Vagabond Shoes Longing to Stray - Why Israeli Firms List in New York - Causes and Implications

by

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Abstract

There are more Israeli firms listed in New York than firms from any other foreign country, except Canada. Using data on Israeli IPO's in New York and Tel Aviv in the 1990s, we show that firms issuing equity in New York are high-tech and export-oriented. We interpret the results as evidence that US capital markets are better able to evaluate firms with few tangible assets. We also show that New York IPO's exhibit significantly higher post-issue returns than Tel-Aviv IPO's. We suggest that Israeli corporations signal that they are of high quality by issuing in the US, so that good firms prefer to list their shares there, rather than domestically. Finally, we present similarities between Israeli and Dutch stock issues in the US.

I. Introduction

From 1990 through 1995 more than two hundred Israeli manufacturing and software corporations issued stock through initial public offerings (IPO's), while others whose shares were already publicly traded sold additional shares. By January 1996, approximately 300 manufacturing firms were listed on the Tel-Aviv Stock Exchange (TASE), a rather large number for an economy whose GDP and population are smaller than Connecticut's. The amount of funds raised through sales of stock was also substantial, financing one third of equipment purchases in Israel between 1992 and 1994 (Yafeh and Yosha, 1997, Bank of Israel Annual Report, 1994, p. 61). This is an extremely high ratio compared to other countries such as the US, the UK or Germany (Mayer, 1990).

Although most new shares were sold in Israel and listed on the TASE, many Israeli corporations, mostly in electronics and software, chose to issue and list their stock on US exchanges, primarily the NASDAQ, instead of Tel Aviv.[1] By 1995, the number of NASDAQ-listed Israeli firms nearly equaled the number of all other foreign firms combined (excluding Canadian companies). The number of Israeli companies listed at that time was twice that of UK firms and nearly four times the number of Dutch companies. 1995 and 1996 witnessed another twenty three IPO's of Israeli firms, and in spite of the twenty-some British and Dutch IPO's, Israel is still the largest "exporter" of IPO firms to NASDAQ (NASDAQ 1996 Fact Book).

A large body of the finance literature focuses on the question of why firms choose to become publicly traded and raise funds on a stock exchange, instead of remaining privately owned and relying on internal funds or bank loans to finance their activities. Although there is no 'conventional wisdom' regarding this question (see Pagano et. al., 1997), in this paper, we take the decision to issue equity on a stock market as given, and focus instead on

[1] In addition, a few Israeli firms recently issued equity on the London AIM market.

the firm's choice of *where* to issue or list its equity. This line of research is relatively unexplored[2], in part because it is uncommon for US firms to list *exclusively* abroad (and not at home), and also because the phenomenon of foreign (non-Canadian) firms listing their shares in the US but not at home (i.e. not as a multiple listing) is relatively new.[3]

Given that a firm wants to issue equity on one exchange only, what determines its choice of location? In a recent paper, Cheung and Lee (1995) argue that if stock markets differ in regulations and disclosure requirements, listing in the market with the more rigorous rules might serve as a signal of firm quality. The value of the signal to a high-quality firm might be sufficiently high to offset the costs resulting from its disclosure of important private information which might benefit its rivals. A separating equilibrium may therefore exist in which high quality firms issue shares in the market with more stringent requirements, while lower quality firms choose less demanding locations. This, they argue, is a plausible mechanism which attracts high quality foreign firms to US equity markets where disclosure rules are considered rigorous. This theory, however, is not sufficient to explain why Israeli firms choose to issue equity abroad since formal listing requirements in Tel-Aviv do not appear to be less stringent than in New York, and indeed are modeled in part on the American rules. If listing in New York serves as a quality signal for Israeli firms, it would therefore be not due to *official* disclosure requirements, but rather due to other differences. One such difference is the well-documented phenomenon of IPO *underpricing* in the US, in contrast to Israeli IPO's which, on average, are not underpriced. As suggested by Stoughton et. al. (1997), only high quality firms will agree to sell their

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[2] Notice, however, that the issue of *multiple listing* (at home and abroad), has been investigated. Alexander et. al. (1987) argue that a firm can reduce its cost of capital by listing its shares both abroad and locally if foreign and domestic capital markets are not fully integrated. This hypothesis is tested in a number of other studies as well (e.g. Howe and Madura, 1990, Ko, Lee and Yun, 1997). Since few Israeli firms have opted for multiple listing, we do not address this question here.

