

ISRAEL HIGH-TECH REPORT

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JOSEPH MORGENSTERN, EDITOR

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From the Editor

State of Israel Guarantees for High-Tech Investments Panacea or Booby Trap for Tax Payers?

Venture capital is an expression which, in essence, defines reservoirs of money that are earmarked for investment in businesses of above-average risk. The community of venture capitalists consists of investors who seek out precisely those investment opportunities that are characterized by above-average risk, but by the same token hold out above-average potential for high return. In the world of venture capitalists, expectations regarding returns may be as high as 60 per cent per year, or higher. Typically, venture capital investing is practiced more widely, and for higher sums, in the United States than in other countries. European businessmen are more conservative in this area of investing than their U.S. counterparts; the Japanese, recently, have become more active than in the past.

Venture capitalists whose ventures succeed are justifiably proud of having contributed their efforts towards financing businesses that would not exist if not for their participation and faith. The computer industry is one outstanding example of an industry that has thrived on venture capital. In Israel, limited partnerships and several public and private research and development companies have opened new ground for venture capital investing. Athena Venture, Discount Investments, Hapoalim Investment, among others, have been high profile participants in the field. As the Israeli economy has grown, however, so has the need for more venture capital. It goes without saying that the supply of venture capital funds rarely suffices to meet the demand.

Until now, the State of Israel has

accommodated this demand with a variety of grants and tax alleviations connected to the Law for the Encouragement of Capital Investment. In 1985 the Law for the Encouragement of Industrial Research and Development passed the Knesset. The Law authorized the Office of the Chief Scientist to extend financial assistance in support of industry, and has been a critical factor in attracting more than 150 foreign companies, who are now active in R&D investments in Israel.

The United States views Israel as a unique partner in joint research and development activities. The two countries pool more than \$310 million in joint research funds at present, and the fruits of this cooperation include research in industry, agriculture and science. Individuals involved in research and development may draw on either State of Israel or Bi-National R&D funds. The road from R&D to industrialization, marketing and, ultimately, export, is also costly and as risky as R&D from the investor's perspective. Many suggest that needed "bridge capital" - for achieving the transition from R&D to actual production - is not available. It goes without saying that investing in high-tech businesses requires vision and fiscal capability of no small order. Many, including

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Attention: Mr. Robert M. Bruckenthal.
Editorial Offices: Asia House, 4 Weizman Street, Tel Aviv 64239, Israel.
Tel: - 972-3-430817. Tlx: 33511 EISGR IL. Fax: - 972-3-255816.

ourselves, believe that venture capital, and other capital investments in Israeli high-tech companies warrant strong encouragement. One of the most positive attractions would be to offer tax alleviation on the profit and/or loss side of these investments. State guarantees for any form of investment, even high risk, are less desirable. It is more than likely that in the long run business investments receiving State of Israel guarantees would prove problematic to tax payers. Despite previous experiences which have proved less than satisfactory, the Government of Israel is about to approve legislation establishing venture capital funds for the purpose of investing in high-tech industries. In the new bill, up to 80% of the investment will be guaranteed by the State of Israel. Key points of the proposed legislation are outlined below...

Government of Israel's Proposed Financial Involvement in Venture Capital Investing for Israeli High-Tech Industries

The principal objective of the legislation is to create a government instrument that will encourage investment in high-tech industry in Israel, after Research and Development stages through to production, marketing, and export sales. Companies involved will include start-ups.

Basic Concerns and Assumptions Motivating this Legislation:

1. In order to increase investment in high-tech industries, the State of Israel intends to offer assistance to venture capital funds in place of the clause in the income tax law (20a) which addresses investment in R&D by a non-principle.

2. The State of Israel proposes offering State Guarantees covering up to 80% of a venture capital fund's investment, subject to the following conditions:

- a. The State will choose which funds will receive State Guarantees, and the limits of the Guarantee...
- b. The State will establish criteria for selecting companies in which

approved venture capital funds will invest.

3. Venture capital fund success in enrolling investors will hopefully encourage the development and growth of high-tech firms in particular and the Israeli economy in general. The careful selection of investors will hopefully establish conditions that will not necessitate reliance on the State Guarantee.

Approval Process:

The approving bodies will be the Ministry of Finance and the Office of the Chief Scientist. They will be authorized to select and approve the venture capital funds according to the following conditions:

1. Fund management will be obliged to prove the financial ability, know-how, and experience with investments in high-tech industries and their operation as companies.

