



The Knowledge Development Box

An Ibec submission to the Department
of Finance

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Table of Contents

1. Introduction	4
2. The rationale for the KDB	5
2.1 Making Ireland a more attractive place to invest.....	5
2.2 Commercialisation of innovation	5
3. Innovation in Irish firms	7
3.1 The Irish innovation ecosystem	7
3.1.1 Innovation Investment	7
3.1.2 National Policy Environment – Driving Change in Innovation.....	8
3.1.3 Investment in the innovation ecosystem.....	10
3.1.4 Competitiveness as a location for R&D	11
3.2 Innovation, the KDB in Irish firms.....	11
3.2.1 The Food and Drink sector	11
3.2.2 ICT and the software sector	12
3.2.3 The Pharmaceutical sector.....	13
3.2.4 The Medical Technology sector.....	15
3.2.5 Financial Services	16
4. The proposed KDB, the modified nexus approach and Irish business.....	17
4.1 The exclusion of marketing intangibles	18
4.2 Non-patented IP.....	18
4.3 Deciding on qualifying expenditures	18
4.4 Administration	19
4.5 Outsourcing and working with existing schemes	19
4.6 SME participation.....	20
4.7 Cost competition	21

Ibec's key recommendations for a Knowledge Development Box (KDB) are:

1. The KDB must be ambitious and focus on innovation: The proposed modified nexus approach in its current form has the potential to militate against how innovation is performed in many Irish companies. In many smaller countries with a focus on high value added services, software and manufacturing excellence, much of the focus of innovation is on the process rather than on traditional 'white coat' R&D. Ireland needs a KDB which is focused on innovative ways of commercialising and developing knowledge into a final product. As currently proposed, however, business believes that excessive focus on product innovation and certain types of R&D will favour larger countries at Ireland's expense. There is no good economic reason for the excessive focus on patents within the current modified nexus approach and if interpreted too strictly many sectors of the economy will be systematically disadvantaged.

2. Marketing intangibles are a crucial element of innovation for many industries: The potential exclusion of marketing related IP assets under the modified nexus approach is unfortunate. Marketing intangibles such as trademarks, trade secrets, copyright and consumer research are crucial to the R&D process in many industries where patenting is not a viable option. Marketing intangibles often include post development research and analysis which is key to future product enhancements. In a number of sectors the majority of R&D expenditure involved in incremental innovation of existing products would be excluded under this definition.

3. Qualifying expenditures should be based on a template of existing schemes: The best way to ensure that there is equal treatment across all sectors and businesses of different sizes is to use an established approach already familiar to firms and tax authorities alike. We suggest that by using standards that are already in use and understood by taxpayers and taxing authorities through their interaction with R&D tax credit regimes the issues raised by BEPS could be overcome. This could be done whilst also achieving the aim of being easy for business (of varying sizes) and authorities to engage with and understand and having a coherent national innovation policy base. There is no reason within the modified nexus approach, however, to tie the KDB to the Frascati definition used under the R&D tax credit. This is a limiting factor on use of the R&D tax credit for many companies. Where there is scope to push the boundaries of qualifying expenditure or innovation definitions in order to make the KDB best in class this opportunity should be taken.

4. Encouraging SME participation: It is vitally important that the KDB is usable from an administrative point of view for SMEs. Tracking by asset would be extremely expensive and burdensome for a MNE to administer; it would be prohibitively expensive for any SME. Certainty is also an important point to consider when encouraging SME participation in the KDB. Where a patent is subsequently declared invalid there should be no revenue claw-back or limited claw back for SMEs. From the supply side in these relationships it is important that SMEs are not disadvantaged in terms of their interaction with larger companies. In order to encourage collaboration between SMEs and larger firms' limits on qualifying outsourcing should exclude work outsourced by MNC to SMEs.

5. The administrative burden must be reasonable: It is important that the methodologies to be agreed for identifying qualifying expenditure are simple and practical, not only for years prior to the rules being defined but also for ongoing expenditure. Taxpayers will face considerable challenges in tracking and tracing income from IP. Ibec believes that the prime tenet of this element of the IP regime should be that the costs of compliance do not outweigh potential benefits.

6. Outsourcing requirements must take into account existing innovation structures: Ibec is concerned that the modified nexus approach penalises companies for outsourcing R&D activities, particularly in small open economies such as Ireland, where the pool of available labour is too small to contain all relevant specialisms. In a globalised world it is common to work with talent located outside the jurisdiction where these skills are necessary to a project. Collaboration with specialist R&D service providers which is central to the performance of R&D in many industries and to Irish innovation policy will be affected by this approach. The final design of the KDB must give serious thought to companies' interactions with each other as well as with HEI's and research institutes. The current proposals may have a serious effect on how these structures operate for companies and Ireland's innovation eco-system.

7. The KDB must form only one part of improving Ireland's innovation supports system: Ibec has outlined in previous submissions that although a successful KDB is central to Ireland's international tax offering, it is only one part of the necessary reform needed in order to ensure Ireland is able to continue to compete internationally. Improving the domestic skills base, investing in infrastructure and education, continuing reform of the R&D tax credit, creating an attractive intangible asset regime and lowering Ireland's income tax burden on high skilled employees must all form part of the policy mix.

1. Introduction

In Budget 2015 the Minister for Finance announced plans to introduce a Knowledge Development Box (KDB) regime for IP in Ireland which was 'best in class'. In a post-BEPS world it is Ibec's view that international competition for skills and innovation will become the new standard for successful small economies such as Ireland. In this context, the KDB has the potential to become a key part of Ireland's toolkit to meet the challenges which will emerge over the coming years. A 'best in class' KDB if sufficiently workable and attractive has the opportunity to become a central part of our overall international tax offering, attracting high class R&D to Ireland, and a key enabler for domestic firms in expanding and commercialising their R&D activities in future years.

As Ireland's largest business organisation with scope across the whole economy, domestic and international, big and small, Ibec is in a unique position to reflect the broadest and most in depth range of views on the KDB. As such Ibec welcomes the opportunity to input into the design of the KDB and reflect the views of companies on how it can be designed to work best with their business models.

The approach outlined in the Department's consultation document, set out in simple terms, permits beneficial tax treatment of the income arising out of qualifying IP where a direct relationship between the income and the expenditures contributing to that income can be established. How the approach functions in practice, however, and what qualifies as IP, income and expenditure may have significant implications for companies' ability to interact with the regime and its competitiveness internationally. In this submission Ibec will lay out business views on the proposed approach and how it interacts with their business models. From this we set out a set of recommendations on how the KDB should operate in order to be most effective.

The submission is structured as follows – in the following section we briefly lay out the rationale for the KDB from an economic point of view. In Section Three we give an overview of the innovation ecosystem in Ireland and the innovation process in specific sectors. Finally, in Section Four we outline the views of business on the proposed KDB and the Modified Nexus Approach that underpins it.

2. The rationale for the KDB

2.1 Making Ireland a more attractive place to invest

Recent years have seen a number of challenges for Ireland from an FDI point of view with the emergence of strong competition, particularly from the UK, and a challenging fiscal environment. In light of the changes to international taxation likely to emerge from the ongoing OECD Base Erosion and Profit Shifting' (BEPS) process it has never been more important to take account of Ireland's long-term FDI strategy and ways in which we can continue to attract and retain mobile investment.

While Ireland has continued to successfully attract new projects in recent times, there is a real risk that our attractiveness could be undermined if the current challenges are not effectively addressed. The economic importance of mobile investment to Ireland's economy has been well established and was underlined in a number of publications produced with Budget 2015. It is vital that all policy makers recognise that the emerging economic recovery could well be undermined if Ireland fails to position itself competitively in the changing international tax landscape.

