Vagabond Shoes Longing to Stray:

Why Foreign Firms List in the United States

Asher Blass and Yishay Yafeh*

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Abstract

How do firms that go public decide whether to list on a major stock exchange or locally? Using a unique data set on Israeli IPO's in the US and Tel Aviv, we find that high-quality firms--in terms of both stock returns and revenue growth--are willing to incur costs associated with listing in the US in order to reveal their value and distinguish themselves from firms that issue stock back home. These costs include first day underpricing and relinquishing corporate control. Companies listing in the US are young and high-tech oriented and are therefore willing to incur such costs. A smaller sample of Dutch IPO's in the US reveals some similar charateristics.

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I. Introduction

When firms decide to go public, what determines their choice of location? In an environment of international capital mobility, why would a firm choose to issue its equity on a local market rather than on a major stock exchange? In this paper we argue that listing on a major exchange involves additional costs, but provides a credible signal of firm value, suggesting that listing in the United States would be worthwhile for high-quality firms. We provide substantial evidence for this proposition from Israeli IPO's in recent years--both in Tel Aviv and in the United States--and some additional corroboration from Dutch IPO's in Amsterdam and in New York (mostly NASDAQ).

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 rather than remain private and rely on internal funds or bank loans (see Pagano et. al., 1998). Little attention has been paid to the firm's choice of *where* to issue its equity. This is probably 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. [1] [2]

Israeli IPO's provide an exceptional opportunity to investigate the factors that influence firms from foreign countries to issue stock in the US *instead of* in their home markets. Since 1991, so many Israeli companies have issued equity in the US that by 1995 the number of NASDAQ-listed Israeli firms nearly equaled the number of all other

[1] The issue of *multiple listing* (at home *and* abroad) has been extensively investigated: For example, 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). See also Karolyi (1998) for a comprehensive survey of the literature on multiple listing.

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

foreign firms combined (excluding Canadian companies). 1995 and 1996 witnessed another twenty three IPO's of Israeli firms, so that Israel is still by far the largest „exporter" of IPO firms to NASDAQ (NASDAQ 1996 Fact Book). During the same time period, more than a hundred and sixty Israeli manufacturing and software corporations issued stock through initial public offerings on the Tel-Aviv Stock Exchange (TASE), raising the number of listed companies in these industries from about one hundred to over two hundred and fifty. Our data set, consisting of detailed information on more than two hundred Israeli firms that went public either in New York (New York Stock Exchange and NASDAQ) or in Tel Aviv from 1990 through 1996, is ideal for an empirical investigation of the choice of listing location.

A theoretical explanation for firm choice of location has been provided by Cheung and Lee (1995). Assuming that a firm wants to issue equity on one exchange only, they 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. Although we agree that „signaling" plays an important part in attracting foreign firms to US equity markets, we find that disclosure rules do not provide a full explanation for the decision to issue equity abroad. In the case of Israeli firms, formal listing requirements in Tel-Aviv are not less stringent than in the US,[3] and

[3] A recent *Robert Fleming Survey* (April 1998) described Israeli disclosure rules as comparable to those of the US.

underwriting and administrative costs in the US and in Israel are also quite similar (Gross, 1996).[4] We argue, however, that other major costs make listing in the US difficult. One well documented cost associated with a US IPO is first day *underpricing*. In contrast to Israeli IPO's which, on average, are not underpriced (Ber, Yafeh, and Yosha, 1998), investors who purchased shares of Israeli firms that issued stock in the US realized average first day returns of nearly 20 percent. Indeed, share prices increased on the first day of trading in all but three issues. Another cost is the percent of equity offered: an IPO in the US leads to a more disperse ownership structure, and often requires original firm owners to relinquish part of their control. By contrast, post-IPO ownership in Tel Aviv is extremely concentrated (Ber, Yafeh, and Yosha, 1998). Finally, shareholders of Israeli firms that do not list in Israel forgo a number of valuable tax exemptions (in particular, capital gains on Israeli-listed stocks are exempt from taxes), so that in this respect listing exclusively in the US is also costly.

