Financing innovation in the Asia-Pacific

Challenges and enabling mechanisms

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Abstract

Many Asia-Pacific economies have adopted policy initiatives and programmes to facilitate financing for firm-level innovations. The impact of such policies and programmes, however, varies from country to country which can be attributed to many factors. The policy makers need to understand that different type of innovations need to be aligned with different types of financing mechanisms. The policy makers need to be aware of their national context and set up clear directions before adopting financing schemes that have been successful in the developed economies. This paper provides insights into some of the enabling mechanisms and practices for financing innovation, particularly in the context of Asia-Pacific countries.

Introduction

It is a globally shared view that fostering environment that enables firm-level innovation, especially for Small and Medium sized Enterprises (SMEs) and start-ups is crucial in the current and emerging knowledge-based as well as Intellectual Property (IP) based economy.

In order to create such enabling circumstances, governments in the Asia-Pacific region are putting lot of efforts mimicking policies and programmes which have been proved to be successful in different countries, leading to policy convergence. For example, we could easily see accelerators in almost every country in the region now. Every government emphasizes on enhancing venture capital in the country as a critical element to facilitate financing for innovation. The impact of such policies and programs, however, varies from country to country.

With this paper, the author intends to offer some observatory remarks and opinions as a person who has worked in the domain of innovation financing for the last 16 years in the Republic of Korea and have extensively participated in helping developing countries in the region such as Viet Nam and Thailand in creating enabling mechanisms for financing innovation through Knowledge Sharing Program (KSP) between 2013 and 2016. The author's view does not necessarily represent the perspective of the organization that he belongs to.

Different types of innovation require different financing mechanisms

Differences in the types of innovations often fail to get enough policy attention, leading to a failure in aligning proper financing scheme for each different type of innovation.

Financing innovation is known to be different from financing other types of business activities due to its inherent difficulty from financers' perspective in understanding the uncertainty that is different from typical financial risk, which can be tackled in large part through sufficient market discipline followed by a systemic know-how of standardized evaluation. Thus, many policy makers are tempted to jump into the conclusion that venture capital (VC) is the most suitable enabling financial mechanism for financing innovation in general.

This belief is further enhanced through the theory of Death Valley, in which firms generate negative cash flow while growing rapidly and cannot bear the burden of paying back bank interest, in addition to cash outflow. Therefore, equity financing is best suited for the task (or for the job).

Bank lending, on the other hand, is often regarded inappropriate in financing innovation because the pay-off structure of loan is not adequate; composing high risk portfolio is inherently difficult because of the maximum revenue that is limited to principal and interest even in the case of big success of borrowers.

However, this is a good supporting argument only when we deal with disruptive innovation. There are several different types of innovation that deserve attention with equal importance.

The types of innovation that the author understood[1] out of the dynamic learning from financing more than 300 innovative ventures in the Republic of Korea with both debt guarantee and equity are as follows:

- **Experimental innovation:** An exploration research and development (R&D) that is often conducted by universities and research institutes or some small startups testing the new idea of doing it differently from status quo.
- **Sustaining innovation:** An incremental innovation to make existing products or services improved with higher value added, functions, up-

[1] Theoretical Basis of Author's understanding in different types of innovation came from a series of Harvard Business Review articles written by Clayton Christensen

dates and additional features mostly executed by already established firms or entrepreneurs who are former employees, often in the R&D division, of the well-established firms tend to be a little more aggressive and risk taking than when he was with the previous firm.

- **Efficiency improving innovation:** Innovation that is mostly established by firms that leads to the improvement of the existing process often regarded as enabling and doing more with less resources.
- **Market-creating innovation:** Radical and disruptive technology or a business model innovation that aims to create a new market. This type of innovation is mostly new to the world, rather than new to the firm.

Experimental innovation is important and deserves the quantitative support because it sets basis, direction and a tone for the entire innovation ecosystem. Countries can choose the direction by priority area depending on their own strategy. For example, a country may choose to pursue a staged advancement in a certain prioritized technology sector with the goal of eventually having a solid ground for the field in the nation in which it can be time-consuming. However, it will probably be more fruitful in the long run. The other country may choose not to build from scratch, but promote R&D that can be readily commercialized, centering on creative applications.

This type of innovation goes well with grants and concessionary loans by public financial institutions that finance projects in policy-prioritized sectors with potentially above zero net present value (NPV).This requires appropriate policy framework for tolerating failure and rewarding long term success. Some of the outcomes later would become attractive investment objects when uncertainty at the early stage is cleared and concept is proved successful. Before such a stage, ushering and pushing VCs and banks to those innovations to invest or lend would not work.

Important element in this type of innovation domain is to have a highly dedicated public financial institution that not only renders public financial resources, but also translates the knowledge and information earned out of evaluating such projects to financers in the language of financers at a stage where promising business potential is demonstrated.

