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The Financing of Innovation

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Agenda

1. Presentation
2. Innovation & its impact on Economy
3. Source of Funding for Innovation
4. Venture capitalism: what and how
5. Conclusion

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Francis Bellido, MSc, MBA, PhD

- más de 35 años de experiencia en las industrias de Biociencias, salud y finanzas. También dirigió la ejecución de varios proyectos de desarrollo en la cadena de suministro de las ciencias ambientales. Sus áreas de especialización son la gestión empresarial, la planificación estratégica, la verificación diligente técnica y financiera y la reestructuración operacional. Su experiencia internacional en el desarrollo de negocios se extiende más de 30 transacciones negociadas en el ámbito de los acuerdos comerciales, transferencia de licencias y fusiones / adquisiciones. Su favorita es la industria del medicamento y dispositivo medical donde trabajó durante 15 años en temas de regulación, desarrollo clínico y la investigación básica.

Experiencia

- Director financiero (**CFO) a SoundBite Medical Solutions**
- Director de Estrategia a **Medical Intelligence Technologies,**
- Presidente del consejo de administration et director de operaciones a **Alternatives Technologies Pharma**
- Presidente del consejo de administración et director de operaciones a **Panacis**
- Presidente del consejo de administración et director de operaciones a **Supratek Pharma**
- Fundador, Presidente y director general a **Miagwa**
- Presidente y director de operaciones a **la SGF Santé Inc. un fondo de capital de riesgo con más de 300 M $ de activos.**
- Ha trabajado para **Eli Lilly**, Indianápolis, en Estados Unidos y Europa, ocupando diversos puestos ejecutivos**: director de Asuntos Regulatorios, director de la Unidad de Negocios Globales, director de activos estratégicos y director de Desarrollo de Negocios.**
- El Dr. Bellido fue también director de la **Cátedra de Gestión de Bioindustria en la Universidad de Quebec en Montreal,** donde aún enseña como profesor visitante.

Educación

- Master en ciencias, 1984, Universidad de Ginebra, Suiza
- Doctorado en ciencias, 1988, Universidad de Ginebra, Suiza
- Master en Administración de Empresas, 2000, Facultad de Administración, Universidad de Quebec en Montreal, Canada

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What is Innovation

- Invention vs Innovation: transforming ideas in Cash Flow

- something fresh (new, original, or improved)
- that creates value (economic)

- “Innovation is the specific instrument of entrepreneurship… the act that endows resources with a new capacity to create wealth.” Business Week

- Innovation is defined “as change that creates a new dimension of performance“ Peter Drucker

- Not only technology but any part of value creation chain: platforms (Amazon; Google; Uber as business model)

