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Toward a Conceptual Framework for the Knowledge Bank

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Abstract

This paper proposes some basic elements of a conceptual framework to help organize the thinking about policies that can strengthen the knowledge mission of the World Bank. It first argues that the Bank occupies a unique and prominent subset of the social and economic development “knowledge space” that ranges from abstract basic research to codified knowledge solutions. The fact that this niche centrally includes the provision of public good-intensive knowledge weakens organizational analogies between the Bank and private consulting firms. The range of products coupled with an increasing emphasis on just-in-time advisory services

dictate the need for not more generalists, but rather an increased range and depth of very specific and high quality human capital. However, this increased specialization in turn creates the need for “hinge” actors who can communicate and operate well across different knowledge communities—academics, policy makers, practitioners, etc. The necessary changes in human resource and incentive policies, in particular the critical development of better means of ensuring the quality of knowledge production, are an essential complement to any organizational restructuring.

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Toward a Conceptual Framework for the Knowledge Bank

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The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist ... I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas.

*John Maynard Keynes, Architect of the World Bank*¹

It's about the people you have, how you're led, and how much you get it.

*Steve Jobs, former CEO of Apple Computer*²

1. Introduction

It is by now a commonplace that knowledge is the future business of the World Bank. Yet, what is knowledge and what kind of business model does it require to foster and disseminate it? This paper explores several dimensions of these questions with the goal of stimulating debate and nudging forward the quest for the Knowledge Bank. We say quest because the Bank is far from walking its own knowledge talk of the last two decades. Despite the explicit knowledge agenda of the last reorganization, as one vice president recently observed “We function as an integrated, effective knowledge bank perhaps 5 percent of the time.” The rest, we argue remains a missed development opportunity of dramatic proportions. The demand for knowledge from our client countries is demonstrably deep, spans a vast spectrum of topics, and, when satisfied, has far reaching development implications. The Bank is globally unique in its *potential* to generate, intermediate, archive, disseminate, and inform policy with such knowledge. The challenge is to understand what types of reforms are necessary to make this potential kinetic and enable us to truly play that role.³

This paper is organized as follows. In section 2 we introduce a taxonomy of knowledge products in a three-dimensional *knowledge space*. In section 3, we attempt to locate the World Bank’s *niche* relative to other knowledge institutions in the knowledge space and discuss its comparative advantage. Particular attention is given to the synergies across a vast array of knowledge actors, ranging from experienced practitioners on the front line, to researchers interfacing with academia around the world, which are unique to the Work Bank, and which make it irreplaceable as a knowledge institution. As an illustration germane to the discussion of the nature of client demand, quick response products need to be seen as the tip of a *Knowledge*

¹ Keynes, J. M. (1936), “*The General Theory Of Employment, Interest, And Money*,” Ch. 24 “Concluding Notes” page 383.

² As quoted in *Fortune* ([1998-11-09](#)).

³ For a historical review of intellectual and institutional changes that have shaped research at the World Bank see J.J. Dethier (2009). The paper provides an overview of the shift in development economics that have influenced Bank research and briefly surveys the changes in research organization, structure and approach.

Iceberg, resting on a sophisticated and articulated knowledge generation capacity “below water” staffed by specific and diverse, but well-connected, specific human capital.

In light of this view of the Bank, section 4 explores some of the implications in terms of the nature of the organizational structure and human capital required to capture and capitalize on the positive externalities associated with the economies of scale and scope intrinsic to knowledge accumulation. The *Pelota* (Spanish for soccer ball) stresses how the generation of an array of distinct knowledge products requires distinct and articulated human capital within the Bank, but that the spillovers and gains from trade arising from this diversity of specific talent gives the Bank the chance to become more than the sum of its parts.

Section 5 reviews the key challenges faced by the Bank in order to evolve from an institution primarily focused on lending to a Knowledge Bank. It outlines selected issues ranging from human resources concerns to institutional structure and incentives.

2. Three Dimensions of the Knowledge Space

In general terms, knowledge can be defined as the advance in understanding that results from the processing of information and recombination of ideas.⁴ In this respect, it is essential to highlight from the beginning that knowledge differs from “information” which is but an ingredient in the generation and dissemination of knowledge. Hence while increased access to information and well-designed websites are important efforts in these directions, they remain a relatively small part of an overall movement toward a Knowledge Bank.

Knowledge products differ along multiple dimensions. They differ not just with respect to their topics (e.g., quantum mechanics vs. basketball coaching), but also the ways in which they are packaged (e.g., research paper, report, op-ed, blog), and the audiences to which they are aimed (e.g., technical specialists, policy makers, the general public). Substantial differences also characterize distinct knowledge phases, such as generation vs. dissemination vs. application. These distinct products may differ fundamentally in their “production functions”—that is, in the manner which they are generated and in the type of skills, time, and other inputs required for their production.

All of this suggests that to sensibly navigate the highly heterogeneous universe of knowledge, a practical typology of knowledge products is needed. Figure 1 lays out the knowledge space along three dimensions which are helpful for organizing thinking.

(a) *Public vs. private good knowledge*

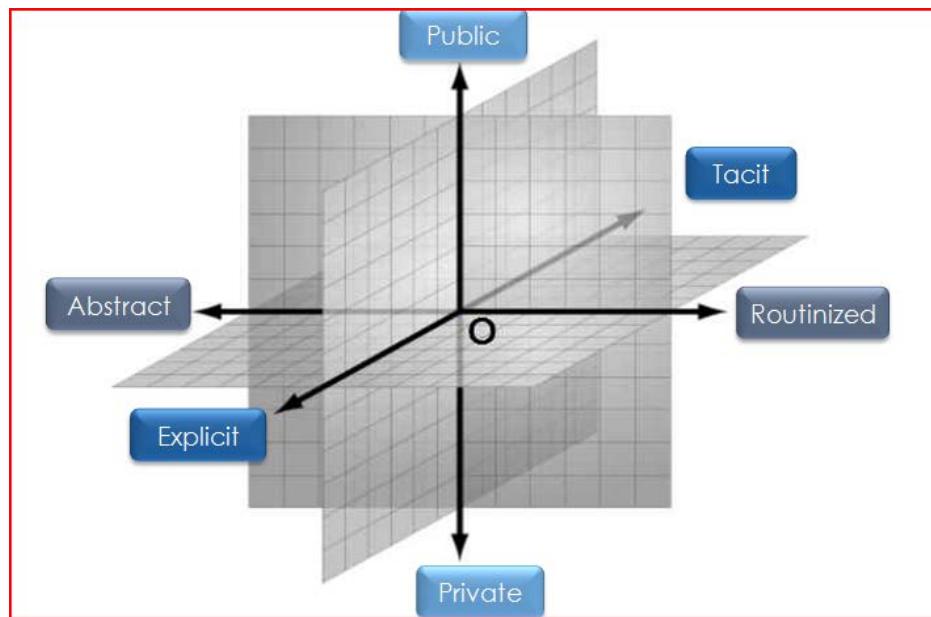
The vertical access in Figure 1 captures the degree to which the knowledge managed or generated constitutes a public good—i.e., ideas that are unrestrictedly available to any and all humans, without being able to exclude others from “appropriating” those ideas. The public good