We argue that the most important benefit provided by a US IPO is a relatively accurate signal of firm value. Obtaining such a signal is particularly important for innovative companies whose financial statements reveal little about their future prospects. Part of the ability of US equity market to provide such an evaluation is due to its size and „diversity of opinions" (Allen and Gale, 1995). Another part is due to major Wall Street underwriters that take part in the IPO and provide a „stamp of approval." For example, Oppenheimer or Lehman Brothers took part in about 40 percent of Israeli IPOs in the US, whereas underwriters in the local IPO market are mostly affiliated with domestic banks (Ber, Yafeh, and Yosha, 1998). In line with this hypothesis, we find that Israeli firms that

[4] Moreover, many of the listing requirements both in Tel Aviv and on NASDAQ are „endogenous" in the sense that they refer to post-issue characteristics of the firms. It is therefore possible to plan the IPO so as

list in the US („US issuers“) are all (with one exception) in the electronics and computer software industries. They are young, with low current profits, and extremely R&D intensive, employing relatively large numbers of highly educated people in research and development, and devoting much of the offering proceeds to R&D (and marketing). These firms are clearly in need of a market evaluation of their future prospects. As mentioned above, we also find that, in comparison with firms that go public in Tel Aviv, US issuers sell a much larger fraction of their equity at the IPO, a feature which is consistent with the view that in order to use the market opinion to evaluate their prospects, high-tech firms have to sell a high fraction of their shares (e.g. Maug, 1997).

If a US IPO is costly and quality is revealed upon listing, we would expect that only firms whose future is promising would be willing to incur the costs associated with a US IPO, while the less promising ones would prefer to issue at home. In line with this hypothesis, we show that Israeli firms choosing to list in the US are indeed high-quality, both in terms pre-IPO revenue growth rates and in terms of post-IPO stock returns. We find that the return on US issues exceeds the return on TASE IPO's for at least eighteen months (our period of observation), and by a very wide margin. It is therefore hard to argue that the difference in returns is entirely due to lower market risk in Tel Aviv, especially given that the fraction of firms with negative returns is smaller among US issuers.

In addition to providing a signal of quality, another likely benefit from listing in the US is investor recognition. For example, Huberman (1998) suggests that „familiarity breeds investment“ (investors are more willing to purchase equity of firms they know).

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to meet either exchange's requirements.

The fact that Israeli companies listing in the US are young and relatively unknown, as well as their disperse post-IPO ownership are consistent with the investor recognition motive.[5]

We also find that US issuers are overwhelmingly export-oriented firms,[6] suggesting that visibility and name recognition among potential clients is yet another potential benefit of a US IPO.

Finally, in order to verify that our findings regarding the characteristics of foreign firms listing in the US are not Israel-specific, we investigate Dutch IPO's in New York and Amsterdam. Much like their Israeli counterparts, we show that Dutch manufacturing firms that list their equity in the US are high-tech and fast-growing firms, unlike their counterparts in the Netherlands. The phenomenon of innovative firms choosing to signal their value by going public in a major rather than a local exchange is therefore not specific to Israel, and may be generalized to other economic environments.

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 returns of US and local issuers. Israeli IPO's are compared with Dutch stock offerings in the US in section V. Further discussion of the results is in section VI.

II. Israeli IPO's: The Data

The data are collected from three sources. First, we obtain the prospecti of IPO

[5] Kadlec and McConnell (1994) argue that name recognition among potential investors is more easily achieved the larger is the number of investors holding the firm's equity.

[6] Saudagaran (1988) reports a similar finding regarding listing of American firms on multiple stock exchanges.

firms submitted to the Securities Authority in Israel and the SEC in the US which provide information about lines of business, future prospects, business risks, ownership structure and intended use of IPO proceeds. For each firm we document the 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. For most of the firms traded in the US 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 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 Lists in the US?