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Innovation and wealth

- Innovation requires some forms of protection

- Intellectual Property
  - Know-How
  - Patents

- Strong correlation between GDP and innovation

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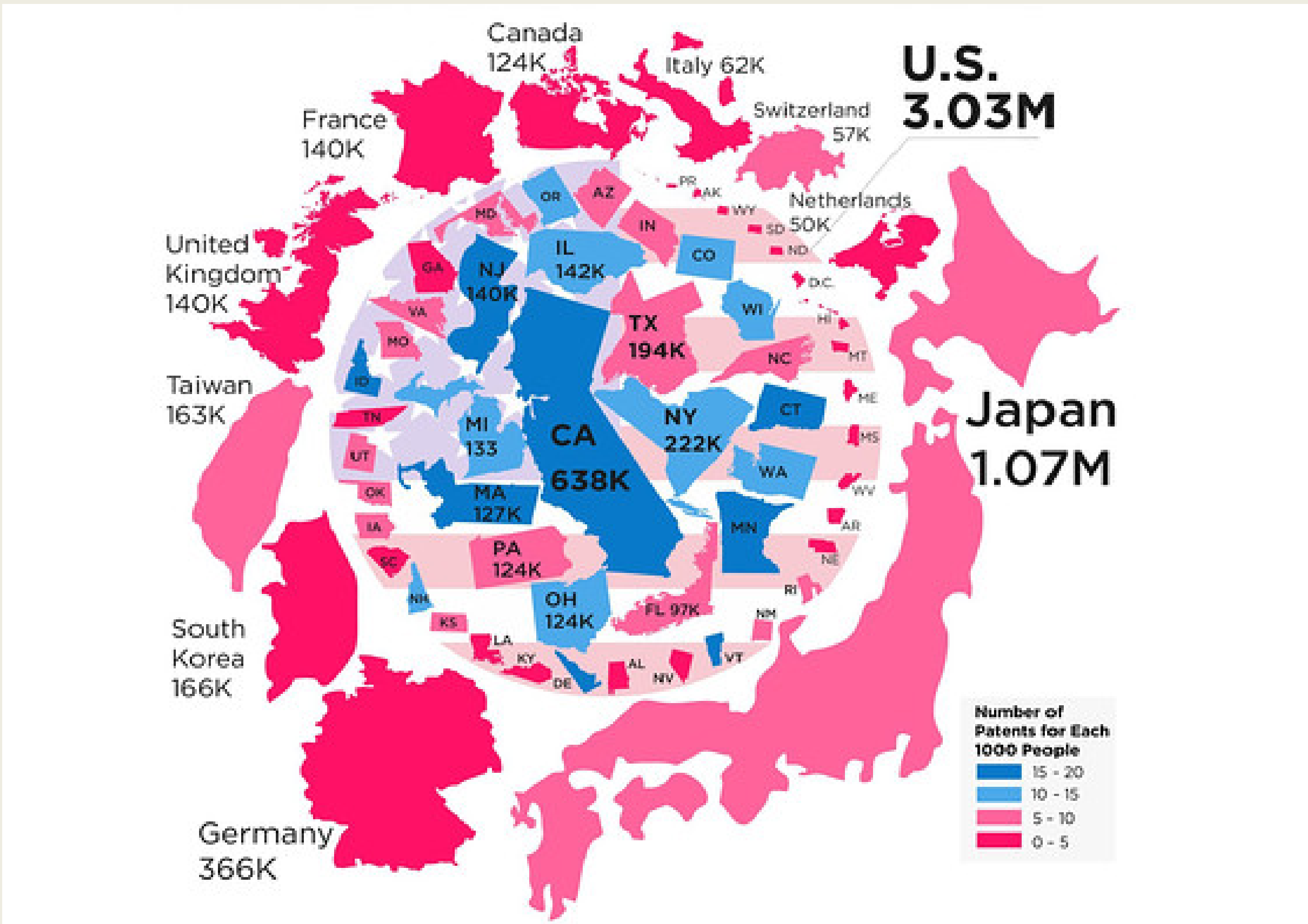
The most innovative countries in the world in one map



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Innovation = Wealth

Countries Where Most Patents are Created

1. United States (3,030,080 patents)
2. Japan (1,069,394 patents)
3. Germany (365,627)
4. South Korea (166,353)
5. Taiwan (162,732)
6. United Kingdom (140,227)
7. France (139,866)
8. Canada (123,904)
9. Italy (62,148)
10. Switzerland (57,135)

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*the number of patents filed between 1977 to 2015

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The Global Innovation Imperative

•Innovation is Key to Growing and Maintaining a Country's Competitive Position in the Global Economy

•Collaboration among Small and Large Businesses, Incubators, Universities, and Research Institutes is Essential

•New Institutions and New Incentives, are increasingly important to support collaboration and foster innovation

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•The right level of access to capital

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Natural resources vs innovation

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Natural resources as a economic curse: low profits, competition

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Innovation follows evolution