⁴ Knowledge takes on innumerable forms. The “knowledge space” is in effect a fiendishly complex, constantly evolving network where heterogeneous components (“knowledge products”) are linked, in some cases tightly (forming strong clusters, as in the case of highly specialized sciences), in others loosely (spanning the entire space, as is the case of language), and often in elusive and unexpected, even serendipitous, ways.

nature intrinsic to some knowledge products has been acknowledged for centuries. As Thomas Jefferson put it: “If nature has made one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea the moment it is divulged, it forces itself into the possession of every one ... [and] no one possesses [the idea] the less because every other possess the whole of it” (quoted in Johnson, 2010).

A cure for AIDS would be a very powerful “idea,” one that could be employed around the world, and one which experience suggests might be hard (and undesirable) to exclude people from. Intrinsic to the public good nature is the under-provision (market failure) of this type of goods in a decentralized free market: the initial generator or collector of knowledge would receive a return to his investment below the return to society at large and the amount of knowledge produced by the free market is therefore sub-optimally low, potentially very much so.⁵ The collection of uniform statistics across the world which no single country would pay for, but all would value can also be cast as example of under-provision of a public good.⁶ Not to confuse “public” with “multi-country,” a single country study (e.g., the evaluation of *Progresa/Oportunidades* conditional cash transfer program in Mexico) can have vast global benefits and merit a corresponding subsidy.

Figure 1: The Knowledge Space



Numerous mechanisms have evolved to reduce the wedge between private and social interest and foment the generation of knowledge ranging from publicly funded universities to

⁵ For Instance, see Jones and Williams (1998), who argues that even in the US, R&D spending is probably too low by at least a factor of 4.

⁶ There is a “network” externality here. If a single country collects data on its business climate, it is of limited use since there are no comparators to benchmark against. Hence, all countries benefit from the coordinated collection of statistics.

subsidies for R&D to the establishment of intellectual property rights (patents).⁷ At a global level, the World Bank potentially serves a similar role. Graphically, such ideas we would find at the top of the vertical axis in Figure 1.

As we move down the vertical axis, we find types of knowledge whose benefits, perhaps due to the specific subject matter or legal patentability, can be appropriated by some while excluding others from its use. An individual's medical history or the solution to a particular strategic problem for a company is knowledge, but often of interest to relatively few. Consulting firms, by virtue of providing knowledge that is very specific to a particular country, sector, or firm and which may be therefore of little interest to other parties, are most likely to recoup fully the returns to their efforts. The associated knowledge thus tends to occupy the southern hemisphere of the knowledge space.

(b) *Abstract vs. routinized knowledge*

Another dimension along which we can classify knowledge products is the degree to which they are routinized or standardized. At one extreme (the far right of the horizontal axis) are products that are no longer new, and whose design has been worked through over a period of time. The compact disk revolutionized information reproduction, but at this point the knowledge relating to producing them is fully routinized. At the other extreme, the research underlying the blue laser technology that permitted putting 50 gigabytes on a disk the size of a CD is more abstract or fundamental.⁸ Sony's research division, Bell Labs, or many academic departments can be thought of as engaged in this kind of work. The production function of abstract work is perhaps the least easy to manage since it involves getting very specialized human capital to generate products that, by definition, are new and as such require a different set of incentives.⁹ As we move toward the center, we find knowledge which is and which can be rapidly tailored to a particular client's needs. Consulting firms, for instance, that draw on talented MBAs as the interface between accumulated knowledge and client needs are trading in this kind of knowledge.

(c) *Tacit vs. explicit knowledge*

Another important dimension of the knowledge space is that of explicit vs. tacit knowledge. Explicit knowledge is knowledge that is easily written down or communicated to others. The phone book, everything on Wiki, and academic papers are easily separable from their creator and shared, once produced. Tacit knowledge, at the other extreme, is not easily

⁷ Patenting an innovation, for instance, ensures that future users of that knowledge must compensate inventors, tax write offs or subsidies encourage private firms to undertake R&D even though they know some will be appropriated by others, public universities are subsidized to do deep research, publicly funded research institutes at their best develop and disseminate knowledge tailored to a particular national economic sector.

⁸ The knowledge that we are referring at this side is illustrated, for instance, by the insights into physics made by Isaac Newton, Albert Einstein, and Niels Bohr, or the type of advances in economic thinking made by the likes of Adam Smith, Alfred Marshall, and John Maynard Keynes.

⁹ On the role of incentives for tasks involving creativity and cognitive skills see Glucksberg and Weisberg (1966), "Verbal behavior and problem solving: Some effects of labeling in a functional fixedness problem," *Journal of Experimental Psychology*, Vol. 71(5), May 1966, 659-664; and Heyman and Ariely. "Effort for payment: a tale of two markets." *Psychological Science* 15.11 (2004): 787-793.

shared and almost by definition is embedded in and inseparable from an individual. Though elements of the specialist's knowledge can be codified and easily shared, often much cannot be. Nanaka (1994) argues that such knowledge is rooted in the action, experience and involvement in a specific context and is comprised of both cognitive and technical elements. The cognitive element consists of mental maps, beliefs, paradigms and viewpoints while the technical consists of concrete know-how and skills that apply to a specific context (cited in Alavi and Leidner 2001). These are clearly not easily packaged. Although numerous books claim to have distilled the innovation secrets of Apple's founder Steve Jobs, there appears no replacement for the accumulated experience, know-how and vision embedded in the man himself at the helm of the company. Steve Jobs is not codifiable.

There is clearly some relationship between the degree of routinization of knowledge and its codifiability—phone books easily communicate routinized knowledge. But the correspondence is clearly not one to one. Fundamental cellular medical research can be distilled to research papers and easily communicated. By contrast, a country doctor has in his mental tool kit a range of very well understood and communicated disease typologies, but there is no substitute for his accumulated experience and crystallized intelligence managing this typology when deciding which corresponds to a particular feverish child. The tacit knowledge of a superb country doctor is thus far from being routinizable or codifiable, which illustrates the fundamental point we want to make here—that tacit-explicit dimension of knowledge is quite independent of (non-reducible to) the abstract-routinized dimension of knowledge.

