

# **CREATING EFFECTIVE VENTURE CAPITAL INDUSTRIES/MARKETS**

**Implications of the Israeli  
Experience**

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# **STRUCTURE AND OBJECTIVES**

***A. Defining and Characterizing Venture Capital (VC)***

***B. The 'Added Value' Contribution of Venture Capital to high tech Start Ups (SU)***

***C. Emergence of Venture Capital in Israel***

***D. Innovation and VC policy broadly defined: Pre-emergence policies and the Yozma Program***

# A1. Definition of Venture Capital -1

## I. Classical Definition (Lerner)

Funds managed by *independent, specialized firms* (usually LP), staffed by full time investment professionals, for *investing in the illiquid securities of high growth companies* (whether or not high tech)

### **Features**

- **A pool of money** “*funds*”
- **A financial intermediary managing the pool** *different from Business Angels* (‘organization’ versus individual; and own funds versus outside investors)
- **Investment Orientation** *equity finance of high growth, private, companies either high tech (SUs) or non-high tech (innovative SME’s)*
- **Motivation** *capital gains*

# A1-2

## II. Strict Definition of VC (VC\*)

*Funds dedicated to the early-stage finance of high tech Startups*

*The main difference from the Classical Definition lies in the investment orientation: high tech (rather than either high tech or non-high tech as long as 'high growth'; and early phase that is at the early, R&D phase in the life of the SU)*

## III. Private Equity (PE)

*Funds oriented to investments in 'privately held' companies i.e not quoted in stock markets and held by 'the public', whether or not high tech and whether or not high growth/young companies (or early stage)*

*PE organizations are thought as financial intermediaries where the dominant investment orientation is not according to VC\**

## **A1-3**

***Note that from a 'pool of money' perspective  
"PE includes VC which includes VC\*"***

***PE-> VC-> VC\****

***These distinctions are critical for countries  
with a strong skill and Science/Technology  
base wanting to promote EHTC. Frequently  
the policies aimed at VC\* and ended up with  
PE***

# A1-4

## **VC/VC\* is a New Intermediation Form**

**Supply Agent:** A new Financial Intermediary, VC rather than banks

**Demand Agent:** A new type of company to be financed

In contrast to established/incumbent corporations which, prior to Venture Capitalism (*itself the product of the ICT revolution*) undertook most of the R&D and the subsequent commercialization, SUs specialize in “R&D/invention”

SU are also distinct from the ‘contract R&D organizations’ which preceded venture capitalism; they operate not only in product markets but also in knowledge and in capital markets

**A new institutional framework:** in the US this required adaptations of Pension Funds’ regulatory framework ***these institutions are the major investors in US VC***

## A1-5

***The VC/SU-related new intermediation form also involved a change in the 'product/service' transacted in the new market***

**Rather than loans we have 'funds (provided against equity)' *bundled with* added value advice and services in the area of strategy, management, marketing, head hunting, certification and networking/opening of doors**

# A1-6

## ***The Multidimensional Nature of VC (and VC\*)***

- VC as a pool of money ('funds')
- VC as organizations
- VC as a new industry and/or market

***In several Avnimelech/Teubal papers we develop the idea that VC is also a new industry and/or market which could or could not emerge. Emergence might be an important policy objective of Governments***

***This view was not the predominant view during the 1990s; and is not the predominant view in Academia nowadays***

## **A2. VC organizations-1**

Organizations undertaking VC investments, there are many types of such organizations e.g Limited Partnerships (LPs)

A VC organization may operate several funds simultaneously.

## **A2: Limited Partnerships (LP's)-2**

The VC is a 'management company' which manages one or more Funds with the objective of profit maximization;

Owners of the management company are 'General Partners'(GPs); external investors in specific funds are 'Limited Partners';

Funds are closed and of a pre-determined duration. GP compensation: 1%-3% of capital + 10%-30% of profits(capital gains). Investors get their money back + profits during operation of fund and profits remaining at end of fund life. Most common in US and Israel

## A2: LP Characteristics-3

- Limited life (7-12 Years)
- 4-8 year **investment time horizon**
- All investment decisions made under the full **responsibility** and exclusive **control** of the fund managers
- Target compounded annual rate of returns (**ROR**) aimed at: in the range of 25% to 100%
- **Compensation:** primarily based upon the actual performance/capital gains of the investments made (share in earnings 10%-30%)

## A2. General Partners: Background and Role- 4

### Who they are

- **Successful Entrepreneurs**
- **Investment Bankers**
- **Business Consultants and Strategists**
- **Senior Managers from a Variety of Industries**

### Role in the VC Cycle (Gompers and Lerner 2004)

- **Organize Fund & Raise Capital for Potential Investments**
- ***Due Diligence*, selection of Investment Proposals & *Investment***
- ***Monitoring and Added Value Activities*: Mgt, Involvement in Business Development & Providing Networks for the Portfolio Companies**
- ***Harvest/Exit* (e.g. M&A or IPO) of Investments**

