unique owner achieves full control of that company with a personal holding of 3 percent of its equity, in accordance with the theory of pyramidal business groups. We reiterate that the identification of controlling owners, their classification by identity and the division of companies into affiliated companies and unaffiliated companies were made under a strong assumption regarding the definition of

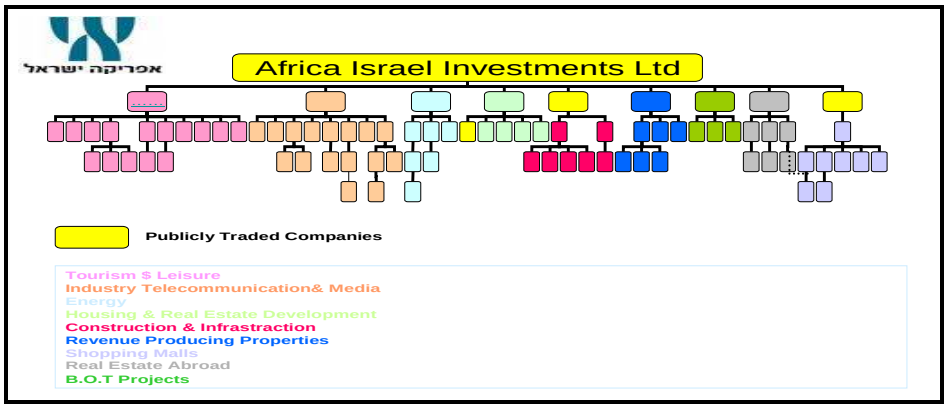
[29] The percentage holding on the basis of dual shares and pyramid structures in Europe is 30 percent.
[30] This finding supports the business groups' structure theory (Alemida and Wolfenzon [2006]).

control in a publicly-traded company. Under this assumption, the controlling owner holds at least 25 percent of the company's capital apart from his being the largest from the aspect of holding relative to the amount held by the other two owners. Unlike previous studies, where attribution rates of 10 percent and 20 percent were selected, we regard our definition as rational in view of the evidence on parties' at interest holdings in publicly-traded companies in Israel. Accordingly a unique characteristic of companies traded on the Tel Aviv Stock Exchange is interested parties' high percentage holding in a firm's capital. Recent examinations and the findings of previous research (see Bar, 1999) show that parties at interest hold an average of 66 percent of the ownership in publicly-traded companies in Israel and the holdings concentration index (Herfindahl-Hirschman index) at them amounts to 0.5. This phenomenon differs greatly from that typical of other western countries, where the percentage equity holding of interested parties is much lower. This may result from the small size of Israeli companies compared with firms in other western countries. The situation may also result from the relatively late development of the Israeli capital market, which left most private sector companies with undiluted equity holdings by large owners over time. But despite the rapid development of the market in recent years, the privatization process and the use of instruments for diluting control, the pattern of ownership concentration at publicly-traded companies in Israel has remained unchanged. As a result, the percentage ownership by the public remains at around 40-45 percent. In view of the previously mentioned factors, by international standards the results of this study are downward biased relative to the findings of studies that are based on attribution points of up to 20 percent for the purpose of defining control at a company. Otherwise, unique ownership of business groups and pyramidal structures in Israel would be a more common phenomenon.