2. Fund managers will need clean records with no past convictions.

3. Fund managers will be obliged to invest from their own funds at least 3% of the amount of the State Guarantee, not to be covered by the State Guarantee. Fund managers will also present assurances, proper instruments of security, including insurance, equivalent to at least 3% of the funds in source.

4. The Minister of Finance, in consultation with the Minister of Industry and Commerce will determine the extent to which a fund's resources are being directed to the general objectives of the program defined in this legislation.

5. The operations of the funds will be based on uniform regulations to be established by officers of the Ministry of finance, Office of the Chief Scientist, high-tech industry managers, and other experts.

6. The sum of the State Guarantee - current and cumulative - will be detailed in the National Budget.

Fund Management and Administration:

1. The funds shall invest only in Israeli companies, including cooperatives, in which at least 80% of the activities concern Research and Development and transfer of R&D to production production, marketing, and sales; developed under the auspices of the Office of the Chief Scientist or BIRD.

2. Fund reserves shall be deposited with a trustee as defined in clause 5 of the Cooperative Trustee Investment Law (1961). Reserves will be held in bank deposits, government securities and securities not considered "taxable" under clause 33 of the above law.

3. The trustee shall release funds for the following purposes only:

a. Investment in companies as per allotment of shares by the various companies to the fund.

b. Payment of management charges to fund managers - not to exceed 2.5% per year of fund reserves.

c. Distribution of profits and return of investments to investors and fund managers.

4. The fund will have a board of directors consisting of four representatives of the public, including one from a high-tech company, and a manager. The board is invested with the responsibility to assure that the fund is managed correctly, according to regulations and with no conflict of interest.

5. The fund will not invest more than 15% of its capital in any single company.

6. The fund will receive in return for its investments in a particular company at least 10% of the voting rights to profits and rights in the company at the time of distribution.

7. Fund managers will submit quarterly and annual reports to the Minister of Finance and to other authorities according to the law. 8. The participation of fund management in profits beyond the shares as investors will occur only after the State Guarantee has been annulled. The rate of participation will be determined in advance by prospectus.

Framework of the Guarantee and Proliferation of Funds

1. The Minister of Finance will determine the number of existing funds according to the extent of available guarantees and their conditions. The Finance Committee of the Knesset will approve the Minister's proposals every fiscal year.

2. Funds will be limited to raising no

more than \$20 million each.

3. The State Guarantees will be valid for periods of 6-7 years, following which investors may exchange "participation units", within a certain period of time, for cash. If the fund is unable to redeem, the government will do so, and in return, receive ownership of freed participation units, including rights to appoint managers and other rights.

4. In the event funds are managed improperly or with negligence, the State may seek compensation from fund management. If the Guarantee is enforced, compensation may even exceed guarantees and insurance as befits a particular situation.

5. All payments to investors and to fund managers (excluding operating charges) will be reduced from the State Guarantee dollar for dollar in the event the State Guarantee is enforced.

Structure of Funds and Financing

1. Funds will operate as companies in the form of "private funds" or "public funds" with shares listed for trading on the stock exchange.

2. Compulsory institutional investment, pension funds and retirement funds will be reexamined so as to allow investment in such funds.

Tax Concerns

1. The enactment of the State Guarantee will be governed by the income tax statutes at the time of enactment. The rules include the following conditions:

a. In public funds investment in tax exempt.

b. In private funds a foreign investor is exempt for exchange rate differences.

c. An Israeli investor is liable (for tax) as for all capital gains.

2. Funds will be taxed as companies, and distributed profits will be taxed as companies and distributed profits will be taxed according to normal regulations, as for industrial companies.

3. Sums invested by the fund in a company will be reduced from amounts deductible by a company according to income tax laws.