## A2. Limited Partners (Investors)-5

### Who they are

- **Institutional Investors: Pension Funds, Endowments & Insurance Companies**
- **Individuals: High Net Worth Individuals**
- **Strategic Investors: High Tech Corporations**
- **Foreign Entities/ Foreign Direct Investors**

### Role in the VC Cycle

- **Suppliers of 90-99% of Capital for 70-90% of Capital Gains**
- **Passive: No direct involvement in Investment Decisions**
- **Limited Liability**
- **Networks**

## A2: Advantages of LPs-6

***Taxation-***'pass through' *not available to 'firms' like public VCs*

***Flexibility-***not regulated as public VCs

***High Powered Incentives-***compared e.g to 'affiliated' [rather than independent'] VC organizations e.g Intel Capital

## A2. Other VC (or VC-related) Types of Organization-7

- ***Public VC companies:***

Independent VC companies quoted in stock markets; first VC organization in the US (ARD founded in 1946) and one of the earlier types in Israel (Inbal Funds of 1992). *Major Issue: what are the disadvantages of Public Funds compared to LP form of VC organization?*

- ***'Affiliated' VCs***

***-Corporate VC:*** organizations affiliated to corporations. Objectives: 1) investing in 'complementary technologies' to those of the corporation (or creating future 'options' *i.e* '***strategic goals***); 2) profits (***financial goal***). Constraints on how much compensation to managers of funds.

***-Affiliated to Financial Institutions:*** only financial goals; also constraints on compensation.

## A2-8

- ***Angels***

wealthy individuals (either entrepreneurs with experience or individuals without) who invest their own funds directly in SU companies

- ***Private Equity Companies***

They invest both in high tech and in non high tech companies; and on SU and post SU phases. They include VC organizations.

# A3.Venture Capital 'Cycles'-1

## *There are two notions of VC Cycle*

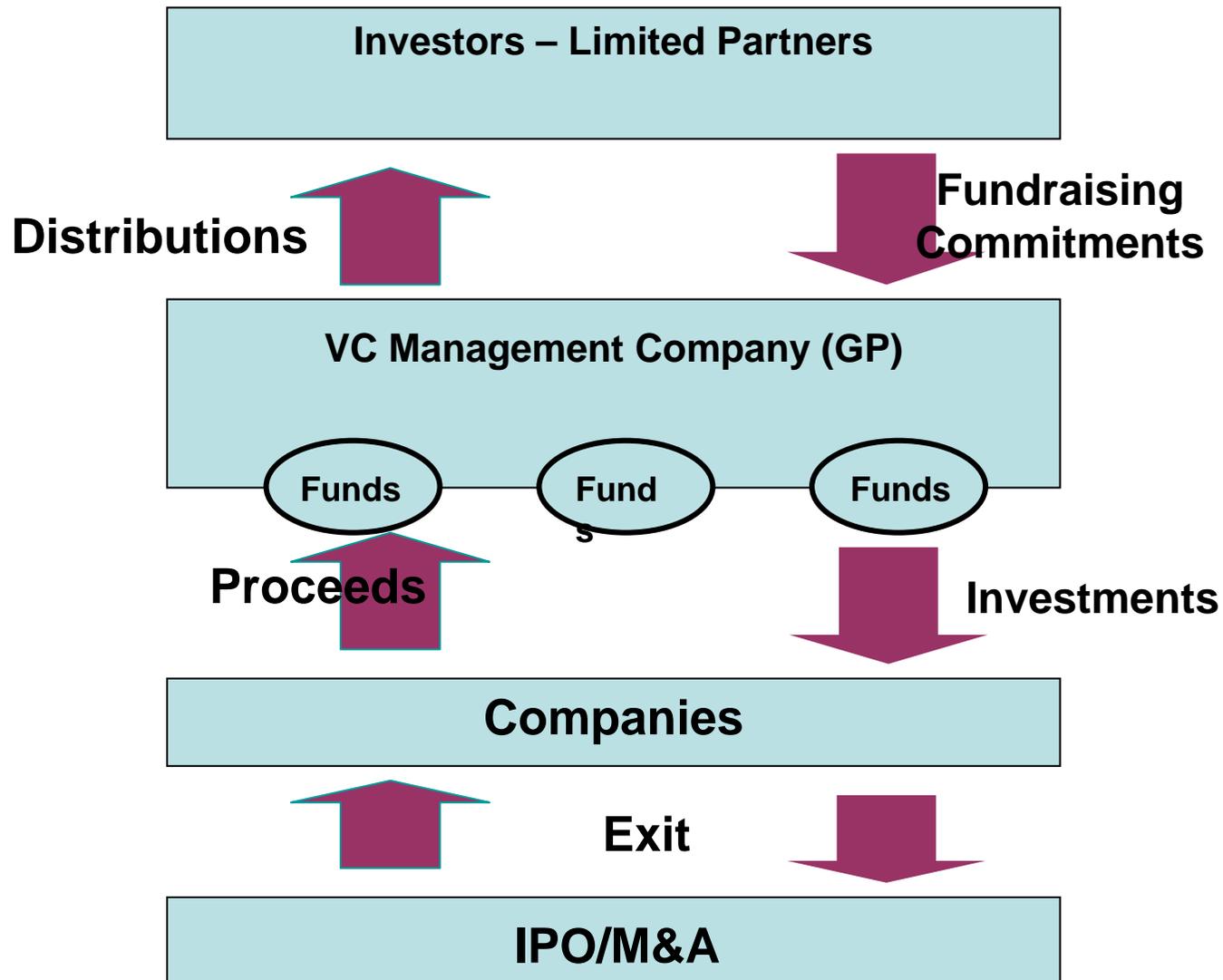
- 'Operational' VC Cycle
- VC Industry/Market 'Evolutionary Life' Cycle

