



H M Treasury

**Financing of High Technology
Businesses
A report to the Paymaster General**

November 1998

THE WORKING GROUP ON THE FINANCING OF HIGH TECHNOLOGY BUSINESSES

Sponsored by HM Treasury

EXECUTIVE SUMMARY AND RECOMMENDATIONS

We were asked by the Paymaster General to identify financing barriers experienced by UK high technology companies and to bring forward proposals to help overcome those barriers. He asked for an Interim Report by January 1998, which was not published as it was advice on the 1998 Budget, and a Final Report by July 1998.

The UK has technological strengths, but the UK has a long way to go before it compares to the vigour of the US in bringing high tech early stage companies to a scale and quality that makes them world class. For example, in 1997 the US venture capital industry invested £5.8 billion in startup and early stage technology based businesses, compared with an equivalent figure of £349 million for the UK. The giants of bio-industry and information technology demonstrate the dramatic results. 24 US companies - most in bio or IT industry - grew their turnover from \$2.1 billion in 1975 to \$248 billion in 1995. The number of their employees increased from 48,300 to 1,383,100.

2. However there are already encouraging signs for the future. Over 40% of total European venture capital is invested in the UK, though that figure falls to 20% if MBO/MBIs are excluded.. There are many financing companies with world class competitiveness and a number of role models in the form of successful high technology companies. We seek ways forward, to build on these successes and to exploit the UK's scientific and technological strengths.

3. We focus principally on the barriers to financing 'Emerging Growth' companies - those which have not yet achieved their first profit, particularly startups and early stage. Such firms face two key issues:

first, the company must find funding, on the right terms, to allow the product to be developed, markets to be evaluated and explored, and to finance all the other activities a new enterprise must get under way;

second, the company must attract a management team with the talent and experience to get the venture on the road to success. This is in part a financing issue, first because high quality managers need high quality remuneration, including equity incentives, at least in prospect, to attract them to high risk ventures. A good management team is also vital to maintain a company's standing with investors.

4. Among the potential financing barriers Emerging Growth firms face, we single out:

the difficulties, time and cost of properly appraising and monitoring the

technology possessed by the firm, for sources of finance;

the long lead times involved very often before commercialisation. This is a particular issue for biopharmaceutical companies where it may take 10-15 years to bring a product successfully to market; and some emerging companies suffer from the opposite: software is an example, where products are developed and time-expired at such speed that the financial system is sometimes insufficiently nimble to finance their development.

the perceived high risk of such businesses at an early stage and the consequent high rates of return required; we believe that the risks are over-emphasised compared to the potential returns;

the relatively small size and “hands-on” nature of these technology investments; for institutions and venture capitalists, this feature can make investment management on a significant scale more expensive for a given rate of return.

5. Solutions to many of these issues are matters for financial institutions, individuals, venture capitalists and high technology companies. Government can play a role as enabler, where it can genuinely add value to the market. It needs to ensure that its policies on tax and on market regulation, in particular, give strong support to entrepreneurial investment. The Government’s role needs to be set in a global context, since entrepreneurial talent and capital are both increasingly mobile, and Governments are responding to these trends.

6. We would like the following proposals to be considered by Government, in some cases for the next Budget:

- (i) On Capital Gains Tax (CGT), the UK has much to learn from US experience. After a toughening up of their CGT regime was followed by plummeting venture capital in high technology companies, the US re- thought their tax regime. Between 1979 and 1982 the CGT rate was cut from 35 per cent to 20 per cent. After 1981 stock options were taxable only when the relevant shares were sold, rather than exercised. The market responded. In 1980-82 alone, commitments to private equity partnerships totalled more than \$3.5 billion, two and a half times the commitments to private equity during the entire decade of the 1970s. Over the next three years such commitment reached more than \$4 billion annually, much more than an upturn in the cycle would have implied. The US has continued to develop its CGT regime to encourage entrepreneurial investment. Recent developments include a taper for long-term investors and flexible rollover arrangements to promote long-term investment in general rather than locking investors into a particular business. Other countries’ policies are also of interest. The Netherlands, for example, has a CGT regime which encourages long term investments.

We welcome the 1998 Budget proposals on CGT, legislated in the 1998 Finance Act, particularly for their recognition that the tax has an important behavioural impact on the financing of high technology companies; and in

particular the significance of a low marginal rate. We would like some early changes considered in the 1999 Budget, for example on the business assets test. We would like further reform, to help keep the UK competitive in increasingly global capital markets. Building on US experience and elsewhere, we would like to see a radical reform, with a zero rate for early stage high technology investments after five years. If that is not possible, we would like a regime which allows gains to be taxed at 20 per cent after 3-5 years, and the lowest rate of 10 per cent to apply after 7 years. To be truly effective this regime needs to be combined with rollover arrangements which encourage long-term investment in general rather than locking investors into a particular business. Where an investor re-invests the proceeds from the sale of a business asset in a second (or subsequent) business asset, then the number of years qualifying for CGT taper relief on the gains on each asset should equal the total length of time that the individual has been investing including reinvestment. The individual should be taxed on the combined holding period for all these investments. In other words the CGT system should be neutral between encouraging long term investment in a sequence of investments over time on the one hand, and investment in a single company for a sustained period on the other. If a way could be devised of applying such a regime only to early stage high technology companies, we would support that. Alternatively, a general reform along these lines would also help the sector that we are examining.

