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THOUGHT LEADERSHIP BRIEF

University Matching Fund for Technology Transfer in the Context of Output-thinking

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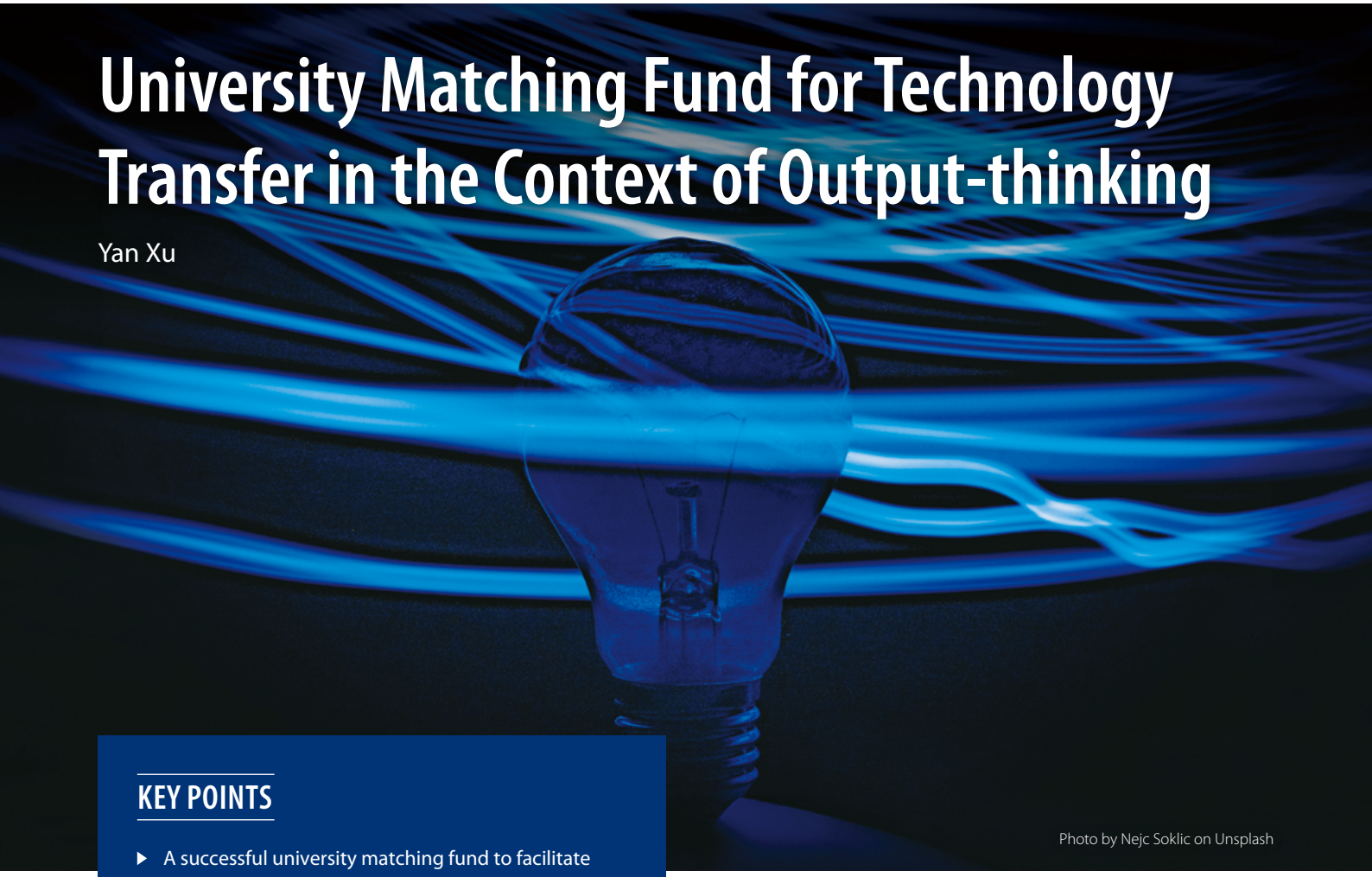

