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NOTHING VENTURED, NOTHING GAINED?

Venture Capital, Innovation and Entrepreneurship in Emerging Markets

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Introduction: Emergence by Leapfrog, or Uphill Crawl?

The myth that the Internet is a global, borderless technology and communications medium which allows all nations and societies to access an ever expanding amount of information, commerce and business relationships is just that. This myth is perpetuated by the thesis that the explosive nature of information and communications technologies (ICTs) will provide the catalyst for equally explosive economic development in emerging economies and societies. Some may accuse us of having helped foster that myth in our earlier work on the Internet, knowledge networks, and development, (see Cukor and McKnight, 2001; as well as our work on valuation of Internet firms in emerging markets. (see Vaaler and McKnight, 2000). Whether or not we accept these criticisms, we admit that the myth of the Internet fostering development does not adequately address the fundamental conditions of the critical infrastructure of the underlying communications technologies. These technologies are approaching ubiquity in the United States, Europe and Japan but are nascent in the much of the rest of the world.

This paper will demonstrate why the generally unrealistic theory that less developed economies, with less developed communications infrastructure, will perform technology generation "leaping feats" ignores numerous other economic, regulatory and social factors and premature. Rather, the reality is that for most emerging nations, taking advantage of advanced information and communications technology to increase innovation and entrepeneurship will feel more like a slow uphill crawl – interrupted by frequent downhill slips. There is little doubt that the communications segment in many emerging nations is undergoing revolutionary change as state monopolies are broken up; new players emerge, consumers adopt the latest services and entrepreneurs begin to exploit discontinuities inherent in this rapid and evolving medium. This does not, however, translate directly into a Silicon Valley like experience with easily available capital for entrepreneurs.

This paper examines the probability of domestic and international venture capital playing a critical role in the rapid development of IT and Communications technologies in emerging nations. First we examine the venture capital point of view highlighting what today's venture capitalists require from an emerging market investment with a focus on the role that intellectual property invention plays. Then we examine the role of Internet and communications technologies and comment on innovation in this context. This will enable us to more fully evaluate the conditions of specific nations in encouraging the development of entrepreneurship and technical and business innovations. Finally, we explore in more depth review the role that ethnic diaspora play in encouraging entrepreneurship in developing nations, as well as within the global heart of Internet innovation and entrepreneurship itself, Silicon Valley.

We conclude that emerging nations will continue to undergo dramatic technological change in IT and Communications, However, this is not by itself sufficient for emerging nations to leapfrog entire phases of development and socioeconomic growth. In spite of the rhetoric, embrace of free market solutions by many advocates of technology-derived

development, in emerging markets, this can lead to 'cowboy capitalism' which may favor certain risk-takers but is not conducive to technology-based innovation processes and national growth strategies. Rather, it is the transparency of a nations' political and juridical infrastructure, which is perhaps the most important factor to take into account, if venture capital is to overcome their instinctive doubts and concerns. This need not operate in the same manner as that of the United States – but it must interoperate with such mechanisms.

Venture Capital and International Entrepreneurship in Information and Communication Technologies

Entrepreneurs create and build value based on opportunity and personal motivation to innovate. Venture capitalists provide the currency for entrepreneurs to build their companies from ideas into companies, which employ staff and generate economic value. While entrepreneurs sell substantial portions of their companies in exchange for the capital they need to grow and expand, the relationship between these two groups has become the primary method used to create new information and communications technology companies in the U.S. and around the world.

The US experience in creating and deploying IT and Communications technologies has lead the world and will continue to be the catalyst and engine in creating new ICT-based companies. Whether it is an Indian engineer returning to Bangalore after working in Silicon Valley for five years or an Israeli engineer leaving the military and starting a new communications-based company in the U.S., ICT entrepreneurs seek validation of their ideas and in many instances, capital from the U.S.

Venture capital comes in many forms and at a variety of stages. Venture capital can be used to build companies from a business plan to a full functioning profitable and valuable company. Before VC money is useful, entrepreneurs must develop their own idea and technology. They need a base to accomplish this, which is usually provided by friends and family or a previously successful entrepreneurial activity (their own funds). During the heyday of the first generation Internet investments, incubators provided many of these functions in the US. Outside the U.S. the lack of angel capital has forced countries to rely on the traditional government sponsored incubators as well as some private attempts at supporting startups.