## *Operational VC Cycle*

Put forward by Gompers and Lerner (1999,2001,2004), it refers to the typical cycle of a specific fund of an LP VC organization. The cycle begins with ***Fundraising*** where commitments from investors are obtained; ***Due Diligence and Venture Investing*** in SU companies; ***Monitoring and Added Value Services*** to such companies; and ***Exiting of Investments***(typically IPO or M&A)

This is represented in the graph of the next page

# A3: Operational VC Cycle- LP case (Gompers & Lerber 2001)-2



## A3-3

### ***VC Industry/Market 'Evolutionary Life' Cycle***

In Avnimelech & Teubal 2004,6 we analyze the Emergence of a VC/VC\* market & industry (& Entrepreneurial High Tech Cluster) in Israel and the role of policy in the process

*In contrast to how an existent industry or VC organization operates, the question we ask is: 'when will a VC\* industry and/or market emerge and what could be the role of policy in the process'*

4 Phases were identified in the Israeli case

- Background conditions phase, 1969-84
- Pre-Emergence phase, 1985-92 (related to the Fluid Phase of Abernathy and Utterback 1978)
- Emergence, 1993-2000 (related to A & U's Growth Phase)
- Crisis and Restructuring, 2001-2004 (related to A&U's Mature Phase)

## ***B. The 'Added Value' Contribution of Venture Capital to high tech Start Ups (SU)***

**VCs with strong capabilities provide 'added value' in addition to finance to their portfolio SUs.**

**I. There are various aspects of this 'added value', I will refer to those aspects for which I have (mostly Israeli) examples**

- ***Strategy***-helping the SU define their product/market
- ***Management***-up to the point of a VC general partner taking over the mgt of a SU till a new manager is appointed

## B-2

Continued-

- ***Head Hunting***-helping to identify a (e.g. foreign) manager for the US operation of the SU, especially after the R&D phase
- ***Global Partnering***-critical for the post R&D phase, for penetrating foreign markets
- ***Opening of Doors***-e.g of important User organizations in order to test the product; of Investment banks for underwriting an IPO
- ***Accessing Complex Complementary Assets***-reduce Transactions Costs in commissioning co-specialized complementary assets (Teece 1986, and recent literature). See also global partnering

## B-3

- ***Reputation***-getting a top tier VC to invest in one's SU also signals 'quality' to other agents (users, partners, suppliers, competitors)
- ***Identification of Exit Opportunities***

**II. There are several points that have to be mentioned with regards to the possibility of providing timely and adequate 'added value' to portfolio SUs**

1. **VC capabilities are important**
2. **They depend on VC manager background: science/technology/engineering (and even better a this with a background of management) or finance/economics**

## B-4

**3. Added Value also depends on VC organization and Strategy (some believe because of possibilities of providing 'high powered incentives').**

*Thus the flexibility of LP form of organization (which is not regulated, in contrast to 'public' VCs) may enhance the timeliness of 'added value'*

**4. Which VC capabilities depend on area e.g it is generally believed that the capabilities required for ethical drug development are much greater than for many ICT areas**

*In Israel an ICT oriented VC industry emerged during the 1990s, with relatively few capabilities in the life sciences area.*

## B-5

5. There could but need not be one 'optimal' form of VC or VC-related organization (despite the fact that in the US and Israel LPs emerged as the dominant form)

*In some contexts angels may play a very important role e.g in Scotland in the Life Sciences;*

*it also may depend on the phase of evolution of the VC industry: at the pre-emergence phase a variety may be desired in order to experiment with and in order to identify or select a 'most desirable form'\*; whereas for emergence it may be desirable to focus on a dominant VC organizational form*

*\*similarly at the mature phase and because of the need to accommodate different types of SU- variety in order to re-invent the underlying entrepreneurial high tech cluster (EHTC), it may be desirable to have a variety of forms*

## **C.EMERGENCE OF VC IN ISRAEL**

- ***Israel succeeded during the 1990s in creating a high impact domestic Venture Capital (VC) industry/market; and a 'related' Silicon Valley model of high tech cluster (EHTC= Entrepreneurial High Tech Cluster)***
- ***These achievements enabled that country to latch into the ICT Revolution and to favorably exploit the opportunities opened by the Globalization process***

# C1-2

- ***The EHTC developed during the 1990's was (maybe together with the one in Cambridge, UK) one of the most successful EHTC's developed up to then outside of North America***

**At least 2500/2000 Start Up SU foundations during the 1990s ; the number of organizations involved in VC rose from two or three to about 100/130; total capital under management reached 8.5 B\$/10B\$ level.**

