
Impact of Government Organizational Reform to Scientific Research Legal System and Response Thereto (2) – For Example, The Finnish Innovation Fund (“SITRA”)

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III. Comparison of Strength and Weakness of Sitra Projects

1. Sitra Venture Capital Investment Model

In order to comprehend how to boost innovation business development to upgrade innovation ability, we analyze and compare the innovation systems applied in Sweden, France and Finland^[1]. We analyze and compare the characteristics, strength and weakness of innovation promotion models in terms of funding, networking and professional guidance. Generally, the first difficulty which a start-up needs to deal with when it is founded initially is the funding. Particularly, a technology company usually requires tremendous funding when it is founded initially. Some potentially adequate investors, e.g., venture capitals, seldom invest in small-sized start-up (because such overhead as supervision and management fees will account for a high percentage of the investment due to the small total investment amount). Networking means how a start-up integrates such human resources as the management, investors, technical advisors and IP professionals when it is founded initially. Control over such human resources is critical to a new company's survival and growth. Professional guidance means how professional knowledge and human resource support the start-up's operation. In order to make its product required by the market, an enterprise usually needs to integrate special professional knowledge. Notwithstanding, the professional knowledge and talents which are available from an open market theoretically often cannot be accessed, due to market failure^[2].

Assuming that Sitra's funding is prioritized as Pre-seed-Initiation stage, Seed-Development stage and Follow-up – Growth stage, under Finland model, at the Pre-seed-Initiation stage, Sitra will provide the fund amounting to EUR20,000 when Tekes will also provide the equivalent fund, provided that the latter purely provides subsidy, while the fund provided by Sitra means a loan to be repaid (without interest) after some time (usually after commercialization), or a loan convertible to shares. Then, the loan would be replaced by soft or convertible (to shares) investment and the source of funding would turn to be angel investors or local seed capital at the Seed-Development stage. At this stage, the angel investors, local seed capital and Sitra will act as the source of funding jointly in Finland, while Tekes will not be involved at this stage. At the Follow-up-Growth stage, like the Sweden model, Sitra will utilize its own investment fund to help mitigate the gap between local small-sized funding and large-sized international venture capital^[3].

How to recruit professional human resources is critical to a start-up's success. Many enterprises usually lack sufficient professional human resources or some expertise. DILLI service network set up by Sitra is able to provide the relevant solutions. DILLI is a network formed by product managers. Its members actively participate in starts-up and seek innovation. They also participate in investment of starts-up independently sometimes. Therefore, they are different from angel investors, because they devote themselves to the starts-up on a full-time basis^[4]. In other words, they manage the starts-up as if the starts-up were their own business.

2. Key to Public Sector's Success in Boosting Development of Innovation Activity Business

In terms of professional guidance, voluntary guidance means the direct supply of such professional resources as financing, human resource and technology to starts-up, while involuntary guidance means the supply of strategic planning in lieu of direct assistance to help the enterprises make routine decisions^[5]. The fractured and incomplete professional service attendant market generates low marginal effect. Therefore, it is impossible for the traditional consultation service to mitigate such gap and the investment at the pre-seed initiation stage will be excessive because of the acquisition of the professional services. Meanwhile, professional advisors seldom are involved in consultation services at the pre-seed initiation stage of a start-up because of the low potential added value. Therefore, at such stage, only involuntary professional guidance will be available usually. Under Sitra model, such role is played by an angel investor.