Table 1: In deciding to locate R&D in Ireland, please choose the top three issues for your company from the list below

Ranking	1st	2nd	3rd
Access to existing markets	12%	4%	9%
Access to new markets	7%	11%	6%
Availability of qualified staff	42%	16%	25%
Quality of infrastructure	1%	5%	3%
Calibre of local universities	2%	9%	7%
Cost of doing business	9%	14%	18%
Business friendly intellectual property	1%	6%	3%
Tax incentives	24%	27%	16%
Other government support	2%	7%	14%

Source: Ibec survey on the R&D tax credit, 2013

In a 2013 Ibec survey, when asked what the most important factor was when deciding to locate R&D in Ireland 51% of firms rated tax incentives either first or second on that list. The availability of staff, on the other hand, was the largest factor at play when firms decided to invest in Ireland. As such, competition for R&D exists on many dimensions of which tax incentives are only one. The results of this survey should focus stakeholders' minds on not only the importance of the tax environment for firms but also for human capital in encouraging and retaining investment in Ireland. In previous submissions Ibec has identified the four central pillars needed for a competitive business tax offering in the medium-term. These include favourable personal taxation for high skilled individuals, a competitive R&D tax credit scheme, the 12.5% corporation tax rate and an attractive intangible asset regime.

In this context the plans announced in Budget 2015 by the Minister for Finance, to introduce a KDB regime for IP in Ireland which was 'best in class' are to be welcomed. The extent to which this box will be effective will have a large say in Ireland's ability to attract and compete for FDI in the coming years. In particular it will be central to our ability to position ourselves as a prime location for innovative activity in a post-BEPS world. The attractiveness of such a box, however, will be reliant on its focus and applicability to firms but also how it fits within the overall tax regime.

2.2 Commercialisation of innovation

Innovation and the R&D process which goes into it is a key driver of economic growth and one which will become increasingly important in the coming years as the BEPS process progresses. As such developing Ireland's innovation eco-system and attracting new firms into it must continue to be a key aim of government enterprise policy.

The economic rationale for public support of private investment in innovation is two-fold. Firstly, the creation of new knowledge is associated with spillovers, which mean that firms are not able to fully capture the returns of their R&D investment. As a result, the private returns of R&D will be lower than the social return, leading to a lower level of innovative activity than would be societally optimal. In theory the KDB should reduce the risk

associated with this process, particularly increasing the potential benefits of commercialising innovation at the margin. This in turn should lead to an increase in the amount of R&D and innovation performed in the country.

The second reason for public support of private R&D relates to informational imperfections and asymmetries. Firms reliant on external funding may have difficulty in accessing finance to undertake R&D projects as lenders/investors may have difficulty in identifying viable, worthwhile projects. This effect may be particularly acute for smaller firms and start-ups, which tend to be more reliant on external financing.

Estimating the returns of R&D is not without its challenges, and results may vary significantly depending on the methodology. In particular, Griffith (2000) outlines that the social rate of return will vary depending on the level of measurement. Estimates at firm level capture the social return to that firm, but not beyond. Industry-level estimates include within-industry effects, but not spillovers to other industries. Finally, estimates at the national level capture within-country social returns, but not cross-country effects.

Despite these challenges, the empirical literature measuring spillovers and the gap between private and social returns to R&D has built up solid evidence of their existence. In particular, Griliches (1992) and Hall et al (2009) provide reviews of the literature concluding that spillovers do exist, that they can be quite large and that social returns exceed private returns.

Likewise, an extensive empirical literature has investigated the constraints that firms face in financing R&D and innovation. A number of studies, for example Hall (2002), Hall and Lerner (2009), Czarnitzki and Hottenrott (2011), provide evidence that smaller firms and start-ups in particular face funding constraints for R&D investments. The findings for larger firms are more mixed, but we cannot rule out the existence of funding constraints; Cincera and Ravet (2010), for instance, find evidence that access to external financing constrains R&D investments in large manufacturing companies in the EU but not in the US.

Having established that spillovers and funding constraints exist, a final question relates to what policy tool should be chosen to mitigate for these market failures. The policy objectives can sometimes be contradictory. While it can be desirable to ex-ante correct for knowledge spillovers, this has the ex-post effect of inhibiting knowledge diffusion, which is necessary for capturing the full societal benefits of innovative activity. IP protection and patents play an important role in protecting the private return on innovation, but on their own are not enough given their varied use.

Public financial supports, in the form of fiscal supports or direct grants, narrow the gap between the private and social rates of return by lowering the cost of doing innovation and ensuring that the level of innovation performed moves closer to the socially desired optimum. In terms of the process of innovation, the R&D tax credit should incentivise firms to undertake R&D in the first place whether it is successful or not. The KDB on the other hand should complement this by ensuring that firms are able to capture more of the private returns from their innovation by giving preferable tax treatment to the profits from these activities. As such firms will be better incentivised to commercialise the IP from innovation activities and indeed to undertake these activities in Ireland.

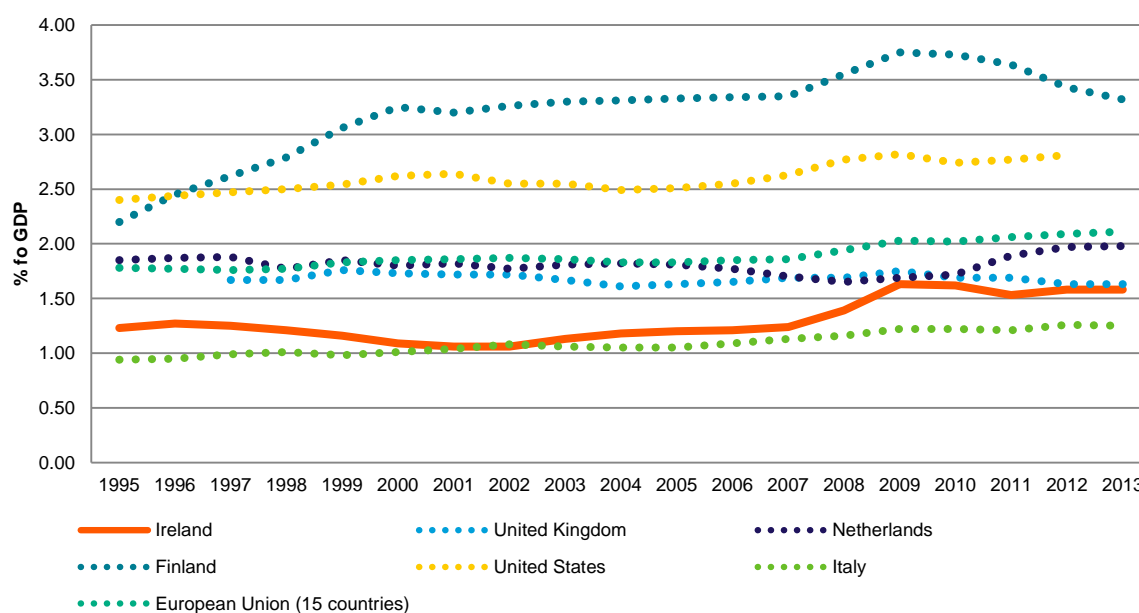
3. Innovation in Irish firms

3.1 The Irish innovation ecosystem

3.1.1 Innovation Investment

Investment in knowledge development is a key factor in driving sustainable economic growth. This is recognised by Government by the continued investment in science, technology and innovation to develop a competitive knowledge based economy. The aim is to drive innovation at the business level, build human capital and maximise the return on R&D investment for economic and social progress.