Here again, it is essential to note that “information,” in the sense of what is found on websites, corresponds only to the most explicit knowledge and excessive focus on this type of activity ignores the bulk of the knowledge space. Further, becoming the reference of choice for even this type of information requires that the Bank has a role in curating the massive amount of available material for quality and relevance.

3. The World Bank's Niche in the Knowledge Space

The mandate of the World Bank is to reduce poverty and advance development. Given that one of its intellectual founders, John Maynard Keynes, argued that it is ideas more than anything else that shape the course of history, what is perhaps surprising is that the vocation as a knowledge institution was not explicit from its founding. Indeed, in this section we emphasize that it is the Bank's mandate that defines its comparative advantage in the knowledge space, and that the Bank is uniquely positioned to perform in this niche. We argue, more precisely, that there is no obvious substitute for the Bank in this regard, for the Bank draws its strength to perform well in that niche from a number of Bank-specific characteristics, including its ability to fruitfully link the global and local developmental lessons.

Knowledge related institutions of many types have evolved to fill particular niches in the knowledge space. Their design and character reflect where in the knowledge space their knowledge products and activities fall. Figure 2 attempts to crudely locate the World Bank relative to other knowledge institutions along the first two dimensions, leaving aside for now the “tacit vs. explicit” dimension. The World Bank's knowledge services at present span, roughly,

the northern and central region of the knowledge space, with a relatively minor incursion into the southern hemisphere of appropriable knowledge.

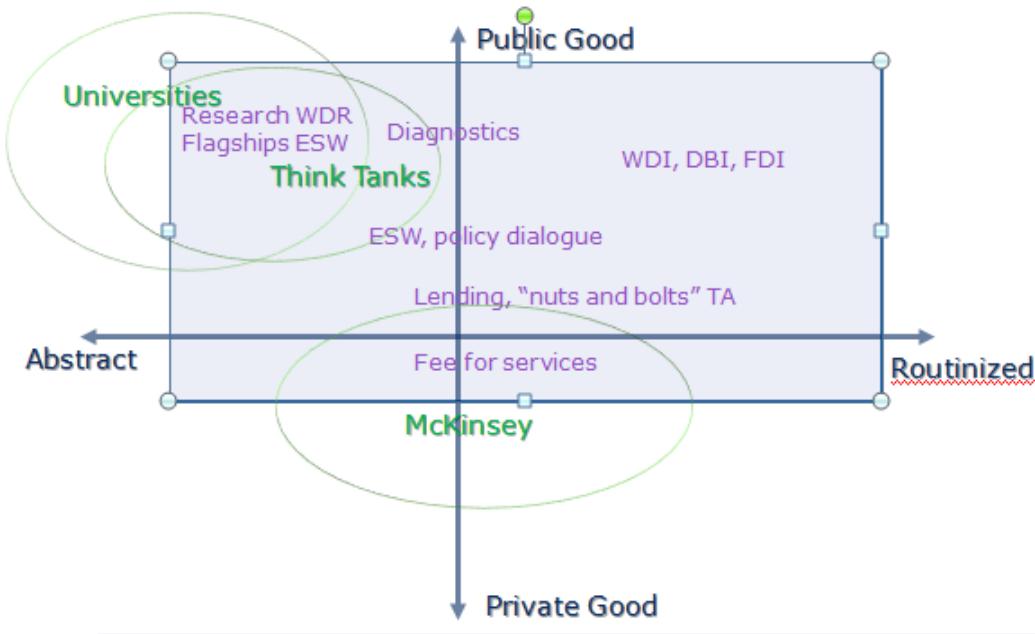
The Bank's niche in the knowledge space is of course not static. Rather, it is subject to a host of external and internal forces, including (i) changes in client demand for knowledge products; (ii) changes in the Bank's business model (e.g., the shift of a country director-based budget allocation system, the effects of trust funds on the selection of knowledge activities, and the sheer variance in corporate views on how to move forward the Knowledge Bank agenda); and (iii) rapid changes in information technology that significantly influence the ways and speed with which knowledge can be disseminated. These forces can push the Bank in different directions, often creating tensions and tradeoffs and carrying significant downside risks. For instance, such forces can induce the Bank to spread too thin across the knowledge space, thereby potentially sacrificing quality, effectiveness, and relevance; or they can lead the Bank into corner solutions (e.g., unduly privileging knowledge packaging, brokering and convening, at the expense of knowledge creation) that are ultimately self-defeating to a robust knowledge agenda. A passive response by the Bank to the mentioned forces may thus move it out of its natural niche in the knowledge space and into a position that is inconsistent with its mandate, which would result in an undersupply of public good knowledge. Below we elaborate on issues associated with the public good vs. privately appropriable dichotomy in more detail.

(a) The premium for the Bank is on public good-intensive knowledge products

The Bank plays, and will increasingly play, a vital role in the provision of knowledge public goods. The Bank's existence, even in the lending sphere, represents an acknowledgement of a market failure and the need for (global) coordination and policies. The greater the public good nature of economic and social development knowledge, the more severe the market failure and, hence, the more compelling the need for intervention from an institution like the Bank. Further, as knowledge moves more deeply into the public good domain, the "client" is not just the individual country that is a member of the Bank but also the larger development community. Hence, emphasizing the analogy between the Bank and for-profit consulting firms, while somewhat informative, misses the fundamental market failure-resolving nature of the World Bank. The flip side of this is that the Bank's public good mission endows it with a particular and unique comparative advantage in the knowledge market.

In Figure 2 we have reduced the knowledge space to two dimensions (public vs. private good; and abstract vs. routinized) and have drawn a box around the region where the Bank has an arguably clear niche. Note that the box is heavily tilted in favor of the public good region of the knowledge space while it spans much of the entire range of abstract vs. routinized knowledge. Arguably, the Bank's presence in the knowledge space also spans much of range of knowledge along the explicit vs. tacit dimension (not shown in Figure 2). The public good mission of the Bank in the knowledge space is played out in several dimensions, particularly in knowledge generation and in catalytic and convening services, as discussed below.

Figure 2: The World Bank Niche in the Knowledge Space



The Generation of New Knowledge. As part of its mandate to understand and foment economic and social development, the Bank has been active in both underwriting and coordinating the generation and diffusion of knowledge in the upper two quadrants where there is a high public good component. In the northwest corner, we have more “fundamental” knowledge products: research in DEC and selected Chief Economist Offices, the World Development Reports, Policy Research Reviews, etc. Here we find efforts to understand, for instance, the linkages between growth and poverty reduction; the role of institutions or infrastructure in stimulating growth; structural transformation; the efficacy of conditional cash transfers (CCTs); optimal prudential financial regulation; the functioning of labor markets; what elements of the Washington Consensus work or need modification; what are the best ways of measuring poverty or distribution or mobility; what the best methodologies are for measuring the impact of development policies; the role of knowledge accumulation in development; etc. These are agendas that are vital to all client countries and hence have a strong public good component.

