

ISRAEL HIGH-TECH & INVESTMENT REPORT

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A Closer Look at Economic Data

Mutual fund managers are too professional to be drawn into making predictions as to the future course of stock prices. Nevertheless, during a discussion with Michael Cyvler, managing director of Leumi PIA - Israel's oldest and largest mutual fund management company - possible scenarios emerged which could set the stage for a revival in the share market.

The Capital Gains Tax

The tax was seen as insignificant in its scope, yet it left a lot of uncertainty. More than a few individuals in banking, computer and auditing circles did not believe it could be applied in its proposed form. Its cancellation at the end of January gave the local share market a temporary boost removing the uncertainty for those who left the market because of the pending tax. The capital gains tax would affect private investors, including foreign investors who could not utilize double-taxation treaty exemptions. Total assets in Israel's funds for foreign residents were \$150 million. Part of these funds have been withdrawn, but are likely to return when conditions for an upward market are in evidence.

Inflation and Interest Rates

Inflation is the major concern to Israel's central bank. As inflation was moving considerably above Treasury Department forecasts to 14.5% for 1994, compared with 11.3% in 1993, the Governor of the Bank of Israel raised interest rates from 10.5% at the beginning of 1994 to 17% by the end of the year. Investors faced with very attractive shekel market rates moved to high-yielding certificates of deposit and Treasury notes. Stocks continued to decline, as the alternatives were more attractive. In order for investors to return to the share market, the rate of inflation needs to be reversed itself, as early in the first quarter of 1995. Only a fall in inflation would allow the Bank of Israel to lower its punitively high rates. Only a fall in interest rates would lure investors back into the equity market.

Rate of Exchange

The Bank of Israel has been steadfast in maintaining

a steady rate of exchange for the shekel. In 1994 the rate of exchange for the dollar rose by only 1% in nominal terms, for a drop in real terms of 11.7%. The factors acting on the rate of exchange are numerous, but mostly they are influenced by the willingness of the Bank of Israel to maintain a steady exchange rate. The efforts at maintaining a steady rate of exchange were assisted, in the past year, by an internationally weak dollar.

The local business community increased their borrowing of dollars overseas. Buying up these dollars by the central bank helped maintain the equilibrium in the rate of exchange. It could change, suggests Mr. Cyvler, should expectations of an unspecified devaluation develop.

So look for a devaluation, but expect it to be moderate. In the past, devaluations have inspired stock market rallies of varying duration, depending on the rate of devaluation; the higher the rate, the greater the rally.

Profitability

Corporate profits have been disappointing, but Q2 1995 could see a revival.

Conclusion

Any meaningful fall in inflation in the months ahead may convince the Bank of Israel to begin lowering interest rates, allow the Treasury to mildly devalue the shekel vs. the dollar, and help business gain corporate profitability. With economic indicators turning positive, any progress in the peace process would increase the chances for a sustained share market advance.

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FDA approves Teva's Atenolol and Metoprolol

Teva Pharmaceutical Industries Ltd. (NASDAQ:TEVIY), Israel's largest pharmaceutical company, has received approval from the Food and Drug Administration to manufacture and market Atenolol and Metoprolol Tartrate tablets. Atenolol is similar to Zeneca's cardiovascular product Tenormin, for which there are several generic equivalents. The market for this compound is estimated to be approximately \$200 million in the United States. Metoprolol is the generic equivalent of Ciba Geigy's cardiovascular product Lopressor, for which there is a \$220 million market in the United States. These are Teva's second and third approvals this year, following the approval of Miconazole vaginal cream, a generic equivalent of Otho's Monistat. The non-prescription vaginal cream market is estimated to be approximately \$75 million in the United States. There is currently only one other approved generic equivalent, with which Teva will compete in the private label, over-the-counter segment of this market.

With an eye on the future, Teva has entered negotiations to collaborate with Marion Merrell Dow to market Copaxone in North America. Copaxone is Teva's product for the treatment of multiple sclerosis. The proposed collaboration is seen by Teva's management as "a vote of confidence in Copaxone."