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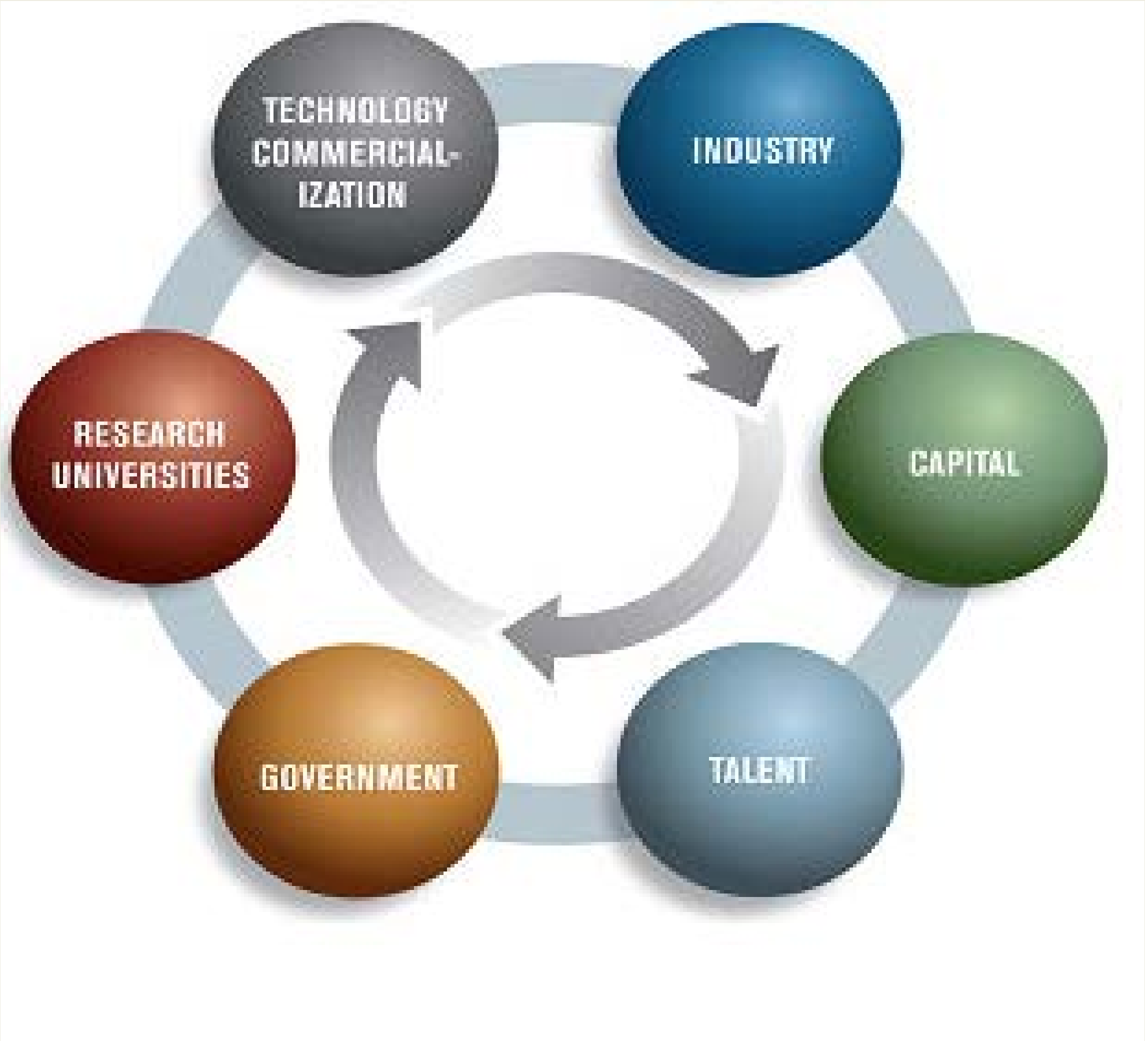
Innovation Ecosystem Components



Success =

IP
+
Funding
+
Commercialization

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Challenges in commercialisation:

We have great S&T and ideas for new businesses

BUT

There is no money to take them forward

SO

Lets build a venture capital industry

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Forms of capital: getting the mix right

- Business cash flow – treasury management
- Grants – good but beware transaction costs
- Equity injection – long term risk sharing
- Loans – for working capital and short term needs
- Guarantees – for those without collateral
- Strategic alliance – also for credibility enhancement

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The Commercialization “Secret”

- Its not only about
  - TECHNOLOGY!
- Its about
  - REVENUE
  - SCALABILITY
  - CASH FLOW
  - PROFITS IN TWO YEARS
  - COMPETITIVE ADVANTAGE
  - ACCESS TO FINANCING

Innovation Capital

- Invested before commercial success
- $100,000 - $2,500,000
  - Seed Capital $100,000 - $250,000
  - Early Stage $250,000 - $2,500,000
- High risk - vital to new innovative companies
- Scarce for new entrepreneurs
- Innovation Capital Providers
  - Angels
  - Tech and innovation-based economic development organizations
  - VC's