[3] Foreign issues of bonds which are not addressed here are more common.

shares at a discount, since they can thereby attain the certification of quality that a US IPO can provide. In other words, investors who purchase the shares at a discount benefit, and so do firm owners who, despite the discount, obtain a high price for their shares relative to a TASE issue due to the signal provided by an IPO in the US. Moreover, the quality signal provided by the IPO is of particular value for the sample of Israeli firms issuing equity in New York.

We begin by identifying the factors that influence the choice of IPO location for a large sample of Israeli firms. Our analysis is based on detailed information on almost all Israeli manufacturing and software companies that went public either in New York or Tel Aviv from 1990 through 1996. Since this is the largest sample of its kind, we believe our results might shed light on the factors that influence firms from other countries to issue stock in the US, rather than in their home markets; indeed, we will present some preliminary evidence suggesting the existence of certain similarities between Dutch and Israeli stock offerings in New York. The results reported below are robust, and hold for the entire sample of issuers as well as for the sub-sample of high-tech industries, to which almost all US IPO's belong.

Using a two-stage Probit analysis we find that Israeli corporations that sell stock through IPO's in the US differ from those selling IPO's in Israel:

(I). Israeli firms that issue stock in the US ("US issuers") derive an overwhelming share of revenue from exports, whereas those that issue in Israel ("local issuers") do not. This finding is consistent with the view that US issuers use the IPO process as an opportunity to attain customer and investor recognition.

(ii). US issuers employ relatively large numbers of highly educated people in research and development and devote large shares of the offering proceeds to R&D and marketing. Local issuers do not appear to be as R&D intensive and often designate IPO proceeds to

equipment purchases or to repay bank debt. This finding is in line with Allen and Gale's (1995) view that innovative firms require a diversity of opinions which can only be found in a large stock market to monitor their performance, whereas firms in traditional sectors do not. It also suggests that this is a population of innovative firms that may well need some "certification of quality".

(iii). US issuers typically sell a relatively large amount of shares so that their post-IPO ownership is more diverse, whereas ownership of local issuers remains extremely concentrated. Ownership of US issuers is also less concentrated even prior to the IPO. This finding is consistent with the view that high-tech firms use market opinion to evaluate their prospects, and therefore sell a higher fraction of their shares (e.g. Maug, 1997). It also indicates the existence of a significant cost involved in a US IPO: firm owners have to relinquish a higher fraction of their stake in the firm in order to obtain external finance.

(iv). US issuers tend to be younger and their pre-IPO operating profits are lower. This finding is, again, consistent with the view that US issuers are firms in need of investor and customer recognition, as well as of quality certification.

Next, we analyze the post-IPO performance of local and US issuers. We find that investors who purchased local Israeli IPO's realized returns that were 30 percent lower than the TASE total return index. By contrast, investors who purchased shares of Israeli firms that issued stock in the US realized average first day returns of nearly 20 percent! In fact, in all but three issues, share prices increased on the first day of trading. This implies that while US issuers were underpriced, local issuers were not (as reported also by Ber, Yafeh, and Yosha, 1997). Moreover, positive (albeit statistically insignificant) excess returns on US issues persist for about eighteen months. One possible interpretation of this tremendous difference in returns between US and local issues is that US issues are riskier. However, the performance of US issues exceeds that of local issuers by a very wide

margin, so that it is hard to argue that this result is entirely due to lower market risk in Tel Aviv. Similarly, the fraction of firms with negative returns is smaller among US issuers, so that differences in risk are unlikely to account for the ex-post gap in returns. Instead, we favor the interpretation that US issuers are of higher quality, and not merely of higher risk. Indeed, only high quality firms would be willing to incur underpricing costs, as well as costs associated with the need to relinquish a large equity stake, in order to attain investor and customer recognition. The fact that the population of US issuers is both young and innovative further corroborates this view. The results on post-issue stock returns, together with related corporate governance problems in Israel, may well explain why most foreign portfolio investors have limited their purchases of Israeli companies to firms listed on the NASDAQ (and to a lesser degree on the New York Stock Exchange and the British AIM), not on the TASE.

