



The start-up nation: **cosa ho imparato dal viaggio** **di studio in Israele**

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Facts and figures



- ❑ World's highest R&D exp. (4.65% of GDP, twice the OECD average)

- ❑ Leading in number of start-up companies per capita

- ❑ Large hub for VC backed ventures: 2,300 Vs. 5,000 in the US

- ❑ 2nd only to the US in NASDAQ traded companies



- ❑ Most of the big players have established R&D centers in Israel



Facts and figures

❑ 2nd among OECD countries in tertiary education (46% Vs 32% avg.)

❑ 5th among OECD countries in education exp. (7.4% of GDP)

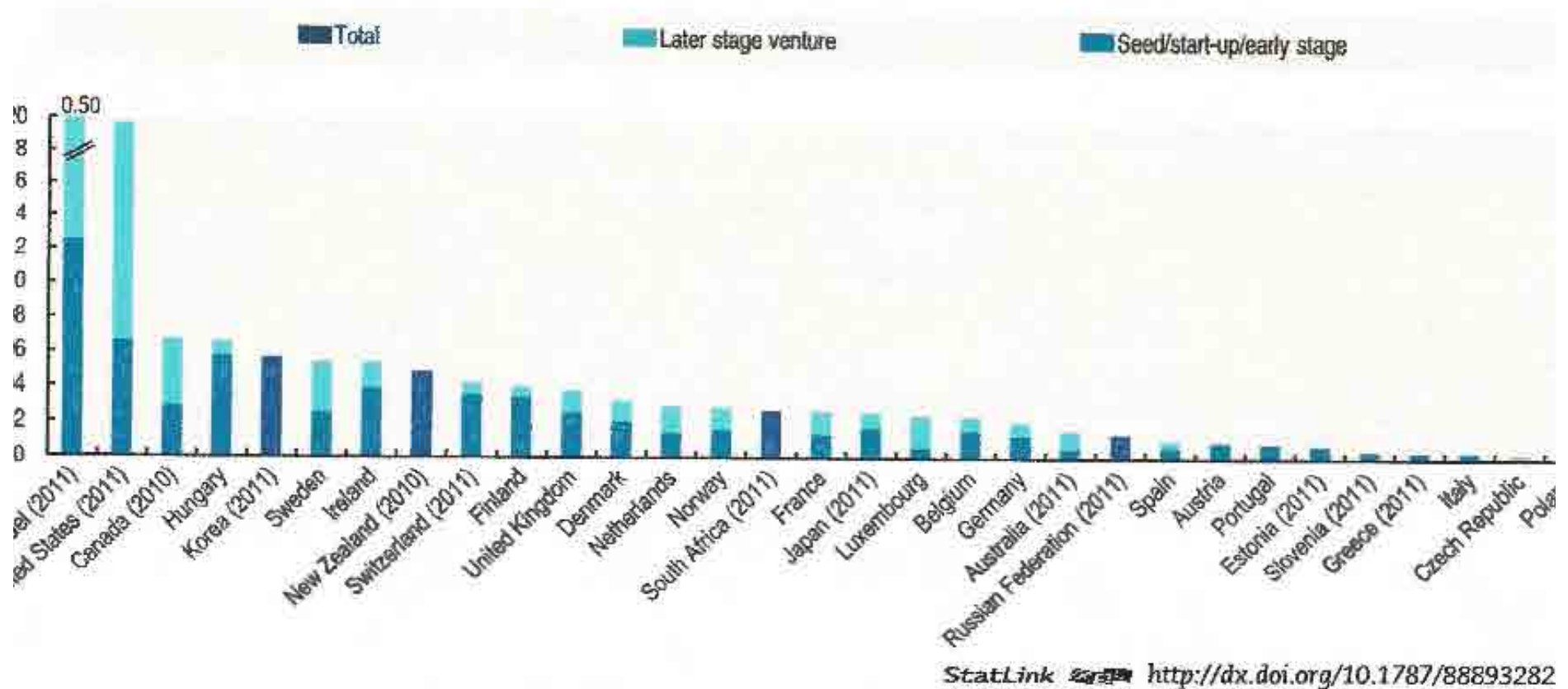
❑ 1st in terms of no. of scientists/engineers per capita: 14/1,000

❑ Leads OECD countries in terms of no. of PCT patents per capita

❑ Leads in terms of no. of scientific publications

VC investments in Israel

Figure 6.9. Venture capital investments as a percentage of GDP (US dollars)
Percentage, 2012