Alarm clock for the multi-handicapped

A unique, user-friendly alarm clock for multi-handicapped, blind individuals has been developed at the Keren Or center at the Jerusalem College of Technology. Keren Or is a school for multi-handicapped blind children and young adults, and is dedicated to the development of devices and systems to help educate and rehabilitate the handicapped. A team of technologists designed and constructed the clock in response to requests by a child at Keren Or. The clock features large, sensitive operation keys arranged in the form of a mini-piano, easily identifiable through tactile markings. This makes it user friendly for motor-impaired blind individuals. The device has been programmed to address the user, and enables him or her to perform all necessary functions through auditory feedback.

ISOCs

ISOCs, a Jerusalem College of Technology PATIR, or incubator company, has just come up with its first product, the VISILENS 2000, an ophthalmic lens analysis system. The focimeter offers full-power topographical examination of any lens - progressive, aspheric, toric or spheric- in just a few seconds. The system offers 1,000 simultaneous measurement

points at practically the same cost as one-point measurement systems currently on the market. There could be major commercial applications in the area of quality control during the production of high-quality ophthalmic lenses.

Manager Dr. A. Abitol has just returned from the SIMO international exhibit in Paris, where he met manufacturers of lenses from America, Egypt, Europe, Morocco, Japan, Australia and even New Caledonia. Many expressed interest in purchasing the product.

ISOCs has applied for a patent in Israel, and intends to expand it to the US, Asia and Europe.

Visilens 2000 is being brought to the consumer market by Visitonix, a JC Tech company that specializes in 3-D Vision (non-contact optical measurement). Both ISOCs and Visitonix are looking for investors. "We reached the marketing stage so much more quickly than we anticipated that we need an infusion of funds," Dr. Abitol noted. A number of additional instruments are currently under development.

Virtual conferences and multi-media meetings

A Rehovot-based company, Ubique Ltd., has designed software for virtual conferences and other gatherings involving multi-media presentations. It was created on the basis of a Weizmann Institute programming environment.

"Virtual Places" allows the creation of Internet-based on-line services allowing people to meet and communicate in real time, share multi-media information and hold live audio conversations. This allows companies to establish contact with employees, vendors, customers and partners worldwide. This capability can also be exploited to create virtual trade shows, customer service center sales and marketing venues and training facilities. A demonstration of "Virtual Places" was held at a recent computer trade show in Atlanta entitled "Networld plus Interop," where it was used to set up the first virtual trade show. This allowed Internet users to "tour" the booths of various companies, examine the displays, hold spoken conversations with sales representatives through microphones attached to their computers and "attend" conference sessions and other special events - all without leaving their desks.

The advantage of "Virtual Places" is that it is based on a programming language which uses rules of logic rather than computational instructions.

Pharmos files for FDA approval of its first drug

Pharmos Corp. recently took an important step toward the commercialization of the first of five planned drugs, when it partially filed for a new drug application for Lotemax. The remaining section of

the application is to be filed during the first quarter of this year. The drug is an ophthalmic anti-inflammatory substance using the company's proprietary "site active" delivery system. Clinical trials have demonstrated superior safety profiles, and significant efficacy compared to available ophthalmic steroids.

"The submission of the Chemistry and Manufacturing control section of our New Drug Application marks the culmination of years of research. I am pleased we have achieved our goal to develop this superb drug," stated Dr. Haim Aviv., Pharmos Chairman.

Privatization of Israel Chemicals

IC is Israel's largest chemical combine, with sales exceeding \$1.0 billion last year. One quarter of the company is in the hands of the public. Another 24.9% has been bought for \$230.3 million by the Israel Corporation and a non-Israeli company controlled by Shaul Eisenberg. The billionaire businessman will become chairman of the board of Israel Chemicals. It is expected that further international public offerings will complete the privatization of one of Israel's most important companies. The government of Israel still holds 50%, but the intention is to reduce its holdings to 28%.