In addition to the conclusion that NASDAQ attracts the best of Israel's IPO's, our results suggest two other implications. First, the observed characteristics of US issuers cast doubt on the ability of small stock markets such as the TASE to adequately evaluate and finance high-growth, R&D, and export oriented firms with intangible assets. By contrast, US capital markets, which are well developed and reflect the opinions of a large number of participants, seem better able to do so (Allen and Gale, 1995). Part of the ability of US capital markets to fund high-technology start-ups is probably due to the ability of American investors to diversify their investment portfolios, a feature which makes them more willing to purchase the equity of start-up, innovative firms, regardless of nationality.

A second implication of our results is that Israeli households would have been better off had a smaller portion of their portfolio been invested in Israeli IPO's. In part, this "over-investment" (in domestic IPO's) was due to restrictions on investors' ability to invest abroad either privately or through provident funds. Investments overseas suffer

from discriminatory taxation, regulatory restrictions on investment policies of provident funds, and other transaction costs and fees. Assuming the US market is able to identify promising firms even if their current profits are low, Israeli investors would have been better off if they could hold more equity of US-issued Israeli corporations.

The rest of the paper is organized as follows. Section II describes the database. Section III presents an empirical analysis of factors that affect the choice of where to issue stock. In section IV, we discuss differences in post-IPO performance of US and local issuers. Israeli IPO's are compared with Dutch stock offerings in New York in section V. Further discussion of the results and policy implications are in section VI.

II. The Data

215 Israeli industrial and software firms (approximately half in software or electronics) went public from 1990 through 1996, raising $1.7 billion dollars. About one fourth, or 52 firms, all but one in software and electronics, issued stock in New York (Table 1). The US issuers accounted for more than half of funds raised. Two thirds of the local issues went public in just two out of the six years, 1992 and 1993. By contrast, the distribution of new issues in the US was more evenly distributed .

The data are collected from three sources. First, we obtain prospecti submitted to the Securities Authority in Israel and the SEC in the US in which firms are required to provide information about their lines of business, future prospects, business risks, ownership structure and intended use of IPO proceeds. For each firm we document the following: date of issue, year of incorporation, IPO proceeds and their designated use, distribution of employees by occupation and role, ownership structure, and sales by country and large customers.

Our second source of data contains financial statements obtained mostly from a Compustat-type data base ("Dukas") compiled by the TASE from annual reports.[4] For most of the firms traded in New York for whom data are not provided in Dukas, we extract information from the prospecti and from annual reports.

Our third source consists of stock return and volume data. The TASE provides the relevant data for local firms, while figures for Israeli firms traded on the NASDAQ and on the New York Stock Exchange are taken from the Bloomberg system.

III. Empirical Results: Who Issues in New York?

Table 2 presents sample statistics for US and local issuers. The differences between the two sub-samples are striking:

(i). The ratio of exports to sales among US issuers is, on average, more than three times larger than for local issuers. The differences in medians are even bigger. Indeed, many of the local issuers do not export at all, while this is rarely the case for US issuers. In fact the average ratio of exports for the local issuers is slightly lower than the ratio for the manufacturing sector in Israel as a whole. We conclude that US issuers value listing their equity in a capital market which is monitored by their customers in North America and Europe.

(ii). US issuers tend to offer a larger proportion of their stock when they go public, and their post-issue ownership is relatively disperse. Furthermore, controlling shareholders in those firms often sell part of their holdings at the time of the IPO, thereby further diluting their control. While this may be necessary in order to enable the market to evaluate the firm, from the point of view of the firm's original owners, this is a cost associated with an

[4] Because Dukas contains just four years of data at any point in time, it was necessary to reconstruct early financial statements figures by matching current and older versions of Dukas.

IPO in the US. This is in sharp contrast to local IPO's where typically about 20 percent of the equity is offered at the IPO, and little more in subsequent seasoned offerings, so that ownership remains extremely concentrated (Blass, Yafeh and Yosha, 1998). Moreover, managers in the Israeli issues (who are often related to the firm's founders) typically retain large amounts of shares, often in excess of 50 percent, a figure which is much higher than the equity stake of managers in US IPO's.

(iii). R&D intensity is high (relative to aggregate industry figures) for local issuers but particularly high among US issuers: nearly half of the employees in those firms are involved in R&D. That figure is almost four times larger than the corresponding figure for all local issuers, and 50 percent higher than for local issuers in electronics and software. The differences are even bigger when R&D intensity is measured by the designated use of IPO proceeds: US issuers designate, on average, about 15 percent of the proceeds to R&D, while the corresponding figure for local issuers is just 1 percent! (3 percent for local issuers in electronics and software).