The sample is described in Table 1. 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 (three on the New York Stock Exchange and the rest on NASDAQ), accounting for more than half of the total amount 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. Table 2 presents sample statistics for US and local issuers. The differences between the two sub-samples are striking:

(i). R&D intensity is very high among US issuers: Nearly half of the employees in those firms are involved in R&D, a figure almost four times larger than the corresponding figure for 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).

(ii). 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).[7] The fact that these firms are both innovative and young is reflected also in the large fraction of the IPO proceeds they designate for marketing their products.

(iii). US issuers raise considerably more funds through their IPO's: On average the US issuers raise more than $18 million, while local issues raise less than $5 million.[8] This discrepancy exists despite the fact that median pre-IPO assets, as well as the number of employees, do not suggest that significant differences in size exist between the two groups. As a result, US issuers offer a larger proportion of their stock when they go public, and their post-IPO ownership is relatively disperse. 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, for the firm's original owners, relinquishing control can be viewed as a cost associated with an IPO in the US. In comparison, in local IPO's only about 20 percent of

[7] 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.

[8] The figures refer to new capital raised by the company at the IPO, and exclude proceeds generated by sales of shares by original owners. Israeli IPO's are therefore smaller than the average NASDAQ IPO

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).[9]

(iv). There are interesting differences in pre-IPO profitability and revenue growth rates: Prior to going public, US issuers exhibit much lower profit margins than the local issuers, but are nonetheless characterized by higher growth rates.

Our findings that US issuers are young, high-tech and high growth companies that offer a large fraction of their equity, are consistent with the view of that the US IPO is a costly signal of quality for „promising" firms.

(v). 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. Apparently, US issuers gain value when listing their equity in a capital market which is monitored by their customers in North America, Europe, and Asia.[10]

Table 3 (panel 1) presents Probit regressions of the choice of issue location for the entire sample and for firms in high-tech industries. Because listing requirements in Israel and the US are quite similar, the coefficients reflect the effect of firm characteristics on the decision to issue in the US. The dependent variable, PLACE, is a dummy variable which takes the value one if the firm issues in the US and zero otherwise. 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

(NASDAQ 1996 Fact Book).

[9] Another interesting difference in ownership is that foreigners hold a relatively large fraction of the equity in firms that list in the US even prior to the IPO.

[10] As a share of total exports, the US accounts for about half of the exports of US issuers, and about 43 percent of the exports of local issuers. It is therefore incorrect to conclude that US issuers list in New York because this is the *only* market for their products.

firm size and growth rates. The estimation procedure is therefore two-staged, where IPO size is estimated in the first stage and its fitted value is then used in second-stage 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 spend more resources on R&D (and marketing), and tend to be younger and (prior to going public) less profitable (in terms of accounting profitability). US issuers are more diffusely owned after going public (as measured by their ownership concentration), that is, US issuers tend to sell a larger share of equity during the IPO. Finally, US issuers are significantly more export-oriented. Adding a dummy variable for IPO's of the „hot market" period of the early 1990s does not affect these results (panel 2).[11]

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 population of these two high-tech industries, the more R&D and export-oriented firms tend to issue in the US, rather than on the TASE. Again, younger, less profitable firms opt for NASDAQ, where they offer a larger proportion of their equity. Both Probit

[11] In addition, there are six firms that issued in the US for which it is not clear whether they could meet the value added requirement for listing on the TASE at the time of their IPO. The results are unchanged when these firms are excluded from the regression. It is also possible to exclude from the sample eight firms that issued in the US and had pre-IPO profit rates of less than -100 percent. This does not change any of the results either.

procedures predict very well 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. This section deals with post-issue differences in stock returns. We begin by examining first day returns for both US and TASE issues. If US issues are underpriced (Ritter, 1991)[12] while TASE issues are not, this would imply an additional cost of issuing in the US. A US IPO may therefore signal firm quality because only „good" firms would be willing to sell their shares at a discount in order to reveal their ability to succeed in a large and developed capital market.[13] We then proceed and examine long-term returns as a measure of quality, indicating whether firms that produce high returns over time tend to issue in the US or locally. For both local and US IPO's we calculate 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.