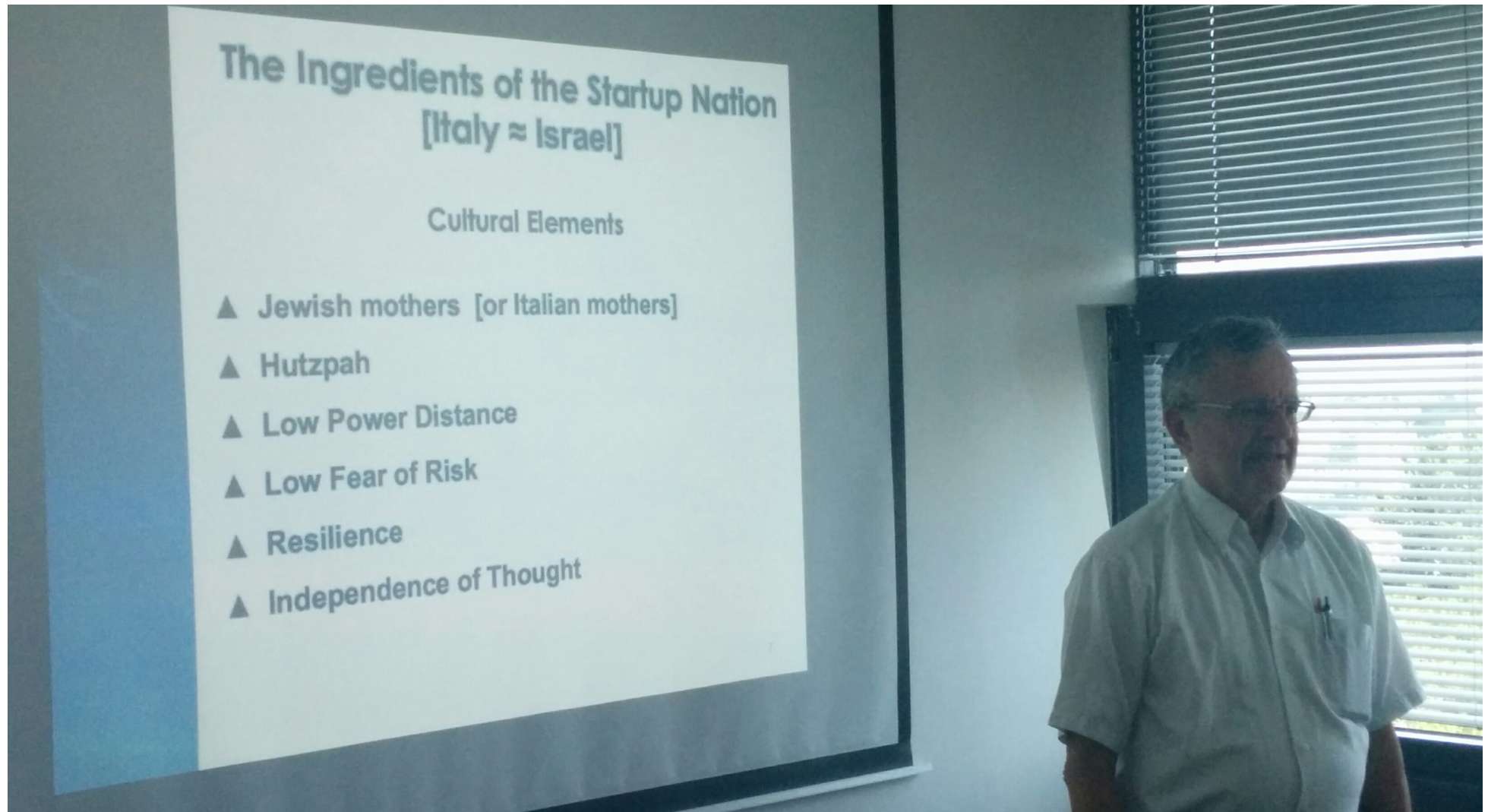


I suggerimenti della *Lonely Planet*

- Il numero di ERC vinti nelle università
- Le start-up che puntano subito al mercato globale e quindi a quotazione in borsa o roba del genere
- Tutte le università hanno una società esterna per il TT
- Esistono incubatori privati specializzati e certificati
- L'investimento in centri multidisciplinari del Technion
- Il ruolo dell'Office of the Chief Scientist e il sistema di finanziamento delle start-up
- Il ruolo degli investimenti nel settore militare
- L'obiettivo di ricevere immigrazione qualificata

Gli israeliani

- Come noi, gli israeliani non amano molto la gerarchia; sono pronti a improvvisare e sono piuttosto individualisti. E' vero che sono abituati alla vita militare, ma anche nell'ambito di tale vita sono abituati ad agire individualmente e a sfidare la gerarchia (low power distance)
- Israele è un paese piuttosto piccolo e nell'ecosistema dell'innovazione si conoscono tutti. Tutto sommato funziona così anche in Italia
- In Israele i denari pubblici spesi nel settore della difesa e del VC hanno dato risultati eccezionali, facendo partire molte iniziative private
- In Israele c'è un meccanismo moltiplicatore che moltiplica per n ogni investimento di privati o di VC. Si tratta di un meccanismo utilizzato molto spesso dall'Office of the Chief Scientist
- In Israele sembra che fare impresa abbia ancora uno "scopo collettivo", oltre a quello personale. Anche i giovani sentono molto il senso della nazione e fare impresa vuol dire per loro contribuire al futuro

