

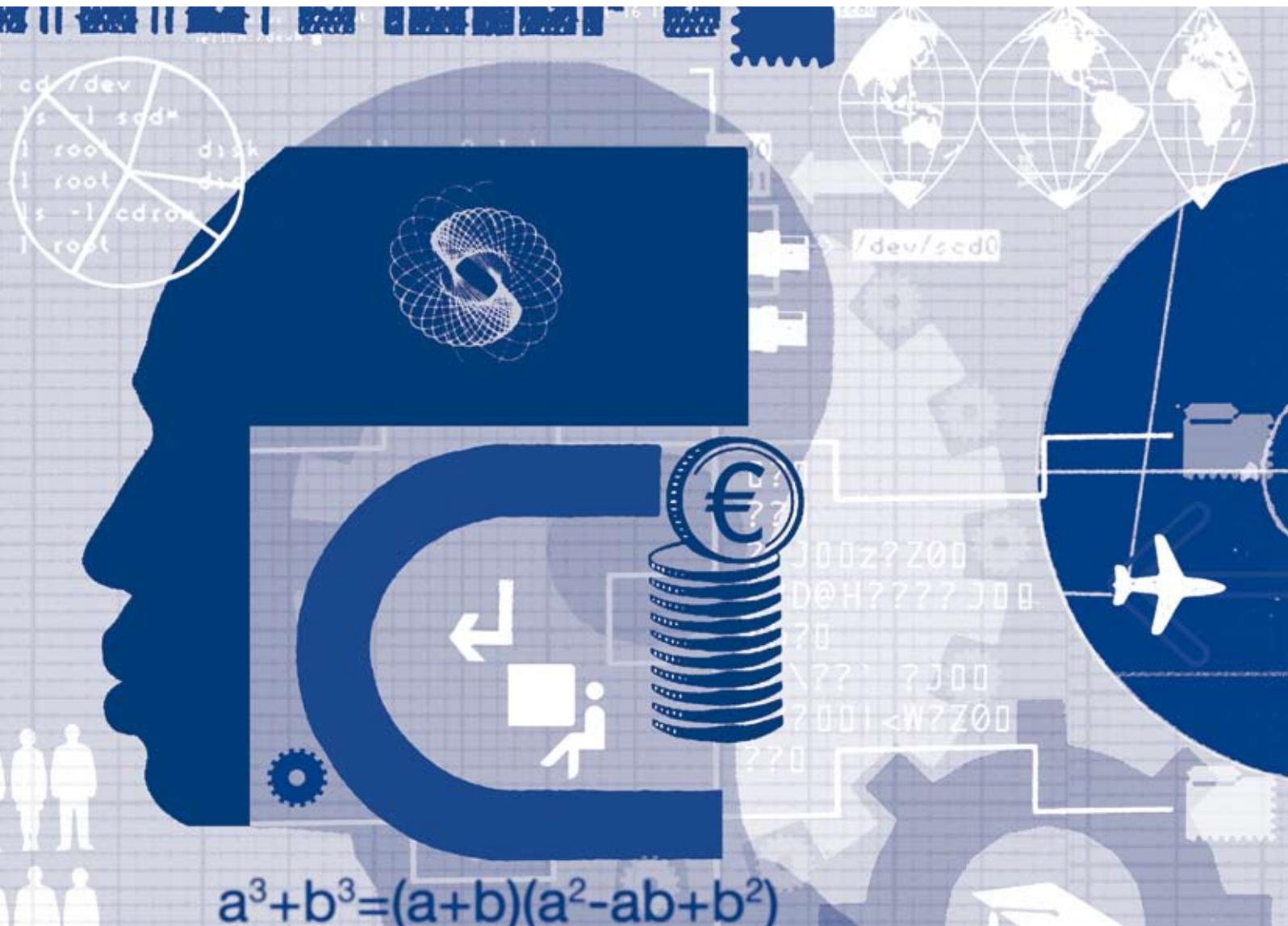
Accounting for intangibles: Financial reporting and value creation in the knowledge economy



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A Research Report for The Work Foundation's Knowledge Economy Programme

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Research Republic LLP



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Executive Summary

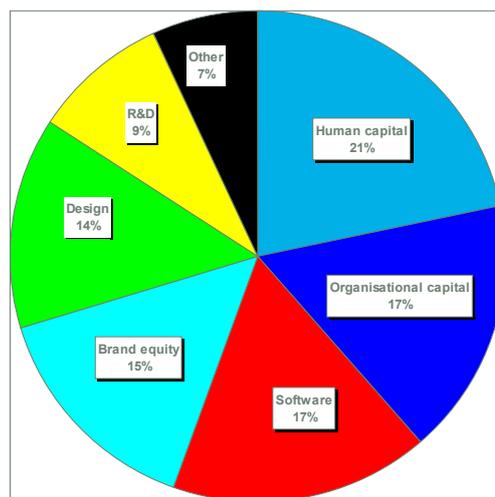
All industrialised economies are becoming knowledge based: competitive advantage and organisational performance is moving from investment in physical assets and low skilled labour to investment in intangible knowledge based assets such as R&D, design, brand equity, software, and human and organisational capital. For many organisations investment in such intangibles now equals or exceeds their investment in tangibles such as buildings, office equipment, hardware, machines, and vehicles.

The latest estimates by HM Treasury show that in 2004 UK business invested nearly £130bn in intangible assets, 20 per cent more than in physical assets. In 1970 such investment was worth just 40 per cent of physical investment.¹ This is shown in the chart below.

UK Business Spending on Intangibles in 2004

Source: HM Treasury, October 2007

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The story is much the same in the US, the Netherlands, Sweden, and Finland – and with an important qualification also in Japan.² Knowledge and technological based industries as defined by the OECD now account for over 45 per cent of UK value added and employment.³

¹ HMT October 2007

² OECD 2008

³ OECD definition includes high to medium tech manufacturing; telecommunications; business, high tech and financial services, education and healthcare. Shares of value added and employment are The Work Foundation estimates from the EU KLEMS database for 2005

These changes have thrown up four major challenges in how we account for such assets:

Firstly, despite decades of debate and effort, it has not proved possible to find a way of accounting for such assets in the same way as, say, investment in a machine. This is what we call in this report the 'value paradox' – recognising the value of such assets but being unable to account for them through conventional accountancy rules. Investors, shareholders, and managers will in consequence make less well-informed decisions.

Secondly, much of the debate has ignored SMEs and focused on the corporate sector because it is here that improvements in reporting, recognition, and management of intangible assets have been seen to have the greatest relevance. But the shift towards knowledge activity is even stronger among SMEs than large firms.⁴ Yet SMEs face even greater problems than corporates in accounting for intangibles.

Thirdly, economists and others have increasingly recognised that the conventional models based on the national accounts definitions of investment in physical assets were only giving a partial account of growth, investment and productivity. And when intangible investment has been recognised, it is often focused exclusively on scientific R&D – as defined by the OECD.⁵ Important though R&D is, it accounts for less than 10 per cent of all intangible investment by business.

Fourthly, we know next to nothing about investment levels or the treatment of intangible investment by the public sector – even though the two public based knowledge industries of education and healthcare account for around 40 per cent of value added produced by knowledge intensive industries in the UK. As well as all the problems identified for private organisations, public organisations have a further set of dilemmas: for example, how far they can legitimately exploit their intangible asset base to generate additional revenue.

Our recommendations:

- The primary focus must be on improved company reporting of intangibles in a more consistent and comprehensive way: whatever the theoretical benefits of changes to accountancy practice, efforts to find a practical way forward have not proved successful;

⁴ Between 1995 and 2006 employment in SMEs in knowledge based service industries went up from just over 1.8 million to around 2.4 million (The Work Foundation estimate)

⁵ The EU's ambition to become the world's leading knowledge based economy was vaguely defined in the 2000 Lisbon Treaty. One of the few specific targets has been to increase R&D spend to 3 per cent of EU GDP

- Trade associations and other business organisations have a role in encouraging greater consistency and making sure that the value of intangible investments is widely recognised by firms, investors, shareholders and managers;
- BIS already publishes league tables of investment in R&D based on company reports, a valuable source of benchmarking and information. The department should consider extending this approach to other intangible investments where sufficient information exists;
- As suggested in the 2009 White Paper, *New Jobs, New Industries*, the government should encourage the development of new financial institutions at both the national and local level to meet potential funding gaps for knowledge intensive, intangible rich but physical asset poor SMEs;
- New advice services should be developed to help SMEs make the best use of intangible assets: the work of the Intellectual Asset Centre in Scotland is one example of how this could be done;
- There should be a cross-cutting audit of the public sector's intangible asset base as part of the next Spending Review. A key objective would be to identify how the public sector can make best use of the intangible assets it has at a time of overall spending austerity, including new forms of revenue raising;
- The government should publish annual estimates of intangible investment by major sector, building on the reports published by HMT and BIS; and support the ONS in developing more robust measures for inclusion in the national accounts and international comparisons.
- We think there is mileage in exploring the idea that as part of new institutional arrangements focused on delivering high value, knowledge based growth, there should be a national knowledge bank.

In the knowledge economy, and in knowledge-based firms, much value lies in what accountancy practice refers to as 'intangible assets'. Knowledge, know-how, human capital, informational data, reputation and organisational practices are examples of such assets. They are 'intangible;' meaning they cannot be 'touched;' they cannot be grasped like material assets; they cannot be easily costed, counted and quantified.

The nature of the knowledge economy, and the importance of intangible assets within it, is neatly summarised by Stanford economic growth theorist Paul Romer:

*'How can it be that we are wealthier today than people were 100 years ago? . . . This question is puzzling because, if you add up all the things we own, it is clear that the underlying quantity of raw materials has not changed over time,. . . The total physical mass here on earth is the same as it has ever been, and now we have to divide this up among a much larger group of people. So how could it be that we have more total wealth per person than we ever did before? ...There's only one explanation for this increase in wealth. We took this raw material that was available to us and rearranged it in ways that made it more valuable. We took stuff that was not very valuable and made it much more valuable. . . . What lies underneath this process of rearrangement are instructions, formulas, recipes, methods of doing things – the things accountants classify as intangible assets if they recognize them at all. They tell us how to take something that is not very valuable and rearrange it into a new configuration that is more valuable.'*⁶

Knowledge-based businesses rearrange. They generate their main cash flows from their investments in intangibles rather than from the traditional exploitation of physical assets and relatively low-skilled labour. As we shall see, macro-level analysis clearly demonstrates that intangibles create value, and investments in intangibles certainly yield returns above the cost of capital. Why else would business enterprises invest so heavily and consistently in R&D, employee training, brand creation and maintenance, organisational change, and other forms of intangible asset if this was not the case?

Despite their evident value-creating capacity, however, the case for capturing and representing that value within existing accounting practice has proven hugely controversial. In part, such controversy reflects 'philosophical' differences about the nature and role of accounting practice. On the one hand are those for whom the primary role of accounting is to assure a coherent representation of past performance, while others suggest that when faced with a knowledge

⁶ Romer, 1998

based economy, traditional accounting acts to obscure a whole array of intangible drivers of value, and thus fails to anticipate future value-creation. As a consequence, for some, accounting is seen to require nothing short of a revolution in its ability to grasp the fundamentally distinct (forward) drivers of value growth in today's economy.

Lev (2001)⁷, one of the primary advocates for reform of accounting practices around intangible assets, suggests that such assets are now the primary drivers of modern economic activity. As a consequence, their absence from traditional financial statements leaves investors with insufficient information on which to make informed decisions about the (past and future) performance of a business. Indeed, Lev goes further, claiming that the lack of accurate reporting on intangibles has probably led to the 'systematic undervaluation of intangibles,' and as a result, also to insufficient levels of investment in these core assets.

We thus face a situation in which we know intangibles are valuable, but cannot say how. Or more accurately, we can say *many* things about how, but none can adequately satisfy the demands of traditional accounting practice for verifiable quantification of risk and reward. This paradox, between something we actually use to create value yet which escapes adequate demonstration or quantification is referred to in this report as the *Value Paradox*.

The Value Paradox is inherent to the knowledge economy. It is universal and cannot be solved. As we suggest below, there is no 'golden' metric for intangible value, and accountancy is not designed to deliver one even if there was. Where traditional accounting tools function as a guide to *past* performance, the focus on intangibles needs to be oriented to *future* value creation. This is not to say that research should not be undertaken to improve methods of accounting for intangibles at the firm level, only that their value can never be entirely captured in numeric representations.

This report does not, therefore, follow the decade of analysis of intangibles that simply calls for a revolution in accounting practices. Indeed, it seeks to break out of trying to conceive of the Value Paradox simply in terms of the problem of capturing value. Instead, it ranges over debates in macroeconomics, microeconomics and the public sector to reveal dimensions of the Value Paradox that might be more effectively managed.

What has occurred, and is highlighted in the debates around intangible assets, is that the nature of the economy has fundamentally changed. The old coat of traditional accounting no longer fits.

⁷ Lev, B. (2001). *Intangibles – Management, Measuring and Reporting*, Brookings Institute.

Yet what we need is not so much a new or larger coat, but to liberate value-creation from the constrictions of a system of value reporting that is in fact oriented to an industrial economy. To escape the inaccuracy of analogy, what are now required are *new methods of value-creation*. To this end, this study argues that value creation in the knowledge economy is most fruitfully conceived in terms of innovation: here in the ways in which intangible assets are invested in. New products, services and processes that are generated by the innovation process (such as new drugs or internet-based distribution channels) are the outcomes of investment in R&D, acquired technology, employee training, customer acquisition costs and other intangibles.

Certainly, intangibles are inherently difficult to trade, their legal property rights are often hazy, contingent contracts are difficult to draw up and the cost structure of many intangibles (large sunk cost, negligible marginal costs) is not conducive to stable pricing. Accordingly, at present, there are few active and organised public markets that enable trade in intangible assets. While this might eventually change – perhaps, for example, facilitated by internet-enabled exchanges – it will still require specific enabling mechanisms, such as valuation and insurance schemes. Once again, then, while private trades in intangibles proliferate, they do not provide adequate information for the measurement and valuation of intangibles in general.

The key to achieving substantial improvement in the disclosure of information about intangibles is thus to construct a comprehensive and coherent information structure that focuses on the big picture – the value creation (innovation) process of the enterprise – and places intangible assets in the proper role within that structure. This study therefore attempts a shift in focus from the dilemmas of reporting to an approach that focuses more on enabling the sorts of changes and reforms that are already identified as helpful, but are currently stifled by the pre-occupation with getting standards and measures absolutely right.

To that end, in the first section of this report, we examine the nature of the knowledge economy in order to clarify and learn from current macroeconomic debates. We then turn to an analysis of current developments in asset identification and issues arising from attempts to account for goodwill, research and development and brand reputation, respectively. From here, the report takes up the problems arising in the SME and public sectors, and then examines current policy initiatives and their implications. To indicate directions for innovation in value creation, the report concludes with a series of indicative options and suggestions.

**A note on
(the limits) of
definition**

Before we do so, however, it is important to note that there is no established definition or classificatory scheme that determines the scope of intangible assets. There is, as we hinted at above, much conceptual confusion as to what constitutes an intangible asset, and the term itself is hotly contested.

Often, it is used interchangeably with ‘intellectual capital’ or ‘intellectual assets’. Such confusion reflects not only the nature of intangible assets, but also the complex constituencies that are involved – investors, accountants, academics, policy-makers, consultants and firm representatives – and their different and sometimes competing interests in managing, measuring and reporting intangible assets. Investors tend to employ more specific terms such as ‘reputation’ and ‘brand equity’ rather than consider intangible assets in their entirety.

Research shows that, internally, while managers appreciate the importance of company resilience and managerial competency, they tend to not consider these virtues as examples of intangible assets. Even advocates of a more schematic approach have tended to confuse the issue. The Enhanced Analytics Initiative, for example, has taken intangible assets to subsume socially responsible investment issues – a different, though related concept.

More recently, categorisations of intangible assets have broadened considerably, beyond the more ‘traditional’ intangible assets, such as patents, software and trademarks, to include more dynamic elements of businesses such as human resources, organisational competencies and business processes oriented to innovation.

Thus, guidelines published by researchers from European universities under the EU Meritum project, for example, identify three distinct categories of intangible assets: ‘human capital’ refers to the knowledge and skills of employees, such as the amount of employees with a PhD; ‘relational capital’, referring to the consumer, supplier and research networks that are open to the firm – such as consumer loyalty, previous business or research collaborations; and ‘structural capital’, (ie the organisational competencies of the firm) – such as its intellectual property and infrastructure assets.

The non-physical nature of these assets has, however, continued to thwart efforts to quantify their exact value. Again, the Value Paradox is not something that can be ‘solved.’ Financial statements and reports of physical assets no longer provide comprehensive analyses of knowledge-based firms, and this is certainly problematic for investors, accountants, shareholders, management and policy-makers alike.

Moreover, the broadening of definitions to include more dynamic issues further compounds the difficulties of valuation. Indeed, ambiguity continues between the intangible assets themselves – such as patents and trademarks – and their ‘value drivers’, ie the organisational competencies and networks that will effect whether or not the former are utilised to their full potential. Furthermore, the various components of intangible assets can be deeply intertwined, making them difficult to isolate and quantify. (Lev and Daum, 2004).

On the whole, policymakers have largely failed to appreciate the extent and diversity of intangible assets and their preoccupations have often been restricted to an almost exclusive focus on R&D. This in part reflects a long-standing paucity of existing (systematic and comparable) macroeconomic data on intangibles within the international System of National Accounts. While a 1993 revision of the SNA did incorporate a number of hitherto excluded intangible assets – such as software, artwork and mineral exploration – its scope has remained relatively narrow (Schreyer, 2007). As a result, certain R&D expenditures have been taken to constitute consumption expenses within existing national accounts. Recent revision of SNA in 2008 has sought to address this issue incorporating measures of R&D capitalisation.

However, this immediately begs the question of why stop with R&D capitalisation? For example, staff training and other intangible assets are just as risky as R&D and equally important for value creation. Indeed, companies invest in a host of intangible assets other than R&D to enhance their technological capabilities and bring innovative products to the market (Baldwin et al, 2004). The growing challenge for national accounting bodies will be to provide a more expansive account of the role of intangibles in the (macro) economy that is better able to capture their diversity in a systematic and comparative form.

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1. The macroeconomics of the knowledge economy

The value-creating potential of intangible assets is perhaps most advanced in studies of the macroeconomy. Here, information is relatively rich when compared to the microeconomic level, and researchers have sought to use this evidence to more accurately measure the impact of intangible assets on growth, productivity and competitiveness. This evidence confirms that the impact of intangibles on the macroeconomy is real and growing, and suggests that our assessment of the importance this impact has is likely to increase as research into intangibles by national accounting bodies continues.

1.1 A major challenge for national governments is how to appropriately measure the contribution of
How much intangibles in national accounting systems. As the knowledge economy develops, estimating
does the UK that contribution to national productivity and identifying the role of intangible investment as
invest in a driver for economic growth will be essential if governments are to direct investment and
intangible resources in the most effective manner. Certainly, there is evidence to suggest that excluding
assets intangibles for the national accounts distorts estimates of GDP growth, total factor productivity
growth, the value of corporate equity and even labour hours at the macroeconomic level
(Corrado, Hulten, and Sichel (2006); McGrattan and Prescott (2005a, 2005b); Fukao et al.
2007).

The Lisbon Agenda goal of becoming 'the most competitive knowledge-based economy in the world by 2010' is underpinned by the goal of increasing levels of R&D expenditure to three per cent of GDP. However, the way in which R&D investment is defined in the Lisbon Agenda – as exclusively scientific R&D – is excessively narrow and takes no account of intangible investment (including R&D) in other sectors, such as financial services. Investment in other intangibles, such as staff training, for example, are just as risky as scientific R&D and likewise can lead to significant increases in productivity and value creation. What constitutes intangible investment is thus a matter of some complexity. This, in turn, impacts on their treatment in any national accounting framework.

In research analysing intangible investment in the US, Corrado, Hulten and Sichel (2005, 2006) classify spending on intangibles into three main groups:

- Computerised information (software);
- Innovative property (R&D);
- Firm competencies (training).

