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Explaining the "University-run enterprises" in China: A theoretical framework for university–industry relationship in developing countries and its application to China☆

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Abstract

This paper explains and evaluates the evolution of the UREs (University-run Enterprises) in China by building a new theoretical framework on the university–industry relationship. Unlike the Triple Helix or the New Economics of Science that advocates a certain type (integration or separation) of university–industry relationship, we take a *contingent* or context-specific perspective on the relationship, having the context of developing countries in mind. The framework developed in this paper explains in what condition universities would keep distance from industry or become entrepreneurial to take a part in the functions of industry (i.e. setting up and running their own business enterprises). In this typology the basic determinants are internal resources of university, absorptive capacity of industrial firms and existence of intermediary institutions, as well as the propensity of university for UREs. The paper has argued that the Chinese universities since the market-oriented reform had strong propensity to pursue economic gains and strong internal (R&D and other) resources to launch start-ups, and thus established their own firms (i.e. UREs), given the low absorptive capacity of industrial firms and the underdeveloped intermediary institutions. The recent adjustment of the UREs in China can also be understood in terms of changes in the above three factors, such as universities' weakened propensity to pursue economic gains, relative decline of superiority of university resources, and improved external environment.

Keywords: University-run enterprise; University–industry relationship; China

1. Introduction

Knowledge has increasingly become recognized as a key source of economic growth and firms' competitiveness. With this trend, as universities are the source of new knowledge, the university–industry relationship (or UIR hereafter) has become an important issue, subject to diverse views and contending perspectives on the appropriate relations between universities and industries. In other words, at the heart of the UIR-related debates lies

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a frequently asked question, "What role should universities play in a national economy?"

A group of scholars (Etzkowitz, 1998, 2002; Etzkowitz and Leydesdorff, 1997, 1999; Etzkowitz et al., 2000; Slaughter and Leslie, 1997; Viale and Etzkowitz, 2004) argue that universities should form direct links with industry to maximize "capitalization of knowledge", and that academia should be (and is now being) closely integrated with the industrial world. This view is largely referred to as the "Triple Helix" thesis.[1] In contrast, another group of scholars have expressed some concern about the "too" close relations or integration between university and industry. Most prominently, the so-called "New Economics of Science" put forward by Dasgupta and David (1994, p.493) warns that short-run policies that aim to shift resources toward commercial applications of scientific knowledge may seriously jeopardize a nation's capacity to benefit from scientific advances. Dasgupta and David observe that "Open Science" (academia) and "Proprietary Technology" (industry) are distinctively organized and functionally differentiated spheres, and that a proper division of labor between the two should be maintained in order to maximize the social benefit. Others have echoed this philosophy of the New Economics of Science, such as Rosenberg and Nelson (1994), Stephan (1996), Mowery and Sampat (2004), and Lundvall (2002, 2004). Some in this group also point out that one of the most important roles of universities is to produce academically trained high skill workers, and this observation stems from the belief that indirect links (or arm's length relationship) between university and industry work quite well.

The contrasting views on the ideal UIR and the role of university have often perplexed policy makers and practitioners in related fields. This is more so from the point of view of those in developing countries, because both views seem to have a common drawback in terms of their *applicability to developing countries*. This is the departing point of this paper.

The core idea of the Triple Helix group is that the "nature of knowledge" in newly emerging industries (typically in biotechnology) is different from that in traditional industries, and this difference makes it necessary to form a new institutional setup, i.e. the "Triple Helix" comprised of university, industry, and government. To the extent that this group assigns importance to the nature of newly emerging industries, we can say that it has minimum relevance for the situation in most of the developing countries that tend to inherit mature industries from the advanced countries to produce standardized products.

The New Economics of Science has a similar problem in terms of pertinence to developing countries, although it supports the *division* of labor between university and industry rather than *integration* of the two. It assumes that universities make *scientific breakthroughs* and provide *generic knowledge* upon which industry bases its, more or less, trivial applied research. However, this assumption remains problematic in many developing countries where research capacity of universities is backward. Even in more successful developing countries (e.g. Japan in the 1960s and 1970s and Korea in the 1980s), industrial firms (especially, large conglomerates) had a stronger research capacity than local universities. Moreover, universities in developing countries often devote their resources to undergraduate education that mostly utilizes knowledge that is imported from advanced countries, or to applied researches that can easily be adopted by local industrial firms, as in the case of China in the 1980s and the early 1990s.

It is our view that neither the Triple Helix nor the New Economics of Science provides a precisely realistic platform for discussion of the UIR in the *developing countries*. Although some authors (e.g. Jie and Lu, 1995; Turpin and Garrett-Jones, 1997; Min and Ma, 1999; Qiu, 2002; Etzkowitz and Mello, 2004) have addressed the UIR in developing countries (implicitly) by referring to either the Triple Helix or New Economics of Science, they did not critically examine nor compare the two competing views, both of which have underlying assumptions that are more suitable to the *advanced countries*. Thus, many of them have, somewhat arbitrarily, endorsed either of the two views, while neglecting the different context of developing countries. There comes a need to develop a theoretical framework that can explain better the UIR in *developing countries*. More recently, Chang et al. (2005, 2006) have explored the recent changes in the role of universities and the UIR in Taiwan with brief comparisons to neighboring countries (i.e. Korea and Japan). Although they contribute insights to the UIR in East Asian countries, their studies do not make much theoretical distinction between the situation in the *developed* and *developing* countries, either.

Given the lack of a guiding framework suitable for developing countries, academicians and policy makers

[1] The intertwined three in the 'Triple Helix' are university, industry, and government. Triple Helix scholars interpret recent trends as follows. Universities and industry, up to now relatively separate and distinct institutional spheres, are each assuming tasks that were formerly largely the province of the other. Governments are offering incentives and encouraging academic institutions to go beyond performing the traditional functions of cultural memory, education and research, and to make a more direct contribution to 'wealth creation' (Etzkowitz and Leydesdorff, 1997; p. 2).