

Growth, Innovation and Competitiveness - Maximising the Benefits of Knowledge-Based Capital

13-14 February 2013
OECD Conference Centre
Paris, France



Background Notes
Session Questions



Background Notes

TAXATION OF KNOWLEDGE-BASED CAPITAL IN A GLOBALISED ECONOMY	4
<i>Questions for the conference session</i>	8
DOES THE RISE OF KBC REQUIRE A NEW COMPETITION POLICY?	10
<i>Questions for the conference session</i>	12
GLOBAL VALUE CHAINS: KBC AND THE POSITIONING OF COUNTRIES AND INDUSTRIES	14
<i>Questions for the conference session</i>	17
REFORMING CORPORATE REPORTING OF INVESTMENT IN KNOWLEDGE-BASED CAPITAL: WHY IS THIS IMPORTANT, AND CAN ANYTHING MORE BE DONE ?	18
<i>Questions for the conference session</i>	21
‘BIG DATA’: AN EMERGING FRONTIER FOR INNOVATION AND POLICY?	22
<i>Questions for the conference session</i>	24



**Growth, Innovation and Competitiveness -
Maximising the Benefits of Knowledge-Based Capital**

13-14 February 2013, Paris





TAXATION OF KNOWLEDGE-BASED CAPITAL IN A GLOBALISED ECONOMY

Background

Introduction

R&D tax incentives for business expenditure on R&D are central to many governments' efforts to foster innovation. In addition, a number of countries have adopted tax regimes that apply a lower rate of corporate income tax (CIT) to income from patents and similar intellectual property (e.g. 'patent boxes'). New tax analysis by the OECD under the New Sources of Growth (NSG) project has been undertaken to estimate the overall effects on Effective Tax Rates (ETRs) from tax reliefs on the expenditure side and on the income side. This analysis, moreover, enables estimates to be made of the effects on ETRs of cross-border tax planning strategies used by multinational enterprises (MNEs).

This work suggests that MNEs, in particular, may be able to achieve very low ETRs on their investments; and that in some cases post-tax returns may exceed pre-tax returns. Against this background, designing cost-effective policies to encourage innovation in a globalised economy where MNEs play a major role is becoming ever-more challenging.

Multiple channels of tax relief for R&D

Tax policy affects business investment in knowledge-based capital (KBC) through many routes, direct and indirect. Whether through R&D tax credits or special tax allowances, many OECD countries offer significant tax relief for business spending on R&D. Estimates of the amounts of revenue forgone through such tax reliefs are shown in Chart 1. In addition, some countries also have 'patent box' regimes that lower tax rates on income of resident taxpayers earned on KBC (e.g. royalty income from patents). The number of countries providing tax relief for business spending on R&D, and the generosity of such relief, are rising and, in some countries, tax relief of this sort is the principal policy instrument used to foster innovation. Ensuring that resources are used cost-effectively is essential.

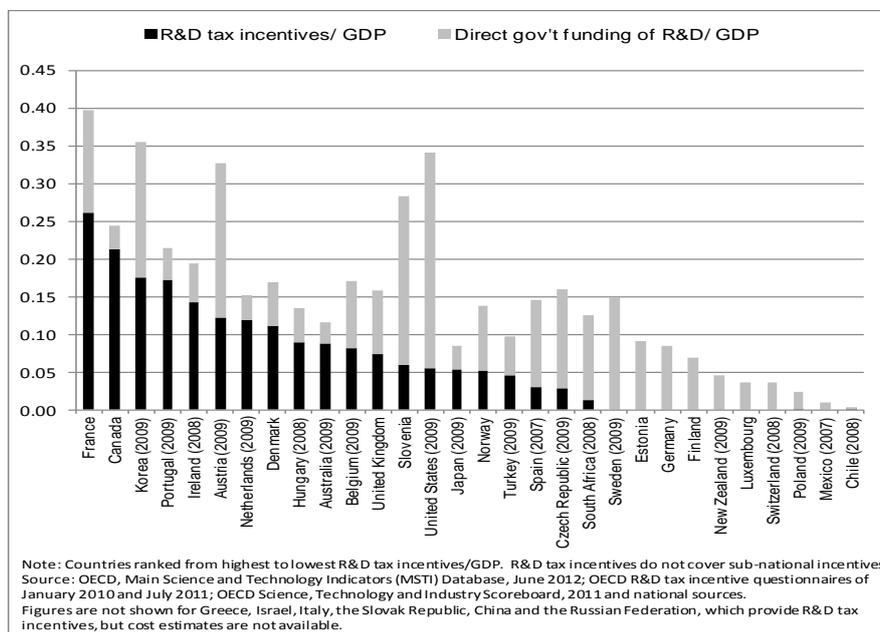
However, tax revenue forgone on business investment in R&D may be substantially more than the direct support through tax incentives for R&D. MNEs typically operate as integrated global businesses and are able (within the limits of the law) to exploit differences in tax systems and rates across different tax jurisdictions.



Notwithstanding tax rules in many OECD countries designed to protect the tax base, MNEs are often able to largely avoid domestic tax on returns to R&D, for example using offshore holding companies. As noted, some countries have ‘patent box’ regimes, which aim to discourage MNEs from using offshore holding companies by offering a lower tax rate. But tax revenues foregone by such measures may be significant. In most cases, such regimes have been introduced too recently for data to be gathered to allow assessment of their cost-effectiveness.