(iv). There are interesting differences in pre-IPO profit and sales: Prior to going public, US issuers exhibit much lower profit margins than the local issuers, all but four of whom have positive operating profits, but higher growth rates. This is consistent with the view of US issuers as "promising" firms even though their actual profits or sales are still low.

(v). US issuers are younger than the overall sample of local issuers, and are also younger than local issuers in the electronics and software industries (although the difference is smaller).[5] This attests to the ability of the US market to evaluate these firms, and also to the need of these young companies to obtain investor and customer recognition.

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[5] Interestingly, the average age of Israeli firms that issue stock in the US is similar to that reported by Megginson and Weiss (1991) for a sample of venture capital-backed American IPO's in the 1980s.

(vi) While the medians of pre-IPO balance sheet totals and numbers of employees do not suggest that significant differences in size exist between the two groups,[6] US issuers raise considerably more funds through their IPO's: on average the US issuers raise more than $18 million, while the Israel issues raise less than $5 million.

Table 3 (panel 1) presents Probit analyses of the choice of issue location for the entire sample and for firms in high-tech industries. The dependent variable, PLACE, is a dummy variable, which takes the value one if the firm issues in New York, and zero, otherwise. The coefficients measure the marginal effect of each right-hand-side variable on the probability of issuing in New York. To avoid simultaneity problems due to the possibility that the size and location of the IPO may be jointly determined, we instrument (panel 3) for the (log) of the IPO size by using pre-IPO firm size and growth rates. This is a two-stage procedure where IPO size is estimated in the first stage and its fitted value is then used in the Probit regression. In addition, the percent of equity offered and the choice of IPO location are likely to be jointly to determined as well. Although in Table 3 we use post-issue ownership concentration as a regressor, we examine an alternative specification where pre-IPO ownership concentration and ownership concentration squared are used as instruments for post-issue ownership structure. This specification does not change any of the results, and is not presented.

Our impressions from Table 2 remain mostly unchanged: US issuers are significantly more export-oriented, and spend more resources on R&D and marketing. Other things equal, US issuers tend to be younger and (prior to going public) less profitable. US issuers are more diffusely owned after going public (as measured by their ownership concentration)--in other words, US issuers tend to sell a larger share of equity during the

[6] Note, however, that employees in the local issuers tend to be unionized, whereas in the US issuers most are not.

IPO. This may have to do with their need to relinquish control in order to obtain funding in the US, or with the existence of corporate governance mechanisms (mostly missing in Israel) which enable diffusely held US listed firms to operate efficiently. Adding a dummy variable for IPO's of the "hot market" period of the early 1990s does not affect these results (panel 2).

Because US issuers with one exception are either electronics or software firms, we repeat the analysis using only TASE and US issues in those industries (Table 3, panels 4 and 5, instrument in panel 6). The results remain mostly unchanged. Even within the populations of these two high-tech industries, the more R&D and export-oriented firms tend to issue in New York, rather than on the TASE. Again, younger, less profitable firms opt for NASDAQ, where they offer a larger proportion of their equity. It is interesting to note that both Probit procedures predict correctly the issue location of nearly all firms in the sample (Tables 4a and 4b).

IV. Empirical Results: Ex-post Performance

In the previous section we compared pre-IPO attributes of US and local issuers. We have argued that US issuers are export-oriented, young, and innovative, and therefore in need of investor and customer recognition. We have also outlined one type of cost of obtaining recognition through a US issue, namely the need to sell a relatively large fraction of equity in the IPO. In this section we investigate post-issue differences by examining post-IPO stock returns. We report first day returns for both US and TASE issues. If US issues are "underpriced', (Ritter, 1991)[7] while TASE issues are not, this would imply an additional cost of issuing in New York, and thereby suggest that a US IPO might signal

[7] There is evidence for IPO underpricing in other countries as well: see, for example Jenkinson (1990) for Japan and the UK, Kunz and Aggarwal (1994) for Switzerland, and Biais (1996) for France.

firm quality because only "good" firms would be willing to sell their shares at a discount in order to reveal their ability to "make it" in New York. Long-term returns could also represent a measure of "quality" indicating whether "good" firms go to New York, or issue locally. We therefore calculate, for both local and US IPO's, post-issue stock returns for a period of eighteen months after the IPO, both relative to market returns as well as relative to each other.