Figure 3
Illustration of the Pyramidal Structure in Israel



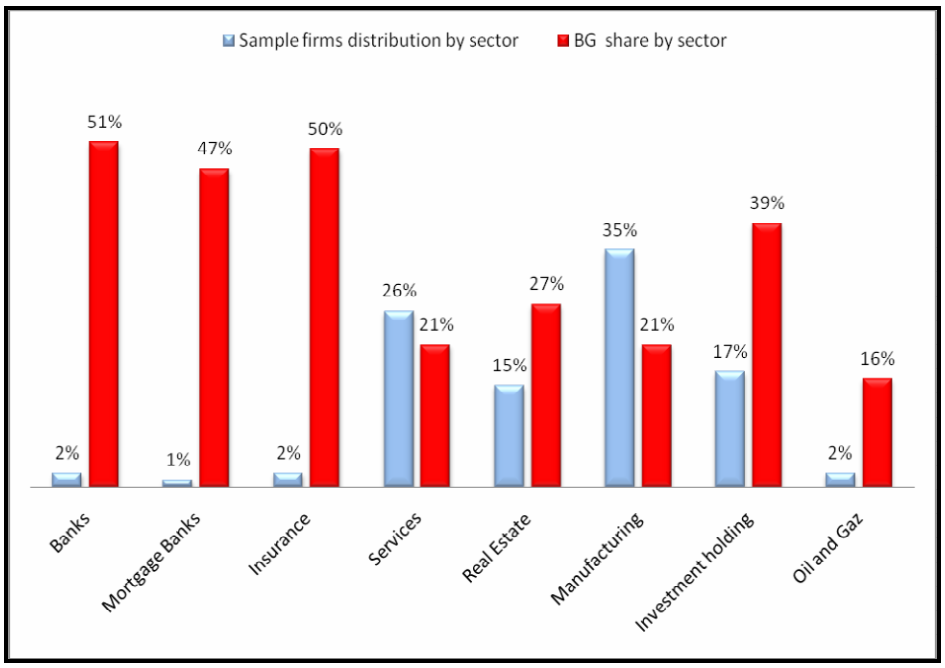




Unfilled companies – private companies

We concluded our analysis of the issue of control and business groups by focusing on the dispersal of the business groups over the different sectors of the economy. A conclusion arising from Figure 4 is that the business groups' control diversification is apparent in all industries. It is clear however that the business groups' control in the banking industry (which is comprised of banks, mortgage banks, holding companies) and in the insurance industry is more substantial, and extends to over 40 percent of the companies in those industries. In the manufacturing industry however, only 21 percent of companies can be classified as affiliated to business groups. The center of gravity of most business groups in Israel therefore appears to be concentrated in the financial sector.

Figure 4
Distribution of Business Groups' Companies and Holdings, by Principal Industry



b. Company characteristics and characteristics by type and controlling structure

Table 2 presents data on all publicly-traded companies for the years 1996 to 2005, years notable for periods of both buoyant and depressed activity. As the table shows, average profitability (profit normalized by asset volume – ROA) in the sample amounts to 3 percent for the entire period. During the years 2000-2002, average profitability was particularly low. Clearly, this was a phenomenon typical of the recession prevailing in the economy at the time and especially the recession in the financial markets[31]. The table also shows that the average size of companies in the Israeli economy (based on total assets) increased, companies' financial leverage (debt to capital ratio) remained stable over the entire period and the public's percentage holding averaged 35 percent. Companies' financial performance, as measured by Tobin's Q, was within the limits accepted in the literature and consistent with the development of the local capital market (a decline in value during a recession period). The average age of publicly-traded companies at the beginning of the sample period was 7 years – further proof of the relatively undeveloped state of the local capital market. Particularly apparent is the intensity of Israeli companies' investment in R&D, which was estimated at 3.5 percent of firms' total income.

Table 2
Statistical Summary of all Stock Exchange Firms

Year	ROA	SIZE	Leverage	Tobin's Q	Percent of equity held by non-controlling shareholders (%)	R&D intensity (%)	Sales growth (%)
1996	7.8%	404,074	0.47	0.98	32	0.78	5.40
1997	2.5%	474,901	0.48	1.07	34	0.78	3.10
1998	1.1%	738,799	0.50	1.06	33	1.13	8.54
1999	8.9%	809,433	0.51	1.37	33	1.31	4.28
2000	-2.6%	799,973	0.52	1.23	33	2.98	2.69
2001	-1%	854,135	0.53	1.16	32	3.59	3.95
2002	-2.4%	1,009,484	0.53	1.05	34	7.67	4.04
2003	3%	1,057,478	0.53	1.25	37	6.67	2.40
2004	6.7%	1,190,986	0.53	1.34	39	3.77	3.06
2005	6%	1,409,591	0.54	1.46	40	6.33	2.30

We will now examine the business groups' impact on companies' accounting and financial indices before conducting an econometric analysis of these characteristics.