First Day Returns

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

[12] 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.

[13] This is in line with Stoughton et. al. (1997) who argue that only high-quality firms will agree to sell their shares at a discount, since they can thereby attain certification of quality provided by the IPO.

returns.[14] 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. We conclude that underpricing constitutes an important cost of listing in the US.

Long-term Returns

Long-term retruns are also displayed in Figure 1. 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. This 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. By contrast, Israeli IPO's in the US exhibit positive (albeit statistically insignificant) cumulative returns relative to the US market for about eighteen months, and positive and significant returns relative to the Israeli market for the entire period of observation.[15] 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

[14] Similar findings are reported in Ber, Yafeh, and Yosha (1998). Disappointing long-term returns on IPO's are, of course, not unique to Israel (Ritter, 1991). We show below that Israeli IPO returns are different than US IPO's in that they produce low returns over time *without* producing offsetting high abnormal returns on the first day of trading.

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.

Post-IPO returns, as well as pre-IPO differences between the two groups of firms, confirm that there is a segmented market for Israeli IPO's: High-quality issues of innovative firms go to the US („if you can make it there, you'll make it anywhere") while low quality firms stay home.

Why, then, do Israeli portfolio investors continue to purchase lower-quality IPO's issued in Tel Aviv? One possible explanation is related to the structure of the financial system in Israel. Commercial banking is highly concentrated, and the universal banks operate as merchant banks, underwriters, brokers, investment advisors, and investment fund managers. Ber, Yafeh, and Yosha (1998) show that banks in Israel were heavily involved in the local IPO process during the 1990s both as underwriters and subscribers, and that bank-underwriters tended to overprice new issues. They conclude that conflicts of interest resulted in low returns to investors, who often purchased local IPO's through their bank-managed provident or mutual funds.

V. Israeli IPO's in International Perspective - Dutch Stock Offerings in the US

In order to examine if our results are driven by factors specific to Israel, we examine Dutch initial stock offerings in New York and Amsterdam in the 1990s. The population of Dutch IPO's of manufacturing and software companies in New York is

[15] Returns on US IPO's are significantly higher than TASE IPO's even when first day returns are excluded.

much smaller than the population of Israeli IPO firms. There are nine companies that went public in NASDAQ between 1990 and 1996, and one 1993 IPO on the New York Stock Exchange (the total population of non-ADR Dutch firms on NASDAQ in 1997 was sixteen). In addition we have information on all 15 IPO's of manufacturing and software companies in Amsterdam during the same period. Table 5 displays some sample statistics for these firms.[16]

(i) Industry affiliation: Much like Israeli firms in the US, *all* ten Dutch IPO's are in high-tech industries, including biotechnology, electronics, and software. In their prospecti, these firms are described as R&D-intensive. By contrast, firms issuing shares on the Amsterdam Stock Exchange are not concentrated in these industries. Of the 15 IPO firms in the sample, only two were in pharmaceuticals and bio-technology and two others were in computer software, whereas the remaining 11 firms were all in traditional manufacturing industries such as textiles, food, wood, and machinery. Van der Goot (1997) similarly reports that only thirteen out of seventy four IPO's in Amsterdam between 1983 and 1992 were companies in computer-related industries.

(ii) Pre-IPO growth rates: We find an average pre-IPO revenue growth of about 26 percent for Dutch firms that list in the US, relative to about 11 percent for Dutch firms that choose to list in Amsterdam. The difference in growth rates is statistically significant, although both samples are rather small. Similarly, van der Goot (1997) reports a median pre-issue growth rate of assets of 4.7 percent for the population of (both manufacturing and other) Dutch IPO's in Amsterdam between 1983 and 1992.

(iii) Much like Israeli firms, Dutch firms in the US occasionally report pre-issue losses.

[16] Information published by Dutch firms issuing in Amsterdam is mostly in Dutch, using a variety of reporting methods. This is the reason for the missing figures in Table 5.