- (ii) Using a tightly drawn definition of high technology companies, we propose a new tier of tax incentive under both Venture Capital Trusts (VCT) and the Enterprise Investment Scheme, directed at those firms alone, called the Technology VCT. Its purpose would be to encourage venture capital into Emerging Stage high tech businesses, rather than more established businesses and sectors. The Technology VCT would attract full relief from income tax to investors in the year of their investment, as well as the existing reliefs, including CGT exemption after 5 years. We welcome the tighter focus of VCTs and the EIS changes introduced by the 1998 Budget and 1998 Finance Act. We would like to see the detailed provisions of the EIS amended to remove the obstacles to private investors (“business angels”) making full use of this important vehicle for high risk investment. We would like to see the limit on individual VCT investments (generally) increased from the current £100,000 to £150,000. On the basis of the first three years’ experience, we believe that this could increase the venture capital raised under the scheme by 15%.
- (iii) We also propose that Technology VCTs should be accessible to insurance companies, following the same principles as existing VCTs, with tax reliefs tailored to take account of the special arrangements applying to those institutions. We would like all institutions to be eligible to invest in VCTs, though pension funds would not be able to gain tax relief, given their current tax position.
- (iv) We also welcome the Budget announcement of consultations on the

recruitment of high quality management to high technology early stage companies. Key managers in high technology Emerging Growth businesses should have the opportunity to be awarded Equity Incentives. They would be taxed on their gains only at the point that they sell their shares, and be taxed as a capital gain, not as income. There would be no limit on the value of the share options issued under this scheme, because these key managers are in an internationally mobile labour market, where to attract and retain world class management competitive remuneration has to be offered. Equity Incentives should also be given the same treatment for CGT purposes as we recommend for outside investors in high technology Emerging Growth companies. Equity Incentives would be available to existing managers (to aid retention) as well as new hires.

- (v) We propose a new scheme, called the Emerging Growth Rebate, which would be targeted particularly at early stage firms whose long lead times for converting R&D into marketable products puts them at a disadvantage with established concerns, given particularly the need to make various payments to government before income, much less profit, is significant. For such firms cash flow is under severe strain, whereas established firms' R&D is a deductible expense against existing profit streams. Such firms would receive a rebate from various tax payments, in exchange for surrendering at a discount the benefit of rolling forward R&D losses against future income for tax purposes. The tax payments which we believe are most appropriate in this context are PAYE and National Insurance Contributions, because they are employment-related. The scheme would help finance a firm for a limited number of years, say five. We are pleased that the Government is considering the Emerging Growth Rebate in the context of the Comprehensive Spending Review.
- (vi) We found no evidence that the regulatory environment for institutional investors is a significant barrier for them making high risk investments in high technology ventures, though we would like to see the powers in the new Financial Services Act to regulate advertisements to expert investors, and the promotion of venture capital partnerships, drawn as widely as is consistent with protecting less expert investors. It should be easier, for example, to market venture capital partnerships' side funds to high net worth individuals, to replicate the success these funds have had in the US.
- (vii) We found a good deal of evidence that the culture of those who operate within that regime tends towards the over-cautious. While it is important that institutions and their advisors act in a prudent manner, we do not believe that the UK yet has the balance right. It is worth noting the latest evidence on returns to high technology venture investments, which shows an improving picture. The public and private sectors can contribute in many ways to change this culture. We propose that the Governor of the Bank of England should convene an annual forum, along the lines of his meetings on small business and the banks, to bring together senior representatives of the major financial institutions and high tech early stage companies, to improve communications in

both directions, building on previous work in this area.

7. To meet the needs of high technology companies we need to build trust and credibility between entrepreneurs and every kind of investor: business angels, venture capitalists, institutions and corporate venturers. Our proposals should be seen as a package, aimed at dealing with different barriers to growth by early stage high technology companies and encouraging finance from all these sources.

8. We were glad to be associated with the University Challenge scheme launched in the Budget and look forward to a positive response to the call for bids, announced on 30 June. We also welcome the £1.1 billion announced on 13 July to expand the funding of the UK science base and the £300 million announced for the Higher Education Funding Council. The aim should be to take the UK's share of cracking the human genome from one third to one half. A relatively modest sum - say around a further £30 million - would make a significant contribution, given the significant investment that has already taken place. We recommend that the Government consider financing that expansion. The work is crucial to maintaining our pre-eminent position in the research on the human genome, to training scientists to providing the building blocks for the continued success of our pharmaceutical industry. We would also like the Government to encourage the Cambridge School for Entrepreneurship and similar initiatives around the country, aimed at developing business skills among those specialising in science and technology. We ask the Government to consider how to take fully into account the value of high technology early stage companies to the economy in planning decisions.

9. We also place importance on the financing needs of companies beyond the 'Emerging Growth Stage', who reach the 'Sustained Growth Stage'. These companies are making profits and have considerable growth potential, but they risk not growing further to become global companies. They share some issues - particular the need to recruit and retain high quality management - with their younger cousins in the Emerging Stage. So some of our proposals would help those companies too. They also face fresh challenges. We call for a public debate to identify solutions to those challenges, with action by the Government and private sector in the near term. One general fillip for growing companies, which would help those in the high tech sector too, would be to introduce a starting rate of corporation tax for small companies at, say, 10 per cent. This incentive would encourage them to reinvest in their business. Our proposals on Equity Incentives need to be developed further to help these more mature companies too. We recommend that the criteria of chapter 20 of the London Stock Exchange's Listing Rules should be relaxed and broadened to enable and encourage loss making technology businesses outside the biosciences sector to seek public market finance. We welcome the Tech Stars Group's activities, particularly in encouraging work on corporate venturing. We are delighted that the UK Presidency has launched a debate on risk capital in the European Union, in strong collaboration with the European Commission. We urge the Government to give priority to follow up work on the Action Plan discussed at the Cardiff European Council, with other Members States, in the Council and elsewhere. We would like particularly to see progress on more liquid equity markets in Europe, drawing on the contribution NASDAQ has made to the development of high technology industries in the US.

THE WORKING GROUP ON THE FINANCING OF HIGH TECHNOLOGY BUSINESSES

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I. INTRODUCTION

The Working Group on the financing of high technology businesses was established by Geoffrey Robinson MP, the Paymaster General, under the chairmanship of first Dr Keith McCullagh, Chief Executive of British Biotech plc, then Sir Peter Williams, Chairman of Oxford Instruments plc, to identify financing barriers experienced by UK high technology companies and to bring forward proposals to help overcome those barriers. The Chancellor of the Exchequer launched the Working Group in the Pre-Budget Report published in November 1997, as the first step in a wide ranging look at ways of improving the UK's record on investment in R&D, which he and the President of the Board of Trade are undertaking. They published a consultative document 'Innovating for the Future: investing in R&D' on Budget Day, 17 March 1998, on this wider review. We also intend this final report to be a contribution to that consultation.