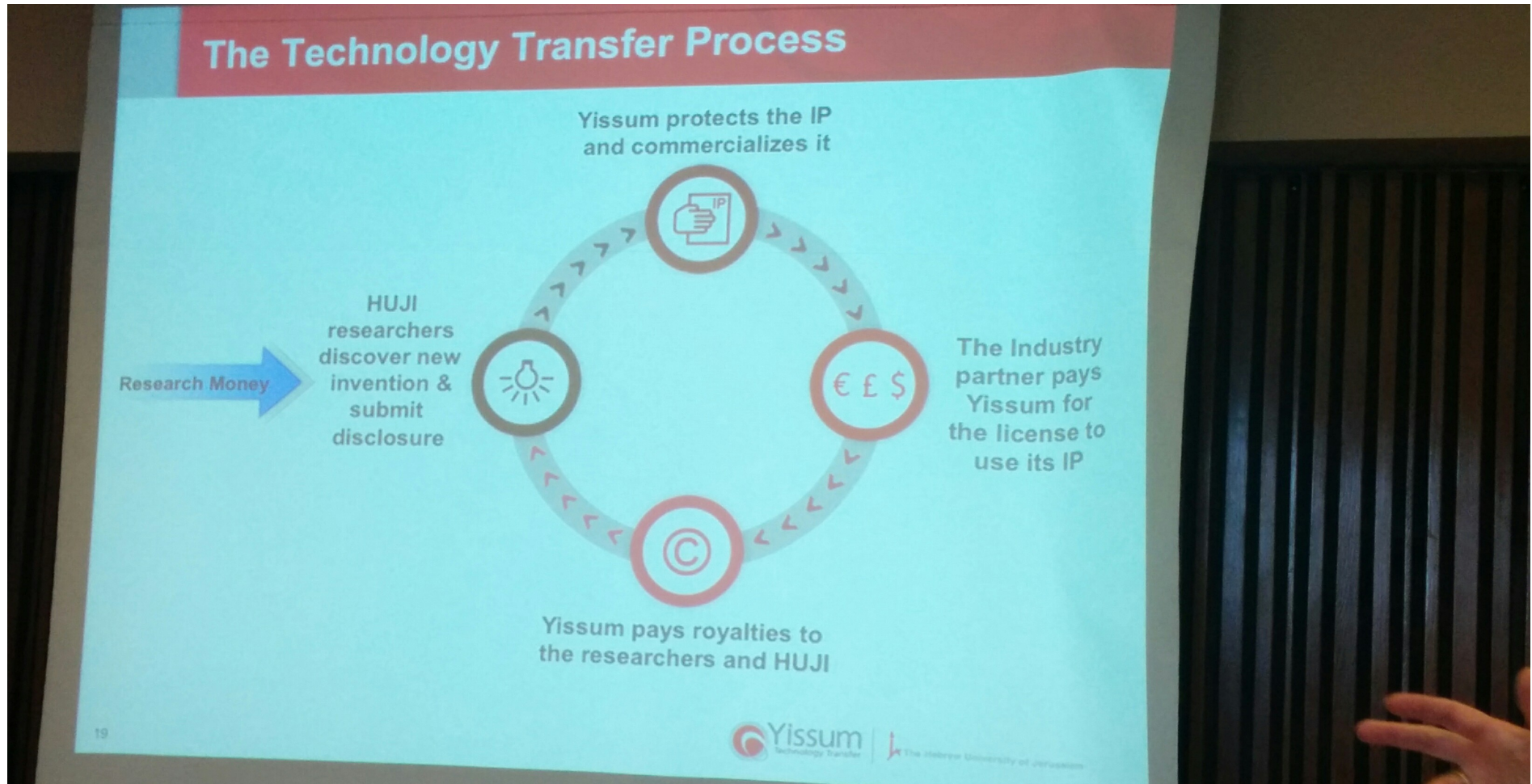


VC e incubatori

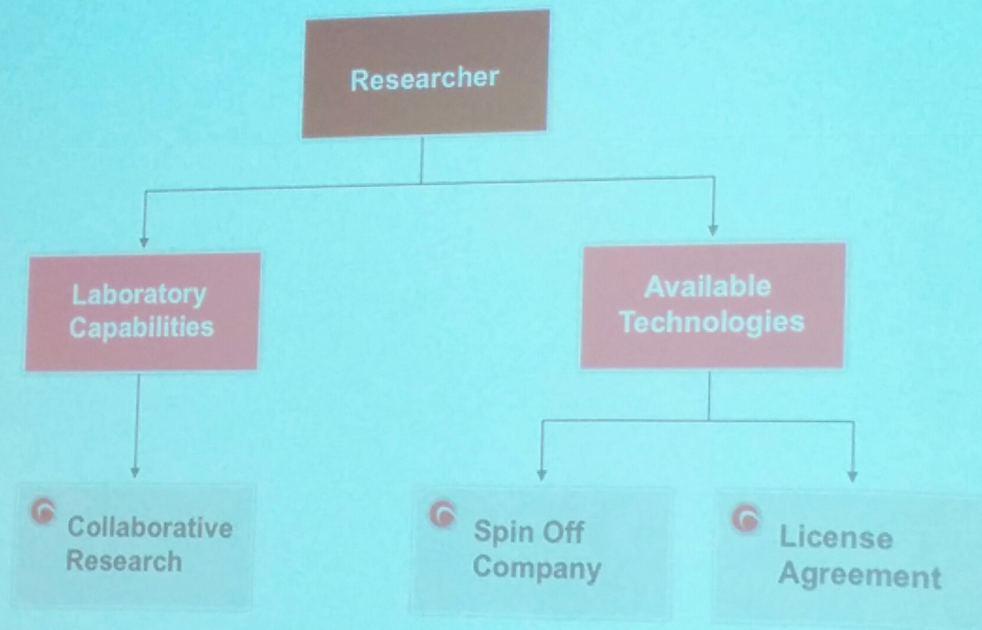
- Lo Stato conta! In Israele per portare il VC che non esisteva, lo Stato ha messo dei finanziamenti di tipo 1+1. Se un VC portava 1, lo Stato gli regalava un altro 1. In questo modo agli inizi degli anni novanta sono partiti 10 fondi ed ora non c'è più bisogno di quello specifico metodo di finanziamento. In realtà lo Stato si è anche riportato a casa buona parte di ciò che aveva investito perché c'è una clausola che dice che in caso di successo - solo in quel caso - i soldi vanno restituiti a poco a poco. A quel tempo non c'era un settore high-tech in Israele. Le persone che oggi lavorano nel VC vengono da esperienze in impresa e/o nell'esercito (dove si lavora sulle tecnologie, la leadership, dove si fanno contatti, ecc.)
- Per le spin-off sono importanti le partnership con grandi gruppi industriali, che in Israele sono presenti
- Lo Stato d'Israele ha capito che oggi c'è un fallimento di mercato nel seed investment. Pertanto ora lo Stato fa il matching con un risk free loan di un max di circa 450KUSD che deve essere ripagato, solo in caso di successo, con royalties sulle vendite. Lo Stato ci mette l'85% e i finanziatori, come gli incubatori privati, il 15%. In questo modo, un VC come JVP, magari inizia con questo tipo di grant e poi passa ai JVP Labs e solo dopo ai JVP funds veri e propri
- In Israele ci sono 20 incubatori e ogni anno nascono circa 80 startups con questo State Grant. Secondo le statistiche di JVP, il 30% poi fallisce, il 30% fa un X1, il 30% fa un X2 e il restante 10% fa veri profitti