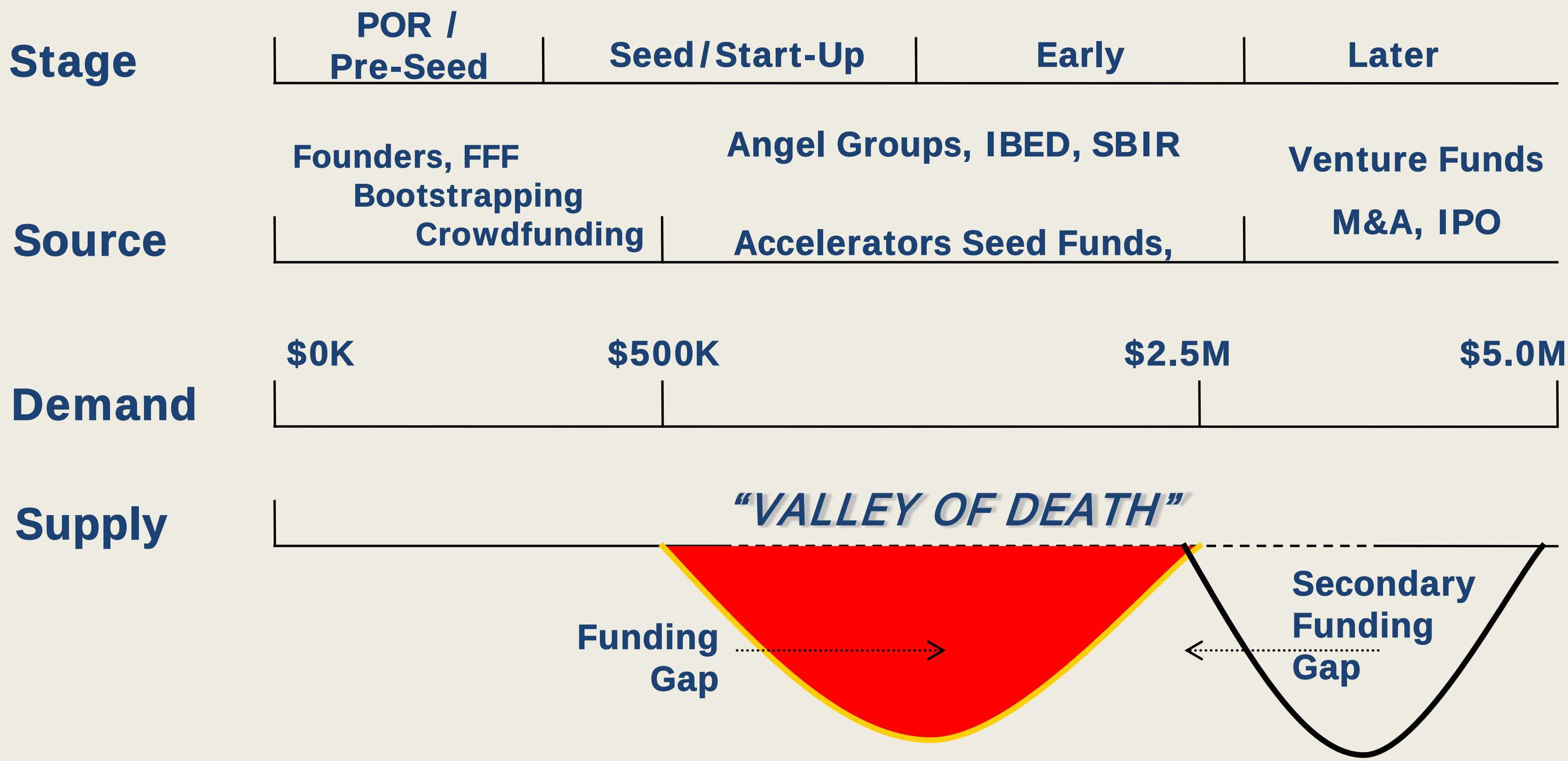
Innovation Capital

- **Generates 60 to 80% of net new jobs annually**

- **Employs 30% of high-tech scientists, engineers, and computer workers**

- **Produces 13 to 14 times more patents per employee than large firms**

Innovation Capital Valley of Death



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Ways To Raise Innovation Capital