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KEY POINTS

- A successful university matching fund to facilitate technology transfer in Hong Kong's universities can be achieved by combining resources as input and an "output-thinking" approach.
- Hong Kong's current university matching fund rewards universities with the longest history and the largest alumni networks. Universities with shorter histories and limited alumni networks receive limited funding.
- We propose that 50% of the matching fund should be allocated based on financial income generated from universities' scientific research results and knowledge transfer. These funds should be used to support entrepreneurship and innovation activities and for universities to autonomously develop tailored strategies.
- This way the government can foster a more comprehensive and dynamic approach to university development creating a favourable ecosystem for innovation and technology transfer within the academic community.

ISSUE

Universities have received substantial resources as input, with expectations for both quality education and advanced research as outputs. In recent years, technology transfer has emerged as an important expected output, given the crucial role universities play in national or regional innovation systems. Consequently, governments should leverage the importance of technology transfer to encourage universities to enhance their efficiency and effectiveness in facilitating technology transfer processes.

Hong Kong's universities are globally renowned for their research capabilities but have lagged behind in terms of knowledge transfer. One contributing factor is the absence of large technology companies in Hong Kong, making it challenging to establish a robust industry-academia-research ecosystem. If the Lok Ma Chau Loop successfully attracts R&D centres of large multinational companies, it will undoubtedly promote the transfer of science and technology from major universities in Hong Kong.

ASSESSMENT

This article proposes the establishment of a university matching fund by the Government to facilitate technology transfer in Hong Kong's universities within the context of an "output-thinking" mindset. Compared with the prevalent "input-thinking" approach in many countries' innovation and technology policies, this proposal advocates for an "output-thinking" approach. "Input-thinking" refers to a mindset that primarily focuses on injecting financial resources to foster innovation and technology development, without giving due attention to the effectiveness of resource utilization and the quality of the processes involved. The underlying belief is that more input would automatically yield more output. However, empirical evidence suggests that this is not always the case, and such "input-thinking" has created a gap between investments and the expected returns.

On the other hand, "output-thinking" recognizes that the economic competitiveness of companies and countries hinges on effectively managing the entire innovation process. It considers all factors that influence the successful outcomes of the innovation process and determine the competitiveness of companies and national economies. These factors include the efficient and productive utilization of resources, in addition to financial input. Successful innovation and technology management leads to high effectiveness and productivity in the innovation process. In essence, "output-thinking" emphasizes that successful innovation and technology result from a combination of input and effective management.

Another aspect of promoting technology transfer in Hong Kong's universities is fostering a culture of knowledge transfer. The government's matching fund can play a pivotal role in this regard. Currently, the Hong Kong government matches university self-raised donations. The purpose of the matching fund is to encourage a philanthropic culture that supports education in society. This program has played a significant role in the past, with billions of HKD allocated annually, greatly facilitating donations from society to universities.

However, upon closer examination, it is evident that most of the funds have been allocated to the two universities with the longest history and the largest alumni networks. In contrast, universities with shorter histories and limited alumni networks receive only limited funding. In a way, the matching fund has become a reward for historical factors rather than a recognition of a university's current contributions to society. Figure 1 illustrates the distribution of the matching fund among Hong Kong's tertiary institutions in 2005/06, 2006/07, and 2007/08.

Figure 1. Fund Matching Situation of Hong Kong's Universities from 2005 to 2008 (HK$ Million)