Hebrew University

- Alla Hebrew University hanno Yissum, che funziona esattamente come ISIS Oxford. Ogni università israeliana ha una società esterna, totalmente controllata, che si occupa di trasferimento tecnologico. Yissim esiste dal 1964 e solo dopo 20 anni è andata in pari. Ora fa profitti, quasi solo con farmaci blockbuster. Quando Yissim brevetta un'invenzione, lo considera un investimento e inizia a lavorarci. In 50 anni, 8537 brevetti, 2403 invenzioni, 725 licenze e 88 spin-off
- Il Netval locale si chiama ITTN
- I ricercatori ricevono il 40/60% delle revenues
- Nel 2013: 170 invenzioni e 47 brevetti
- Ma non è solo una questione di denaro. A loro preme l'IMPATTO sulla società
- In questa università quando emettono dei bandi per nuove persone, non specificano neanche il settore. Tutte le volte che una STAR presenta domanda, loro la prendono, anche se appartiene ad un settore in cui sono già coperti. Una STAR fa sempre cose importanti. Se viene uno in settore nuovo, iniziano con il dargli 1 milione di Euro per avviare il laboratorio



Yissum's Business Model



Incubatore Kinrot

- Tutti gli incubatori “certificati” presenti in Israele sono specializzati in uno specifico settore
- L’incubatore Kinrot esamina annualmente circa 100 start-up all’anno
- L’Office of the Chief Scientist (OCS) effettivamente finanzia le start-up partecipate dagli incubatori (che sono privati), ma è anche vero che regolamente – prima e dopo i finanziamenti – manda degli osservatori fisicamente presso gli incubatori. Teniamo presente che gli incubatori prendono tra il 30 e il 50% del CS delle start-up e lo fanno usando finanziamenti pubblici!
- Guardando questi incubatori, si ha forse anche l’impressione che in Israele si faccia “di più, con meno”. Per esempio, le strutture sono spartane e non si nota ridondanza di personale gestionale. Però si ha l’impressione che non si risparmi sull’attività di ricerca!



Weizmann Institute of Science



- Hanno solo graduate studies
- Ricevono un sacco di donazioni
- Formano il 30% dei PhD students in Israele
- Anche loro hanno una società per il TT che si chiama YEDA (che vuol dire know-how in ebraico). YEDA impiega 14 persone
- Il Vice-President del TT di Weizmann Institute è il chairman di YEDA
- Presso il WI almeno 18 docenti/ricercatori sono milionari. Tra i beneficiari dei ricavi hanno inserito anche i contributors (immagino quindi i tecnici, ecc.) e non solo gli inventori
- In caso di ricerca finanziata dalle imprese, le imprese hanno 90 gg. di tempo per brevettare un'invenzione ottenuta dal WI, dopodiché il WI è libero di pubblicare
- Ad oggi hanno un fondo di 3 billion USD che è stato messo insieme con i soldi dei ricavi da PI (essenzialmente life science) e con le donazioni. A questo punto loro possono finanziare l'attività di ricerca "semplicemente" con il rendimento di tale fondo!
- Anche presso il WI si recluta in funzione dell'eccellenza e non tanto in funzione di specifiche esigenze



