

A Case for Sector-Specific Start-up Ecosystem

SRIRAM JAYASIMHA
GURUMURTHY KALYANARAM

Abstract

Entrepreneurship is neither novel, nor so trendy as to be presented as a universal panacea; however, politicians of all hues have some “policies” to promote high-value entrepreneurship – the left supports subsidies in greenfield areas such as environment-friendly technologies and bio-technology, while the right favours tax breaks. However, all agree that start-ups must be exempt from complying with onerous and stifling Government regulations and institute clusters and incubators where entrepreneurs may cross-fertilize their ideas and develop “holistic” skills. In addition, in a resource-poor country, entrepreneurship promotion should be targeted by sector in order to maximize the possibility of success as well as maximally utilize available resources. In some cases, milestone-based investment approaches can minimize down-side risks to both entrepreneurs and investors. We shall explore ways by which technology-deficit industry can benefit from youth-driven innovation.

Keywords: *Entrepreneurship, Small-and-Medium-Enterprises, Public Sector Undertakings, Intellectual Property, Monopolies, Public Policy, disruption*

Introduction

Entrepreneurship takes many different forms; one classification scheme might be based on the scale of its benefit to society. Taking inspiration from Klemens von Metternich [1] who said, “*It is in general interest that existence guarantee is found, while particular interests are of secondary importance*”, organizations that dominate “general interest” (or GI) in telecommunications, computing, transportation, food-processing, health-care and education abound; while some are long-lasting, a few become well-known behemoths. However, such GI start-ups are rare (amongst the pool of start-ups), perhaps 1 in a 100; even though it would benefit society to fund them, there is no dearth of capital for such ventures, subject only to their being well-conceived.

Other new enterprises take inspiration from a quote ascribed to Charles Darwin [2]: *It isn't the strongest that survive, nor the most intelligent, but those most responsive to change*. Such highly nimble (HN) enterprises spawn when there is a promise of new methodology. However, by its very nature, few last well beyond the change (unless they continually adopt promising new and diverse technologies). Nevertheless, such enterprises are far more numerous than the first, perhaps one in 10. Since such enterprises are the harbingers of change and some may not be immediately visible to private capital, an incubator/ accelerator might greatly benefit such start-ups.

Almost all other start-ups merely echo Martin Luther King's view [3] that “*Capitalism doesn't permit even economic benefits. A small privileged few are rich beyond conscience, and the rest doomed to be poor at some level. That's the way the system works*”. Many such new follow-the-leader (FTL) firms adopt newly established business practises in the hope that they will not, for some time, be disrupted (again) by more enterprising firms in the first and second category. Many are, in fact, started by the well-to-do as their older enterprises start to fail (a Hemmingway anti-hero famously said [4] about failure that “it happened gradually and then suddenly”). Such enterprises may be euphemistically described as being “intellectually conservative” and, not unsurprisingly, can be long-lasting and well-networked. They neither need, nor deserve, public support.

Having summarized a provisional start-up categorization and search strategy, we now focus on other conducive factors. Luigi Cavalli-Sforza, in his seminal *Genes, People and Languages*[5] states that human race has made its most rapid strides when migration occurs (the other factors such as mutation and genetic drift are much slower). For example, the Silicon Valley model has yet to be successfully replicated elsewhere, the reason primarily being that the melting cauldron does not have the same diversity. Nevertheless, there are new trans-border organizations and collaborations that thrive given the development of technologies that

provide “tele-presence”. Thus, one could gauge the eventual success of an enterprise by the richness and diversity of its collaborative network. Indeed, in [6] it is stated that an entrepreneur:

- *must be able to recruit widely, sometimes from outside of his current social network*
- *positions himself strategically to connect network cliques*[7]
- *employs flexible strategies*

Another factor is whether the enterprise's market is global, [8] describing “International Entrepreneurship” as “a combination of innovative, proactive and risk-taking behaviour that crosses national boundaries and creates value to organizations”. Indeed, historically, foreign trade has been an important source of wealth generation over several millennia, and is likely to do so in the future as well. Contemporary historians credit *Mittelstand* (German-speaking countries' small and medium companies) for 20th century German economic growth. They achieve high efficiency by deep engineering of a critical product (doing that one thing very well) and globally export (usually B-B) to achieve economies of scale. Other conducive factors are that they employ outside-the-family professional managers, have a long-term (as opposed to quarter-to-quarter) financial plan and work closely with researchers and universities. In Germany, they employ 70% of the workforce and contribute 50% to GDP.