Israel High Tech Shares Traded in United States

Company	Revs (In mil.)	Net Income (In thou.)	Share Price	Change
BIOTECH GENERAL c Biological products for health care BTGC:OTC	6,475	d 6,805	n.a.	---
ELBIT COMPUTERS b Defence electronics ELBT:OTC	38,500	2,900	8.825	-0.250
ECI TELECOM ■ Telecommunications ECL:OTC	12,321	1,038	8.750	-0.375
ELRON ELECTRONICS ■ Invests in high-tech ELRN:OTC	36,647	d 0,692	5.250	+1.125
ELSCINT ■ Medical imaging ELT:NYSE	25,300	d 0,639	1.125	-0.125
FIBRONICS b Fiberoptics FBRX:OTC	11,100	230	6.375	+0.250
INTERPHARM LAB * c Biological products for health care IPLF:OTC	18,092*	505*	3.250	n.c.
LASER INDUSTRIES Surgical lasers LAS:ASE	n.a.	n.a.	2.625	-0.375
OPTRITECH ■ Electro-optical systems OPTK:OTC	17,314	929	8.000	-0.750
SCITEX b Computer graphics SCIX:OTC	55,413	7,253	11.375	-0.500
IIS INTELL c Computer peripherals IISL:OTC	17,099*	3,549*	5.000	+0.125
ARYT OPTRONICS c Optical lenses	11,400	277	1.375	-0.250

Selected earnings summaries for the calendar quarter indicated.

Price quotations are from the 10th of the month and the change related to the corresponding quotation a month ago.

a Q1-1989; b Q2-1989; c Q1-Q4 - 1988

Israeli Companies on Wall Street

Scitex Maxwell Bid for Crossfield Blocked

In the first week of August De La Rue management won shareholder backing to carry out the sale of its Crossfield subsidiary to DuPont and Fuji. By a margin of nearly two to one the board approved a \$390 million joint offer by DuPont and Fuji for Crossfield its computer graphics subsidiary. Robert Maxwell's controlled companies including Scitex had stated their preparedness to pay 10 per cent more than the DuPont-Fuji offer. The strategy behind the Robert Maxwell bid was to form an entity composed of Scitex and Crossfield with anticipated synergies from the similarities of their businesses its complementary capabilities and multinational presence.

Second Quarter Results

Elbit Computers Ltd. Israel's premier defense electronic producer was right on target with three months ended June 30 profits of \$2.9 million. Sales were nearly flat at \$38.5 million. Yet the six month results were satisfactory. The profits of \$5.7 million on sales of \$75 million, which are down on last years figures, indicate that management continues to deal well with a contracted local demand and to expand its export sales and still maintain respectable profit margins. Elbit has also announced that it is increasing its quarterly dividend by 11 per cent to \$0.05 per share.

Scitex Corporation Ltd. Profits of \$ 7.25 million on sales of \$55.5 million were above expectations. The only possible fly in the ointment for the third quarter is a \$5.7 million current unrealized paper loss on Scitex's holdings of 4.42 million shares in De La Rue. The shares were purchased at £3.88 and are currently trading at £308. Prisma the recently introduced Intel-386 workstation and which is rated as Scitex's top of the line pre-press workstation is coming in for good demand from the trade.

Fibronics International Ltd. The push for larger sales is paying off as second quarter sales advanced strongly to \$22.2 million. The increased sales expenses penalized profits. They were down to \$230,000.

Novel Technology Developed

Diamond Coated Semiconductors Increase Computer Durability

Researchers from the University of Houston and the Soreq Nuclear Research Center in Yavne, Israel, have succeeded in coating silicon semiconductors with diamond. They achieved this by bombarding the silicon with beams of carbon atoms just strongly enough to drive the carbon molecules into the surface of the silicon.

The process forms a crystal-like diamond coating firmly attached to the underlying silicon atoms.

The outcome is a new material with a number of advantages for creating powerful integrated circuits. Since diamond is an extremely effective conductor of heat (superior even to copper) the cooling efficiency of silicon chips is vastly improved. Consequently diamond coated chips can be driven harder than normal without overheating. Diamond is also one of the best insulators, so thinner coats of insulating material are required between conductive elements, thereby reducing overall chip size and increasing speed. In addition, diamond can be manipulated to acquire various other properties. Although an insulator in its pure state, for example, diamond can be mixed with other molecules and become a semiconductor itself.

The process of diamond coating is believed to herald yet another generation of even more powerful computer chips.

ISRAEL HIGH-TECH REPORT INDEX*

61.80 DOWN 2.50%

*ISRAEL HIGH-TECH REPORT INDEX is a weighted index made up of the shares of 10 leading high-tech companies.
Base=100 as of 8/30/84

Automation Spreading Into Diamond Industry

New Diamond Factory with Full Automatic Processing Opened by Lev Leviev

Lev Leviev Diamond International Ltd. has opened a technologically advanced diamond factory in the community of Barkan, in Samaria. This first "serious" diamond factory to be established over the green line is considered a breakthrough on account of its automatic processing facilities.