Technion

- Il Technion è passata da essere una engineering school a una research university.
- Nel 1969 il technion ha iniziato le attività nella microelettronica e questo ha rappresentato l'inizio del settore high-tech in Israele
- Il technion in seguito decise di aprire anche Medicina. Era senza dubbio un rischio, poiché è noto che medicina comporta anche tutta una serie di difficoltà e problemi, ma si pensava che l'interazione tra tecnologie e medicina avrebbe consentito importanti sviluppi futuri, per esempio nei medical devices
- Poi arrivò la grande immigrazione russa, con tanti tecnici, ricercatori e scienziati russi. In questa fase il Technion crebbe del 25%
- Poi è partita la fase attuale, nella quale la parola chiave è l'interdisciplinarietà
- Oggi il Technion conta 750 full time positions, più di 13,000 studenti, 2000 tra tecnici e personale amministrativo
- L'ultimo obiettivo strategico del technion è quello della globalizzazione. Hanno partecipato e vinto la gara per fare una nuova università a Manhattan. Nel progetto ci sono tre centri interdisciplinari. Apriranno anche una nuova sede nel Guandong

Technion

- Vicino al campus del Technion verrà costruito un parco tecnologico che ospiterà anche imprese israeliane.
- I laureati del Technion sono stati la spina dorsale di Israele come start up nation. Ora qui è pieno di imprese high-tech. Ogni anno contano 30 milioni di dollari in ricavi provenienti dal TT. Probabilmente questa è la performance #1 se si confrontano gli investimenti in ricerca e i ricavi
- Ogni studente del Technion deve studiare entrepreneurship & innovation. Si tratta di un corso di 140 ore, pari a 10 crediti. Viene organizzata una business plan competition per gli undergraduates. Infine, grande impegno in H2020.
- *In Italia noi non sfruttiamo abbastanza il network degli ex allievi*
- Molto importante il regolamento sulla P.I. che loro fanno firmare a tutti quelli che vengono assunti
- Parte del successo di Israele, anche in confronto con l'Italia, è dovuto non solo alla diversa uncertainty avoidance, ma soprattutto alla diversissima power distance (in Israele le distanze formali sono minori che in Italia; tutti si conoscono, ecc.)
- *Nella nostre università italiane abbiamo tanti MBA e simili e dovremmo metterli più in connessione con le tecnologie. Per esempio, ad ogni studente di Master si potrebbe affidare un brevetto dell'università e proporgli di fare un piano di sfruttamento*
- Shlomo Mittal (un bel personaggio da invitare in Italia), ci ricorda che italiani e israeliani sono molto simili. Il Technion è più vecchio di Israele stesso



Altri materiali vari su Israele



Israel is widely hailed as a **startup nation**, hosting more NASDAQ listed companies per citizen than any country. But not so many years ago, it was the opposite of that: a country that prized socialism and distrusted capitalism.

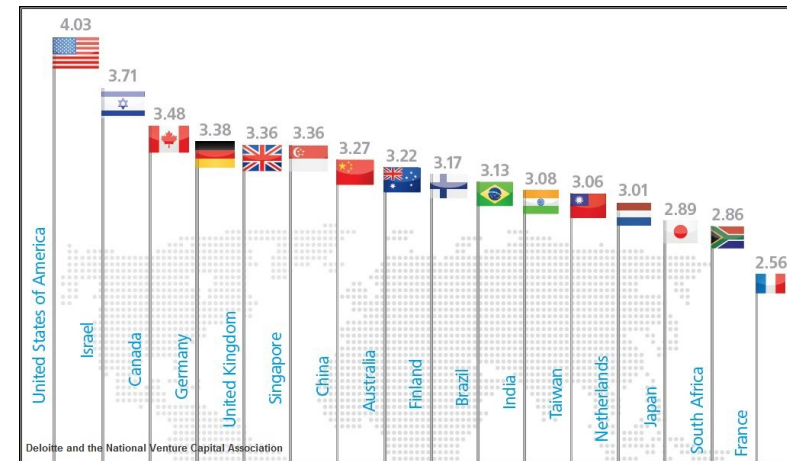
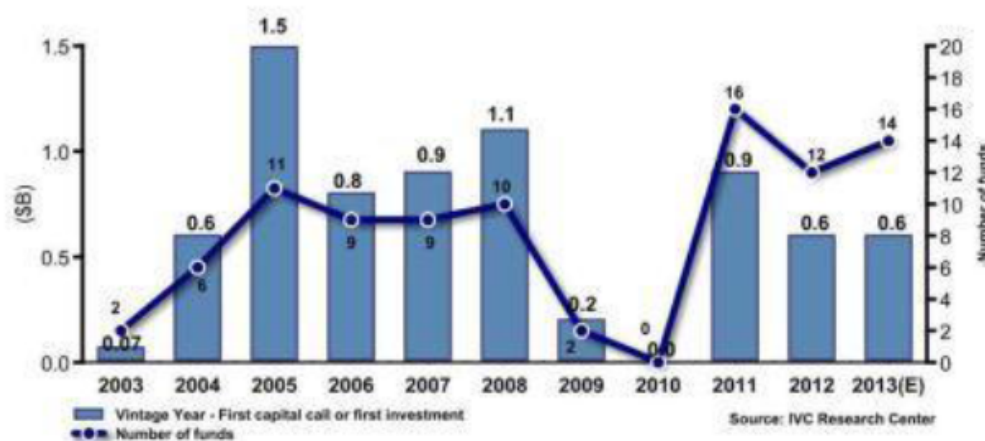
Yozma, the creator of the Israeli venture capital industry

Yozma effectively created the Israeli venture capital market in 1993 through the formation of its first venture fund, Yozma I. Originating from a government program aimed at prompting venture investments in Israel, Yozma I has transformed the domestic landscape of private equity investments. Over a period of three years, the Group established ten drop-down funds, each capitalized with more than \$20 million. In parallel Yozma started making direct investments in start up companies. This marked the beginning of a professionally managed venture capital market in Israel. Today, Yozma's drop down funds constitute the backbone of the Israeli venture market.