Chart 1

R&D tax incentives and Direct Government Funding of R&D, 2010



A particular difficulty for tax authorities is establishing an appropriate arm’s-length price for transfers of KBC within a multinational group, as the unique characteristics of KBC often mean that there are neither similar transactions nor observable prices between unrelated parties. There are obvious risks that the managers of a MNE, possibly with greater awareness of the value of the KBC to the firm, may attempt to under-report the value in order to minimize their home country tax burden.

Also, in part due to pressures to provide internationally competitive tax treatment, countries are often reluctant to impose ‘controlled foreign company’ (CFC) rules that would tax on a current basis (rather than deferred or exempt basis) royalty income received by offshore holding company affiliates of resident MNEs.

It is difficult to make robust estimates of the global scale of profit shifting to no/low-tax countries through MNE tax planning strategies involving KBC, but the magnitudes involved appear to be significant. For example, research suggests that the potential annual revenue cost from income shifting by US-based MNEs may be as high as USD 60 billion, with possibly half of this due to aggressive transfer pricing of KBC-related transactions.



Many estimates of the effect of tax incentives for R&D on ETRs on investment in R&D largely ignore the international dimension of tax policy and thus overlook effects of tax planning behaviour of MNEs. A main objective of work on taxation undertaken in the *New Sources of Growth* project has been to identify common cross-border tax planning strategies involving the use of KBC in production, and to incorporate these in a transparent model so that effects of tax policy on firm behaviour and tax revenues can be analyzed.

The OECD Centre for Tax Policy and Administration has developed a new ETR model for assessing tax burdens, and examining the influence of domestic and international tax policy on business decisions to undertake R&D, where to hold KBC (e.g., patents) resulting from R&D and where to locate production using it. This (QETR) model captures effects of R&D tax credits, ‘patent box’ regimes, and common cross-border tax planning strategies, including tax avoidance on royalty income. As described above, these are important considerations, given the evidence that such tax planning is widespread in industries (such as ICT and pharmaceuticals) where KBC is crucial and MNEs have a major market presence.

Main findings and policy implications

Based on the application of the model, the main preliminary findings and their policy implications are set out below.

First, in many countries, overall tax relief for R&D (particularly that performed by MNEs) could well be greater than governments intended when they designed their regimes for supporting R&D expenditure. Indeed, analysis using the QETR model suggests that when tax planning strategies to avoid tax on returns are taken into account, MNEs may achieve a significant and much larger than intended tax subsidy to investment in R&D, i.e. the post-tax return on R&D spending may exceed the pre-tax return.

Second, no/ low tax rates and favourable tax regimes encourage MNEs to locate economic ownership of KBC (and hence income, for instance, in the form of royalties) in offshore holding companies. In addition, the use of KBC in foreign production in host countries with relatively low corporate tax rates may be encouraged. A number of consequences flow from this:

- Because MNEs are typically well-placed to exploit cross-border tax planning strategies, countries providing tax incentives for R&D expenditures may collect little tax on the return on that R&D.
- Where KBC is used in foreign production, there may be an important loss of domestic spillover benefits from R&D (i.e., knowledge gained from embedding KBC in production technology). As limited taxation of foreign royalty income encourages the use of KBC in foreign (low-tax) production, international tax policies may result in leakages of spillover benefits and revenues beyond the national borders of the countries providing tax incentives for R&D expenditure.
- Domestic employment may be negatively impacted. (Over time, the economy is likely to adjust and other jobs may be created, so that employment might not be much affected. However, wages paid by these jobs may be lower and the overall composition of employment different).



- Global output could be reduced when capital is attracted away from locations where pre-tax rates of return are higher. In other words, investments involving KBC may not be occurring where they are most productive, but where the tax arrangements afford the highest post-tax profitability.

These factors weaken the rationale for tax incentives to encourage private domestic R&D, based on domestic spillover benefits from R&D and local knowledge gained (and productivity enhanced) when embedding new KBC in domestic production. They also flag the need to re-examine international tax policies that facilitate tax planning and profit shifting.

Third, domestic R&D performers that do not have foreign affiliates may be at a competitive disadvantage in undertaking and exploiting R&D, relative to MNEs with cross-border tax planning opportunities. This disadvantage may be more pronounced for business start-ups that have not yet made sales and are thus in a loss position and unable to make immediate use of R&D tax credits (if they are non-refundable). The absence of a level playing field may make it more difficult for pure domestic firms to compete with MNEs, which may inhibit knowledge creation. SMEs and young firms have particular strengths as R&D performers (e.g., in creating radical innovations).

The above findings and analysis add to arguments for targeting R&D tax credits on firms that do not have cross-border tax planning opportunities. This approach is supported by other OECD analysis performed under the *New Sources of Growth* project showing that the productivity impacts of fiscal incentives are unclear, possibly because such policies can favour less dynamic incumbents at the expense of dynamic young firms. On the other hand, countries may not want to target R&D tax credits, and may want instead to consider how profit shifting by MNEs can be curtailed, tending to level the playing field, without having significant negative impacts on innovation activity. The OECD project to address Base Erosion and Profit Shifting (BEPS) will provide a collaborative framework within which appropriate reforms to international tax systems can be developed.