# C1-3

- ***Up to the 1990s several attempts by other countries in Europe (either through the promotion of VC or through other policies e.g Germany and even Ireland and Finland) to promote SUs and/or EHTCs were not so successful or failed outright***

## **C1-4. *Why an interesting case?***

**Our detailed, rather comparative, analysis of the emergence of Israel's VC/EHTC suggests two implications of the case and of its methodology of analysis**

**First, while the Israeli example cannot be copied, *specific aspects of the underlying process could be of interest to other countries/regions* interested in developing VC/EHTC or other innovative SMEs-based Entrepreneurial Clusters**

**e.g *Yozma Program* (the targeted policy now being emulated elsewhere); and other VC-directed and VC-related policies**

## C1-5

*Second, the methodology & theor. framework used in the analysis (the emerging Systems-Evolutionary, S/E perspective) may help frame policies in other complex & dynamic environments*

They may be of interest to other regions/countries including industrializing economies (and not only those interested in entrepreneurial high tech clusters)

*This is so since Innovation and VC policy cannot be designed/implemented from a static perspective*

## C2. DATA ON ISRAEL'S EHTC OF THE 1990s

### Venture Capital

- *VC raised increased from 58M\$ in 1991 to 4.557 M\$ in 2000 (back to 558M\$ in 2003)*
- *VC invested as a share of GDP rose from 0.4% in 1997 to 2.6% in 2000 (and back to 1.2% in 2004)- highest share among OECD countries*
- *High (est) share of VC investments in 'early phase' (e.g SU up to 5 or 6 years of age)*

## C2-2

*High share of VC entrepreneurs with S&T backgrounds and with high tech experience*

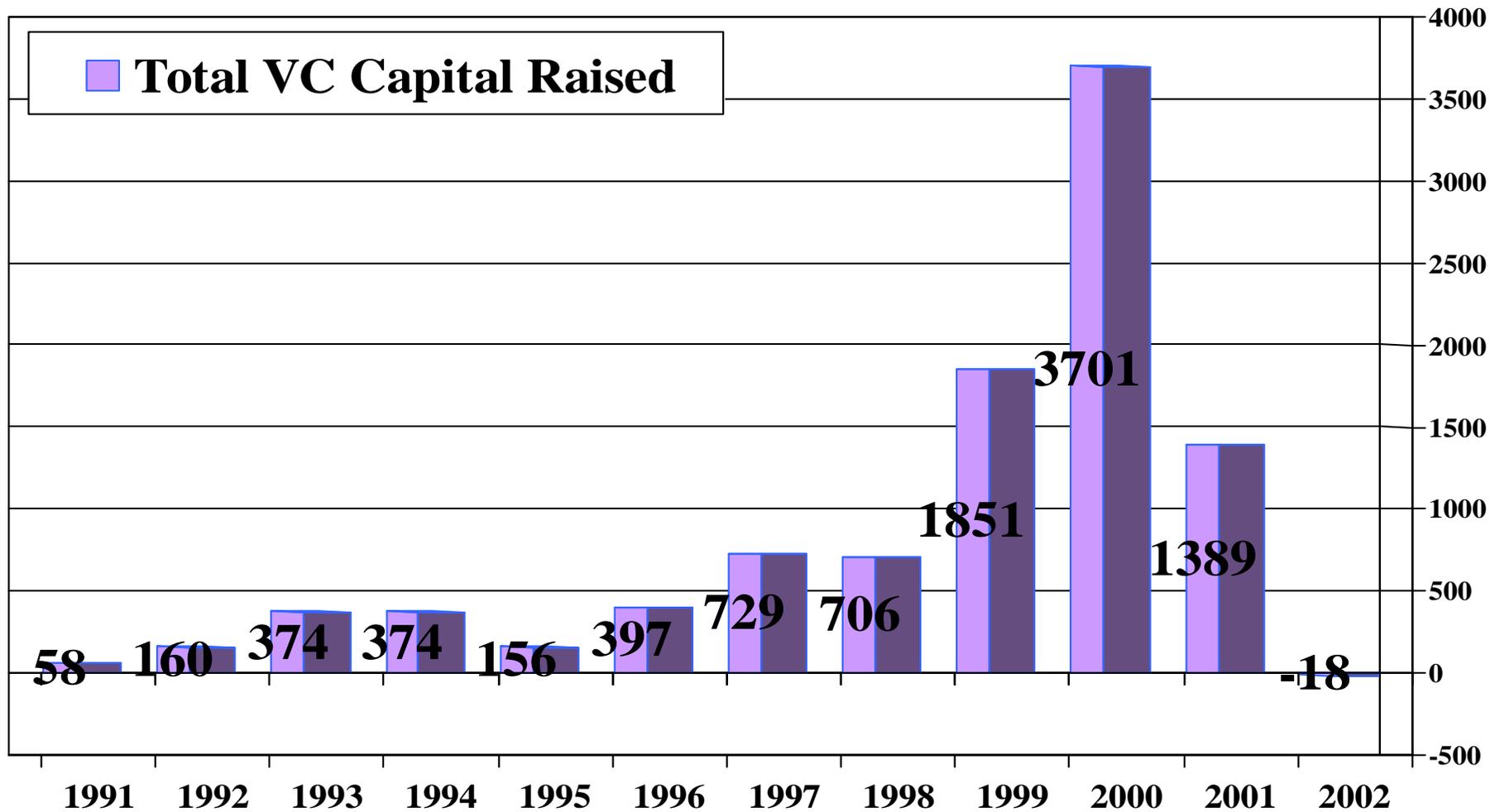
*90% of funds coming from foreign sources*