Before entrepreneurs can even think of new ideas which are based on new technologies, there needs to be a baseline set of conditions available in a given market or region which together create an opportunity to create new value. Being an entrepreneur is not about getting rich, although some have recently thought this was the endgame; it is about creating value from an idea. An entrepreneur needs to believe in an idea, believe that this idea can fundamentally (not incrementally) change the way a given service is delivered or a product is developed. It is this drive to bring ideas to life and translate them into value recognized by third parties that is the ultimate satisfaction for an entrepreneur.

In many emerging nations, this entrepreneurial drive certainly exists outside the technology sector. It exists in all economies be they capitalist, socialist, totalitarian or in blended economies. It usually takes the form of individual or family businesses that operate in the service sector and are being entrepreneurial more out of a need to survive in an economy than out of a drive to create new value using technology. These entrepreneurs are to be admired for their sheer perseverance and courage, however, these are not the entrepreneurs who will participate in creating value in a technology sector.

The telecommunications sector is the primary sector to examine in developing nations to determine if the essential ingredients exist for technology entrepreneurship and thus an increased role for venture capital and private equity.

The Internet from a VC's point of view

Venture capitalists see the Internet as an economically disruptive technology capable of upending existing economic structures and replacing them with more cost effective 'new economy' variants.[1] In the first phase of Internet investing, circa 1995-2000, VCs focused on 'pure play' investments, which relied only on the new Internet cyber-paradigms. The current phase of investment 2000 - ?? is focused on the Internet "infrastructure" which is a euphemism for non-consumer-facing businesses. The near term investment focus on the wireless Internet[2] has generated an avalanche of new investments in the US and Europe. This avalanche has already buried many would-be entrepreneurs and venture capital investments.[3] Whatever the current focus of venture capitalists might be in developed or emerging markets, a fundamental basis of communications and information technology is a prerequisite.

The confluence of factors which combined to produce breakthrough Internet technology and the application of that technology to new businesses in the United States, is merely a continuation of what has occurred in the United States since its founding. Combining the American spirit of independence and entrepreneurship with a mature democratic capitalist society characterized by a hands off accounting, legal and financing culture all served to create the explosion of the Internet. Most importantly for this paper, it enabled the availability of capital necessary to fuel this engine[4]. This is the American experience. Translating unique American experiences to other nations without significant adoption

[1] For more on the concept of disruptive and sustaining technologies, See Clayton Christensen, *The Innovator's Dilemma*, New York: HarperCollins Press, 1997. For more on how the disruptive and destructive characteristics of the Internet can be harnessed by businesses and policymakers for creative and innovative purposes, see Lee W. McKnight, Paul Vaaler, and Raul Katz, eds., *Creative Destruction: Business Survival Strategies in the Global Internet Economy*, Cambridge: MIT Press, 2001.

[2] www.Tornado-Insider.com Weekly newsletter lists financing details of private companies in the wireless Internet segment. The May version of the newsletter lists $126 million of new investments alone. More examples are available at www.tornado-Insider.com.

[3] For example, those who bet too early on business plans based upon Bluetooth, or 3G technologies for the wireless Internet. Mobile commerce markets have yet to extend in most nations beyond short messaging communications applications.

[4] Lewis, Michael, *The New New Thing* . Penguin Books, New York, 1999.

and in many cases changing the underlying DNA of the idea, is unrealistic in any market segment let alone the Internet.

This is not to say that the American experience of entrepeneurship in information and communications and technology businesses is either the right way or the only way. When we consider then the borderless, open access characteristics of the Internet, we are again faced with the question of translating and interpreting the American experience with this medium to other nations. We believe this is the wrong approach to addressing the development of information and communications and technology outside the US. There are entrepreneurs ready to exploit new communications and Internet business opportunities in nearly every market around the world, few are able to rapidly grow their new enterprises without the easy availability of capital, particularly venture capital.

For venture capital to be attracted to a market, there must eventually be opportunities for liquidity through exits. Exits can be through either an IPO – initial public offering, that is a sale of stock - or a trade sale, in which the venture is merged with an existing and presumably more established enterprise. Venture Capital becomes available only when the minimum levels of communications and information technology (IT) infrastructure are achieved and exists in combination with other government, social and economic conditions. A more appropriate way of approaching the global expansion of communications, IT and Internet innovations is to look first at the nation and economy in question and determine where this economy fits in the continuum between old economy monopolistic, centrally controlled IT business environments and the US experience on the other extreme.[5] One of the distinguishing features is the treatment of intellectual property. While it is not critical for all successful enterprises to have their own unique intellectual property assets, it is a strong expectation if not a precondition for most venture capitalists.