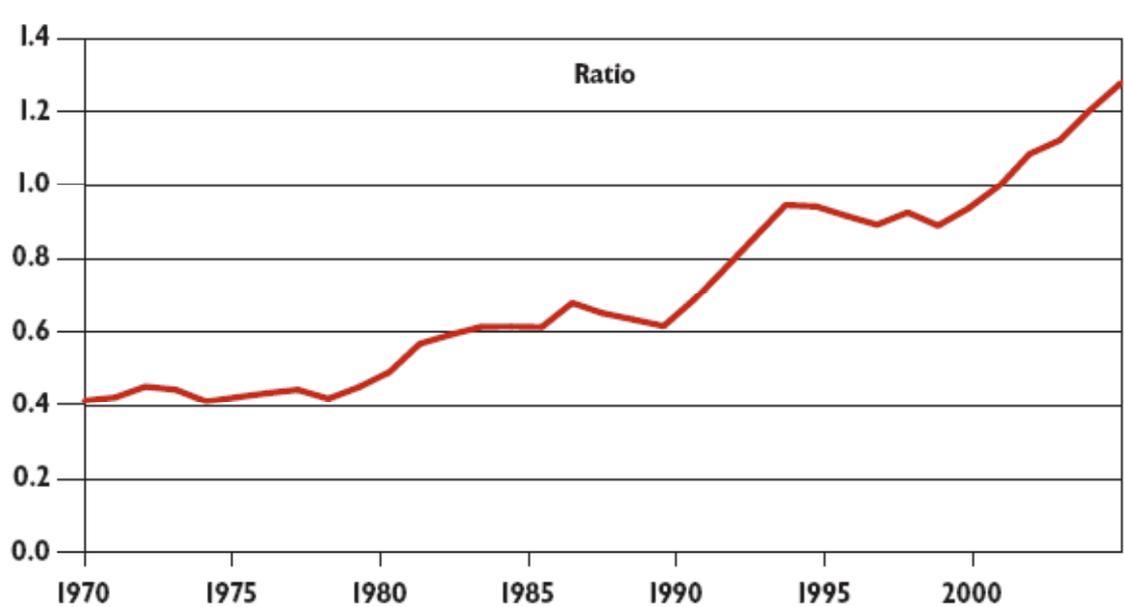
In their work on the UK intangible investment, Marrano, Haskel and Wallis (2007) show how intangible assets that map to these categories are treated in the existing national accounts framework.⁸

Type of intangible investment	Includes the following intangibles	Current treatment in national accounts
Computerised information	(1) Computer software (2) Computer databases	Both treated as investment
Innovative property	(1) Scientific R&D (2) Mineral exploration (3) Copyright and license costs (4) New product development costs in the financial industry (5) New architectural and engineering designs (6) R&D in social science and humanities	Only (2) and (3) treated as investment
Economic competencies	(1) Brand equity (2) Firm-specific human capital (3) Organisational structure	None of these treated as investment

Revealingly, in the current framework of national accounting, significant drivers of value and productivity such as brand equity and firm-specific human capital are not considered as investments. Though intangibles such as brand are clearly important for knowledge economy firms, they are currently not accounted for in macroeconomic measurement. Indeed, exploratory research sponsored by HM Treasury (Marrano *et al*, 2007) suggests that business investment in the UK (2004) would have been more than the double official measures had intangible assets been included. While tangible investments in the UK were approximately £96bn in 2004, intangible investment was £123bn.

⁸ The table below is reproduced from, Marrano, Haskel and Wallis *Intangible investment and Britain's productivity*, Treasury Economic Working Paper No.1 (2007)

Figure 1: Ratio of intangible to tangible investment in the UK 1970-2004⁹



As Figure 1 above shows, we see that since 1970, the ratio of investment in intangible to tangible assets has been increasing, and the proportional investment in intangibles since 2001 has accelerated. Further, around 2001, intangible investment overtakes tangible investment in the economy and increases dramatically thereafter.¹⁰

When we decompose total intangible investments, a number of crucial factors emerge. First, investment in economic competencies such as reputation and human and organisational capital account for around 50 per cent of total intangible investment in 2004 [Marrano *et al* (2007)]. Though clearly important, however, economic competencies remain unaccounted for in current systems of national accounting.

The same issue arises when looking at innovative property, where only mineral exploration (£0.4bn) and copyright and license costs (£2.4bn)¹¹ are currently included in national accounting. Yet investment in innovative property accounted for 35 per cent of total intangible investment in 2004 [Marrano *et al* (2007)] and computerised information – which is included in national accounts – only constituted 15 per cent of total intangible investment in 2004.

⁹ The chart below is taken from, *Intangible investment and Britain's productivity*, Treasury Economic Working Paper No.1

¹⁰ One possible explanation of the spike in the investment ratio since 2001 is the growth of broadband technology. Sadun and Farooqui (2006) found that the availability and use of broadband technology increased rapidly in the UK between 2001 and 2003

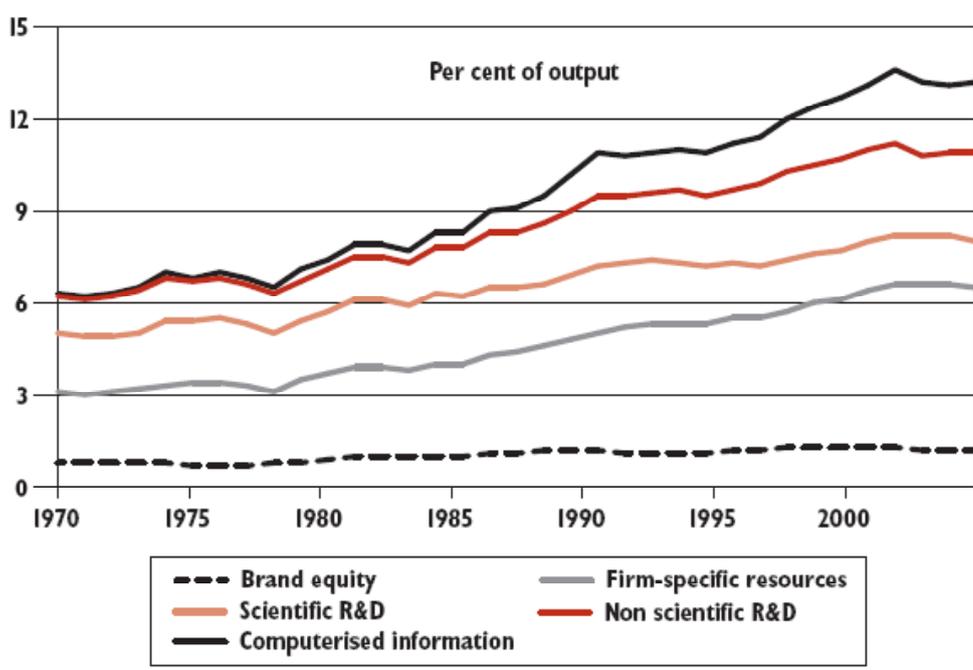
¹¹ Figures reported are taken from Haskel (2007)

In trying to assess the contribution of intangible assets, Marrano *et al* (2007) seek to more accurately estimate the share of the nominal market sector gross value added (MGVA) attributable to nominal investment in intangible assets. Their chart (see Figure 2 below) confirms that, over time, the contribution of intangible assets has increased significantly. The most important drivers of this increase are computerised information and non-scientific R&D.

This again highlights the shortcomings of current methods of national accounting, as one of the biggest drivers of value – non-scientific R&D – is excluded from national accounting systems. Interestingly, the contribution of brand over this time period, despite being a significant asset to many knowledge economy firms, has remained more or less constant, with brand only contributing a small part of MGVA.

One implication of these results is that the estimated value of market sector output for 1970, measured by market sector gross value added, should have been higher by an estimated 6 per cent, while for 2004 it should have been higher by approximately 13 per cent. Further, nominal business investment would have risen over this period, rather than declining, as has been observed previously (Marrano *et al*, 2007).

Figure 2: Intangible investment and market sector gross value added¹²



¹² The chart below is taken from, *Intangible investment and Britain's productivity*, Treasury Economic Working Paper No.1

The level of investment in intangible assets is also made clear in estimates of capital deepening.¹³ Capital deepening is the process of increasing the amount of per capita capital investment in the workforce, and results in the economy expanding and workers becoming more productive. (It should be noted, however, that growth in this context is subject to diminishing marginal returns¹⁴).

The following table presents the average per annum percentage growth rate for capital deepening. In adding in software, the average per annum percentage growth rate for capital deepening in the UK increases in every time period, and this result is even more pronounced when all intangibles are included.

Capital deepening in the UK

Average per annum percentage growth rate in per capita capital investment in the workforce

	Excluding software	Including software	Including all intangibles
1990-1995	1.40	1.55	1.90
1995-2000	1.82	2.00	2.27
2000-2004	1.18	1.35	1.71

The inclusion of these factors has a significant impact on both labour productivity growth, and on total factor productivity growth (TFPG) in the UK. Once all intangibles are incorporated into estimates of TFPG, the observed decline in TFPG from previous studies disappears. Prior studies, in excluding the contribution of intangible assets, had observed a decline in TFPG from 1995-2000. This anomaly appears to result from the exclusion of MGVA from intangible investment [Marrano *et al* (2007)].

The story of the rise in intangible investment in the UK is repeated in many other economies. It reflects the rise of knowledge based services, the development of an intangible rich manufacturing sector¹⁵, and the shift towards a more highly educated workforce.

We now have estimates for seven economies using the same methodology as that pioneered in the US in 2005 by economists at the US Federal Reserve and built on by Jonathon Haskell

¹³ The data presented in the table is extracted from Table 5.1 in Marrano *et al* (2007)

¹⁴ Source: Growth and Development, 7th Edition, A.P. Thirlwall, Palgrave Macmillan

¹⁵ Gil and Haskell (2008) Industry level expenditure on Intangible Assets in the UK. The ratio of investment in intangible asset to investment in tangible assets in UK manufacturing in 2004 was 2.5 to 1, more than twice the ratio for the economy as a whole. Manufacturing accounted for just under 30 per cent of business spending on intangibles

and colleagues at Queen Mary College. These show that the UK has a relatively high rate of investment in intangibles at just over 10 per cent of GDP compared with just over 8.5 per cent in France and just under 7.5 per cent in France. However, the US has an even higher rate of investment at nearly 12 per cent of GDP.

The latest estimates compiled by the OECD and from the EU's Coinvest programme are shown in the chart on the next page. All estimates are for 2004-2005 or latest period available. These estimates should be used with caution, as although the methodology is similar data sources are different in terms of coverage and comprehensibility. The estimates for Japan and Netherlands are known to be underestimates.

Japan is something of an exception, as the ratio between the value of intangibles investment and the value of tangibles investment is around 30 per cent compared with at least 100 per cent in the US, UK, Netherlands and Finland. The low Japanese ratio is less because Japan under-invests in intangibles and more to do with the very high rate of investment in physical assets. The Japanese authors suggest this may be because Japanese banks put greater emphasis on physical assets as collateral against business loans. It is unlikely such an extreme position will develop in the UK or the US, but as banks become more conservative it is possible that intangible rich businesses will struggle disproportionately to attract finance in the future.

1.2 Measuring the contribution of intangible investment to productivity

The difficulties involved in estimating the value of individual intangible contributions to the provision of goods and services make the task of measuring the contribution of intangible investment to productivity enormously complex.

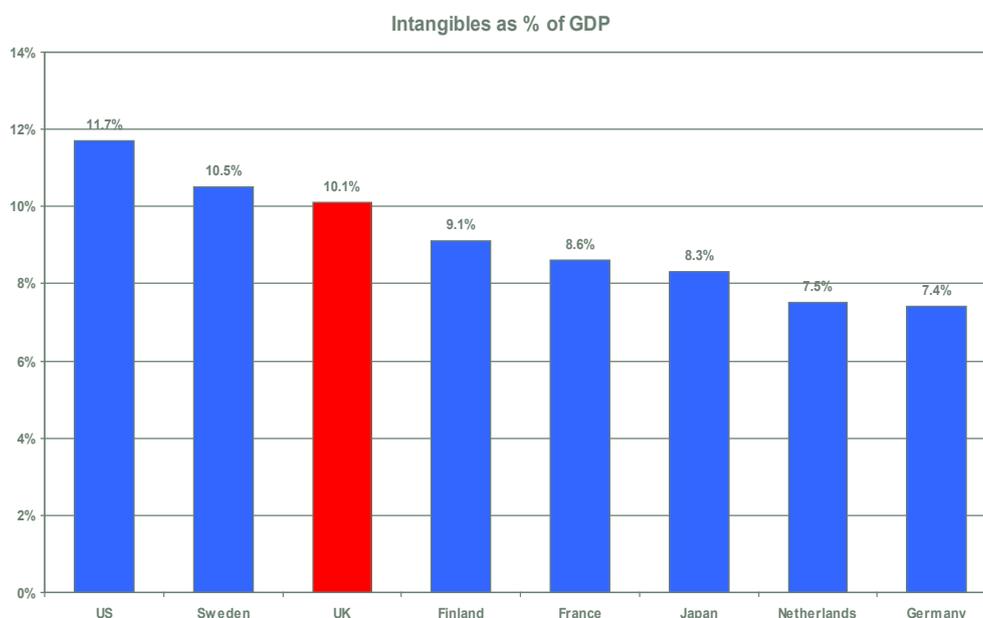
In the UK market, services constitute around 42 per cent of GDP and public services around 22 per cent [Haskel (2007)]. However, estimating service transactions and their contribution presents problems. Even with simple examples, measuring what is actually being paid for exacerbates the problem of estimation for the economy as a whole. Most of the service economy does not provide one service, but bundles or packages of services.¹⁶ Haskel (2007) puts forward the simple case of food services. The example considers the price of a bottle of wine at wholesale cost, the price of the same bottle of wine in the supermarket and the price paid for the same bottle in a restaurant. Here the price differential between the supermarket price and restaurant is the value that customers place on the bundle of services that the restaurant provides eg atmosphere, surroundings etc.

¹⁶ Haskel (2007)

Intangibles compared across the OECD

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Notes: Intangibles include software and databases, design, brand equity, R&D, human and organisational capital. Tangibles include buildings, machines, plant, equipment, and vehicles. Japan and Netherlands under-estimates. All figures 2004 except US 1998-2000; Japan 2000-2002; Finland 2005.
Sources: OECD (2008) *Intellectual Assets and Value Creation, Synthesis Report, Table 1. 1.*; Edquist (2009) IFN Working Paper No. 785 for Sweden. Crass, Licht, Peters Sofka (2008) www.coinvest.org.uk for Germany and France.



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Even when we have benchmarks that seem intuitively accurate, the complexity of estimating what is being paid for, and arriving at an estimate of productivity, is far from simple. Innovation and technology are commonplace within the UK economy.¹⁷ Yet measuring investment and innovation is problematic. The current focus on R&D statistics as the obvious benchmark for measuring innovation is skewed by the fact that 80 per cent of R&D expenditure occurs in no more than twelve large firms in the UK – for the most part in the pharmaceutical and biotechnology sectors.¹⁸ It is unlikely that this captures the vast bulk of innovation being invested in across the UK economy. As Haskel (2008) notes,

‘This does not seem to line up with the seemingly fast pace of innovation. Nor does it seem realistic that the vast bulk of companies are not spending at all.’

¹⁷ Haskel (2008) notes that downloadable mobile ring tones are now included in the Retail Price Index

¹⁸ Haskel (2008)

This argument is further supported by the fact that the UK is second only to America in basic scientific work. The UK undertakes 5 per cent of the World's research, publishes 10 per cent of cited papers and wins around 10 per cent of international scientific prizes. Innovation is therefore a significant component of activity within the UK¹⁹ and it seems unlikely that all of this effort occurs with a limited number of large corporations.

Another important part of the UK economy is the 'creative' sector, which incorporates advertising, publishing, broadcasting and design. In the UK, this sector accounts for 5.8 per cent of GDP. This is much more than other countries, such as America and France, where it accounts for only 3 per cent.²⁰ Again, the assertion that such firms are not innovating does not seem probable. Investment in innovation must, therefore, emanate from other intangible assets, such as training, design and software [Haskel (2008)].

The current national accounting framework thus ignores the way in which large parts of the economy invests. This is in part due to the narrow view that is currently applied globally to investment in intangibles – often focussed exclusively on scientific research and development.

The complex relationship between R&D and innovation can also be seen in the results of the 2008 R&D Scoreboard and the 2008 Value Added Scoreboard produced jointly by the Department of Innovation, University and Skills and the Department of Business and Regulatory Reform. The 2008 R&D Scoreboard analyses the level of R&D investment for 1,400 global (G1400) companies and the top 850 for the UK.²¹ In the chart on the next page, we see that the biggest innovator in the world by R&D is the US. Interestingly, the UK has more of the G1,400 companies than both France and Germany, but lower comparative R&D expenditure.

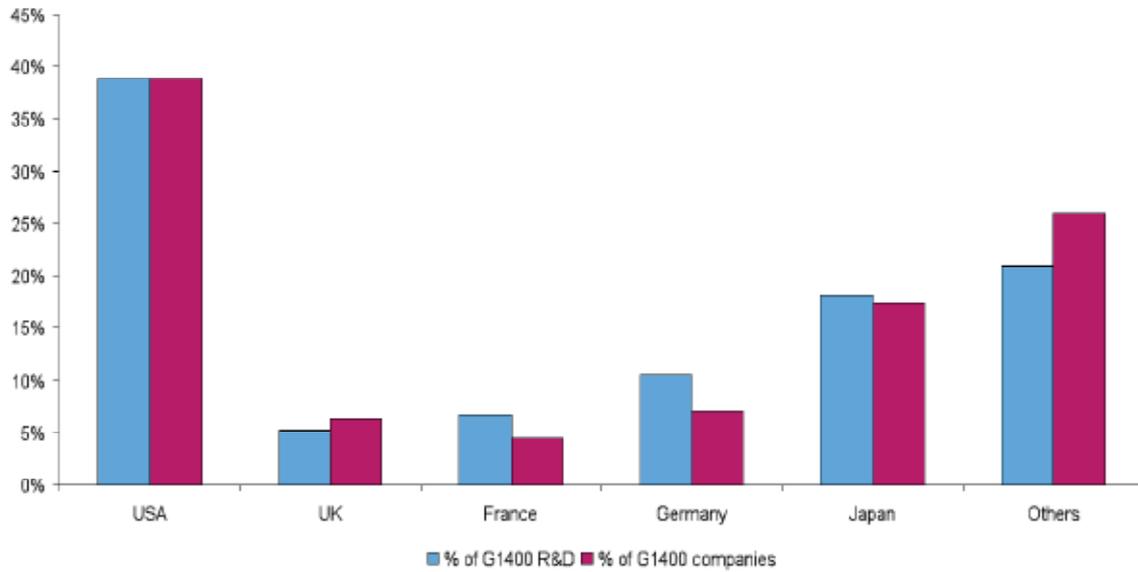
In examining the distribution and growth of research and development in the UK, the following chart illustrates that, year-on-year, pharmaceuticals and biotechnology invest considerably more than every other sector.

¹⁹ Source: The Economist, The good, the bad and the ugly; Innovation and the economy (Britain's knowledge-based economy), 4 August 2007

²⁰ Source: The Economist, The good, the bad and the ugly; Innovation and the economy (Britain's knowledge-based economy), 4 August 2007

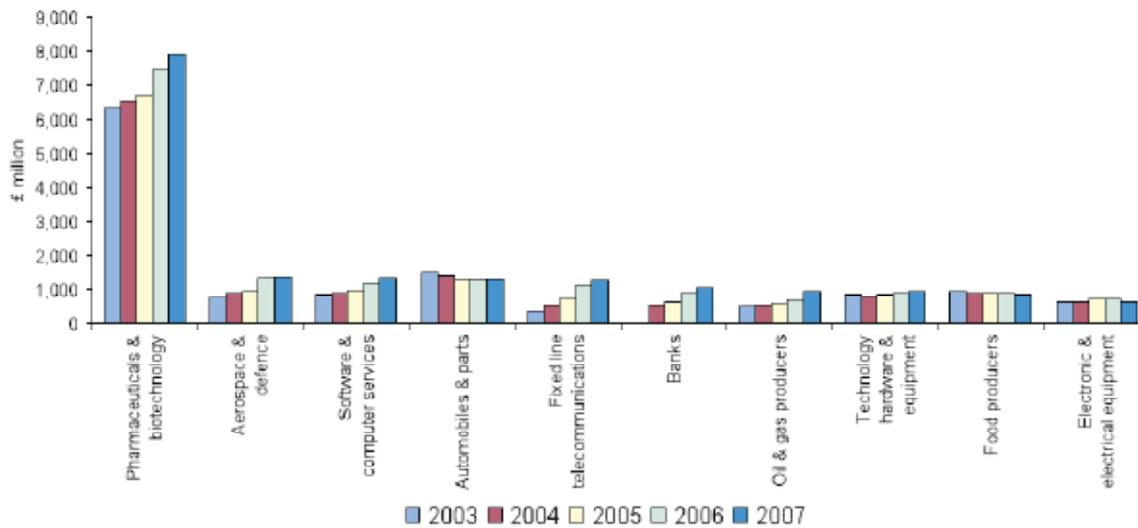
²¹ The chart below is taken from The 2008 R&D Scoreboard

Figure 4: Distribution of R&D expenditure among G1400 by country (2007)



Source, DIUS/BERR, 2008

Figure 5: Growth in R&D expenditure by sector across UK850



Source, DIUS/BERR, 2008

However, in considering the results of The 2008 Value Added Scoreboard, a very different picture emerges. The Value Added Scoreboard methodology analyses.²²

$$\text{Value Added} = \text{Sales} - \text{Costs of bought-in goods and services}$$

It therefore analyses wealth creation, and gives a much better perspective on a company's economic contribution than basic operating profit.²³ Companies can therefore increase their value added through a number of channels namely:²⁴

- Introducing innovative new products and services that provide greater value to customers compared to the cost of the materials, components and services used to make them;
- Selling more existing products and services, for example by improved marketing or by entering markets in new geographies, or by raising prices and hence margins;
- Reducing the cost of bought-in items, for example by more effective procurement and improved design and development; and
- Improving productivity by reducing the unit cost of bought-in items required for each unit of output.

Moreover, when we break down the value added by sector of the UK's 800 leading companies, pharmaceuticals and biotechnology – despite dominating the research and development expenditures – can be seen to contribute only 4 per cent of the total in the face of enormous sectoral diversity amongst those companies using intangible asset-driven strategies to increase value added. This evidence further reiterates the fact that current systems of national accounting fail to adequately capture an accurate picture of the drivers of growth and value in the economy.