It is a factory designed not to find cheap labor but to compete with cheap labor, and contains technology which will make the plant more competitive on manufacturing costs. Leviev specializes in "makeables", from the smallest to the largest and the cheapest to the most expensive. Due to automation, his direct costs will be a smaller percentage of the final costs of the stone.

One of the factory's features is a locally developed security system designed to control access to a building and to provide information regarding persons located inside. The system is manufactured by Electro-Galil and installed by Golan Communications. The factory's workers will be monitored as they pass through 50 specially fitted doors using unique ID tags.

Robogem Gem Cutter and Polisher to be Introduced in Israel

A robotized gem cutting and polishing system called Robogem, is in final stages of development and is expected to be on-line in the Israeli gemstone industry within six months. Sarin Research & Development is the creator of the new product, which they believe is the most advanced system of its type on earth today.

The system is comprised of two units. One examines the rough diamond and sets the configurations. The second executes the girdling, faceting and final polishing. It independently completes the work that would ordinarily be done by four separate workers, and takes about one-third the time the work takes by hand. Since one worker can operate five machines simultaneously, productivity is increased even further.

SRD Medical Ltd. A Small R & D Group Turns Out Saleable Prototypes

Founded in 1981, SRD Medical, Ltd. is an Israeli electronics firm which has been developing, manufacturing and marketing computerized instruments for physiological monitoring and electro-optic measurement for medical and other purposes. It is based on Moshav Shorashim, in the "Region 2000" industrial development area of Central Galilee, is housed in a modern 8000 sq. ft. plant, and employs some 50 workers at present. SRD's featured products include Cerebro Trac 2500, introduced in 1985. The unit was designed to meet the growing demand among anesthesiologists for a technique to monitor a patient's depth of anesthesia and the adequacy of blood supply to the brain. Cerebro Trac 2500 is a video-screen monitor providing computer-analyzed EEG and other important physiological data in clear, readable form. It also produces a simultaneous hard-copy of the data. The unit has received top rating among brain monitors in the \$12,000 - \$15,000 range in a comparative study published by the Emergency Care Research Institute. Cerebro Trac also complies with FDA Good Manufacturing Practice, UL 544, and other critical standards. SRD's national office in Bethesda MD handles distribution in the U.S. through a network of local dealers. Management is now seeking additional distributors worldwide. CombScan is a new product SRD Medical has recently completed under subcontract from Organics an Israeli biomedical firm. It is a computerized electro-optical system for rapid readout of colorimetric chemical immunoassays. A device useful for diagnosing AIDS and other immunological disorders, CombScan was developed and produced in less than seven months. SRD is now manufacturing CombScan in quantity under exclusive license. The company's technical writing affiliate "In Other Words" has written the user's manual. They are constantly seeking similar engineering projects which combine electronics, electro-optics, software, technical writing and production. At present, some of

Israel's leading industrial and military electronics firms are in the process of exploiting SRD Medical's services as subcontractor. These include Elbit, Ancor and Volta, among others. Quality assurance is maintained at stringent MIL-standard levels. The company's proven track record of excellence in terms of efficient on-time production has also attracted development projects from the Israel Ministry of Defense. SRD Ltd. an affiliated company, has developed and produced, for example, a high-performance helmet-mounted Eye Tracking system for use in flight simulation and control.

Institutes of Higher Learning

Leshmaniasis: Widespread Tropical Disease Coming Under Control in Israeli Labs

Scientists at the Weizmann Institute and Ben Gurion University have made progress in the fight against a tropical skin disease which affects some 12 million people worldwide. In its most deadly form, "visceral leshmaniasis", a parasite spread by sand flies attacks the liver, spleen and bone marrow. The last epidemic, left 20,000 people dead in India. It is a disease which is endemic in Asia, Africa and South America. A mild Israeli form, commonly known as "Rose of Jericho", leaves disfiguring lesions on the skin, but is not fatal. A new diagnostic test for Leshmaniasis, developed by Dr. Charles Jaffe of the Weizmann Biophysics Dept. is being field tested in Brazil following successful laboratory tests. Until now, the usual diagnostic method for the disease has been a tissue biopsy of an affected organ. The method, unfortunately, fails to identify many cases since the number of parasites in the tissue sample is often quite low. More sophisticated methods also prove ineffective in areas where the disease is endemic because the existence of other widespread diseases, and antibodies, produces false readings. Dr. Jaffe's method is the first suitable for widespread fields and epidemiological screening in endemic areas. It gives no false readings when tested with antibodies from other diseases. Yeda Research and Development Co has filed a patent on the diagnostic assay.