Intellectual Property Creation: Is There a Model for Emerging Markets?

There are certainly very successful businesses based on a service business model without any IP. In this context, 'IP' does not signify the Internet Protocol but rather intellectual property invention at the core of their business model. However, in the communications and Internet technology sector, intellectual property invention is essential to most successful new businesses. New IP invention is an essential ingredient determining whether or not a VC will enter a marketplace and expose their capital to higher levels of risk.[6] As we noted above, the climate for industry leading intellectual property creation is more dependent on the educational and legal environments in a given country than the state of development of the communications and Internet infrastructure.

[5] Sachs, Jeffrey D., et. al., *Readiness for the Networked World – A Guide For Developing Countries*, Cambridge: Center for International Development, Harvard University – www.readinessguide.org.

[6] In Internet retail, or electronic commerce sectors, some businesses may employ and integrate innovative technologies, thereby being a consumer rather than a developer of intellectual property. However, as is now evident, venture capital investment in strictly retailing new enterprises ism likely to be limited.

The most prominent example of this is India where the number of Internet users is nascent but the high technology sector is a world leader in the export of software and software services.[7] For a brief period during the Internet boom of the late 1990s, several venture capital funds were misled to believe that India was in fact ready for broad consumer and business Internet investment.[8] The reality of the domestic Indian situation is that the underdeveloped national communications infrastructure, still dominated and constrained by government supported monopolies, did not support the financing of Internet startups except where they exported their products and services; exploiting the skilled engineering labor arbitrage opportunity.

Another example of a nation in which entrepeneurs have succeeded at exploiting the availability of innovations which have created significant intellectual property assets is Israel where the only market of a significant size that exists for any high technology ventures is outside of Israel, in Europe or the United States. Long before the Internet boom, Israeli companies had successfully developed new intellectual property, converted these innovations into products and then marketed these products overseas resulting in many NASDAQ listed companies.[9] Israeli companies are uniquely capable to develop new intellectual property because of the Israeli government's support for converting military technology into commercial products. This government policy ensures that there will be a rich environment for both domestic and international VCs to exploit. It is not based on the development of fundamental communications and Internet infrastructure technologies locally, but on the existence of an "IP-factory" policy supported by the government and developed by private enterprise. To what extent the Israeli model is replicable elsewhere is open to question, given the unique sociopolitical circumstances in which Israeli policies are developed.

The rise of Ericsson and Nokia in Sweden and Finland has created a new geographic focus for mobile technologies in the Nordic Region of northern Europe. Core technologies are often developed in the larger enterprises (Ericsson and Nokia), while the application of these technologies are proven in the Nordic marketplace. The governments of Sweden, Finland, Denmark and Norway are leaders in the commercialization of mobile telephony.[10] The unique combination of geographic isolation, early adoption of new technologies, and mobile operators willing to offer new services primarily to young people has created a virtual laboratory of mobile products and services, which leads the world in its innovation and creativity.[11] Unlike India and Israel where the market is

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[7] Wipro, for example, is a $4 billion USD software and software services company listed on the NASDAQ.
[8] See for example, information on eVentures India (www.eventures.co.in) and Chrysalis Capital (www.chrysaliscapital.com), as examples of how venture capital investments in India got ahead of the market opportunities.
[9] For a history of VC investment in Israel, review the history of Checkpoint (www.checkpoint.com) as an example of a NASDAQ company developed from Israeli intellectual property.
[10] Examples include Telia (www.telia.com) in Sweden, Telenor (www.telenor.com) in Norway, and Sonera (www.sonera.com) in Finland. Smaller Nordic area carriers also include Tel Danmark, Elisa Communications (FN), Tele2 (FN) and Europolitan (SW).
[11] According to the GEM report (Babson College, 2000) www2.babson.edu/babson/babsoneshipp.nsf/Public/entOrganizationResearchGEM

export oriented, the Nordic region first applies its intellectual property inventions in its local market and then exports across Europe, the United States and Asia.

