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## A Flourishing Innovation Economy:-

### How the UK must attract and retain knowledge-based businesses

*Attracting innovative businesses is rather like gardening – creating an environment in which plants can flourish over the long term. A buddleia bush is a butterfly magnet, attracting not only insects but supporting a whole food-chain. Cutting it down will not give rise to angry butterfly demonstrations; instead they will simply vanish, along with a host of other creatures, to the garden of a more enlightened neighbour. Similarly, knowledge businesses, footloose and global in outlook, can quietly and quickly abandon locations that cease to be advantageous for them.*

#### Key Messages

The factors that influence business location have changed over recent years. Traditional, quantitative and tangible factors (cost of land, labour, transport and raw materials) have been replaced by more qualitative and intangible criteria - skills, IPR regime, tax and regulation, technology and public services. At the same time, the contribution that knowledge-based businesses make to national economies now often outstrips that of traditional manufacturing. However, unlike manufacturing operations, knowledge businesses are not tied to physical assets or raw materials and can locate their operations anywhere in the world. This means that countries offering the most advantageous environment will attract these businesses, thereby benefiting from the jobs and tax revenues, the spin-offs and supply chains that they generate. Competition for these businesses is now truly global.

It is vital that UK policy keeps pace with these changes because knowledge-based businesses now underpin our economy, both as industries that add value in their own right and as the facilitators for the competitiveness and modernisation of other sectors. The risk of failure is enormous – but largely underrated by policy makers who are complacent because the UK compares well to the rest of Europe and who fail to understand the true impact of the global economy. Manifesto commitments like “government must support the wealth creators”<sup>1</sup> are all very well, but as the Aho Report<sup>2</sup> points out “There is a large gap between the rhetoric of a political system that preaches the knowledge society and the reality of budgetary and other priorities that have shown little shift in preparing to engage with it.” The evidence below suggests that policy is indeed lagging behind technological reality and that the whole basis of our economy is potentially in crisis.

#### What Can Be Done? The Challenge to Government

Political priorities include full employment, improved opportunities, rising prosperity and a secure future, but all these depend on the UK building on its existing advantages rather than squandering them. Unless we take action to attract and retain the businesses that underwrite our economy, the UK cannot fund its social agenda. The key is keeping existing investors happy so that they will attract others and catalyse development.

#### Key Recommendations

- Support success:- if industries are generating wealth and making an above-average contribution to the economy, actively encourage them. Don't be afraid to single out high value sectors for special help.
- Foster innovation:- have targeted funding schemes for commercial R&D and innovation, allowing focussed support, plus an assurance that funding is spent on the intended purpose.
- Encourage businesses to develop Intellectual Property (IP) portfolios, for instance by extending R&D tax credits to IP registration costs. Extend tax credits for larger companies above “noise” level.
- Build on existing success:- continuous improvement works best. Focus on developing successful clusters rather than creating new ones.
- Be proactive:- improve stakeholder relations. Find out what the wealth creators value – and provide it. Communicate with key companies and sector representatives to identify their needs, and ensure they are met. Develop expertise in high value sectors to understand their requirements, and provide specialist help.
- Trust successful, innovative businesses as co-developers of policy:- engage them in the policy making process.
- Encourage excellence:- refocus the academic reward structure from volume of citations and publications to support excellence in innovation and exploitation. Encourage the development of a sustainable skills base in the UK with fiscal incentives for training and skills development.
- Act now. Innovation requires the right government actions. Inaction will lead to certain failure.
- Don't wait for knowledge businesses to complain – they won't! They will simply disappear, in turn causing the other industries they underpin to decay.

<sup>1</sup> Labour Party election manifesto 2005

<sup>2</sup> Creating an Innovative Europe – Report of the Independent Expert Group on R&D and Innovation, January 2006 (Aho Report)

## Introduction

The UK is now becoming a true knowledge economy, where value lies increasingly in new ideas, software, services and relationships.<sup>3</sup> In this environment, knowledge-based, innovative businesses such as biotechnology, pharmaceuticals, financial services, telecommunications, software and information technology are making an above-average contribution to the UK's GDP, to its competitiveness and its economic well-being (economic rent)<sup>4</sup> because they require high-level skills with high salaries and generate above average growth. Knowledge business clusters attract similar businesses to the same area and catalyse further innovation through spin-offs and partnerships.

It is therefore critical that the UK and the wider EU attract and, more importantly, retain these businesses. The UK in particular has an excellent record in attracting inward investment and leads the rest of Europe in terms of foreign direct investment<sup>5</sup>. However, the criteria for attracting businesses are changing and there is concern that UK policy is not keeping pace with developments. Moreover, Government is still applying out-of-date parameters to monitor, measure and manage progress<sup>6</sup>.