Incremental innovation that includes sustaining innovation and efficiency-improving innovation should be addressed with bank lending because cash flow out of such innovation is relatively predictable. VCs may not feel attracted with this type of innovation because most of the incremental ones carried out by SMEs are not scalable while it allows SMEs to survive and thrive to a certain degree.

Big firms may leverage internal source of capital or direct financing from capital market for this type of innovation. Government policy therefore should be directed towards making banks to adapt to the practice and get familiarized. Developing countries in the Asia-Pacific region, however, may lack in the necessary skill set for the practice of lending based on cash flow projection. Also, many commercial banks are not capable of differentiating between experimental innovation and incremental innovation.

In this case, the government should establish or appoint a specialized institution to interpret the bankability of the innovation, characteristics and a potential cash flow projection. This valuable communication mechanism often in the form of certificate should go together with a strong policy drive and active risk mitigation mechanisms such as partial credit enhancement.

Intellectual Property (IP) financing, pledging IPs as collateral for bank lending, also go well with this type of innovation. To foster IP-backed banking, enabling mechanisms should be prepared in a more multidimensional manner. First of all, there needs to be *inter alia* a specialized institution that can effectively translate the commercialization value of IPs in terms of banking at reasonable cost, not just patent specialists who tell only how solidly the IP is written and how well the IP will protect the invention down the road. IP financing for SMEs are more in the nature of cashflow-based lending rather than collateral-based lending. Therefore, the same risk mitigation mechanism as credit enhancement is necessary.

Although IPs can be taken as collateral, we cannot expect them to have the same liquidation potential as tangible assets at the point of borrowers' default. Most of the countries in the Asia-Pacific region lack in the capacity of secondary market for IPs. The creation of IP recollection mechanism which ensures purchasing of collateralized IPs from banks in case of borrowers' default can be another form of enabling mechanism. However, from the perspective of disciplining bankers to be familiarized with the practice, risk sharing mechanism in terms of both reducing information asymmetry and partial credit enhancement upfront would be a better solution rather than practicing guaranteed purchase of IPs with the accrued loan amount in case of default.

Despite the degree of development in terms of IP infrastructure and whether or not the country has a critical mass of qualified IPs for commercialization, it is important to get banks disciplined to prepare for ongoing IP based economy. Placing policy favors on IP financing will also lead innovators to habitually think of registering their ideas into the legitimate form of properties, which contributes to the increase of good IPs in the country. During the due course of nurturing the environment, we should not expect that the mechanism would work exactly the same as in a few advanced economies where bankable IPs are relatively abundant with the long history of facilitating IP generations.

Especially at the early stage of developing IP financing, without the right set of support mechanisms, it will be next to impossible to convince bankers to adapt themselves to the practice of IP financing even in a highly selective and gradual manner.

When aiming for big disruptive innovations that may lead to the birth of unicorns, often times neither the innovator nor the financier knows the true potential of such projects although innovators

may still know a little more about it.[2] The only way to learn about the true potential of such projects may be to invest in it. In addition, such big innovations tend to not have a foreseeable distribution in return generation.

With these reasons, venture capitals and financial entities known to have a specialized risk appetite for high risk and high return, are the pertinent entities to finance such innovations.

Venture capitals are important entities in fostering scalable innovative business ventures. However, relaxing regulations and providing fund of funds scheme for VCs are not enough. Before considering the fostering of VCs with government resources, policy makers should ask whether the country has or can connect to a well-developed capital market. Without existence of well-developed capital market, VCs may find it extremely difficult in finding a room for exit. Israel's Yozma fund scheme was successful because it considered, from the beginning, connecting their successful ventures to the capital market and M&A opportunities in the United States.

Most the countries in the Asian and Pacific region lack in the capacity of capital market backing innovation. If the governments in such countries target the cultivation of big innovations and unicorns by supporting VCs, equipping them with capital source is not sufficient. It has to consider building pipelines to the advanced country capital market, such as Singapore, Hong Kong, and Tokyo. Recently, KOSDAQ market in Republic of Korea has been quite keen in inviting promising foreign firms.

The process of doing so requires a great deal of cross-border program coordination including borrowing the capacity of experienced foreign investment and investor relations (IR) professionals. Although such capability can be well imported with the right incentive alignment, having a specialized institution which can select and communicate promising technology ventures, would still be necessary. VCs are generally good at identifying great entrepreneurs and innovative business models, capability of which can be earned relatively quickly; however, VCs in developing economies are often so nascent in identifying potentially disruptive technologies.

Precautions in the art of benchmarking

Benchmarking is an important part of strategy. Examining successful practices elsewhere enables us to quickly catch up with the new concept and to gain vivid impetus to the policy initiatives.

Nevertheless, benchmarking is a midpoint not the endpoint. Meticulous ex ante analysis considering different contexts and surrounding should be conducted before bringing in new concept originated from foreign countries first of all because what was successful in one economy can be manifested into different outcomes.