It is reported that, although the government is selling control of the company, it retains control over the natural resources. The price paid by the Israel Corporation was based on a valuation of \$925 million. Israel Chemicals was independently valued at \$1.1 billion.

The Israel Corporation has investments in more than 80 companies. Its holdings include shipping, industry, real estate and advanced technologies. In its last published report it announced \$30 million in profits.

Healthcare Technologies invests in British distributorship

Healthcare Technologies has become a 50% partner in Gamidor Ltd., a one-year-old diagnostic distribution company in England. The other half of Gamidor is owned by an Israeli company of the same name. The British firm projects sales for 1995 at \$2.5 million. Healthcare's investment is \$800,000.

ECI at new highs

ECI fourth-quarter 1994 profits, reported on February 7, were \$20.3 million, compared with \$7.9 million in 1993. This represented a 19% return on sales of \$106.8 million. In 1993, ECI took a charge of \$9.2 million against profits - a result of merger costs with Telematics International.

"Revenues of Telematics rose 25% in 1994, to \$97.8 million from \$78.3 million," stated President David

Rubner. Sales of \$385 million for all of 1994 represented an increase of 30% compared with those of 1993, and net income was \$76.7 million, an increase of 44.2%.

The quarterly results were received with satisfaction by the investment community. Analysts had accurately predicted \$0.27 profits per share for the quarter. The shares advanced by \$1.625 to \$15 immediately after the announcement.

IEC to connect with Jordan's electricity grid

Following a recent meeting between officials of the Israel Electric Corporation and Jordan's Electric Corporation, the Israelis reported that they will link Israel's electricity grid in Eilat to that of Jordan in Aqaba in July. According to the officials, the rest of Jordan will be ready to link up a few months later.

Swiss Bank delegates visit Israel

Executives from the London branch of Swiss Bank Corporation, led by CEO Dr. Rudolph Bonni, visited Israel in February to examine business opportunities. The bank will be represented in Israel by Clal Issuing, a member of the Clal Group's capital markets sector. The Swiss Bank Corporation will issue Israeli stocks on European markets - especially for companies being privatized. It will also participate in mergers and acquisitions, and in related services to multi-nationals investing in Israeli stocks.

Publicly traded companies on TASE

Bank Hapoalim's research department is predicting profitability for publicly traded companies on the Tel Aviv Stock Exchange. According to the bank, producers of food products and large retail concerns will be the most profitable in 1995. Sectors such as computers and software, building construction products, insurance and small holding or investment companies - characterized by intense competition - will see a continued erosion in profitability.

Israel's official credit rating

On January 31 the international ratings agencies Standard and Poors and Moody's released credit ratings for long-term loans to Israel. Moody's gave Israel a Baa rating, and Standard and Poors awarded an equivalent rating of BBB+.

IAI and Airborne Express deals

Israel Aircraft Industries presently has a number of agreements with the US-based cargo carrier Airborne Express (ABX) worth approximately \$100 million. The deals mandate IAI to refurbish and renovate ABX's fleet.

Strong earnings growth for Lannet Data

Lannet Data Communications Ltd. (NASDAQ-

LANTF) has reported a strong surge in sales. In Q4 1994 sales totaled \$20.5 million, compared with \$14.4 million a year earlier. The figures exceeded analysts' expectations. Net earnings were \$1.3 million (\$0.12), but these included a one time write-down of \$1.4 million connected with American activities. In 1993 the company earned \$1.9 million (\$0.18).

A broker at one of the banks pointed out that the firm appears destined for further growth, as it has corrected some previous marketing problems. The projection by the investment community is that Lannett will earn \$0.93 in 1995, compared with \$0.52 in 1994. "At a price/earnings ratio of 37, the shares are not cheap," he added. Lannett is a leading supplier of intelligent fault-tolerant switching hubs. Its shares have recently reached new highs at \$25, moving up sharply from the \$10 level last November, when the company had a successful trade show presentation.