## Locational Factors

Traditional criteria for attracting businesses were quantitative, tangible and relatively easily measured. They included cost of raw materials and other supplies, access to market, transport costs, labour supply, land and site costs, availability of grants and subsidies, costs of loans, and cost of technology. Innovative, hi-tech businesses tend to concentrate their asset value in intellectual property, in knowledge and in client and partner relationships rather than in physical assets like land, plant, hardware or materials. As a result the factors that influence where they locate their operations are increasingly qualitative, less tangible and harder to measure.

Current factors that influence where high-tech and knowledge based businesses locate their operations include ease of access to growth markets of demanding customers, political and economic stability, taxation, support for innovation, flexibility of labour market and availability of key skills, regulatory environment (especially employment legislation), openness of market, trade barriers and non-tariff barriers, quality, availability and cost of public services (eg health, education, transport), quality of technology infrastructures and services (eg broadband), opportunities for expansion (eg planning regime, restrictions on foreign ownership of assets), language, cultural issues and working environment.

Of these factors, support for innovation is growing dramatically in importance, for instance in the field of Intellectual Property Rights (IPR), which increasingly make up the principal asset base of knowledge businesses. A supportive and well-enforced IPR regime is vital to attract innovative businesses and to encourage the growth of SMEs. Whilst the UK's regime is widely accepted as a good model, more could be done to encourage businesses to develop their IP portfolios, for example through an extension of the R&D tax credit system, to help companies offset the costs of IP registration. The way that IPR is exploited is also changing<sup>7</sup> and this should be reflected in the way that intangible assets are evaluated.

The tax regime is another important factor and the UK could do more, perhaps along the lines of Eire or Estonia, to use tax incentives to attract innovative businesses. In the area of R&D tax credits, recent moves by the Inland Revenue to improve levels of expertise among tax officers are welcome, but more needs to be done. In particular, the current tax credit regime applicable to SMEs should be extended to cover larger companies:- for whom the effective relief currently has a value of 3-4%, well below "noise" level and certainly not near the 9-10% needed to act as an incentive to major corporations to maintain R&D operations here<sup>8</sup>. Successful innovation economies (eg Finland and the Netherlands) foster innovation through targeted funding schemes for commercial R&D and innovation, and do not restrict them to SMEs, who anyway much prefer to work with their customers in large firms in the natural ecology of commerce. The increasing gap between the US and EU on R&D spending as a percentage of GDP and the similarly widening gap in GDP growth serves to emphasise the need for urgent action.

A skilled workforce is critical to attract businesses, and much could be done to encourage skills development in the UK, where there is a mismatch between the demands of business and the outputs of universities, particularly in IT skills. Without action, the situation can only deteriorate *"the UK will not be competitive in the global economy in 10 years time if we continue with the level and type of [technology related] skills being relied on by business today. There is a tendency to dismiss the subject of skills as a "soft" issue with no real impact... To do so would lead to catastrophic damage to the UK economy"*<sup>9</sup>. At the moment the UK relies

<sup>3</sup> Definition proposed by Scottish Enterprise: [www.scottish-enterprise.com/sedotcom\\_home/help/help-glossary.htm](http://www.scottish-enterprise.com/sedotcom_home/help/help-glossary.htm)

<sup>4</sup> In economic theory, economic rent is effectively the "value-add" – the contribution above average to an economy, for instance.

<sup>5</sup> UK Trade and Investment Key facts 2006, Issue 1, [www.ukinvest.gov.uk](http://www.ukinvest.gov.uk)

<sup>6</sup> See Intellect's report: Navigating the New Economy, May 2006 ([www.intellectuk.org](http://www.intellectuk.org))

<sup>7</sup> Valuation and Exploitation of Intellectual Property, STI working paper, OECD

<sup>8</sup> Intellect, as quoted in "Developing the Future", report on UK software commissioned by Microsoft

<sup>9</sup> Karen Price, Chief Executive, e-Skills UK, quoted in press release on publication of their report: "IT Insights, Trends and UK Skills Implications", November 2004

heavily on imported skills (for instance, 300,000 French nationals are reportedly working in the UK and City institutions favour French analysts because of their superior mathematics skills). This situation is neither secure nor sustainable in the long term. The French are here because the UK has a flexible labour market, which has helped it avoid the downturn affecting other parts of the EU<sup>10</sup>. Once things improve in their home countries there will be little incentive for highly skilled workers to stay in the UK.