Figure 1: Gross R&D expenditure % of GDP

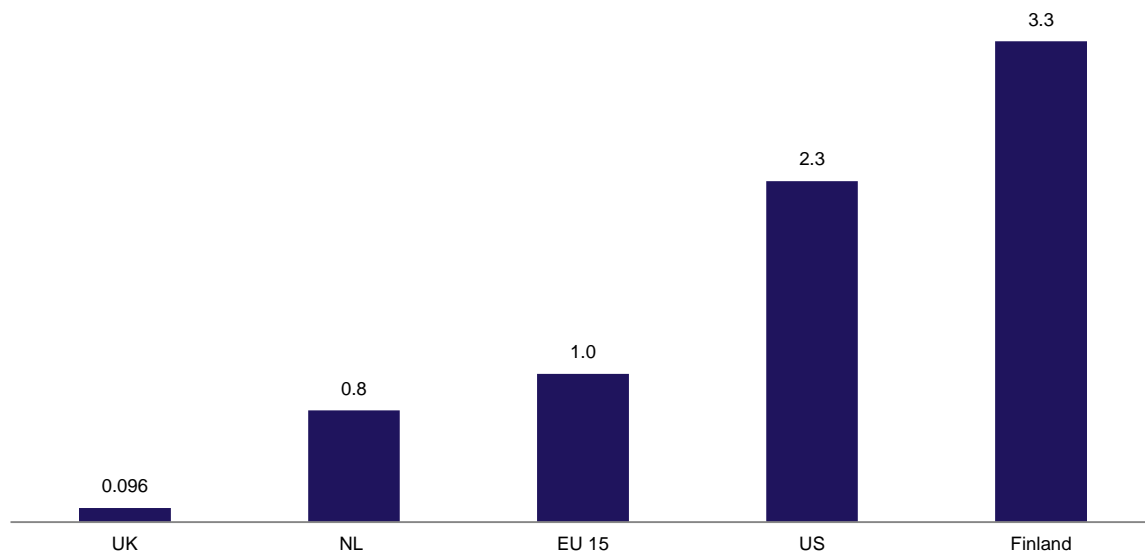


Source: Eurostat

Ireland is committed to a revised R&D investment target of 2% of GDP by 2020. This will be achieved by both public and industry direct contributions, and it also assumes that industry's total investment will represent approximately two-thirds of total expenditure. In order to achieve this industry target, additional support will be required to facilitate the innovation capacity of technologically-based businesses and in less manufacturing intensive sectors.

The Community Innovation Survey highlights that business expenditure across all sectors in Ireland consisted of €1.9 billion on R&D activities in 2012, an increase of €275 million from 2008. Business R&D intensity, presented as BERD as a percentage of GDP, reached 1.14% in 2012 (Total public and private reached 1.58% of GDP).

Figure 2: Implied GERD funding gap to competitors (€ bn)



Source: Ibec calculations using Eurostat data

Ireland's innovation performance still lags many of our key competitors. If total expenditure on GDP (public and private) were at average levels (as a proportion of the economy) of the EU15 countries we would currently be spending over €1 bn each year additional to our current spend. To catch up with world leaders such as the US and Finland we would need to be spending twice our current levels or over.

As a priority, Ireland must continue to invest in research, development and innovation in order to boost its national productivity and economic competitiveness. It is also vital for a small, open economy that Ireland remains an attractive place to conduct research, development and innovation.

3.1.2 National Policy Environment – Driving Change in Innovation

Following the launch of the Strategy for Science, Technology and Innovation (SSTI) 2006-2013, the national focus is to activate high-value R&D and improve opportunities for its successful commercialisation. It is no longer solely focussed on basic, experimental research. Science Foundation Ireland (SFI) aims to achieve a better balance between basic, applied and near market research, as detailed in its Agenda 2020: Excellence and Impact strategy document.

The Research Prioritisation Exercise set out the rationale for continued public investment in science, technology and innovation and identifies measures to improve the efficiency and effectiveness of the Irish innovation landscape. Government has set targets to maximise the impact of public investment in R&D and metrics to measure its success. This exercise has established a clear business case for investing in 14 targeted research themes and stressed the importance of maintaining public investment, but in a more efficient and targeted manner.

The Research Prioritisation: A Framework for Monitoring Public Investment in Science, Technology and Innovation contains targets, including specific challenges for business:

- Increase the share of publicly performed R&D financed by enterprise to €180m over 2013 to 2017 – an average of €36m per annum, from a baseline of €31.2 m in 2010.
- 50% increase in number of spin-outs from publicly-funded research.
- Increase the number of spin-out companies greater than 3 years old from 44 to 69 by 2017.
- Increase the number of firms engaged in R&D projects of significant scale by 115 firms by 2017, from 1070 companies in 2011 to 1185 companies in 2017.
- Increasing, by 10%, the turnover due to new-to-firm or new-to-market product innovations from 9.3% to 10.3% by 2017.

- 65% increase in the proportion of invention disclosures, patents, licenses and spinouts recorded by Enterprise Ireland that are linked to SFI and industry collaborative research.
- A further 1,100 researchers will be employed in the enterprise sector in addition to the circa 10,600 currently employed.

An environment that supports the implementation of these recommendations can only benefit industry further and ensure that Ireland is well positioned to capitalise on the opportunities created by innovative activity.

While the focus of Ireland's national policy has changed, so too has our understanding of R&D activity. It has evolved beyond the confines of the laboratory bench and the traditional "white coat" approach into a wider, far-reaching cross functional activity that applies to all business in the economy. R&D activity also encompasses a significant proportion of process innovation to enhance Ireland's reputation in manufacturing excellence. Much of this activity will not be patented and protected under a formal registration process as the innovation remains in-house. Nonetheless, it demonstrates that the translational phase is equally creative as the discovery phase and that the channel to commercialisation is not linear.

The design and development of software products, and software-based services, is also a very significant aspect of Ireland's existing and future R&D activity. The kinds of IP generated from software R&D are typically not protected by patenting, but more usually through copyright and trade secrets. It is critical that the KDB recognises that such forms of IP protection are equally valid and that the KDB is not restricted to patent-protected IP.

Innovation can be assessed by an overall review of a range of indicators that broadly assess the level of public and private investment, the outputs of this investment and the overall performance of the firm. It is recognised that Ireland's investment in R&D is increasing at both public and private level. Ireland has a low level of patent applications and is ranked 12th in Europe in this regard, according to Eurostat. This demonstrates that Ireland focuses less on developing new/novel products or patentable IP. As discussed in greater detail in Section 4.2, many companies may not patent the knowledge arising from R&D activity, due to the nature of their business contracts, type of knowledge and technology developed and resource requirements involved in the process. Therefore, patents and other formally protected knowledge may be a poor indicator of the value and quality of knowledge developed.

The true acid test of successful innovation and knowledge development, however, can be demonstrated by overall business performance. Forfás analysis of the ABSEI (Annual Business) survey in 2013 demonstrates that over the last decade research active companies consistently increased sales and exports, and retained and jobs during a difficult economic period. Exports of R&D performing companies increased from €44bn in 2003 to €117 bn in 2013, while for non-R&D performing companies, exports decreased from €48bn to €26bn during the same period. Additionally, previous studies in Ireland have found R&D to be an important driver of innovation and productivity at a firm level (Jordan and O'Leary, 2008; Roper, Du and Love, 2008, Doran and Jordan, 2011, Crowley & McCann, 2012).

In addition, grant supports from the enterprise agencies have been introduced or refined to include new types of research and innovative activities, including measures to assess scientific, technological and innovative merits and subsequent impact. This change in innovation activity has led to the development of a range of innovation supports that national and regional agencies target specifically to industry. This has enabled companies to select an investment strategy that best suits their long term business plans.

The Government's plans to develop a successor to SSTI build on this focus and firmly places business at the centre of activity. The revised SSTI will aim to improve Ireland's science base, attract and maintain FDI, grow indigenous enterprises and focus on new growth areas, such as service technologies.

There is a critical need to ensure that all policy is developed with a common understanding and recognition of R&D activity. The Department of Finance tax offering to support R&D activity must reflect the actual innovation activity and evolving national innovation policy environment.