Figure 1 presents average returns for local new issues relative to an index of total return for all stocks. We find that local IPO's differ from those of other countries, and that on the first days of trading returns are no higher than the indices, that is, there is no underpricing, and, in contrast to other countries, investors do not realize high first day returns.[8] Moreover, over time, returns are particularly disappointing: Through an eighteen month period following their offering, new issues in Tel Aviv underperform the market by about 30 percent, and this result is both statistically significant and robust in a variety of cross sections. In particular, underperformance is not caused by the allegedly poor quality of IPO's during the "hot market" of 1992-93, since underperformance of local issues persists in periods of market upswings as well as downswings. When the market rose dramatically, as it did from 1991 through 1993 (when stock prices rose at a real annual average rate of 43 percent), new issue share prices rose but by considerably lower percentages. When the market fell, IPO prices fell by even more. IPO's in all sectors underperformed the market.

Disappointing long term returns on IPO's are not unique to the Israeli financial system. Indeed, Ritter (1991) documents that investors purchasing IPO shares at the *closing* market price on the first day of trading realize significantly low returns over time. However, Israeli IPO returns are different: they produce low returns over time *without*

[8] Similar findings are reported in Ber, Yafeh and Yosha, 1997.

producing offsetting high abnormal returns on the first day of trading. More striking is the difference in performance between Israeli IPO's issued in Israel and Israeli IPO's in the US: On the first day of trading, prices of US issuers rose on average by nearly 20 percent (also in Figure 1). Indeed, in only three issues did share prices fall on the first day. Moreover, the cumulative market returns remain positive relative to the US market for about eighteen months (albeit statistically insignificant), and positive and significant relative to the Israeli market for the entire period of observation. The difference in returns between US and local issuers is unlikely to be merely due to differences in risk, because the systematic risk for US issuers (*beta*'s) is not higher than that of the TASE issuers, and moreover, bankruptcy rates among US issuers are low. Furthermore, average return on US issuers' shares is positive for the entire period of observation and negative for local issuers. Although we can only observe these ex-post measures of risk, it is rather hard to argue that local issuers are ex-ante safer investments with low risk.

These results, as well as the underlying differences between the two groups of firms, suggest that there is a segmented market for Israeli IPO's: high quality issues go to New York ("If you can make it there, you'll make it anywhere"), while low quality firms stay home. Even if part of the difference in post-issue returns is due to underpricing in the US, only high quality firms would be willing to incur these costs to prove their "superiority". In other words, in spite of the fact that the shares of US issuers are underpriced (one-day returns are abnormally high), it may still be advantageous for high-quality firms to opt for NASDAQ because issuing stock in the US might enhance firm value. Benefits from underwriting and listing in the US may include investor recognition, thereby gaining continued access to a large financial market. Kadlec and McConnell (1994) argue that this effect is stronger the larger is the number of investors in the firm's equity. Their argument is consistent with the fact that US issuers sell a larger fraction of their equity. Other

benefits from listing in the US may include visibility and name recognition among potential clients, many of whom are in the US. More generally, listing and underwriting in the US under the auspices of well-known US investment banks may signal that the firm expects to grow rapidly and provide investors with substantial returns over time. Attaining recognition, however, is likely to exceed the cost of underpricing only for "good" firms, especially those intending to make additional stock offerings in the future. For these reasons, it seems reasonable that foreign investors prefer to purchase Israeli equity listed in the US and not on the TASE.

Why, then, do Israeli portfolio investors continue to purchase lower-quality IPO's issued in Tel Aviv? One possible explanation is conflicts of interest related to capital market structure in Israel: Commercial banking is highly concentrated, and the banks operate as merchant banks, underwriters, brokers, investment advisors, and investment fund managers. Ber, Yafeh, and Yosha (1997) show that banks in Israel were heavily involved in the local IPO process both as underwriters and subscribers, and that bank-underwriters tended to overprice new issues, thereby suggesting that conflicts of interest resulted in low returns to investors, who have limited choices in an overwhelmingly bank-dominated system, and are unable to invest abroad because of discriminatory taxation and regulations.