*Negligible investments by Domestic Pension Funds*

*Dominance of Limited Partnership form or organization*

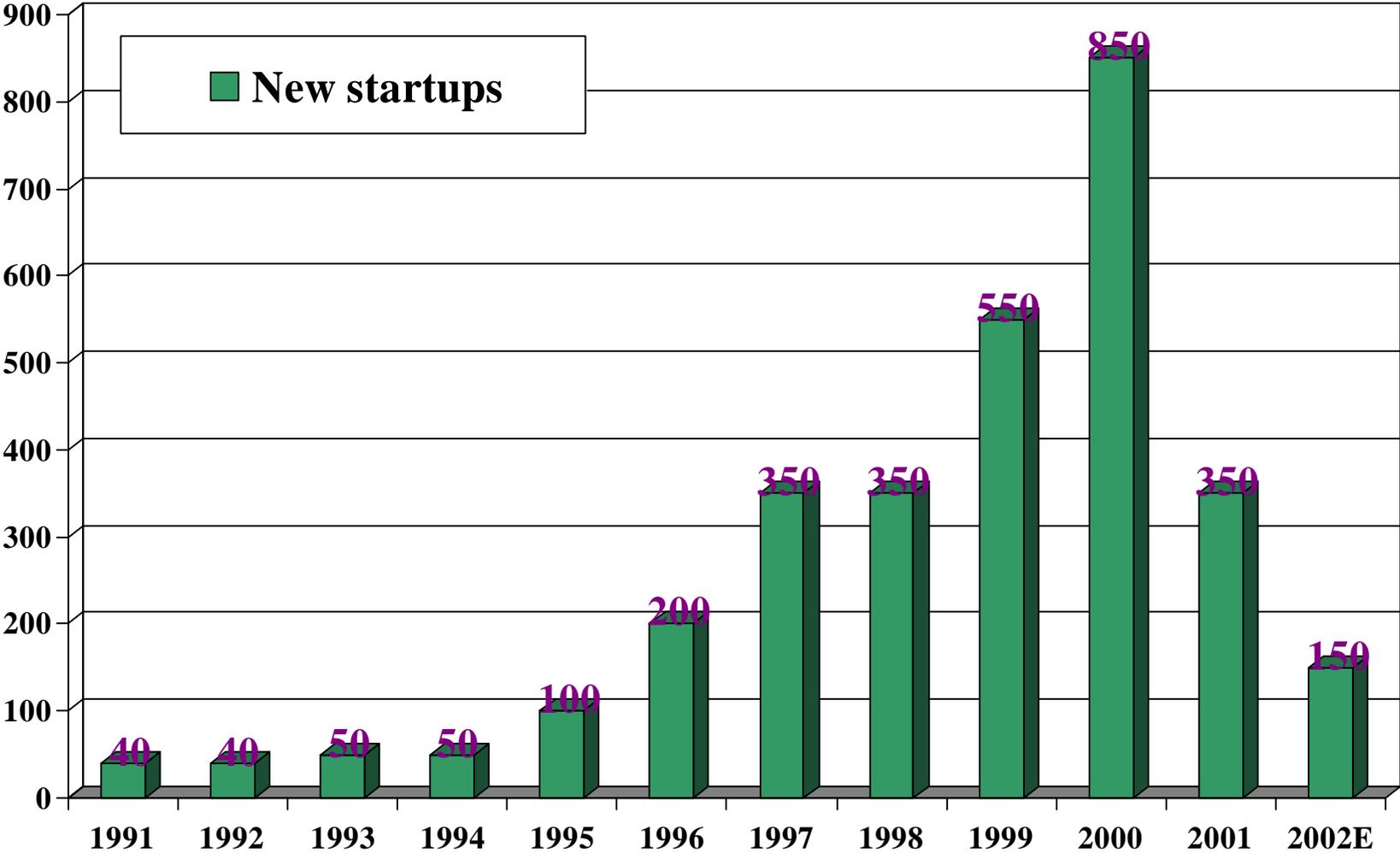
*VC co-evolved with High Tech (particularly SU segment)*