Fourth, the academic literature suggests that R&D tax incentives increase amounts of R&D undertaken, but their cost-effectiveness is less certain. There is thus a risk that international competition to increase levels of tax support for business R&D could increase tax revenue forgone without commensurate increases in the amount of innovation. International cooperation should extend not only to unintended tax relief for R&D (and its use in production) by MNEs through profit shifting, but also statutory policies for supporting R&D through tax credits and patent boxes.

The framework of analysis of tax issues presented above is a first-of-its-kind. Work under the *New Sources of Growth* project is pointing to the need for policy makers to use ETRs on investment in KBC that factor in tax relief from cross-border tax planning strategies. Further work and additional research is also necessary to:

- Broaden the scope of analysis to incorporate country-specific domestic and international tax rules;
- Better understand the sources and size (value) of spillover benefits of R&D, and how closely they are linked to undertaking R&D versus incorporating KBC in production;
- Improve estimates of the responsiveness of R&D to tax incentives. To the extent that past analyses have used biased ETR measures for MNEs that ignore cross-border tax planning, new empirical work could help to guide policy making;



- Examine implications of a coordinated policy response on the provision of R&D tax credits, to reduce concerns over a leakage of spillover benefits;
- Examine implications of co-ordination in tightening defensive tax measures (e.g. controlled foreign company (CFC) rules), to reduce concerns over loss of international competitiveness that may be holding back unilateral action; and
- Assess the consequences for innovation and entrepreneurship of any competitive disadvantage for purely domestic R&D-performing firms stemming from tax arrangements that benefit MNEs.

QUESTIONS FOR THE CONFERENCE SESSION

- What are the reactions of the speakers to the main findings and policy implications of the tax work?
- What are the main considerations that should guide tax policy to encourage R&D? Have developments accompanying globalization not only complicated but also weakened arguments for tax reliefs for R&D?
- What are the pros/ cons of policy adjustments to ‘level the playing field’ for MNEs and domestic-only R&D performers, by
 - increasing R&D tax credits/ allowances for SMEs, and/or
 - limiting cross-border tax planning opportunities of MNEs?
- In what areas should policy co-ordination be sought?



**Growth, Innovation and Competitiveness -
Maximising the Benefits of Knowledge-Based Capital**

13-14 February 2013, Paris





DOES THE RISE OF KBC REQUIRE A NEW COMPETITION POLICY?

Background

Knowledge-based capital (KBC) has emerged as an important driver of growth, investment, and innovation in OECD economies. KBC is a term that encompasses a broad range of ideas, intangible assets and innovations, including computerised information, scientific and non-scientific knowledge and processes, business methods, intellectual property, and economic competences such as firm-specific human capital and efficiency-enhancing know-how. KBC complements and may even supersede physical capital in stimulating and facilitating economic growth. Competition is another factor that can drive growth, investment, and innovation – including investment and innovation related to KBC itself. Accordingly, sound competition policy and effective competition law enforcement can and should support the development of KBC.

As KBC-focused businesses have grown in economic importance, they have started to encounter and create more competition law and policy issues. During the past several years, there has been a string of high-profile competition law enforcement matters involving KBC-focused businesses. Many of these have occurred in the digital economy and involved companies such as Google, Apple, Facebook, Microsoft, and Intel. Not all of these were IT firms, however, as settlements with major banks like JPMorgan Chase and UBS over price-fixing conduct in bond markets illustrate.

Yet it remains the case that while most competition authorities and many courts in OECD countries have substantial experience applying competition principles to markets that involve physical goods and capital, they generally have less experience with competition in KBC-intensive markets. Indeed, questions often arise concerning whether traditional competition law and policy principles are even applicable in such markets and, if they are, whether they need to be adjusted to account for the differences between KBC-intensive and other kinds of markets.

Competition law and policy, as a general rule, provide a flexible framework that can be adapted to fit diverse markets. Traditional competition laws and principles can and should be applied to prevent and deter anticompetitive behaviour in any setting. That fosters investment and innovation, including in KBC-focused markets. Nonetheless, certain features of those markets—such as their tendencies toward rapid change, constant innovation, market tipping (when the nature of a market makes it likely to be monopolized) and a prominent role for intellectual property—can complicate competition policy analysis.

Previous work of the OECD Competition Committee highlights: the theoretical and empirical evidence on the relationship between competition and innovation (including KBC-related innovation); the complex relationship between competition and a common type of KBC, patents; and the nature of competition in the digital economy, which is an increasingly important sector in which KBC plays a central role. The



Competition Committee has also identified and analyzed some of the competition law and policy issues that arise in KBC-focused markets.

This session of the Conference will go over those issues, as well as some of the features of KBC-intensive businesses that arguably call for a different approach to competition analysis, with an eye toward determining whether competition policy must change to be effective in KBC-intensive markets.

Policy Implications

Innovation is the lifeblood of most industries that are based on KBC, driving product development and market growth. Accordingly, optimal competition policy for KBC-intensive markets should be innovation-focused. Ambiguity regarding the precise relationship between competition and innovation, which exists both in theory and at an empirical level, complicates the task of determining the proper role for competition law within such markets. The evidence strongly suggests, however, that there is scope for well-conceived and targeted interventions by competition authorities to support and augment the process of innovation. Of course, as always, care must be taken to avoid inefficient market distortions as a result. With respect to other components of government, there is reliable evidence that eliminating unnecessarily anticompetitive regulatory restraints boosts innovation and growth.