Technology continues to be created in the UK and Germany primarily in the core technology areas out of university environments and large multinational corporation technology laboratories. Obviously these technologies have ready markets domestically and across Europe, however, most of these innovations must be vetted through market entry into the United States in order to be fully adopted by the market. Given the leadership position of the European mobile segment, a large portion of the IP invention occurring is focused on this segment and rapidly deployed in local markets.[12]

Japan and Korea continue to be intellectual property application markets rather than IP creation markets. Due to language and cultural reasons, entrepreneurs tend to remain focused on their local markets rather than export markets, which are dominated by the vertically integrated conglomerates. Exceptions such as NTT DoCoMo in the wireless Internet arena, as well as several firms in the gaming and other electronic hardware and software areas, can be viewed as drawing upon traditional Japanese industrial strengths rather than openness to fundamental technical innovations and intellectual property creation.

While not all the best concepts and ideas for communications and the Internet have been or will be invented in the United States, the question is; can great ideas conceived outside of the US come to life in nations and economies which may not be as friendly to the business application of IP invention ? From these examples we can conclude that countries differ significantly in their ability to invent IP and given the state of their domestic Internet market, they are forced into an IP exporting role. This in turn attracts venture capital (local, international and diaspora sourced capital), but only for exporting the startup's technology into larger and better-developed markets. Eventually, these countries will be able to be global leaders once their local markets fully develop.

It must be emphasized that while intellectual property is often an important part of business development, those are not restricted to forms such as patents and copyrights as is typically thought of, but also extend to trade secrets. Trade secrets may mean nothing more than a business's standard operating procedures, or culture. Those business practices, even if not explicitly proprietary, and especially the business and technical talent of the leadership team of a firm, are as important if note more for the execution of a business plan that would offer the chance for extraordinary returns on investment. It is that combination, of sound business plan, strong management team, and relatively favorable national conditions including adequate level of infrastructure development, which determines whether or not venture capitalist's will consider investing in intrinsically high – risk ventures in higher risk, emerging markets. We explore emerging markets through that prism in the following section of this paper.

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[12] "Nordic telecoms operators jostle for top-dog position" *Financial Times*, May 17,2001,.

Exhibit I:

Best National Internet Investment Opportunities

	Financial Development	Political and Economic Freedom	Communication Capabilities	Investment Potential	Economic Growth	Infrastructure
TIER 1						
Latin America						
Chile	2.71	2.00	3.09	1.75	2.04	2.77
Colombia	2.95	2.64	3.39	2.19	2.43	2.74
Costa Rica	2.98	2.43	3.25	2.05	2.71	2.50
Jamaica	2.95	2.41	3.15	2.38	2.91	2.74
Peru	2.69	2.70	3.01	1.96	2.40	2.90
Venezuela	2.92	2.99	2.82	2.81	2.77	2.54
Central/Eastern Europe						
Czech Republic	2.99	1.76	2.18	2.45	2.78	2.11
Estonia	3.19	1.90	2.24	1.48	3.14	2.29
Hungary	2.85	2.37	2.28	2.32	2.77	2.15
Russian Rep	3.18	3.33	2.67	2.92	3.46	2.45
Slovenia	3.31	2.67	2.02	1.96	2.37	2.05
Turkey	2.86	2.79	2.98	2.32	2.64	2.29
Africa/Middle East						
Botswana	3.54	2.34	3.90	2.94	2.63	2.96
Egypt	2.94	3.40	3.46	2.70	2.78	3.66
Israel	5.00	2.15	2.22	2.07	2.22	1.84
Mauritius	2.94	2.12	2.93	3.06	2.56	2.66
Morocco	3.19	2.77	3.86	2.12	2.98	2.94
South Africa	2.50	2.17	3.14	2.10	2.85	2.74
United Arab Emirates	4.30	2.45	5.00	3.42	2.09	2.43
Asia						
Indonesia	2.72	3.01	3.59	2.30	2.64	3.18
Malaysia		2.49	2.67	2.51	2.09	2.75
Philippines	3.00	2.54	3.20	2.81	2.80	3.65
Thailand	2.71	2.21	2.86	2.09	2.41	2.83

(Source: B. Day, et. al., International Technology Innovation: Strategy and Policy, DHP P 236, Fletcher School, Tufts University, 2000. See www.murrow.org)

Emerging Nations: Leapfrog or a Worldwide Wait?