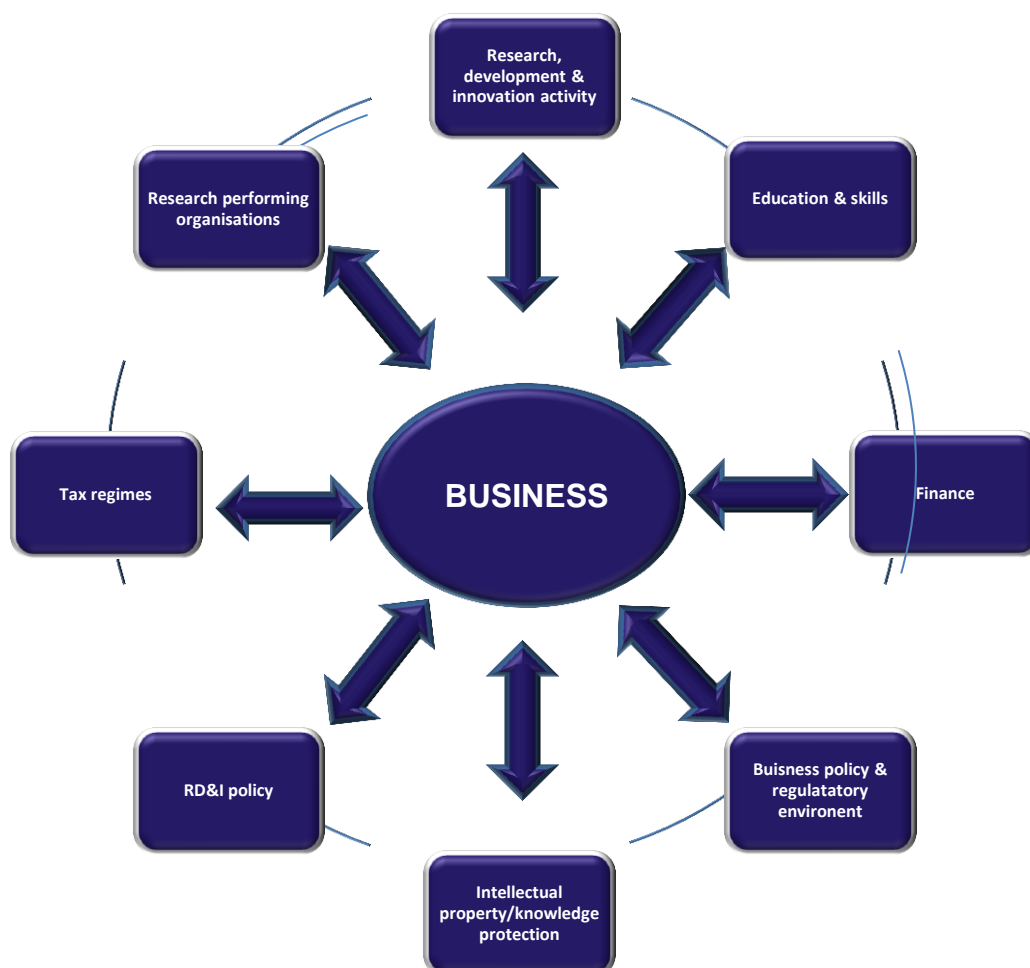
3.1.3 Investment in the innovation ecosystem

Significant capital investment has been made in scaling research capacity across the research performing organisations (RPO's), including the development of critical mass and expertise in key areas. It is important that the infrastructure put in place is fully utilised by academia and industry. Such investment will lead to increased collaboration between academic centres and industry.

However, criteria that determine eligibility for the KDB may discourage such cross functional collaboration. It is important that KDB policy acknowledges the shift in the funding landscape, including new requirements of funding and grant support agencies to foster collaboration between industry and academia. This should include all investment (in-cash and in-kind) by business in research and technology centres.

The World Bank (2006) states that an interaction of actors involved in innovation. It extends beyond the creation of knowledge to encompass the factors affecting demand for and use of knowledge in novel and useful ways.' According to the Innovation Union Competitiveness Report (June 2011), "Ireland is relatively well diversified and its trend towards a more knowledge and innovation-intensive economy is a realistic prospect". Ireland has made progress over the past decade but continued improvement will largely depend on the ability to maintain favourable framework conditions. With business at its core, Ireland's innovation framework covers grants, skills public policy, tax regime, finance and intellectual property and knowledge protection services (see Figure 1).

Figure 3: Core components of the Ireland's innovation framework



Ireland has taken a number of positive steps to improve the environment for the development and exploitation of research output. This includes the establishment of Knowledge Transfer Ireland and development of a national IP protocol, which aims to make it easier to commercialise and ultimately create jobs from ideas developed through

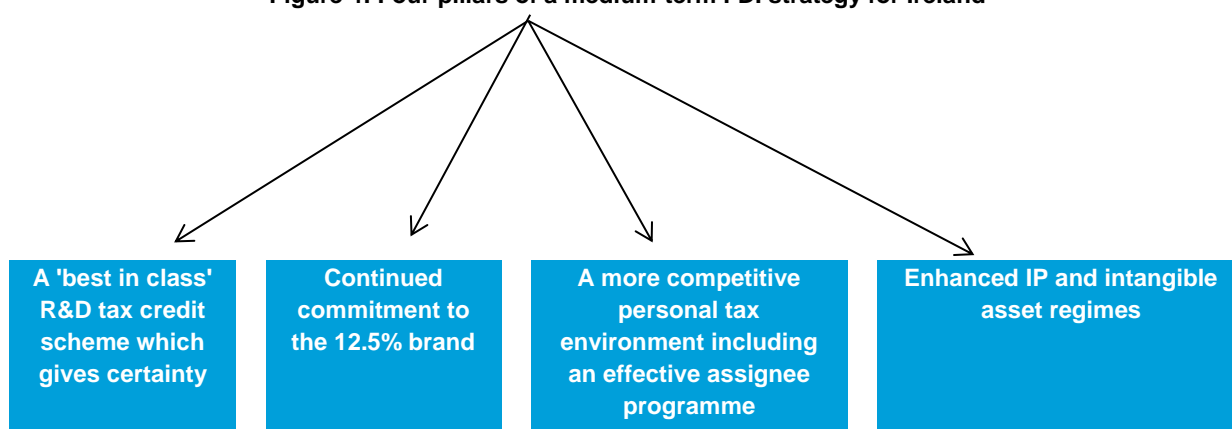
publicly-funded research. Despite this, we need to ensure that the Irish innovation ecosystem continues to support the creation of knowledge and the appropriate mechanism for its protection, if required, including intellectual property, copyright and trade secrets.

3.1.4 Competitiveness as a location for R&D

Ireland has a unique concentration of the world's most innovative companies in addition to world class global and home grown leadership skills. If supported effectively, these companies and their people will collaborate to produce technologies and knowledge that will drive societal and economic change for Ireland. It should also be recognised that R&D is an increasingly mobile investment for firms; which face increasingly competitive incentives for their R&D activity from a range of countries.

It is essential that corporation tax reform restores Ireland's competitiveness as an investment location by addressing the intellectual property offering; giving certainty in relation to the R&D tax credit and developing a more competitive personal tax regime. Other aspects of Ireland's overall offering such as infrastructure development and skills availability will also need to be considered.

Figure 4: Four pillars of a medium-term FDI strategy for Ireland



3.2 Innovation, the KDB in Irish firms

3.2.1 The Food and Drink sector

Innovation in the food and drink sector is often incremental based not only on new to market products but also incremental innovation within existing product ranges. A significant proportion of innovation in the sector is linked to continuous modifications of existing products often in order to suit changing consumer preferences or preferences in new markets.

As part of this process a considerable amount of resources is invested in consumer and market research. A major part of R&D is understanding new customers and developing products incrementally to suit those changing tastes. For example, a recipe might be altered to suit the taste preference of a different country. A firm expanding sales into China or another new market may spend considerable amounts ascertaining tastes in that country, investigating the size of the market and using the information gathered to make alterations to recipes, packaging or how the product is produced.