V. Israeli IPO's in International Perspective - A Comparison with Dutch IPO's

In this section we present a preliminary comparison between Israeli IPO's in the US and Dutch stock offerings in New York. The comparison is based on prospecti and annual reports of ten Dutch firms which issued shares on NASDAQ in recent years (the total population of non-ADR Dutch firms on the NASDAQ in 1997 was sixteen). Much like Israeli firms in the US, all but one of the listed Dutch firms on which we have data are in

high-tech industries, which include biotechnology, semiconductors, computer hardware and software, etc. According to their prospecti, these firms are R&D intensive, operating in a risky and competitive environment. Much like Israeli firms, Dutch firms in New York often report pre-issue losses. Some, though not all, of the Dutch firms on which we have information, propose to use the issue proceeds to finance and expand their R&D. By contrast, firms issuing shares on the Amsterdam Stock Exchange are not concentrated in these industries (van der Goot, 1997).

It seems that although NASDAQ-listed American firms are distributed among many different industries and sectors, foreign firms from countries such as Israel and the Netherlands are almost all high-tech companies. This seems to fit the view that the large American capital market is able to evaluate innovative firms better than smaller markets, and that a US IPO can serve as a signal of quality for high-tech firms. Local markets, on the other hand, attract firms with tangible assets in traditional industries, that prefer to issue stock at home.

Despite the similarities, there are important differences between the Dutch and the Israeli IPO's in New York. Unlike Israeli firms, Dutch firms tend to issue their equity either simultaneously or subsequently in Amsterdam as well as in New York. In other words, dual listing is common for Dutch high-tech firms, while it is rare for their Israeli counterparts.[9] Dual listing may therefore serve Dutch firms both as a method of reducing risk (as in the model of Alexander et. al., 1987) as well as a signal of firm quality. Unlike Israeli companies, local capital market conditions enable Dutch companies to issue their equity at home as well as in the US. By contrast, the bank-dominated financial system in Israel seems less welcoming to this class of innovative firms. Moreover, whereas in Israel, managers and owners do not relinquish their controlling stakes (usually selling no more

[9] It should be noted also that two of the Dutch companies we examine are seasoned offerings, not IPO's.

than 20 percent of equity), in the Netherlands, only a quarter of newly listed companies retain that level of control (van der Goot, 1997).

VI. Conclusions

We have argued that Israeli IPO's in New York are composed of young, innovative firms, in need of certification of their quality. This is a plausible reason why promising firms are willing to pay the costs of underpricing and of selling a large fraction of their equity in order to access NASDAQ and thus attain investor and customer recognition. But paying these costs seems appealing only for "good" firms, whose true "value" will be revealed upon listing. This suggests the existence of a separating equilibrium, whereby high quality IPO's opt for New York, while less promising firms remain in local markets. This implies that the behavior of foreign investors with regard to Israeli IPO's has been prudent: As opposed to most emerging markets where they have purchased locally traded shares, in the case of Israel, foreign portfolio investors have tended to limit their purchases to companies listed in the US, not on the TASE. [10]

In addition to the fact that high-quality firms are attracted to US equity markets, the market power of large bank-affiliated underwriters, as well as potential conflicts of interest have resulted in low returns to investors. Of particular importance in this respect is the ability of bank-affiliated underwriters to sell shares of IPO firms to the same banks' fund-management subsidiaries at a high a price (see Ber, Yafeh, and Yosha, 1997).

The fact that US issuers raise considerably more funds in their IPO suggests that there may exist a minimal issue size which is needed in order to access US equity markets.

[10] In addition to foreign investors, the results on ex-post returns suggest that Israeli investors would have been better off if a greater share of their portfolios were invested in equity of Israeli firms trading in the US. While some of these losses to investors were partially offset by a corresponding enrichment of the banks, their employees, the tax authorities and controlling interests in newly issued firms, there were additional indirect costs worth noting. These include costs associated with a loss of confidence in financial intermediaries which might have led investors, among other factors, to overweight their portfolios with real estate rather than financial assets (Shiffer 1996).

In particular, it should be noted that the smallest Israeli IPO in the US raised $3.5 million. By contrast, more than half of industrial IPO's in Israel were for less than that amount. If this is the case, small, R&D intensive firms seeking financing may face difficulties when they decide to issue their shares. Even though high-technology start-ups are abundant in Israel, it is unlikely that all of them, especially the smaller among them can access the US capital market. High tech firms needing to raise between $1 million and $3 million may be unable to raise funds, neither on the Tel Aviv Exchange nor in the US. In order to alleviate these difficulties reforms facilitating small firm access to domestic sources of finance should be introduced. Equity markets could be further developed; in particular, making equity markets independent of bank control could facilitate the allocation of capital to innovative firms.