KBC-intensive markets do have certain distinctive features. Industry standard-setting is a common practice, for example, but is vulnerable to both collusion and single-firm manipulation. Intellectual property is often a key asset for firms in KBC-based markets. That raises questions about the optimal scope of patent rights for the purpose of encouraging investment and innovation without deterring beneficial competition. In digital economy markets, where some experts believe inter-platform competition is of the greatest importance to innovation, a significant question is the extent to which intra-platform competition should also be actively protected through competition law mechanisms. If entire technology platforms and ecosystems are constantly rising and falling as they compete with one another, intra-platform competition concerns may be secondary.

It is certainly plausible, at the very least, that competition laws and policies in OECD countries are sufficiently flexible to be applicable in any market, including KBC-focused markets. It is also clear, though, that due account should be taken of the specific market context in each case and, in particular, of the key role of innovation in spurring growth and consumer welfare in these markets.

In summary, the OECD has distilled the following key policy implications with respect to competition policy in KBC-intensive markets:

- Although there is no firm consensus yet on the degree of competition that generates the most innovation, support is accumulating for the idea that the relationship is similar to an inverted U, with moderate levels of competition stimulating more innovation than low or high levels of competition. The great majority of enforcement activity by competition authorities occurs in markets that already have low levels of competition and, in the case of merger control, markets that would likely shift toward the low end of the spectrum in the absence of enforcement interventions. Therefore, the inverted-U theory implies that enforcement actions increase innovation by moving markets closer to



moderate levels of competition. Policymakers can continue to support and implement sound, effective competition law enforcement.

- OECD studies have shown that one of the most effective ways to boost business research and development – a key driver of innovation, including KBC-related innovation – is to get rid of unnecessarily anticompetitive product market regulations. Policymakers can support efforts to identify and remove such regulations in their economies.
- KBC-intensive digital markets have certain distinguishing traits, including tendencies toward “winner takes all” rivalries, strong network effects, two-sided markets, fast-paced innovation and high rates of investment. The cyclical nature of competition in some of these markets has meant that certain digital platforms acquired significant but transient market power. That suggests that dynamic competition, based on continual cycles of innovation, development, and disruption, is paramount in the digital economy. Policymakers need to consider whether that, in turn, means that dynamic competition considerations – such as protecting and promoting incentives to innovate – should generally take precedence over static efficiency concerns in these markets. An important factor in weighing that question is whether adequate conceptual and practical analytical tools currently exist for evaluating dynamic competition and efficiency issues.
- Many markets in the digital economy have a worldwide geographic scope. That can lead to jurisdictional or territorial problems. For example, it may be difficult to identify within a given country a physical entity that is legally representative of the party responsible for certain anticompetitive behaviour. Alternatively, an anticompetitive practice may affect several jurisdictions, thus raising the question of which agency should take enforcement action. Policymakers can support the improvement of international co-ordination and co-operation mechanisms between competition authorities.

QUESTIONS FOR THE CONFERENCE SESSION

- What are the reactions of the speakers to the OECD policy assessment and conclusions?
- What are the most persuasive arguments for the position that competition policy should change in the context of KBC-focused markets?
- What are the most persuasive arguments that competition policy is fine as it is now, even in the KBC context?
- Regardless of whether actual competition policy and analysis needs to change, what can competition authorities do to better prepare themselves for the likely increase in cases arising in KBC-intensive markets?



**Growth, Innovation and Competitiveness -
Maximising the Benefits of Knowledge-Based Capital**

13-14 February 2013, Paris





GLOBAL VALUE CHAINS: KBC AND THE POSITIONING OF COUNTRIES AND INDUSTRIES

Background

Recent decades have witnessed a rapid global fragmentation of production, with different stages of the production process located in different countries. The rise of global value chains (GVCs), driven by advances in information and communication technologies (ICTs) and trade liberalization, has changed the nature of global competition. Economies and firms increasingly compete for high value-added activities within GVCs rather than for high value-added industries. Such competition within GVCs is important because the total value created by a GVC is unevenly distributed among the participants in the GVC. For example, in 2006, the iPod accounted for 41 000 jobs, with 27 000 outside the United States and 14 000 inside. But US workers – where investments were occurring in forms of KBC such as design, R&D, software and marketing - earned a total of USD 753 million, while those abroad earned USD 318 million. The value accruing to individual firms in a GVC depends in turn on the complexity and originality associated with the GVC-related activities they perform or control.

The highest level of value creation within a GVC is often found in certain upstream activities such as new concept development, R&D or the manufacturing of key parts and components, as well as in certain downstream activities such as marketing, brand development or customer service. Those activities involve highly tacit, non-codified knowledge in such areas as original design, and the creation and management of cutting-edge technology and complex systems. Such activities define the extent to which the final product can be differentiated in consumer markets, which in turn determines the total value the GVC can create.