Pre-IPO profit margins, however, do not appear to be lower for Dutch firms that issue stock in the US, averaging about 7 percent, whereas for Amsterdam IPO's in the 1990s we find an average pre-IPO operating profit margin of about 6 percent.

(iv) As in the case of Israeli IPO's, underwriters for Dutch companies that go public in Amsterdam are local, whereas in our sample of Dutch companies that list in the US underwriters always use well-known American investment houses, most notably CS First Boston, Morgan-Stanley, and Goldman-Sachs.

(i) through (iv) suggest that while NASDAQ-listed American firms are distributed among many different industries[17], foreign firms from small countries such as Israel and the Netherlands that issue stock in the US tend to be fast growing high-tech companies. This fits the view that the large American capital market is able to evaluate innovative firms better than smaller markets, and that, a US IPO under the auspices of a well-known underwriter can serve as a signal of quality for foreign high-tech companies whose past reveals insufficient information about their growth and profitability prospects.[18]

Despite the similarities, there are significant differences between Dutch and Israeli IPO's in the US:

(v) Firm size and size of issue: Although smaller than Dutch companies that list in Amsterdam, Dutch IPO firms in the US are about five times bigger than their Israeli counterparts in terms of assets (about $127 million versus $25 million). Indeed, the smallest Dutch firm that issued in the US is larger than the average Israeli US issuer. Average proceeds in Dutch IPO's are also much larger than the average in Israeli issues

[17] According to the NASDAQ 1996 Fact Book, traditional industries and services accounted for about 40 percent of the exchange's market value.

[18] Although our information on export markets is incomplete, it is not the case that Dutch firms that list in the US sell their products primarily in North America, while companies that list in Amsterdam do not.

(about $46.5 million relative to $18.9 million).[19]

(vi) Dual listing: Unlike Israeli firms, the majority of Dutch firms (six out of ten) chose to issue equity simultaneously in Amsterdam and on NASDAQ. By contrast, the financial system in Israel seems to induce innovative firms to remain listed exclusively abroad, perhaps in order to separate themselves more clearly from local IPO's. It should be noted that three of the Dutch IPO's in Amsterdam are dually listed on other European exchanges, for example in Frankfurt or London.

(vii) Use of proceeds: Only one Dutch firm explicitly designated the IPO proceeds for R&D expenses, in contrast with the typical use of proceeds by Israeli firms. The designated use of proceeds in most Dutch IPO's is the repayment of debt.

In addition, two key differences between Israeli IPO's in the US and in Tel Aviv do not arise when comparing between Dutch IPO's in New York to IPO's in Amsterdam:

(viii) Percent of equity offered: On average, a third of the equity is offered in Dutch IPO's in the US, a figure roughly similar to that of Israeli issues in the US where typically about a quarter of the equity is offered. While for Israeli firms this is a much higher figure than what listing at home would involve, for Dutch companies there seems to be little difference between the percent of equity offered in US issues and that of Amsterdam IPO's (where about 60 percent of the firms offer at least 30 percent of their equity on the IPO, see van der Goot, 1997).

(ix) Post-issue performance: In contrast with Israeli IPO's that are underpriced only in the US and not in Tel Aviv, underpricing is common in Amsterdam as well, and therefore its

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European markets, primarily the Netherlands and Germany, are important in both sub-samples.

[19] Proceeds of Dutch companies refer to capital raised in New York only, excluding proceeds generated by sales of shares by original owners.

prevalence in the US does not constitute an additional cost from the point of view of Dutch firms considering listing there. Both van der Goot (1997) and van Veen (1998) find underpricing of about 15 percent in their samples of IPO's in Amsterdam.[20] First day underpricing for Dutch firms that list in the US is similar (around 17 percent). As for long term performance, while Israeli IPO's in the US perform far better than Tel Aviv IPO's, the performance of Dutch IPO's in the US does not differ significantly from that of Amsterdam issues.