[31] This is also apparent from ROE data, which are not reported in the table.

Table 3 presents average relevant parameters and the significance of the averages differences between companies according to their affiliation to business groups. The data show that significant differences exist between the two groups of companies (affiliated and unaffiliated). Affiliated companies are notable for a lower Tobin's Q, which is indicative of the market's underassessment of those companies. However, the profitability of affiliated companies is higher. Companies that are affiliated to business groups are older companies from the aspect of stock listing age, are larger on the basis of their asset volume, are notable for a higher level of risk based on their level of financial leverage, have lower growth rates and invest less intensively in technological development (R&D) – signs of greater entrenchment. Unsurprisingly and in view of the pyramidal structure of most of the groups, affiliated companies are notable for a greater distinction between control and ownership (wedge parameter): The concentration of control is higher and direct holding in the equity of the held companies is low. To conclude: An initial analysis of the data shows that affiliated companies are more mature in terms of age and size, their growth rate is lower than that of unaffiliated companies, their financial leverage is high and their investment in technological development is lower. In addition, the findings relating to the distinction between the rate of control and the rate of ownership in these companies indicate that they conform to the business group ownership structure theory.

Table 3
Data on Stock Exchange Firms by Business Group Affiliation

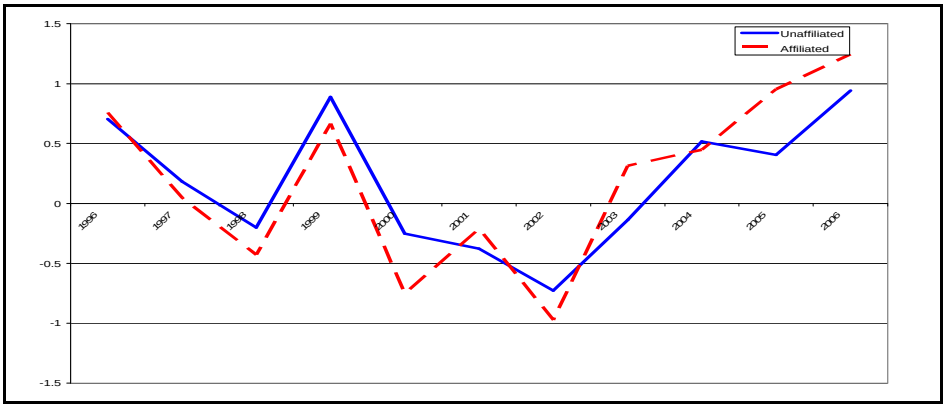
	Affiliated	Unaffiliated	t-statistic for the difference in means
ROA (%)	2.1	1	2.90
Size (market capitalization in NIS)	1,958,187	371,370	14.17
Leverage	0.54	0.48	4.98
TQ	1.15	1.24	4.34
Ownership (%)	40	60	30.20
R&D intensity (%)	3	6	2.25
Sales growth (%)	4	5.7	3.82
Control %- Ownership% ("Wedge")	59	40	32.97
Age	14	10	36.27

5. ECONOMETRIC ANALYSIS

In this section, we will conduct an econometric analysis of the pass-through channels via which the costs and benefit of a firm's affiliation to a business group are expressed in its value as a publicly-traded company in Israel. The analysis is based on quarterly panel data with various regression specifications. The explained variable in the regressions is determined according to the stage in the research question. We focused on the following two variables: ROE (ROA can also be used) as an index of the company's profitability (see Figure 5). Since the index is an accounting index, it is a backward looking index – an index of the actual profitability of the company's performance. The analysis of the question of

whether a significant change in a firm's profitability index occurs as a result of its affiliation to a business group is based on this index.