Upon analysis and comparison, we propose six suggested policies to boost innovation activities successfully as the reference when observing Sitra operation. First of all, compared with the French model, Finland Sitra and Sweden model set more specific objectives to meet a start-up's needs (but there is some defect, e.g., Sitra model lacks voluntary professional guidance). Second, structural budget is a key to the successful model. Sitra will receive the funds in the amount of EUR235,000,000 from the Finnish Government, but its operating expenditure is covered by its own operating revenue in whole. Third, it is necessary to provide working fund in installments and provide fund at the pre-seed-initiation stage. Under both of Finland model and Sweden model, funds will be provided at the pre-seed-initiation stage (Tekes is responsible for providing the fund in Finland). Fourth, the difficulty in networking must be solved. In Sitra, the large-sized talent network set up by it will be dedicated to recruiting human resources. Fifth, the voluntary professional guidance is indispensable at the pre-seed-initiation stage, while the same is unavailable at such stage under Sitra model. Instead, the Sweden model is held as the optimal one, as it has a dedicated unit responsible for solving the difficulty to seek profit. Sixth, soft loan[6] will be successfully only when the loan cannot be convertible to shares. At the pre-seed initiation stage or seed-development stage, a start-up is usually funded by traditional loan. Assuming that the start-up is not expected to gain profit, whether the loan may be convertible to shares will also be taken into consideration when the granting of loan is considered (therefore, the fund provider will not be changed to the "capital" provider). Besides, the government authorities mostly lack the relevant experience or knowledge, or are in no position to negotiate with international large-sized venture capital companies. For example, under the French model, the government takes advantage of its power to restrict the venture capital investment and thereby renders adverse impact to start-ups which seek venture capital. Finally, the supply of own fund to meet the enterprises' needs at seed-development stage and follow-up-growth stage to mitigate the gap with large-sized venture capital[7] is also required by a successful funding model.

IV. Conclusion—Deliberation of Finnish Sitra Experience

As the leading national industrial innovation ability promoter in Finland, Sitra appears to be very characteristic in its organizational framework or operating mechanism. We hereby conclude six major characteristics of Sitra and propose the potential orientation toward deliberation of Taiwan's industrial innovation policies and instruments.

1. Particularity of Organizational Standing

In consideration of the particularity of Sitra organizational standing, it has two characteristics observable. First, Sitra is under supervision of the Finnish Parliament directly, not subordinated to the administrative organizational system and, therefore, it possesses such strength as flexibility and compliance with the Parliament's requirements. Such organization design which acts independently of the administrative system but still aims to implement policies has been derived in various forms in the world, e.g., the agency model[8] in the United Kingdom, or the independent apparatus in the U.S.A. Nevertheless, to act independently of the administrative system, it has to deal with the deliberation of responsible political principles at first, which arouses the difficulty in taking care of flexibility at the same time. In Taiwan, the intermediary organizations include independent agencies and administrative corporations, etc., while the former still involves the participation of the supreme administrative head in the right of personnel administration and is subordinated to the ministries/departments of the Executive Yuan and the latter aims to enforce the public missions in the capacity of "public welfare" organization. Though such design as reporting to the Parliament directly is not against the responsible political principles, how the Parliament owns the authority to supervise is the point (otherwise, theoretically, the administrative authorities are all empowered by the parliament in the country which applies the cabinet system). Additionally, why some special authorities are chosen to report to the parliament directly while other policy subjects are not is also disputable. The existence of Sitra also refers to a circumstantial evidence substantiating that Finland includes the innovation policy as one of the important government policies, and also the objective fact that Finland's innovation ability heads the first in the world.

Second, Sitra is a self-sufficient independent fund, which aims to promote technical R&D and also seeks profit for itself, irrelevant with selection of adequate investment subjects or areas. Instead, for this purpose, the various decisions made by it will deal with the utility and mitigate the gap between R&D and market. Such entity is responsible for public welfare or policy projects and also oriented toward gain from investment to feed the same back to the individuals in the organization. In the administrative system, Sitra is not directed by the administrative system but reports to the Parliament directly. Sitra aims to upgrade the national R&D innovation ability as its long-term goal mission and utilizes the promotion of innovation business and development of venture capital market. The mission makes the profit-orientation compatible with the selection of investment subjects, as an enterprise unlikely to gain profit in the future usually is excluded from the national development view. For example, such industries as green energy, which is not likely to gain profit in a short term, is still worth investing as long as it meets the national development trend and also feasible (in other words, selection of marketable green technology R&D, instead of comparison of the strength and weakness in investment value of green energy and other high-polluted energy).