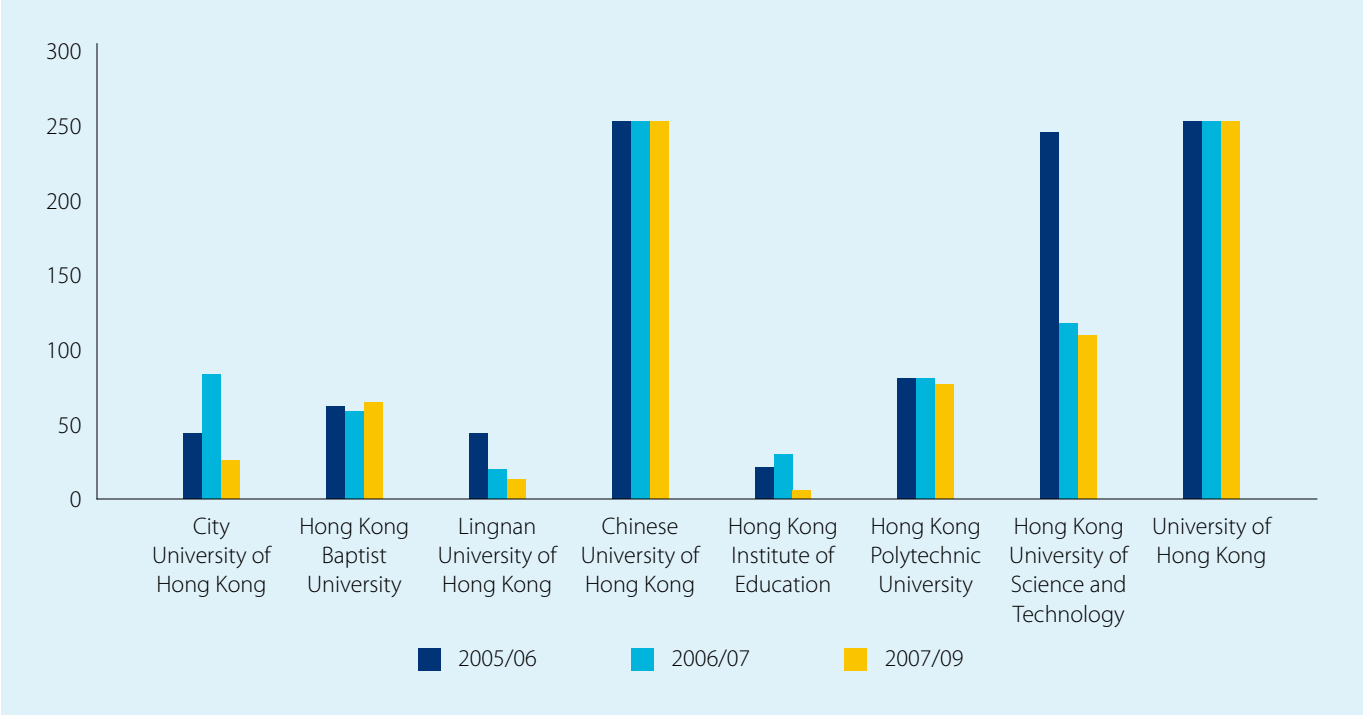


Table 1. The Amount of Donations Received by Hong Kong's Universities from 2018 to 2020

	2018/19	2019/20	Average
Chinese University of Hong Kong	760,000,000	1,308,000,000	1,034,000,000
University of Hong Kong	440,000,000	1,230,000,000	835,000,000
Hong Kong University of Science and Technology	62,000,000	740,000,000	401,000,000
Hong Kong Polytechnic University	240,000,000	390,000,000	315,000,000
City University of Hong Kong	48,370,000	380,000,000	214,185,000
Hong Kong Baptist University	81,280,000	310,000,000	195,640,000
Lingnan University of Hong Kong	26,000,000	204,000,000	115,000,000
Education University of Hong Kong	52,070,000	120,000,000	86,035,000

The government matching fund is not available every year. Table 1 illustrates the fundraising situation of universities in 2018/19 and 2019/20. Due to social unrest and the COVID-19 epidemic in these two years, the donations received by universities were averaged. It is evident that if the government continues to provide the matching fund, a similar situation can be expected, as seen in the past.