2. Members of the Working Group are drawn from the venture capital industry, investing institutions (including insurance companies, pension funds and other asset management businesses), high technology companies themselves, the Association of British Insurers, the Bank of England, the Confederation of British Industry, the Department of Trade and Industry, and HM Treasury. (A full list of the Working Group's members is at annex A.)

3. Geoffrey Robinson asked us to make an Interim Report by 14 January, with particular reference to proposals which might require further consideration during preparations for the 1998 Budget; and a more comprehensive Final Report in July 1998. We delivered the Interim Report on schedule. It was not published, since it was private advice to Ministers in advance of the Budget, though we draw on its analysis and policy prescriptions, taking account of the Budget proposals and Finance Bill debates, in this report.

4. We looked at a wide range of financing issues for high technology companies and possible solutions. Those we highlight here seemed to us either most ready for early action (though we recognise that further work may be required to implement them) or most urgent for systematic review and a wider debate in Government, the business community and more widely.

5. We focus in this report on the roles of Government and financial institutions, including pension funds, insurance companies and banks. We also see important roles for venture capital and the high technology sector itself.

6. We do not see the role of Government as a provider of subsidy, or support when times are hard. We see it as an enabler, when two key conditions are met.

- (i) First, there are times and situations when the market cannot do the job alone. In the language of economists, there must be a market failure, unless the action of the government itself, on wider policy grounds, is causing problems in the financing of high technology companies in their early stages. Two are relevant here. High technology firms tend to generate substantial wider benefits to the rest of the economy. Investors and shareholders understandably focus on their own prospective returns. Second, there are high costs of appraisal and monitoring.
- (ii) Second, the government must be able to intervene cost-effectively. There must be some way in which government can work with the grain of the market. In effect, the government must have a business plan, to show why its action, as taxpayer, spender or regulator, will be effective and efficient. We set out, with reference to our individual proposals, how these conditions are met. The proposals span these three key roles of Government.

7. As background to our work, we found various reports and documents helpful. We would like to mention in particular the Bank of England's report on the financing of technology-based small firms (1) and the CBI's report on Tech Stars (2).

8. We have stayed faithful to our remit to look at high tech companies. We cannot claim to have discovered a definition that would suit every circumstance. But broadly we focus here on firms and sectors whose future depends on the commercial exploitation of some technology, usually derived from some scientific discovery at some point in the past. Biology and physics loom large as influences on these sectors. For the purposes of this report we follow the definition from John Allen quoted in the Bank's report:

“A business whose products or services depend to a significant extent on the application of scientific or technological skills or knowledge (whether it be a novel application of advanced technology to provide a totally new product or service, or an application of an existing technology in an innovative manner)
(1, page 10)

The definition of high tech is discussed at greater length in Annex B.

9. It is noteworthy that the returns on high technology ventures are often perceived as comparatively low, relative to the riskiness of the investment. It is important to review this perception, looking at the latest evidence (3). Returns to early stage investments (generally, not just high technology investments) have risen sharply in recent years, and compare reasonably well, for example, with the return on UK equity investments by pension funds and the FTSE All-share (though over 10 years the story is much less encouraging). It is well known that many of the larger UK quoted companies have performed well on the FTSE in recent years. At other times, smaller companies had better returns. The long term real return on UK equities has been around 7 per cent real for most of the century, which puts current trends in perspective. We believe that there is a sound financial case for investors, including financial institutions, fund managers and advisors, to examine the current role of high technology early stage companies in their portfolios. Failures, which can be used as learning

experiences, will always be common, and many firms will perform unremarkably. But many firms have a bright future, we believe, including a few that will be giant creators of returns to shareholders, as well as commercial opportunity and jobs. In a portfolio, the evidence suggests that the returns on the successful companies in early stage ventures would significantly outweigh the failures.

10. Sectors of particular interest in the UK include biotechnology, biophysics, software, microelectronics, aerospace, telecommunications, sensors and instrumentation. But we have a myriad of small high technology firms in a wide range of sectors, and we do not believe in second guessing the market on which of them may grow to become major companies. Our aim is to encourage a framework in which the best of them can grow, and all get a fair opportunity to prove their worth, to the economy, their share holders, their employees and all their stakeholders.

11. Where our proposals require legislation, we believe that it should embody a definition of a high technology company, to allow scarce resources to be focused on the sector - say by specifying the sectors which are, or are not, to benefit. There will be an element of arbitrariness to this approach, and the legislation will need to be amended - perhaps by secondary legislation - from time to time, as technologies develop and disappear or are assimilated into general commercial use. But we believe that the advantages outweigh this need, given the risks of spreading the benefits too thinly and on firms that add nothing to our technological competitiveness, if legislation is drafted too loosely. Legislation should err on the side of stringency: better to amend legislation to permit new possibilities than to tighten up an over-loose definition which has proved open to abuse. In that spirit, we recognise that the drafters of the legislation will have some difficult issues to tackle, but we trust that they could devise solutions in time to achieve early action. Different definitions may be appropriate in different contexts.

12. Until such definitions are finalised, our proposals cannot be costed very precisely. We are conscious of the need to respect the Government's overall fiscal policy. We are also committed to targeting policy on a comparatively narrow range of early stage ventures in high technology sectors. We are also conscious that our proposals, if successful, would contribute to Government revenue as the target companies grew: a business plan for Government, as in industry, must look at short term costs and medium term prospects. For individual companies, the cumulative effect of our proposals and existing policies could be significant, in proportion to the priority we put on encouraging the high technology sector.