Other factors are the intellectual prowess, zeal, functional-area coverage and persuasive powers of the entrepreneurial team as well as the environment in which they function. The relevance of these factors are usually very specific to the enterprise and, not surprisingly, assessment of these factors tend to

vary widely.

The remainder of this paper focusses on three subjects (addressed in Sections 2, 3, and 4 below)— (section 2) assessing value of start-ups, (section 3) Entrepreneur behaviour and (section 4) policy initiative (specific to India).

Assessing Start-Ups' Values

Current trends in start-up promotion focus on *disrupting* (or revolutionizing) current goods' and services' delivery practices, rather than being a part of them, or even, refining them. Disruption is usually made possible either by challenging widely-held assumptions or by the development of *disruptive technologies*. For example, the development of the driverless car will herald profound changes in automobile ownership and of taxi-cab service providers. We shall, therefore, restrict value assessment to those start-ups that will develop either disruptive technologies or business models and assume, for simplicity, that they are captured by patents, trade secrets, etc.

Assuming eventual (execution) success of the start-up enterprise, the natural question is how we assess its value; this relates to either value of the new market it creates or the market it replaces (by producing goods more efficiently, perhaps using less resources, and by perhaps, adding to its utility). A brief discussion of monopoly legislation follows; this is justified by observing that a patent, exclusively assigned, may create a monopoly.

In antitrust regulation, the government worries mainly about “horizontal” mergers in which one company buys another that does the same thing, creating a more monopolistic market. The traditionalists of antitrust economics

held that extending a monopoly “vertically” would be irrational because a company could not extend its market share by merging with one of its customers or suppliers. This argument so influenced the US Justice Department that it omitted “vertical integration” from its merger guidelines. Tirole [8] used game theory to show that it was possible to enlarge profit by de-fragmenting a supply chain through mergers with suppliers or customers, or both. Suppose a firm with a patent on a cost-reducing innovation sold patent rights to all downstream producers rather than just one. The latter approach might enable, profitably, the chosen producer to under-price its competitors and capture marketshare. While there is an incentive for a patent holder to buy its customer, the downside is that there is less competition and likely higher prices (at the expense, potentially, of reduced demand). However, potential profits that may accrue due to vertical integration may interest a venture capitalist to invest in the start-up.

This is, of course, a simplistic analysis based on the success of an enterprise attaining its goal and the absence of the development of alternate technologies; these factors lead to a venture capitalist to discount the firm's future value. In actual practice, such concerns weigh so heavily on a venture capitalist that he rarely invests in a start-up with just an idea. More common are self-financing and so-called angel investors who invest largely due to intuitive reasons, best rationalised by themselves.

Venture capital usually pursues established firms well after intellectual property creation and initial dissemination and, consequently, value is usually higher than that attributed to intellectual property rights alone.

Entrepreneurship Behaviour

In [10], behavioural biases have been described. They include:

- Present bias
- Framing bias
- Loss aversion
- Affect heuristic
- Anchoring heuristic
- Bounded rationality
- Certainty/ possibility effects
- Confirmation bias
- Diversification bias
- Gambling with house money
- Halo effect
- Herd behaviour
- Hindsight bias
- Endowment and IKEA effects
- Inequity aversion
- Inertia
- Mental accounting
- Optimism bias or hubris
- Sunk-cost fallacy and regret aversion

Most of these biases are found in entrepreneurs and their surrounding ecosystem. For example, herd behaviour, hubris and anchoring bias may help explain current trends towards entrepreneurship incubation. As another example, entrepreneurship is viewed as a positive sum game, i.e., the ensemble of selected start-ups provides a (hugely) net positive return on external investment (by those unrelated to the entrepreneurial team); however, the number of successful start-ups are a small subset of the ones initially funded. Incubators or Accelerators can themselves be thought of as start-ups with differentiated methodologies. As an example of a highly selective incubator (which aims to increase both the number of profitable of incubates and absolute profit), that has managed to cherry pick from the GI start-up pool, has been YCombinator [11], an incubator (which provides seed funding and 3-month incubation advice in fundraising and recruitment in

exchange for 7% equity). Fortune, valuing this incubator at \$7.8 billion, calls it "a spawning ground for emerging tech giants". Acceptance of applications for funding can be as low as 1% and mentor-to-mentee ratio can be 10:1.