Most of the innovation in the sector is centred on product renovation and reformulation. This might typically mean reducing salt, fat etc. It might mean packaging a product differently to make the product more user-friendly and/or ensure longer shelf life and durability. Another example would be the development of platform technologies which are used to create technology-based ingredients, flavours and functional ingredients which are then sold as solutions to other food companies. These technologies can be employed across a range of products and facilitate product reformulation and renovation. Flavour masking technologies are a typical example. Thus a large part of innovation in the sector is application/customer specific innovation with shorter life cycles.

These technologies would never be registered or patented due to commercial sensitivities. As a result Food technology companies rely mostly on non-registered forms of IP. Often this is preferable for their company.

Many companies suggested that existing structures including the R&D tax credit and EI's R&D fund already test for technical change, require approval and are regularly audited. These mechanisms were suggested as being the most reasonable standard to apply as 'functionally equivalent to patents' for the food sector.

The main concerns expressed by food companies are that if the KDB is focused on 'patentable innovation' or even registered IP then most firms indicated it would contain no benefit for them and would not be usable. This is because the relatively small (or negligible benefits) would be far outweighed by the cost associated with a tracking and tracing regime. Additionally, companies expressed concern that the KDB would be severely problematic in terms of the relationship with some of the states existing innovation structures. Many had invested in research centres or partnerships the work of which would receive extremely limited or no benefits under the KDB regime as proposed.

3.2.2 ICT and the software sector

Innovation in the software industry can take various forms including product, solution and services output. This can include product development, process innovation and the use of both applied and basic research.

The type of innovation can be influenced by the delivery method, as the product or solution might be presented to the customer in a number of offerings including standalone licence solution or rendering in a cloud or hybrid cloud. The cloud might be further complicated based on single or multi tenancy and the variations between public and private cloud. Another major aspect of innovation in the software area can be scaling. This ranges from; a simple application for an individual user, to enterprise software which is typically targeted at users up to 500,000, to carrier class software products which are in the range of tens of millions of users.

Performance innovation will also be impacted by the level of concurrency of the users, their physical location on the globe and the associated levels of latency. Another innovation challenge can be the level of recovery and backup required. If for instance recovery from a system crash is required this is a very different innovation challenge than a system which has a 24 hour recovery scenario. Data and data residency and associated compliance also add to the innovation challenge.

Additionally, Ireland has built an international reputation as a strategic location for the ICT sector to internationalise operations and serve customers at scale. The process innovation which is performed out of Ireland is material to the ICT industry's operational efficiency globally and an integral part of overall product development.

This type of process innovation is often built on user feedback and analysis which in a similar way to the food sector can often be incremental in nature. For example this may include analysing customer feedback flows to drive incremental improvements in consumer products, analysing industry trend data and devising product enhancements for cloud based technology solutions, building and optimising data feeds to improve product performance and designing, implementing and automating management information systems (dashboards) to drive strategic business decisions. This process innovation is increasingly viewed as a highly valuable competitive indicator and intrinsic to supporting more effective product innovation. A KDB which fails to acknowledge the value of business process innovation or one which limits the definition of "qualifying activity" to traditional conceptions of product focused R&D would be unattractive to ICT and software companies.

Ireland has equally focused on developing its capabilities as a best in class location for data centre services. These centres provide network reliability, at scale, for millions of Internet users around the world. Engineering on these sites involves developing design processes and enhancements to ensure the smooth and efficient running of networked systems. It is focused on incremental innovation to increase network reliability and data analysis to drive velocity, efficiency and quality across the Internet's technical infrastructure. With Ireland's policy focus on becoming an attractive destination for data storage it is essential that the KDB takes into account this process development as a crucial component of value creation in the ICT sector.

In terms of the innovation process itself, it is moving towards a continuous model but companies might also use Waterfall and Agile. Most companies targeting the cloud use a continuous model with incremental releases on a weekly basis. The target platforms are also evolving with mobile being the platform of choice and many companies focusing on a cloud and mobile first strategy.

To achieve a Continuous Model of software development, innovation is also required at the tooling and automation level. There is a growing set of open source tools but typically companies will need to innovate to build these into their build and test environments. In Cloud the distinction between test and development is blurring and most companies have moved to the Development Operations model.

In any software innovation the key initial step is to determine the goal or target. Companies depending on their size might use a combination of design, product management and architectural thinking to craft the overall scope of the product, solution or service. Examples could include all of the following;

- creating or extending a database
- creating or extending a solution for aggregating of car hire data and
- providing insights
- creating or extending a solution for compliance in the FinTech area
- creating or extending a solution for a new game
- creating or extending a solution for a new app

Typically software innovation is an interactive process of adding new functionality, new platforms, and new delivery mechanisms while ensuring standards, security, accessibility and compliance are maintained. In fact some software innovation may actually focus on the security and compliance area.

The end of the innovation process can be a complex mix of intellectual capital including patents, source code, open source, implemented and non-implemented patents, third party licensed software etc. The real value is not in the individual parts but in the combined product, solution or service.

There are four methods to protect Intellectual capital;

- Patents - protect inventions that are new and non-obvious
- Copyright - protect the expression but not the function of Software Code
- Trade Secrets - protect knowledge and knowhow for economic advantage e.g. Source Code
- Trademark - identify the source of goods or services

A successful KDB for ICT and software companies will need to include the three forms of intellectual capital which are patents, copyright and trade secrets. All three are not necessary to show innovation but it is reasonable to assume a minimum of one of the three.

Due to the complexity of software and the associated delivery methods, it is impossible to link revenue to intellectual capital at the micro level. Hence an aggregate approach is needed which combines a bundle of intellectual capital with a bundle of revenue.

Many companies in the sector avail of grants in the form of Innovation Partnership and R&D Capability Grants. In addition many companies in the sector avail of the R&D Tax Credit and this has evolved to be very effective with the ability to handle the accounting above the line and the recent move to a volume based program. A successful KDB must build on the learning from both R&D capability grants and R&D tax credits. Two key requirements are the ability to recognise some of the benefit above the line from the accountancy perspective and the ability to have an aggregate approach.

3.2.3 The Pharmaceutical sector

For the Irish pharmaceutical sector it is important that the Irish legislation should be drafted in a flexible way, due to the restrictions imposed by OECD/ EU Modified Nexus Approach.

Examples of R&D activities in the case of the Pharma industry include;

- Pure research work leading to downstream commercial value as new product or therapy.
- Development of new drug modalities (e.g. antibody drug conjugates) where bio-pharma companies can leverage existing capabilities in the small and large molecule space to bring these novel, more targeted

therapies to market, and where new MNE investment may be attracted by developing specific competencies in such a niche area on a national level.

- Product enhancements to existing therapies which are differentiated from existing product form (e.g. extended release formulations, and, sub-lingual formulations) that create enhanced patient treatment possibilities.
- Research and development of existing products, which transforms the underlying value of the marketed product, in terms of both manufacturing effectiveness and efficiency. Such innovations, generally implemented later in the product lifecycle, may not result in a newly marketed product, but enhance the value of the product, thus creating additional revenue. This R&D work is conducted at considerable risk and is subject to regulatory review and approval. This work includes, for example, development of green chemistry, deployment of continuous processing and other novel technologies. Such work can be done in partnership with universities and other centres of expertise. This work ultimately benefits patients, and also adds significantly to the knowledge capital and capabilities of the Irish academic, research and manufacturing communities.

The cost of clinical development of pharmaceuticals represents 60-70% of the total cost of product development. Most of this money is spent to fund studies in clinics or hospitals and is an important additional source of funding for innovation in health services in many countries, including Ireland. Under the current R&D Tax credit scheme, R&D costs associated with clinical trials are not considered eligible expenses. It would be important that this policy is not applied to qualifying expenditure within the KDB. Considering the high proportion of spending on clinical development for pharmaceuticals, limits on outsourced expenses to unrelated parties should be generous.