II THE IMPORTANCE OF HIGH TECHNOLOGY BUSINESSES TO THE UK'S GROWTH AND COMPETITIVENESS

13. As the UK prepares for the new Millennium, it seems reasonable to ask in what areas our industry can excel in the coming century. The extraordinarily rapid growth in manufacturing skills in the low cost economies of Asia and the Pacific Rim, together with the internationalisation of trade, communications and finance, have led to fresh challenges for UK industry. How can they be met?

14. There are low tech sources of employment and growth, and we do not deride them, but it is clear that to deliver long term growth on a higher trend, increased employment opportunities and the wider benefits of a modern economy, we must secure our future as a high technology economy. We need to encourage and embrace technology, creativity and entrepreneurship. Investment in innovation and the commitment to develop new technologies are essential ingredients of a growing economy. New and different products, made possible by technical innovation, are often able to address previously unmet needs. Such products have the capacity to create new and different markets, improving the way we live and work. Demand so created is real and less dependent on price than in the case of “me-too” commodities. The result is that higher margins can be sustained, profitability grows rapidly and wealth and employment are created in the economy. Two case studies serve to make the point.

The Information Technology and Communications Industries (ITC)

15. New venture capital backed businesses and new industrial sectors are rapidly emerging in communications, information technology, microelectronics, material sciences and robotics. Once again, the most successful companies in these fields have been created by technology entrepreneurs in the USA. Microsoft, Apple, Intel, Sun and a host of other names spring to mind. As public demand for Internet technology, products and services grows at enormous speed, it is vital that the UK has its own high growth sectors in these fields, once again contributing to faster trend growth and higher employment, as well as to exports, government revenues and in many other ways.

16. There is enormous potential here. The UK in 1997 consumed at least £25 billion of ITC products, including £3.5 billion consumer electronics, £5.5 billion electronic components, £11 billion electronic instrumentation and £5 billion broadcast and network equipment. UK production in these industries has grown from £17 billion in 1993 to £29 billion in 1996, approximately 15 per cent of UK manufacturing output. The UK was the fourth largest market for ITC products and services in 1995, the latest year available, and the sixth largest producer. (4)

17. The UK has particular strengths in such fields as specialist software, mobile technologies, broadcasting technology and semiconductor design. The UK is a major player in electronic publishing and dominates the professional information market. The UK ITC industries are achieving an average growth currently of 7 per cent per annum, employing nearly 900,000 people. But once again, there are many more opportunities to be exploited, and a long way to go before we catch up to US performance in an increasingly competitive sector. Despite the scale of the market, less than £80 million was invested in early stage ITC companies in the UK in 1996. (5)

The Bioscience Industry

18. A good example of the way in which technological innovation is creating new markets is seen in the bioscience and biotechnology industry. New medicines which substantially improve the treatment of cancer, arthritis, multiple sclerosis and other serious diseases are already under development by British companies. The new science of genomics, understanding the genetic basis of our idiosyncrasies, has the capacity to open doors to rapid diagnosis and

prevention and to make health care delivery more effective. New food crops with better productivity, nutritional value and taste are already beginning to come into our supermarkets. Bioprocessing in industry is leading to new plastics and biomaterials with unique properties while at the same time enabling more efficient recycling or destruction of industrial waste.

19. The UK has the opportunity to become a world leader in biotechnology and bio-industry. This does not come as a surprise. After all, the structure of DNA was first unraveled in Cambridge and our universities are still at the forefront of technical advances in bioscience. This is also a field where we have the expertise to turn inventions into commercially successful products. A quarter of the world's top twenty best selling prescription drugs were developed by UK based businesses. (6) Furthermore we already have a bio-industry which by the end of 1998 is forecast to have turnover of over £1.5 billion, employing nearly 14,000 people (7).

20. But competition in biotechnology is worldwide and growing fast. The USA leads the way with more than 300 entrepreneurial, publicly quoted bioscience companies. The most successful of them is Amgen, Inc, a company which sells more than \$2 billion of its new protein drugs each year. It has a market capitalisation of approximately \$16 billion. Others, such as Genentech, Chiron, Biogen and Genzyme are only just behind, generating much needed medical breakthroughs and rapid growth in revenues, jobs and profits. If the UK is to have its own string of successful bioscience companies, contributing to the economy, trade, employment and general well being of our society, then we believe that a framework for encouraging the development of this emerging sector needs to be put in place now. Germany, from a relatively low base, has indicated that it intends to develop such a framework rapidly.

III. THE UK'S COMPETITIVE STRENGTHS

21. To attain the benefits of higher growth and employment, and all that would accompany them, the UK needs to build upon the following strengths:

- (i) The UK has a strong presence in a number of sectors that use technology as a significant part of their business:

we have some world class companies, for example in pharmaceuticals;

we have some rising companies in various technological sectors. To sample the possibilities, the reader could look at the websites of the BioIndustry Association, the Federation of Electronics Industries and the Computing Services and Software Association, at

<http://www.bioindustry.org/welcome.html>,

<http://www.fei.org.uk/fei/index.htm>, and

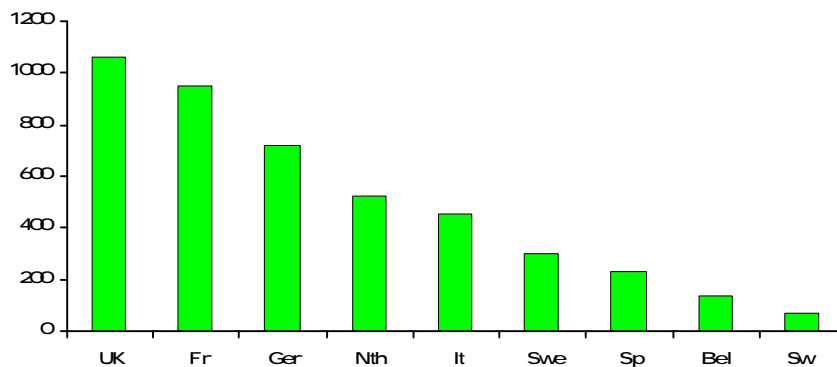
<http://www.cssa.co.uk/cssa/index.htm> respectively.