It will take much longer than predicted for most emerging nations to adopt these new technologies throughout their mainstream economy. But adoption will accelerate, as the demonstration effect is already increasing the willingness of individuals, firms, and governments to learn new ways of doing business and providing services. We have already pointed out the fallacy in assuming, however, that even the best-intentioned public or private actors can easily change the fate of nations. Thus, venture capital will enter these emerging nations in a measured manner focused first on large infrastructure private equity opportunities and then as company building venture capital

The catalyst for financing these startups will come from the ethnic diaspora as well as from domestic sources. The measurement of value creation will remain difficult as local capital markets evolve into transparent exchanges with a high degree of liquidity.

This discussion is designed to evaluate when an economy is ready for venture capital. Venture capital as defined by early stage cultivation of an entrepreneur to take an idea from a business plan to a company that generates revenue and profit and scales to have market recognized value. The Internet boom of the late 1990s has simplified this process in many people's minds. What is evident is that before venture capital can enter a market and really be productive, certain basics need to be in place.

The following table provides an overview of selected countries based on several key factors, which together serve to create an environment where venture capital backed companies, can create innovative value in emerging nations.

Exhibit II

Informal Assessment of Selected Countries

Country	IP Invention	Local Internet Market	Available Capital	Entrepreneurship Factor	Capital Market	Communications Infrastructure	Diaspora Factor	Cost of Doing Business	Tech Early Adopter	Overall View
India	Medium	Low	Low/Medium	Medium	Low	Low	High	Medium	Low	Medium
Israel	High	Low	High	High	Low	High	High	Medium	High	High
China	Medium	Low	High	Medium	Low	Low-Medium	High	High	Low	Low/Med
Philippines	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
France	High	Medium	High	Low	Medium	High	Low	High	Medium	Medium
Brazil	Low	Medium	Medium	High	Low	Medium-High	Low	High	Medium	Medium
South Africa	Medium	Low	Low	Medium	Low	Low	Low	Medium	Low	Low
Japan	Medium	Medium	Medium	Low	Medium	Medium	Low	High	High	Low
Sweden	Medium	Low	Low/Medium	High	Low	High	Low	Medium	High	High
Poland	Low	Low	Low	Medium	Low	Medium	Low	Medium	Low	Medium
United States	High	High	High	High	High	High	Medium	Medium	High	High

In a World Bank case study of India, Robert R. Miller, makes a clear case outlining the limitations of leapfrogging:

> "Much remains to be accomplished in freeing Indian businesses and financial institutions from the web of government controls and regulations that have in the past stifled the type of growth seen in other Asian countries. Poor infrastructure, along with low public investment, remains a difficult problem to overcome. Moreover, India's overall educational attainment generally is poor, although technical education has been a bright spot. Lack of literacy will continue to be a critical factor that will re quire many years of effort to overcome." [13]

The conclusion we can draw from this informal assessment is that when IP invention and the general level of entrepreneurship in a nation are considered, several countries stand out as more likely than others to generate high technology entrepreneurial activity. These include India, Sweden and the United States. A more complete assessment of country entrepreneurial readiness is contained in the Babson College GEM study.[14]

Venture capitalists are interested in building companies. Private Equity firms are interested in financial returns from proven business models. There is a substantial difference in an emerging economy between these two financing methods.. There will be a great deal of private equity capital in emerging nations as the communications infrastructure is built out and a growing number of consumers are enabled to use these services. This process is never a quick process and inevitably moves in cycles as the economy internalizes a rapid deployment of new communications technologies.

Entrepreneurs rely on angel investors or high net worth individuals or members of a particular diaspora to finance the earliest stages of a company's development. During this stage the entrepreneur is developing their technology and business model and ensuring that the company idea or concept actually has the element of being a real business. While some venture capitalists will specialize in this seed stage in emerging nations, it is usually accomplished through the diaspora network or through government or university incubation.

A local VC who specializes in emerging markets often provides the first round of professional venture capital. The risk level of a regional or global VC remains too high at this stage primarily because the assessment of the investment risk must be made primarily on personal relationships and an intimate knowledge of the local market and economy. "Investor AB"[15] is an example of such a local investor in Sweden and STI

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[13] Miller, Robert R., "Leapfrogging? India's Information Technology Industry and the Internet", World Bank IFC Discussion Paper Number 42. See also www.vcline.com for more information on venture capital in India.