1. **Self Funded**
   - Be Your Own ~~Boss~~
   - Grow 20% per year

2. **Friends and Family**
   - People That You Already Know

3. **Strategic Partners**
   - Non-Recurring Engineering
   - Purchases of Beta Units

4. **Angels**
   - Clubs / Funds
   - Individuals

5. **Grants**
   - SBIR Phase II up to $1 million

6. **Early Stage Venture Capital**
   - About 75 Pre-Revenue VCs left

7. **License Royalties**
   - Average is $375,000 over 5 years
   - For $9 million of funded research

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Venture as the critical source of Innovation Financing

- Where Does Venture Capital Money Come From?
- How are Venture Capital Funds Organized?
- How do Venture Capitalists make money Personally?

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Where Does Venture Capital Money Come From?

- Professional Venture Capital Firms raise money from Insurance Companies, Educational Endowments, Pension Funds and Wealthy Individuals.
- These organizations have an investment portfolio which they allocate to various asset classes such as stocks (equities), bonds, real estate etc.
- One of the assets classes is called “Alternative Investments”- venture capital is such an investment. Perhaps 5% to 10% of the portfolio might be allocated to Alternative Investments.
- The portfolio owners seek to obtain high returns from these more risky Alternative Investments.

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How are Venture Capital Funds Organized?

- Most Venture Capital Funds are Limited Partnerships:

General Partners

These are the "Venture Capitalists" you will deal with. They may have been Entrepreneurs in a prior life or they might be financial types.

Venture Capital Fund

The General Partners use an Offering Memorandum to raise a fund of a given size from the Limited Partners by convincing them that the GPs have a unique strategy or expertise in a particular sector or sectors of the market. Fund raising can take a year or more.

Limited Partners

Pension Funds, Educational Endowments, Foundations, Insurance Companies, Wealthy Individuals

If the GPs are successful they will convince enough Limited Partners to invest enough money to achieve the size fund offered. When this happens there is a first "close" of the fund.

Challenges of Venture Financing

- Critical issues involved in financing young firms
  - Uncertainty
  - Asymmetric Information
  - Nature of Firm's assets
  - Conditions of relevant financial and product markets

- Responses by VCs
  - Active Screening
  - Stage financing
  - Syndication
  - Preferred Stock
  - Use of Stock options/grants with strict vesting requirements
  - Contingent control mechanisms – Covenants and restrictions
  - Strategic composition of Board of Directors

Got a Term Sheet

Multiple Rounds, Multiple Tranches

READ THE TERM SHEETS!!

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Conclusion

- Innovation is the decisive driver of economic wealth
- Innovation strives in an adequate ecosystem
- Innovation needs patient and expert funding

Back up Slides

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What Do Venture Capitalists Do?

- Source Deals
  - The GPs have to “source” deals- I.e. find investment opportunities. This is done in a variety of ways- referrals from trusted sources (other funds, entrepreneurs they have invested in before, lawyers, accountants etc.)
- Make Investment Decisions
  - From the opportunities identified the GPs pick the ones they think will be the “winners”. They might look at 50 or 100 opportunities for each one they invest in.

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Money will find good ideas not create them

- Finance needs to be articulated to grow value
- Some systemic hypotheses and diagnoses
- Communicating potential benefits from a framework
- The best approaches provide money plus

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What Do Venture Capitalists Do?

- Manage The Investment
  - The GP/VCs have a fiduciary duty to the LPs to "manage" the investment. This means they usually sit on the Board of Directors. Given this time commitment a VC might only be able to handle 6 to 10 portfolio investment companies at a time.
- Harvest The Investment
  - As you will see in the following slides, the GP/VCs win only if they can get their money out of the investment ("harvest the investment"). This usually takes the form of an acquisition of the portfolio company or taking the portfolio company public in an Initial Public Offering (IPO). Note: even the most successful funds rarely have even 1/3 of their portfolio investments become successful – i.e even with careful vetting 2 out of 3 investments are not "wins".