- (ii) the City of London is a major world financial centre, still the largest in Europe, though working in highly competitive markets where others are ambitious to catch up. The City has enormous funds available for the financing of high

technology UK firms, if the conditions are right;

- (iii) we have the most lively venture capital industry in Europe. The UK venture capital industry has invested nearly £23 billion in the UK since 1983 (8). The bulk of this has however gone into management buyouts. Over 40% of total European venture capital is invested in the UK, though that figure falls to 20% if MBO/MBIs are excluded. (9: 1998 report) Our record of investment in high tech early stage SMEs is weak.
- (iv) our universities, which have had a sound record in scientific research. Too often this has remained in the laboratory, although there are some signs of an increasing commercial awareness; the same holds for many individual scientists,

**Chart 1: Distribution of Venture Capital in Europe
(1996) US\$ million**



who are increasingly enthusiastic to look for opportunities to commercialise their research;

- (v) the English language (the international language of choice in the technology community);
- (vi) an open economy and culture;
- (vii) and the Government has made it clear that it takes very seriously the UK's relative performance in financing and developing high technology businesses.

22. So we recognise the UK's strengths, though we know that there is room to improve. Attitudes to making money out of science, and creating jobs from that source, are beginning to change. Attitudes to technology and commercialisation need to catch up. Two small examples illustrate the point. We have a flourishing and high quality magazine aimed at the science community and those who are interested in science, in the 'New Scientist'. Why do we not have an equally successful 'New Scientific Entrepreneur'? Second, medical machinery is an example of our strong science base not currently translating into commercial products, UK

jobs and profitable markets.

23. We see signs of a changing academic culture, that gives great hope for the future, though it will need constant attention. The new University Challenge Scheme is aimed at changing this culture. More needs to be done, to encourage scientists, universities and other research institutions to commercialise their research, while maintaining the UK's record in world class scientific research. We should celebrate the commercial success that is its natural partner. Our financial institutions have shown a lack of interest in new forms of investment, including venture capital. That needs to change.

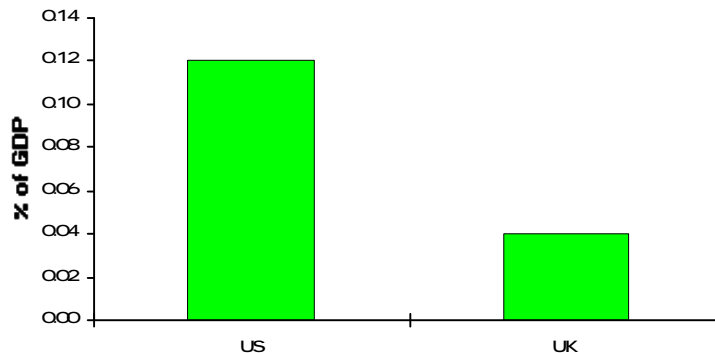
IV. THE OTHER SIDE OF THE ATLANTIC

24. Despite our achievements and our advantages, the UK still has a long way to go to become competitive with the US, the benchmark in the financing of high technology businesses, as it is in much of high technology itself. The series of seminars launched by the Chancellor and the President of the Board of Trade are highlighting the gap in our productivity performance, particularly when compared with the US. High technology is a very important part of that story. Silicon Valley is well known as the cradle and nursery of high technology businesses. What is lesser known is that a flourishing venture capital community has made a key contribution to the development of the Valley's businesses. Big US financial institutions have also made a powerful input to the financing of US ventures into high technology. The OECD say that pension funds have become the largest source of venture capital funding in the US, accounting for close to half of the funding in 1996. (10) Corporate venturing is much livelier in the US (11). US universities take an active part in business development, and the academic entrepreneur has been a well known figure in America for decades. University endowments, such as the recent \$1 billion increase at Yale, are important. Wealthy individuals are far more likely to invest in technology ventures, and are more numerous relative to the overall population. Business failure is regarded much more an opportunity to learn, not a career disaster. And though the record of US government, at federal and state level, can vary, there have been times when its interventions have made a crucial impact, for good and ill. The results of all this symbiotic activity are enormously impressive, as our two selected case studies of bio-industry and the information industries demonstrate convincingly. 24 US companies - most in bio or IT industry - grew their turnover from \$2.1 billion in 1975 to \$248 billion in 1995. In the same two decades, their employees increased from 48,300 to 1,383,100. (12) The result is a vibrant economy with a huge market for new products and services made possible by technological progress. Carol Galley put the case very well in her introduction to the 1998 UK R&D scoreboard :

“..we need to improve the efficiency of the capital market for technology based firms. To understand why, one only needs to compare the capital markets of Europe with those of the USA. In recent years, less than a quarter of the investments made by the European venture capital industry were in technology based sectors. By contrast, the USA has managed to channel almost two thirds of its venture capital funds into technology based firms, and currently reaps the benefit of a flourishing technology sector. “

(page 9, The UK R&D Scoreboard 1998, published by DTI)

**Chart 2: Investment in High-Tech in the US and UK
(1997)**



Figures include MBOs and MBIs

Source: BVCA

25. Venture capital is a key case in point. According to a study undertaken by Hay and Abbott in the early 1990s, total venture capital funds under management in 1992 totalled £23.33 billion in the US compared to £7.47 billion in the UK (though it is worth noting that the latter is three times the total achieved by our biggest European rival in the venture capital industry, Germany). (13). However the UK figure includes funds invested in management buyouts and buy-ins (MBO/MBI), which are not included in the US figure. Stripping out the MBO/MBI funds gives cumulative classic UK venture capital funds under management in 1992 as approximately £3.4 billion. The gap between the US and the UK venture capital industry has continued to widen. In 1996, US venture capital investment for the year totalled £6.8 billion. By contrast UK venture capital investment in the same year amounted to only £1 billion, excluding MBI/MBI financing (14). For 1997, UK venture capital investment was around 0.14 per cent of GDP, the same as in the US. So the flows of early stage to expansion stage venture capital may be reaching comparable levels. But the stock lags behind by a considerable (though unquantifiable) margin, because the US has been developing this stream of finance for so much longer and on so larger a scale. This reflects some of the factors mentioned above, particularly the lack of commitment by UK financial institutions to venture capital funds, compared with their US counterparts.