Costs associated with outsourcing to 3rd parties (anywhere in the world) form part of the “qualifying expenditure” under the Modified Nexus approach. The Irish rules should remain in line with this important provision. The Irish R&D tax credit rules currently impose restrictions on outsourcing R&D activity. Bringing the R&D tax credit regime in line with the Modified Nexus Approach by removing the 3rd party outsourcing restriction would be extremely effective. Critically, these restrictions should not be applied to the KDB regime.

In the Irish pharma R&D and manufacturing sector, qualifying IP relates (but is not limited) to:

- Therapeutic area research
- Pharmaceutical product research and development
- pharmaceutical product trials
- Products
- Development of valued features or enhancements of pharmaceutical products
- Development of the manufacturing processes used to make the products which give new sources of competitive advantage for pharmaceutical products, thus sustaining the R&D and manufacturing enterprise and activity in Ireland.

The IP related income may be clearly traceable and easily quantified, or it may be embedded in the product revenue stream. It is critical that clear formulae and mechanisms fully recognising embedded value are in place, to ensure that R&D work and knowledge capital that generates revenue is fully rewarded.

“Functionally equivalent to patents” should include all product related costs associated with getting the patented product to market. A patent on a product is only of value if that product can be brought to market and the associated regulatory approvals granted. The cost base for the qualifying IP asset should include all costs associated with the development of the patented product and costs associated with bringing it to market.

Development of pharmaceuticals is notable for the long development timeline which consumes about 50% of the period of exclusivity afforded by patents. Often assets are traded during the development cycle, either as a sale or by way of licensing of IP for further development or for commercialisation. One aspect of the value proposition in such licensing deals can be the right to exclusive use of trademarks which plays a role in protection of IP during the period when income is being earned. Automatic exclusion of costs of creation and registration of same seems unreasonable.

3.2.4 The Medical Technology sector

The success of the medical technology sector in Ireland is built upon a commitment to R&D and continuous innovation. The nature of innovation within the Medtech sector is increasingly influenced and shaped by a value-creation dynamic, with medical technology a key contributor to sustainable healthcare in Ireland and across Europe.

Medical technologies span a huge breadth of products with more than 500,000 product types or 10,000 generic product groups available today. Innovation within the sector is primarily driven by exceptionally short medical technology product lifecycles, on a par with those in information technology. Improvements to break through technologies are generally iterative and continuous within a short timeframe of 18 to 24 months. New disruptive therapies or innovations are developed often in conjunction with a clinician, where a clinical need has been determined and then validated. The industry is characterised by a very high proportion of SME's, whose flexible business model facilitates the rapid development of breakthrough or improved products to meet both existing and unmet clinical needs.

Technically complex medical devices may be protected by hundreds of patents covering the structure, function and/or methods of using the device. In the field of medical devices, to opt for a not protected design and thus invent around patents is relatively common because alternative technical solutions can be found. This, in turn, enables the creation of greater competition in the market through alternative types of devices, with variations and continuous iterative improvements produced by other companies within the patent term. However, many Medtech companies do not file for patents for strategic reasons, preferring to keep knowledge as trade secrets or know-how.

The concept of open innovation in Medtech is becoming more prevalent, with innovation increasingly occurring external to core R&D units. Irish Medtech companies will rely more frequently on open innovation and outsourcing to drive future growth, co-locating product innovation and process development will also shape the sector as frequently product innovation arises from process innovation. The nature of innovation within the sector is changing; radical innovation, advanced manufacturing and integration of big data and services are becoming more dominant, future innovation supports should acknowledge this significant trend.

A successful KDB for the Medtech sector will need to reflect that IP in Medtech has a broad definition that extends beyond patents and this should be considered when setting limits for R&D activity for the future KDB;

- Intellectual Property (IP) for medical technologies is generated in many ways other than product IP or patents. Appropriate definitions of assets which can be considered functionally equivalent to patents for the Medtech industry should be incorporated, for example, registered and unregistered community design rights, registered copyright, confidential trade secrets among others.
- For consistency and efficiency of tracking and reporting, the definition of qualifying expenditure should at a minimum match that which is used in the current R&D tax credit regime, a separate tracking and reporting system for a different 'knowledge box regime' would make the box less attractive to Medtech companies. The KDB should leverage and link directly to legislation for the R&D tax credit to provide a direct nexus from the qualifying R&D expenditure to qualifying IP income. However, where R&D costs are not covered as qualifying expenditure under the current R&D tax credit scheme, for example clinical investigations, such costs should be considered as qualifying expenditure in the KDB, thereby significantly increasing the attractiveness of the regime.
- Medical technology clinical investigations (comparable to clinical trials for pharmaceuticals) are integral to the development of new innovative therapies and solutions and account for a significant proportion (approximately 50%) of the development cost of a new medical device. Consideration of R&D costs associated with clinical investigations as qualifying expenditure would significantly increase the attractiveness of the KDB.
- As a sector characterised by a significant number of SME's, is vitally important that the future KDB is usable from an administrative point of view for SME's. In particular, the overall design should disregard the notion of tracking by asset; it would be prohibitively expensive and difficult for an SME to administer.

- External providers and customers are more closely involved than ever in the spectrum of Medtech product and service ideation to commercialisation, therefore, the future KDB should also support the successful interaction of Irish Medtech firms with strategic partners, a key driver for future growth.

Developing and sustaining a world class innovative capability in Medtech in Ireland will require best in class innovation supports which should be guided by the unique nature of the Medtech industry and its products and services.

3.2.5 Financial Services

Innovation in financial services involves both improving operational efficiency and designing new products. However as the design of new products is highly regulated and therefore transparent they are easily reverse engineered, easier to replicate and less prone to patenting. Hence while the industry is a reasonably frequent user of R&D the use of tax regimes overly focused on patents would be harder to envisage.

In Actions 21 and 22 of *IFS 2020* the government commits to driving research and innovation within new and existing firms. Actions 23, 24 and 25 emphasise the importance of enhancing IFS – ICT sectoral collaboration, improving sources of funding for FinTech firms and partnering with existing FinTech accelerators. Further actions identify a sectoral strategy for payments and business process outsourcing and securitisation, areas where conceivably new technologies could in the near or medium term future play important roles in value creation.

As government policy drives potential change, forces of change may also arise from the industry side. To date FinTech is largely understood as a phenomenon whereby financial services firms enable new products and services through the use of high technology. But as shown by Applepay a new dimension is arising: Companies in the high technology space – many leading examples of which are strongly present in Ireland – could soon extend their operations into financial services. This opens up exciting vistas for new applications of technology which could derive benefit from the KDB.

It is therefore important that the KDB is sufficiently flexible in its implementation to financial services innovation to adapt to the industry's exciting potential for growth and change. The KDB should ensure consistency with the new strategy for the financial services sector *IFS 2020* by both maintaining an open mind on the relevance of the KDB to the FinTech sector and allowing time to monitor and respond to the rapidly emerging FinTech sector so that if activity relevant to the KDB emerges that tax policy can facilitate its growth.

