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## 主 論 文 の 要 旨

論文題目

Title

The Relationship between Brain Circulation and Industry Growth:  
A Case Study of the Knowledge Services Industry in Sri Lanka  
(Translation of Title \*If any)

氏 名

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## 論 文 内 容 の 要 旨

Brain circulation is critically important in the globalized and knowledge-based economy as returning skilled migrants are recognized as knowledge transmitters between the developed and the developing countries. Thus, the purpose of this study is to analyze the relationship between brain circulation and industry growth with special reference to the Knowledge Services Industry (KSI) in Sri Lanka. The KSI is defined as a combination of Information Technology services firms, Information Technology enabled Services firms, and firms involved in Business Process Outsourcing or Knowledge Process Outsourcing (BOI, 2014). This dissertation consist of seven chapters.

In the first chapter, I present the background, research problems, research questions, objectives, and significance of the research. To achieve the main objective specified above, two specific objectives were set as:

- (1) To examine the determinants of brain circulation; returning decisions of skilled migrants, in the knowledge services industry, and analyze the temporal nature and transnational capital of the returnees.
- (2) To examine the ways in which returned entrepreneurs' (REs) advantage contributes to business expansion and industry growth, and to analyze the effects of brain circulation on the knowledge services firms in terms of export performance, business financing and diffusion of institutional know-how within the firms.

Chapter Two reviews the relevant literature to understand the evolution of brain circulation, its determinants and effects on industry growth. First, the concept of brain circulation is still at its infancy stage, without a clear consensus on the scope and the definition. Scholars are skeptical about the general validity of the concept of brain circulation due to lack of empirical evidence from countries other than Taiwan, China, South Korea, India and Israel. Second, the determinants of

return migration from the North to the South are under-researched. Studies that investigate the returning decisions of skilled migrants are limited. Third, it is generally accepted that the retuning of skilled migrants is driven by incentives provided by the governments. However, the effectiveness of such incentives to promote the returning of skilled migrants is questionable as the policy mix has failed in some other countries. Fourth, effects of brain circulation can be analyzed at micro, meso and macro levels. However, meso-level factors are not identified. In particular, the ways in which REs can contribute to business expansion and industry growth are not well-studied. Fifth, REs should have a competitive advantage to reap the benefits in the knowledge-based economy due to accumulated transnational capital. Some scholars argue the other way. These concerns justify the importance of this research. Based on the literature reviewed in this chapter, an analytical framework to be used in this research was proposed.

Chapter Three offers the justification of the choice of Sri Lanka as a suitable country case for the present study. Sri Lanka is suffering from skilled migration, which is a multifaceted phenomenon in the country. There is an increasing trend in the skilled migration of professionals in health, management accounting and sciences, a phenomenon known as brain drain. In contrast, the KSI, which is growing very rapidly in the last decade, is experiencing a beneficial brain circulation with low attrition rates within the industry. The industry is largely benefited by the presence of REs. Therefore, it is interesting to explore what factors have promoted the brain circulation focusing on a single industry. In addition, the effects of the presence of REs on the export performances, business financing and diffusion of institutional know-how within the industry need to be analyzed.

Chapter Four presents the methodology of the present research. This research relies on the integrated approach using a combination of both quantitative and qualitative methods. To achieve the first specific objective, I analyzed how skilled migrants respond to the growth of an industry by employing firsthand data collected through a survey of Returned Skilled Migrants (RSMs) and qualitative information from 10 REs. The data collected through a survey of knowledge services firms and case studies of two leading firms in the industry were employed to achieve the second specific objective of the study.

In Chapter Five, I analyze the determinants and temporal nature of brain circulation. Moreover, transnational capital of the returned skilled migrants (RSMs) were analyzed. The determinants of brain circulation were analyzed using the push-pull framework and the micro-meso-macro framework. In contrast to the policy driven process of brain circulation in other countries, in Sri Lanka, a market driven process of brain circulation has been observed with few policy interventions. In addition, pull factors have driven the current flow of brain circulation in the KSI. Among the pull factors, most agreed ones were socio-cultural determinants and post-war peace.