26. We do not dismiss Europe and Asia, nor other parts of the world, as places from which we may learn. We are delighted to hear that the European Union is looking at ways of encouraging risk capital in Europe. The French Government has recently introduced some measures that look worth a closer look. We understand that the Chancellor and M Strauss Kahn have organised a task force on entrepreneurialism to do just that. We look forward to the results. The Netherlands is also of interest. But we have no doubt that it is most productive to look across the Atlantic, to see how high technology business can flourish; where a benevolent government environment can combine with an understanding financial community, a corporate culture keen to invest in ventures, commercially aware academics and high tech entrepreneurs themselves, in a public private partnership.

V. THE FINANCING ISSUES FACING HIGH TECHNOLOGY FIRMS IN THE UK

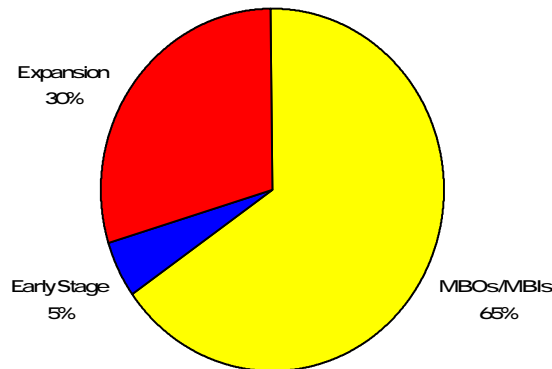
27. In recent years a number of leading UK authorities have identified an apparent inadequacy of financing as one of the reasons for the poor performance of the UK, in comparison to the US in particular, in the successful development of technology based businesses. The Bank of England's report, mentioned above (1), was particularly important in identifying the distinctive requirements of technology-based firms at the start-up and early Emerging Growths for genuine risk capital.

28. It is useful to distinguish startups and early stage companies - the Emerging Growth - on the one hand and companies which are established and capital hungry - the Sustained Growth stage - on the other. They both have in common the potential for growth or failure and the high tech nature of their products and manufacturing processes. However, their financing issues differ markedly. We need to examine the whole life cycle up to the point at which companies break through - as they do too rarely in the UK - into massive commercial success, with employment in the '000s, significant contributions to UK growth and regular dividends to investors.

29. Looking first at the Emerging Growth stage, there seem to us to be three key issues at the birth of a high technology company:

first, the company must find funding, on the right terms, to allow the product to be developed, markets to be assessed and explored, and to finance all the other activities a new enterprise must get under way. For all sorts of reasons, but particularly because the company has no income to repay loans, equity capital to finance R&D and other investment is much more appropriate in the early stages than loan capital. Venture capital is crucial here. A high proportion of UK venture capital, as noted above, goes to finance management buy-outs and buy-ins. That has a positive role in the UK economy, but does not address the concerns of our report. Abbott and Hay estimated that 16.8 per cent of disbursed venture capital went to early stage companies in the UK in 1992, compared with 28.7 per cent in the US (and here it is noteworthy that Germany scored just below the US, at 27.6 per cent) (15). In 1997 65% of venture capital fundings went to MBOs/MBIs in the UK, whereas only 5% was invested in early stage companies (16). The absolute gap with the US remains enormous, particularly in technology ventures: For example, in 1997 the US venture capital industry invested £5.8 billion in startup and early stage technology based businesses, compared with an equivalent figure of £349 million for the UK (17).

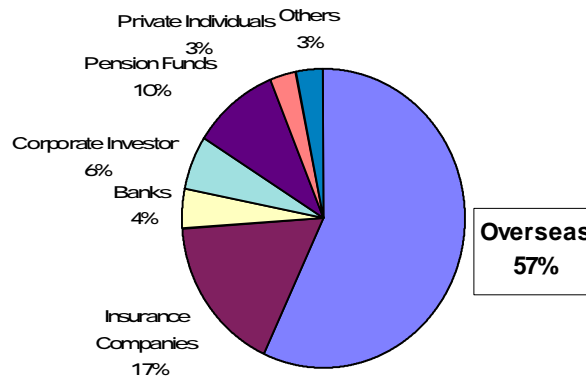
Chart 3: UK Venture Capital Investment by Financing Stage (1997)



Source: BVCA Report on Investment Activity 1997 (May 1998)

The relatively low level of venture investment by individuals (entrepreneurs, friends, business angels and others) and the absence of venture capital investment by endowment funds and foundations is also striking. As usual, it is enlightening to look across the Atlantic. From 1986 to 1992, \$4.9 billion was committed to US venture capital partnerships from these two sources, with private individuals alone contributing \$2.33 billion. (18) By contrast venture capital investment by private individuals in the UK remains minuscule, approximately £16 million being committed to formal venture capital during 1994-95, primarily to non-technology firms (19) (though informal angel capital may be much higher, there is no reason to believe, and some reason to doubt, that we out-perform the US on this front);

Chart 4: Total Funds for UK Venture Capital by Source (1997)



Source: BVCA Report on Investment Activity 1997

second, the company must attract a management team with the talent and experience to get the venture on the road to success. Scientists and engineers with ideas are invaluable. So are business managers with the experience to develop products and bring them successfully to market. This is in part a financing issue, because high quality managers need high quality remuneration, at least in prospect, to attract them to high risk ventures. The importance of this human element in creating investor confidence and catalysing finance flow was recognized by the Working Group as a pivotal issue. This includes developing skills, from university onwards, that such managers need.

third, companies need much better access to corporate venture capital. There are some initiatives around. UC Cruciform, based, at University College London and part funded by Glaxo Wellcome, is a case in point. But the scale is, according to anecdotal evidence, far too small, compared with the US. The Tech Stars Group, chaired by Ronald Cohen of Apax Partners & Co and sponsored by the DTI, is examining how to encourage more work in this area. We welcome their efforts.