Another (at least partially public) Indian incubator, T-HUB, with an application acceptance ratio of 25%, has the option of selecting equity (rarely exercised) or rent for a start-up located in its premises (it also extends some of its common facilities and services to off-site start-ups) and has primarily an infrastructure-services business model. Via an albeit small \$25M start-up fund, it could participate in the capital of market regulator-approved VC funds, up to 15 per cent as limited partner. Being public, decision-making is limited by a committee consensus (with substantial Government representation), and this may inhibit risk-taking. In addition, such an incubator focusses on facilities and clustering, rather than equity participation, to promote entrepreneurship. Such an incubator can thrive only in an infrastructure-poor and input-rich environment; however, there is as yet no conclusive evidence that it has (or will) increase the number of entrepreneur success stories. It does appear that all the categories – GI, HN, and FTL start-ups – are its incubates, although we have not investigated the relative ratios in which they are represented. Generally, angel investors and venture capitalists encourage risk taking behaviour in their investee companies (sometimes overcompensating loss aversion into something akin to gambling on house money). They have three reasons: first, because they have a limited time horizon to divest their stake; second, because, they want to gauge success/ failure quickly (as they typically invest via several financing rounds, or tranches, based on the entrepreneur meeting commitments

agreed upon in advance); and third, because they disproportionately lend weight to phenomenal over middling successes. The behaviour seems to reflect some of the observations made in *The Deal or no Deal* game show described in pp. 297-301 of [10].

Whatever the motivation of the funding enterprises, one goal, apart from funding, that stands out is: *altering behaviour of their investee companies (at least with regard to their risk-reward orientation)*. Thus, incentives in their programs are planned early (immediately following selection, during a "honeymoon" glow phase), while the stiff uphill nature of phenomenal entrepreneurial success is revealed only as time elapses. In contrast, policy initiative that we describe below, *does not desire to change* behaviour of the ecosystem's participants, and most participants adopt "anomalous" behaviour, i.e., not exactly what "rational" optimization automata might do. Rather, the method we suggest below engineers the interaction between sectoral investors and entrepreneurs in order to produce favourable outcomes.

Policy Initiative

Traditional industrial policies date as far back as the 18th century and most developed countries, including United Kingdom, United States, Germany and France, intervened actively in their domestic economy through industrial policies (even though Adam Smith, in *Wealth of Nations*, advocated industrial growth via the free market route). Pack and Saggi [12] define Industrial policy as "any type of selective government intervention or policy that attempts to alter the structure of production in favour of sectors that are expected to offer better prospects for economic growth in a way that would not occur in the absence of such intervention in the market equilibrium". Failures in

industrial policy can occur because of *governmental failure* or because of *market failure* (or both). However, the frequency of debates of this nature have diminished primarily because globalization has changed the economic landscape; global production networks make industrial decision-making both more complex (because of the great increase in both competition and the number of alternative suppliers) as well as easy (in eliminating barriers). Surpluses from goods and services sales are increasingly concentrated in the hands of those who innovate and restructure – in terms of technology as well as business processes.

The new mantra in industrial development is toward promoting such “high-value” entrepreneurship and, a news report perhaps prematurely claiming that “India surpassed China and Israel to become the third largest start-up ecosystem (after UK and the US)”. This impetus has been spurred due to two reasons: first, the credit-unfriendliness of Indian banking institutions to start-ups and second, its essentiality in a country where 80 per cent of the population is under the age of 40 and unemployment is rising. Perhaps the biggest challenge for the Indian incubator eco-system is that it provides infrastructure and very limited capital for a very short time-frame. Both the entrepreneur and incubator are under great pressure to generate down-stream private venture capital interest in the incubates (given that a typical successful start-up takes 3 years to generate positive cash-flow).

We note that many Indian public sector undertakings (PSUs), hitherto driven by import-substitution and protected markets, have to incur a high cost of either technology reverse-engineering or acquisition. As manufacturing margins are driven down, refurbishing and retooling their aging machinery imposes a

heavy burden, particularly when they operate on an inadequate scale. Section 2 above suggests that combining innovation with exclusive licensed manufacturing can release latent (monopolistic) value. This value can service large-scale sector-specific investment in innovative start-up enterprises. Optimally a level of investment can be chosen so that when the remaining investors bring in private or foreign equity, larger export markets can also be tackled, bringing the benefits of scale to the PSU's manufacturing infrastructure. Moreover, private equity brings management that takes more risk than a PSU's and this helps to moderate loss aversion.