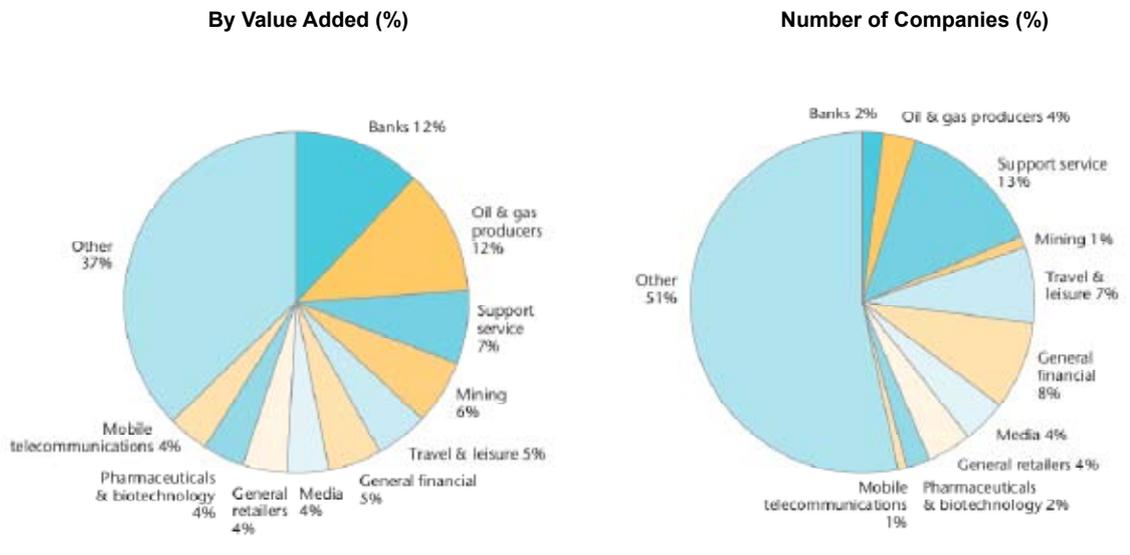
In looking at the broader drivers of value and growth in the UK, it is clear that scientific R&D as a measure of intangible investment is significantly limited. Scientific R&D clearly understates the true level of intangible investment and does not reflect the depth of intangible investment

²² The Value Added Scoreboard does not include the US however as there is insufficient information available

²³ The Value Added Scoreboard 2008

²⁴ The Value Added Scoreboard 2008

Figure 6: Breakdown of Value Added by Sector UK800, 2007



Source, DIUS/BERR, 2008

in the UK. Value and growth come predominantly from sectors where investment in intangibles is misaligned with current methods of national accounting. It therefore seems clear that, for government to understand the ‘true’ structure of the economy, the way in which national accounting is conducted needs to include consideration of a much wider range of intangible investments than is currently the case.

In effect, national accounting currently ignores ways in which large parts of the economy invest. Unsurprisingly, this limited understanding of the contribution of intangible investment has a range of important implications for policy at the macroeconomic level.

1.3 1.3.1 Property rights and risk in the knowledge economy

Macroeconomic complexities of intangible assets

A large part of the existing academic literature in macroeconomics regarding intellectual property in the knowledge economy focuses on the costs on benefits of ‘*propertising*’ intellectual goods. Economically there is a clear trade-off between fostering the creation of intellectual goods and enhancing productivity, against associated concerns about restricting access to technology and creating an effective monopoly over a given asset through patent. By giving firms the right to be the sole producers of an innovative product, this incentivises them to

produce such goods within a definable time frame adjudicated by the limited life of a patent and the subsequent publication of patent protected information [Posner 2005)].²⁵

A key issue is whether this situation is optimal. Debates around optimality arise from the heavy costs associated with the production of intellectual property. Once an asset has been created, the cost of production is generally low; so the price charged above marginal cost is large – to offset the large initial outlays to create the intellectual property. However, the monopoly pricing of the good may reduce access to it (Posner (2005).

For Arrow (1962), the overall level of production of intellectual/intangible goods in the economy is likely to be sub-optimal simply because the returns on such assets are highly uncertain and so risk aversion informs a great deal of decision-making around investment and production. He, however, disputes that the consequence of increased risk is necessarily aversion. Rather, he suggests, that strategies to offset risk are equally likely to be based on the diversification of production and investment. So, for example, a publisher will produce many books, some of which will be highly successful, and a proportion of which will be assumed to fail.²⁶

Hunt (2006) considers the trade-off that firms face when undertaking research and development (R&D) and applying for patent. In analysing the decision to undertake research, patent applications are considered separately and are found to be complementary in most cases. R&D intensive firms therefore apply for more patents, and if the process of gaining patent or undertaking research is cheaper, then R&D will increase. However, firms are also shown to be concerned about the research and patent activities of competitors. So, for example, in circumstances where patents between competing firms have significant overlap, the impact of reducing the cost of patent is to decrease in the level of R&D (Hunt (2006).

As is particularly clear with the use of generic drugs in the pharmaceutical sector; socially, the optimality of patent and protected intellectual property will often impact on the welfare of citizens and consumers. Another focus of debate around the optimality of patent and protected intellectual property is, therefore, the impact they have on consumer welfare. There is substantial research that shows that modelling the impact of global patents is extremely complex – relative to a single economy where both the firms with the patent and the consumers of the product are in the same county [see for example Grossman *et al* (2004)].

²⁵ The balance here can be highlighted in looking at the pharmaceuticals industry. Companies are allowed to produce a product under patent for a limited period of time. Once the patent expires the product and the underlying technology can be produced generically

²⁶ One recent example of this is the publisher Bloomsbury whose success in recent years is almost exclusively down to the publication of the Harry Potter series of books

Specific examination of the welfare impact of global patent protection has been undertaken by Chaudhuri *et al* (2006). In 1995, the World Trade Organisation (WTO) set a prerequisite for membership countries: that they must enforce patent protection under the Agreement on Trade-Related Intellectual Property Rights (TRIPS). Within this agreement, all member countries must enforce intellectual property rights; including those on pharmaceuticals. In fact, however, many countries did not enforce the agreement with regards to pharmaceuticals, as the removal of cheaper generic versions of certain drugs would have had a significant negative impact on public health in many poorer countries.

1.3.2 Research and development and the business cycle

Another area of debate arising from the limited ability of macroeconomic analysis to capture the diverse ways in which firms invest in intangible assets, occurs around the role of R&D and innovation in the business cycle. Is R&D and innovation cyclical or countercyclical?

A number of papers have suggested that recessions spark innovation and technological change [see for example, Canton and Uhlig (1999)]. Over long time periods, recession should, therefore, contribute to overall growth and productivity by stimulating innovation. Against this, Barlevy (2007) argues that, if this was to hold, then economic downturns would not be as frequent or severe as they actually are.

Shleifer (1986) found that large volumes of new technology are introduced into the market during booms, as this allows for the greatest amount of revenue to be generated. Francois and Lloyd Ellis (2003) estimate the innovation component of Shleifer's (1986) model as an endogenously determined factor and demonstrate that it is countercyclical. Bringing these analyses together, R&D would seem to take place in the economic downturn, with the technological output from the R&D being brought to market during the subsequent boom.

1.3.3 Knowledge spillovers

Finally, intangible assets in a knowledge economy also create unseen/unquantifiable benefits. Knowledge spillovers are one example of an intangible asset that is difficult to quantify or propertise. In training workers or creating specialisations, for example, it is difficult to ensure that the implied benefits of training remain within the firm. Productivity gains associated with knowledge spillovers are, therefore, hard to estimate.

The concept of human capital externalities is not new and can be traced back to Alfred Marshall (1890). He noted that the presence of more educated workers within a firm increased productivity. Interactions within the workforce create learning opportunities, and so overall productivity increases. Lucas (1988) argues that such spillovers may explain the observed differences in income between rich and poor countries over long time periods.

Despite the important policy implications of knowledge spillovers, there has been virtually no research that analyses their scale (Moretti, 2004). In order to begin to address this gap, Moretti (2004) analyses the differences in productivity for a sample of manufacturing firms where some manufacturers have high levels of human capital and others have less. Firms with higher levels of human capital were found to be more productive; relative to those manufacturers with low levels of human capital. However, observed productivity gains are offset by the increased wages in those cases where levels of human capital were higher.

Knowledge spillovers have also been found to occur across firms and industries. Cooke (2001) argues that regional clusters of innovation in the US are the result of targeted funding of initial research by the federal government. As Cooke notes, such policies of targeted strategic funding have not been commonplace in Europe and this may help to explain the much observed productivity gap between the US and Europe.

This section has shown that developments in macroeconomic inquiry have improved our understanding of the importance of intangibles as drivers of value creation. More needs to be done, however, as governments need to create suitable and consistent frameworks for collating and calculating national statistics and the broader impact of intangibles on the (macro) economy. With so much productivity, growth and prosperity in the economy coming from intangibles, the implications for public policy are profound. This is particularly the case as we enter an increased state intervention in the economy. To more adequately inform the allocation of resources and investment, government will need to draw upon an improving evidence base. There is thus a clear need to continue the development – currently being undertaken by the ONS and H.M Treasury – of macroeconomic measurement of IA investment in the knowledge economy. This will necessarily include the facilitation of satellite national accounts that run parallel to those presented under the current framework with a view to incorporating our most accurate assessments of the contribution of intangible investment to growth and productivity.

2. Accounting for intangibles in the corporate sector

The motivation for the valuing and reporting of intangibles at the firm-level generally revolves around the claim that many contemporary businesses are 'knowledge-based', in that they generate their main cash flows from their investments in intangibles rather than primarily from the traditional exploitation of physical assets and relatively low skilled labour.²⁷ For example, Lev (2001)²⁸, one of the primary advocates for the reporting on intangibles, suggests that 'intangibles' are now the primary drivers of economic activity and that as a consequence of the absence of intangibles reporting in traditional financial statements, users have insufficient information on which to base rational investment decisions. Indeed, Lev goes further and claims that the lack of reporting has probably led to significant under-investment in intangibles, ie, the 'systematic undervaluation of intangibles' by investors; and that radical reforms to the reporting model might be the catalyst for generating higher and economically worthwhile levels of investment in such assets.

Lev is not alone in making these claims, or in calling for accounting reforms to more adequately disclose firms' investments in intangibles. For example, the CEOs of the world six largest accountancy firms have also suggested that, because the market values of firms typically far exceed their book values, this provides 'strong evidence of the limited usefulness of statements of assets and liabilities that are based on historical costs' (DiPiazza et al., 2006, p 16).²⁹ This same report calls for more 'forward looking', ie, 'predictive' information relating to 'how well a company will perform in the future: innovative success ... measures of customer satisfaction, product or service defects or awards, and measures of employee satisfaction (perhaps approximated by turnover)', (DiPiazza et al., 2006, p 17).

According to this view, then, accounting measurement is not a sufficient basis for the strategic management of the firm. Rather, the firm needs to set goals and track performance using a broader framework of analysis. This involves decomposing market capitalisation into current and future growth value components, and creating systems to track that future growth in all of its dimensions (market, customer, human, structural, etc.).

²⁷ Management accountants have long recognised that for many products, the proportion of indirect overhead costs has tended to increase as firms make greater use of intangible investments to produce their output and to manage their business strategies. Such observations, driven by increased product complexity and often arising from the adoption of mass customisation strategies, led to the development of new costing and performance management techniques such as activity based costing and the balanced score card designed to produce more strategy relevant costing information and key performance indicators that recognised the intangible value drivers of the business

²⁸ Lev, B. (2001). *Intangibles – management, measuring and reporting*. Brookings Institution

²⁹ DiPiazza, S.A., McDonnell, D., Parrett, W.G., Rake, M.D., Samyn, F. and Turley, J.S. (2006). 'Global capital markets and the global economy: A vision from the CEOs of the international audit networks'. (Available [http://www.deloitte.com/dtt/cda/doc/content/dtt_CEOVision110806\(2\).pdf](http://www.deloitte.com/dtt/cda/doc/content/dtt_CEOVision110806(2).pdf))

Where firms recognise the limitations of traditional, transaction-based accounting, they have sometimes moved to measure and disclose the 'fair value' of their intangible assets. This, in turn, leads them to use a broader set of metrics, now including measures for customer, human and structural capital. These metrics are derived by decomposing market capital into current and future growth value components, and enables the measurement of future value creation streams. Indeed, there has been no shortage of attempts to develop such stand-alone measurement frameworks, and currently, there are at least 80 different value and performance measurement schemes on offer.

The proliferation of value frameworks, their different conceptions of intangibles and their varied weighting of values, all attest to the difficulties faced by any attempt to account for intangible assets within the firm. These difficulties are widely aired across the relevant literature and can be categorized as pertaining to issues around the identification of intangible assets, problems accounting for goodwill, how R&D is accounted for and how brand reputation is to be measured. We here take each in turn.

2.1
Identifying
intangible
assets within
the firm

Current international standards for intangible accounting are highly complex. For the firm to have created an intangible asset, it must be identifiable, separable and reasonably expected to generate some future economic benefit.

Under IAS38, the current international accounting standard that covers accounting for intangibles, an intangible asset is defined as '*an identifiable, non-monetary asset without physical substance*'. Further, any intangible asset must also fulfil the criteria of an ordinary asset as set out in the IASB Conceptual Framework of being '*a resource controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity*'. Investment in R&D or training does not therefore automatically result in the creation or acquisition of an intangible asset as it is not clear that this investment will result in any future economic benefit to the firm.

Companies must also control the asset to allow for the firm to gain any future economic benefits, and do so with a high degree of certainty. In many instances, this can be achieved through the protection of intellectual property (IP), which gives the firm legal rights over a specific technology or process through patent or copyright. Although such legal control is intuitive for technological innovations, however, it is not so for other forms of intangible asset, such as training and knowledge spillovers. The ability of the firm to secure future economic benefit from such assets is, therefore, rendered uncertain.

Even when the firm has a copyright or patent, these must still fulfil the asset criteria, as well as being identifiable. Again, the condition of identifiability is not straightforward. As IAS38 states, an asset is identifiable when the firm has control over the asset, or it can be separated from the other assets of the firm. To be classed as separable, the asset must be *'capable of being separated or divided from the entity and sold, transferred, licensed, rented or exchanged'*. Under this definition, for example, goodwill is not an intangible asset as it is not identifiable.

To actually recognise an intangible asset on the balance sheet, all the above criteria must be met and the cost of the asset must be estimated. In these circumstances, the cost of the asset is usually the cost of acquisition – such as the purchase of a franchise or the cost of generating the asset such as R&D. However, to estimate the expected future economic benefits of a given intangible asset, IAS38 allows managers to apply discretion to arrive at the best approximation of the revenues that the firm expects to gain. If intangible assets are purchased, the issues surrounding recognition are reduced, as the total cost is the price paid for the asset plus any costs that are directly related to the purchase. The price then reflects the expectations of any future economic benefit that that asset might generate.

Firms can also generate intangibles internally. Yet again, such assets are difficult to accurately identify and cost. IAS38 is, however, explicit that *'internally generated goodwill shall not be recognised as an asset'*. Research and development are therefore considered to be different parts of creating an internally generated intangible asset. IAS38 defines the research phase as *'original and planned investigation undertaken with the prospect of gaining new scientific or technical knowledge and understanding'*. By so defining research, any costs incurred are expensed when they occur. Classifying research in this way is consistent with the standard and takes on what constitutes an intangible asset. This definition is also intuitively appealing, as there is a high degree of uncertainty as to whether any initial research would actually lead to any future economic benefit.

The development phase of a project is defined as, *'the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services before the start of commercial production or use'*. At this stage there is a much higher likelihood of there being an identifiable asset, and managers are able to demonstrate that the asset will result in some economic benefit flowing to the firm. If, however, it is not possible to identify an asset at the development stage, then any development costs that are occurred must be expensed.

In circumstances where the firm has an intangible asset, the value of that asset must be regularly measured over its life. IAS38 states this can be done through either the cost model or the revaluation model. Under the cost model, the asset is carried at cost minus accumulated amortisation and impairments. For the revaluation model, assets are carried at fair value on the date of revaluation minus accumulated amortisation and impairments. Regardless of the model used, any increase in the value of the asset is recognised as gain in the statement of changes in equity and not as income in the income statement. Losses, however, are expensed in the income statement and the revaluation reserve is debited.

One of the biggest intangible assets that firms have is internal goodwill, such as reputation. This, however is not covered by IAS38, for as already noted, internal goodwill does not meet the conditions to be classed as an asset. For internal goodwill, this occurs mainly because it is not possible to accurately estimate its value. However, where there are business combinations, it is possible to estimate the value of goodwill in any transaction. Accounting for goodwill then falls under IFRS3: Business Combinations.

Business combinations occur where an acquirer buys the shares of another firm creating a parent/subsidiary structure or the acquirer buys net assets that form another business. In both cases, the goodwill will form an asset in the financial statements of the acquiring firm.³⁰ Under IFRS3 goodwill is classed as *'future economic benefits arising from assets that are not capable of being individually identified and separately recognised'*. Goodwill is, therefore, the cost of the business combination less the fair value of the target's assets and liabilities at the acquisition date. Essentially, it is the premium paid on the combination. Goodwill is, however, one of the most fragile intangible assets and can be eroded very quickly. For this reason, goodwill from business combinations is not amortised, but subject to annual impairment testing. Goodwill is thereby impaired when the value of the asset is lower than the carrying amount.

Clearly, the complexity of accounting for intangible assets in the knowledge economy presents accounting with a major challenge. However, despite all the different criteria and methods for accounting for intangibles, there are two further issues that may exacerbate the problem of consistent financial reporting of such assets.

These complexities in current accounting practices are made more difficult when confronted with issues of managerial discretion and 'fair value' mechanisms for asset valuation. On the

³⁰ Where there is a parent/subsidiary structure created goodwill is recognised as an asset in the consolidated financial statements of the acquirer

one hand, critics allege that the use of managerial discretion in estimating the future economic benefits of intangible assets that a firm may reasonably expect could be problematic. If managers' expectations are unreasonably high, their assets will be valued and reported at too high a level, and therefore the meaningfulness of financial reports will be reduced.

On the other hand, the use of 'fair value' amounts contributes to the difficulty of ascertaining future economic benefits. Under IAS38 and IFRS3 fair value is defined as *'the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction'*. While this may seem uncontroversial, critics claim that the use of fair value accounting is problematic and adds a layer of complexity to the already difficult task of asset valuation. The reliance of 'fair value' on quoted market prices, means that distorted prices – caused by market (dis)stress or illiquidity, for example – can be uncritically taken to represent the actual value of the assets concerned, regardless of what their 'true' economic worth might be.

Current trends in reporting practice

Current reporting practices generally focus on previous performances and have limited import as indicators of future prosperity. Given the uncertainty that exists with non-physical assets, investors require greater detail about companies if they are to reach informed decisions. To that end, a multitude of guidelines and value frameworks have been published to help firms provide investors with more detailed information.

Two broad strategies can be discerned from these value frameworks: 'specific reports' and 'narrative reports'. The former provide information on the intangible assets themselves while the latter aim to supplement the former with broader information on a firm's value drivers. Narrative reports can prove invaluable in the assessment of a firm's future prospects because they disclose more qualitative information regarding, say, value creation and risk management strategies, and previous performances where they relate to intangible assets. They might include: (a) contextual information that allows for a more informed perspective with regards to a firm's current and expected financial position; (b) enhanced information on both financial and non-financial performances; (c) prospective information that is specifically geared towards future performances; (d) information on potential risks that may adversely affect a firm's long-term position; (e) and, finally, information on key performance indicators (KPIs) that are used to manage and develop a firm's assets.

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In practice, there is a definite tendency to more detailed and thorough reporting of intangible assets. The Skandia Navigator scheme was initially developed in 1991 as a scorecard format for companies to report the various components of their intellectual capital. However, that approach was superseded somewhat by attempts to explicitly link innovation and value creation under more comprehensive schemes such as the Value Chain Scoreboard initiative. Once again, however, that approach was superseded when in 1997 a group of Danish firms piloted a scheme under the auspices of the Danish government based on narrative reports. That scheme – the Intellectual Capital Reports – began as an experiment involving just 14 Danish firms but has since spread to Germany and, by June 2007, 70 German firms were involved.

The EU has sought to encourage this tendency to more detailed and thorough reporting of intangible assets. In fact, many leading European firms have reported intangible assets in excess of EU requirements (Ordonez de Pablos, 2005), with UK firms voluntarily publishing their reports through the Operating and Financial Review (OFR) programme in an attempt to improve their dialogue with investors. Yet there remain great discrepancies between countries within the EU. In Germany, for example, narrative reporting is mandatory for all companies, while in the UK narrative reporting is voluntary for quoted companies. To prompt uniformity, the EU passed the 4th and 7th Company Law Directives in April 2005 that makes it mandatory for large EU firms to include business reviews. Furthermore, under the RICARDIS report of June 2006, small European countries are encouraged to standardise procedures and disclose information regarding research-orientated SMEs. These initiatives take place within the broader context of the Lisbon Agenda's goal to create 'the most competitive knowledge-based economy in the world by 2010'.

These trends are only likely to continue in the OECD countries with guidelines already published in Japan. However, the US has been slow in this regard with firms less active and investors less insistent on reform. Broadly speaking, there is no coherent institutional framework to further develop the field, nor any consensus on how such a framework might be achieved. In an attempt to foster such a common framework, The American Institute of Certified Public Accountants' (AICPA) Special Committee on Enhanced Business Reporting launched the Enhanced Business Reporting Consortium (EBRC) in 2004. A report released in October 2005 aimed to improve corporate governance and reporting strategies. Other key players include IASB and its Management Commentary (MC) initiative that proposes the development of principle-based standards that aim to provide contextual and prospective information for investors. The International Corporate Governance Network (ICGN) also set up a 'non-financial business reporting committee' in order to promote a coherent set of best practices.