# Acceleration of Rate of Growth of VC Activity Figure 1: Capital Raised by the Israeli VC industry: 1991-2002



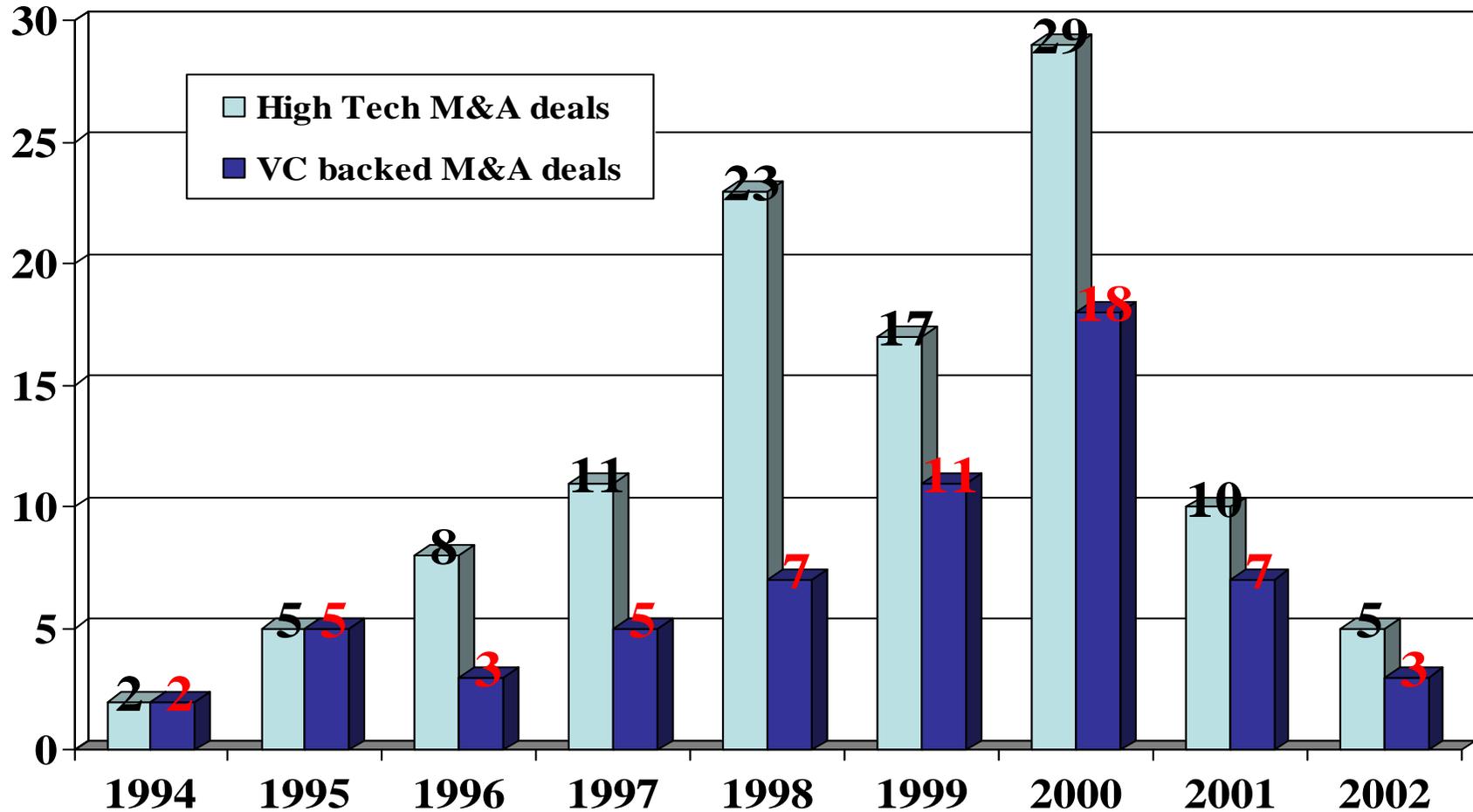
Source: IVC

# Figure 2: Foundation of SU companies: 1991-2002



Source: IVC, D&A, D&B, S&P, OCS, CBS and other sources

# Figure 3: Israeli high Tech companies which were Targets in M&A deals 1994-2002



Source: Avnimelech 2002

**Table 1: The 1990s compared with previous decades**

<b>Decade</b>	<b>90s</b>	<b>80s</b>	<b>70s</b>
Accumulative Number of Startups established:	~2,500	~300	~150
Accumulative Number of VC Companies:	~100	3	0
Capital Raised by VCs: M\$	10,000	~50	0
Capital Invested in Israeli Startups: M\$	~6,500	~100	0
Accumulated No. of High tech IPOs (in NASDAQ):	~150	~10	1
Accumulated capital raised by SU in IPOs (in NASDAQ and EU capital markets) and in M&As: B\$	~35	<0.5	<0.25
Share of hi-tech Exports in Total Manufacturing Exports	58%	40%	~25%
Share of high tech industries in Total Manufacturing Sales	34%	24%	~18%

**Table 2: Israeli Software & Electronics Sale (M\$)**

	<b>1991</b>	<b>1995</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
<b>Software Sale</b>	540	950	2,950	3,700	4,100	2,800
<b>Software Export</b>	110	300	2,000	2,600	3,000	1,900
<b>Electronics IT sales</b>	3,600	5,900	8,600	12,500	11,500	9,700
<b>Electronics IT Export</b>	2,300	4,300	7,100	11,000	9,800	8,200