[14] Babson College GEM study. www2.babson.edu/babson/babsoneshipp.nsf/Public/entOrganizationResearchGEM

[15] See www.investorab.com for a comprehensive description of their investment strategy for both private equity and venture capital

Ventures[16] is an example in Israel. Both firms retain technical executives who are intimately tied into the local technical and entrepreneur community and who can correctly assess which new ventures are most likely to succeed.

Once a venture capital company has made an investment, the investors must dedicate their time to building the company. In an emerging country context this requires substantially more time and effort because the entrepreneurs are likely to be developing both domestic and international business strategies simultaneously. Successful venture capitalists are those who have a strong operating background and can help these companies develop the practical elements of their business rather than only the financing elements.

Exhibit III

Types and Financial Stages of Business Development

- Angel Financing
  - High Net Worth Individuals
  - Diaspora Angels
- Venture Capital
  - Early Stage
  - Late Stage
- Private Equity
  - Large projects based purely on ROI in later stage companies
  - Also early stage investments in sectors with a clear ROI
- Government Financing
- Debt Financing

At some stage the entrepreneur and the venture capitalist will have to develop an exit strategy, which provides the business angels and the venture capitalists a return on their capital. This remains a substantial hurdle for most young companies because of the immature capital markets outside of the US and Europe. During the Internet boom several new equity markets were created to mirror the US NASDAQ exchange including the Neuer Mart in Germany, NASDAQ Japan and the MOTHERS exchange in Japan and a new section on the Hong Kong exchange among others. These markets are struggling with the downturn in equities, but will regain momentum as equities recover in the coming quarters. What is important is that there are now more choices for investors and entrepreneurs to realize public value for their efforts.

Firm Strategies and National Opportunities for Venture Investment and Entrepreneurship in the Global Internet Economy

The Internet bubble of the last three years has generated several significant lessons for venture capitalists and entrepreneurs outside the United States. The most salient lesson is that transplanting internet or new technology business models from the US to other

[16] www.stiventures.com for a description of investment strategies and a listing of portfolio companies.

nations, particularly emerging nations, is not only hard work but is more likely to fail than succeed. What works in Santa Clara won't necessarily work in Paris or Shanghai or Bombay.

The fundamental reason why technology businesses are difficult to export is that the underlying communications and IT infrastructure and economic fundamentals, which exist in the US, or UK does not exist in an emerging nation. The example of exporting eCommerce sites to other markets demonstrates this quite clearly. While the web site itself is easily translated into another culture and language, the ability to deliver the products by an efficient and low cost logistics system is unlikely. Thus, the underlying economic fundamentals are often more important than the mere existence of communications and IT technologies and an entrepreneur who is ready to start a business.

In emerging nations we are more likely to see entrepreneurs such as Edward Tian, CEO of China Netcom. Tian is leading a massive public-private venture to lay fiber across China's vast eastern provinces.[17] This type of entrepreneurship is already generating an ecosystem of smaller entrepreneurs who will build companies to exploit and/or use this new broadband communications pipe. Without entrepreneurs who can effectively act as infrastructure pioneers in a private equity environment and in partnership with governments, company building on top of such an infrastructure becomes much less probable.

It is also important not to assume that the adoption of new Communications and Internet technologies will solve world hunger or that people in emerging nations will see value in anything more than the first leap of bringing a dial tone to a remote village. Entrepreneurs must adapt their models to exploit the reality of the local market conditions. It is substantially more difficult to create a new market segment for your company and create a new company simultaneously. Entrepreneurs in emerging nations are more likely to succeed when they innovate to solve existing problems for businesses and consumers rather than invent entirely new economic models.

Using the China Netcom example, possible new businesses which could be built around the China Netcom ecosystem include ISP access for local markets, web hosting and design services, education services on how to benefit from using the internet for your business and many more.