Besides being sensitive and reliable, the assay is easily standardized, and suitable for inter-laboratory comparison. The diagnostic test is based on two proteins which the Weizmann Institute researchers isolated from the disease-causing parasite and purified. They found that antibodies against the parasite responsible for visceral leshmaniasis recognize these proteins. In addition, Dr. Jaffe has some evidence showing that one of the two proteins for the diagnostic test may be effective as a vaccine against the disease. When laboratory mice were immunized with the protein their parasite levels were reduced 80%. Through cloning various mice genes coded for the protein he hopes to determine which ones are generating the immune response. Meanwhile, a new ointment against the skin disease has been developed by Dr. Joseph El-On of Ben Gurion University's Negev Faculty of Health Sciences and Dr. Jeffrey P. Jacobs, formerly of Hebrew University's School of Pharmacology. Dr. El-On, head of Soroka Medical Center's Parasitology Lab and Dr. Luis Weirauch, a skin doctor at Hadassah.

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Hospital, have been working with local physicians in Belize on a joint Leshmaniasis research project funded by the U.S. Agency for International Development Research. The ointment, which was proven effective against the mild Israeli form of the skin disease, is even more helpful in curing the South American variety. Central and South American leishmaniasis is characterized by particularly large sores, which can spread to the mucus membranes in the nose, pharynx, and genitals. The ointment is also proven to be effective against the Ethiopian variety of the disease, which is often resistant to conventional treatment. Combined research efforts of the Israeli scientists and physicians in Belize are continuing. Physicians from Belize will visit Israel to study the local form of the disease and learn more sophisticated methods of diagnosis.

New Fetal Monitor Key in Reducing Number of Caesarian Births

A team of physicians from Bnai Zion Hospital - Haifa Medical Center has developed a new fetal monitor that could reduce the number of unnecessary Caesarian sections. Post-birth statistics show that in more than 50% of cases physicians make the decision to perform Caesarean sections too early. The reason for premature decisions is closely linked to the "false alarms" current delivery room fetal monitors often give. These alarms are based on problems of insufficient blood supply to the brain and other signs of fetal stress in the birth process. Invasive fetal blood tests which provide more definite information are uncomfortable and in some cases also endanger the fetus. To develop the new monitor the Bnai Zion physicians turned to Technion's Laboratory for Physiological Signal Processing in the Dept. of Electrical Engineering. Prof. Gideon Inbar and Dr. Meir Steinkoler developed a monitor which provides a much wider range of information than current

equipment, and eliminates the need for invasive tests. The new monitor has been of critical importance in cases of high risk pregnancies at Haifa Medical Center. Hundreds of caesarian sections have been avoided already. All infants were born naturally with no complications. FranzTech, the Technion Research & Development Foundation Ltd's subsidiary, is building a number of prototypes of the monitor, and will be commencing marketing efforts in due course.

Electrical Stimulation Helps Paraplegics Exercise Muscles

Researchers at Technion's Dept. of Biomedical Engineering are studying the effects of applying electrical stimulation to the unusable leg muscles of paraplegics. Since 1982, when the project began, sixteen patients have been helped to exercise; thereby improving blood circulation, muscle growth and muscle tone overall. Initially patients' muscles are strengthened, and the final objective is to achieve the ability to stand and walk. The technique is based on replacing the impulses of the healthy nervous system through application of electrical current, on the surface of the thigh and calf muscles. "The new means of mobility is not expected at this stage to replace the wheelchair," comments project head, Technion Prof. Joseph Mizrahi ... , "but rather to allow easier mobility in cases where distances are short and the space limited." The training program takes about six months and is designed to help patients mainly in indoor situations.

The electrical stimulation laboratory is located in Lewenstein Rehabilitation Hospital in Ra'anana, Israel's largest rehabilitatory medicine center.

The project is supported through the assistance of the Ministry of Defense.