"We had a very strong fourth quarter, as there is a great demand for switching products to relieve network congestion," stated Benny Hanigal, Lannett President. The company is seventh in worldwide market share for intelligent hubs, and third in reported sales.

Foreign investments in Israel

According to a report by Israel's Ministry of Finance, total foreign investment in Israel declined to \$612 million in 1994 from \$777 million in 1993. A closer look at the figures reveals that in 1994 there was less money raised by public flotations in the US. In 1993, companies raised \$450 million overseas, but in 1994 only \$93 million was raised. The reason for the decline was mostly lower corporate profitability.

However, the decline was offset by a sharp increase in real estate and other non-financial investments. These more than doubled, from \$150 million in 1993 to \$311 in 1994.

Key indicators

	1994	1993	change
Total Foreign Investment (in \$ millions)	\$612	\$777	(\$165)
<i>Accounted by:</i>			
Overseas corporate financing	\$93	\$450	(\$357)
Investments on TASE	\$208	\$176	\$32
Real Investments	\$311	\$151	\$160

New peptide could reverse Osteoporosis

Researchers at the Hebrew University Dental Medicine Faculty's bone laboratory have discovered Osteogenic Growth Peptide (OGP). Animal experiments indicate that OGP can reverse the effects

of osteoporosis - the loss of bone mass which usually affects persons in their middle to advanced years, particularly women.

These findings were published in the respected scientific magazine EMBO Journal and reported at international conferences.

The peptide, a protein-like substance, is present in the blood of humans and various animals.

Researchers at the lab revealed that the cells which appear before the formation of bones produce polypeptide compounds, known as growth factors, which accelerate the formation of bone tissue. One of these factors is OGP, originally isolated from the regenerated bone marrow of laboratory rats. Hundreds of formulations using OGP were tested for effectiveness in accelerating the growth of bone-forming cells. Once the chemical composition of OGP was determined, it was easy to reproduce it in the lab.

A synthetic OGP, identical in composition and other properties to the isolated peptide, was prepared by Prof. Michael Horev at the School of Pharmacy, Hebrew University's Faculty of Medicine. The university researchers also developed a test to measure OGP levels in the blood of humans and other mammals. The university's R&D authority has filed for international patent protection, and a company was formed - OGP Licensing and Development Co. Ltd. - to exploit the discovery. An American firm, Odyssey Therapeutics of Cambridge Mass., is exploiting the commercial opportunities, and is a joint partner with Yissum Research and Development Co. of the Hebrew University.

The High-Tech Commission gets off the ground

The cooperation of the Israeli and American governments, their officials and community leaders, combined with a strong response from industry, has stimulated the formation of the High-Tech Commission. The commission's first three projects, described below, are budgeted for a total of \$24 million, not including the industry partners.

Background

Early in February of this year, US Commerce Secretary Ron Brown and Israeli Minister of Industry and Trade Micha Harish met in Israel to discuss a broad range of economic issues. The two are responsible for the activities of the U.S.-Israel Science and Technology Commission, popularly named the High-Tech Commission - the culmination of more than two years of intensive negotiations. In March 1993, President Bill Clinton and Prime Minister Yitzhak Rabin agreed to create a Joint Commission to develop advanced industrial projects in science and technology. In January 1994 the two

leaders signed the document which established the commission. The working groups were formed and headed by the Chief Scientist of the Israeli Ministry of Industry and Trade, Dr. Y. Gleitman, and Dr. Mary Goode, Deputy US Commerce Secretary. The aim of the commission is "total economic cooperation to enhance economic growth and the creation of jobs in both countries."

Four areas for cooperation were chosen:

1. Biotechnology and medicine;
2. Electronics, communications and micro-electronics;
3. Agriculture, energy and ecology;
4. Civilian projects based on military industries.

Leading economic, academic and scientific figures from both countries joined government officials on the commission. The working groups prepared papers on Israeli industries and suggested specific projects.