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It is important to note, however, that narrative reports have not always proved successful and there are significant obstacles ahead if they are to be adopted on a more general basis. According to a study by Deloitte (2005), UK companies tend to limit risk management to foreign exchange and interest rates and are reluctant to adopt a broader approach. Managements can be reluctant to release what they perceive to be sensitive information because of potential risk of litigation and/or a desire to protect commercial confidentiality. Investors have also voiced concerns that current reporting practices often produce irrelevant information that fails to provide adequate insight into future prospects and uncertainties.

For a clear case to be made for narrative reports, steps should be taken to ensure that the information they provide is relevant but not overbearing. Narrative reports should also aim to supplement – not undermine or repeat – information that already exists. It is likely that sectoral disclosure frameworks will have to be developed in order to improve the relevancy and potency of the information. Indeed, since value drivers and KPI vary industry by industry, the EBRC has moved to create individual frameworks for pharmaceutical, oil and gas, telecom, banking and IT industries. The pharmaceutical industry is set to be the first one affected with a specific taxonomy reserved for its narrative reports.

2.2
Accounting
for goodwill

Goodwill is observable where mergers have occurred and the estimated value of goodwill is readily available in a company's balance sheet. Goodwill thus circumvents many of the issues surrounding other intangibles, such as the complexities of arriving at an appropriate estimate of brand value, and so on.

Although much of the academic literature that examines goodwill focuses on the value impact of goodwill impairment, there are a number of academic papers that analyse the causes of goodwill impairment loss. Research suggests that in respect of goodwill, there is an overriding tendency for acquiring firms to overpay for target acquisitions based on inflated values of goodwill in the acquired company. The over-riding conclusion in the literature is that firms over-pay for the target. Henning, Lewis and Shaw (2000) demonstrate that the market value of acquirers is lower post acquisition where the estimated overpayment of goodwill is higher, implying the acquirer overpaid for the target firm.

The causes of overpayment are seen to come from two main sources; agency conflicts and hubris. Under agency theory, managers will undertake unrelated diversification to entrench their

position in the firm and empire build [Shleifer and Vishny (1997) and Morck, Shleifer and Vishny (1990)]. Roll (1986) proposes a 'hubris hypothesis' whereby managers overestimate the value of the target firm and pay too much because they believe they will be able to extract more value from the target due as a result of their own ability. Both of these explanations for why acquirers overpay have been confirmed empirically by Berkovitch and Narayanan (1993).

Most of the current research on accounting for intangibles analyses the impact of Statement of Financial Accounting Standards (SFAS) 142. In the US, SFAS 142 eliminated the amortisation of goodwill from business combinations and introduced periodic reviews of goodwill based upon the fair value of goodwill. Where goodwill is deemed to have fallen in value, the firm has to recognise a loss from the impairment of goodwill in a similar manner to the approach of IFRS3. Much of the current research on SFAS142 is therefore useful for drawing out implications for accounting for intangibles under IFRS3.

The introduction of any new accounting standard is implemented with the goal of improving the information content of financial reports. A number of papers analyse the informational efficiency of SFAS142. Bens *et al* (2007) find a significant and negative market reaction to unexpected goodwill write-downs. For those firms that had the highest level of informational asymmetry this reaction was the most pronounced. However, with adoption of SFAS142, this reaction is in fact less pronounced as a result of a reduction in the information content of financial reports. One explanation for this is the use of fair value amounts as they require discretion, the application of fair value may in practice have reduced the reliability of accounting information.

Conversely, Chen *et al* (2004) find that the information content improves with the adoption of SFAS142 as the reported amounts are more value relevant and so share prices reflect the accounting amounts presented.

Li *et al* (2004) analyse the determinants and consequences of goodwill impairment loss post SFAS 142. They find, first, that investors and analysts revise their expectations about future earnings downwards where large goodwill impairments occur. Further, they find that firms announcing impairments are more likely to have overpaid for the target firm and the post business combination performance of the firm is lower.

Studies that analysed the market reaction of goodwill impairments prior to SFAS142 find that there is only a small reaction to the write-down in goodwill [Francis *et al* (1996) and Henning

et al (2002)]. Under the previous standard, SFAS 121, however, the impairment of goodwill generally occurred as part of a restructuring or as part of a disposal; so there is a confounding event that render its value implications unclear.

There is little agreement as to the rights and wrongs of managerial discretion around goodwill impairment. Francis *et al* (1996) also suggest that managers utilise the discretion afforded to them to time when they impair goodwill and undertake restructuring to manage earnings. Additionally, Beatty and Weber (2005) find evidence that managers time goodwill impairments under SFAS 142 and also where the loss is reported in the income statement. For firms that have earnings related bonuses within executive remuneration, or are listed on an exchange with delisting requirements, or have debt covenants that are affected by impairments, then the impairment of goodwill is less likely to occur. However, impairment is more likely where firms have a CEO with a short tenure or have higher earnings multiples.

The implications of timing and discretion of impairments has also been raised in the literature. Actually deciding the level of impairment and when impairment should occur is subject to managerial choices and assumptions. It is not clear, therefore, whether the level or timing of the impairment is appropriate or if it is being used to manage earnings. It is thus difficult for auditors to dispute, and consequently, the quality of the information in the financial accounts may be lower [Lewis *et al* (2001), Massoud and Raiborn (2003), Watts (2003) and Philips (2005)].

In addition to the potential impact on the quality of financial accounts, the use of annual impairment reviews reduces the predictability of earnings [Massoud and Raiborn (2003)]. Hayn and Hughes (2006) show that investors cannot predict goodwill impairments. Consequently, investors cannot predict earnings, as they are unable to foresee future goodwill impairment charges that will reduce earnings. Lewis *et al* (2001) raise an important issue with regards to this. Clearly, impairments may occur as a result of a permanent fall in the value of goodwill. However, the fall in the value of the asset may be as a result of a transitory shift in the prevailing rate of interest. Under the standard, an asset that may be just as valuable in the future is permanently impaired because of the accounting rules. In this situation, the underlying value of the firm is greater than the actual value reported.

Underlying all such research is a fundamental issue in accounting for all intangible assets. This amounts to a conflict between managerial objectives and the goal of effective financial reporting. By their very nature, intangibles rely on suitable estimates of their true value to be provided by

managers. Yet self-interest and informational asymmetries tempt managers to utilise intangibles to overstate the underlying value of the firm. Managers in such circumstances thus reduce the informational content of accounting numbers, so impairing the ability of users of financial accounts to make sound investment decisions.

There are also two key issues that do not emerge from existing research into goodwill. First is the relative magnitude of goodwill as an asset on the balance sheet of many firms. For firms in both the knowledge economy and also more traditional industries, goodwill is clearly a substantial asset. Second and possibly more crucial, is the inability of current reporting to illustrate the risks associated with goodwill arising from its inherent fragility. These two emerge clearly in the examples below.

The fragility of goodwill: the cases of Sprint Nextel and Taylor Wimpey

The Under IAS38 goodwill can only be classed as an asset where a business combination has occurred. However, both academic research and accounting standards do not fully demonstrate how fragile goodwill is as an asset on a company's balance sheet. In looking at the case of the Sprint Nextel merger the complexity of estimating goodwill and the fragility of goodwill as an asset is clear.

Sprint Nextel is the third largest wireless telecommunications company in the United States. The company was formed through the acquisition of Nextel Communications by Sprint Corporation for \$35bn in 2004. At the time of the deal Sprint had only \$8bn in intangible assets on the balance sheet. However, by February 2008 the intangible assets of Sprint Nextel were around \$60bn of which \$31bn was goodwill. Further, the total assets of the firm at this time were around \$90bn and so 1/3 of the company's assets were goodwill and 2/3 were intangibles.³¹

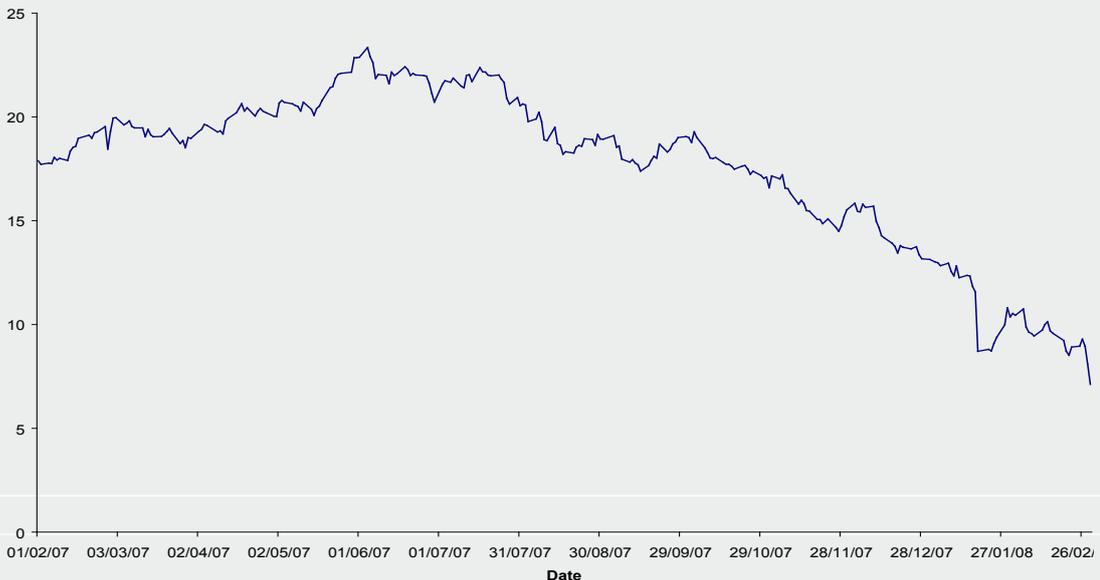
However, despite the perceived synergies from the acquisition, Sprint Nextel in February 2008 announced a \$29.7bn goodwill impairment. This was, at the time, the second biggest goodwill write-down in US corporate history.³² In acquiring Nextel the premium paid severely overestimated the synergies that the deal would bring.

Cont.

³¹ Source: Financial Times, Seeking Alpha, February 2008

³² The biggest goodwill write-down was \$54bn from the AOL/Time Warner merger

Cont.

Sprint Nextel 1 Year Share Price Performance

Although the case of Sprint Nextel is an example of a knowledge economy firm, the complexity and fragility of goodwill can also be seen in more traditional tangible asset based firms such as Taylor Wimpey.

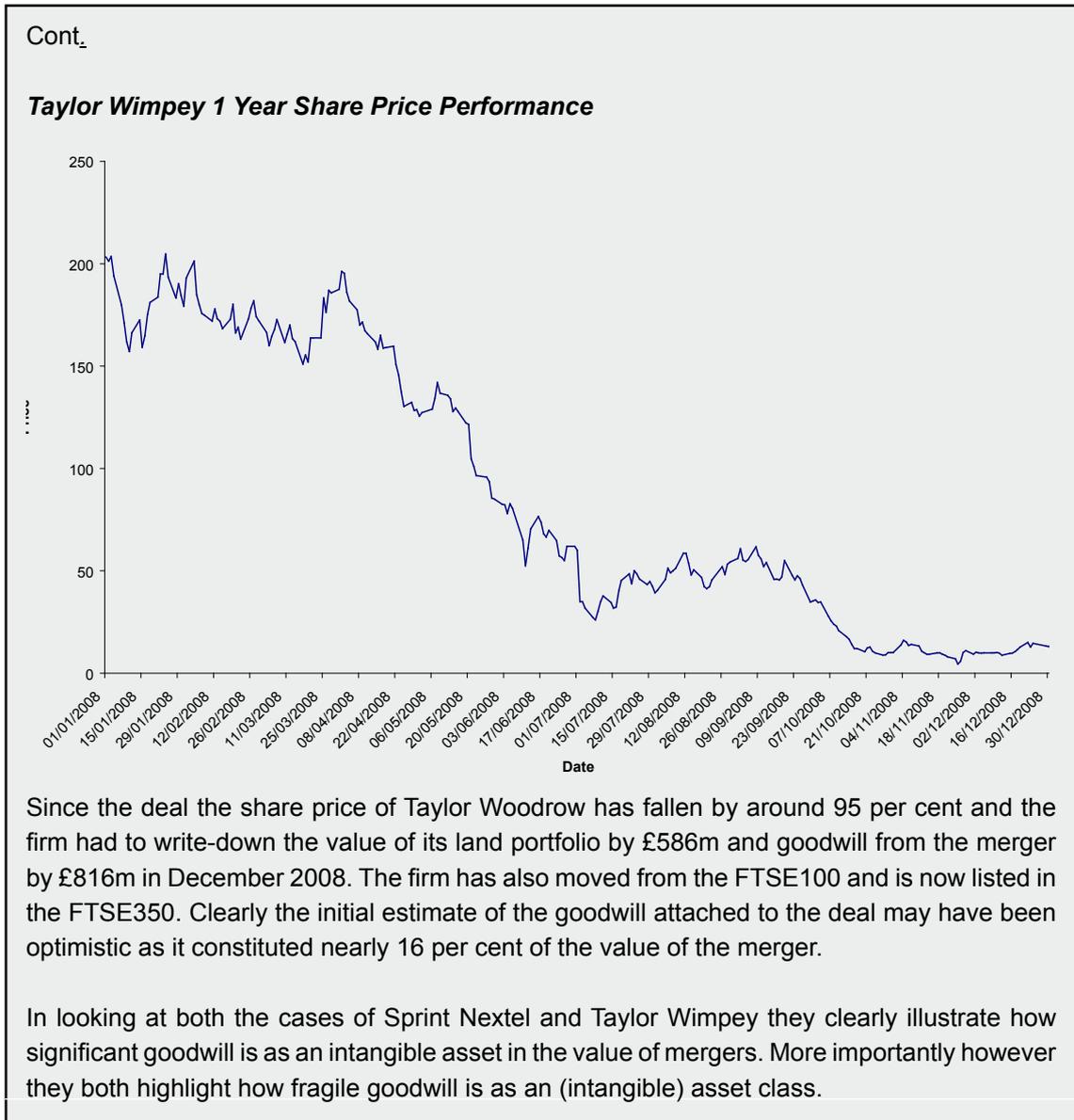
Taylor Wimpey is a UK house builder that was formed out of the merger of Taylor Woodrow and George Wimpey in 2007. The merger created the biggest UK house builder valued at around £5bn at the time of the deal resulting in the new company being included in the FTSE100. Once the deal was announced to the market it was viewed positively with the share price of George Wimpey up 3 per cent and Taylor Woodrow up 13 per cent on the announcement day. Analysts also viewed the deal positively,

*'The Wimpey-Taylor Woodrow deal makes good sense...It's a good strategic fit and the synergies they are targeting look realistic.'*³³

Managers cited cost savings of £70m per annum in both their UK and US operations. However, the deal was completed as the US housing market was in steady decline and the UK housing market was showing signs of weakening. Throughout 2007 and 2008 the credit crunch worsened with mortgage lending in the US and UK drying up.

Cont.

³³ Collette Ord, an analyst at Numis commenting to BBC Business



2.3 Accounting for research and development

Accounting standards for R&D presents still further complexities. R&D is risky, with highly uncertain payoffs. Consequently, many accounting regulators argue that research and development should be expensed.³⁴ However, there is substantial evidence to show that R&D frequently results in future economic benefits to the firm (Hirschey and Weygandt, 1985; Lev and Sougiannis, 1996) and this suggests that the inclusion of R&D as a value creating asset would increase the value relevance of financial accounts (Elliot and Jacobson (1991).

³⁴ This is the approach of FASB in the US under SFAS2.

The value relevance of R&D has been fully explored in the accounting literature. Numerous studies have shown that equity prices and future returns are positively related to research and development in the firm (Hirschey and Weygandt, 1985; Lev and Sougiannis, 1996).

Also, there is a tendency noted in accounting research for markets to overestimate the value of R&D relative to the increased earnings derived. The extent to which the market may overestimate the value of R&D is highlighted by the findings of Sougiannis (1994). For a \$1 increase in R&D, market values increase on average by \$5. Yet earnings only increase by \$2. Investors cannot, therefore, properly assess the potential future benefits of R&D investment. The reporting of R&D and the inherent riskiness of these investments is not properly understood. This was highlighted by Kothari *et al* (2002), who show that relative to future cash flows from tangible assets (property, plant and equipment), future cash flows from R&D are much riskier.

Shi (2003) considers R&D increases from the perspective of bondholders to assess if the benefits outweigh the risks. The results show that from the perspective of bond holders the risk of the uncertain payoffs from increases in R&D outweigh the benefits. Interestingly, the study finds that around 80 per cent of the cross-sectional variation in bond ratings and risk can be explained by R&D components. These results suggest that increases in R&D increase shareholder wealth at the expense of bond holders by increasing firm risk [Eberhart *et al* (2007)].

However, Eberhart *et al* (2007) find that Shi's results (2003) are dependent on the measurement of R&D used. Applying a better measure of R&D and a more sophisticated analysis, they show that the net effect of R&D is positive for bondholders; ie the increase in firm value from increases in R&D offsets the increase in firm risk. Further, those firms that have the highest probability of default are found to benefit most from increases in firm value that come from increases in R&D. This is also the case where the level of bank debt in the firm is higher as covenant protection is much more stringent.

Another option that firms historically exploited in structuring R&D was the creation of a research and development financing organisation (RDFO). By so doing, R&D is essentially undertaken in another corporate form: as either a limited partnership or a corporation. These structures offer potential tax and reporting benefits, yet Beatty *et al* (1995) found that the benefits of such structures are far from clear. Such methods can only point to marginal tax benefits and can, due to high levels of informational asymmetry, create adverse selection problems.

The impact of research and development on firm value: the case of pharmaceuticals

Pharmaceuticals are an industry where research and development, protected intellectual property and regulatory approval are crucial. Where a firm has a drug under patent the implications on firm value of gaining regulatory approval are significant. In looking at pharmaceuticals as a case study the impact of R&D on firm cash flows and also the costs of undertaking such investments become clear.

Glaxo-SmithKline, (GSK) a large UK pharmaceutical, gained approval from the Federal Drug Authority (FDA) for the sale of Altabax, a topical cream for impetigo in April 2007. FDA approval in this case was the first approval by the FDA for a prescription only tropical antibacterial in almost 20 years. Altabax clearly has a number of advantages relative to the other treatments that are currently available as it requires only two applications per day for five days. Most other treatments need to be used for around ten days and require more applications on a daily basis. This improved effectiveness is crucial as impetigo is a highly contagious skin infection that generally affects children between two and six and so the shorter treatment time with fewer applications makes treatment much more effective.

The process of getting the drug to market however was not smooth. In 2005 the FDA said that it would require more testing to be carried out before regulatory approval was granted despite the firm having carried out successful clinical trials on 700 patients. In the third phase of clinical trials involving 210 patients the drug was shown to have an 86 per cent success rate.

Analysts estimate that with European approval, which was announced by GSK on the 1 June 2007, that the drug could generate worldwide sales of £150m per annum by 2011. Upon the announcement of the FDA approval the share price of GSK closed up by some 2.4 per cent giving the firm an estimated market value of £84bn (and increase of almost £2bn).

In looking at the case of GSK it is clear that intangible assets and protected intellectual property can be very lucrative for firms. Further, the market clearly values these assets where a tangible revenue stream has been identified and secured. In fact, the drug was available as early as 2005, but was only approved in 2007. Implicit in this are significant costs in getting any drug to the market and there is clearly a high level of risk that approval would not be forthcoming in the end.

2.4 Accounting for brand reputation Brand names and reputation are significant assets for many firms and firms clearly trade on these. Google, for example, has an estimated brand value in excess of \$86bn.³⁵ However, once again, to properly value and account for this is problematic, here exacerbated by the wide range of stakeholders with competing needs.

From the perspective of the firm, branding and reputation create competitive advantages for products that are easily substitutable. One such example is training shoes; Nike clearly generates significant value through its brand and customer loyalty. This is done through creating relationship based assets through the development of a psychological link between the customer and the product.³⁶

How, though, do we value brands? In recent years there has been a good deal of work that aims to value brand. However, no method is wholly satisfactory and most require managerial judgement and discretion. Thus:

- *Historical costing* asks: how much did it cost to create the brand? Here, the inputs that would be required include design costs, trademarks and copyright. This, however, may understate the actual value of the brand.
- *Replacement cost* can be used as an estimate of the value. Here, measurement is focused solely on how much a brand would cost to create.
- *Market-based valuation* incorporates expectations of the future cash flows that the intangible assets of the firm will generate. The idea of using market values is, therefore, *forward* looking.
- *Comparison of the premium* that a brand allows a firm to charge relative to an unbranded competitor. This requires managerial judgment as to the appropriate comparator.
- *Economic substitution* estimates the profitability of a particular line as if the product was unbranded. This, again, requires managerial judgment as to the appropriate comparator.