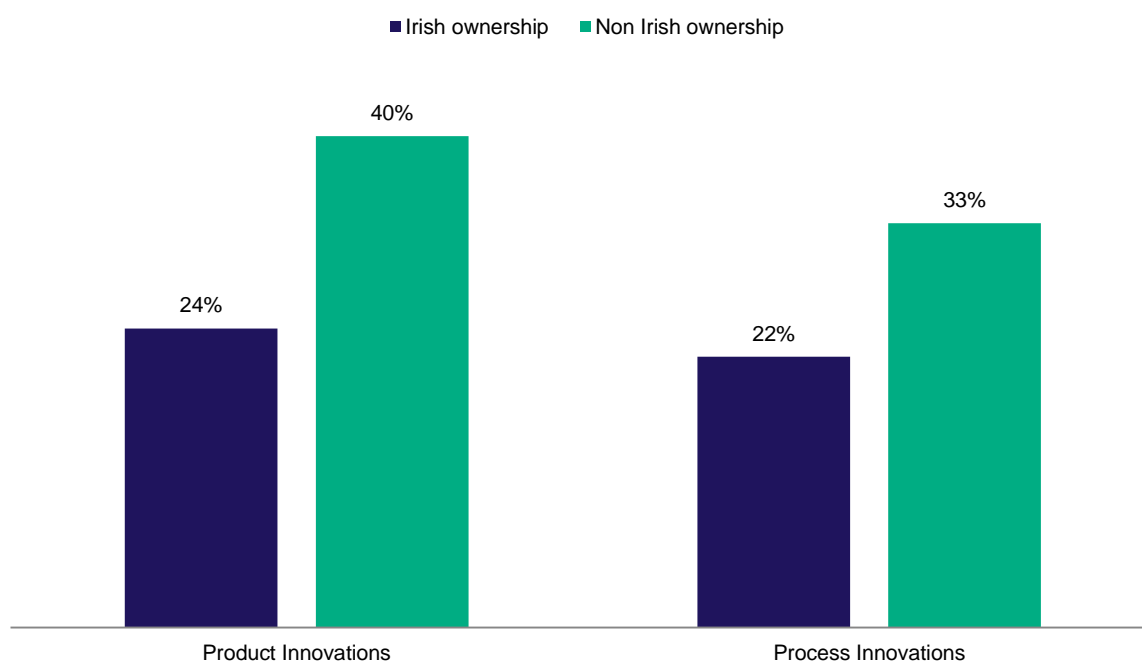
4. The proposed KDB, the modified nexus approach and Irish business

As outlined in the consultation document the modified nexus approach seems to have emerged as a consensus approach to innovation boxes under the new BEPS standards for international taxation. As outlined in recent submissions to the OECD Ibec welcomes the spirit of the modified nexus approach in terms of the necessity to clearly identify qualifying IP, the expenditure that has given rise to it and the income attributable to it. This is in line with the aim of the BEPS project to align profit with substance worldwide and is welcomed by Irish business.

Ibec has, however, a number of concerns many of which tie directly back to the proposed modified nexus approach and its potential to militate against how innovation is performed in many Irish companies as outlined above. In many smaller countries such as Ireland, with a focus on high value added services, software development and manufacturing excellence, the focus of much innovation is on process rather than on traditional lab based R&D.

Ireland would benefit from a KDB which is focused on innovative ways of commercialising and developing knowledge into a final product. As currently proposed, however, there is a fear that excessive focus on product innovation and certain types of R&D will militate in favour of larger countries at our expense. There is no good economic reason for this focus on patentable only innovation apart from the ease with which it might be tracked. This is not sufficient reason to disadvantage some sectors of the economy relative to others through public policy. There are aspects of the current modified nexus approach, outlined both by Ibec to the OECD and most recently by our Dutch and German counterparts to commissioner Moscovici, which are blind to the realities of innovation in modern business.

Figure 5: Types of innovation by ownership



Source: Community Innovation Survey (2012)

In particular it is our belief that the regime as currently stated is too narrow to sufficiently encourage a broad swath of sectors to engage in R&D or innovation. As currently outlined the modified nexus approach would severely limit the use of the KDB for most if not all firms by not aligning very well with the reality of IP protection and management in companies in general.

An additional major concern is that restrictions on the outsourcing of R&D mean that smaller countries with limited skills pools in specialist areas will be disadvantaged by the new regime compared to larger countries. It is important that this is avoided and that some leeway is given where the project control and economic risk can be clearly demonstrated to reside in the country.

4.1 The exclusion of marketing intangibles

The potential exclusion of marketing related IP assets under the modified nexus approach is unfortunate. Marketing intangibles often include post development research and analysis which is key to future product enhancements. In a number of sectors the majority of R&D expenditure involved in incremental innovation of existing products would be excluded under this definition.

For example, the development of pharmaceuticals is notable for the long development timeline which consumes about 50% of the period of exclusivity afforded by patents. Often assets are traded during the development cycle, either as a sale or by way of licensing of IP for further development or for commercialisation. One aspect of the value proposition in such licensing deals can be the right to exclusive use of trademarks which plays a role in protection of IP during the period when income is being earned. Under the exclusion of marketing intangibles it is not clear this type of IP could be included under the regime. Their exclusion would also disadvantage both the food and software sectors in particular where product testing and customer feedback is a key part of the product development process.

Every effort must be made at an OECD level to acknowledge that marketing intangibles such as trademarks are a key way to protect certain kinds of innovation. In the absence of this many firms will be locked out of using a KDB for some of their main innovations – particularly it will disincentivise incremental innovation which is often key to developing better products.

4.2 Non-patented IP

It is often the case that businesses which engage in R&D produce valuable IP which cannot be legally protected for sound commercial reasons including the sensitivity of information in patent filings to competitors; concerns on the enforcement of patented rights in many jurisdictions; the length of time taken to register a patent; and the timelines and costliness of registering patents across multiple jurisdictions. This is a particular concern among smaller firms which may engage in R&D and may not have the necessary resources to patent their outputs. In addition, the litigation process in defending patents in key markets can be extremely costly meaning many firms don't patent their products in the first instance at all. Firms often opt to rely instead on other forms of protection such as trade secrets and non-disclosure agreements.

Firms in a number of sectors such as software, manufacturing and agri-food which engage in substantial in-house R&D do not produce outputs from that process which would ordinarily be patented. For example software code is often protected by copyright and is not patentable. In many sectors copyright, industrial designs, database rights, know-how, and trade secrets provide a much more practical protection for IP assets. Companies typically rely on a combination of these methods in order to protect IP; as such it is of utmost importance that these IP equivalent assets are benefited by the KDB. There is a substantial amount of R&D performed in these companies and reflecting this must be central to any approach to IP regimes.

Ibec believes that the approach taken through the KDB process must reflect these commercial realities by recognising non-patent forms of protection as equally valuable to patents. For example trade secrets are often used by companies in the innovation process. Standards have already been set in this regard within Ireland's innovation ecosystem. For example firms using the R&D tax credit are required to pass standards of innovation by experts in the field. There is no reason why these could not be considered as functionally equivalent to a patent in terms of their verifications of innovative content.

It is the view of business which are engaged in innovation in Ireland that that the benefits of a KDB focused mainly on patentable IP would not outweigh the considerable cost of patenting, tracking and tracing and the risks associated with defending the now-public IP. Additionally, there is a legitimate concern that a patent-only KDB would incentivise metric-chasing by companies rather than the most impactful innovation.

4.3 Deciding on qualifying expenditures

Ibec believes that the best way to ensure that there is equal treatment across all sectors and businesses of different sizes is to use an established approach already familiar to firms and tax authorities alike. This approach must recognise the differing R&D processes between companies whilst also being recognisable, clear and flexible. For example the application of the Frascati criteria in R&D tax incentive regimes confirms that it is

possible to develop and form a common understanding between taxing authorities and taxpayers across industry sectors of the R&D activities that are eligible for reliefs.

We suggest that by using a combination of tests set by reference to standards that are already in use and understood by taxpayers and taxing authorities through their interaction with R&D tax credit regimes the issues raised above could be overcome. This could be done whilst also achieving the aims of being easy for business (of varying sizes) and authorities to engage with and understand whilst also from a BEPS perspective aligning profit with substance.

In addition, definitions used under the R&D tax credit have been found to be overly restrictive when it comes to certain types of innovation. Where there is room to expand past the Frascati definition used under the R&D tax credit this opportunity should be taken. This is a grey area within the modified nexus approach where Ireland should push to make the Irish KDB best in class. For example, the cost of clinical development of pharmaceuticals represents up to 70% of the total cost of product development. Most of this money is spent to fund studies in clinics or hospitals and is an important additional source of funding for innovation in health services in many countries, including Ireland. Under the current R&D Tax credit scheme, R&D costs associated with clinical trials are not considered eligible expenses. Similarly, UX (user experience) work and testing in software are not considered eligible expenses. It is important that these policies are not applied to qualifying expenditure within the KDP. Furthermore, in order to fulfil the aims of the modified nexus approach to link expenditures directly to demonstrated real value add by the taxpayer the expenditures eligible should take into account all expenditures related to the revenue generating IP along the supply chain including design, strategy and roadmap innovation, product management and development.