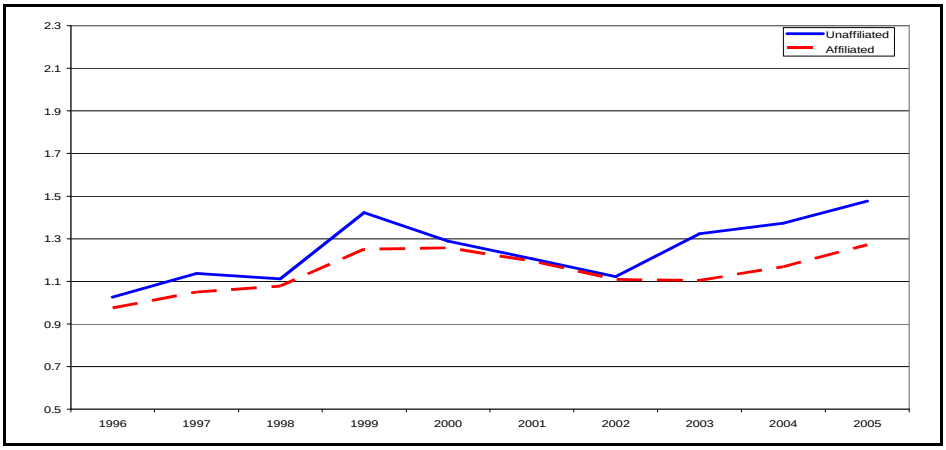
Figure 5
ROA by Business Group Affiliation



The second index, which appears as a dependent variable in the regressions, is a forward looking profitability index – a Tobin's Q index (the company's market value relative to its book value (Figure 6).

The Tobin's Q can be regarded as an index for the market's future assessment of the company's performance. At the second stage, the question is examined of whether a significant change in the market value of the assets relative to their opportunity cost has occurred due to the firm's affiliation to a business group and as a result, of whether a market premium for business groups exists.

Figure 6
Tobin's Q by Business Group Affiliation



The explanatory variables in the regression were selected according to the accepted methodology (Claessens, 2000): Log (Assets) – balance sheet volume, which is an index of company maturity and goodwill; Log:Age) – the company's age in years, which is also an index of firms' maturity as well as the stage in its life cycle; Ownership – the controlling owners' percentage holding in equity; TA 100 – a dummy variable for the firm's inclusion in the Tel Aviv 100 index during the period reviewed; Leverage – financial leverage (total debt divided by total liabilities) is an index of the firm's risk; as a variable for drawing maximum attention to the regression, we chose the Group variable – an indication of the firm's affiliation to a business group as defined in this study; a dummy value which obtains a value of 1 for an affiliated company and 0 otherwise. Also included in the regression were variables of percentage sales growth, the firm's dividend allocation – an index of the firm's financial resilience, an index of R&D investment intensity, the spread between the percentage control of the firm and the controlling owner's equity rights (wedge), and the group's size according to group equity. The interaction of the above variables with the Group variable was used as well. Also included were dummy variables for industry, sub-industry and time variables (quarter) in order to neutralize permanent effects.

From the aspect of expectations regarding the direction of the impact of the coefficients in the regression, it transpires that the expected impact of company age on financial value is negative and publicly-traded companies enjoy higher rates of growth (Khanna and Palepu [2000]). Company size variables and sales growth rate are included in order to examine the effect of the firm's value on the future possibility of growth. We expect the sales growth rate to have a positive effect on company performance and the size of the company to have a negative effect. The financial leverage risk index is expected to exert a negative effect on the firm's performance. Since dividend distribution is indicative of the firm's financial resilience and non-dependence on external forces (due to its reliance on intra-group markets), we expect that index to exert a positive effect on the company's performance. As regards variables that are indicative of the group's impact on the firms' performance, we do not expect an effect in a specific direction, and the true subject of the study is the ratio between the benefit of affiliation to a group and the cost. The results of the regression are presented in Tables 4 and 5.

a. Analysis of the results

Table 4 summarizes the results of 4 regressions for examining the impact of a firm's affiliation to a business group on the ROA profitability index. Also examined were other accounting indices such as ROIC and ROE as dependent variables. The results remained stable in these cases. The findings obtained are clear-cut and significant in each of the regressions and in each specification: A firm's affiliation to a business group does not have the effect of increasing its profitability. However, an examination of profitability throughout the manufacturing industry alone – an examination based on the concept of neutralizing the effect of accounting data in the finance sectors – shows that the sign of the affiliation to a business group variable is negative. With respect to the other parameters we can conclude that most of them impact in the expected direction although the impact is not significant with part of these parameters. Particularly notable is the positive impact of the

company's sales growth rate on its profitability, dividend distribution and level of leverage – which also contribute to the company's performance. Company size, as measured by the group equity variable, has a positive impact on profit.