The patterns of reasoning drastically differed for REs and RSEs. Family considerations were the most agreed motivational factor for RSEs. However, those for the REs were the patriotic feelings and social ties to the home country. Second, the KSI has generated wage premium for the returnees. On the other hand, entrepreneurs have returned when the industry growth was not visible before the industry took off in 2009. Thus, the findings suggest that the industry growth is not a significant factor that motivates entrepreneurs to make the returning decision. Entrepreneurs are less likely to return permanently compared to the skilled employees as the location has not been an obstacle to their investment activities. However, returned skilled employees tend to be more permanent returnees. Third, the transnational capital of RSMs was analyzed using the duration of overseas stay, years of foreign education, working experience abroad, and networking. In general, REs had higher accrued transnational capital than RSEs. Co-worker networks and kinship networks are the most commonly observed types of networking among the REs.

In Chapter Six, I analyze the ways in which REs' advantage contributed to business expansion in the KSI in Sri Lanka using two case studies of knowledge services firms founded by two prominent REs. Second, export performances, business financing and diffusion of institutional know-how of locally grown firms and REs founded firm were compared. The two cases, Virtusa and WSO2, have shown a rapid growth in local and global markets in the last decade. The two case studies demonstrate several advantages of the REs that contribute to business expansion, i.e., (a) founding "global startups"; (b) use of co-worker networks to start firms; (c) export market orientation of the firms; (d) stay connected to the host country; (e) ability to raise seed capital from market sources; (f) the use of innovative ways to finance business expansions; and (g) act as knowledge transmitters. However, export orientation, ability to raise seed capital from market sources, using venture capital financing and angel investors to finance business expansion may not be specific features for the firms founded by REs. Therefore, the export performances, business financing and the diffusion of institutional know-how were compared between locally grown firms and firms founded by REs. I employed four indicators to measure export performance: export market intensity, export client intensity, exporters from the beginning, and exporter status. The results of the regression analyses suggest that REs' firms have higher export market intensity and client intensity than locally grown firms. And also, RE's firms have a higher probability of becoming a fully exporting firm compared to the locally grown firms. Additionally, REs' firms have a higher probability of growing as global firms. The advantages of the REs' firms have arisen through the accumulated transnational capital of the REs. Then, I analyzed REs' ability to access seed capital from foreign sources and access to capital from foreign sources as business financing indicators. REs have effectively utilized foreign capital market and new instruments, in particular, finance through business angels, to finance their businesses. Knowledge about new ways of financing knowledge services brought back by REs has helped overcome the capital market imperfections in the country,

as few firms had access to local venture capitalists to finance their businesses. Furthermore, the relationship between the presence of REs and the diffusion of institutional know-how was also analyzed. There was no significant difference between REs' firms and other firms in terms of applying institutional know-how such as merit-based promotion, teamwork culture, having a flat hierarchy in the organization, and open-door policy to handle employee grievances.

Finally, the dissertation ends with the conclusions in Chapter Seven. The present study adds empirical evidence to support the concept of brain circulation. However, brain drain is still an important issue in most of the other sectors in Sri Lanka. Brain circulation is happening in certain industries in developing countries such as the KSI in Sri Lanka, as in the ICT industry in Taiwan, the KSI in India and the IT industry in Israel, commonly knowledge intensive, and IT-oriented industries.

Theoretically, return migration is explained as a negatively selected process. If the return migration is negatively selected, push factors in the host country become the determinants of returning decisions. However, in the KSI in Sri Lanka, pull factors have significantly influenced the returning decisions of the skilled migrants. The present study found that home-country conditions have driven the brain circulation within the KSI. More precisely, the returning decisions of the skilled migrants is positively selected. The results also confirmed that the macroeconomic factors are necessary but not enough to promote the brain circulation in developing countries. In addition, I found that the temporal nature of brain circulation is kept but does not apply commonly to both skilled employees and entrepreneurs. Entrepreneurs are less likely to return permanently compared to the skilled employees since the location does not become an obstacle to their investment activities. In the conclusion, a new framework to analyze the returning decisions of skilled migrants is presented by incorporating determinants of brain circulation. Moreover, I conclude that the firms founded by REs outperform locally grown firms due to accumulated transnational capital of the returnees. Policy recommendations and suggestions for further research are presented at the end of the chapter.