## **C2-7: Summary of EHTC towards 2000**

***Numbers of SU created: 2,500***

***Accumulated VC funds raised: 8,500 M\$***

***VC Investments in Israeli SU: 6,650 M\$***

***Accumulated Nos. of IPOs: 126***

***Accumulated VC-backed IPOs: 72***

***Accumulated Nos. of significant M&A by MNE: 75***

***Number of VC companies: 100***

***Share of ICT exports in manufactured exports (end of decade): 54%***

***Civilian R&D as a share of GDP: 4.3% (2004)***

***Three/Four fold increase in ICT output/exports->13 B\$***

### **C3. AN EXTENDED INDUSTRY LIFE CYCLE (ILC) PERSPECTIVE TO VC/EHTC EVOLUTION**

*(1) Background Conditions (1970-1984)\**

*(2) Pre-Emergence Phase (1985-92)\**

*(3) Emergence Phase (1993-2000)\**

*(4) Crisis and Restructuring (2001-2003)*

*(5) Consolidation Phase (starting in 2004)*

## **C3-2: (Some) Background Conditions Phase(69-84)**

***Strong STE infrastructure*** for historical reasons ***and continued support till after 2000***

- ***Clear ‘market/system’ failure regarding BS R&D/Innovation*** export of textiles & oranges, not high tech
- ***Creation of the OCS as a specialized agency (part of Ministry of Industry/Trade) in charge of promoting BS R&D***
- ***Backbone Policy: A Successful Grants to BS R&D program which Directly supported projects at firms. Horizontal Support with neutral incentives at firm level***

## **C3-3: Pre-Emergence Phase(85-92)**

### ***New opportunities in the global environment (globalization and technological revolution)***

Begginnings of Software industry, de-regulation of communications markets, liberalization of trade and investment, globalization of NASDAQ (→ first IPO of a non-profitable Israeli SU in 1991)

### ***Increase in R&D in Israel's BS and begginings of a Civilian-oriented high tech industry***

***Creation of new SUs, new entrepreneurs and  
Business Groups, foundation of some of  
what would become the largest ICT  
companies of the 1990s e.g the RAD group,  
Formula, Comverse, Amdox***

## C3-4

### ***Significant Business Experiments involving both SU and VC***

In order to exploit the new opportunities also in capital markets. The strategy of SU became 'born global' towards the end of the Phase; and oriented no less to global capital/knowledge markets than to global product markets

There was not yet a VC industry, only about 2-3 formal organizations (Atena, Star). Still many individuals (also from abroad) searched for investment opportunities, and to perform part of the functions a VC industry would perform

'Selection' (both by the market and also through Yozma—see below) of the Limited Partnership form of VC organization

### ***A critical mass (about 300) of SU by 1993***

→ Demand for the services of a future VC industry

## C3-5

***A number of IPOs in NASDAQ by incumbent companies*** Scitex, Tadiran, Teva → new links with global capital markets

### ***Consolidation of External Networks and Links***

With Nasdaq, business links from the BIRD program, Defense links, Israeli Diaspora and returning Israelis, Academic Links

## C3-6

### ***Significant Restructuring of Defense Industries and reallocation of highly skilled manpower to Civilian industry***

Partly a result of Macroeconomic constraints and of cancellation of large military projects. The restructuring affected also the allocation of future *flows* of skills (new graduates from Universities, inmigrants)

### ***Liberalization of Capital and Foreign Exchange Markets***

Critical for future flows of foreign capital to VCs and SUs

## **C4-1: VC/EHTC Emergence(93-2000)-1**

***During 1993-2000, VC activity & SU foundations accelerate and a new EHTC emerged involving a quadruplication of high tech exports see C. above***

***This was the outcome of a 'cumulative process with positive feedback' [autocatalytic, or dynamic increasing returns see below] process, triggered by a targeted VC-directed program Yozma see below)***

## C4-2

***That process built upon very favorable Phase 2 pre-emergence conditions part of them the result of policy, see D(2)***

***Moreover the domestic and global contexts was very favorable***

- *growth in the NASDAQ index and globalization of these and of knowledge markets,*
- *growth in global technology markets*
- *highly skilled immigration from the former Soviet Union*
- *The Oslo Peace Process*
- *Continued ICT revolution (e.g the Internet); etc*

## C4-3

***Still, the cumulative process of emergence would not have happened without a new targeted ITP program-Yozma; and without luck!***

***The timing of Yozma and its design were crucial-see below.***

***So (and partly related to this) was the preparatory 'policy learning' process which took place during the late 80s and early 90s e.g 'selection' of the LP form of organization; and the requirement for the supported 'Yozma Funds' to partner with reputable foreign financial institutions***

## D. Yozma program (1994-7/8)-1

### *Background & Objectives*

- **Identification of the System Failures** constraining the growth of high tech: (early 90s): *Absence of a VC industry*
- **Creation of stable, competitive, domestic VC industry with strong capabilities**
- **Ensuring minimum government intervention** in management
- **Generating a critical mass of VC activity** (for triggering a cumulative process of emergence)
- **Linking with & Learning from foreign partners**

