

## Comment 12.3

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This chapter makes an important contribution to the literature on knowledge transfer from public research organizations by expanding its scope well beyond the conventional IP-driven channel. After the enactment of the Bayh-Dole Act of 1980 in the United States of America (U.S.), academic and policy attention centered on streamlining the “clumsy” IPR frameworks prevalent in public research organizations across the world. Enthused by the US legislation, many countries, both developed and emerging (France, Denmark, Japan, Brazil, China, and South Africa, among others), started enacting their own Bayh-Dole-type legislations from the late 1990s onward. There prevailed a sense of faith in such legislation as though it would act as a magic formula to energize public-funded research for knowledge transfer in different countries. However, the subsequent academic literature on the US post-Bayh-Dole experience suggests that the evidence in this regard is far from unambiguous (Ray and Saha 2011). This has not only raised questions about the effectiveness of IP as a vehicle of knowledge transfer from public research organizations but also redirected policy focus in many countries toward other (perhaps more) important channels of knowledge transfer, hitherto underemphasized.

The need to expand the scope of knowledge transfer from public research organizations to other formal and informal channels, like collaborations, contracts, consultancies, use of public research organization facilities and infrastructure, training, student placements, and so on, is now fairly well established in academic and policy circles, and many of these channels are now frequently used for knowledge transfer in both developed and emerging nations. However, there is still a lack of comprehensive information metrics for the non-IP channels, the United Kingdom being a noted exception in this regard, as highlighted by the authors in the chapter. The British Higher Education–Business and Community Interaction (HE-BCI) survey collects data on knowledge transfer activities of British universities through multiple channels. In

fact, using these data, Sengupta and Ray (2017) showed that among the various channels of knowledge transfer in British universities, it is only the academic exchange channel (contracts and collaborations) that brings about a virtuous cycle. They showed that a large research base leads to greater knowledge transfer through this channel, some of which, in turn, further augments the research base, thus completing the virtuous cycle. Studies on other countries have relied primarily on sample surveys or case studies of knowledge transfer offices (KTO) and academic researchers (in some cases). One of the few studies for India on the subject is by Ray and Saha (2012) – a study commissioned by the Department of Science and Technology, Government of India. It highlighted the importance of non-IP channels for selected Indian public-funded institutions. Based on case studies of six public research organizations in India, Ray and Saha (2012) found that while success stories of effective knowledge transfer through the IP-driven channel in many of these institutions are limited in number, many of these Indian public research organizations do engage in knowledge transfers significantly and effectively through various non-IP channels.

Despite such compelling evidence on the importance of non-IP channels of knowledge transfer in different countries, there has unfortunately been very little attempt until now to construct comprehensive metrics of knowledge transfer activities, including the various facets of non-IP channels. The chapter by Arundel and Es-Sadki fills this very important gap in the knowledge transfer literature. Without such a comprehensive database, knowledge transfer activities can never be fully captured and understood for appropriate policy interventions. Informational bias toward the IP-mediated channels may lead to distortion of policy prioritization, resulting in suboptimal knowledge transfer through the other important channels. In drawing up these comprehensive metrics of knowledge transfer activities, the authors have correctly distinguished between three different methods of data collection from three distinct sources: (1) KTOs and the public research organization administration, (2) surveys of academics and researchers at public research organizations, and (3) firm-level surveys. The importance of combining all three sources stems from the fact that the conventional source, that is, the KTOs, may not have information on all channels of knowledge transfer, particularly the informal ones. Moreover, perceptions about the relative importance of different channels of knowledge transfer and their determinants and barriers may diverge widely among the three sets of stakeholders. The paper contains an elaborate and useful discussion of the

types of data that can be collected through each of these modes of data collection and their limitations.

While reiterating the importance of collecting data through multiple modes to create comprehensive metrics, I would like to add a word of caution and a suggestion. First, if one ends up collecting information on the same variable from all three sources, there is a possibility of ending up with data discrepancies. For instance, the number of cases of knowledge transfer through licensing reported by the KTO may or may not exactly tally with the total number of these cases reported in the survey of academics. One must, therefore, have a well-designed strategy to tackle such data discrepancies. Second, academics are often survey fatigued, as they are regularly bombarded with questionnaires asking for the same factual information along with some questions on their perceptions. As a result, academics are often reluctant to respond to survey questionnaires. This is highly avoidable if the public research organization administration mandates that all researchers submit a comprehensive annual report of their academic activities undertaken in the preceding academic year, including an extensive set of information pertaining to their knowledge transfer activities through multiple channels. This could form a database of factual information that would be compiled by the public research organization and made available in the public domain. Such databases could be used for numerous purposes by multiple agencies and stakeholders. The public research organization will use this information to prepare its annual reports. Funding agencies (government and nongovernment) may use this information to assess the performance and accountability of public research organizations. National and international ranking agencies may use it for ranking and accreditation purposes. And, most importantly, this database would go a long way in constructing comprehensive metrics for knowledge transfer activities. The survey of academics could then be restricted to a much smaller set of questions only about their perceptions of the knowledge transfer policies and practices. A smaller questionnaire would allow a larger sample to be surveyed with little or no escalation of the survey costs, a challenge highlighted by the authors. Enlarging the sample size could potentially mitigate the sample selection bias of small sample surveys that tend to ignore academics and departments with little or no knowledge transfer experience.

The final section of the chapter highlights another very important aspect of knowledge transfer, namely, the metrics of costs and benefits. This is a complex issue as both costs and benefits include a large number

of elements that cannot be adequately captured purely in financial terms. The authors present a detailed discussion of the systemic benefits and costs as well as the benefits and costs to the public research organizations and to the firms, focusing on both financial and nonfinancial elements. The authors do acknowledge that nonfinancial benefits and costs are more difficult to measure, especially in a format that is amenable to comparisons over time, both nationally and internationally. But, unfortunately, we fail to find much in the chapter by way of clear directions in this regard. Likewise, the authors also highlight the difficulties of identifying and estimating the systemic benefits and costs. But again, we do not find any concrete guidelines here to overcome this difficulty in order to come up with comparable measures of systemic costs and benefits. Of course, neither of these limitations has a simple solution. It could be a matter of another extensive research study just to explore possible solutions to the highlighted problems of measuring the costs and benefits of knowledge transfer. Nevertheless, one must acknowledge that the chapter makes a good beginning by flagging the issues and concerns pertaining to the creation of comparable metrics of benefits and costs.

Overall, the chapter makes a significant value addition to the scholarship by putting forward a concrete pathway for generating comprehensive metrics of knowledge transfer activities – facts, policies, and practices. If the framework proposed by the authors, along with the suggestions given here, were to be implemented judiciously, it could go a long way in providing incisive insights on various facets of knowledge transfer activities and their determinants and obstacles in different contexts, regions and time periods.

### References

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