Much stronger incentives are needed to encourage engagement and knowledge transfer between business and academia. Successive UK Innovation Surveys<sup>11</sup> show that a mere 2% of companies regard universities as highly important sources of information, and place the UK nearly last in the EU15 on successful innovation activity. Today's global focus implies evaluating academic institutions against global comparators, not just the EU, and emphasising results in innovation and exploitation, measuring those citations and publications that support excellence in innovation and exploitation.

### The Nature of Knowledge-Based Businesses

The change in locational factors reflects the nature and requirements of innovative businesses. Because they are rich in intangible rather than physical assets, they are not tied to a location for the long term in the way that traditional manufacturing has been. This makes them ephemeral in nature, able to move relatively easily from one location to another as circumstances change. This in turn means that such businesses will not lobby vociferously for changes and improvements – because they can move, gradually or quickly, but always relatively painlessly, to a more advantageous location.

Innovative, knowledge-based businesses also tend to establish themselves near to others with similar characteristics, building up clusters, which then grow and in turn attract more investment and create more value. Evidence shows that 80% of new investment in a region is related to existing investors<sup>12</sup>. These clusters are often based around (but not exclusive to) leading universities. The Innobarometer 2006 survey<sup>13</sup> reveals that the most innovative companies in the EU “*work in a cluster-like environment, enjoying close cooperation with other enterprises in the region and strong ties with the local business infrastructure*”, i.e. “Science is a contact sport”. Managers believe this helps business expansion and that public authorities have a key role to play in supporting clusters. Even in the US the truly innovative communities are located in a few small areas<sup>14</sup> and the most successful clusters are those that allow the innovators and exploiters to work closely together, creating a “virtuous circle”. Once a critical mass is generated, in turn it generates a local skills base, potential partners (and competitors), improved infrastructure and economic development. It is therefore important to focus support on the strongest clusters, and policy that favours the creation of new clusters should be reviewed. Some research<sup>15</sup> suggests, moreover, that for the best results physical proximity is not enough and that social capital (frameworks of social connections and the attendant norms and trusts) is also an important factor.

As well as being industries in their own right, sectors such as ICT are the key enablers of other collaborative, information-driven businesses and also underpin modern manufacturing competitiveness. A knowledge economy is a complex system, with multiple interconnections between and within sectors. For instance IBM's research laboratories in Hampshire are stimulated by the UK financial services industry, which needs innovative software for leading-edge City institutions, so IBM invests in response to this demanding customer community. There are also strong connections between manufacturing and R&D, for instance in pharmaceuticals or motor-racing, where high-value, complex manufacturing tends to remain close to its associated R&D function, even when generic manufacturing is moved offshore. In each case a decline in one area will lead to decay elsewhere. These interactions are often poorly understood by policy-makers. Such a complex system is literally not simple:- quick fixes based on simple cause and effect models are unlikely to be successful in the long term. The Sarbanes-Oxley legislation in the US was designed to improve trust but has instead had the opposite effect and has discouraged companies from listing on NASDAQ and even encouraged de-listing.

### Capitalising on the UK's Advantage

The UK has a major advantage which must not be squandered. We currently lead the rest of Europe in terms of foreign direct investment and are the favourite location for European head offices of US and Asia Pacific companies, and for shared services operations for multinationals<sup>5</sup>. The UK is also a world leader in financial services and software (particularly computer and video games). This success is not just due to factors like competitive business costs, entrepreneurial activity and a flexible labour market, but relies on the fact that the UK has the benefit of existing clusters of knowledge-based businesses which stimulate and attract both investment and innovation. The contribution of such businesses to the UK economy is often underestimated – the City of London contributes 25% of UK GDP and in terms of employment, all Japanese motor

<sup>10</sup> See “Enfin un Boulot!” by Vladimir Cordier

<sup>11</sup> Community Innovation Survey 3 (CIS3)

<sup>12</sup> Roel Spee, “Making the Right Offer”

<sup>13</sup> See [www.europa-innova.org](http://www.europa-innova.org)

<sup>14</sup> See the work of Richard Florida –The World is Spiky:-- <http://www.creativeclass.org/acrobat/TheWorldIsSpiky.pdf>

<sup>15</sup> Social Capital, A Discussion Paper, Performance and Innovation Unit, April 2002

manufacturing in the UK employs fewer people than work in Citibank Tower in the Docklands<sup>16</sup>.