In June 1994, Minister Harish presented interim reports to Secretary Brown in Washington. These included a review of possible fields of activity, the options available and directions open for cooperation between specific industries. The report also included some specific recommendations. The Minister and Secretary announced that the sides will allocate \$30 million over three years.

The past six months were used to gather project proposals from Israeli industry.

The Minister sent out 1,800 letters to high-tech companies requesting that they indicate their interest in cooperating within the framework of the Commission. To be considered, a project should be valued at \$10-\$12 million, with completion planned within 48 months of approval. It should involve 50% participation by the industry partners in both countries.

Smaller projects would be considered if they can be identified as technological novelties, able to give birth to new industries and further development in both countries in areas such as energy, ecology and agriculture.

Any project approved would be required to provide a timetable geared to market readiness within 48 months. Each project must present a business plan indicating that it will have the potential to bring visible benefit to both nations.

Of the 630 inquiries, 108 were chosen by the Ministry for consideration. Of these, 16 were asked to submit a detailed request.

The final selection resulted in three projects being approved and announced at the recent meeting of the Minister and the Secretary. The commission expects to report progress within one year.

PROJECTS

Venture title: US-Israel aquaculture technology

joint venture.

Project aim: Year-round production of high-performance fish for rearing purposes.

Partners: AquaPharm Technologies Corp. (USA) of Columbia, Maryland, is a world leader in the application of compound delivery and encapsulation technologies to problems in aquaculture. AquaFuture Inc. (USA), Turner Falls Mass, is the leading American breeder of striped bass in intensive recirculating culture systems. Ma'agan Michael Fish Breeding Center Ltd. (Israel), on the Mediterranean coast, has pioneered the culture of striped bass in Israel. Ardag Ltd. (Israel) is a leading innovator of seawater culture of seabream and seabass.

The goal: The goal of the joint venture is to develop and commercialize new products and technologies essential for the efficient year-round production of fish.

The products will create competitive advantages for the partners and for the aquaculture industries of both countries. The world is currently entering a crisis in fish supply as the production of the oceans declines and global population continues to grow. Under this pressure, global aquaculture has maintained record growth over the past two decades. The partnership will focus on two critical bottlenecks in aquaculture production:

1. The control of reproduction to provide a reliable, year-round supply of eggs, sperm and embryos, and
2. The selection and nutrition of young fish with improved characteristics for industrial aquaculture.

Despite their leadership in agricultural technologies, the US and Israel have lagged behind the aquaculture industries of Asia, Europe and South America.

The project addresses key factors that limit both nations' domestic aquaculture industries and contribute to their increasing dependence on imported fish. The project is the first US-Israel joint venture in the industry, and will have leading research scientists seeking to develop applied technologies.

The joint venture will develop products in four areas:

- the control and enhancement of reproduction in domesticated fish and shrimp;
- the selection of fast-growing strains of fish for cultivation;
- the long-term preservation of fish eggs and embryos;
- the development of high-nutrition feeds for young fish.

These sub-projects will each be led by one of the partners, and will be supported by research scientists at the Center of Marine Biotechnology at the University of Maryland, and the Israel Limnological & Oceanographic Institute at Ben Gurion University in Israel.

Responsibilities of the partners: AquaPharm will develop formulations and produce pharmaceutical products for the control of reproduction, as well as high-performance feeds for young fish.

AquaFuture will direct the project in the selection of new high-performance strains in striped bass. Ma'agan Michael Fish Breeding Center will direct the program of long-term preservation of fish eggs and embryos.

Ardag will direct the project in environmental manipulation of reproductive times.

Project size: The Aquaculture Technology joint venture is a four-year, \$6 million project, half of which is to be supplied by the High-Tech Commission and the other half by the joint venture partners.

Venture title: Solid-state gamma camera.

Project aim: To develop a mobile, cost-effective, solid-state gamma camera.