³⁵ Source: Brandz Top 100 Report 2008

³⁶ Source: <http://www.brandfinance.com>

- *Royalty relief* estimates how much the firm would have to pay to acquire a license for the brand. This method is relatively straightforward, as all that is being estimated is an additional cost ie a percentage of sales.³⁷

Despite these limitations, however, the fact of the knowledge economy appears only to have reinforced the importance (and scale) of imputed brand value of leading companies. This is most evident in the latest Brandz Top 100 survey which estimates the top 100 global brands. In the 2008 survey knowledge economy firms dominated the top 10 global brands. Technology as a whole, including mobile telephone operators accounted for 28 of the top 100 brands. Further, technology out-performed all other categories with an estimated year-on-year increase in brand value of \$187.5bn.

The magnitudes of brand value in the top 10 are considerable. Google for example has an estimated market capitalisation of \$112bn³⁸; the firm's estimated brand value is therefore around 75 per cent of the market value of the firm. In the case of Google the key driver of the company's success in creating brand value is bonding.³⁹ This underlines the importance of creating and maintaining brands and customer relationships.

For knowledge economy firms, the growth in their intangibles and in particular brand is a key part of their value. This however poses an important challenge for both accounting standard setters and governments for national accounting. Accounting standard setters are faced with the challenge of accounting for such assets in a useful and pragmatic way. Governments meanwhile need to assess how best to incorporate these assets into national accounts and estimates of productivity.

Intangible assets, by their very nature, are not a good fit for traditional models of accounting [Hunter *et al* (2005)]. Tangible assets are a better fit, as firms control such assets, future benefits are probable and these can be reliably measured. For intangibles investments, however, these investments are not '*immediately embodied in physical matter*' and it is not certain that the firm can identify, separate and control them. As such, any future economic benefit remains uncertain [Hunter *et al* (2005)].

The differing economic traits of tangible and intangible assets effectively splits academic research. However, treating them like any other asset confronts difficulties or separation

³⁷ These methods are summarised from Brands in the Boardroom IAM supplement No. 1

³⁸ Source: Datastream

³⁹ Source: Financial Times, Special Report – Global Brands, April 2008

Figure 7: Brandz Top ten most powerful global brands 2008⁴⁰

Rank	Brand	Brand Value (\$M)	Brand Value Change (on 2007)
1	Google	86,057	30 %
2	GE	71,379	15 %t
3	Microsoft	70,887	29 %
4	Coca Cola	58,208	17 %
5	China Mobile	57,225	39 %
6	IBM	55,335	65 %
7	Apple	55,206	123 %
8	McDonalds	49,499	49 %
9	Nokia	43,975	39 %
10	Marlboro	37,324	-5 %

and identification [Lev and Zarowin (1999)]. Indeed, as Hendriksen (1982) argues, such an approach can estimate the value of intangible assets only in relation to the firm as a complete economic entity. Intangibles, therefore, do not generally have alternative uses [Hendriksen (1982)].⁴¹

In addition to the inconclusive debate surrounding accounting for intangibles, different users of accounts have different needs. Investors, analysts, corporate managers and fund managers all have specific requirements. Tensions then emerge between corporate managers, fund managers and analysts. This diversity is highlighted in a survey by Vance (2001).⁴² For managers, conveying information about the value of their intangible assets is seen as important. However, funds are not concerned with the reporting of intangibles in this way, and their investment criteria are more concerned with issues such as strategic fit. Interestingly, neither fund managers nor corporate managers were found to want compulsory intangibles reporting. Most importantly, the report highlights a clear conflict between improved financial reporting and market participants. *'The more information which is made publically available, the harder the fund manager's job is to do: it is our job to beat the market'*.

⁴⁰ This table is taken from the Brandz Top 100 Survey 2008

⁴¹ Cited in Canabano et al (2000)

⁴² Valuing Intangibles, Caroline Vance, ICAEW 2001

Conclusion This review of current work seeking to capture the value of intangibles at the firm level reveals enormous conceptual complexities that continue to prevail over theory and practice. In a helpful summary of the broad theoretical challenges that remain for those attempting to capture the 'true' value of intangible assets, Kim (2007) suggests that there are four core concerns that will need to be addressed. These are⁴³:

1. Aggregation problems: these arise from the often incommensurable nature of various intangible assets. How do we delineate between management and scientific knowledge when in practice these exist in the mix? Moreover, while some intangible assets are amenable to quantitative measurement, others can only be represented in a qualitative form.
2. Depreciation: Little is known about the depreciation pattern of intangibles. Moreover, intangible capital depreciates both internally and externally. So, for example, the appearance of a new technology may lead to the depreciation of an old technology at an irregular and unexpected speed. How and how much intangibles depreciate (or, put differently, how fast they become obsolete) is often simply assumed rather than underpinned by rigorous evidence.
3. Human capital: While firm specific human capital should be treated as an intangible assets belonging to the firm, the general skills embodied in a person can leave the company when that person leaves. However, how can human capital which is firm specific be separated from other general skills in micro-level valuation exercises?
4. The relationship between intangibles: Many researchers have found that there are clear complementarities between tangible and intangible investment. However, there has been little research, and hence little is known, on the interaction and complementarities between different intangibles. The relationship between intangibles is bound to be more complicated than the one between tangibles and intangibles and it is likely that contribution of intangible assets as a combined whole is greater than the sum of the contributions of individual intangible capital items alone.

⁴³ This list is directly based on Kim (2007)

The Value Paradox as a problem of capture

Accounting for intangible assets within the firm confronts the Value Paradox in terms of a problem of capture and accounting. Is it possible to capture the value of such assets, and if so, how? Is it desirable to measure their value? Who actually requires such measurement, and to what end? Once again, the Value Paradox is this: intangible assets have evident value, yet this resists adequate capture. This paradox cannot be overcome, yet when we try to identify ways of managing it more effectively we note a series of methodological difficulties, as well as a number of perspectival ones. This is apparent again as we focus on accounting for intangible assets in the SME sector.

3. Accounting for intangibles in the SME sector

The corporate sector has been the most receptive to the message that greater recognition, reporting and management of intangible assets can lead to significant improvements in performance. Increasingly, however, it is suggested that a similar approach to intangible assets in the SME sector may also give rise to comparable performance benefits for small firms.

3.1 SMEs in the knowledge economy

It is widely accepted that SMEs are fundamental to successful and innovative economic development. Research shows that SMEs contribute to economic growth and innovation (Barber et al, 1989), employment (Storey, 1994) and the turnover of economic wealth (Camino and Carbonne, 1999). In addition, they facilitate emerging industries (Keogh and Evans, 1998) and act as a catalyst of change in a number of existing industries (Peña, 2002).

A recent report by The Work Foundation's knowledge economy programme (Brinkley, 2008) highlights the importance of the SME sector in the knowledge-industries and the economy as a whole. SMEs provide 51 per cent of employee jobs in the private sector knowledge-based industries and 54 per cent in the private sector knowledge-based services. SMEs are the dominant actor amongst those working in private education, health services (where up to 75 per cent of firms are SMEs) and business services (up to 60 per cent are SMEs). SMEs are, however, less important in high-to-medium technology-based manufacturing industries, where only a third of such organisations are SMEs. This latter figure can be explained by the fact that this sector is capital and R&D-intensive, and that economies of scale are crucial. Indeed, the less capital intensive the sector, the greater the share for SMEs, with 58 per cent in medium-to-low technology-based manufacturing industries.

3.2 Intangibles and the structure of the small firm

3.2.1 The structure and management of the small firm

Despite the crucial importance of the SME sector for the economy as a whole, the harsh reality is that most SMEs are destined to die or stagnate (Burns, 1990). Research demonstrates that almost one in every two SMEs fail after eighteen months, while only 26 per cent survive after six years (Peña, 2002). Moreover, it is rare for surviving SMEs to experience growth of any significance, and many owner-managers – the so-called 'stagnant satisfiers' – actively pursue stagnation (Clarke et al, 2001).

There are a number of attributes that are specific to SMEs – other than simply size – that distinguish SMEs from the typical large, well-established publicly-listed firms that are more stable and geared towards growth. These differences have significant implications for evaluating what may be the most appropriate business models and strategies for SMEs.⁴⁴

⁴⁴ For a review of the unique governance and management characteristics of SMEs, see K. Keasey and R. Watson, *Small Firm Management*, Blackwell publications, 1993

SMEs tend to be unlisted, and to have closely-held ownership structures. This means there is no public market for either their equity or their debt claims. One implication of this lack of market listing is that investors wishing to exit from an SME will typically find this both difficult and costly. The lack of a ready market valuation of their financial claims reduces the firm's sources of finance and increases the cost of capital. The absence of outside investors, and an associated secondary market price discovery function, does, however, allow owner-managers to pursue goals other than the maximisation of shareholder wealth. So, for example, several surveys of small business owners have indicated that autonomy and freedom from the need to meet externally imposed performance targets is one of the main motivations for going into business.

In SMEs, a large part of the owner-managers' wealth is often tied to the enterprise. Though such assets are generally more productive – and more customer and geographically specific – than is the case for larger firms, lack of diversification limits protection of the owner-managers' personal wealth in the event of business failure. This tends to induce conservative financing and investment strategies and to stimulate the constant monitoring and marshalling of cash flows. High levels of uncertainty, together with the lack of formal contracts and other reliable information on the firm, further increases monitoring and bonding costs when accessing formal, external financial suppliers.

Again, with the management teams of many SMEs consisting of a single or a few key individuals, the business often lacks the full portfolio of management skills. This can be exacerbated by the fact that many SMEs do not have a contingency plan to ensure continuity if any of these key individuals leave or succumb to illness. Access to outside professional expertise, and compliance with statutory requirements such as audit and financial advice, are typically costly to obtain – due to the inevitable fixed-costs components associated with such services. Not surprisingly, therefore, SMEs tend to limit their use of outside expertise and, as a result, can be critical of new regulatory initiatives that entail further expenditure.

3.2.2 Intangible assets in SMEs

The many differences between large firms and SMEs have important implications for the nature of SME assets, their relevance for the IP framework and the difficulties posed in respect of their valuation. The small-scale nature of SMEs and high-cost of ventures in, for example, the service and knowledge-based sectors, typically lead to low quantity of tangible assets, such as machinery and buildings. SMEs are also less likely to own complex IT-based intangible assets (eg complex KM intranets, billing and automated procedures) and more likely to process their information via documents, letters and manuals that can be shared and codified.

The intangible assets of SMEs can be located in a number of different forms of intellectual capital. During their early stages, SMEs are likely to embed much of their intellectual assets in human capital. The fundamental ideas and processes supporting the organisation at this stage are likely to depend upon the founder and immediate employees. SMEs also have to be more agile than their larger counterparts, and 'relational capital' is thus imperative (high-trust relationships with suppliers, customers, collaborators and subcontractors, etc.). Thus, SME intangible assets often reflect the idiosyncrasies of the individuals involved and the relationships they foster. Such assets are, therefore, inherently fragile.

Of course, 'structural capital' (such as intellectual property), is also of importance, with some SMEs protecting their intangible assets with copyrights, trademarks, patents, etc. Indeed, particularly for the more research-intensive SMEs and technology based small firms, the use of patents can be crucial in obtaining venture capital. However, in general, research has shown that SMEs tend to avoid using the IP system and often see it as counterproductive (Kingston, 2004). This is likely due, not so much to a lack of ideas and potential patents, but to the high costs and administrative burden of the IP process. Moreover, the informal nature of many SMEs puts them at odds with the formality of the IP system. Most SMEs protect their intangible assets not through the IP system but through informal methods such as developing high-trust relationships or maintaining lead-time advantages (Kitching and Blackburn, 2003). Moreover, intangible assets that provide the firm with a competitive technological edge tend to be protected through further technological investments in order to maintain competitive advantage. Often, IP protection in SMEs relies upon the simple inimitability of their intangibles.

The usual difficulties pertain to SME intangibles where they are not appropriatorialised. A common problem in accounting for SME intangibles is thus that they tend to constitute clusters relating to the nature of the business or the products involved, and therefore can be neither isolated nor quantified. The dependence of SMEs on the 'human capital' of the owner/manager and perhaps a few others exacerbates this ambiguity. For example, an employee's PhD in a relevant field of research, while invaluable to the operation of the firm, is hardly the 'property' of that firm. The informalities and idiosyncrasies of SME business, coupled with the fact that SME intangibles often involve tacit knowledge acquired through experience, again makes assigning a market value more difficult. Such issues would require significant revision of current accounting practices if they were to be fully addressed.

3.3
Intangibles
reporting and
management
in SMEs

Increasingly, it is being suggested that techniques for intangible asset reporting and management can provide significant benefits for SMEs. In June 2006, for example, the EU's RICARDIS report encouraged policy initiatives to foster the standardisation of intangible asset reporting guidelines for research-intensive SMEs. The hope was that this would mitigate the traditional difficulties encountered by SMEs when seeking investment (OECD, 2006).

Yet it may be that the benefits to SMEs of intangible asset management techniques are less attainable than is the case with larger firms. In fact, some commentators have criticised the studies that report improved SME performance arising from the use of such techniques, and/or the voluntarily disclosure of information. In his review of the empirical evidence, for example, Ittner (2008) concludes that:

'Although the bulk of studies provide at least some evidence that intangible asset measurement is associated with higher performance, many are limited by over-reliance on perceptual satisfaction or outcome variables, inadequate controls for contingency factors, simple variables for capturing complex measurement practices, and the lack of data on implementation practices. Future studies must take account of these research design issues if our understanding of the performance benefits from intangible asset measurement is to improve.'

Other commentators have argued that the benefits of disclosure may fail to outweigh the costs (Skinner, 2008). Indeed, there are concerns that even where firms have invested heavily in managing and reporting their intangibles (eg Scandia), this has not been worthwhile. Certainly, the fact that firms are already at liberty to report such information voluntarily – but that only a few actually do so – suggests that for the majority of large firms, the likely benefits are insufficient to compensate for the complexities and costs needed to produce the required information. The high set-up costs associated with developing the necessary managerial infrastructures suggest that intangible management systems will 'not find a suitable home in a SME environment, and will typically be deemed 'unworkable' by SME management' (Huggins & Weir, 2007).

Despite these negative cost-benefit considerations, however, the general point that creating and growing any form of successful businesses today involves significant investments in intangible assets – and thus their efficient management – is fairly uncontroversial. It is also evident from the growing use of more inclusive management control and performance evaluation methods, such as the 'Balanced Scorecard' and enterprise resource planning software, that

the management of intangibles is seen as an increasingly important issue by businesses of all sizes. Moreover, the growing presence of specialist contractors that provide the tools and training for identifying, valuing and managing SME intangible assets indicates a market for such services.

Thus, SME business strategies are typically dependent upon the intangible management skills, strategies and motivations of their owner-managers. These resources are severely constrained and the identification and valuation of their specific components is fraught with conceptual and practical difficulties. While the current relatively weak financial reporting environment may suggest that requiring SMEs to produce information concerning their holdings and usage of intangible assets increases incremental value; this presumption needs to be considered alongside the likely costs and reliability of the resulting information.

3.4 In a perfect hypothetical capital market, projects are funded irrespective of a firm's size, **Intangibles** collateral or equity. This counterfactual ideal provides a critical standpoint from which actually **and** existing capital markets can be evaluated. Accordingly, where projects are not funded purely **SME finance** on the basis of their own merits, there is a probable instance of market failure. Of course, in the real world, other variables inevitably arise that contort the ideal. For example, informational asymmetries can prevent investors from appreciating the quality of a given project. This issue has been construed as a hypothetical financial and contractual problem that involves an entrepreneur with an idea but a lack of capital, and an investor with capital but a lack of apprehension regarding the idea (Admate and Pfliegerer, 1994; Aghion and Bolton, 1992). In such circumstances, rather than raise interest rates – that would clear markets in equilibrium – investors generally discriminate against riskier projects via credit constraints (Stiglitz and Weiss, 1981).

There is broad agreement within the literature that SMEs do face financial constraints and that existing capital markets are some distance from achieving equilibrium. Research has shown that characteristic institutional deficiencies prevent SMEs from adequately accessing financial and capital markets. SMEs with a turnover between £250,000 and £5,000,000 remain unable to access any external financial assistance from any source (ACCA, 2007). Given the inherent fragility of most SMEs and the fact that most do not command – particularly in their early stages – the reputation, networks, or economies of scale enjoyed by larger, more established, companies, SMEs are somewhat inevitably considered higher-risk investment options than more established and statistically speaking, more stable larger firms.

Some SMEs are also hampered by the fact that, because their value is tied up in intangible assets, they lack the collateral to secure loans. This issue is a complex one, the solution to which involves far more than the need to address deficiencies in the accounting practice. It is also the case that smaller companies, particularly in their early stages, might not be able to afford the costs that would allow for adequate risk assessment schemes to provide investors with the reassurance they require. Any new company confronts the problem of persuading investors to trust their managerial experience, even if the firm has innovative ideas and sound finances (Muzyka, Birley and Leleux, 1996). Such problems are exacerbated where small and new businesses seek investment in innovation (Carpenter and Peterson, 2002). This is because the innovation process is inherently uncertain and new products are sometimes difficult to comprehend. As such, innovation compounds the problem of information asymmetries.

Difficulties around quantifying intangible assets, information asymmetries, and the perceived risk of default and the size of the loan vis-à-vis interest income, all appear to weigh heavily against lending by banks and other financial intermediaries to intangible asset-driven SMEs. This is a situation further exacerbated in the UK by the fact that its venture capital markets are underdeveloped, particularly when compared to the US. Whereas abundant equity markets have been fundamental in the development of a fully-fledged knowledge economy in the US, venture capital markets are more restricted in the UK and simply not large enough to meet demand. As a result, venture capitalists in the UK are less likely to invest in highly innovative firms that are dependent on intangible assets.

Of particular concern for policy makers is that such financial constraints suppress the emergence of SMEs that could potentially enjoy great success: the so-called 'Gazelles' (Brinkley, 2008). The high growth potential of Gazelles makes them disproportionately valuable to the overall economy. In addition, generic financial constraints serve to suppress technological innovation and the development of a fully-fledged knowledge economy. This, indeed, is intensified the more innovative the product. A highly innovative product then confronts an inherently cautious investment environment that will struggle to comprehend the product's implications (Perez, 2004). In such cases, the margin of success or failure is at its greatest. Policies that attempt to mitigate the funding gap are thus of particular importance where products are highly innovative.

This matter has received much attention in the literature, often in the form of discussions around technology-based small firms (TBSF). Such firms are widely lauded for their innovations

in science, communications and computing (Romijn & Albu, 2002), and are seen to make a significant contribution to the overall economy. However, the financial constraints encountered by all SMEs have long been recognised as particularly acute in the TBSF sub-sector (Bank of England, 2001). This has led a number of commentators to inquire into the characteristics that are specific to – or at least common amongst – TBSFs that impede their access to financial resources. Two general explanations have been formulated to account for this issue: supply-side financial constraints and demand-side financial constraints (Cressey and Oloffson, 1997). Supply-side financial constraints are imperfections in capital and financial markets that prevent an appropriate allocation of funds. Research backs up the claim that in terms of supply-side financial constraints, many of the issues that SMEs encounter are exacerbated when it comes to TBSF. For example, since TBSF is a knowledge-intensive sub-sector of SMEs, investors tend to be wary that their owner-managers might be academically orientated and therefore lack market experience. Research confirms that managers of TBSFs tend to have a high degree of technical expertise but little experience of business administration (Giudici and Poleari, 2000).

Nevertheless, it is the complexity of their products that is perhaps at the root of the problem facing TBSFs. Investors find it challenging to assess risks and reach informed investment decisions due to the scientific or technological nature of the products involved. Thus, information asymmetries are particularly acute, as are the uncertainties of the innovation process itself. Innovative TBSF products are even harder for investors to comprehend since the information that the entrepreneur provides might be overly esoteric and technical. Indeed, even if TBSFs are able to attract funding in the early stages, there is typically a five-year cut off point, after which funds will be withdrawn. This is a further disadvantage that is particularly damaging for TBSFs since their highly complex products often take longer to develop than those in other sectors (Oakey, 2003). The problems facing TBSFs therefore occur at different stages of the business cycle and are not confined to the start-up stage. At each stage, moreover, the problem of information asymmetry is especially acute: the information may well be open and clear to the entrepreneur but closed and opaque to investors.

Demand-side financial constraints are, similarly, imperfections that prevent firms from utilising their intangible assets and achieving their full potential. Demand-side constraints are internal, whereas supply-side constraints are external. For example, owner-managers might refuse to relinquish equity in their businesses in order to retain their full autonomy and control over company policy or safeguard family ties to the business. More strategically, owner-managers might avoid venture capital and prefer to pursue short-term borrowing in order to send out a

signal that their firm is strong enough to survive on its own and is unwilling to share anticipated profits – so-called signalling theory (Myers and Majluf, 1984). It is also important to note that inverse informational asymmetries can arise. Investors and other sources of finance sometimes provide inadequate information to inexperienced entrepreneurs regarding their financial options (Howorth, 2001) and trust is depreciated as a result (Berggren et al, 2000).

Although these are important issues, empirical research suggests that it is supply-side financial constraints that are more significant barriers to innovation, and are often to blame for the failure of potentially successful ideas. Indeed, in a survey of 171 UK SMEs, Westhead and Storey (1997) found that a majority of firms, and in particular R&D intensive ones, were subject to financial constraints that impeded their development and suppressed innovation. Guidici and Paleari (2000) similarly report that more than 90 per cent of surveyed entrepreneurs did not borrow from banks because of a fear that their ideas would have been significantly undervalued for the reasons mentioned above. And more recently, in an analysis of a sample of 130 TBSFs in the UK, Ullah and Taylor (2007) report that almost 80 per cent of firms are finance constrained.