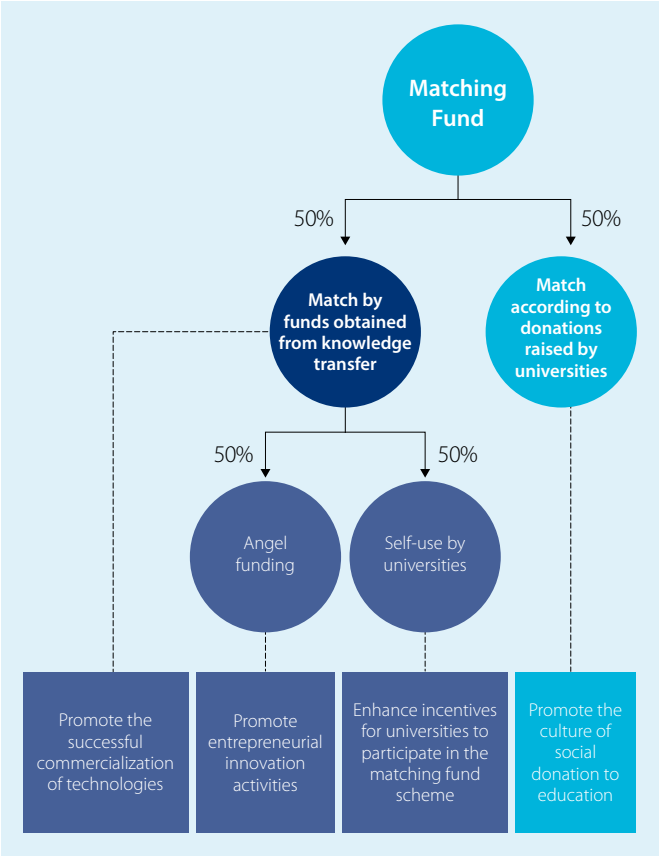
Implementing policy adjustments to efficiently utilize resources and embrace an "output-thinking" approach is proposed. We suggest dividing the matching fund into two parts to address different aspects of university development. Firstly, 50% of the funds should follow the existing method and be matched based on the donations raised by universities. This approach will continue to encourage a culture of social donation to education, fostering philanthropic support for universities in Hong Kong. Secondly, the remaining 50% of the matching fund should be allocated based on financial income generated from universities' scientific research results and knowledge transfer. This allocation will promote the commercialization of scientific and technological achievements, facilitating the practical application and economic impact of research outcomes.

To further enhance the impact of this portion of the matching fund, it should be divided into two sub-parts. Half of the allocated funds should be dedicated as an angel fund to support entrepreneurship and innovation activities by scholars and college students. This will provide crucial financial support for turning innovative ideas into viable business ventures. The other half of the funds should be allocated to universities autonomously, allowing them to strengthen incentives and initiatives to participate in the matching fund scheme. This autonomy will enable universities to develop tailored strategies that align with their specific strengths and priorities, promoting a competitive environment that encourages active participation in knowledge transfer and technological commercialization.

By implementing these adjustments, the government can foster a more comprehensive and dynamic approach to university development. This approach will not only continue to promote philanthropy in education but also incentivize commercialization and entrepreneurship, creating a favourable ecosystem for innovation and technology transfer within the academic community.

The reformed matching fund should consider the financial income derived from various aspects of knowledge transfer, including not only income from the transfer of intellectual property rights such as patents but also income from contract research and consulting projects. This broader inclusion will provide a more comprehensive assessment of universities' engagement in knowledge transfer activities. Furthermore, to encourage universities to prioritize collaborations with local companies in Hong Kong, the income from knowledge transfer to local enterprises can be double the matching value. For instance, when transferring one HKD to a general enterprise, one HKD can be matched; whereas, when transferring one HKD to a local enterprise, two HKD can be matched.