Partners: Isorad Ltd. (Israel) has developed and tested a mobile gamma camera based on room-temperature, solid-state Cadmium Telluride (CdTe) detectors. e.V. Products (USA) is a producer of solid-state Cadmium Zinc Telluride (CZT) detectors. CZT provides imaging characteristics equal to CdTe but costs less. These two developments open the way to commercialization of cost-effective solid-state gamma cameras.

G.E. Medical Systems (USA) is a world leader in the design, manufacture and sales of diagnostic imaging equipment.

Introduction: Nuclear medicine is an imaging technology with the capability of generating images which demonstrate organ functions. It involves the administration of trace amounts of radioactive compounds. The resultant emitted radiation is detected by a highly sensitive gamma camera. Today the most common camera is the Anger camera, which consists of a scintillating crystal, photomultiplier tubes and electronics. The basic camera was invented over 30 years ago. While it has been improved significantly, several shortcomings limit image quality. In addition, the size and weight of the camera requires large mechanical structures which prevent the development of truly portable imaging devices.

The camera developed by Isorad is said to represent an improvement in both image quality and operation.

The goal: The goal is to develop, engineer, manufacture and market a new generation of gamma cameras based on CZT. These cameras will be cost-effective, with improved image quality, dimensions and weight.

Venture title: Power generation systems using

solar energy

Project aim: To develop a solar-power generation system based on unique technologies provided by the partners. The system is to be competitive with conventional energy-generation technologies.

Partners: McDonnell Douglas, Ormat, Elop Electro-Optics Industries, Rotem Industries and Weizmann Institute's Yeda Research and Development.

INDUSTRY INCREASES R&D SPENDING

In the mid 1990s, Israeli industry can be characterized as R&D intensive. The country's annual research and development bill is NIS 3 billion (\$1 billion). Two thirds of the sum comes from industry, with the remainder being supplied by the Office of the Chief Scientist (OCS) in the Ministry of Industry & Trade. In 1994 the OCS budget totaled \$315 million, of which about 70% was allocated for projects in the electronics sector, 15% for the chemical industry, and the balance for biotechnology, medicine and others. In all, 750 of the 850 companies which requested research grants received them.

Israel is seen by foreign investors as an R&D source, and they have taken advantage of this potential. As a rule, funds supplied by the OCS ensure that the research and development results in manufacturing in Israel. An exception to this rule is InterPharm Laboratories, whose researchers developed a drug named interferon beta with \$25 million in funding from its Swiss parent Ares Serono. Shareholders then tried to thwart Ares Serono's desire to shift part of its production out of Israel, but the OCS, which had supplied \$3.4 million in research and development funds, approved the move. It recognized that Ares Serono is a foreign company which had invested heavily in an Israeli pharmaceutical firm.

The defense connection

The conversion of defense to civilian products can prove rewarding, but reaching the civilian market is a lengthy and expensive process. ECI Telecom, a world leader in circuit multiplication (with annual sales of more than \$300 million) used Israel Air Force speech garbling and reconstitution as the basis for its telecommunications business.

Due to the nature of investment in R&D, the OCS is bound to secrecy as to which company receives participation grants. It is not required to reveal how much money has been approved, to which company or for which project. It can, however, reveal which company paid royalties, as the payment of royalties indicates that the project represents a lower security risk.

In 1994, 19 companies paid the OCS royalties

ranging from NIS 1 million to NIS 13 million (approximately \$4.3 million).

For the first time the OCS has listed those companies, ranking them according to the amount of royalties paid. Nevertheless, the full sum paid remains secret; only public companies include these figures in reports to their shareholders.

Among the firms which received the biggest grants are: Teva, Telrad (owned by Koor), Tadiran, Elisra, El-Op, Elbit, Elscint, Fibronics, Lannett, RAD (from the RAD Binat group), Motorola and Scitex. The 24 largest companies received 42% of the total,

expenditures at 37% of turnover in the first nine months of 1994. The company was established in 1986 by a group of engineers who had served together in the army. In the first years they concentrated on the defense sector, but as the need for expansion was felt, the company moved into the civilian market. In December 1991 it raised capital on the Tel Aviv Stock Exchange. Last year it sold a subsidiary, NiceCom, for \$60 million in a private placement to an American company named TriCom. Its defense products include systems specializing in communications, intelligence, signal identification, directional identification and command-and-control units. Sales of these items are growing annually by 15-20%.