Further, the premium on generating public good-intensive knowledge is boosted by need for the Bank’s policy oriented research to be ahead of the curve in shaping the intellectual and policy debate, and ahead of what clients are demanding today. To quote Henry Ford: "If I had asked people what they wanted, they would have said faster horses." A similar sentiment drives Apple’s aversion to focus groups.¹⁰ Pushing the frontier beyond current country client demands can not only inform the policy debate and illuminate the reform agenda; it can also enrich the Bank’s lending program and enhance the stature of the Bank as a convening agent. Public good-

¹⁰ To return again to Steve Jobs, “It’s really hard to design products by focus groups. A lot of times, people don’t know what they want until you show it to them” (quoted in BusinessWeek, 1998-05-25).

intensive knowledge products are contrasted to research outside the Bank's niche, such as the research that supported the development of Blue Ray (SW corner), which is eventually commercializable.

At the far left of the box in Figure 2, there is substantial overlap between the Bank and academia although, importantly, it is far from complete. While universities may produce more public good knowledge in theory and methods, the Bank will engage in topics or approaches driven by its more applied and development oriented nature. This comparative advantage of the Bank is to a significant extent boosted by its proximity to a myriad of concrete development experiences across countries and over time. Their documentation and analysis thus could become a distinctive and potentially substantial contribution that the Bank can make to the development community at large. This can in addition enable the Bank to link the lessons learned from the development of the more advanced countries to the challenges faced by countries at lower stages of development. It can also boost the Bank's ability to inform and facilitate policy coordination to resolve collective action problems at a global scale, as for instance in the case of the Bank's knowledge contributions to the climate change debate.

Further, and as a natural implication of its mandate, the Bank can fill knowledge gaps that are relevant to poorer countries and that would not be filled otherwise. In the same way that it has been argued that the market does not dedicate enough resources to resolving scientific questions specific to poor countries—a cure for Malaria, for example—academic institutions tend to respond to the fads and publication incentives of the day and do not cover many central issues relative to developing countries. Academic journals tend to focus on the industrialized world¹¹ and the profession is generally focused there (because there are better data, which enable more sophisticated analysis and application of novel methodologies). Success in influencing academics' choice of research through grants is often limited by the tendency of academics in giving a higher weight to activities that are perceived to advance their career within the prevailing academic norms, which do not necessarily coincide with the type of knowledge generation that would mainly benefit the less developed countries and their poorer population segments.¹²

The potential misalignment of academic incentives with the needs of the development community says nothing about the needed high level of rigor. The best research work in the Bank should seek to be published in top journals, for it is essential that it receives the critical

¹¹ For instance, a recent work found that economics papers written about the U.S. are 2.5 percentage-points more likely to be published in the top five economics journals after accounting for authors' institutional affiliations and the field of study. This is a large effect because only 1.5% of all papers written about countries other than the U.S. are published in first-tier journals. See Das, Do, Shaines and Srikant (2013). On the other hand, current penchant for randomized control experiments in top journals has been a boon to selected development topics.

¹² Paul Gertler, a Berkeley professor and recently Chief Economist for Human Development at the World Bank, tells the story of a very successful academic paper which examined the relative contributions of family planning programs, economic development, and women's status to Indonesia's fertility decline between 1982 and 1987. The paper found that nearly 75 percent of the fertility decline in Indonesia stemmed from increased contraceptive use, which was in turn primarily induced by economic development, improved education, and broader economic opportunities for women. Though accepted by a major academic journal, Paul felt uncomfortable when the World Bank used it in its decision to cancel its fertility planning program in Indonesia to shift all of our resources toward education for young girls.

examination that those journals provide. Moreover, the “reality impact” of sloppy research in academia is modest and indirect, whereas sloppy research at the Bank—dealing as it often does with crucial policy issues—can have huge adverse effects in the real world. A crisis arising from badly designed financial regulation can set an economy back a decade; a badly designed pension scheme can hurt client countries for generations. The idea that “policy oriented” analysis can be the quick study of harried generalists is just wishful thinking.

Global Coordinator of Research/Analytical Efforts. The Bank is very well positioned to expand its role as a coordinator of knowledge production and dissemination efforts. On the more explicit/codifiable end of the spectrum, the Bank already plays this role as it collects, standardizes, and disseminates statistics. The Open Access initiative moves the Bank further in this direction. The Bank also has played a role in the coordination of research. As an example, one country may not choose to spend the resources on evaluation of every dimension of CCTs that would improve their efficacy. However, through its support for impact evaluation of policy interventions in many countries, the Bank can coordinate findings, identify gaps in global knowledge, and help to fill them. This may require a substantial pool of resources to co-finance the production of such public goods as well as thought about the optimal cost-sharing and subsidy to resolve the underprovision without inducing crowding out of resources.

More generally, with its power as a convener, the Bank can articulate and coordinate a global knowledge agenda. This said, it is essential to emphasize that the Bank cannot be reduced to a convener of global actors and influence agendas without playing an active and significant role as knowledge producer. This is simply because the legitimacy of the Bank as a convener depends on its bringing something to the analytical table.

Relatedly, the Bank increasingly can facilitate South-South knowledge transfers. The nature of developing economy knowledge production has radically evolved over the last quarter century. First, we have seen a quickening of the pace of policy experimentation along virtually every dimension, the results of which have the potential to offer lessons for the greater development community. Second, we have seen the emergence of academic institutions and research institutes in the South that can claim to be equal partners with those of the North and whose analytical work, again, has important implications for other countries. Third, the increase in connectivity through the internet makes the dissemination of knowledge from North and South faster and of vastly greater reach. The Bank has a role as the reference of choice for this knowledge, both serving as a central node, and contributing to vetting its quality and implications. In both functions, the Bank must be able to recognize and synthesize good research—it cannot serve simply as an unfiltered page of web links.

(b) The limits of Bank participation in marketable knowledge

Moving toward the center of the box in Figure 2, we find a range of activities which are intermediate in their degree of abstraction—neither routinized nor fundamental research and more tailored to individual country settings and hence less of a public good. This is the realm of what might be called the “development practitioner.” Seasoned practitioners typically operate out of a sophisticated understanding of “good practices” (as defined by a relevant community of practitioners or standard-setting bodies). Expert practitioners, for example, have been the main

actors in the development of “standards and codes” (such as the Basel Core Principles of Banking Supervision), which aim at encouraging convergence in country practices toward a set of common minimum standards. Here we would also find the expert practitioners in agriculture, water, education, health, infrastructure, climate change, etc., who, while not doing fundamental research in these areas, have both considerable depth and breadth of experience and superb applied knowledge. While much of what they know is codifiable, it is in good practice and judicious application where they excel, making their knowledge largely tacit. It is a type of practical knowledge that is difficult to replicate, although it could be passed on to others through example and mentoring. Because of its scale, traditionally the Bank has been able to house large numbers of development practitioners with substantial tacit knowledge in particular technical fields, and to reap the benefits of having them under one roof.