In conclusion, the comparison with Dutch IPO's corroborates the hypothesis that foreign firms on NASDAQ are fast-growing, high-tech oriented companies. The findings are also consistent with the view that a US IPO can provide a beneficial signal for innovative foreign firms, although the signal that Dutch firms gain by listing in the US seems somewhat different from that of Israeli firms. For Dutch companies, it seems to suffice that they list their shares in the large US market. For Israeli firms, the signal is much stronger: Israeli IPO's in the US offer higher (first day and long-term) returns than their Tel Aviv counterparts, and choose not to list in Tel Aviv even after listing abroad, despite the associated tax benefits. One explanation for this phenomenon is that corporate governance problems in Israel (Blass, Yafeh, and Yosha, 1998) make small, innovative Israeli companies, whose assets are mostly intangible, opt for a stronger signal (listing *exclusively* in the US). The more established Dutch companies can enjoy the benefits of listing their equity in the US *and* in Amsterdam (as well as on other European exchanges).

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[20] We find a similar picture in our sample of Amsterdam IPO's in the 1990s, although underpricing is somewhat lower, around 8 percent on average.

VI. Concluding Remarks

Our main conclusions are summarized in Table 6. We have argued that Israeli IPO's in the US are composed of young, innovative firms, in need of certification of their true value. 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 have their value revealed upon listing. At the same time, a US IPO is an opportunity to attain investor and customer recognition. Thus, our findings suggest the existence of a separating equilibrium, whereby high-quality IPO's opt for US equity markets, while less promising firms remain in local markets. The results on Dutch IPO's are not inconsistent with this view. We believe these findings may provide a more general answer to the question why some firms list their equity in regional markets, while others choose to incur additional costs in order to list their shares on a major exchange.

In addition to characterizing firm choice of a stock market on which to list its equity, our results are relevant to questions of financing innovation. First, the preference of Israeli high-tech companies to use Wall Street rather than the bank-dominated capital market at home fits the view that bank-based financial systems are not appropriate for financing innovation (Allen and Gale, 1995). Second, recall that despite being small by American standards, Israeli IPO's in the US raise considerably more funds than Tel Aviv issuers do. The smallest Israeli IPO in the US raised $3.5 million, whereas 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 finance may face difficulties when they decide to issue their shares. Even though high-technology start-ups are abundant in Israel, it is unlikely that

the smaller among them will be able to access the US capital market. In all likelihood this is true for other countries as well. Promising high-tech firms needing to raise between $1 million and $3 million may be unable to raise funds, neither on the local exchange (which favors traditional sectors), nor in the US.

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

	No. of IPO's	In Israel	In the US
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: Israeli IPO's - Sample Statistics

(Means, except where otherwise noted)

	Tel Aviv IPO's	**Tel Aviv IPO's in Electronics and Software**	**US IPO's**
	N=163	**N=56**	**N=52**
Pre-IPO Total Assets (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 $)å			
Mean	4.7	3.7	18.9*
Median	3.2	2.7	16.6
Percent Employees in R&D:			
Mean	12 %	30 %	45 %*
Median	3 %	24 %	47 %
Percent of Proceeds Designated for R&D	1 %	3 %	15 %*
Percent of Proceeds Designated for Marketing	1 %	1 %	16 %*
Age (Years)	21	16	9*
Pre-IPO Ownership Concentration (Herfindahl-Hirschman Index)	7,876	7,892	5,540*
Pre-IPO Share of Foreign Ownership	5 %	3 %	17 %*
Percent of Equity Offered at the IPO	21.4%	21.6%	26.3%*
Post-IPO Ownership Concentration (Herfindahl-Hirschman Index)	4,905	4,953	2,902*
Pre-IPO Operating Profits/Salesåå	16.7 %	18 %	12 %*
Pre-IPO Annual Revenue Growth Rate	17 %	23 %	38 %*
Exports as a Percentage of Revenue:			
Mean	24 %	27 %	77 %*
Median	2 %	2 %	90 %

* denotes a statistically significant (at the 5 percent level) difference in means between the sub-sample of US issuers and the sub-samples of local issuers and local issuers in electronics and software.