Israel's **venture capital industry** has approximately 70 active venture capital funds, of which 14 are international VCs with offices in Israel. VC funds raised \$607 million in 2012.

Total Capital Raised by Israeli VC Funds by Vintage Year (\$b)
2003-2013(E)



In 2014, 12 Israeli venture capital funds raised \$914 million, the most raised by Israeli venture capital funds in six years.

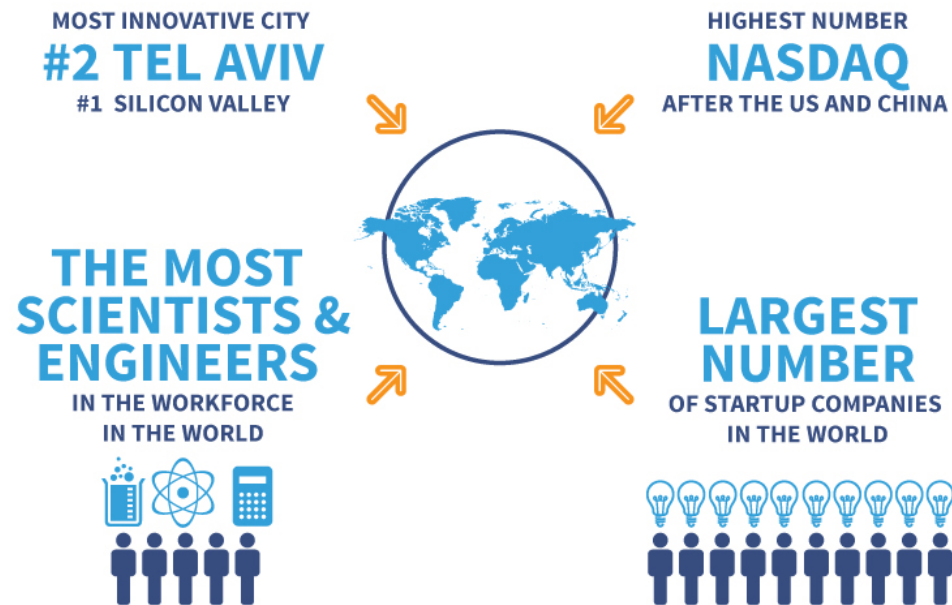
The Israeli success story

- Israel has the highest ratio of **university degrees** to the population in the world.
- Israel produces more **scientific papers** per capita than any other nation by a large margin -109 per 10,000 people - as well as one of the highest per capita rates of **patents** filed.
- In proportion to its population, Israel has the largest number of **startup companies** in the world. In absolute terms, Israel has the largest number of startup companies than any other country in the world, except the US (3,500 companies mostly in hi-tech).
- Israel is ranked #2 in the world for **venture capital funds** right behind the US.
- Outside the United States and Canada, Israel has the largest number of **NASDAQ listed companies**.

- Israel leads the world in the number of **scientists and technicians** in the workforce, with 145 per 10,000, as opposed to 85 in the U.S., over 70 in Japan, and less than 60 in Germany. With over 25% of its work force employed in technical professions. Israel places first in this category as well.
- The **cell phone** was developed in Israel by Motorola, which has its largest development center in Israel.
- **Voice mail technology** was developed in Israel.
- Both **Microsoft and Cisco** built their only R&D facilities outside the US in Israel.
- An Israeli company was the first to develop and install a large-scale **solarpowered and fully functional electricity generating plant**, in southern California's Mojave desert.
- Israel's Given Imaging developed the **first ingestible video camera**, so small it fits inside a pill. Used to view the small intestine from the inside, the camera helps doctors diagnose cancer and digestive disorders.

Some call it a miracle. Others an enigma of the culture. But the statistics surrounding the amount of high-tech startups that are conceived in Israel is astounding. A small country, with roughly 7.6 million people, has approximately 4,800 startup companies and attracts far more venture capital per person than any other country in the world.

So what makes Israel a base to nurture the creativity, innovation, and risk that comes with starting a company?



1. The Military

In Israel, most citizens join the army prior to entering college. In the military, it is common to be an expert in a technology at an early age since technology is a key component in military warfare and military communications. There is also an environment and culture in the army that encourages entrepreneurship and leadership. After leaving the army, a lot of young soldiers know that they want to start a company and solve the world's problems through technological solutions. They just have to figure out what problem to solve.

2. Universities

Aside from government incentive, Israel also has some of the best universities in the world that focus on technology, such as the Technion in Haifa. The universities are, in a sense, a playground for entrepreneurs to meet others with similar interests who may later go into business together.

3. Government Resources

The Israeli government encourages young entrepreneurs to take the risk of beginning a startup company by providing early-stage funding. The government also goes to great lengths to provide support to young entrepreneurs by introducing companies to investors, creating partnerships and programs that can provide support for young companies.

4. Mentors

Since the first generation of innovators are now in their retirement phase, they are offering both financial support and mentorship to the leaders of the next generation. The retiring business leaders are both acting as investors in these high-tech startups and are providing strategic counsel on how to develop a business model and go to market successfully.