The further the Bank moves toward tailoring such knowledge to a particular country context (i.e., as we move southward in the box in Figure 2), the more it could potentially overlap with consulting groups: charging a price for its publications and services when possible or, more importantly, through *fee-for-services activity*. To the extent that the Bank provides technical assistance and advisory services for a relatively unsubsidized fee, a bona-fide market niche for the Bank appears to exist in this region. This is because of some peculiar characteristics of the Bank that are not necessarily shared by consulting companies, including the Bank’s credibility as an honest broker that does not provide services to the private sector and is thus free from the associated conflicts of interest. As an example, the Bank has been often hired by central banks on a fee-for-services basis to provide expert advice on the modernization of large-value payment systems. However, the Bank’s ability to draw on the resources devoted to its public goods role, and the knowledge generated there also gives it a particular comparative advantage in the market.

That said, fee based services are unlikely to become the driving motivation for the continued existence of the Bank. It is precisely its potential for resolving market and coordination failures in knowledge, which other firms working in the realm of low public good-high codified knowledge do not share, that militates in favor of the Bank continuing to work mainly in the northern and central regions of Figure 2. As discussed below, to do so well, the Bank will need to enhance the quality, relevance, and impact of its knowledge services, and this will require revisiting its business model—as it remains much more geared to the “Lending Bank” than to the “Knowledge Bank.”

4. The Knowledge System and the Bank

In this section, we first discuss the externalities and network effects that must be crucially taken into account in the quest for an enduring Knowledge Bank. We then sketch some of the implications for human resource management, organizational structure and incentives.

(a) Synergies across knowledge products and the “knowledge iceberg”

The multiplicity of knowledge types and products complicates any long-run view of the business model of the Bank, but it is also a tremendous source of strength that makes the Bank a unique institution. Three points are worth highlighting here. First, it is not possible to say that

one type of knowledge is superior to another. The accumulated know-how of an experienced financial practitioner is central to the Bank's mission, but the more fundamental research in DEC (the Bank's central research department) is no less relevant to the public goods role of the Bank, or as an input to more applied knowledge products.

Second, the different types of knowledge and specific human capital are to be thought as complementary assets capable of yielding positive externality and cornerstones of a virtuous knowledge generation process. Figure 3, the *knowledge iceberg*, lays out the many kinds of knowledge and suggests the importance of linkages among them. It is central that practitioners remain somehow linked to the frontier literature, and it is critical that the agenda of DEC is influenced by the work at the front line and that its results find their way back to the policy dialogue and lending.

Third, and as an example of the second point, it has been argued that in the future, clients will demand fewer long reports and more rapid response, targeted pieces. However, to say that something is produced quickly or is narrowly targeted does not in any way imply that less knowledge is required. Rapid response cannot mean that the Bank gives the client quickly what generalists can scrape together from sources that the client also could quickly distill, or lower the quality standards to meet the fast paced deadlines. Quite the reverse—such targeted rapid responses are the tip of the *knowledge iceberg* and made possible because they rest on enormous installed and specialized expertise that can be drawn on quickly.

Figure 3: The Knowledge Iceberg

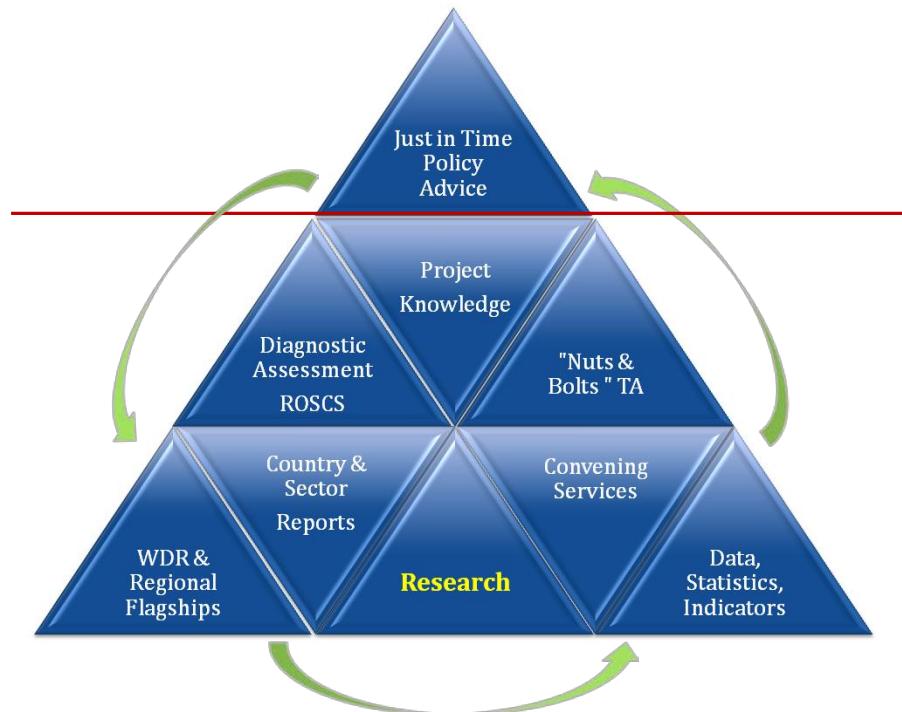


Figure 3 offers a clear warning to the tendency, popular these days, that of placing a disproportionately large weight on the “packaging” of knowledge—i.e., on privileging

knowledge “bits” that can be delivered through blogs and short and easily readable essays—which can come at the expense of more fundamental research and nodes in the knowledge network. Figure 3 also illustrates the myopia of focusing solely on the tip of the iceberg and then erroneously concluding that excellence at the tip can be generated and sustained without the underlying knowledge work—ranging from academic-style research to diagnostics and assessments, to country and sector reports, to “nuts-and-bolts” technical assistance, to data production, etc. The tip of the iceberg is the minimal, yet seldom more visible, part of the story, for it reflects the quality, depth, and synergy of what lies under the surface. For instance, the quick-turnaround but highly effective policy notes that are amply used by the Bank in its dialogue with country authorities ultimately rest on a deep installed capacity of research and practitioner knowledge. Knowledge “on the cheap” is indeed an oxymoron.