For advanced economies, innovation policies involve analyzing plenty of existing information. They can draw on prior experience on multiple fronts. In contrast, emerging economies cannot afford to engage in extensive research in their context.

Even in such situation, the introduction of a new concept in a timely manner is imperative; however, without thorough examination of the current condition, sensible planning on execution time span in staged manner and pertinent resource allocation to each stage, it will lead to significant resource waste, which may not be discovered in the short run.

In many cases, it takes a while to realize whether a benchmarked program was set up to fail because it tends to keep going so long as resource is funneled into it. To make matters worse, once a system is established on poor design, the undesired impact would silently persist, growing its own path dependence only to be noticed after some time passes.

Secondly, new concept should be piloted in a small scale. Piloting is learning by testing that enables elaborate design of the mechanism that actually works. There is no easy and safe path to pursue in the building of enabling mechanism. Before experimenting in small scale, we can hardly see how the effect of one action would be interconnected with other elements in the whole mechanism. It is tempting for the policy makers to come up with grand program that pushes for a new concept in large scale; however, change is not an event, but a process. Successful policy requires the ability to abandon or amend poorly performing pilots, but also capitalize on successful ones. The programs can be scaled up by drawing lessons from ex port examination of pilot experimentation.

Beware of agency cost

When considering complementation of the capacity of financers in terms of reducing uncertainties, it is easy for policy makers to entrust third party experts in the market to act on its behalf especially in this era in which private sector is blindly believed to be more efficient than the public sector institution.

However, policy makers should firstly ensure whether the agency will be always acting in their best interests. Especially when hiring small size private sector experts who are often driven by short term revenue maximization rather than sustainable profit by preserving reputation on reliability, performance assessment and incentive mechanism should be carefully designed considering all possible scenarios. If they are deemed as uncontrollable or prohibitively expensive to hire, establishing a specialty public institution under the direct control of the government may be a better choice in spite of the burden associated with it.

In most of the developing economies, public sector institutions can mobilize qualified talents with non-monetary incentives such as honor, social prestige, great learning opportunities, and other sort of intrinsic motivation. Thus, creating capable public institution may be more cost effective in some cases.

Conclusion

Facilitating firm-level innovation is important for decent job creation, business competitiveness and economic growth. Fostering financing of innovation plays a pivotal role in such initiatives.

[2] William R. Kerr & Ramana Nanda, Financing Innovation, Working Paper 15-034, Nov 5, 2014

When it comes to financing innovation, policy makers should firstly understand that there are different types of innovation, each of which is suited with different forms of financing. This means that they need to precisely know the nature of innovation they are pushing for. Misaligning primary financing scheme with targeted sort of innovation would lead to resource waste with only a fraction of the desired outcome at best. It is also important to understand that VCs are not cure-all.

Also, seemingly attractive schemes that proved to be successful in other countries would probably be manifested into a different extent due to different condition and context. For a policy to be far-reaching, policy makers need to be aware that their hot spot can be different from sweet spot known in the different economies with different context. Rather than pursuing à la carte combination of policy choices benchmarked from here and there, policy makers need to set a clear direction with well-defined sort of targeted innovation first and then consider various options in comprehensive and harmonious manner.

Lastly, financial resource allocation to promote schemes and programs that enable effective financing of innovation should go contemporaneously with the right set of capacity supplementation for the major financing entities. Simply pushing by pouring money with poorly designed supplementary mechanism would not lead to the desired action of the financers.

Luckily, we are living in a world where knowledge and skills can easily be transferred to be adaptable in the local context through various sharing and assistance mechanisms. The Knowledge Sharing Program (KSP) of Republic of Korea and capacity building programs of International organizations, including those of UNESCAP Asian and Pacific Center for Transfer of Technology, are there to help build such needed capacity in shorter period of time than when trying to build from scratch on your own. Information becomes knowledge only at the point of active seeking and learning. ■

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WIPO GREEN contributes to green technology innovation and transfer by bringing together a wide range of technologies and players in the green technology innovation value chain. It connects owners of new technologies with individuals or companies looking to commercialize, license or otherwise access or distribute a green technology.

WIPO GREEN's database assembles in one place technologies at all stages of development, from upstream research to marketable products (and everything in between). These technologies are available for license, collaboration, joint ventures and sale. It therefore adds greater transparency to the market for green technology.

In addition to matchmaking via the database and Partner initiatives, from time to time WIPO GREEN organizes regional matchmaking projects focused on specific fields of technology. Through these matchmaking events, WIPO GREEN brings together providers and seekers of technologies and/or services as well as other facilitators and experts from the WIPO GREEN network and beyond. The WIPO GREEN Network facilitates commercial relationships and transactions by connecting green technology providers and seekers.

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