

Towards an “Entrepreneurial University” Model to Support Knowledge-Based Economic Development: The Case of the National University of Singapore

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Summary. — In common with other Newly Industrialized Economies in Asia, Singapore is moving toward a knowledge-based strategy for growth. Increasing prominence has been given to the role of Singapore’s universities in stimulating economic growth through industrially relevant research, technology commercialization, high-tech spin-offs, attracting foreign talent, and inculcating entrepreneurial mindsets. The National University of Singapore (NUS) is examined as a case study of how East Asian universities are responding to the globalization of the knowledge economy. It is argued that a shift toward an “entrepreneurial university” model [Etzkowitz, H., Webster, A., Gebhart, C., & Terra, B. R. C. (2000). The future of the university and the university of the future: Evolution of ivory tower to entrepreneurial paradigm. *Research Policy*, 29(2), 313–330] is critical for NUS to contribute effectively to Singapore’s transition to a knowledge-based economy.
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Key words — university technology commercialization, university–industry link, entrepreneurial university, small newly industrialized economies, Asia, Singapore

1. INTRODUCTION

In common with other Newly Industrialized Economies (NIEs) in Asia, Singapore is moving toward a knowledge-based strategy for economic growth (Wong & Singh, 2005). Policy makers have charted a course for Singapore’s transition from an investment-driven economy to an innovation-driven economy, emphasizing the building of intellectual capital and its commercialization to create value and jobs. While the role of Singapore’s universities in nurturing talent has always been recognized, in the current period of economic transformation, increasing prominence has been given to their role in stimulating economic growth through industrially relevant research, technology commercialization, high-tech spin-offs, attraction of foreign talent, and injecting an entrepreneurial mindset among its graduates. This paper examines how the National University of Singapore (NUS), the leading university in Singa-

pore, changes its role in the Singapore economy as a case study of how universities in East Asia are responding to the globalization of the knowledge economy.

Singapore’s case is of particular interest because of its unique status as a relatively small city-state, where the pressure for globalization and the pace for shifting toward a knowledge-based economy to sustain economic survival are particularly intense. As such, the challenges that its university system faces are likely to be symptomatic of those that other small NIEs will likely have to cope with in the near future. In particular, the experience of Singapore is of relevant interest to study how the mission and governance of local universities in late-comer economies may need to be reformed toward an “entrepreneurial university” model to enable

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such economies to achieve a faster “catch-up” in the global innovation race.

2. THEORETICAL FRAMEWORK

As argued by *Etzkowitz, Webster, Gebhart, and Terra (2000)*, universities around the world are increasingly shifting from their traditional primary role as educational providers and scientific knowledge creators to a more complex “entrepreneurial” university model that incorporates the additional role of the commercialization of knowledge and active contribution to the development of private enterprises in the local and regional economy. As a result, universities become an increasingly important component of the national innovation system, and need to operate increasingly within a *Triple-Helix nexus* involving close interaction with government institutions and private industries.

This imperative for universities to shift from their traditional model to the new “entrepreneurial” model is expected to be even more urgent in the context of Asian NIEs, for three reasons. Firstly, the universities in most of these NIEs are relatively younger institutions compared to their counterparts in advanced, mature economies, and invariably are created as public institutions owned and regulated by the government. Academic faculty members are effectively state employees, and university administrators are usually government appointees, tasked to carry out government policies. As such, they tend to have much less autonomy than public universities in Europe, let alone the private universities in the United States. For example, competitive differentiation among local universities is often stifled in favor of bureaucratic directions and coordination by the state. Secondly, as “late-comers,” these economies had traditionally placed a much stronger emphasis on absorbing and diffusing technological knowledge from the advanced countries, rather than on indigenous innovation. Consequently, the universities in these NIEs also tend to have been tasked by their respective governments to focus strongly on their manpower development role through the assimilation of foreign technologies and knowledge, with much less emphasis on new knowledge creation through indigenous research activities.

Thirdly, the shift toward a knowledge-based economy, rather than one based on low-wage and natural resource advantages, requires a sig-

nificant increase in the indigenous capabilities of local enterprises to create and commercialize new knowledge, not just using knowledge imported from advanced countries. However, many of the local private enterprises that had developed in the earlier industrialization phases still tend to be laggards, rather than leaders, in engaging in R&D and innovation activities. Consequently, compared to their more technologically mature counterparts in the advanced economies, local industries in NIEs often have less experience, and lower capability, to commercialize knowledge generated from local universities.

These three factors—a more rigid bureaucratic control by the state, a lower base of research and inventive outputs coming out from the university, and lower demand and ability of private enterprises to commercialize university knowledge—suggest that the pre-conditions for Triple-Helix dynamic interactions is much weaker in the NIEs than in the advanced economies. Thus, arguably, the universities in NIEs have even greater urgency to take on an “entrepreneurial” role than universities in the advanced economies, in order to compensate for these less favorable pre-conditions that they start from. For example, the universities in NIEs may need to be more pro-active in commercializing their inventions through spin-offs, rather than relying on outside private enterprises to license them, because of the weakness of the latter. Similarly, universities in NIEs would need to undergo more drastic reform of their organizational structure and incentive system, in order to change the culture and mindset of their staff toward knowledge commercialization.

In the context of a small NIE like Singapore, we suggest the need for the local university system to take on an additional economic role not mentioned in *Etzkowitz et al. (2000)*’s model: The attraction of foreign talent. Given the small local population, Singapore needs to be able to tap top foreign talent to help staff the top echelons of specialized knowledge workers required in a knowledge economy. Just as the dynamic economic regions like Silicon Valley, London, New York City, and Boston have benefited from the influx of foreign talent, Singapore similarly needs to do likewise to differentiate itself as the leading knowledge-economy hub in Southeast Asia. Moreover, the experience of regions like Silicon Valley, Boston, and London strongly suggests that the competition for global talent not only

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