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Economics of the VC Fund - CAPITAL

- Capital Commitments
  - The Limited Partners do not actually invest money in the Fund at the closing. They legally commit to provide a certain amount of capital when they are called upon. This is called a Limited Partner’s Capital Commitment.
- Capital Calls
  - When the General Partners find what they think is a good investment opportunity they make a “Capital Call” on the Limited Partners. Example: a Fund has $500M of capital and the GP/VCs what to make an investment of $10M. A Limited Partner with a Capital Commitment of $50M will be required to send $1M to the General Partners: 50M/500M = 10% times 10M = $1M

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Economics of the VC Fund – VC Compensation

- Management Fees
  - The General Partners receive an annual Management Fee, which is usually a percentage of the Capital Commitments to the Fund.
  - A typical fee is 2.5%. On a $400M fund this $10M per year.
  - The Management Fee is used by the General Partners to run the Fund business –e.g. it pays the salaries of the General Partners, the Associates, the Support Staff and the office rent.

- Number of General Partners
  - The number of GP/VCs in a Fund is a function of the size of the Fund and the size of investments the Fund makes. For example, a $500M Fund might have 5 GP/VCs, each investing $100M of the Fund's Capital

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Economics of the V C Fund – VC Compensation

- Splitting the Returns
  - The GP/VCs make investments and they hopefully harvest some of those.
  - The returns from the investment are split between the Limited Partners and the General Partners.   A typical arrangement is as follows:
    - The Limited Partners receive 99% of all the returns and the GP/VCs receive 1% of all returns until the Limited Partners receive back 100% of their Capital (plus in some cases “interest” on that Capital).
    - Thereafter the splits go 80% to the Limited Partners and 20% to the GP/VCs. This 20% part is called the GP’s “Carried Interest”
  - Venture Capitalists with a great track record will receive a higher Carried Interest- e.g. 30%

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Economics of the VCI Fund – VC Compensation

- Compensation Drives Behavior
  - The Split Formula provides a heavy incentive for the GP/VCs to invest in situations that can be Big Hits. Reason: They don't make money unless they return Big Returns to the Limited Partners.
- Examples
  - Assume the Fund has invested $400M in 20 companies ($20M per company on average).
  - Assume that each of the Fund's investment provides it with a 50% ownership interest in a portfolio company.
  - Assume that 25% of the companies are successful and the Fund can harvest those investments – i.e. 5 of the 20 companies are successful.

Economics of the VC Fund – VC Compensation

- Example (continued)
  - Assume the average "win" returns to the Fund 5 times the amount invested. In our example, the $20M becomes $100M.
    - Note: If the Fund owns 50% of a company then the value of the company at harvest has to be $200M in order for the Fund to receive 5 times its investment.

Venture Partners Fund 1

Capital Commitments: 400

Winning Investments:

Company	Amount Invested	% Ownership	Return Multiple	Investment Value at Harvest	Value of Company
1	20	50%	5	100	200
2	20	50%	5	100	200
3	20	50%	5	100	200
4	20	50%	5	100	200
5	20	50%	5	100	200
	100			500	

Economics of the VC Fund – VC Compensation

- Example (continued)
  - This is how the Return Splits would work:

Venture Partners Fund 1
Capital Commitments: 400

Winning Investments:

Company	Amount Invested	% Ownership	Return Multiple	Investment Value at Harvest
1	20	50%	5	100
2	20	50%	5	100
3	20	50%	5	100
4	20	50%	5	100
5	20	50%	5	100
	100			500

Return Splits

	Returns	Limited Partners $	Limited Partners %	General Partners $	General Partners %
Return of Capital:	404	400	99%	4	1%
Upside, if any:	96	77	80%	19	20%
	500	**477**		**23**	
LP % Return:		19%			

  - Recall: 99% of the returns go to the Limited Partners until they receive back their invested Capital then the upside is split with the General Partners
  - In this case the LPs are probably somewhat happy - they get a 19% return - and the GPs make $23M. (note: this example ignores the time value of money).