30. Getting finance on the right terms can be done, if all the ingredients for success are clearly present. A technology that looks ripe for exploitation, with the right mix of technological and wider business expertise in the management team, put together in a convincing business plan and marketing strategy, will usually succeed. But we believe that even then the business may not always get off the ground.

31. If all the right ingredients are not clearly present, the problems are all the greater. If this were simply the natural functioning of the market, there would not be practical issues to address here. Too often, we believe, barriers arise which could be removed, by those who put them there and by others. In particular, there are certain barriers to investment faced by all potential investors, whether they be individuals, foundations, institutions or venture capital partnerships. We have in mind particularly:

the difficulties, time and cost of properly evaluating the technology possessed by the firm and its commercial potential;

the long lead times involved very often before commercialisation. This is a particular issue for biopharmaceutical companies where it may take 10-15 years to bring a product successfully to market, but it is not unique to that sector. New technologies can often require significant outlays before trading is possible and profitable.

some emerging companies suffer from the opposite: software is an example, where products are developed and time-expired at such speed that the financial system is sometimes insufficiently nimble to finance their development. To measure the costs, one has only to look at Microsoft, Sun and Intel, and think of the early British lead in computers, which had such small results in terms of developing a UK-based computer industry on the massive scale of the US.

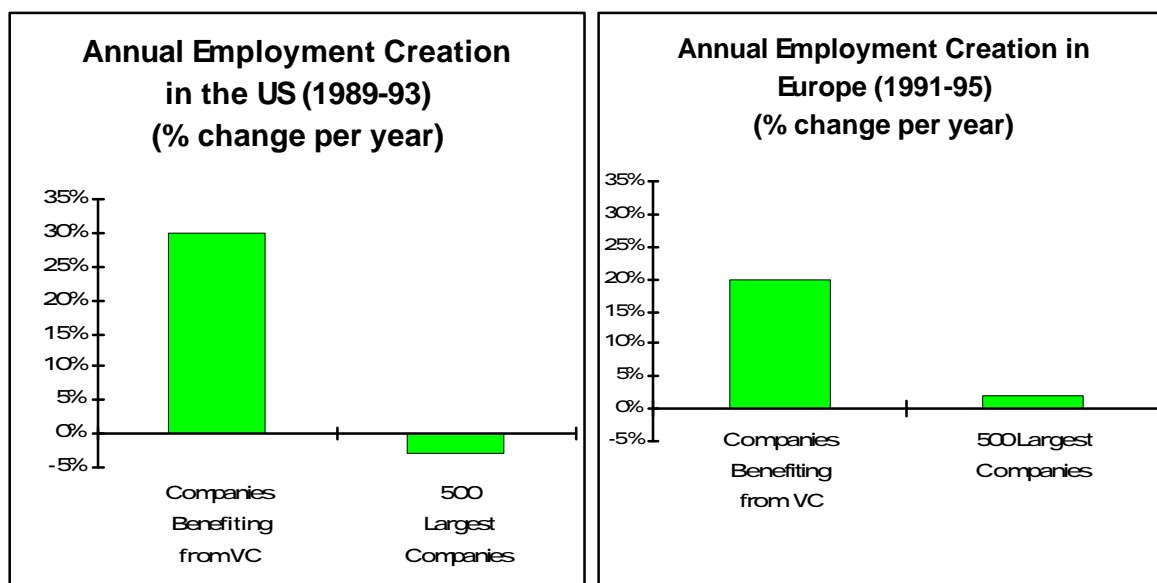
the perceived high risk of such businesses at an early stage and the consequent high rates of return required; we believe that the risks are often over-emphasised compared with the potential returns, at least when comparing the UK with the US. Loan finance is particularly hard to come by in these circumstances.

the relatively small size of technology investments, which for institutions and venture capitalists can make investment management on a significant scale relatively more expensive for a given rate of return.

the perception of low returns. There are good reasons for believing that this perception may be out of date (3).

32. Turning now to the Sustained Growth Stage, these companies remain hungry for capital. It is well known that Britain has a comparatively under-developed tier of growing companies, well beyond small scale but not yet global in reach, though often global in ambition. Not all will succeed by any means, but we need a larger population to enhance the chances that some will, with a dramatic impact on growth in output and jobs. That means growing the overall population of Sustained Growth Firms, and putting a framework in place to increase the chance that the few candidates with the potential for enormous growth will make it through to the peak. Job creation studies on both the US and UK show that around 3-4% of businesses are fast-growers. According to a recent US study (20), fast-growing firms account for nearly 80 per cent of gross job growth. A 1995 UK study (21) estimated that about 5-20 per cent of firms are responsible for as much as 70 to 80 per cent of gross job creation.

Chart 5: Employment and Venture Capital



Source: Risk Capital; A Key to Job Creation in the European Union - Commission of the European Communities, April 1998

33. Their financing issues include:

illiquid markets in their shares, with only a few investors, usually institutions, interested in their stock;

the challenge of adequate communication between companies and financial institutions; and the knowledge and understanding of high tech investment by fund managers and trustees.

- they remain in an active and international labour market, particularly where senior management are concerned. They must be able to retain these people through the growth years, and attract fresh talent.