How do entrepreneurs and venture capitalists know that a particular marketplace is ripe for investment ? With US venture capital investment returns returning to the pre-bubble norms of 30-50 %[18], global investors are seeking out opportunities outside the US and Europe. While the risk is obviously much higher in these markets, these investors are driven by the stark reality that there will be more Internet users and eCommerce purchasers outside of the US than inside by 2002. The opportunities for large-scale

[17] See article in *Wired Magazine*, February, 2001
[18] VentureEdge, Summer 2001, published by VentureOne. See www.ventureone.com for more information.

private equity investments in building out broadband wireline and wireless infrastructure are therefore substantial.[19]

Exhibit IV details several formal and informal methods of measuring the readiness of a particular country for significant growth and innovation in entrepreneurship in Communications and Information Technology areas. While the traditional methods used to examine this problem remain important (GDP, Income per capita, etc…), these new methods provide venture capitalists and entrepreneurs with a far more insightful set of predictors for a new business.

The most significant counter-intuitive example of this is NTT DoCoMo's investment in bringing the Internet to Japanese consumers through a simple, slow, "data driven", "always on" mobile channel rather than the US example of being wired to your desk with Internet access being defined as surfing. This is the perspective that entrepreneurs must adopt in emerging nations if they are going to successfully bring the power of the Internet to business and users in a profitable local context.

Two significant ongoing research studies consistently uncover evidence that the entire range of social, economic, government and regulatory factors blend together to create the opportunity for entrepreneurial innovation and venture capital participation in emerging markets. The Babson College Gem Study[20] examined the entrepreneurial environment in 18 countries using a thorough quantitative and qualitative interview approach. Their primary findings enumerate the following key determinants of entrepreneurship:

Exhibit IV

Key Determinants of Entrepeneurship

1. The perception of new business opportunities;
2. Demographic characteristics and growth;
3. Participation in post-secondary educational programs;
4. Cultural and social values supportive of personal independence;
5. A strong physical and professional infrastructure.[21]

While this study does not focus exclusively on technology's impact on entrepreneurship in these nations, another study compiled by the Center for International Development at Harvard University (with support from IBM) has generated a comprehensive "readiness

[19] See www.softbank.com for press releases describing Softbank's $1 billion plus investment with Cisco for an Asian Infrastructure VC Fund. Also see www.asiaglobalcrossing.com for a system map and strategy description of their seamless global IP cable network including a recent announcement to enter mainland China.
[20] See www2.babson.edu/babson/babsoneshipp.nsf/Public/entOrganizationResearchGEM
[21] ibid

framework" for Information and Communications Technologies (ICTs) in a networked world.[22] The Harvard study outlines and evaluates five major elements, which they view as the critical prerequisites for a nation to be "ready" for the networked world and by implication when entrepreneurs are likely to begin building innovative companies. These factors are:

Exhibit V

Emerging Market Readiness Factors

1. Network Access: Availability, cost, and quality of ICT networks, services and equipment
2. Networked Learning: Integration of ICTs into the educational system.
3. Networked Society: To what degree are ICTs used in business and at home.
4. Networked Economy: To what degree are governments using ICTs to deliver information and services.
5. Network Policy: Level of promotion or hindrance of ICTs.

When viewed together, the GEM study and the Harvard study provide a comprehensive view of national ICT readiness and the level of national entrepreneurship.

[22] See www.readinessguide.org for complete research report.

Exhibit VI

Entrepreneurial Readiness Metrics

Rank	GEM Entrepreneurship Rank[23]	Wired Magazine Creativity Index[24]	Internet Penetration[25]	Mobile Phone Density percent[26]	Population/ Market Size[27]
1	Brazil	US	Iceland	Taiwan	China
2	South Korea	Finland	Finland	Iceland	India
3	United States	Singapore	Canada	Singapore	United States
4	Australia	Luxembourg	United States	Hong Kong	Indonesia
5	Norway	Hong Kong	Australia	Italy	Brazil
6	Canada	Denmark	Sweden	Austria	Russia
7	Argentina	Germany	Norway	Finland	Pakistan
8	India	Canada	Denmark	Sweden	Bangladesh
9	Italy	Australia	United Kingdom	Norway	Japan
10	United Kingdom	Japan	The Netherlands	Netherlands	Nigeria
11	Germany	Sweden	Germany	United Kingdom	Mexico
12	Denmark	Israel	Switzerland	Denmark	Germany
13	Spain	Ireland	Austria		Philippines
14	Israel	The Netherlands	Ireland		Vietnam
15	Finland	United Kingdom	Belgium		Egypt
16	Sweden	Iceland	France		Turkey
17	Belgium	Switzerland	Hungary		Iran
18	France	Hungary	Spain		Ethiopia
19	Singapore	France	Italy		Thailand
20	Japan	Malaysia	China		France