Table 4
Impact of Business Group Affiliation

Independent variable	Full sample (1)	Full sample (2)	Manufacturing firms (3)	Manufacturing firms (4)
Intercept	+	+	+	+
Group affiliation	0.10	0.76	0.18	-0.04
Ownership	0.0009	0.0009	0.002	0.004
Log(age)	0.04	0.05	0.12	0.20
Log(assets)	0.13*	0.14*	0.14*	0.14*
Sales growth	0.013***	0.014***	0.015***	0.01***
Leverage	-0.016***	-0.017*	-0.014**	-0.0004*
Dividend	0.18*	0.17*	0.17*	0.10
TA100	-0.13	0.06	-0.08	0.20
R&D intensity	1.00E-06	-2.54E-06	3.21E-06	-7.00E-07
Group*Wedge		0.0004		0.009
Group*Log(age)		-0.19*		-0.11
Group*Log(assets)		-0.057		0.026
Group*Sales growth		0.003**		0.02**
Group Equity		0.015*		0.02
Group*TA100		-0.18		-0.63
Group*R&D		5.23E-06		6.03E-06
Group*Leverage		0.013*		0.013
Quarter Dummies	Yes	Yes	Yes	Yes
Industry/sub industry Dummies	Yes	Yes	Yes	Yes
R-adjusted	0.44	0.47	0.52	0.5

*** Significant at 1%, ** 5%, * 10%.

The accounting indices are usually inadequate because they are affected by macroeconomic data (although we deduct them via fixed effects) and companies' and company manager's manipulation of financial reports. We therefore decided to use the Tobin's Q variable as an observation of market control for the purpose of examining the effect of a firm's affiliation to a business group. Table 5 summarizes the results of the regressions. As distinct from the previous test, the negative impact of a business group on firms' performance is apparent from both a full and limited sample that includes industrial companies only. In the case of large companies (those listed on the Tel Aviv 100 index), as

Table 5
Impact of Business Group Affiliation
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Independent variable	Fixed (1)	Fixed (2)	Manufacturing firms (3)	Manufacturing firms (4)
Intercept	+	+	+	+
Group affiliation	-0.0008	-0.34***	-0.05**	-0.42**
Ownership	0.001***	0.001***	0.001***	0.002***
Log(age)	-0.034***	-0.035***	-0.006***	-0.014*
Log(assets)	-0.14***	-0.14***	-0.10***	-0.14***
Sales growth	-3.96E-08***	-3.96E-06***	-3.35E-06***	-3.96E-06***
Leverage	0.0013*	-0.001*	0.003*	-0.0004*
Dividend	0.03***	0.03***	0.007***	-0.02***
TA100	0.16***	0.28***	0.19***	0.258074***
R&D intensity	1.85E-06***	7.74E-06***	2.70E-06***	6.63E-06***
Group*Wedge		-0.0007*		-0.00009*
Group*Log(age)		-0.016		-0.002
Group*Log(assets)		0.036*		0.026*
Group*sales growth		-1.28E-05		1.58E-06
Group equity		0.003***		0.006***
Group*TA100		-0.157***		-0.11***
Group*R&D		-6.95E-06***		-5.44E-06***
Group*Leverage		0.003***		0.005***
Quarter Dummies	Yes	Yes	Yes	Yes
Industry/sub industry dummies	Yes	Yes	Yes	Yes
R-adjusted	0.62	0.63	0.61	0.63