This is a theme reflected in EU-level data also. In analysis of the latest (2004) data from the European Community Innovation Survey, Peneder (2008) suggests that, the lack of appropriate sources of finance are more acute amongst small firms and particularly so for those firms engaged in innovative activity and for those delivering intangible-driven business services.

Conclusion

Intangible asset valuation and management programmes should, in theory, produce benefits for SMEs, and assist in the raising of new equity and debt finance from external financiers. This is most obvious in the case of SMEs seeking new venture capital or a public listing for the first time. In both situations, potential investors will be particularly interested in the quality of the management team, the firms' primary sources, the sustainability of its competitive advantage and its potential for profitable growth.

However, in reality, the relative lack of sellable and clearly defined intangible assets, which either generate an identifiable income stream and/or are adequately protected by patent or copyright laws, tends to increase the cost of obtaining debt capital – or more likely, means that funding is unavailable from any external source. It is unclear that intangible assets reporting and management strategies can really help to overcome this situation. Difficulties arise in quantifying an owner-manager's human capital, for example, and there are significant conceptual and

Figure 8: Finance-related hampering factors (per cent of firms considering them important)

	Innovation costs too high	Excessive perceived economic risk	Lack of appropriate source of finance
Total	21	15	15
Enterprises with innovation activity	24	17	19
Enterprises without innovation activity	19	14	13
Small enterprises	21	16	16
Medium-sized enterprises	19	13	13
Large enterprises	21	18	10
Industry	21	15	15
Mining and quarrying	17	10	8
Manufacturing	22	15	15
Electricity, gas and water supply	9	11	4
Services	20	15	16
Trade	16	12	13
Transport, comms, financial intermediation	20	14	13
Business services	31	24	30

Source: EU, 2004/ Peneder, 2008

legal obstacles presented by the use of intangible assets for loan collateral and debt supply. Furthermore, the costs and administrative burdens of the reporting procedures that would provide the necessary level of detail might easily outweigh the benefits.

Ultimately, high-tech firms have an incentive to engage in systematising their knowledge for the benefit of investors, but this can prove exceptionally expensive relative to proposed gains. To be incentivised, knowledge-based SMEs will need to be able to establish a much firmer link to practical efforts to bridge the 'finance gap' that disproportionately impacts on the sector. Only in conjunction with such policies can a broader case to encourage more SMEs to report their intangible assets be made.

The Value Paradox as a problem of cost vs. benefit

Accounting for intangible assets presents us with what we have referred to as a Value Paradox, as it is extremely difficult, and perhaps impossible, to adequately capture such assets with reliable metrics. In the SME sector, the Value Paradox again appears as a problem of capture, but here it also shows a further dimension. For SMEs, there is an additional and practical problem of costs and benefits. Even if the Paradox could be solved, therefore, it is by no means certain that such a method of capture could and would be utilised.

4. Accounting of intangibles in the public sector

The drive towards increased accuracy of intangible asset reporting is particularly clear in the private sector, where its quantification takes the form of economic benefit and value is standardised in monetary form. Thus, in the private sector, intangible assets are managed and exploited for the simple reason of economic advantage and monetary gain. While interest in intangible assets in the public sector is increasing, there is a notable lack of research that directly examines intangible asset management in public sector organisations.

In this very different realm, intangible asset management, reporting and exploitation is made more complex by the public ownership of such assets, by the subsequent intrusion of different forms of value (social, cultural, political), and thus also, by requirements for different forms of value representation. Economic advantage and monetary gain may therefore be secondary to other factors in the management and exploitation of public sector intangible assets, say, reasons of 'public good'. Indeed, in the public sector, commercial exploitation often finds itself in direct competition with other possible uses of intangible assets, perhaps oriented to values such as accessibility of information. Here, then, accounting for intangibles involves the striking of a balance. On the one side, it is important to maximise the monetary value of such assets. On the other, the 'public task' demands that such maximisation be pursued towards wider goals. In the analysis that follows, this tension is much in evidence.

What are public sector intangible assets?

Public sector intangible assets (PSIAs) come in a variety of forms, and range over research and knowledge, Crown copyright, trademarks, designs and reputation. They may include data and software inventions along with other assets that are far more difficult to account for, such as human skills and organisational processes. In recent years, the public sector has increasingly drawn on intellectual property rights (IPR) as a means of protecting the value of its intangible assets, although the use of IPRs remains much less systematic amongst public sector organisations than private ones. Perhaps the most important – and certainly the most commonly focused on – form of PSIA in the UK is the information assets. Here, the UK public sector boasts an extraordinary array of such assets, including:

- Scientific and research data
- Mapping data produced by the Ordnance Survey
- Data produced by the Hydrographic Office and Met Office
- Primary and secondary legislation, published for and on behalf of HMSO
- Official records of Parliamentary proceedings
- Departmental codes of practice
- Consultative and policy documents

Cont.

Cont.

- Statistics produced by the Office for National Statistics, including Census data
- Annual reports published by government departments, agencies and local authorities
- Company information made available through Companies House
- Statutory registers such as those for birth, death, marriage and land titles
- Patent information held by the IPO
- Health and safety guidance and reports published by the HSE
- Technical reports
- Local planning information
- Regional economic strategies (OPSI, 2005)

The richness of these informational assets alone suggests that considerable value remains potentially to be realised within the UK public sector.

4.1 Drivers of recent interest and policy around PSIAs in the UK

Constrained funding, and the pressures wrought by the recent economic crisis, have served to stimulate recent interest in PSIAs. Mostly driven by government departments and their finance divisions, the overarching concern, on the part of policy-makers, remains that of maximising the value of publicly owned assets – particularly informational assets. To that end, a number of initiatives – such as the Lyons and Gershon reviews; the Wider Markets initiative; and the current Operational Efficiency Programme, – have endeavoured to facilitate additional efficiencies and to utilise spare capacity amongst public service organisations (O’Neil et.al., 2009).

A further driver of the growing attention to PSIAs is the number of innovative practices now emerging in government and non-government agencies that creatively employ such assets in the pursuit of public goals. Increasingly, these initiatives seek to capture values other than simply value-for-money. Yet the appearance of other values constitutes a significant complication of existing private sector attempts to quantify the value of intangible assets. Where, for example, information accessibility or democratic legitimacy is of limited relevance for the private sector, they are particularly pertinent and pressing in the public realm. Thus, for example, the Office of Public Sector Information (OPSI) has enhanced its role in helping the public sector to provide information to the general public in accordance with the European Directive on Public Sector Information. Web technologies are also being utilised under the impetus of the ‘Power of Information Task force’ in order to mitigate a perceived democratic deficit, with an emphasis on empowerment through e-democratisation.

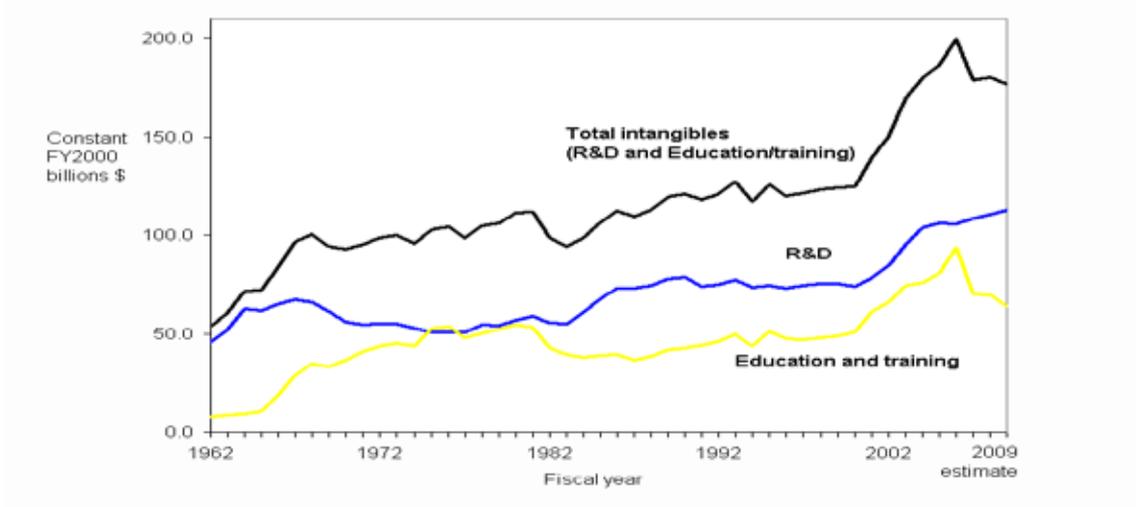
4.2 Although the stock of public sector assets is conservatively estimated to be in the region of £800bn, there is no comprehensive register of public sector *intangible* assets. It is therefore likely that a significant proportion of such assets remain unrecognised and under-developed.

What do we know about the value of PSiAs?

The Office of Fair Trading estimates the value of UK public sector informational assets to be in the region of £1bn (2007). Yet, as already noted, informational assets are but one sub-set of PSiAs. The UK public sector invests extensively in intangibles, with government spending an annual £8bn on research alone. This level of investment is mirrored throughout the EU, although research has shown that Europe lags behind the US in its expenditure on public information assets. A comparative study by PIRA (2000) into investments within the information sub-sector across Europe and the US reveals substantial differences in the gains derived from informational assets. Differentiating between ‘investment value’ – the actual investments in public-sector information – and ‘economic value’ – the value for the economy as a whole, the study estimates Europe-wide ‘investment value’ in information assets to have been an annual €9.5bn and ‘economic value’ an estimated €68bn. In the US, the corresponding figures were €19bn and €759bn, respectively (OPSI, 2005). This suggests that Europe still has some way to go in reaping the full value of its public investment of intangible assets.

In the case of the US, recent analysis by Jarboe (2009) suggests that the federal government invests extensively in a range of intangible assets, including physical capital, R&D and education and training. Levels of federal government investments in these areas increased only marginally between 1968 and 2001, and then increased dramatically after that, reaching an all time high in 2006 in real terms. The 2006 levels are expected to have declined in 2008 and 2009, however, due to anticipated decreases in education and training expenditures.

Figure 9: US federal government investment in education/training and R&D



Jarboe also provides a breakdown of federal government spending in 2006 which he acknowledges to be rudimentary but which, even then, makes clear the scale of US annual public investment in intangible assets.

4.3 Accounting for and reporting on PSIAs

Up to now, government has struggled to comprehend, pinpoint and assess the worth of public-sector intangible assets. Their efforts have been impeded by the fact that the processes that would ensure effective management and exploitation of PSIAs – including the relevant tools, skills and incentives – are underdeveloped. Inadequate capture is also due to the inevitable difficulties that arise when attempting to define intangible assets, particularly where relevant market knowledge is lacking. As already noted, there is a further lack of clarity as to the nature of intangible assets in the public sector, and of adequate conceptual frameworks (though this is currently being addressed by an impending UK IPO report on this very issue).

It has also been suggested that government accountancy practices and governance mechanisms are partly to blame. Current work by the UK Intellectual Property Office suggests that amongst the barriers to exploiting intangibles are current Treasury rules that allow public bodies to retain only 20 per cent of commercial revenues generated above forecast. Any surplus thereafter must be reported to HMT. As the OPSI states:

Figure 10: Estimate of US federal government investment in intangibles (2006)

Information and intellectual property	
R&D funding (does not include facilities and equipment)	\$122.4bn
Arts & humanities/museum funding (including Smithsonian)	\$1.0bn
Government information creation	
Statistical agencies	\$2.2bn
Weather service	\$0.7bn
Library of Congress/CBO/GAO	\$1.0bn
PTO	\$1.6 bn
Individual human capital (know-how)	
Education and training	\$61.0bn
Training of government personnel (military)	\$9.0bn
Social capital (alliances & networks)	
<i>Organisational capacity building & technical assistance</i>	
Community (HUD, EDA, HHS, USDA extension service)	\$0.5bn
Company (MEP, SBA)	\$0.5bn
Brands and marketing – reputation	
Export promotion	\$1.5bn
Product safety, food safety, drug safety (investments in product reputation)	\$3.0bn
Total	\$204.4bn

N.B.: The above calculations do not include tax expenditures or value of landing slots, grazing rights, water rights, mining rights, spectrum and broadcast licenses, etc.

'Public sector information has been an underutilised asset, probably because the incentives facing public sector bodies have not made facilitating the re-use of their information a priority for them. Even bodies which have had accessible policies have not necessarily aimed for consistency of practice with other public sector bodies' (OPSI, 2005).

4.4 From commercialisation to co-creation: Models of PSIA exploitation

Emerging practices around intangible asset management suggest that a rather more complex and specific set of goals pertain to public sector organisations than to private. Public service organisations confront all the difficulties of intangible asset reporting in the private sector – such as problems of definition, conceptual clarity and quantification – as well as the tension between the commercial and 'core public task' imperatives of the organisation. Unsurprisingly, therefore, there is no single model for intangible asset use and exploitation in the UK public sector. Indeed, surveying current initiatives in accounting for PSIAs serves to highlight the tension between straight commercialisation on the one hand, and open information that arises by virtue of the public task on the other. So, for example, we see many initiatives driving intangible assets to secure additional revenue for public bodies and a consequent analysis of how best to achieve this end. Many organisations (such as the MOD) pursue a strategy of securing and commercially exploiting intellectual property rights, and thus rest on an avowedly commercial model of asset exploitation.

Running alongside such innovations in commercialisation, however, are a growing number of initiatives that seek to exploit PSIA's towards quite different ends. Here, a more radical and open model of exploitation is exploring the 'gifting' PSIA's to the public sphere in the hope that they might facilitate the generation of not only economic, but also social, cultural and democratic returns. Indeed, Ahmed Bounfour has argued that such initiatives evince a 'community perspective' that operates alongside the dominant commercial model; one he terms a 'transaction perspective'. While commercial innovations in the exploitation of PSIA's are driven by efficiency concerns and are product-orientated, the 'community perspective' is a matter of networks and knowledge sharing. This, then, is more of a 'gift counter gift' model, which, he argues, is of particular value in a knowledge economy.

A number of recent projects have demonstrated the value-creating potential of 'gifting' informational assets into the public sphere. For example, public sector informational assets underpin the content of a number of online communicative tools including mysociety.org, which has enabled 200,000 people to write to their MPs for the first time; theyworkforyou.org – the politics site – which was visited two million times in 2007; Writetothem.org which has been used to send over 400,000 messages from citizens to politicians and fixmystreet.org which has led to 25,000 reports of local roads in need of repair. Such examples clearly show the potential for informational PSIA's to generate significant other values, over and above that of commercial gain. Moreover, these 'other values', including as they do social, cultural, civic and political gains, can often be shown to be fulfilling elements of the core public task of the public organisation itself.

The appearance of other values as part of the public task, over and above that of economic gain, clearly complicates the identification of, and accounting for, intangible assets in the public sector. These differing values – often arising from the value-creating potential of open information – generate tensions and conflicting incentives. Clearly, how the public task of an organisation holding PSIA's is conceived has significant import for the appropriate models of exploitation.

The importance of recognising values other than straight commercialisation has been recognised by the current IPO project, the aim of which is 'not necessarily to promote commercialisation of intangible assets in the public sector but to consider how best to maximise the impact for the benefit of the United Kingdom as a whole.'

It is thus imperative for public sector accountancy initiatives to acknowledge that PSIAs lie along a spectrum, with pure commercialisation at one end and pure gifting – in the hope of generating different values – at the other. At the gifting end of the spectrum, value is effectively ‘co-created’ between the holder and the user of PSIAs.

An assessment of public sector intangible assets may, therefore, have to allow for *two* sets of criteria if an adequate assessment strategy is to be formulated. Indeed, to the extent that initiatives do lie along a spectrum ranging from commercialisation to co-creation, many public agencies are likely to reap benefit from mixing models. So, for example, the National Archives at Kew use commercialisation strategies to fund the development of more publicly-oriented resources (eg the National Archive digitisation of the 1901 and 1911 censuses), which they then make more widely available through a project – funded by its commercial partner – to charge for premium access services and so subsidise general public access.

Another influential example of co-creation is afforded by the BBC’s ‘Backstage’ project. backstage.bbc.co.uk is an innovative information-based website that provides the general public with access to, and influence over, BBC material. It allows the public to creatively re-design that material or feedback ideas as to how it might be better used. The website is one aspect of the BBC’s attempt to ‘build public value’, as the following statement from the BBC governor makes clear:

‘The BBC will support social innovation by encouraging users’ efforts to build sites and projects that meet their needs and those of their communities ... The BBC will also be committed to using open standards that will enable users to find and repurpose BBC content in more flexible ways.’

A recent Power of Information Task Force (2008) report has favoured adopting the BBC model in an attempt to refashion the relationship between the public and the government. The task force sees a number of advantages that may arise when public services adopt this model: it provides an ongoing source of innovative ideas for the use of government information; build stronger relationships and strengthen the capabilities of those working inside and outside government; and, finally, serve to address issues relating to what is often inaccessible government information. According to the task force, public sector websites should work in conjunction with the government to create a government backstage capability that endeavours to both develop talent and work in the public interest. If successful, a world class innovation

and R&D initiative is anticipated. Indeed, it is likely that, following collaboration with the task force, the government website [Direct.gov](https://www.direct.gov) will adopt the BBC model, and has already launched their first comparable platform: innovate.direct.gov.uk. The task force has also urged UK trading funds to examine non-commercial re-use licences, such as those pioneered by the BBC's 'Backstage' project and Google Maps.

Conclusion:
The public
value
of PSIAs

The state of the debate around models of intangible asset exploitation in the public sector is beset by recurrent conceptual and definitional problems and a marked lack of coherent research. Current initiatives suggest that commercialisation and open information both have their place, and that the gifting of publicly owned IP may be effective in co-creating other forms of value – with these reflecting core elements of an organisation's public task. In the public sector, therefore, the Value Paradox inherent in seeking to account for intangible assets appears not only as one of capture, but also one of function. It here takes the form of a potential opposition between the creation of private value and the co-creation of more public values.

In a democracy, social values are mandated by the citizenry. The value of an intangible asset is thus, in the final analysis, to be determined by citizen preferences. Certainly, these always include value-for-money and financial prudence, as well as the meeting of legal and administrative requirements. But so are public sector resources to be exploited *for* the public good. One conceptual approach to the operation of the public sector in this way is that of 'public value' which stresses precisely the need for value creation to orient to public preferences (see, for example, Horner, Blaug and Lekhi, 2006). Such an approach counsels organisations to consult systematically with their stakeholders in order to find creative means and ends for their intangible asset exploitation. When deployed for social benefits mandated by the public, intangible assets have the capacity both to secure revenue and to generate other forms of value. Indeed, given the often unique nature of the informational and other intangibles assets developed in the public sector, the need – and indeed potential – for more innovation at this end of the spectrum is particularly clear.

One consequence of the above is that it demands that policymakers and senior public managers understand, debate and communicate the nature of the public task(s) that their organisations pursue. Current debates about the use and exploitation of PSIAs are often characterised by a worrying lack of clarity about what public organisations should actually be trying to do. Decades of overt concentration on value-for-money, new public management and audit culture have clouded the nature of the public task to the extent that some confusion now

arises as to the appropriate goals that should orient the leveraging of intangible assets by public bodies. Were this clarity available, it is clear that there remains a huge potential for the more creative exploitation of IAs in the public sector, and for far more innovation in the co-creation of value. This might open up possibilities such as, for example, relating brand equity to public value, where integrity of brand is intimately related to evidenced levels of public trust.

Conclusion: The paradox of accounting for intangibles

C.1
'The Value Paradox'

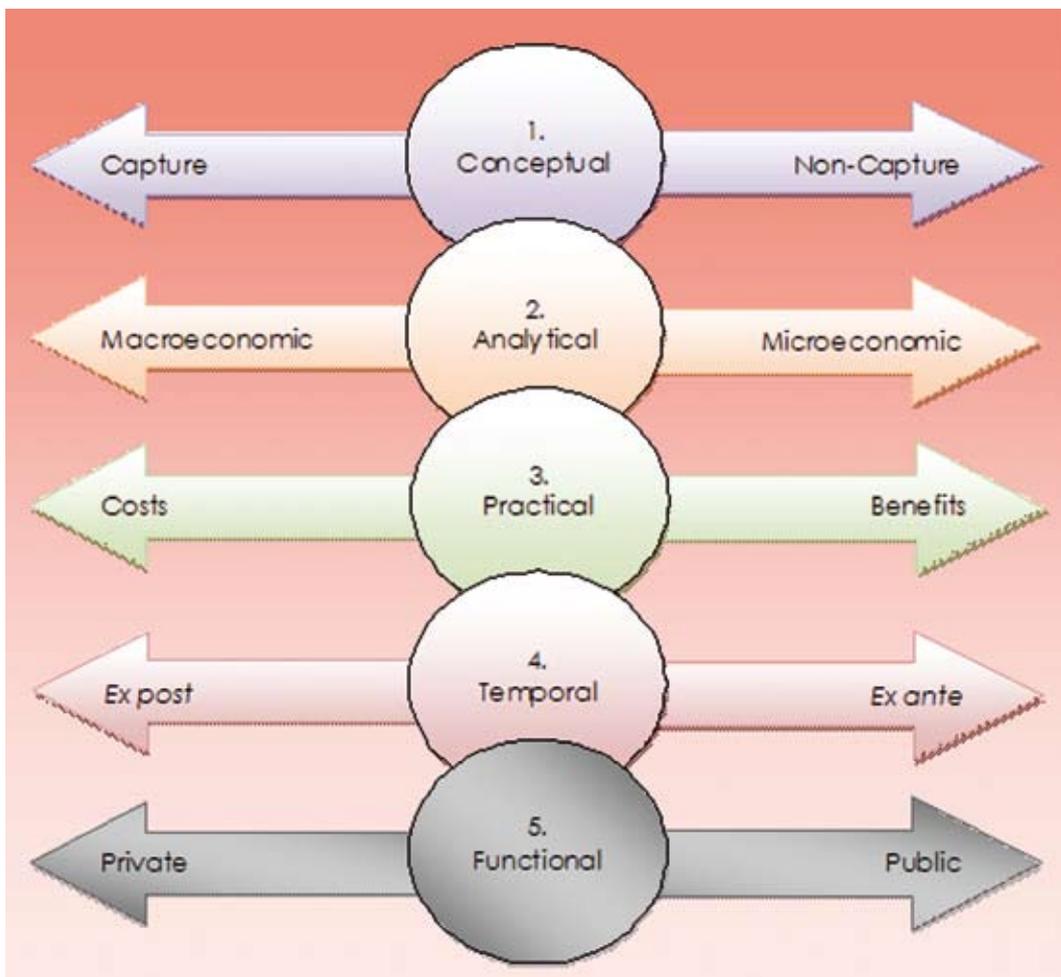
As we have seen, throughout this study, macroeconomic research demonstrates that investment in intangibles is a core and vital driver of economic value creation in the UK. Yet the value-creating capacity of intangible assets now stands in stark contrast to current accounting practice. In the knowledge economy, emerging forms of value have effectively outgrown their methods of representation. This disconnect has prompted significant debate, with suggestions for possible reforms of accounting practices pitted against denials that such reforms are viable or even necessary. In many ways, therefore, the current debate is at an impasse, and has been so for a number of years. As this study shows, this impasse is exacerbated by a chronic conceptual confusion about what, precisely, an intangible asset is, whether its value can be adequately captured and by the acceptance that, though accountancy practices clearly need to change, there are few practical means available to effect such change. This paradox, between something we actually use to create value yet which escapes adequate demonstration or quantification is what we have referred to in this report as the *Value Paradox*.