### The Risk of Failure

Despite its good record in inward investment, the UK is very vulnerable: in reality we are “*living a moderately comfortable life on slowly declining capital*”<sup>17</sup>. Many other locations can offer similar benefits to businesses, particularly in developing markets where increased global mobility, infrastructural improvements and reduced instability are driving a change of heart in companies that were previously resistant to the attractions of low cost base and market potential. Once a drift starts in a particular direction, it can be very difficult to stop, and the speed of change can be dramatic. The catalyst can be a change of technology which drives a review or simply that in a traditional location, costs or other disadvantages have gradually built up to reach a “tipping point”<sup>17</sup>. Nowhere is this better illustrated than in Germany, which peaked as global leader in ethical pharmaceuticals in 1996, when there was a shift from “wet laboratory” technology to bio-informatics. The industry had to make massive reinvestment in its technology base and chose to do so outside Germany, largely in the USA where, although manufacturing and staff costs were similar, there was a less restrictive regulatory environment. Within 6 years the industry had severely dwindled in its homeland. Elsewhere in Europe, Novartis, Pharmacia, Glaxo Smithkline and Aventis have recently moved R&D operations to the US<sup>18</sup>. The UK is not immune from such catastrophe – while our pharmaceutical industry still employs 73,000 people in high-class, sustainable manufacturing, and 27,000 in leading-edge R&D, with a gross output per employee of £205,000, UK pharmaceutical output is dropping and the balance of trade is declining (a negative balance of trade is forecast by 2008). R&D expenditure has been declining since 2000, with a 13% decrease from 2003-2004<sup>19</sup>. Global pharmaceutical CEOs report that they are finding it increasingly difficult to justify a UK location for their operations.

The financial services sector, a particular UK success, is also vulnerable. Whilst the City of London outstrips other European cities as a financial centre, this is no cause for complacency since the real competition is in New York. City practitioners rank London highly in terms of available skills and regulatory competence, particularly the FSA (Financial Services Authority). However, they are critical of central Government which fails to respond to their needs, and cite confusing signals emerging from Whitehall and HM Treasury, a perceived anti-City bias in Government and disadvantageous concessions made by the UK in Brussels. They also criticise the poor standard of public services (education, healthcare and transport). Moreover, they perceive the UK’s existing tax advantage being eroded by new fiscal measures, often targeted at foreign banks and individuals, and believe that the benefits of a competent regulator are being undermined by an increasing regulatory burden driven by Brussels and over-zealous UK implementation<sup>20</sup>.

Software, particularly gaming, has been another UK success. Those who have not studied the most recent figures cite the UK as world No.1 in gaming software, yet the current position is actually around 3<sup>rd</sup> – and slipping. One of the largest gaming software houses in the UK, Lionhead, states that there is “nothing to prevent a wholesale move offshore”, and indeed another leading UK software house has just relocated to Switzerland.

Government is often unwilling to make a special case for one sector over another. However, while a particular industry is generating more than average wealth, why not act to reinforce success and safeguard that value-add to the economy? For instance, difficulties in obtaining visas for specialist staff to work in software development in the UK can jeopardise a whole operation. Facilitating visas for such staff is a small price to pay for ensuring those businesses remain in the UK. Policy makers must prioritise resources to value those sectors that make an above-average contribution, instead of applying a deficient one-size-fits-all approach, and must recognise that simple market forces are not the answer to everything at every time.

### **Conclusion**

Policy makers should understand that in business terms they are no longer managing an industrial estate, where relocation is protracted and painful, but a campsite – where people can strike camp quickly and easily once circumstances do not suit - and must reflect how our economy would prosper if sectors such as financial services, software, telecommunications, biotechnology and pharmaceuticals moved their operations away. All politicians, whether in government or in opposition, want to see full employment, improved opportunities for everyone, rising prosperity and a secure future, particularly after retirement. However, they must act, quickly and consistently, to ensure that the businesses that make up the innovation economy stay here and attract others. Without them, we face an inevitable and catastrophic decline. As the Aho Report<sup>2</sup> states “*Europe and its citizens should realise that their way of life is under threat, but also that the path to prosperity ... is open if large scale action is taken now by their leaders before it is too late*”.

<sup>16</sup> Sir Digby Jones, – Quotation awaiting authentication

<sup>17</sup> *Tipping point – the point where dramatic and sudden change occurs* – see Malcolm Gladwell

<sup>18</sup> *Financial Times*, 8 May 2002, page 21

<sup>19</sup> Figures from ABPI – The Association of the British Pharmaceutical Industry – <http://www.abpi.org.uk>

<sup>20</sup> *Sizing up the City – London’s Ranking as a financial centre* – CISF, June 2003