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Table 1: Israeli Industrial and Software IPO's, 1990-1996

	# of IPO's	In Israel	In theUS
By Year			
1990	3	3	0
1991	11	9	2
1992	54	45	9
1993	80	70	10
1994	35	26	9
1995	17	9	8
1996	15	1	14
By Industry			
Software	43	18	25
Electronics	64	38	26
Other	108	107	1
Total	**215**	**163**	**52**

Table 2: Sample Statistics*

	Tel Aviv IPO's	Tel Aviv IPO's in Electronics and Software	New York IPO's
Pre-IPO Balance Sheet Total (mil $)			
Mean	14.3	6.3	25.3*
Median	6.2	3.7	5.6
Number of Employees (Median)	93	69	86
Size of the IPO (mil $)			
Mean	4.7	3.7	18.9*
Median	3.2	2.7	16.6
Age (Mean, Years)	21	16	9*
Pre-IPO Ownership Concentration (Average Herfindahl-Hirschman Index)	7,876	7,892	5,540*
Pre-IPO Share of Foreign Ownership (Mean)	5 %	3 %	17 %*
Percent of Equity Offered at the IPO (Mean)	21.4%	21.6%	26.3%*
Post-IPO Ownership Concentration (Average Herfindahl-Hirschman Index)	4,905	4,953	2,902*
Exports as a Percentage of Revenue:			
Mean	24 %	27 %	77 %*
Median	2 %	2 %	90 %
Percent of Proceeds Designated for R&D	1 %	3 %	15 %*
Percent of Proceeds Designated for Marketing	1 %	1 %	16 %*
Pre-IPO Operating Profit (Median)	17 %	20 %	10 %
Pre-IPO Annual Growth Rate Revenue	17 %	23 %	38 %*
Percent Employees in R&D:			
Mean	12 %	30 %	45 %*
Median	3 %	24 %	47 %
Number of Observations	163	56	52

* denotes a statistically significant difference in means between the sub-sample of US issuers and the sub-samples of local issuers and local issuers in electronics and software.

Table 3: Probit Regression Results

Dependent Variable	Full Sample			Electronics & Software Firms Only		
	Place (1)	Place (2)	LN Proceed (3)	Place (4)	Place (5)	LN Proceed (6)
C	-29.59 (-3.67)	-28.77 (-3.53)	5.33 (13.98)	-12.61 (-3.16)	-36.22 (-2.66)	5.21 (9.25)
Export as a percent of Revenue	2.51 (3.19)	2.60 (3.24)		2.25 (3.76)	5.73 (2.76)	
Share of Foreign Ownership	-0.03 (-2.14)	-0.03 (-2.12)		-0.02 (-2.11)	-0.03 (-1.55)	
Pre-IPO Operating Profit Margin	-2.01 (-2.22)	-1.97 (-2.15)		-1.93 (-2.56)	-3.42 (-2.59)	
AGE	-0.09 (-2.69)	-0.08 (-2.45)		-0.04 (-1.68)	-0.12 (-2.09)	
LN (Proceeds)	3.46 (3.61)	3.37 (3.48)		1.56 (3.30)	4.08 (2.63)	
Percent of Employees in R&D	3.59 (2.88)	3.58 (2.91)		1.56 (1.84)	-0.61 (-0.41)	
Post-IPO Ownership Concentration (Herfindahl-Hirschman Index)	- 0.0007 (-3.19)	- 0.0007 (-3.13)		-0.0005 (-3.58)		
Percent of Proceeds Designated for Marketing	10.05 (3.52)	9.65 (3.33)			12.85 (2.58)	
Percent of Proceeds Designated for R&D	4.64 (2.17)	4.96 (2.23)			8.20 (1.94)	
Dummy for IPO in 1990-93 ("Hot Market" issues)		-0.38 (-0.73)			-2.99 (-2.15)	
Ln (Balance Sheet)			0.35 (8.09)			0.39 (5.83)
Pre-Issue Annual Growth Rate Revenue			0.80 (5.10)			0.75 (3.58)
Log Likelihood	-20.01	-19.73		-28.07	-14.26	
R^2			0.29			0.32
Sample	215	215	215	107	107	107

Table 4A- Probit Errors

Actual Location		Of Which: Predicted Location	
		US	Israel
US	52	47	5
Israel	163	4	159
Total	215	51	164