For the most part, the Value Paradox takes the form of an evident demand for capture of intangible value on the one hand, and the fraught difficulties of such capture on the other. Such a conception results in a demand for a revolution in accounting practices that it cannot possibly deliver. There is no 'golden' metric for intangible value, and accountancy is not designed to deliver one even if there was. Traditional accounting tools function as a guide to past performance. Yet the focus on intangibles requires an orientation to future value-creation. The paradox does not, of course, exist *ex post*; for here, value has already been created. When deployed *ex ante*, however, the paradox is amplified, as this still-to-be-created value cannot be represented in the present. Even if the Value Paradox was conducive to a solution, therefore, accountancy is not designed to deliver one.

As has emerged across this study, one reason we are currently at this impasse is because the problem of accounting for intangibles has been misconceived. The Value Paradox not only pertains to whether or not intangibles assets can be better captured. As our explorations of the SME and public sectors reveal, the Value Paradox is experienced in different forms by different actors. In the course of this research, we have identified five distinct dimensions of the Value Paradox. One is certainly of capture, and this is how it has traditionally been conceived. Second, is analytical, and depends on whether nations or firms are the object of study. The third is practical, and revolves around basic calculations of costs and benefits of intangible asset management strategies. The fourth is a temporal dimension of the Value Paradox, and relates to the capacity to make *ex ante* judgments on the basis of *ex post* information. Fifth, and finally,

is a functional dimension pertaining to the sort of value that intangibles are being used to create. Only by understanding these distinct dimensions of the Value Paradox can we hope to fulfil the value-creating potential of intangible assets. Where we conceive of the Value Paradox merely as one of capture, the burden of managing the paradox falls disproportionately on accounting professionals. In the face of the multidimensionality of the Value Paradox, its management requires public policy to engage on a much broader scale with the issue of intangible asset exploitation than has hitherto been the case. What the full paradox reveals is how much we will always struggle when we use existing tools to engage the potential of knowledge exploitation. Certainly, the knowledge economy requires that we orient our understanding and resources in more coordinated ways if we are to unlock the full potential of our innovative capacities.

Figure 11: The Five Dimensions of the 'Value Paradox'



C.2 National accounts

Policy implications

Government has largely failed to appreciate the extent and diversity of intangible assets that drive economic value and has often restricted its focus in policy to enabling greater investment in R&D. This is, in part, the result of deficiencies in the evidence base used by policymakers. The international system of national accounts is very restrictive in its approach to knowledge-based assets and consecutive revisions to coverage notwithstanding, continue to fail to give proper account of the scale of intangible investment in modern economies. While the 1993 revision of the SNA did incorporate a number of hitherto excluded intangible assets – such as software, artwork and mineral exploration – its scope remained narrow (Schreyer, 2007). As a result, certain R&D expenditures continued to be taken to constitute consumption expenses. The recent revision in 2008 has addressed this issue somewhat by incorporating R&D capitalisation into the SNA; however, other investments in intangible assets ought also now to be included. As we noted earlier, companies invest in a host of intangible assets other than R&D to enhance their technological capabilities and bring innovative products to the market (Baldwin et al, 2004). Early estimates suggest that such investment is already likely to have outgrown levels of investment in intangible assets in the UK (£123bn to £96bn in 2004).

In the light of this, there is now a growing effort to better understand the real drivers of economic growth and prosperity in the UK. Work undertaken by the Treasury, the Office for National Statistics and the Department for Business Enterprise and Regulatory Reform has led to the development of more innovative, inclusive and useful national statistical analysis around intangible asset investment. The UK is not alone in these efforts. In Europe, there is a similar drive towards understanding the causes of growth in the knowledge economy. Thus, *Coinvest, Competitiveness, Innovation and Intangible Investments in Europe*, has been set up by the EU to better understand the contribution of intangible investments to innovation, competitiveness, growth and productivity. In the U.S, the Bureau of Economic Analysis (BEA) is considering many of the same factors. This includes attempts to measure human capital, economic competencies and innovative capital. To this end, the BEA is proposing to include a wider array of intangible statistics in a satellite national account by 2013. Further, the BEA is also cultivating working relationships with the National Science Foundation and the Census Bureau in an attempt to arrive at a better understanding of the real drivers of productivity and growth in the economy.

We think there is undoubtedly a case for building on the UKs expertise in this area through a similarly expanded programme of research focussed on understanding and representing the nature of intangible assets driven growth in the wider economy. Here, also, a satellite national

account for UK would entrench the gains made in our understanding with view to their eventual adoption as best practice in the SNA more widely.

Recommendations

- Policy-makers and researchers should continue to develop our macroeconomic understanding of the role of IA investment in the knowledge economy.
- The government should publish annual estimates of intangible investment by major sector, building on the reports published by HMT and BIS; and support the ONS in developing more robust measures for inclusion in the national accounts and international comparisons.
- BIS already publishes league tables of investment in R&D based on company reports, a valuable source of benchmarking and information. The department should consider extending this approach to other intangible investments where sufficient information exists.

Reform of accounting and reporting practice

There is general agreement amongst most stakeholders that current accounting practice does not describe the value of intangible assets at the company level particularly well. However, once acknowledged, there is little agreement amongst those same stakeholders about how to proceed with meaningful reform. Currently, there appears to be very little appetite for reform of formal accounting standards and indeed a broad recognition that the focus of debate has been too heavily weighted to the need to address perceived deficiencies in such standards. In light of the current economic crisis, this emphasis on accounting standards is unlikely to progress practical and conceptual debates. As one investor noted in interview:

'The priority areas for governments right now are reviving economic growth, stimulating lending and borrowing, encouraging investment and all the while making sure banks are prevented from making the sorts of errors which led to the current economic difficulties. In these circumstances, regulators are likely to limit attempts to (re)value intangible assets for fear of replacing inflated tangible assets (like property assets and toxic paper such as CDOs, etc) with inflated intangible assets (like brand value, etc).'

Conclusion: The paradox of accounting for intangibles

As noted throughout this report, the problem presented by intangibles is more than an accounting problem and debates around firm-level accounting reform appear to have stalled. Those advancing more ambitious and prescriptive programmes for change are met with a good deal of scepticism amongst many of the stakeholders we have spoken to – particularly representatives of accountancy practitioners, financial analysts and investors. However, it is not clear that less prescriptive frameworks would solve the problem either – given that looser frameworks might give rise to inadequate, selective, inconsistent information sharing by companies.

Nevertheless, the argument that ensuring that the non-financial information about firms' intellectual assets is consistent, comparable over time and across companies, allows investors to better assess future earnings and the risks associated with different investment opportunities and should contribute to making financial markets more efficient. Moreover, the idea that improved information about intellectual assets and company strategy also improves the ability of firms to secure funding at a lower cost of capital – still garners considerable support within the corporate sector.

Even here, however, there has been a notable shift in emphasis away from preoccupations with accounting practice and towards a more specific focus on 'reporting' practice. Here, we spoke to a number of advocates of good practice in corporate reporting who saw it as a core function of corporate accountability and the articulation of strategic drivers of value creation. This is, we think, a helpful shift and has facilitated a much broader discussion of effective practice in corporate reporting than the narrow focus on accounting practice allows for. Recent innovations in corporate reporting of intangible assets are to be welcomed and to be further encouraged as part of our broader learning about how intangibles create value at the firm level and how that value can be sustained and enhanced in business.

Recommendations

- In moving debate forward, the primary focus must be on efforts by companies to report intangibles in a more consistent and comprehensive way: whatever the theoretical benefits of changes to accountancy practice, efforts to find a practical way forward have not proved successful.
- Policy-makers should promote educational/business training initiatives with a view to building broad capacities in intangibles management.

- Trade associations and other business organisations have a role to play in encouraging greater consistency and making sure that the value of intangible investments is widely recognised by firms, investors, shareholders and managers.

SME finance

There is evidence to suggest that knowledge-intensive small firms struggle disproportionately to raise equity or debt finance – particularly at the earliest stages of their development. In large part, this is due to the intangible quality of the assets that are intended to back up the proposed investment or loan. Given the current global aversion from risk, the lack of tangible collateral to back up investment and lending will undoubtedly hinder knowledge-intensive small firms' access to early-stage finance even more severely in the future. Faced with such severe investment constraints, there is a case for government to underpin efforts to innovate in the provision of funding for early stage knowledge-intensive SMEs. This might involve targeted co-investment with the private sector in venture capital funds directed at enabling innovative collateralisation strategies for intangible rich investments.

There are only a few examples of such innovations at present but those that do exist point to learning for a future in which demand for such strategies is only likely to intensify. One notable example of innovation in the collateralisation of loans to knowledge-intensive (mostly medium sized) companies is that of the German Landesbank Rheinland-Pfalz , a commercial bank in the legal form of a public sector financial institution. According to the OECD (2006), the LRPf has accepted technical documentation of research projects as (additional) collateral for the financing of development projects for mid-size companies. These loans have involved about 40 transactions worth in the region of €140m. In addition to this, regulatory changes led by the Federal Financial Supervisory Authority (BaFin) in Germany have enabled banks to accept patents as a sole security for lending.

Despite the exploratory potential of these sorts of initiatives, the inherent instability of most SMEs means that it is imperative that both direct and indirect state assistance is provided selectively and at the right stage of their development. Research by The Work Foundation has shown that the SMEs that are constrained or fail as a result of the existing imperfections in market conditions can be most accurately detected only after the precarious initial stages of SME development. Once again, it is the Gazelles that can be most effectively helped and which offer the greatest gains for the lowest risk. One way of ensuring that public funds are safeguarded as far as possible, therefore, is to limit state assistance to the expansionary stage of the firm's growth cycle, rather than the more precarious start-up stage, and to do so to firms most likely to rapidly expand.

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There is extensive debate about the best policy options to pursue in this regard. For example, specific firms can be funded directly or indirectly through fiscal incentives. The direct funding of specific firms involves providing grants or preferential loans to firms at crucial stages in their development. However, important as these subsidies can be for launching large, innovative projects, they tend to be limited in scope and, due to funding constraints, are often highly selective. Indirect incentives to promote the flow of private finance to specific sectors might include tax exemptions – for example, from capital gains accrued as a result of investments in particular types of technology and/or sectors. Another option available to policy-makers is to stimulate capital markets. This can be done via regulatory reforms, equity programmes and guarantee schemes. Given the complexity of the issue at hand – financial constraints that impede innovative entrepreneurship – and the current economic context that we confront, it is likely that any attempt to enhance the development of knowledge-based SMEs in the future will need to draw on the range of policy instruments suggested above.

- New advice services should be developed to help SMEs make the best use of intangible assets: the work of the Intellectual Asset Centre in Scotland is one example of how this could be done.
- As suggested in the 2009 White Paper, *New Jobs, New Industries*, the government should encourage the development of new financial institutions at both the national and local levels to meet potential funding gaps for knowledge intensive, intangible-rich but physical asset-poor SMEs. To that end, such institutions might:
 - Underwrite loan guarantees to businesses in ways that allow them to more effectively leverage their (probably, as yet, uncaptured) intangible assets for financing.
 - Facilitate the securitisation of IP assets, taking an intangible asset such as a patent licensed to a third party and generating future cash flows from license payments or royalties to secure current financing for the licensor.
 - Use tax credits and/or targeted investment strategies to facilitate greater use by UK business of currently under-utilised capacity within UK universities for innovation.

The dilemmas of state directed innovation: the case of UK biotechnology

Much like pharmaceuticals biotech is a sector that is dependent on research and development, innovation, product pipelines and protected intellectual property. Despite the funding and support given to the industry the performance of the biotech industry as a whole has been poor and the sector is now seeking significant government support.

The push to support biotech in the UK was part of a wider government strategy to '*...promote creative partnerships that help companies to collaborate for competitive advantage, to promote a long-term vision in a world of short-term pressures, and to benchmark their performance against the world's best.*'⁴⁵

In 1999 the Department for Trade and Industry launched an action plan on how to create 'Genome Valley' in several areas in the UK. At the time the biotech industry was 2nd only to the US. As part of this strategy the government launched the £21m Bio-Wise programme, the aim of which was to provide funding to firms that wanted to use biotech processes in their production.⁴⁶

In addition to this there have been a number of other initiatives to push forward the biotech industry. In 1999 £6.45m was allocated to ensuring that the UK remained the number one biotech economy in Europe. On announcing the initiative the Minister for Science, Lord Sainsbury, stated that, '*...dedicated bioscience firms are already investing £350m per year in research and development.*'⁴⁷ Meanwhile in 2001 the UK biotechnology council set aside funds of £33m for a genomics research initiative.⁴⁸

The aggregate estimate of the investment in sciences as a whole is considerable. In the 1998 budget the government increased the science budget by 15 per cent. In addition to this the government then reviewed this so that expenditure in sciences increased. Further, in conjunction with the Wellcome Trust the government invested £1.75bn in the upgrading of scientific research infrastructure. Finally, the government introduced a tax credit for research and development worth an estimated £400m.⁴⁹

The chart below shows the performance of UK biotech as an industry since the government intervention in May 1999. From the chart it is clear that the industry has not performed well and is actually now performing at a lower level than it was prior to the government support.

Cont.

⁴⁵ Source: High Beam Research, UK formulates long-term R&D vision (1999)

⁴⁶ Source: High Beam Research, UK formulates long-term R&D vision (1999)

⁴⁷ Source: High Beam Research, Funding boost for biotechnology in innovation (1999)

⁴⁸ Source: <http://www.genomeweb.com>

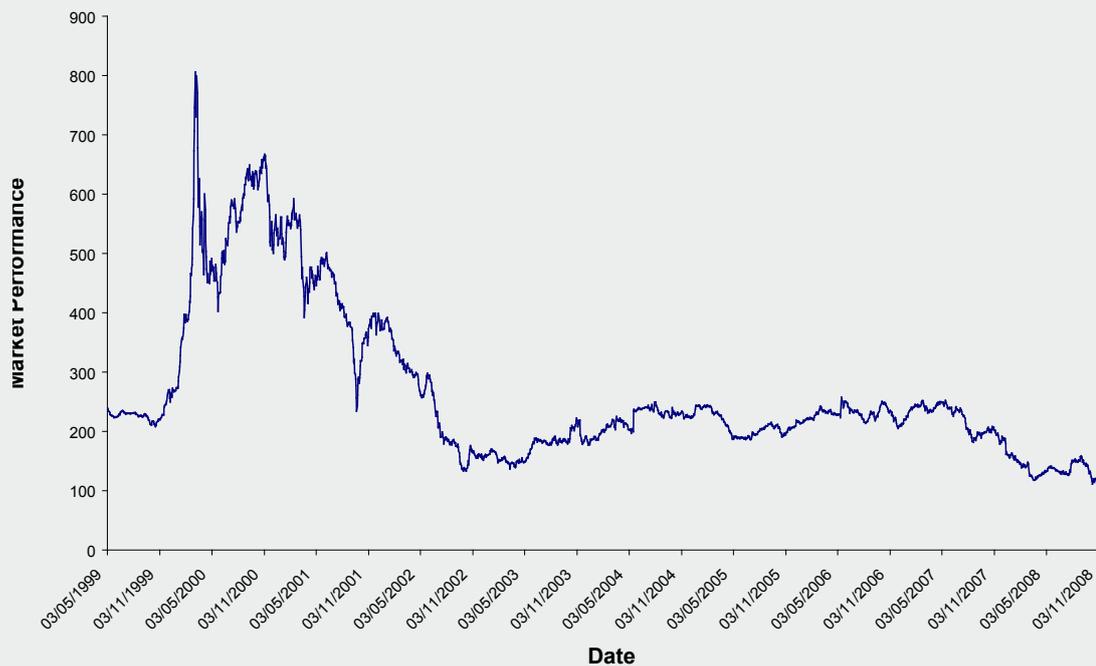
⁴⁹ Source: Speech by Tony Blair on British Sciences, May 2002

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Cont.

In May 1999 the then Secretary for Trade and Industry Stephen Byres instituted an action plan in support of UK biotech that included a public image campaign (to counter adverse publicity in the aftermath of the BSE and GM crop controversies) and more importantly, a review of the tax relief provided for research and development activities.

UK Biotech industry performance May 1999 – December 2008



Nevertheless, despite the intervention and support given to the industry, the performance of the industry as a whole has clearly been less than impressive.

Most recently 22 leading figures from the UK biotech industry have requested urgent government support for the industry that (in the face of the global contraction of credit and investment) they argue is now on the verge of collapse. Their proposal involves establishing two funds, with a minimum of £500m in each, with equal contributions from the private and public sectors. One fund would be intended for the consolidation of the smallest biotech companies and the other for growth companies that cannot currently raise money in the markets. In promoting the need for such funding, Sir Christopher Evans, the founder of the medical sciences investment house Excalibur, bluntly described the situation confronting the biotech industry at the end of 2008: *'There is just no cash available at any stage, from any source, for any type of biomedical company.'* As a consequence, he suggests, up to 400 biotech companies could be out of business during 2009.

Cont.

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The biotech industry is however fraught with risk and there is clearly a mismatch between government policy that has supported biotech as a core knowledge economy industry and the reality of what investors are seeking. As an industry that has been operating for 30 years biotech has only managed to produce two companies that have a market value of over £1bn. Further, many of the more promising firms are bought by larger pharmaceuticals to get access to the potentially lucrative drugs that these firms are likely to produce. However, even where a firm shows great potential such deals only occur after two rounds of clinical trials and the cost of getting through such a process is both expensive and risky.

It is clear that potential investors in biotechnology want considerably more certainty when investing. As Tim Monfort head of equity capital markets at investment bank Jefferies and Co. recently suggested to Reuters: *'Most biotechs are largely selling early-stage concepts, making it likely they will not be appealing to investors for a while yet'*.

Further in its most recent report on the biotech industry, Ernst & Young argues that the initial waves of enthusiasm that engulfed the biotech industry – particularly in the immediate aftermath of the completion of the human genome mapping exercise – have given way to rather more circumspection amongst investors confronted with the long lead times associated with bringing a successful product to market. As a result, according to Eric Schmidt, a biotechnology analyst at Cowen and Co., investors are not 'looking for another Phase 1 or Phase 2 stage company'. Rather, investors are increasingly focused on larger established biotech companies who have successfully brought products to market and have established and resilient revenue streams. As Schmidt notes, investors are increasingly looking to buy 'assets not concepts'.

Public sector intangible assets

The evidence reviewed above makes clear the need for government to more fully comprehend the value-creating potential of its intangible asset base. The notable absence of relevant research indicates that more information on the value of public sector intangible assets is urgently required. To that end, an urgent priority must be for departments and agencies to develop a robust and comprehensive asset register that lists the full range of departmental intangible assets.

The first systematic investigation of management and reporting practice in respect of public sector intangible assets, being led by the UK's IPO, will bear heavily on immediate progress with

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this task. The IPO project report to the Minister for Intellectual Property and Higher Education is likely to recommend the development of practical steps in the management of intangible assets which might be included in the budget process. The IPO is also planning to identify at least five public sector institutions for a pilot scheme in which the latter will be taken through the valuation process.

After pilots, the IPO plans to comment in detail on the viability of the valuation process and publish details regarding best practices. All of this is to be welcomed. However, while there is no one-size-fits-all approach to the management of PSIAAs, there does appear to be a need for a greater focus on the broader conceptual framework associated with (future) intangible assets exploitation in the public sector. This should provide guidance about the balance to be struck between the commercial and public value of intangible asset; the relationship of such activities to the core 'public tasks' of departments and agencies; and the role of more innovative strategies of intangible asset exploitation – including brands, reputation, etc.