*** Significant at 1%, ** 5%, * 10%.

apparent from the (Group*TA100) interaction, business groups' contribution to firms' performance is also negative. The data show that a company's value is positively affected by the size of the controlling owners' holding – a finding consistent with the agent problem theory, whereby an increase in an interested party's equity holding enhances control of the company and as a result, its performance as well. In addition, parameters indicative of the firm's maturity, such as stock exchange age and asset volume were found to be significant and exerted an effect in the expected direction: Younger and smaller companies were found to have a higher equity value than the other companies. Although the sales growth rate coefficient deviates from the previous finding, its impact on company value is minimal (see the coefficient). Companies that do not distribute a dividend (companies likely to encounter financial distress) were found to have a lower value. As expected, the firm's inclusion in the Tel Aviv 100 list and R&D investment intensity are positively correlated with the

company's value. With the complex model (including interactions) however, it was found that financial leverage adversely affected firms' performance. From the interaction of the business group affiliation variable with the other variables, we find that the value of affiliated companies is higher when the spread between control and capital investment is lower (a sign of a decrease in the agent problem), the size of the business group in terms of market value is larger and the growth rate is lower (although the variable is not significant). These findings indicate that business groups power the growth of small companies that are affiliated to them. This claim is supported by the negative coefficient of interaction between the group and R&D investment, which is evidence of the inefficient allocation of sources within the business group. At the same time, a positive interaction coefficient between the financial leverage level and affiliation to a business group reveals a decrease in the risks of affiliated companies and can be interpretated as an indicator for intra-group insurance. A positive interaction coefficient between company-group size shows that large companies have the most to gain from belonging to business groups.

6. DISCUSSION AND CONCLUSIONS

The purpose of this study is to identify and describe the activity of business groups in Israel. On the basis of the sample which we used in the study, a statistical analysis and an econometric model, significant evidence was found of the existence of business groups in Israel and their involvement in economic activity. The following points emerged from the statistical analysis: A limited number of business groups (20 on average) control a large number of publicly-traded companies in Israel (160 listed companies) and a market segment of approximately 40 percent. The Israeli economy is therefore one of the most concentrated in the western world from the aspect of control dispersal and on the basis of the previously mentioned data, is close to the developing countries in this respect. This figure raises doubts as to the efficiency of the allocation of sources in the Israeli economy and the level of exposure to shocks, especially against such a rich background of instability, the frequency at which the ruling elites have been replaced and the far-reaching macroeconomic implications in the event of one of the groups collapsing (as in the case of Heftzibah). It was found that the business groups' holdings are diversified throughout all of the principal industries, except for the high-tech industries, with a preference for the financial sector, which is proof of the enduring nature of the relationships between the banking sector and the business groups. In addition, an examination of companies' characteristics by their affiliation to business groups shows that companies are mature on average, from the aspect of size and stock exchange age, with low growth rates and low market performance concurrent with high risks. Such are the companies that are affiliated to business groups in Israel. An econometric analysis was conducted in order to verify the previous findings and to determine the extent of the business groups' contribution to the firms' performance. The following conclusions emerge from the econometric model: Firstly, it was found that the business groups do not contribute to the wellbeing of the affiliated companies and a negative market premium exists for those companies, as reflected by a decline in the value of Tobin's Q. Secondly, an econometric analysis does