2. Expressly Distinguished From Missions of Other Ministries/Departments

For the time being, Sitra primarily invests in start-ups, including indirect investment and direct investment, because it relies on successful new technology R&D which may contribute to production and marketability. Start-ups have always been one of the best options, as large-sized enterprises are able to do R&D on their own without the outsourcing needs. Further, from the point of view of an inventor, if the new technology is marketable, it will be more favorable to him if he chooses to start business on his own or make investment in the form of partnership, instead of transfer or license of the ownership to large-sized enterprises (as large-sized enterprises are more capable of negotiation). However, note that Sitra aims to boost innovation activities and only targets at start-up business development, instead of boosting and promoting the start-up per se. Under the requirement that Sitra needs to seek profit for itself, only the business with positive development view will be targeted by Sitra. Further, Sitra will not fund any business other than innovation R&D or some specific industries. Apparently, Sitra only focuses on the connection between innovation activities and start-up, but does not act as the competent authority in charge of small-sized and medium-sized enterprises.

Meanwhile, Sitra highlights that it will not fund academic research activities and, therefore, appears to be distinguished from the

competent authority in charge of national scientific research. Though scientific research and technology innovation business, to some extent, are distinguished from each other in quantity instead of quality, abstract and meaningless research is existent but only far away from the commercialization market. Notwithstanding, a lot of countries tend to distinguish basic scientific research from industrial technology R&D in the administration organization's mission, or it has to be. In term of the way in which Sitra carries out its mission, such distinguishing ability is proven directly.

3. Well-Founded Technology Foresight-Based Investment Business

The corporate investments, fund investments and project funding launched by Sitra are all available to the pre-designated subjects only, e.g. ecological sustainable development, energy utilization efficiency, and social structural changes, etc. Such way to promote policies as defining development area as the first priority and then promoting the investment innovation might have some strength and weakness at the same time. First of all, the selection of development areas might meet the higher level national development orientation more therefor, free from objective environmental restrictions, e.g. technical level, leading national technology industries and properties of natural resources. Notwithstanding, an enterprise's orientation toward innovation R&D might miss the opportunity for other development because of the pre-defined framework. Therefore, such way to promote policies as defining development areas or subjects as the first priority will be inevitably based on well-founded technology foresight-based projects^[9], in order to take various subjective and objective conditions into consideration and to forecast the technology development orientation and impact to be faced by the home country's national and social economies. That is, said strength and weakness will be taken into consideration beforehand for foresight, while following R&D funding will be launched into the technology areas pre-designated after thorough analysis.

4. Self-Interested Investment with the Same High Efficiency as General Enterprises

Sitra aims to gain profit generally, and its individual investment model, e.g., DILLI, also permits marketing managers to involve business operation. The profit-sharing model enables Sitra to seek the same high efficiency as the general enterprises when pursuing its innovation activity development. The investment launched by Sitra highlights that it is not "funding" (which Tekes is responsible for in Finland) or the investment not requiring return. Therefore, it has the system design to acquire corporate shares. Sitra participates in a start-up by offering its advanced technology, just like a general market investor who will choose the potential investment subject that might benefit him most upon his personal professional evaluation. After all, the ultimate profit will be retained by Sitra (or said DILLI manger, subject to the investment model). Certainly, whether the industry which requires permanent support may benefit under such model still remains questionable. However, except otherwise provided in laws expressly, said special organization standing might be a factor critical to Sitra profit-seeking model. That is, Sitra is not subordinated to the administrative system but is under supervision of the parliament independently, and how its staff deal with the conflict of interest issues in the capacity other than the public sector's/private sector's staff is also one of the key factors to success of the system.

5. Investment Model to Deal With Policy Instruments of Other Authorities/Agencies

Sitra decides to fund a start-up depending on whether it may gain profit as one of its priorities. As aforesaid, we may preliminarily recognize that the same should be consistent with funding to starts-up logically and no "government failure" issue is involved. For example, the funding at the pre-seed-initiation stage needs to tie in with Tekes' R&D "funding" (and LKSA service stated herein) and, therefore, may adjust the profit-seeking orientation, thereby causing deviation in promotion of policies. The dispute over fairness of repeated subsidy/funding and rationality of resource allocation under the circumstance must be controlled by a separate evaluation management mechanism inevitably.