Although such a policy may not, at the present time, run counter to any international commitment that India may have made, that policy may have to be altered in due course (in response to new international commitments). It must be mentioned that the whole purpose of “industrial policy” is to promote covert demand-side protectionism, while reaping the supply-side benefits of free-market policies.

A consequent policy would be to stress on HN sector-specific start-ups (which are not emphasised by the current start-up eco-system). Their technological capability can be well assessed by PSU managers, while the potential to plumb global markets could be qualified by private or global equity participants. Once promising sector-specific HN start-ups are identified, they should be funded regularly based on both achievement of milestones and on their marketing efforts (by multiplying applications, reaching remote geographies, networking, etc.).

Last, such a policy would initially value start-ups on their talent and achievements alone, while their future rewards will be milestone-based. Thus, product, manufacturing

and marketing downside risks are borne entirely by investors. Mentorship can emphasise diversifying entrepreneur skill-set to address a global, albeit, sector-specific market. Successful marketing skill acquisition will herald substantial additional profits for both the entrepreneurs and investors. In many respects, the proposed policy is not very different from the *Mittelst and model*, except for the joint PSU-private equity funding aspect.

Conclusions

In conclusion, we observe that:

1. Promoting entrepreneurship and SMEs are essential to India's economic growth.
2. Sector-specific initiatives will better utilise scarce resources.
3. Investments already made in India's PSUs can be better utilised by linking them to innovative start-ups.

References

- Henry Kissinger, *A World Restored: Metternich, Castlereagh and the Problems of the Peace, 1812–1822* (1999 reprint ed.). London: Weidenfeld & Nicolson, ISBN 978-0-297-64395-1.
- Charles Darwin, *Origin of the Species*, Fingerprint Publishing; First edition (2013).
- <http://www.brainyquote.com/quotes/quotes/m/martinluth691624.html> (accessed July 31, 2016).
- Ernest Hemingway, *The Sun Also Rises*, Scribner (October 17, 2006), ISBN 978-0743297332.
- Luigi Luca Cavalli-sforza, *Peoples, Genes and Languages*, University of California Press (12 April 2001), ISBN 978-0520228733.
- Sharon A. Alvarez and Jay B. Barney, "Discovery and creation: alternative theories of entrepreneurial action," *Strategic Entrepreneurship Journal*, Volume 1, Issue 1-2, Nov. 2007 pp. 11–26.
- Toby E. Stuart and Olav Sorenson, "Strategic Networks and Entrepreneurial Ventures," *Strategic Entrepreneurship Journal*, Volume 1, Issue 3-4, Dec. 2007, pp. 211–227.
- Patricia Phillips McDougall and Benjamin M. Oviatt, "International Entrepreneurship: The Intersection of Two Research Paths," *The Academy of Management Journal*, Vol. 43, No. 5 (Oct., 2000), pp. 902-906.
- Josh Lerner, Marcin Strojwas, and Jean Tirole, "The Design of Patent Pools: The Determinants of Licensing Rules", *The RAND Journal of Economics*, Volume 38, Issue 3, Autumn (Sept.) 2007, pp 610–625.
- Richard H. Thaler, *Misbehaving - The Making of Behavioral Economics*, W. W. Norton & Company, May 2015, ISBN 978-0393080940.
- Rao, Leena (Aug. 26, 2015). "Meet Y Combinator's New COO". *Fortune*.
- Howard Pack and Kamal Saggi, "Is There a Case for Industrial Policy? A Critical Survey", *The World Bank Research Observer* 2006 21(2), pp. 267-297.

Sriram Jayasimha founded Signion (www.signion.com), that designs telecommunications and other products, in 1987. From May 1981 to June 1987, he was a member of technical staff at GTE Government Systems Corp. (now General Dynamics), Needham, MA. He has authored 41 peer-reviewed publications, and has obtained 20 US patents, in signal processing and telecommunications applications. He received his electrical engineering education from IIT, Madras, India, RPI, Troy, NY and MIT, Cambridge, MA and is a fellow of the Indian National Academy of Engineering. Sriram can be reached at sriram@signion.com

Gurumurthy Kalyanaram is a distinguished professor and scholar, academic advisor, editor, and management and policy consultant. He got his doctoral degree from MIT in Management Science and Industrial Organization Economics.