[23] See Babson College Gem Study on Entrepreneurship at www2.babson.edu/babson/babsoneshipp.nsf/Public/entOrganizationResearchGEM
[24] Wired Magazine, May, 2001
[25] See http://www.smau.it/magellano/tracce/english/scenari/2000/market/world/world1.htm…study for Internet penetration
[26] See report on Mobile handsets, WAP and the Mobile Internet.. www.rcb.dk/uk/staff/chm/wap/2000.pdf, Also see full report on mobile phones at http://www.rcb.dk/uk/staff/chm/wap.htm
[27] See World Bank population estimates www.worldbank.org

The role of the Ethnic Diaspora

Scholars have written substantial works on the importance of overseas ethnic communities in both developing the economies of their adopted nations as well as supporting their home countries through capital repatriation. This diaspora funded home country economic financing has reached new levels in recent years as substantial numbers of qualified candidates have enrolled in, and graduated from American and European graduate schools of engineering and business. During the height of the Internet boom, substantial numbers of non-American entrepreneurs could be found throughout Silicon Valley.[28]

These US trained engineers are also by nature very entrepreneurial because they are trained to discover and invent new ways of viewing traditional solutions. This, combined with exposure to the US entrepreneurial culture and often their strong entrepreneurial heritage generates a wave of entrepreneurs. The most prominent example is the non-resident Indian community in the US.[29]

Because indviduals from these cultures have traditionally emigrated from their homeland to other parts of the world over many generations, there is a broad network of successful businessmen and businesswomen, which form both a support network and a financing source for these budding entrepreneurs. In most cases the businesses that are created are established in the home country, but often financed by members of the diaspora and have a global element to their business plan.

K.B. Chandrasekhar, founder of Exodus[30] and one of the wealthiest non-resident Indian technology entrepreneurs in the United States, speaks out frequently about the significant progress overseas Indians have made in the past ten years in the technology sector. Unlike how Indians were treated in the early part of the twentieth century [31], Indians working in the technology sector " …have shown they can make it to the top of Silicon Valley and now many of them are starting to put their financial and intellectual capital back into India."[32] There are numerous other examples in the Indian community as well as in the Chinese community, of newly earned capital returning to the homeland. This is a vital source of venture capital for emerging nations. In sum, the role of the ethnic diaspora is critical to the development of high technology entrepreneurial activities in emerging nations.

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[28] While no specific study has identified the number of non American entrepreneurs in the Internet economy, the H1-B visa program expansion between 1998-2001 suggests the number is in excess of 200,000.

[29] Reference FT article February 28,2001 on India Lures the high-tech expat dollar.

[30] See www.Exodus.com

[31] Lai, Vinay, Establishing Roots, Engendering Awareness: A Political History of Asian Indians in the United States …www.sscnet.ucla.edu/southasia/Diaspora/roots.html…reference 1

[32] Financial Times, February 28,2001, "India Lures the high-tech expat dollar"

Conclusion

The Internet and associated information and communications technologies will demand sweeping changes in how developed and developing nations approach every aspect of doing business. This change will be driven in developing nations first by the establishment of the essential elements of an open, competitive and connected communications infrastructure. Both wireline and wireless, both narrowband and broadband – followed by the entry of professional venture capital dedicated to building businesses which are uniquely and appropriately designed to exploit the benefits of the Internet in a local and regional context.

Developing nations are unlikely to leapfrog major phases of technology development and attract company building venture capital before the benefits of private equity have been exhausted in building out the national communications and IT infrastructure. Despite this trend, the role of successful entrepreneurs within ethnic Diaspora around the world will remain a catalytic source of capital for emerging nations, particularly India and the Chinese "common market" countries of the PRC, Taiwan, Hong Kong, Singapore and Indonesia. Finally, the successful adoption of communications and IT technologies by entrepreneurs in emerging nations will emerge with uniquely local characteristics.

In this paper we have introduced new metrics for assessing entrepeneurial readiness. While the same factors matter in venture capitalist's consideration of investment opportunities in emerging markets as in nations with more sophisticated technical and social infrastructure, the weighting may vary. Our proposed metrics should be tested against national-level indicators in future research. Unfortunately, as we have argued, while those nations which can, will leapfrog, for many emerging nations all we have done in this paper is suggested in which direction they should continue to crawl. Uphill.