6. Affiliation with Enhancement of Regional Innovation Activities

Regional policies cannot be separable from innovation policies, especially in a country where human resources and natural resources are not plentiful or even. Therefore, balancing regional development policies and also integrating uneven resource distribution at the same time is indispensable to upgrading of the entire national social economic benefits. The Finnish experience indicated that innovation activities ought to play an important role in the regional development, and in order to integrate enterprises, the parties primarily engaged in innovation activities, with the R&D ability of regional academic research institutions to upgrade the R&D ability effectively, the relevant national policies must be defined for adequately arranging and launching necessary resources. Sitra's approaches to invest in starts-up, release shares after specific period, integrate the regional resources, upgrade the national innovation ability and boost the regional development might serve to be the reference for universities' centers of innovative incubator or Taiwan's local academic and scientific sectors^[10] to improve their approaches.

For the time being, the organization engaged in venture capital investment in the form of fund in Taiwan like Sitra of Finland is National Development Fund, Executive Yuan. However, in terms of organizational framework, Sitra is under supervision of the Parliament directly, while National Development Fund is subordinated to the administrative system of Taiwan. Though Sitra and National Development Fund are both engaged in venture capital investments primarily, Sitra carries out its missions for the purpose of "promoting innovative activities", while the National Development Fund is committed to achieve such diversified goals as "promoting economic changes and national development^[11]" and is required to be adapted to various ministries'/departments' policies. Despite the difference in the administrative systems of Taiwan and Finland, Sitra system is not necessarily applicable to Taiwan. Notwithstanding, Sitra's experience in promotion and thought about the system might provide a different direction for Taiwan to think when it is conceiving the means and instruments for industrial innovation promotion policies in the future.

[1] Bart Clarysse & Johan Bruneel, *Nurturing and Growing Innovation Start-Ups: The Role of Policy As Integrator*, R&D MANAGEMENT, 37(2), 139, 144-146 (2007). Clarysse & Bruneel analysis and comparison refers to Sweden Chalmers Innovation model, French Anvar/Banque de Developpement des PME's model and Finland Sitra PreSeed Service model.

[2] *id.* at 141-143.

[3] *id.* at 141.

[4] *id.* at 145-146.

[5] *id.* at 143.

- [6] The loan to be repaid is not a concern. For example, the competent authority in Sweden only expects to recover one-fourths of the loan.
- [7] Clarysse & Bruneel, *super note* 26, at 147-148.
- [8] 彭錦鵬，〈英國政署之組織設計與運作成效〉，《歐美研究》，第30卷第3期，頁89-141。
- [9] Technology foresight must work with the innovation policy road mapping (IPRM) interactively, and consolidate the forecast and evaluation of technology policy development routes. One study case about IPRM of the environmental sustainable development in the telecommunication industry in Finland, the IPRM may enhance the foresighted system and indicates the potential factors resulting in systematic failure. Please see Toni Ahlqvist, Ville Valovirta & Torsti Loikkanen, *Innovation policy road mapping as a systemic instrument for forward-looking policy design*, Science and Public Policy 39, 178-190 (2012).
- [10] 參見李昂杰，〈規範新訊：學界科專辦法及其法制配套之解析〉，《科技法律透析》，第23卷第8期，頁33（2011）。
- [11] National Development Fund, Executive Yuan website, [http://www.df.gov.tw/\(tftgkz45150vye554wi44ret\)/page-aa.aspx?Group_ID=1&Item_Title=%E8%A8%AD%E7%AB%8B%E5%AE%97%E6%97%A8#](http://www.df.gov.tw/(tftgkz45150vye554wi44ret)/page-aa.aspx?Group_ID=1&Item_Title=%E8%A8%AD%E7%AB%8B%E5%AE%97%E6%97%A8#)(Last visit on 2013/03/28)

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