indeed verify the statistical findings regarding the size, age, risk and growth of the affiliated companies. It should be emphasized that the results obtained from the econometric analysis are not trivial, and the conclusions derived from them make it necessary to refer simultaneously to the entire range of empirical evidence and theory of business groups. For this purpose, the impact of business groups should be examined concurrent with the benefit inherent in them, such as the creation of intra-group markets – financial markets and labor markets, weighed against their cost as reflected by the complex holding structure and the potential creation of the agent problem. A clear conclusion emerging from the results of the regression is that the market "punishes" affiliated companies due to this potential problem. This is apparent from the negative coefficient of the variable of the separation between the percentage holding at a company and its percentage ownership. However, the question is whether the implications of the agent problem, such as entrenchment and tunneling, are enough to explain the negative premium of the business groups in the Israeli economy. Given the absence of a tax on dividends, tunneling between companies in the Israeli market is a distinct possibility. But in view of the assessment of the strength of the financial institutions, it can be assumed that these hinder the exploitation of the investor minority. Another, possibly more reasonable explanation is that due to the Israeli economy's open nature, the situation in it highlights the issue of the efficiency of the intra-group markets and the justification for the existence of business groups. According to modern business group theory, an analysis of the impact of a disturbance in the equilibrium between the costs and the benefit of the existence of business groups is particularly relevant for developing countries with missing institutions and less relevant for developed countries. Given the existence of developed markets and resilient financial institutions, the efficiency of intra-group markets as reflected by the risk diversification function and the allocation of sources is doubtful. Accordingly, the extensive industry diversification of the business groups in Israel can be perceived by the market as harmful to investors' interests. It should be noted that the diversification premium is not unique to the business groups in Israel, and can be found in other developed markets such as the USA. Indeed, the negative premium for the business groups may derive from factors unconnected to such economic specifications as the market's assessment regarding the stability of the control within controlling families, the identity of future owners or the future exploitation of the investor minority.

This study raises a number of issues that have yet to be fully covered in the literature on business groups. As distinct from the early 1950s and the 1960s, during the 1990s, as a result of the rapid expansion of the Israeli economy business groups operated alongside sophisticated financial institutions. Accordingly, the continuing impact of business groups in modern society is something of a riddle. It is difficult to attribute the existence and the position of superiority of the new groups merely to political or sociological factors. It is difficult to explain the rise and predominance of new business groups by invoking cultural or political arguments: Israel (including the controlling shareholders of the new groups) is culturally diverse and it is hard to point to a particular common set of values which could affect the formation of business groups. Politically, government favors and crony capitalism exist of course, to a certain extent, but it is difficult to imagine that these would be the dominant factors for the formation of business groups in a vibrant and open democratic 27

society. Thus, business groups "refuse" to disappear from the landscape of the modern economy of contemporary Israel for reasons that are currently poorly understood and could include family considerations, prestige and personal ego of the ultimate owners and other not purely economic motives. These issues will be examined in the future research .

7. SUMMARY

This study is intended to examine the impact of business groups on the performance of Israeli firms that are listed on the stock exchange. The findings of the study show:

1. Significant evidence of the existence of business groups in Israel. The groups' development over the years occurred against the background of government activity in the business sector and the financial markets, the rapid expansion of the economy, geopolitical shocks and the replacement of the ruling elites.
2. Based on a special sample that was built for the purposes of the study, it was found that approximately 20 percent of business groups, nearly all of them under family ownership, control 160 publicly-traded companies and a market segment of approximately 40 percent.
3. The 10 largest groups' segment of the market is among the largest in the western world and amounts to 30 percent.
4. The business groups in Israel have a significantly pyramidal control structure: 80 percent of affiliated companies are held under a pyramidal structure. The maximum level at which control is achieved in a publicly-traded company in Israel via a pyramidal structure is estimated at 7 – that is, the apex of the pyramid achieves control in that company via 6 other publicly-traded companies.
5. An examination of the dispersal of the business groups' holdings reveals that they are heavily concentrated in the financial sector – 50 percent of the companies in that sector can be classified as affiliated to business groups.
6. An analysis of the data reveals the characteristics of companies affiliated to business groups in Israel: On average, these companies are notable for a high degree of maturity, low growth relative to unaffiliated companies and a higher level of risk. Their financial performance is inferior to that of unaffiliated companies.
7. An analytical and economic analysis shows that the cost of the existence of business groups in Israel outweighs the benefit deriving from their existence. The econometric analysis shows that affiliation to a business group does not affect a company's profitability as measured by various accounting parameters. However, the financial value of affiliated companies is significantly lower. These findings are indicative of market discounting with respect to affiliated companies; an important question for future research is whether this result is due to the inefficiency of intra-group markets, the potential for exploitation of the investor minority or the probability that the group might be liquidated because of the network of relationships between its owners.

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