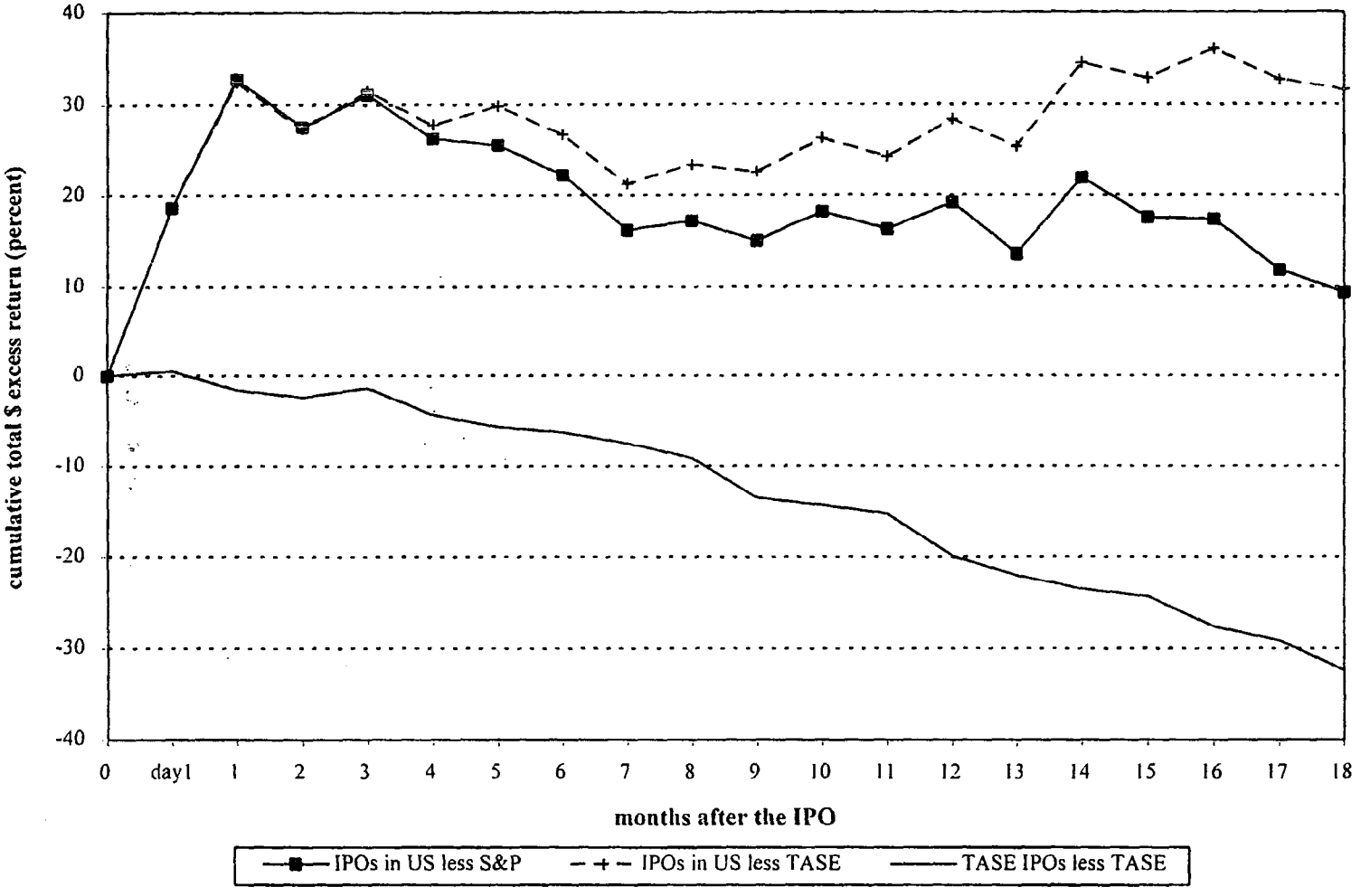
Source: Panel 2 of Table 3.

Table 4B - Probit Errors for Electronics and Software Sample

Actual Location		Of Which: Predicted Location	
		US	Israel
US	51	48	3
Israel	56	4	52
Total	107	52	55

Source: Panel 5 of Table 3.

Figure 1: Excess Returns of Israeli IPO's in US and TASE 1990-1996



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