(b) Heterogeneous expertise and spillovers

Each of these types of knowledge involves different skill inputs and production processes. Generating a quick response on reforming customs administration requires a different process than thinking through whether certain kinds of growth are more or less pro-poor. Comparing the production function of a rigorous research paper to that of a TA toolkit or to that of an assessment tool (such as a poverty assessment, an investment climate assessment, or a financial sector assessment) is comparing apples and oranges. The first is intensive in research skills and experience, the second in practitioner skills and experience, the third tends to require multidisciplinary teams, with expert practitioners working alongside researchers, coordinated by a leader that is strong at playing the role of “connector.”¹³ This, in turn, implies nodes of human capital specific to these individual tasks. As trade and innovation theory predict, the “gains from trade” among these specialists and the existence of knowledge spillovers imply that the Bank can, literally, become more than the sum of its parts. Like the human body, knowledge systems grow healthily because of *both* the specialization of its parts and the connectivity that makes them work together well.

That said, two points are worth emphasizing. First, the quality of a particular knowledge activity and the gains from the interactions and synergy among different knowledge activities are highest the more specialized is this human capital. This is, to some degree, the opposite of the emphasis of versatility or fungibility of Bank staff often stressed at the Bank (and in the selection process of Young Professionals). Second, the literature on knowledge organizations is frank about how challenging the task of designing incentives and governing structures is to ensure that that knowledge flows (trade in ideas) actually occur. Gupta and Govindarajan (2000) and Alavi and Leidner (2001) suggest at least four critical factors in this regard:

1. *The quality of the stock of knowledge of the source.* Do units really have valuable knowledge to offer? In our context, do our specialists have cutting edge knowledge products, whether in the practitioner dimension or the research dimension?

¹³ In addition, the skills, certification and validation systems, and referent group of a researcher are very different to those of a practitioner. A practitioner would not seek recognition from academics but rather from the community of practitioners to which she belongs. And while likely unsuited to write a research paper for a refereed journal, an expert practitioner would excel at documenting “best practices,” preparing a technical assistance (TA) toolkit, and at assessing and “fixing” problems in her field of expertise.

2. *The absorptive capacity of the destination unit.* Can units internalize and see the potential for application of new knowledge? In our context, have our staff maintained their human capital such that they can actually recognize and manage ideas that are important to them and their practices?
3. *The motivation (incentives) of both source and destination to share/learn.* Does the institution send signals that the generation, organization, and diffusion of knowledge are priority in terms of, say, budget allocation or promotion potential?
4. *The availability of modes of transmission.* Even if all the answers to the above were positive, would contact and transmission be fluid?

Central to this typology of factors is, as the opening quote by Steve Jobs also suggests, the interaction of human capital and incentives. Organizational arrangements can of course help enhance inter-connectivity. In effect, the reorganization that created the current matrix in our institution sought to achieve inter-connectivity in knowledge via anchor units, networks, and thematic groups. And the recent creation of additional (super) structures (Knowledge Council, Knowledge Platforms, etc.) has a similar aim. Experience has increasingly taught us, however, that such organizational changes tend to fall short of the aspirations of the knowledge agenda if not accompanied by deep changes in human resource management, incentives, and budgetary allocations. More important than the organizational boxes to which human capital is allocated is the quality of the human capital in those boxes and the system of incentives they respond to.

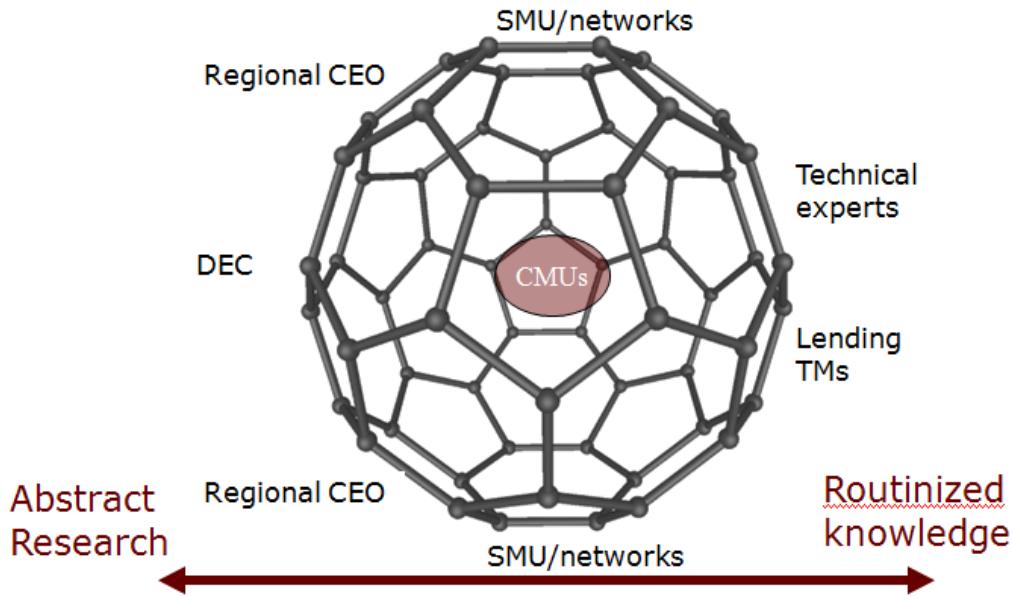
Figure 4 uses the image of “la pelota” (soccer ball in Spanish) as a crude attempt to depict this network of specialized knowledge actors (units) in the Bank context. At the center is the country management unit (CMU) which is the principle point of connectivity to country clients and the suitable tailoring of the gamut of financial, knowledge, and convening services the Bank offers.

The network of nodes that focuses on a particular type of knowledge or knowledge product connects the Bank with the broader development, academic, and practitioner community. Linking these nodes are the coordinating efforts of managers across the matrix, to be sure. In this regard, we see as a particularly crucial role for what we call a “hinge” in boosting synergy and efficiency of knowledge flows in the network. “Hinges” are individuals with technical expertise who work at the interface of different types of knowledge and hence facilitate the flow of knowledge across communities with different specializations.