The value that a firm creates within a GVC depends crucially on the degree of difficulty experienced by rivals in supplying similar or substitutable products/services. When such products/services can more easily be imitated or substituted, fierce global competition will depress the value-added that a firm can earn from its participation in the GVC. On the other hand, when firms provide inputs that are indispensable and non-substitutable to the whole GVC, these firms are likely to enjoy sustained and high value-added.

Upgrading of GVC activities (henceforth, ‘upgrading’) occurs when firms acquire capabilities in supplying GVCs with the products/services that are more difficult to reproduce, and hence associated with higher value-added. Since firms are constantly competing for higher value-added GVC activities, upgrading is a competitive process requiring successful innovation *relative to* rivals. Upgrading takes different forms. Upgrading occurs when firms: acquire capabilities to process complex tasks with significantly higher efficiency and lower defect rates vis-a-vis rivals (*process upgrading*); introduce faster than rivals novel products with superior technological sophistication and quality (*product upgrading*); provide competitive products/services in new segments of a GVC that are associated with higher technological sophistication or originality (*functional upgrading*); or participate in or switch the locus of their activities to new GVCs producing higher value-added products/services (*chain upgrading*). It is often held that economies move up



the value chain beginning from process upgrading and finally achieving chain upgrading. For instance, Asian economies like Japan and Korea upgraded within textiles and electronics GVCs by first exerting cost competitiveness in processing final products, then competing on product quality and originality. With the integration of emerging economies into the global economy, these countries shifted their core competency to upstream activities within GVCs, such as manufacturing of sophisticated material or core components like microchips, while offshoring labour-intensive activities. Finally, Japan and Korea moved their focus to high-end products that do not compete directly with output from emerging economies.

‘Upgrading’ capabilities are nested in firms’ knowledge-based capital (henceforth ‘KBC’), also known as ‘intangible assets’. KBC is a stock of investments in assets that do not have a physical or financial embodiment. While the stock of R&D, human capital and software are often considered typical examples of KBC, the range of KBC is considerably broader and can be grouped into three main categories:

- *Computerized information* : software and databases
- *Innovative property*: R&D, non-R&D innovative expenditure including copyrights, designs, trademarks
- *Economic competencies*: brand equity, firm-specific skill (technological and managerial), networks, organizational structure.

However, the value-added realized through upgrading is expected to be eroded quickly if the KBC that supports such upgrading is easily replicated, because rivals can then quickly acquire comparable capabilities. Therefore, for a firm to enjoy sustainable value-added from an upgrading, it must be founded on the forms of KBC that are highly non-replicable. Conversely, the non-replicability of specific types of KBC can be considered an essential barrier to entry in the GVC activities that use them intensively.

Some types of KBC are hard to replicate when they are highly firm-specific and non-tradable, therefore requiring in-house accumulation through a flow of strategic expenditure over a long period of time. This does not only concern innovative property such as highly sophisticated technologies but also economic competencies such as brands which requires long-term commitment in marketing and product quality. Furthermore, since many types of KBC exhibit increasing returns to scale, late-comers face disadvantages in accumulating new knowledge in competition with firms with a larger initial KBC stock. Replication of KBC is also difficult when the link between some types of KBC and observed competitive advantage is ambiguous, making it difficult to identify which types of KBC should be replicated in order to catch-up. Such *causal ambiguity* is especially strong when the relevant KBC involves highly tacit knowledge, complex integration of several different kinds of KBC, or is highly firm specific. Some forms of KBC like state-of-the-art technology or good management practices can be products of a firm’s unique history of technology investment and entrepreneurial acts. *Path-dependency* of this sort makes it practically impossible for rivals with different histories to fully replicate such KBC.

Economic competencies, which include firm-specific skills such as superior management, brand equity and organizational structure, are, in general, more difficult to replicate than innovative property or computerised information. This suggests that the upgrading founded on economic competencies can sustain larger value than upgrading supported solely by novel technology or datasets. In reality, however, it is often a complex



integration of multiple KBCs that acts as the source of firms' sustainable competitive advantage. For example, some firms integrate simulations of product design and workplace organisation based on large computerized data sets—often referred to as “big data”—to achieve faster product introduction and greater efficiency. Nevertheless, even a cutting-edge technology may not be a sustainable source of value if it can be replicated by rivals within a short period.

The value that a firm can create within a GVC also depends importantly on whether—or how much—it can leverage its own KBC. For instance, textile manufacturers that retain their original designs capture higher value than the subcontractors that produce according to the designs imposed by their customers. An important challenge for GVC participants seeking to move into higher value-added segments of GVCs is to reshape the way the GVC is coordinated by the lead firms, toward a less restrictive mode where they have more room to exercise roles based on their KBC. This calls for an autonomous accumulation of KBC and improvement in capabilities which encourage the lead firms to delegate more knowledge-intensive and higher value-added tasks.