Economics of the VC Fund – VC Compensation

- Sensitivity of Returns
  - Notice what happens if the 5 winning investments pay out at lower multiples:

Venture Partners Fund 1
Capital Commitments: 400

Winning Investments:

Company	Amount Invested	% Ownership	Return Multiple	Investment Value at Harvest	Value of Company
1	20	50%	5	100	200
2	20	50%	4	80	160
3	20	50%	4	80	160
4	20	50%	3	60	120
5	20	50%	3	60	120
	100			380	

Return Splits

	Returns	Limited Partners $	Limited Partners %	General Partners $	General Partners %
Return of Capital:	380	376.2	99%	4	1%
Upside, if any:	0	0	80%	0	20%
	380	**376**		**4**	
LP % Return:		-6%			

Venture Partners Fund 1
Capital Commitments: 400

Winning Investments:

Company	Amount Invested	% Ownership	Return Multiple	Investment Value at Harvest	Value of Company
1	20	50%	4	80	160
2	20	50%	4	80	160
3	20	50%	3	60	120
4	20	50%	3	60	120
5	20	50%	3	60	120
	100			340	

Return Splits

	Returns	Limited Partners $	Limited Partners %	General Partners $	General Partners %
Return of Capital:	340	336.6	99%	3	1%
Upside, if any:	0	0	80%	0	20%
	340	**337**		**3**	
LP % Return:		-16%			

- The reward system makes the VCs “swing for the fences” – they need to find companies that can be really big.

Fund Investment Cycle

- Fund Life
  - Most Funds have a 10 year life. At the end of 10 years they are liquidated.
  - Funds plan to harvest winners in 5 to 7 years or less.
- Initial Portfolio Investments
  - For Early Stage Funds it is typical for the Fund to reserve $2-$3 for every $1 invested. For example if the Fund invests $2m in Round 1 they will reserve another $4m -$6m for follow-on rounds. So a $400M Fund might invest $100M in the first rounds of portfolio companies and $300M in follow on rounds.
- Timing of Initial Investments
  - A Fund usually makes its initial investments in the first 3 years of the Fund life cycle. During the remaining life of the Fund follow-on investments are made and the portfolio companies are positioned for “harvest”

Follow-On Funds

- Once the initial investments have been made in Fund 1, the VCs are motivated to raise Fund 2 so they can make investments in new opportunities and get additional Management Fees.
- Hopefully there are some early successes in Fund 1 so they can go to their LPs and get them to invest in Fund 2.
- Through this layering of Funds the GPs build up their total Capital Under Management.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Totals
Fund 1 Initial Investments	30	30	30								90
Fund 1 Follow On		50	110	150							310
Fund 2 Initial Investments				30	30	30					90
Fund 2 Follow On					50	110	150				310
Fund 3 Initial Investments							30	30	30		90
Fund 3 Follow On								50	110	150	310

Things For the Entrepreneur To Think About

- Does Your Plan Fit the Needs of the Venture Capital Fund?
  - As you can see they need to see Big Returns.   If your Plan can justify this and you need lots of capital to achieve your Plan then VC may be the way to go.
  - You may be able to grow a successful company and make a lot of money without having to scale to the size that will interest Venture Capital.
- Are You Ready For Venture Capital?
  - As you can see VCs have a relatively short time fuse to success- a 10 year Fund and the need to show some “Winners” early in order to raise the Next Fund.
  - Result: You have to be ready to move quickly, there will not be much time to recover from errors in the plan or execution.

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Things For the Entrepreneur To Think About

- Are You Prepared to Become a Minority Stockholder?
  - As the examples show, in order to generate returns for their Limited Partners the GP/VCs have to invest a large amount and this usually means they will obtain a significant percentage of the company over time.
  - Having a small piece of a Big Pie can make you rich but you have to be mentally prepared to become a Minority Stockholder.
- Make Sure the VC You Work With Can Add Value
  - Experienced Venture Capitalists can provide valuable advice and guidance, saving you time and preventing mistakes. They also have contacts with potential customers, Wall Street and acquirers.

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Things For the Entrepreneur To Think About

- Understand Where in the Fund Life Cycle You Are
  - As shown, you want to catch a Fund during its initial investment phase so check out where the Fund is in its Life Cycle.
- All Financing Sources Are Not The Same
  - The Compensation and Return arrangements in a VC Fund drives a certain type of behavior. Learn and understand this so you make an informed decision.
- Talk to Portfolio Company CEOs
  - You can answer these and other questions by talking to the CEOs of companies that the Venture Fund has invested in. Most VC Firms have websites that list their current and past portfolio companies.

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In Conclusion

- All Financing Sources Are Not The Same
  - The Compensation and Return arrangements in a VC Fund drives a certain type of behavior. Learn and understand this so you make an informed decision.
- Talk to Portfolio Company CEOs
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