The Bank has sought to find and develop this latter function—and rightly so—through the technical track, particularly via Lead Specialists, Senior Advisors, and other “Technical GHs” and “Technical GIs.” Some “hinges” may play a role in relatively specialized spaces, for instance, serving as connectors within research-intensive units or practitioner-intensive units. Some “hinges” may play a broader role, connecting different knowledge communities—researchers, practitioners, policy makers, project specialists, etc. These latter “hinges” add value

to the extent that they move comfortably and command respect in more than one community of knowledge.¹⁴

Figure 4: The Bank’s Knowledge System (“La Pelota”)



Organizationally in the Bank, the Research Department (DEC), the Chief Economist Offices (CEOs), and the Sector Units (both in the anchor and in regions) are expected to play the role of connecting nodes, linking different regions of the knowledge space. DEC and some CEOs focus on the more fundamental research with some CEOs seeking perhaps more explicitly to enhance the policy debate through publishable research. They all bridge to the academic community, on the one hand, and to the rest of the Bank, on the other hand. CEOs are in a unique position to strengthen the links between the research communities and the practitioner and policy communities.¹⁵ Jointly, the research by DEC and the CEOs can boost the “knowledge content” of the activities carried out by the operational staff. A staff person in the front lines writing, say, a poverty assessment or designing a project loan may not be as tightly integrated into the most recent advances in research universities and it would be inefficient for her to be so. Ideally, staff working in DEC and CEOs serve as hinges filtering, adapting, and translating the more academic knowledge to the front lines, while at the same time learning from the latter to identify the most policy-relevant research questions.

¹⁴ As an example, background studies for the 1984 Lindbeck report on research at the Bank found that while the transmission of research findings to the practitioner community incurred in long lags, such transmission always resulted from the engagement of the researcher in operations, projects, or policy discussions, which illustrates that tacit knowledge is critical until the issue under investigation is no longer frontier and can become routinized. We are grateful to Alan Gelb for this pearl of institutional memory.

¹⁵ The potential to enhance the interconnection between DEC and the CEOs is much greater than is exploited under current practices.

Sector Units (regional and anchor) are expected to fulfill a similar intermediation role but with respect to the more applied, practitioner knowledge. In effect, these units typically house practitioner-intensive knowledge and are closer to the front lines. Their role is essential to the articulation of a coherent strategy for the generation and synthesis of knowledge. They add value through the nuanced application and tailoring of technical knowledge to country circumstances, sophisticated understanding of specific institutions and constraints, cross-country policy and practical experience, and a solid command of international better practices.

At its best, the Knowledge Bank delivers knowledge services that benefit from the coherent integration of inter-related parts. An example of this is the Bank's work on conditional cash transfers which has involved a very wide range of knowledge products, including rigorous research inside and outside the Bank, regional reports, country-specific analytical work, TA toolkits, advisory services on the ground, program and project implementation, and the use of the Bank's convening services in establishing an international community of practitioners that meet regularly with the help of video conferencing. Another example is the Bank's work in climate change—where basic research, intermediation with academia and policy makers, the LCR regional flagship and the WDR, country-specific studies, climate-friendly projects, etc. have all produced beneficial impacts that a single type of knowledge activity would not have been able to generate. Similarly, some knowledge services for which client countries have expressed the highest of regards—such as a just-in-time policy or technical note or a highly-focused mission of experts—as mentioned earlier are just the “tip of the iceberg” of a much bigger knowledge effort. Such interventions would not have had the quality and impact they did had they not been underpinned by the painstaking accumulation of inter-related research and practitioner knowledge and experience.

However, paraphrasing again the afore referenced Vice President, the Bank functions this well perhaps 5 percent of the time and the Bank winds up being often much less than the sum of the parts. In what follows of this section, we touch briefly on the two issues—human resources and incentives—the interaction of which we, and the literature, stress as critical to the functioning of a knowledge organization.

(c) Human resources

Factors 1 and 2 mentioned above—the quality of the stock of knowledge of the source, and the absorptive capacity of the destination unit—remit us again to the underlying quality of human capital. We began our discussion above with the role of specialized human capital, and then took up the organization of the Knowledge Bank itself. This is because, as Grant (1997) and Simon (1992) argue, more generally talking about “firm” or “organizational” knowledge obscures the primacy of *the individual worker* as the fundamental unit of knowledge generation and dissemination. Hence, it is essential that new organizational structures, new platforms, and new dotted lines between units do not lead us away from *the focus on getting the best individuals for the knowledge tasks, identifying and motivating “hinges,” and maintaining and improving their human capital over time.*

The Bank has nurtured a strong tradition of technical clusters that house groups of individuals with extensive tacit knowledge in particular areas. Again, more recently, there has

been an emphasis on versatility or fungibility—the idea that reasonably smart people can learn to do many things. While this is to some degree true, as stressed above, a Knowledge Bank is more than its parts when people with specific talents “trade” with those with other sets of skills. Further, the emphasis on versatility is more justified the more the Bank remains fundamentally a lending institution, but it is less justified as it tries to move more deeply toward a Knowledge Bank. There is evidence that crowded work programs and career tracks imply insufficient incentives to promote the Knowledge Bank over the Lending Bank and stimulate the maintenance and improvement of knowledge-intensive human capital over time.¹⁶ The bottom line is that the Bank has probably created too many generalists and in many areas is losing the installed human capital to be able to give truly cutting edge advice to clients.

Beyond this, the organization and strategy literature stresses the need for workers to consider management of knowledge a central aspect of their job and this is not yet a high priority in the Bank. This includes thinking through the elements of what was learned in a project or operation that might be of use to others, codifying it, and archiving it in a form that will be easily accessible to other parties. The Bank implemented various reforms in the 1980s that were designed to improve the flow of talent and ideas. The so-called networks were intended to collect, archive, and disseminate knowledge and serve as knowledge hubs to house some of who we are terming hinges. The matrix system was expected to allow expertise to be contracted easily across units. Communities of practice were meant to connect individuals working on similar problems across regions. However, success in these areas has been decidedly mixed and has been so for a long time, largely because they focus on the supply side of knowledge rather than setting up incentives to demand the generation and sharing of high quality knowledge.¹⁷ Instead, Gupta and Govindarajan (2000, page 127) discuss a phenomenon that could well describe the average World Bank task manager:

“Many organizations are relatively lean and many employees do not have time to make knowledge available, share it with others, teach and mentor others, use their expertise to innovate, or find ways of working smarter (Glazer 1998). Instead they are task focused, shifting existing workloads to fight deadlines...Without a systematic routine for capturing knowledge, a firm might not benefit from its best knowledge being captured.”

This would not happen in an institution that truly needed a well-functioning knowledge management system to survive. There is a need to strengthen the evaluation criteria for loans and country- or sector-focused studies such that the emphasis is on analytical care, on communicating the latest thinking to the client, and on innovating. That would boost incentives for task managers to maintain their knowledge-related skills, to know what others are doing inside and outside the Bank. This, in turn, would require a functioning network and richer

¹⁶ At present, the Research Board Funds of DEC are vastly undersubscribed by regional staff, despite offering resources not only for research but to purchase staff time.