Policy Implications

The assessment of KBC as an essential resource for value creation within GVCs yields several new policy implications for economies seeking to draw larger value from their global engagement:

- Policies that facilitate the linkage between GVC participants and the local knowledge base—such as research and training institutions—can contribute to positive feed-back loops between the accumulation of KBC and upgrading of GVC activities. Such knowledge linkage enhances firms' learning abilities and enables them to leverage GVC participation in ways that facilitate the absorption of spillovers of advanced foreign KBC. The autonomous build-up of KBC then raises firms' competitiveness in more knowledge-intensive GVC activities and enables them to participate in the upstream and far downstream segments of GVCs.
- Policies supporting dynamic domestic markets and free trade/investments encourage investments in KBC. Given the fact that innovation is mainly driven by profit-seeking business investments, policies must provide incentives for such investments by enhancing competition and entrepreneurship. Anti-competitive policies discourage investments in KBC by both incumbent firms and potential entrants. Protectionism in international trade and investment is effectively a “beggar thyself” policy because of its long-run consequence of depressing an economy's accumulation of KBC and limiting its ability to draw value from GVCs.
- Policies should foster a favourable business environment for investments in the KBC that support competitive advantage in highly knowledge-intensive manufacturing. Such “advanced manufacturing” can bring about the reorganization of GVC activities from one based on labour and capital abundance to one based on endowments of KBC. Increasing a location's attractiveness for knowledge creation becomes more important than ever for an economy trying to retain manufacturing activity.



QUESTIONS FOR THE CONFERENCE SESSION

- What reactions do the panelists, and the audience, have to the messages and policy implications indicated by the OECD?
- Should existing policies for industrial upgrading be modified in order to incorporate the significant role of non-R&D-based KBC in upgrading?
- Should policy makers target specific forms of KBC most likely to support upgrading?
- Can, in turn, the promotion of global engagement—such as participation in a GVC—be considered a promising policy to stimulate investments in KBC?
- What are the particular challenges facing developing countries in trying to move from being in someone else's value chain – with access to some technology and knowledge, but often with little domestic value creation – to building their own value chains, including those based on KBC ?



REFORMING CORPORATE REPORTING OF INVESTMENT IN KNOWLEDGE-BASED CAPITAL: WHY IS THIS IMPORTANT, AND CAN ANYTHING MORE BE DONE ?

Background

Corporate reporting has been a subject of vigorous debate in recent years, with diverging views on how to enhance its quality and usefulness to ultimate users such as investors, analysts and financial institutions. Enhancing reporting on intangible assets (knowledge-based capital [KBC]) has been an important part of this debate. The relevance of this discussion has grown in tandem with the growth of intangible assets/KBC as a source of value for companies. However, actual reporting on intangibles/KBC has arguably not augmented significantly in recent years.

Reporting on intangibles/KBC is in principle motivated by the same considerations as any other type of voluntary disclosure: the desire to increase market valuation, enhance access to credit or attract investors. However, the ultimate motivation for companies to introduce processes to collect information on their intangibles/KBC varies significantly, depending on company size, industry and the availability of resources to support this exercise. Some dimensions of corporate governance, such as the independence of the board, appear to be positively correlated with better intangibles/KBC disclosure.

Naturally, corporate efforts to collect information on intangibles/KBC are not driven exclusively by companies' desire to report externally. On the contrary, many companies collect such information with a view to improving their management of intangibles. There are several reasons for collecting information on intangibles/KBC for decision-making, including focusing attention on key assets, supporting risk management processes and assisting specific objectives such as due diligence in the context of a merger or an acquisition.

External disclosure of intangibles/KBC is useful only insofar as it is understood by market participants, especially investors and analysts. Available evidence confirms that intangibles/KBC disclosure is valued by market participants. Today, intangibles such as employee skills, copyrights and patents, although not typically reflected in financial statements (except in the context of mergers and acquisitions), are increasingly recognised as corporate assets, contributing to higher company valuations and easier access to finance.

However, the variety of reporting methodologies adopted and the variety of key performance indicators reported by companies impede effective comparisons among companies by investors and analysts. There are currently a variety of approaches to intangibles/KBC data collection and disclosure, most of which have been pioneered by private sector organisations, and some by governments in the form of voluntary guidelines.



While a lack of standardisation is perhaps one of the most important challenges in promoting intangibles/KBC reporting, there is currently a lack of consensus among policymakers on the need to unify reporting standards.

Aside from voluntary disclosure guidelines, a number of measures have been adopted by policymakers in some countries to support intangibles/KBC disclosure, such as coaching and assistance to young companies or ensuring that intangibles/KBC can be used as collateral. The debate on policy measures to stimulate intangibles/KBC disclosure is far from over. A number of questions remain, not the least of which is whether standards on reporting should be voluntary, how the selection of key performance indicators should be done by companies, and whether reporting should be externally verified.

Policy Implications

Currently, privately held companies have no obligation to report on their intangible assets/KBC, but face relatively strong incentives to do so in order to communicate their value to potential investors and creditors. Publicly held companies generally face no obligation to disclose their intangible assets either, except for situations where recognition is required in the context of mergers and acquisitions.

Given that the prevailing accounting standards do not require intangibles/KBC disclosure, reporting is almost entirely dependent on the interest of management to disclose information on their firm's intangibles/KBC and is most often done through narrative reporting. As a result, intangibles/KBC are often described qualitatively and generally not assigned any financial value. This under-reporting of intangibles/KBC may present risks, but also missed opportunities, for potential investors.

Available research points to the fact that companies appreciate that reporting on their intangibles/KBC can bring benefits in the form of higher valuations or better access to finance. And research analysts and investors report that more nuanced reporting on intangibles/KBC, embedded in broader reporting on value creation processes and key performance indicators, enhance their understanding of companies (particularly with respect to high-growth companies). The benefits of intangibles disclosure are in principle very tangible.