Strenghts & Weaknesses

One of the strengths and weaknesses of Israeli startup companies is that they often develop a startup and plan to exit early on making a nice chunk of change but never fully develop the company into a large corporation. Everyone wants to be their own boss; however, for major economic growth, employees are necessary.

Perhaps another reason disruptive technology has been emerging out of Israel is that the first settlers of the country had limited resources, pioneering a land that was primarily desert. So whether in agriculture, technology, or business, Israel is a land filled with pioneering minds and entrepreneurs.

Why invest in Israel?

1. The Innovation Capital

Ranked 1st in the world for innovative capacity by the IMD Global Competitiveness Yearbook 2014 and 3rd for innovation globally out of 148 economies by the WEF Global Competitiveness Yearbook 2014-2015, Israel's modest size is clearly no barrier to its remarkable accomplishments.

Israel's Competitive Edge ¹				
Country Rank →	1 st	2 nd	3 rd	4 th
Total Expenditure on R&D		Finland	Sweden	Japan
Flexibility & Adaptability		Hong Kong	Australia	Brazil
Entrepreneurship of Managers		Malaysia	Colombia	Taiwan
Availability of Scientists and Engineers		Japan	USA	India
Venture Capital Availability	USA		Hong Kong	Taiwan

Leading on so many of the most critical parameters of competitiveness, it is no wonder that Israel has captured the protracted attention of the global investment community. Besides innovative capacity, the IMD Global Competitiveness Yearbook 2014 ranks it 1st for business expenditure on R&D, 1st for cyber security, 1st for entrepreneurship, 2nd for total expenditure on R&D, 2nd for scientific research, 2nd for total expenditure on education and 3rd for information technology skills. Dominating on so many of the critical indicators of competitiveness, Israel has clearly earned its growing reputation as the global innovation capital.

2. The Thriving Entrepreneurial Spirit

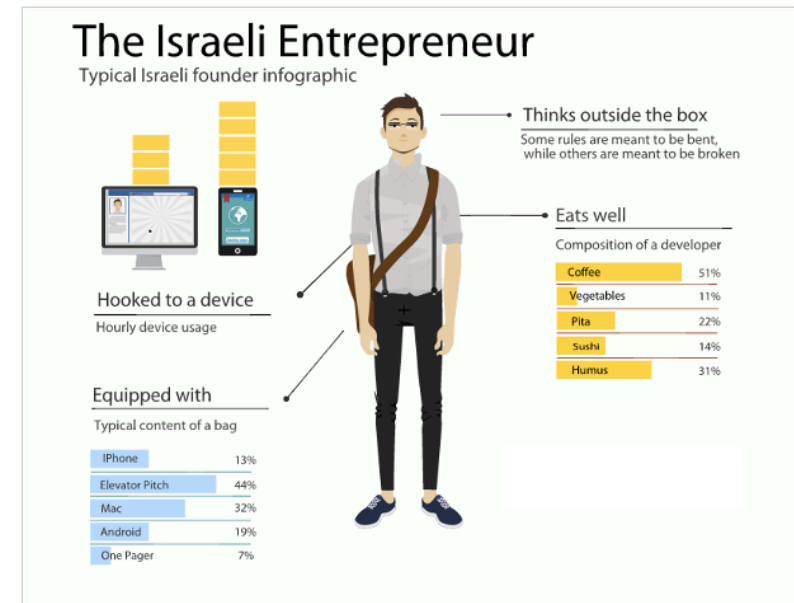
Ranked 1st in the world for innovative capacity and 1st in the world for entrepreneurship (IMD Global Competitiveness Yearbook 2014) Israel is highly regarded across the globe for its thriving entrepreneurial spirit, which enables it to swiftly transform burgeoning start-ups into profitable and competitive companies. In fact, apart from Silicon Valley, the highest concentration of high-tech companies in the world is found in Israel.



The number two startup ecosystem -- ahead of NYC, LA, Seattle, Boston, and London -- Israel's 4,000 start-up companies produce innovations and offer solutions to some of the most pressing global challenges. In fact, in 2009, 63 Israeli companies were listed on the tech-orientated NASDAQ, more than from Europe, Japan, Korea, India, and China combined. Of Israel's 230,000 hi-tech workers, 39% work in the R&D departments of multinational companies, no surprise given that so many leading companies have chosen Israel as the site for investment and development. (Source: The Startup Ecosystem Report 2012).

3. The Exceptional Workforce

Israel's creative, skilled, and ambitious workforce is one of the most obvious reasons leading executives turn to Israel to do business. In fact, Israel boasts one of the most highly educated, entrepreneurial, and multi-cultural workforces in the world, producing technologies, innovations, and research adopted around the globe and across sectors.



Israel's resourceful, motivated and independent workforce is particularly competitive because of its informal but effective get-down-to-business culture, exceptional ingenuity and entrepreneurial spirit. The combination of culture, skill, and initiative creates a flexible working system that allows for maximal adaptability while producing breakthrough technologies and quick time-to-market solutions. In an overarching organizational climate of boldness, experimentation and independent thinking are naturally rewarded, resulting in the types of breakthroughs for which Israel is famous.

