
Introduction

Benjamin J.C. Yuan
and Alfred Li-Ping Cheng

The main themes of this special issue include corporate, industrial, sector and regional innovations stimulated by technological progress, policy instruments, foreign direct investments (FDI) and business strategy. As a fast growing region, the Asian economy absorbed in-flows of capital funds, technology, entrepreneurs and accumulated various experiences of business operations. Typical innovation models are analysed in terms of combined ingredients with or without policy help by the government of the country. Implications and suggestions deduced from these articles are not only emphasised for a single country but also for the formation of innovation systems at regional and cross-country levels.

The key purpose of the leading article by Guan and Liu in this *Journal* is to explore clustering of innovative activities and to reveal the regional inequality of innovative capacities in PR China, based on patent data analysis. The authors examine the relationship between national patenting and variables associated with the regional innovative capacity. The analytical results indicate that the R&D activities of scientists and engineers in enterprises, the governmental R&D funds for enterprises, bank R&D loans and enterprises fund for research institutes and universities are all inefficient to different degrees for the regional innovation systems of PR China. On the contrary, firms' spontaneous R&D investment on their own contributes substantially to the regional innovative capacities. The results suggest that the methodology is a useful and relatively reliable way of measuring regional innovative capacities for China given her specific conditions. The final implications of the article suggest that the reform towards market economy, well-ordered industry competition milieu, and the powerful market-driven competition realistically promotes the enterprises to engage them in technology innovation.

The second article is about the old issue of foreign direct investment (FDI) but with new empirical results on the industry technology performance of manufacturing FDI at micro-level, with evidence from joint ventures in China. Recent literature showed that FDI, especially from developed countries, was claimed to facilitate technology flows into the recipient country via technology upgrade and R&D spillover activities. However, little research has been conducted at the disaggregated (firm – industry) level through which technology is transferred. Ng and Duan research on investigating the industry technology performance of JVs in China and its sources and how structural (institutional) factors of these foreign investments would affect technology progress using micro- (firm) level data. Research results showed that FDI by type of foreign ownership affected TFP progress and growth while capital intensity and its nested effect with market share were also important to enhance production efficiency.

The third article focuses on developed strategies in the ICT industry and the formation of industrial innovation systems on both sides of the Taiwan Strait. The *de facto* base on globalisation trend significantly explains the expansion of the overall trading markets, leading towards increased competition and changes in the global structure of manufacturing activities. The competition amongst multinational corporations (MNCs) for the mainland Chinese markets, squares its importance with strategic industrialists' adoption of 'coopetition' strategies which have contributed to significant growth in the Chinese economy. The evolution of the ICT industry on the two sides of the Taiwan Strait, under such interactively cooperative but competitive strategies, highlights the simultaneous (but may not be symmetric) development of two industrial innovation systems. Industrial investment and competition have jointly induced strong spillover effects and created strategic cross-strait investments for restructuring the industries, with the emphasis being placed upon the ICT industry as a special case. Cheng's paper tries to combine the conceptual view from regional as well as industrial characteristics to form an innovation system based upon emergent cooperative and competitive strategies under the current cross-strait institutional structure. He follows up to present an integrated view of the development strategy for the ICT industry based upon the triple-dimensional structure of interaction between markets, technology and institutions. The paper also attempts to identify the system of industrial innovation in the case of ICT development on the two sides of the Taiwan Strait, concluding with some insightful implications for the way forward.

The fourth article starts with questioning the relationship between R&D and IT tax credits and the policy effect on developing the enterprises. Sakata and Fujisue evaluate the tax reform of Japan as policy packages designed to bolster innovation. Contrasting with tax incentives implemented in OECD countries, the authors review their efforts to stimulate innovative activities in Japan. Emphasis is put on the competition between nations to have value-added R&D activities and to exploit the subsequent business activities located within their borders. Aside from the competitive pressure, the tax reform plan is adopted by the Japanese government, starting in 2003, as a means to stimulate innovation. Then, follow-up research is to estimate the economic benefits inherent in the tax reform plan. The further intention is to verify whether or not the tax reform plan can demonstrate benefits of which an impact can be measured in macroeconomic terms. The authors identify the significant effects of the tax reform plan and the difference in effects between R&D tax credit and IT investment tax credit. Since 2002, Japan has engaged in innovative activities with ambitious tax incentives, the largest ever among OECD countries. Calculation of the expected policy effects from the tax credits is made under some appropriate assumptions. To cope with the theoretical model, the actual effects need to be measured regularly as suggested by the authors. Implication for the tax incentive policy to help accelerate the formation of local clusters is identified when successful efforts are made to get innovation networked, including networking between industry and academia. It is also important to research on regional comparisons about what policy effects the tax incentives may generate.