The frameworks to enhance intangibles/KBC management and disclosure have proliferated in recent years. This has resulted in a multitude of options for companies, ranging from entirely qualitative models to those which promote valuation and in some cases even external verification. And yet, corporate reporting of intangible assets/KBC has not followed these developments with the same speed.

Unsurprisingly, investors and analysts favour information that can be readily integrated into their financial valuation models. However, the variety of reporting models and formats limits the usefulness of reporting information to investors and analysts who use the disclosed information for comparative analysis. Currently, companies have a wide choice of reporting methodologies since national standards on intangibles/KBC reporting remain voluntary and rare. At the same time, communication of information on intangibles through means other than financial statements (i.e. investor briefings) is an option that may have been indirectly addressing this challenge.

The issues and challenges related to disclosure of intangibles/KBC are being addressed in the context of the current debate on enhanced narrative disclosure. Relatively few policymakers and academics still advocate for



better recognition of intangibles/KBC in financial statements. Instead, the global focus has shifted to enhancing the efficiency of corporate reporting by reducing the volume of information being reported and by presenting it in a manner that best elucidates value-adding assets and processes.

It is in this overall context that any advances in and challenges to initiatives aimed to enhance the quality of intangibles/KBC disclosure have to be situated. The attention given to integrated reporting and environmental, social and governance (ESG) reporting appears to have for the moment shifted the focus elsewhere. Advocates of better intangibles/KBC reporting may need to create stronger links to these broader debates by connecting intangibles/KBC not only to higher corporate valuations but also to better financial transparency and stability, which in recent years have climbed in importance on policymakers' agendas.

Other than taking steps towards standardisation of reporting, governments could consider other policy options and solutions such as encouraging external verification of intangibles/KBC or providing direct support to high growth companies on the introduction of intangibles management frameworks. Public support of this sort has so far been relatively rare, while private sector interest in promoting better intangibles/KBC disclosure has clearly grown. This is an important dichotomy to address going forward.

While most market participants see the value of enhanced intangibles/KBC disclosure, the question of "how" remains much disputed. Requiring companies to provide another layer of unnecessary disclosure along a template that may be too general to communicate company value-added may not be productive and may indeed be detrimental, all costs and benefits considered.

In summary, the OECD is proposing the following policy recommendations with respect to corporate reporting of intangibles/KBC-related spending:

- Policy makers could support disclosure by establishing voluntary recommendations and guidelines or giving backing to existing private sector initiatives. Some evidence of market participants' support for the imposition of voluntary disclosure guidelines exists. There is however, no support among companies for making such guidelines anything more than voluntary.
- Policymakers can put in place supporting mechanisms to facilitate reporting. Such measures could include, but are not limited to, support to young enterprises by coaching them on data collection and reporting. Public support for academic initiatives that promote intangibles/KBC reporting through pilot projects might also have a positive impact.
- Policy makers could introduce frameworks for auditors to review disclosure. Policymakers could also pronounce on the preferable standard or format of disclosure (e.g. IC statement, integrated in narrative reporting, consolidated with ESG reporting).
- Policymakers could engage in global coordination – for instance to harmonise the plethora of existing approaches. Better coordination has been achieved in the area of integrated reporting, where the IIRC has played an instrumental role. But there is currently no global policy body that addresses intangible/KBC disclosure.



QUESTIONS FOR THE CONFERENCE SESSION

- What reactions do the panelists, and the audience, have to the messages and policy conclusions indicated by the OECD?
- How might policymakers provide greater incentives for companies to disclose better information on their intangible assets/KBC ? How might these incentives be different for listed companies as opposed to privately-owned companies and for large as opposed to small and medium sized companies?
- What are the relative advantages or disadvantages of existing reporting mechanisms and frameworks? Do they provide the necessary flexibility to companies to reflect their competitive advantage(s) and to communicate their value to the market?
- How successful have national level guidelines (e.g. in France, Germany, etc.) been in stimulating better quality disclosure on intangibles/KBC? How much standardisation in reporting is desirable (at the cost of imposing rigid and possibly irrelevant metrics for companies) and who should lead this process?



‘BIG DATA’: AN EMERGING FRONTIER FOR INNOVATION AND POLICY?

Background

The confluence of several key socio-economic and technological trends is resulting in the generation of huge streams of data every day. The major trends include:

- *The increasing migration of social and economic activities on line:* Social network site Facebook, for example, now counts over 900 million active participants around the world, who generate more than 1 500 status updates every second about their interests and whereabouts. In 2011, e-commerce platform eBay collected data on more than 100 million active users including the 6 million new goods they offered every day.
- *The strong decline in the cost of data collection, storage, transportation and processing:* The average cost of consumer hard disk drives (HDDs) per gigabyte, for example, dropped on average by almost 40% per year between 1998 (USD 56 per gigabyte) and 2012 (USD 0.05 per gigabyte). In 1995, as another example, consumers in France paid USD 75 equivalent per month for a dial-up (56 Kb/s) connection, while in 2011 they paid the equivalent of USD 33 per month for a broadband (51 Mb/s) connection, which was almost 1 000 times faster.
- *The increasing deployment of “smart” ICT applications such as smart grids and smart transportations based on machine-to-machine (M2M) communication:* Connecting one million homes to a smart grid may produce as much as 11 gigabytes of data per day. In order to accommodate for hourly readings through smart meters, a network with a minimum capacity of up to 1 Mbit/s dedicated to M2M communication is needed.
- *The continued expansion of mobile communication:* In 2011, there were 780 million smart phones worldwide capable of collecting and transmitting geo-location data, which generated more than 600 petabytes (millions of gigabytes) of data every month. It is estimated that the global data traffic generated by mobile communication (including M2M enabled smart devices) will almost double every year to reach 11 exabyte (billions of gigabytes) per month by 2016.