## **D-2. Yozma Design**

- ***Government VC component***

**A \$100M Government venture component which leveraged an additional \$150M of private capital**

- ***Fund of Fund***

**In each of the (10) Yozma funds supported, the government invested 40% of the capital raised - 8 M\$ (size of funds \$20M)**

- ***Incentives to the upside***

**The privately held 60% had a 5 years option to buy the government share at initial value plus interest**

## D-3

- Focus on ***Early Stage investments in purely high tech SU***
- ***Adoption of LP form of VC organization***
- ***Requirement to partner with a reputable foreign financial institution*** e.g Advent, not a requirement in e.g the Irish case
- ***All management companies were Israeli entities which included partners from both Israeli financial institutions and foreign (US) PE (VC) entities.***
- ***Some selection of Teams***

## **D-4: The Cumulative Process Triggered by Yozma**

***A number of sub-processes were involved including those listed below. Overall, the first ones began operating earlier than subsequent ones (except VC-SU co-evolution which operated throughout VC emergence)\*. A major motivation is 'high and increasing profitability, but there are also 'strategic reasons'***

***Ascertaining the 'nature', 'strength', 'phasing' and 'impact' of each one of them; and their mutual re-enforcement requires additional empirical analysis and additional tools***

## **D-5**

- 1. *Yozma (and 2-3 other 'early') VCs created follow-up funds***
- 2. *Entry of new, non-Yozma linked VCs***
- 3. *Successful Exits → enhanced Reputation***  
Of individual VCs, SUs and of the emerging EHTC
- 4. *Entry of a variety of world class/high profile foreign agents***

## **D-6**

***Financial Institutions, strategic partners (IBM, Nokia, Intel), direct (& indirect through 'corporate' VC arms) investments and M&A, etc***

***5. Entry of Investment Banks →... →***

***6. VC- SU co-evolution-not a separate process***

***7. 'Cluster Effects'***

## **D-7**

**Foreign agents, foreign capabilities and foreign capital played crucial roles- a crucial contextual factor, the result of Globalization.**

**Their contribution was both quantitative and qualitative e.g. entry of a high profile agent signalled to others their belief that Israel was a good place for high tech investments. Their participation in the process opened up new possibilities for creating new companies and for accessing global product and global capital markets**

# CONCLUSIONS

*The ICT revolution has potentially created new possibilities for specialized inventor companies-high tech start ups (SU)*

*Materializing this possibility, however, requires new, specialized SU support systems, of which Venture Capital (VC) is probably one of the most important*

*Without an effective VC market and industry operating domestically ( this, with the deepening of globalization-and ignoring for the time being the current global financial crisis-could increasingly, but still in a partial way, include foreign VCs) the potential of a country to sustain large numbers of SU will be extremely limited [in some ways this was part of Europe's problem, at least in the past]*

## **-2**

***This in turn might affect Europe's capacity for innovation and structural change-based economic growth.***

***An Effective VC industry/market has to be able to provide 'added value services' i.e not only financial support, which may be critical especially in the initial phase of 'emergence' of an ICT (or Life Sciences) cluster involving many SU***

***This in turn means that the industry must possess strong capabilities, reputation and be highly networked globally***

***The fact that 'money and monetary incentives are not enough' enhances considerably the policy problem facing policy makers in Europe***

**it may also explain why policy up to and including the 1990s in many countries of Europe, with some exceptions, had quite weak effects**

## **-3**

***The Israeli experience strongly suggests that, despite the possibility of accessing 'global resources' for the above tasks of building effective VC industries, local capabilities in relation to innovation, SU and domestic VC organizations are also important***

**This view also coincides with the view that effective Transfer of Technology also requires domestic capabilities (e.g to be able to identify, select, negotiate the technology to be transfer and to adapt it to domestic conditions, while also providing it with a dynamic of improvement over time).**

**In this context it is useful to regard the development of VC industries as involving the '*transfer of social technologies*' (Nelson 200X), which frequently are even less codified than physical technologies**

**-4**

***Development of such capabilities is an Evolutionary Process, which in Israel took at least 25 years (and involved not only firms and SU but also the Science, Technology and Higher Education infrastructure and Defense R&D).***

***Therefore effective VC policies may also require an Evolutionary (or Systems-Evolutionary) perspective.***

***In some cases a distinction could be made between policies at the pre-emergence phase oriented to the creation of favorable conditions; and policies for triggering and sustaining emergence.***

## **-5**

***The Israeli case also suggests—beyond the creation of innovation and STE capabilities on a wide front, and beyond ‘experimentation and learning’ concerning adequate VC and SU organizational forms- that an important pre-emergence phase Policy Objective would be the creation of a ‘critical mass of SU’.***

**This would create ‘Investment Ready opportunities’ and therefore a domestic ‘demand’ for the services of the *future* VC industry (it will also stimulate foreign VCs to open offices in the country/region)**

***We conclude that the experience of the last 20 years may be valuable for policy makers, but these would have to adopt a non-conventional perspective which emphasizes no less than ‘the here and now’ an evolutionary and systems of innovation perspective, where policy-oriented analysis underpinns actual policy and where the creation of policy capabilities ( strategic ones) should become a central thrust of policy making***