Figure 2. Distribution Method of University Matching Fund

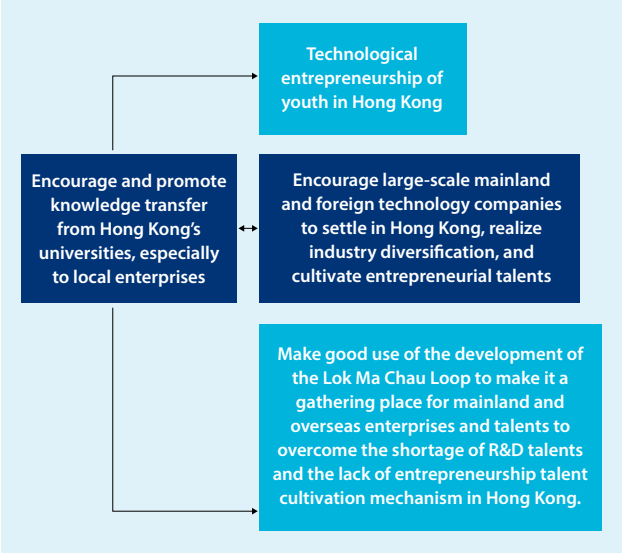


CONCLUSION

This approach is expected to mobilize universities, particularly those with shorter histories, to actively promote knowledge transfer and strengthen their collaboration with industries. The introduction of angel funds will further stimulate the enthusiasm of scholars and college students to innovate and start their own businesses. Notably, successful projects may attract investments from venture capital funds, thereby becoming a driving force for Hong Kong's top-tier technology and innovation industries. This positive interaction will significantly enhance the technological and innovative ecosystem in Hong Kong without requiring additional government expenditure.

The promotion of knowledge transfer from Hong Kong's universities, coupled with the development of the Lok Ma Chau Loop, will likely attract major overseas technology companies to establish their presence in Hong Kong. In turn, the presence of these large overseas science and technology enterprises in Hong Kong will provide incentives for knowledge transfer activities within the universities. Additionally, the promotion of knowledge transfer will offer a steady stream of projects for young people in Hong Kong to embark on their entrepreneurial journeys in the field of science and technology. Figure 3 illustrates the innovation ecosystem that can be fostered by promoting knowledge transfer in universities.

Figure 3. Innovation Ecology Created by Promoting Technology Transfer in Universities



Professor Yan Xu received his B.Sc in Radio Engineering and M.Sc in Communications and Electronic System from Beijing University of Posts and Telecommunications in China in 1984 and 1987 respectively. In 1997, he earned his Ph.D. in Management from the University of Strathclyde in the United Kingdom, supported by the Sino-British Friendship Scholarship Scheme. Currently, Professor Xu is a professor in the Department of Information Systems, Business Statistics, and Operations Management, and Associate Director of the Center for Business Strategy and Innovation at the HKUST Business School. From 2011 to 2023, he served as the Associate Dean of the HKUST Business School, overseeing various responsibilities such as the HKUST Bilingual EMBA program, executive education, and China strategy. His research expertise lies in technology and innovation management and policy, as well as telecommunications policy. Professor Xu has authored several books, including "*Chinese Telecommunications Policy*" and "*Innovated by Hong Kong.*" He also serves on the editorial board of prestigious international journals such as *Telecommunications Policy*. Throughout his career, Professor Xu has been involved in numerous research projects for esteemed organizations, including China Mobile, Siemens, Hong Kong Telecom (HKT), Audit Commission of the Hong Kong Government, Communications Association of Hong Kong (CAHK), Central Policy Unit (CPU) of the Hong Kong Government, the Liaison Office of the Central Government in Hong Kong, Hutchison Telecom, Huawei Technology Co. Ltd., SmarTone, and the International Telecommunications Union of the United Nations. Additionally, he has contributed to executive education programs for institutions like China Telecom, China Mobile, Bank of China (HK), CITIC Pacific, Li Ning, TCL, and Tencent. As an expert of the United Nations, Professor Xu has been commissioned by the ITU to provide training to the Pakistan Telecommunications Authority and the National Telecommunications Commission of Thailand. Professor Xu has held various leadership roles within professional associations. From 2005 to 2017, he served as the president of the Regulation Issues Group of the Communications Association of Hong Kong (CAHK). He was also a member of the Hong Kong Council of Social Service (HKCSS) Institute Steering Committee from 2016 to 2018. Since 2002, Professor Xu has been a board member of the International Telecommunications Society (ITS) and served as the Chairman of ITS's Strategic Planning Committee from 2005 to 2012. In recognition of his expertise, Professor Xu was appointed by the Chief Executive of the Hong Kong Government as a member of the Communications Authority of Hong Kong from 2017 to 2019, and member of the Unsolicited Electronic Messages (Enforcement Notices) Appeal Board since December 22, 2022.

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