4.4 Administration

It is important that the methodologies to be agreed for identifying qualifying expenditure are simple and practical, not only for years prior to the rules being defined but also for ongoing expenditure. The ratio of qualifying expenditure to total expenditure is the key determinant as to what income will attract the reduced IP income tax rate so large anomalies can arise if the rules are not practical and clearly defined.

A number of taxpayers will face considerable challenges in tracking and tracing expenditure from IP. Ibec believes that the prime tenet of this element of the IP regime should be that the costs of compliance do not outweigh potential benefits. This will be decided both by the makeup of the tracking and tracing regime but also by the allowable expenditures and income under the KDB. The complexity of tracking expenditure on activities that have contributed to the development of an intangible asset must not lead to an overly complex IP regime. This may price smaller firms, in particular or those involved in frontier research, out of engaging with the regime and consequently increase the cost of R&D.

Ibec believes that great pains should be taken to ensuring a simplified approach which would include disregarding the approach that tracking is done asset by asset. Allowing great flexibility on the methodology of tracking and allowing companies to work within their existing accounting structures should reduce compliance costs but deliver sufficient transparency.

4.5 Outsourcing and working with existing schemes

Ibec is also concerned that the modified nexus approach penalises companies, in small economies such as Ireland, for outsourcing R&D activities even where the pool of available labour is too small to contain all relevant specialisms. In a globalised world it is common to work with 'talent' in areas outside the jurisdiction where these skills are necessary to a project. Collaboration with specialist R&D service providers is central to the performance of R&D in many industries and will be affected by this approach.

It is Ibec's position that if the management and control of the R&D remains in-house then this should provide the adequate substance to allow companies to outsource some specialist R&D activities without being penalised. Such costs incurred should be included in eligible expenditure where it can be shown that the business is adequately involved in the strategic management and design of the R&D programme and is bearing real economic risk in the activity notwithstanding that some or all of the underlying R&D activity may be outsourced to an affiliate based in another location. Additionally, limits on outsourced expenses may be a particular issue for

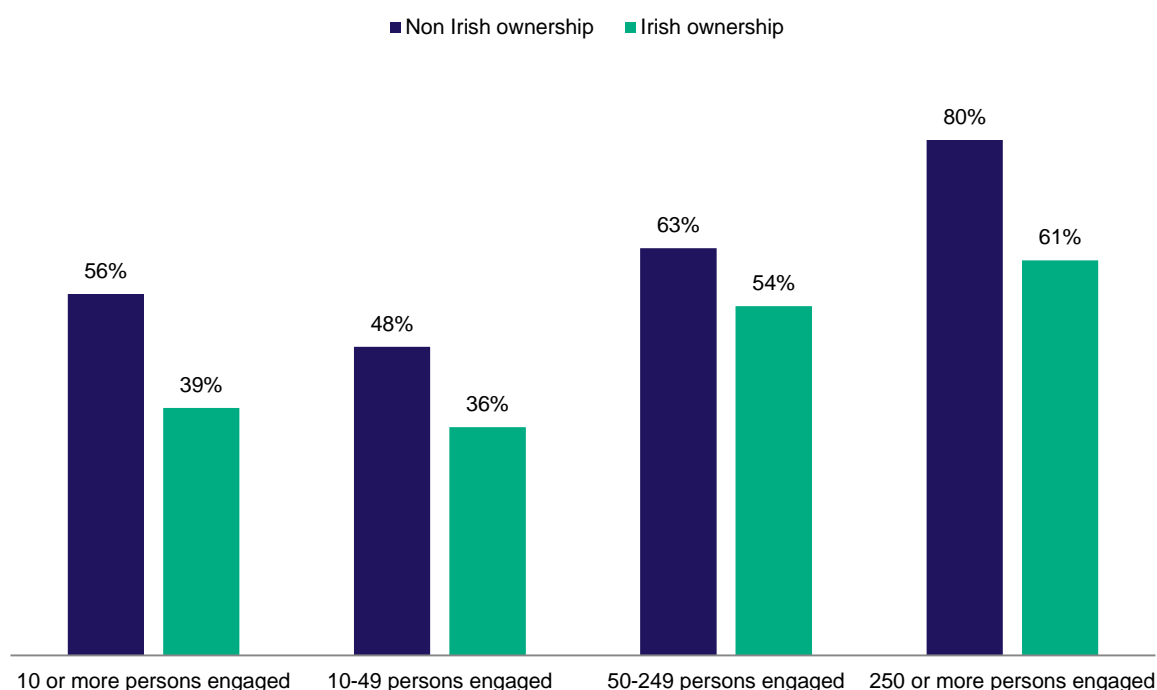
some companies, such as those undertaking clinical trials or in the software sector where outsourced expenditures may be the majority of spend on innovation and R&D.

Similarly joint work between Irish and foreign companies should be facilitated by the KDB. For example where a local Irish entity engages in 40% of the R&D required to develop a patent (or other form of IP) it could, by virtue of the contractual arrangements between the Irish and non-Irish parties, retain a 40% beneficial ownership of the resulting patent which would be legally owned by the foreign registered patent holder (but which would only hold 60% beneficial interest). In such circumstances the legal owner of the patent would be required to pay an arm's length fee to the Irish operation in relation to its exploitation of the patent. This income (40% of total) would then be income which would fall into the Irish KDB.

Finally, a considerable number of firms are incentivised to participate in joint ventures with outside bodies; for example Higher Education Institutions (HEIs) and other research performing organisations (RPOs). This can be particularly important for smaller firms who can pool limited resources in order to perform frontier R&D. The current funding model (under EU rules) for Innovation Partnerships and other collaborative research means any IP developed is owned by the RPO, rather than the company. It is likely that this means companies will be significantly either disadvantaged or dis-incentivised from undertaking joint research under the proposed KDB. The funding system for innovation in Europe would run directly contra to the emerging tax regime.

4.6 SME participation

Figure 6: % of Irish firms undertaking innovation by size.



Source: Community Innovation Survey (2012)

It is vitally important that the KDB is usable from an administrative point of view for SME's. In particular, the overall design must disregard the notion of tracking by asset. This would be expensive and difficult for a MNE to administer; it would be prohibitively expensive for an SME.

Certainty is also an important point to consider when encouraging SME participation in the KDB. The Department of Finance must take into account the Irish two tier patent system i.e. full term patents which are examined before the patent is granted and short term patents which are granted without any examination. It is Ibec's preference that short term patents should be included under the regime and that similar to the UK regime where a patent is subsequently declared invalid that there would be no revenue claw-back or limited clawback for SME's.

From the supply side in these relationships it is important that SME's are not disadvantaged in terms of their interaction with larger companies. Often smaller firms perform specialist activities for larger companies during the innovation process. In order to encourage this association limits in terms of qualifying expenditure that is outsourced should exclude work outsourced by a MNC to an Irish based SME completely. Additionally, collaboration between SME's and research entities such as research centres should be facilitated under the KDB.

4.7 Cost competition

Finally, Irish businesses report that many of the decision makers and potential project investments in MNEs are measured on their above the line results rather than reduced effective tax rates. In order for decision makers in MNE's to see Ireland as having a competitive advantage over rival countries with similar patent box mechanisms, it would be more beneficial to see above the line costs reduced and not just the corporation's tax rates impacted. As such the KDB needs to go beyond being just "tax competitive" to also being "cost competitive" by creating a mechanism that enables companies to take the tax credits/benefits "above the line".

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