The collection and exploitation of these large data flows through data analytics is leading to a shift towards a data-driven socio-economic model commonly referred to as “big data”. In this model, data are a core asset that represents a key resource for new industries, processes, services and goods, making significant competitive advantage possible. In business, for example, data analytics are increasingly being used in a wide number of operations ranging from optimising the value chain and manufacturing production to more efficiently using labour and improving customer relationships. It is estimated that firms which adopt data-driven decision-making, for example, have output and productivity that is 5-6% higher than what would be expected given their other investments and information technology usage. These firms also perform better in terms of asset utilisation, return on equity and market value.



However, with this potential comes a wide array of challenges, many of which have been identified at the 2012 OECD Technology Foresight Forum on “*Harnessing data as a new source of growth – Big data analytics and policies*”. Participants at that event stressed the change in mindset required by individuals, businesses, and policy makers required to make best use of existing and emerging data sources. Among the challenges highlighted at the Foresight Forum, privacy and consumer protection was emphasized most frequently in association with the problem of consent and the current limitations on anonymisation and de-identification due to big data analytics. This and the increasing ease with which non-personal data can now be linked to an identified or identifiable individual were challenging the frameworks on which privacy protection is based.

But as participants highlighted, the potential implications for policy also spill over into many other domains, including issues related to open vs. closed data as well as data ownership and control. Participants also emphasised the implications of big data analytics on employment. They not only stressed the need for new skills and improved awareness across all industries and organisational levels, they also highlighted that big data may threaten white collar jobs (including professional, managerial, or administrative workers), just as the industrial revolution threatened blue collar jobs (including workers mainly performing manual labour).

Policy Implications

To unlock the potential of big data, coherent policies and practices are needed around the collection, transportation, storage and use of data. The following sections highlight some of the main policy implications of the adoption of large-scale data analytics across the economy.

Privacy protection – Ensuring trust to open the way to innovation in the Internet economy: Privacy frameworks should be reviewed to reflect the broader scale of today’s uses of personal data with a view to more effectively protecting the fundamental value of privacy while enabling the economic and social benefits associated with trustworthy and innovative uses of personal data. Recognising that cross-border flows of data are now critical to national and global economic and social development, privacy protection regimes should support open, secure, reliable and efficient data flows, while mitigating privacy risks and enhancing responsible behaviour in the use of personal data.

Open access to data – Governments leading by example: Many sources of third-party data are not yet considering sharing their data. Furthermore, economic incentives may not be aligned to encourage data sharing. Frameworks enabling the appropriate sharing of the full spectrum of categories of data should be reviewed, developed and adapted to this new landscape. Governments can lead by example by taking due account of and implementing the principles articulated in the OECD (2008) Council Recommendation for “Enhanced Access and More Effective use of Public Sector Information”.

Employment – Increasing the availability of needed skills: There are considerable mismatches between the supply and demand for skills in data management and analytics (data science). This may slow the adoption of big data analytics and lead to missed opportunities for job creation across the economy. Therefore science, technology, engineering, and mathematics (STEM) related education, training and skills development should be promoted in a multi-disciplinary approach, as recommended by the OECD Skills Strategy, to meet demand for data analytic skills and expertise.



Infrastructure – Connecting billions of devices: The next billion smart devices that will connect to the Internet, and the exabytes of data that they will exchange every month, will challenge the capacity of current communication infrastructures, in particular mobile networks. With this comes a number of issues that governments need to address, including: (i) migration to the new addressing system on the Internet (IPv6); (ii) opening access to mobile wholesale markets for firms not providing public telecommunication services; and (iii) numbering and spectrum policies (i.e. policies regulating the allocation of numbers and radio frequency spectrum as limited resource for the maximum possible benefit of the public).

Measurement – Improving the evidence base: Improved measurement could facilitate the development of policies better tailored to the scale, benefits and risks posed by the expanding uses of data. Today, however, the value of data is poorly captured in economic statistics and often under-appreciated by organisations and individuals. It is important that governments work together with researchers and firms to better understand the potential benefits and risks of applying big data analytics to various sectors to better inform policies.

QUESTIONS FOR THE CONFERENCE SESSION

- What are the reactions of the speakers to the OECD policy assessment and conclusions? In particular, what other policy areas, if any, should deserve a high priority?
- Participants at the *2012 OECD Technology Foresight Forum on “Harnessing data as a new source of growth – Big data analytics and policies”* concluded that a change in mindset would be required to make best use of “big data”. What changes in mindset are required for policy makers?
- How can governments help prepare society for “big data”, including promoting its responsible use?
- Governments are now looking for new sources of growth. What would be the speakers’ advice to Ministers wondering whether “big data” could constitute such a new source of growth?