Its civilian activities include facilitating the storage and retrieval of information. The target audience includes financial institutions, insurance companies, telemarketing firms and airlines. Since Nice moved into the market at the start of 1994, sales have been growing by 50% quarter to quarter.

In second place is International Technologies (Laser) Ltd., with R&D representing 34% of sales for the first nine months of 1994. General Manager Avraham Sorek hopes that a key product, the Beam Hit target practice

device, will be a major seller. The company reported a loss of NIS 7.6 million in Q3 on a turnover of NIS 9.2 million. A major part of the loss was the NIS 3.1 million used for R&D. International Technologies receives limited assistance from the OCS. Board chairman Ben-Ami Gov stated: "We have paid all the royalties due on every project. I hope our firm will now be able to obtain development work, which is the highest level to which an R&D company can aspire."

MLI Lasers Ltd. is in third place, with an R&D investment that was 23% of turnover in the first nine months of 1994. The company was established in 1982, and took over the work of another firm active in the development of high-powered industrial lasers. By 1992, MLI held 40% of this market, but its share fell to 30% the next year. It then began developing medium and low strength industrial lasers - an area in which it holds a significant market share. MLI also invested in a subsidiary startup company to develop and sell imaging systems for laser printers. In the first nine months of 1994, sales totaled NIS 4.2 million, compared with NIS 3.1 in the same period a year earlier. The R&D expenditure for the period was NIS 1.1 million. In recent financial statements, General Manager Dr. Avigdor Shachrai mentioned the need for even more R&D to develop new

The Biggest Corporate Spenders on R & D in US \$mil.

	Sales 1-9.94	R & D	R&D/Sales %	Profit (loss)
Scitex	416,617	57,466	13.8	47,102
Tadiran	613,298	35,499	5.8	34,428
ECI Telecom	277,875	34,296	12.3	56,395
Israel Chemicals	912,355	31,643	3.5	34,403
Elbit Computers	511,873	26,633	5.2	27,437
Teva Pharma.	428,946	26,399	6.2	52,908
Dead Sea	480,575	10,531	2.2	33,434
Indigo	43,434	7,533	17.3	(20,600)
Lannet	49,720	5,036	10.1	4,317
Clal Electronics	30,093	3,155	10.5	13,866

compared with 50.7% in 1993.

Since not all the companies are public, it is not always possible to obtain details about their balance sheets or activities. Figures available from the OCS refer to specific projects, and therefore one cannot tell which firms are the largest investors in R&D. The ranking was created from available reports for the first nine months of 1994, which itemize R&D spending. There are companies which list R&D spending only in their annual reports.

Two ratings are presented. One is of the companies with the largest R&D investment. The second lists the highest percentage of R&D investment as a proportion of sales. This group also includes small start-up companies in the early stages of development. The length of an R&D project varies from company to company, but the OCS estimates that the average time is four years, even when taking into account that pharmaceutical projects last 7-11 years. Electronics differ in that the average life of a product is three years. This requires continuous research in order to improve existing products and investigate new ideas to satisfy the needs of the thirsty marketplace.

The largest investors as a percentage of sales

At the top of the list is Nice Systems, with R&D

products and improve existing ones. In the meantime, the company lost NIS 3.8 million in the first nine months of 1994, compared with NIS 1.1 million for the same period a year earlier. Current market conditions are not likely to allow further financing for R&D. Azimuth, in fourth place, lost NIS 7.6 million in the first nine months of 1994, on sales of NIS 4.6 million. Approximately 22% of the sales figure, or NIS 1.0 million, was devoted to R&D. The company, owned by Mordechai Reisman and his two sons, develops navigational, identification and target observation systems. It is active both in the defense and civilian sectors. It reports that its R&D is planned in terms of need for new products, but remains sensitive to the level of sales. Even in moderate sales periods R&D is maintained as a long-term investment.