å Excluding proceeds generated by sales of shares by original owners.

åå Excluding eight firms that issued in the US and had profit rates below -100 percent.

Table 3: Probit Regression Results

The dependent variable, PLACE, equals one for US IPO's, and zero otherwise. t-statistics in parentheses

	Full Sample			Electronics & Software Firms Only		
Dependent Variable	PLACE (1)	PLACE (2)	LN Proceeds (3)	PLACE (4)	PLACE (5)	LN Proceeds (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)
Percent of Employees in R&D	3.59 (2.88)	3.58 (2.91)		1.56 (1.84)	-0.61 (-0.41)	
Percent of Proceeds Designated for R&D	4.64 (2.17)	4.96 (2.23)			8.20 (1.94)	
Percent of Proceeds Designated for Marketing	10.05 (3.52)	9.65 (3.33)			12.85 (2.58)	
Age	-0.09 (-2.69)	-0.08 (-2.45)		-0.04 (-1.68)	-0.12 (-2.09)	
Share of Foreign Ownership	-0.03 (-2.14)	-0.03 (-2.12)		-0.02 (-2.11)	-0.03 (-1.55)	
Post-IPO Ownership Concentration (Herfindahl-Hirschman Index)	-0.0007 (-3.19)	-0.0007 (-3.13)		-0.0005 (-3.58)		
Pre-IPO Operating Profit/Sales	-2.01 (-2.22)	-1.97 (-2.15)		-1.93 (-2.56)	-3.42 (-2.59)	
Export as a percent of Revenue	2.51 (3.19)	2.60 (3.24)		2.25 (3.76)	5.73 (2.76)	
Instrument for LN (Proceeds), using regression (3) or (6)	3.46 (3.61)	3.37 (3.48)		1.56 (3.30)	4.08 (2.63)	
Dummy for IPO in 1990-93 („Hot Market" Issues)		-0.38 (-0.73)			-2.99 (-2.15)	
Ln (Total Assets)			0.35 (8.09)			0.39 (5.83)
Pre-IPO Annual Revenue Growth Rate			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

		Of Which: Predicted Location	
Actual 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

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

Source: Panel 5 of Table 3.

Table 5: Dutch IPO's - Sample Meansåå

	Amsterdam IPO's 1983-1992 N=74	Amsterdam IPO's 1990-1997 N=15	New York IPO's 1990-1997 N=10
Pre-IPO Total Assets (mil $)	251.8	255.4	127.4
Size of the IPO (mil $)	178.5	N.A.	46.5*
Percent of Equity Offered at the IPO	see text	N.A.	34.5
Pre-IPO Operating Profit Margin	4.8%	6.0%	7.2%
Pre-IPO Annual Revenue Growth Rate	4.7%åå	11.6%	26.1%*

å The 1983-1992 sample statistics are from van der Goot's (1997) sample, whereas the other two columns are based on our own calculations. Van der Goot's sample includes non-manufacturing firms as well. Because proceeds of Dutch companies in the US refer to capital raised in New York only, excluding proceeds generated by sales of shares by original owners, they are probably understated relative to van der Goot's figures. Dutch guilders were converted to US dollars at a rate of 1.7 guilders to the US dollar.

* denotes a statistically significant (at the 5 percent level) difference in means between New York and Amsterdam IPO's.

åå Median (not mean) growth rate.

Table 6: Summary of the Costs and Benefits of Listing in the US

	Local IPO	**US IPO**
Benefits of a Local IPO/ Costs of Listing in the US	Overpricing (negative first day returns)	Underpricing (positive first day returns)
	Original owners retain 80% of the equity	Dilution of ownership
	Capital gains exempt from tax	No tax benefits
Benefits of a US IPO/ Costs of Listing in Tel Aviv	Use of local underwriters	Stamp of approval by leading Wall Street underwriters
	--------	Revelation of true value for innovative companies
	Local exposure only	Customer recognition in a large export market
	Limited number investors	Access to a large number of potential investors

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