Recommendations

- There is a need to develop an overall strategy for public IA investment that incorporates a wider recognition of intangible value than allowed for by patent and copyright protection.
- There should be a cross-cutting audit of the public sector's intangible asset base as part of the next Spending Review. A key objective would be to identify how the public sector can make best use of the intangible assets it has at a time of overall spending austerity, including new forms of revenue raising.

Final remarks: greater co-ordination in industrial policy

The above policies would serve to address many of the dimensions of the Value Paradox. However, they require significant coordination across government and individual public agencies – without which they are likely to have limited impact. In confronting the need to fundamentally reassess the priorities and directions of economic development, this degree of coordination may enable a strategic shift in the capacity to deliver the full benefits of the knowledge economy in the UK. To this end, we see value in exploring the possibility of bringing these policies together within a broader framework of coordinated investment, delivered through an institutional framework focussed on the expansion of the UK's high value knowledge-based sectors.

The need for a strategic focus in economic policy, that encourages long-term investments in productive assets over short-term rent seeking, has been acknowledged by a range of policy actors. Most recently, the shadow chancellor George Osborne suggested the need for 'a long-term and more strategic attitude to investment in infrastructure, skills and new technologies'. Moreover, recent government work in this area – most notably DIUS' 'Innovation Nation' White Paper – has sought to provide intellectual leadership and a new direction for UK innovation policy. However, in light of the recent abolition of DIUS and the incorporation of the innovation (and Universities) agenda within the vast Department of Business, Innovation and Skills, much recent commentary has focused on the dangers of DIUS' strategic focus being lost within a department with other significant and pressing priorities. Nevertheless, it may be that a more centralised approach enhances rather than hinders the possibility of cross-cutting coordination of innovation policy.

Accordingly, we think there is mileage in exploring the idea that at the centre of an institutional arrangement focused on delivering high value, knowledge based growth, there should be a national knowledge bank. Also, based on the need to rebuild confidence in the commercial banking sector, this would be a 'good' bank, an investment bank financed by the state to coordinate strategic investment in knowledge-intensive industries. A knowledge bank would also provide a focus for science, policy and investment; research into the value and value enhancement capacities of intangible assets (public and private); and operate within a broad set of strategic priorities including the need to rebalance the UK economy in favour of high value knowledge industry.

Of course, the concern with national coordination of innovation and the shift to knowledge based industries is not new and one shared across the world. For example, long established innovation systems in the Nordic region will have much to teach us about remodelling an economy out of debilitating recession (cf. Finland in the 1990s). However, where there is often reflex hostility to purposeful state intervention in and coordination of industry – and this includes the UK – large-scale models of economic renewal will require more complex negotiations amongst a broader set of stakeholders than may be the case elsewhere.

To that end, recent work has begun to develop a more nuanced understanding of the complex interests and dynamics that any attempt to invent or renew a national innovation framework inevitably confronts. For example, Bendis and Blyer (2009) have recently proposed that a national innovation framework in the US might involve a dedicated innovation champion at the

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centre of government, a National Innovation Seed Fund (to invest in early stage providers of investment capital), and a National Public-Private Partnership Innovation Program (the purpose of which is to coordinate government, university and private-sector players in knowledge transfer and commercial exploitation). In the UK, a number of these functions are already in place – undertaken by, for example, NESTA and/or the Technology Strategy Board. The challenge will be to scale up the efforts of these organisations to co-ordinate their policy and practice activities within a broader (and more ambitious) framework within which the UK's longer-term shift to a knowledge-based economy is made real.

References

- ACCA, 2007, Intangible assets and SMEs: report of the acca seminar held February 2007
- Aghion, P. and Bolton, P. 1992 'Distribution and Growth in Models of Imperfect Capital Markets', European Economic Review, Papers and Proceedings of the 6th Annual Congress of the European Economic Association 36(2/3): 603-611
- Aizcorbe, A. M., C. E. Moylan and C. A. Robbins, 2009, Toward Better Measurement of Innovation and Intangibles, Bureau of Economic Analysis Briefing
- Albu, M. and H. Romijn. 2002. 'Innovation, networking, and proximity: Lessons from small high-technology firms in the United Kingdom, Regional Studies, 36 (1): 81-86
- Allsopp Review, available at www.hm-treasury.gov.uk
- Ark, B. V., M. O'Mahony and M. P. Timmer, 2008, The Productivity Gap between Europe and the United States: Trends and Causes, 22, 25-44
- Arrow, K. J., 1962, Economic Welfare and the Allocation of Resources for Invention, in The Rate and Direction of Inventive Activity: Economic and Social Factors, Princeton, Princeton University Press, 609-26
- Bank of England. 2001. Financing of Technology-Based Small Firms: BoE Report
- Barber, J., Metcalfe, J. S. and Porteous, M. 1989. Barriers to growth in small firms. London: Routledge
- Barlevy, G., 2007, On the Cyclicity of Research and Development, American Economic Review, 97, 1131-1164
- Beatty, A. and J. Webber, 2005, Accounting Discretion in Fair Value Estimates: An Examination of SFAS142 Goodwill Impairments, Journal of Accounting Research, 44, 257-288.
- Beatty, A., P. G., Berger and J. Magliolo, 1995, Motives for Forming Research & Development Financing Organizations, Journal of Accounting and Economics, 19, 411-442
- Bendis, R and E. Blyer 2009 'Creating a National Innovation Framework: Building a Public-Private Support System to Encourage Innovation', Science Aprogress, April
- Bens, D. A., W. Heltzer, and B. Segal 2006, The Information Content Goodwill Impairments and the Adoption of SFAS 142, Working Paper, University of Arizona
- Bens, D. A., J. D. Hanna, and X. F. Zhang, 2003, Research and Development, Risk, and Stock Returns, Working paper, University of Chicago
- Berggren, B., C. Olofsson and L. Silver, 2000, 'Control aversion and the search for external financing in Swedish SMEs', Small Business Economics 15, 233-242.
- Berkovitch, E. and M. P. Narayanan, 1993, Motives for Takeovers: An Empirical Investigation, Journal of Financial and Quantitative Analysis, 28, 347-364

References

- Blanchard, O., 2004, The Economic Future of Europe, *Journal of Economic Perspectives*, 18, 3-26.
- Bloom, N. and J. V. Reenen, 2007, Measuring and Explaining Management Practices across Firms and Countries, *Quarterly Journal of Economics*, 122, 1351-1408
- Bounfour, A., 2005, 'Modeling intangibles, transaction regime versus Community regime', in Bounfour A., Edvinsson L. (eds.), *Intellectual Capital for Communities, Nations, Regions and Cities*. Elsevier Butterworth-Heinemann
- Brinkley, I., 2008 *Enterprise and the Knowledge Economy*. The Work Foundation
- Camino, D. & Cardonne, C. 1999 'The valuation and cost of credit insurance schemes for SMEs: the role of the loan guarantee association'. *International Small Business Journal* 17 (4) pp 13-31
- Canibano, L., M. Garcia-Ayuso, and M. P. Sanchez, 2000, Accounting for Intangibles: A Literature Review, *Journal of Accounting Literature*, 19, 102-130
- Canibano, L., M. Garcia-Ayuso, and M. P. Sanchez, 1999, The Value Relevance and Managerial Implications of Intangibles: A Literature Review, Working Paper, Autonomous University of Madrid
- Canton, E., and H. Uhlig, 1999. 'Growth and the Cycle: Creative Destruction versus Entrenchment.' *Journal of Economics*, 69, 239-66
- Carpenter, R. and B. Petersen. 2002. 'Capital Market Imperfections, High-tech Investment, and New Equity Financing' *Economic Journal*. (February)
- Chambers, D. J., 2007, Has Goodwill Accounting Under SFAS 142 Improved Financial Reporting? Working Paper, University of Kentucky
- Chaudhuri, S., P. K. Goldberg and P. Jai, 2006, Estimating the Effects of Global Patent Protection in Pharmaceuticals: A Case Study of Quinolones in India, *American Economic Review*, 96, 1477-1514
- Chen, C., M. Kohlbeck and T. Warfield, 2004, Goodwill Valuation Effects of the Initial Adoption of SFAS142, Working Paper, University of Wisconsin
- Comin, Diego, and Mark Gertler. 2006. 'Medium-Term Business Cycles.' *American Economic Review*, 96(3): 523-51
- Cooke, P., 2001, Regional Innovation Systems, Clusters and the Knowledge Economy, *Industrial and Corporate Change*, 10, 945-974
- Corrado, C., C. Hulten and D. Sichel, 2006, Intangible Capital and Economic Growth', NBER Working Paper, No.11948

- Corrado, C., Hulten, C. and Sichel, D. (2005) 'Measuring Capital and Technology: An Expanded Framework', in *Measuring Capital in the New Economy*, National Bureau of Economic Research Studies in Income and Wealth, The University of Chicago Press, 65, 11-45
- Crafts, N. and G. Toniolo, 1996, *Economic Growth in Europe since 1945*, Cambridge: Cambridge University Press, cited in Arketal (2008)
- Crass, D., G. Licht, B. Peters and W. Sofka, 2008, *Competitiveness, Innovation and Intangible Investment in Europe Overview – Germany*, COINVEST Presentation, Mannheim, Germany
- Cravens, K. S., and C. Guilding, 2001, Brand Value Accounting: An International Comparison of Perceived Managerial Implications, *Journal of International Accounting, Auditing and Taxation*, 10, 197-221
- Cressy, R. and C. Olofsson, 1997. '[European SME Financing: An Overview](#),' [Small Business Economics](#), 9(2), pp 87-96, April
- Crepon, B., E. Duguet, and J. Mairesse, 1998, Research, Innovation, and Productivity: An Econometric Analysis at the Firm Level, *Economics of Innovation and New Technology*, 7, 115-156
- Eberhart, A. C., W. F. Maxwell, and A. Siddique, 2004, An Examination of Long-Term Abnormal Stock Returns and Operating Performance Following R&D Increases, *Journal of Finance*, 59, 623-650
- Eberhart, A. C., and A. Siddique, 2002, The Long-Term Performance of Corporate Bonds (and Stocks) Following Seasoned Equity Offerings, *Review of Financial Studies*, 15, 1385-1406
- Eichengreen, B., 2007, *The European Economy since 1945: Coordinated Capitalism and Beyond*, Princeton University Press.
- Illiott, R., Jacobson, P., 1991, US Accounting: A National Emergency, *Journal of Accountancy*, 172, 54-58
- Francis, J., J. D. Hanna and L. Vincent, 1996, Causes and Effects of Discretionary Asset Write-Offs, *Journal of Accounting Research*, 34, 117-134
- Francois, P., and H. Lloyd-Ellis, 2003, Animal Spirits through Creative Destruction, *American Economic Review*, 93, 530-50
- Griliches, Z., 1979, Issues in Assessing the Contribution of R&D to Productivity Growth, *Bell Journal of Economics*, 10, 92-116
- Grossman, G. M. and E. L-C. Lai, 2004, International Protection of Intellectual Property, *American Economic Review*, 94, 1635-53
- Giudici, G & Paleari, S. 2000. 'The Provision of finance to innovation: A survey conducted among Italian Technology based small firms'. *Small Business Economics* 14 (4) pp 37-53

References

- Hall, B. H. and Mairesse, J., 2006, Empirical Studies of Innovation in the Knowledge Driven Economy, NBER Working Paper, No. 12320
- Haskel, J., 2007, Measuring Innovation and Productivity in a Knowledge-Based Service Economy, *Economic and Labour Market Review*, 1, 27-31
- Haskel, J., 2008, Innovation, the Knowledge Economy and Intangibles, Non-technical Briefing Note
- Hayn, C. and P. J. Hughes, 2006, Leading Indicators of Goodwill Impairment, *Journal of Accounting, Auditing & Finance*, 21, 223-265
- Henning, S., B. Lewis, and W. Shaw, 2000, Valuation of the Components of Purchased Goodwill, *Journal of Accounting Research*, 38, 375-386
- Henning, L., H. Shaw, and T. Stock, 2002, The Amount and Timing of Goodwill Write-offs and Revaluations: Evidence from U.S. and U.K. Firms. Working paper, Southern Methodist University
- Hendrickson, E. S., 1982, *Accounting Theory*, 4th Edition Burr Ridge Irwin, cited in Canibanoetal (1999)
- Hirschey, M., and J. Weygandt, 1985, Amortization Policy for Advertising and Research and Development Expenditures, *Journal of Accounting Research*, 23, 326-335
- Horner, L., R. Blaug and R. Lekhi, (2006, Deliberative democracy and the role of public managers (The Work Foundation)
- Howorth, C., Westhead, P. and Wright, M. 2001 'Information Asymmetry and Opportunism: A Study of Management Buyouts of Family Firms', in P. Poutziouris and D. Pistrui (eds) *Family Business Research in the Third Millennium: Building Bridges Between Theory and Practice*, pp. 39–54. Boston, MA: The Family Firm Institute
- Huggins, R and M. Weir 2007 'Managing intellectual assets in SMEs: evaluating the scope for policy intervention', *International Journal of Learning and Intellectual Capital*, Volume 4, Number 4, pp. 412-429
- Hunt, R. M., 2006, When Do More Patents Reduce R&D?, *American Economic Association Papers and Proceedings*, 87-91
- Hunter, L., E. Webster, and A. Wyatt, 2005, Measuring Intangible Capital: A Review of Current Practice, Working Paper, Intellectual Property Research Institute of Australia
- Hunter, L., E. Webster, and A. Wyatt, 2005, Measuring Intangible Investment, Working Paper, University of Melbourne
- IAS1, Presentation of Financial Statements, International Accounting Standards Board, London

- IAS 16, Property Plant and Equipment, International Accounting Standards Board, London
- IAS 36, Impairment of Assets, International Accounting Standards Board, London
- IAS 38, Intangible Assets, International Accounting Standards Board, London
- IFRS 3, Business Combinations, International Accounting Standards Board, London
- IPA, 2008. KPIs for Marketing Reporting: A framework for effective market disclosure. Institute of Practitioners in Advertising (London)
- IPA 2008. Best Practice in Narrative Reporting 2008: Key learning and recommendations from the IR Magazine UK Award judging process, Institute of Practitioners in Advertising (London)
- IPA, 2007 The Development of Intangible Reporting: How intangible assets are transforming management and reporting practice. Institute of Practitioners in Advertising (London)
- ttner,C ,2008. 'Does measuring intangibles for management purposes improve performance? A reviewof the evidence'. Accounting and Business Research, Vol. 38. No. 3pp.261-272
- Jarboe, K. 2009. US Policies for Fostering Intangibles March 2009, presentation at 6th Summiton Monetizing & Maximizing IP, New York, 5 March
- Kim Y, 2007, 'A Survey on Intangible Capital', Centre for Economic Institutions (Tokyo) Working Paper Series, No. 2007-10
- Kingston, W., 'Making patents useful to small firms', Intellectual Property Quarterly, Vol. 4, 2004
- Kitching, J. and R. Blackburn, Innovation, intellectual property and informality. in R. A. Blackburn, Editor, Intellectual Property and Innovation Management in Small Firms, Routledge, London (2003), pp. 16–34
- Kothari, S. P., Laguerre, T., Leone, A., 2002, Capitalization versus Expensing: Evidence on the Uncertainty of Future Earnings from Capital Expenditures versus R&D Outlays, Review of Accounting Studies, 7, 355-382
- Lev, B., and T. Sougiannis, 1996, The Capitalization, Amortization, and Value-Relevance of R&D, Journal of Accounting & Economics, 21 107-138
- Lev, B., and P. Zarowin, 1999, The Boundaries of Financial Accounting and How to Extend Them, Journal of Accounting Research, 37, 353-386
- Lewis, E., J. W. Lippitt, and N. J. Mastracchio, 2001, Users' Commentson SFAS 141 and 142 on Business Combinations and Goodwill, The CPA Journal, 71, 76
- Li, Z., P. Shroff and R. Venkataraman, 2004, Goodwill Impairment Loss: Causes and Consequences, Working Paper, University of Minnesota

References

- Lucas, R. E., 1988, On the Mechanics of Economic Development, *Journal of Monetary Economics*, 22, 3-42
- Murrano, M. G. and J. Haskel, 2006, How Much Does the UK Invest in Intangible Assets? Working Paper, Queen Mary University London
- Murrano, M. G., J. Haskel and G. Wallis, 2007, Intangible Investment and the UK's Productivity, Treasury Economic Working Paper, No.1
- Murrano, M. G., J. Haskel, and G. Wallis, 2007, What Happened to the Knowledge Economy? ICT, Intangible Investment and Britain's Productivity Record Revisited Working Paper, Queen Mary University London
- Marshall, Alfred. Principles of economics. New York: Macmillan, 1890
- Massoud, M. F., and C. A. Raiborn, 2003, Accounting for Goodwill: Are We Better Off? *Review of Business*, 24, 26
- Merton, R., 1973, The Theory of Rational Option Pricing, *Bell Journal of Economics and Management Science*, 4, 141–183
- Merton, R., 1974. On the Pricing of Corporate Debt: The Risk Structure of Interest Rates. *Journal of Finance* 29, 449-470
- Mohnen, P., J. Mairesse and M. Dagenais, 2006, Innovativity: A comparison across seven European countries, *Economics of Innovation and New Technology*, 15, 391-413.
- Morck, R., A. Shleifer and R. Vishny, Do Managerial Objectives Drive Bad Acquisitions? *Journal of Finance*, 45 (1990), pp. 31–48
- Moretti, E., 2004, Workers' Education, Spillovers, and Productivity: Evidence from Plant-Level Production Functions, *American Economic Review*, 94, 656-690
- Muzyka, D., Birley, S., & Leleux, B. 1996. 'Trade-offs in the investment decisions of European venture capitalists', *Journal of Business Venturing*, 11, 273-288.
- Myers, S. and N. Majluf, 1984. 'Corporate Financing and Investment Decisions when Firms have Information that Investors Do Not Have', *Journal of Financial Economics*, 13, 2., pp. 187-221
- Nickell, S., 1997, Unemployment and Labour Market Rigidities: Europe versus North America, *Journal of Economic Perspectives*, 11, 55–74
- OECD, 2006. Valuation and Exploitation of Intellectual Property, STI working paper 2006/5 [auth. Kamiyama S., J. Sheehan, C. Martinez]
- OFT. 2007. The commercial use of public information (CUPI): OFT861

- O'Neil, S., A. Verson and D. Matheson, (2009).Unlocking the value of Public Sector Intangible Assets (policy brief)
- OPSI. 2005. Regulatory Impact Assessment: Re-use of Public Sector Information
- Oulton, N., 2004, Productivity versus Welfare; Or GDP versus Weitzman's NDP, *Review of Income and Wealth*, 50, 329-355
- Peña, I. 2002 'Intellectual capital and business start-up success'. *Journal of Intellectual Capital* 3 (2) pp 180-198
- Peneder, M. 2008. 'The problem of private under-investment in innovation: A policy mind map', *Technovation* 28, pp. 518–530
- Phillips, M. E., 2005, Audit Committee Effectiveness with Respect to Income Smoothing and Big Bath Behaviour: A Study of Early Adopters of SFAS 142, Working Paper, Middle Tennessee State University
- PIRA 2000, Commercial Exploitation of Europe's Public Sector Information, PIRA International, Leatherhead
- Posner, R. A., 2005, Intellectual Property: The Law and Economics Approach, *Journal of Economic Perspectives*, 2, 57-73
- Roll, R., 1986, The Hubris Hypothesis of Corporate Takeovers. *Journal of Business*, 59, 197-216
- Sadun R. and S. Farooqui, 2006, Broadband Availability, use, and Impact on Returns to ICT in UK Firms, OECD Working Party on Indicators for the Information Society
- Shleifer, A., 1986, Implementation Cycles, *Journal of Political Economy*, 94, 63-90
- Shleifer A. and Vishny, R., 1997. A Survey of Corporate Governance. *Journal of Finance* 52, pp. 737–783
- Shi, C., 2003, On the Trade-off between the Future Benefits and Riskiness of R&D: A Bondholders' Perspective, *Journal of Accounting and Economics*, 35, 227-254
- Skinner, D 2008. 'Accounting for intangibles – a critical review of policy recommendations', *Accounting and Business Research*, Vol. 38. .3, 2008, pp. 191-204
- Sougiannis, T., 1994, The Accounting Based Valuation of Corporate R&D. *Accounting Review*, 69, 44–68.
- Statement of Financial Accounting Standards No.142, Goodwill and Other Intangible Assets, Financial Accounting Standards Board, 2001
- [Stiglitz, J. and A. Weiss 1981, 'Credit Rationing in Markets with Imperfect Information', *American Economic Review*, 1981, vol. 71, issue 3, pages 393-410](#)

References

Storey, D. J. 1994 Understanding the small business sector. London: Routledge

Ullah, F. and P. Taylor, 'Are UK technology-based small firms still finance constrained?', [The International Entrepreneurship and Management Journal](#), Volume 3, Number 2 June, 2007

Watts, R. 2003a, Conservatism in Accounting Part I: Explanations and Implications, *Accounting Horizons*, 17, 207–23

Watts, R. 2003b, Conservatism in Accounting Part II: Evidence and Research Opportunities, *Accounting Horizons*, 17, 287–301

Westhead, P, Storey, D. J 1997, 'Department for Education and Employment Research Report', Training Provision and the Development of Small- and Medium-sized Enterprises, HMSO

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