4. Scientific Excellence, Industrial Profit

The quality of Israel's workforce is naturally reflected in the quality of its scientific institutions, ranked 3rd in the world for their quality (WEF Global Competitiveness Yearbook, 2014-2015). Although it is a young country, comprised largely of immigrants and descendents of immigrants, Israel's scientific and technological infrastructure outperforms almost every other country. In fact, it ranks 5th for its scientific infrastructure (IMD 2014). Complimented by an unusually high availability of scientists and engineers (Ranked 10th in the 2014-2015 WEF Global Competitiveness Yearbook), Israel's scientific excellence makes it a preferred spot for leading multinationals to establish R&D centers.

Given the quality of its institutions and infrastructure, Israel's citizens are naturally found at the fore of cutting edge research, both within Israel's own institutions of excellence and at some of the top universities globally. Ranked 5th in the world for patent filings per capita (2014-2015 WEF Global Competitiveness Yearbook), Israelis are behind a string of innovations across sectors and industries, including in medical equipment patenting, where Israel leads the world in patent registrations.

5. A Global Technological Leader

But Israeli innovations extend far beyond academia. In fact, Israel is a world leader in research collaboration between university and industry, ranked in the top 10 for knowledge transfer by IMD Global Competitiveness Yearbook 2014 and collaboration between university and industry by WEF Global Competitiveness Yearbook 2014-2015. The close ties between academia, industry, and government enable scientific innovation to be swiftly translated into marketable products and profitable business initiatives, explaining how Israel reaches \$25 billion in technological exports annually (Source: MIT Technological Review).

Israel invests heavily in education and research, expending 4.38% of its GDP into R&D, the highest percentage in the world (OECD Science, Technology and Industry Scoreboard 2013). Furthermore, through government agencies such as the Office of the Chief Scientist of the Ministry of Economy, a network of incubators for very-early-stage technology start-ups, as well as an active and alert private venture capital system, Israel provides extensive support for new ideas and technologies and assists the further development of more traditional industries. By maintaining strong scientific and technological infrastructure and leveraging the close links between academia, industry, and government, Israel produces innovation and technology that offers no trace of its tiny size.

6. A Flexible, Creative Economy

Flexibility and adaptability to change are widely considered primary factors affecting business performance. IMD's world competitiveness index in fact places this parameter among the leading indexes of economic competitiveness. Creativity and flexibility are the fuel of innovation, and a high degree of responsiveness to changing business environments is crucial to thriving enterprises in today's dynamic global market. Ranked 2nd for flexibility and adaptability by IMD 2014, Israel's ability to swiftly translate market demands into organizational action, explains why Israel has consistently performed so strongly in the flexibility index and is broadly recognized as a capital of innovation.

7. A Flourishing Venture Capital Market

Israel's thriving start-up industry is complimented by a flourishing venture capital market, which totals \$1 billion (MIT Tech Review). The World Economic Forum Global Competitiveness Yearbook 2014-2015 ranked Israel 9th for venture capital availability out of 148 economies, and the IMD 2014, 3rd, remarkable given its small size. By far outperforming any other country in VC volume per capita (Wall Street Journal, 2013), Israel's venture capital availability is a symbol of the breath of its innovative industries and of the highly efficient financial sector underpinning them. .

8. A Resilient Economy , Security for Investors

Israeli economic resilience helps ensure global investors feel secure about their investments in Israel. IMD 2013 ranks Israel 1st in the world for its central bank policy -- the fourth year in a row that it leads in the top five -- and 4th for the resilience of its economy, while WEF 2014-2015 ranks it 1st for annual percentage change of inflation and 6th for investor protection out of 148 economies.

The Israeli policy of removing barriers to trade and encouraging the movement of capital has served the economy extremely well. Israel is committed to openness as a strategic approach, while recognizing the importance of financial sector regulation, a strategy that has contributed to Israel's impressive economic growth and its increased economic efficiency in recent years.

Sound macroeconomic strategy, coupled with the relatively conservative approach driving the Israeli banking sector's strategic decisions, has fueled Israel's strong economic performance, even as the global economy has contended with crippling economic slowdown. In fact, since 2004, Israel's growth rate has exceeded the average growth rate of all advanced economies. In 2009, as most of the world experienced a decline in GDP, Israel experienced a 1.1% growth in its GDP. Its real GDP growth rate in the third quarter of 2013 had already leaped to 4.9% (source: Israeli Ministry of Finance).

9. The Richness of Diversity

Israel's diversity and multi-culturalism extend naturally from the fact that its population consists of individuals with origins in over 100 different countries spanning five continents. In addition to Hebrew and Arabic, Israel's two official languages, many Israelis are fluent in English, as well as a host of other languages, including French, German, Italian, Russian, Chinese, and Spanish. The richness of the tapestry of Israel's different cultures not only makes Israel a fascinating place to visit and to do business, but also highlights one of the main attractive features of its workforce. A risk-taking and optimistic collective, it is only natural that it is the source of so much innovation.

10. The Support

Enshrined into its legislation through laws for the encouragement of capital and industrial R&D, the State of Israel seeks to offer maximally supportive conditions for companies seeking to invest in Israel. Part of a slew of incentives and benefits, the State of Israel encourages international and local investment by offering conditional grants of up to 24% of tangible fixed assets, reduced tax rates, tax exemptions and other tax related benefits through the Law for the Encouragement of Capital Investments. In addition, Israel offers one of the world's most advanced technological infrastructures along with the services required to conduct business efficiently and effectively