¹⁷ A more controversial policy is actually rotating staff through the organization. As Grant (1996) notes: The shift in employee training from deepening of specialist skills toward increased cross training and job rotation is based on the belief that trading off increased common knowledge against decreased specialist knowledge will enhance organization capabilities” (Grant 1996). What is important here is both the acknowledgment of the fundamental problem of integrating knowledge embodied in individuals across an organization, but also that, different modalities of integration imply tradeoffs, particularly in terms of generating and maintaining expertise which need to be acknowledged and evaluated.

interactions with DEC and the CEOs. This implies that quality control becomes a central and critical aspect of knowledge sharing *from the incentive perspective*. Similarly, serious quality control would create in managers a laser focus on getting the strongest human capital, an incentive to ensure that it did not decay, and a demand that the supporting knowledge organs of the Bank functioned well.

(d) Institutional structure and incentives

The Bank remains a lending bank in spirit and it faces numerous challenges in moving toward a Knowledge Bank. The issues involved are extremely complex and beyond the competence of the authors so we venture at a rather general level and into only a few select issues.

Measurement—finding the missing coin where we lost it, not where the light is better. Ten years ago, Managing Director Shengman Zhang was asked why, despite persistent talk of the coming of the Knowledge Bank, loans remained the central and most valued product. He responded “because we can count them.” Any nonmarket driven organization has a problem of measurement and this becomes increasingly difficult with knowledge, especially of the public good-intensive type—on two fronts.

First, it is hard to measure the quality of very heterogeneous knowledge outputs. It is difficult to compare across such diverse knowledge activities as, for instance, just-in-time policy notes, face-to-face conversations with ministers, sponsored conferences, substantive reports, and academically-oriented papers. It is also hard to measure their quality and impact¹⁸. Various measures of relevance of analytical work have been offered, for instance, the surveys of what is needed by the client. These are imperfect for numerous reasons: good quality knowledge may take years to work its way into the country debate (viz., labor market legislation); the multiplicity of knowledge outputs somehow requires a similar multiplicity of measurement tools; it is difficult to isolate and identify the effect of a particular knowledge product when the observed effect is the result of many contributions in a complex chain that goes from fundamental research to policy debates, from research done in the Bank to research done outside the Bank, etc. Moreover, it is difficult to capture knowledge quality solely through client satisfaction surveys—the functionaries answering the surveys are frequently not those involved with the product and it is not clear if the local client is always in the best position to evaluate the quality.

Second, it is equally hard to measure knowledge inputs. The production of loans, while it often involves herculean efforts, nonetheless follows a relatively well-known recipe, the intermediate stages of which are relatively straightforward to monitor. The same is not

¹⁸ Exceptions are comprehensive evaluations carried out by distinguished experts. In 2006 the World Bank’s Chief Economist requested an independent evaluation of all research activities produced by the World Bank, both in its Development Economics Vice-Presidency and in other Bank units, between 1998 and 2005. The evaluators, headed by Angus Deaton (Deaton et. Al, 2006), found that “[...] too large a fraction of Bank research was undistinguished, in the sense that it had neither great relevance to policy nor claim to academic distinction. These are subjective judgments, but our evaluators are distinguished development economists, and their views were very similar to one another. Their judgments did not refer to the lack of good papers in good journals, many of which were innovative and important by any standard. Nor were any of them counting citations. The concern was with the large fraction of papers that, on reading, did not seem to be very useful from the perspective of either an academic or a policymaker.”

necessarily true for knowledge products. A flagship report can appear dormant for months while background papers or simply ideas are being pursued, literature digested, and the like. This implies that management will need to focus more on ensuring the quality of the final product than managing the intermediate steps getting there or simply counting reports and papers and tabulating website hits.

The governance of resources for a Knowledge Bank. S/he who controls the resources controls the agenda and priorities. In a system like the Bank's where, for instance, budget resources are largely decentralized to country directors, the work of the Bank naturally tends to be focused on generating goods tailored to the client country. This makes sense because country management units are best positioned to respond to client demands. However, this tends to lead to a typical free rider phenomenon, whereby country directors underfinance the production of public goods knowledge activities that go beyond the needs of their particular country. At the other extreme, however, handing the keys to the budget to DEC and the networks may not guarantee that the production of public good knowledge is adequately aligned with the problems faces by individual countries. Striking a reasonable balance between the two extremes is indeed a difficult matter, and it seems that efforts to try to hit a well-balanced "sweet spot" are never perfectly successful.

5. Final reflections

The market failures in development related knowledge are such as to make the Bank a crucial player in generating, archiving and disseminating information essential to reducing global poverty and achieving shared prosperity. This paper has offered some reflections on how the World Bank could better play that role and some of the challenges facing its realization. The hope is that the paper will stimulate discussion and nudge the Bank in this direction, but the paper is far from a blueprint for reform. While we maintain that the Bank needs improvements in human capital, incentive design, and governance, the nuts and bolts of such reforms are the subject of a long literature, the surface of which we have only scratched. In closing, a few points are worth highlighting.

First, the knowledge space necessarily encompasses a heterogeneous array of products ranging from very public goods to those closely tailored to individual clients and sectors. Only in the latter can we imagine a consulting firm-like structure and the idea that we can become an outsized McKinsey focusing primarily on fee-for-services products is probably not appropriate. Relatedly, some rethinking of the allocation of resources is in order to ensure that public goods are provided while being directed to areas of higher demand.

Second, the very fact that the Bank produces so many different knowledge products implies a range of very specific and high quality human capital. The interaction of this specific capital gives rise to gains from trade and offers the Bank a unique comparative advantage vis-à-vis other players in the knowledge space in terms of the depth and breadth of the background analysis that task managers can draw on. In particular, the growing emphasis on just-in-time analytical products does not militate in favor of generalists. Rather, it requires an established and ongoing analytical program by specialists in many areas. Only then can we be sure that what emerges from the tip of the "knowledge iceberg" represents true value added and not merely a

general synthesis that governments themselves might do. Further, it is the breadth and depth of in-house analytical capabilities that legitimizes the Bank's role as a convener.

Third, ensuring that the benefits of the interactions among the different parts of a Knowledge Bank is a challenge heavily studied in the literature. We stress the critical interaction of high quality human capital and the incentives to produce quality knowledge goods, maintain human capital, and interact with other nodes in the knowledge organization. Establishing this is an essential complement to whatever adjustments are required to the Bank's organogram or to which boxes human capital is allocated so that these two factors are in place.

Fourth, of critical importance is a system that ensures the quality and proximity to the knowledge frontier (whether in the research or the practitioner dimensions) of the knowledge products. This not only ensures the credibility of the institution, but aligns internal incentives correctly such that the right human capital is demanded and skills maintained over time, research oriented groups are strengthened and pulled in to support more front line activities, and the accumulated lessons from Bank activities are curated and archived in an easily accessible fashion. Such quality control mechanisms are an essential complement to other reorganizational initiatives because without them there can be no true Knowledge Bank.

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