Indigo is listed fifth with an R&D investment that was \$7.5 mil. and sales of \$43 mil. in the first nine months of 1994. It is a high-tech company registered in Holland, and specializes in color digital printers using liquid print technology. Headed by chairman Benzion Landa and President Giora Yaron, it was founded in 1977 and employs 800 people at its R&D base in the Weizmann Industrial Park. Indigo has subsidiary companies in the US and Europe, and is represented in Japan by Toyo Printing. The firm holds 125 international patents. In 1994 Indigo sold 10% of its shares for \$100 million in its IPO - the single largest issue of an Israeli company on Wall Street that year. Today, 72.4% of the company's equity is owned by the Landa family. Firms controlled by George Soros own 17.6%. Indigo's chief market is the United States, and is estimated at \$100 billion. Indigo's sales for the first nine months of 1994 were \$43.4 million. R&D investment totaled \$7.5 million. The company has yet to earn profits.

Spectronix ranked sixth, reports General Manager Yehiel Spector, invested 14% of its sales in R&D during the first nine months of 1994. In the past four years, the firm has invested in three projects aimed at moving it from defense to the civilian market. In the area of fire detection the company began sales in 1992, and is expected to reach \$2 million in 1995. The investment in this project has not yet been recovered. The company, however, pays royalties to the OCS. In its other product line - devices for the optic detection of gases - the company has sold samples to gas companies. Halon projects are being developed with the cooperation of the US Air Force and Navy. In the first nine months of 1994 the company reported a net loss of \$3.4, but expects to be profitable in 1995.

A look into the Office of the Chief Scientist

Dr. Y. Gleitman, Chief Scientist at the Ministry of Industry & Trade, started 1995 with a shortfall of

whose projects were approved last year. In 1994 the budget was NIS 1 billion (\$330 million). For this year he is demanding NIS 1.5 billion (\$500 million). The funds are not guaranteed, but an informal agreement exists between the Treasury and himself. The message is that R&D is a national priority. In 1994 the budget was NIS 780 million, but additional payments were approved in the course of the year. The office staff numbers 22, and 60 external professional examiners evaluate projects.

Indigo moves on packaging market

Indigo (NASDAQ: INDGF) has announced the world's first digital color printing technology for the packaging market. Its novel digital offset color press brings on demand offset-quality short run color printing to for the label, packaging and decorative printing markets. The Indigo Omnius press uses a process which allows six-color digital press to print on a variety of materials including paper webs, plastic, foil and fabric to metal cans, plastic bottles and even ceramic tiles. Main packaging markets will now have the availability of short run color printing.

The formation of strategic partners

Strategic partnerships have been formed and they include: printing system original equipment manufacturers, strategic material suppliers, pre-press sellers and strategic customers.

Aladdin reports record sales and earnings

Aladdin Knowledge Systems Ltd. (NASDAQ:ALDNF) reports record sales and earnings for the fourth quarter and for all of 1994. The company produces a professional software protection system. It has sold more than one million units in 60 countries. Sales for 1994 rose by 75% to \$7,385 mil. compared with \$4,213 mil. for 1993. Net income for the year reached \$2,434 mil., an increase of 85% over net income of \$1,317 mil. last year. Sales for the fourth quarter rose by 86% to \$2,538 mil. compared with \$1,364 mil. during the fourth quarter in 1993. Net income for the fourth quarter reached \$774,000, a 50% increase over net income of \$517,000 for the comparable period in 1993. "1994 has been a spectacular year of growth for Aladdin. We have managed to grow while keeping our expenses very tight. The forming of Aladdin Knowledge Systems (UK) Ltd. in June, the appointment of three new distributors in Benelux countries, in Egypt and in Mexico should also result in an increased market share in those regions," the company reported.