The importance of knowledge for all enterprises that provide business services is easily justified. However, the conditions and results of knowledge affecting business services and helping on the formation of an innovation system leave room for further justification, especially in growing economy such as China. Zhou, Tang and Xiong discuss

the interactive relationship between Knowledge Intensive Business Service (KIBS) and knowledge environment. Increased research attention has been paid on how the KIBS helps to improve the innovation system, but until now few studies were carried out on how the external environment influences the growth of KIBS. The article develops a conceptual framework of how the knowledge environment established by the innovation systems influence KIBS. Based on the characteristics of KIBS in catching-up economies, general competitiveness mainly depends on the relative contribution of both explicit and tacit knowledge. It has met with serious global technical competition and its survival to a large degree depends on the comparative advantages taken from local complement assets. The paper points out that the National System of Innovation, Regional System of Innovation and Sectoral System of Innovation are likely to co-create the growing as well as the knowledge environment for the KIBS. And it is also noted that knowledge from MNCs is a critical, important, external resource for KIBS in the catching-up economies. The evidence from Japanese industry and the Indian software industry are used as examples.

With the development of a global economy, the utilisation of fuels and power energy are usually quickly and unexpectedly increased. Yuan, Wang and Tzeng's article introduces the fuel cell, a high-tech product, and its applications in Taiwan. A fuel cell has long been identified as the most important energy product in the 21st century. Most advanced and industrialised countries in the world are placing high priority on its development. In Taiwan, applications of fuel cells are widespread throughout products with which Taiwan takes high global market share, such as notebook computers, PDAs and digital cameras, along with items like automobiles, motorcycles and power generation equipment. The authors aims are to discuss ways of establishing the building blocks of the fuel cell industry in Taiwan. Proposals of strategic solutions for sustainable development of the domestic fuel cell industry are made through identifying relevant challenges and issues and evaluating development priority. The analytical hierarchy process (AHP) method is adopted and modified according to the fuzzy multi-criteria decision making (FMCDM) concept for indexing the weighting distribution and criteria ranking. As a conclusion, the paper suggests that the priority for Taiwan to develop fuel cell is in the fields of 3C electronics (Information/Communication and Consumer products), power generation equipment, motorcycles and automobiles. However, the encountered difficulties the fuel cell industry has faced, in turn, are the technology bottlenecks, insufficient R&D investment, high costs, unclear government policy and the short supply of R&D professionals. Experts opine that the top five strategic actions to help solve the problems are to realise the clean energy policy, to establish a national level research programme, to increase the R&D budget, to carefully select the niche products and to plan the operating demonstrating or pilot zone.

Lu, Lin and Wu look at a relatively traditional industry in Taiwan to promote the understanding of the service innovations. The transformation of the automotive industry into a knowledge-intensive service industry has been recognised to be effective. This study examines customer service activities in the automobile industry from the year 2001 to 2003, and identifies the most representative and innovative services of motor firms. These service innovations are not recommended under traditional discounted cash flow (DCF) assessments. However, a positive options-based net present value (NPV) method helps motivate companies to innovate their service activities and thereby increase the

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number of products they sell. Evidence shows that an options-based evaluation is more suitable than traditional approaches. The results of the study should help managers to address and evaluate service innovations.

The last article by Kim, Lee and Ames analyses how Korea develops their small and medium industries. The Korean Government is dedicated to encourage new start-ups by providing financing, man-power training support and technology and marketing support to compensate for the weaknesses of small and medium enterprises. As a new engine of technological innovation and economic development, high-tech ventures have been attracting greater attention from government, industry and universities in Korea. Now fostering entrepreneurship and promoting new venture creation have become priority policy actions. With the economic crisis under the IMF bailout in Korea, business incubators (BI) in Korea are under more pressure than ever to make significant contributions to the national economy. Now BIs are sprouting up rapidly in Korea. During the last 7 years, the number of BIs has gone up very rapidly and almost 350 incubators are in operation. Because the majority of the BI in Korea are in the infant stage, there is room for possible improvement. Policy directions are suggested based on the identified problems faced by BI.

Predictions are to be made for the future development of the Asian economy, not simply based on the papers in this issue. However, the articles can be seen as a kaleidoscope for viewing the changing economy. Of all the fascinating research that attracts a scholar and a policy maker, we find interesting dynamism about the innovation and business developments within the different regimes of institutions. We expect that more research will be forthcoming in these areas.