34. We place importance on the financing needs of Sustained Growth companies, particularly since they sometimes risk not growing further to become global companies because of the financial system rather than their own commercial behaviour. They share some issues - particular the need to recruit and retain high quality management - with their younger cousins in the Emerging Stage. So some of our proposals would help those companies too. They also face fresh challenges. We call for a public debate to identify solutions to those challenges, with action by the Government and private sector in the near term. Our proposals on Equity Incentives need to be developed further to help these more mature companies too. We welcome the Tech Stars Group's activities, particularly in encouraging work on corporate venturing. We are delighted that the UK Presidency has launched a debate on risk capital in the European Union, in strong collaboration with the European Commission. We urge the

Government to give priority to follow up work on the Action Plan discussed at the Cardiff European Council, with other Members States, in the Council and elsewhere. We would like particularly to see progress on more liquid equity markets in Europe, drawing on the contribution NASDAQ has made to the development of high technology industries in the US.

VI. THE POLICY ENVIRONMENT

35. What role does the government have in addressing the barriers which the Working Group has identified?

36. In the first place, the tax system has a key influence on the financing of high technology companies. We have in mind primarily the capital gains tax (CGT) regime. Our income and corporation tax regimes are currently highly competitive, in the European Union and the wider world.

37. The CGT regime matters in two ways:

first, it influences individual investors, financial institutions and venture capitalists to invest (or not) in early stage companies; the CGT rate is a major factor here.

second, it can help to attract key managers, or make it harder to do so. Key managers cannot be attracted by salaries comparable to those paid in established companies. The early stage firm cannot afford them. What it can do is offer stock options, to promise the executive significant rewards, by helping to establish the business and achieve a high financial return, in exchange for taking the risk of joining a startup or early stage company. In the UK the tax rules on exercising stock options do not encourage the taking of such risks.

38. Venture Capital Trusts (VCTs) and the Enterprise Investment Scheme (EIS) are also both relevant here. VCTs aim to encourage investment into early stage companies, by promising a fairly easy exit via the quoted vehicle of a VCT, and giving both a partial income tax relief on investment, provided the investment is held for 5 years, and full CGT relief on exit. The EIS provides similar reliefs, while encouraging the 'business angel' to involve himself or herself in the running of the business. However there can be difficulties in using EIS provisions when venture capital is also active in the business.

39. Both schemes are worthwhile and we would not wish to discourage their use to promote investment in other kinds of early stage investment. But because of the wider benefits to the economy of high technology business, we believe that there is a case for a tier of tax incentive, for both schemes, targeted only on high tech early stage companies.

40. The second kind of Government policy that matters in this context is regulation, particularly in the field of financial services. We have in the past heard claims that there may be regulatory barriers which make it unnecessarily difficult for the early stage firm to attract funds from the capital markets or from business angels. There seems to be a widely held

perception, particularly though not exclusively amongst fund managers, that such barriers exist. We have in mind perceptions of the regulatory regime for insurance funds and pension funds in particular. Our conclusion is that in reality the regulatory regime for institutional investors creates no such barriers. Institutions have ample room for manoeuvre to invest more in high technology early stage companies. The problem is cultural and therefore a culture shift is needed to make this happen. A new focus on the potential risk-adjusted returns to early stage high tech investments would make a major contribution to that shift. For individual business angel investors we do have concerns that current regulations can provide barriers. These need to be addressed in the current review of the FSA.

41. Third, a startup and early stage company must make various payments to the state, on its own behalf and in respect of its employees, while at the same time it may have little or no income, much less profit. This is particularly significant for firms that must do R&D lasting a period of years - common in the bio-industry, telecoms and electronics, to name three key technologies in UK business. Such firms are at a disadvantage to established firms, regardless of the quality of their research, products or management.

VII. THE POLICY SOLUTIONS

(i) CGT

42. The United States provides a useful laboratory for the importance of CGT to the financing of high technology companies.

43. In 1969 CGT rates were increased sharply and the tax treatment of employee stock options was changed so that tax liabilities were incurred when options were exercised rather than when the stock was sold. Startup finance plummeted. 1969 was a record year up to that date, with newly formed venture capital partnerships raising \$171 million. By contrast, in 1974-75 only \$74 million was raised for first round financing by members of the US National Venture Capital Association.

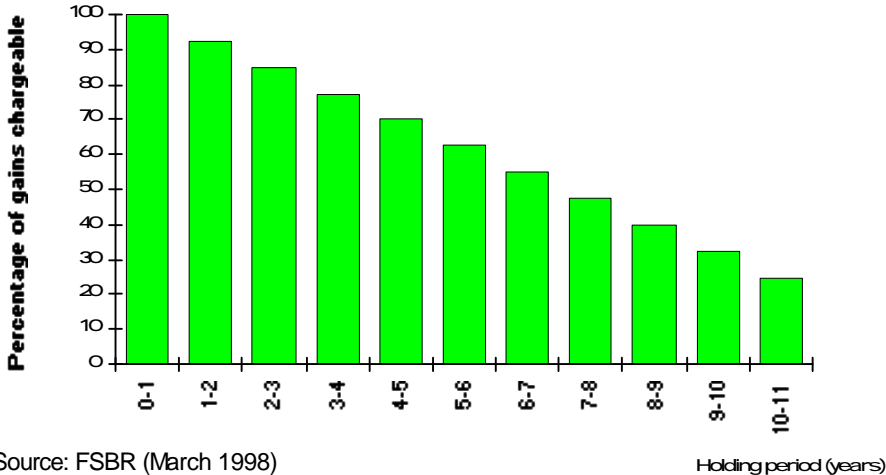
44. At the end of the 1970s this policy was reversed and the CGT rate was cut from 35 per cent to 28 per cent in 1979 and further to 20 per cent in 1982. In addition, after 1981 stock options were taxable when the relevant shares were sold rather than exercised. The market responded. In 1980-82 alone commitments to private equity partnerships totalled more than \$3.5 billion, two and one half times the commitments to private equity during the entire decade of the 1970s. Over the next three years such commitment reached more than \$4 billion annually, much more than an upturn in the economic cycle would have implied. The US has continued to develop its CGT regime to encourage entrepreneurial investment. Recent developments include a taper for long-term investors and flexible rollover arrangements to promote long-term investment in general rather than locking investors into a particular business.

45. No doubt other factors played a role in this turnaround. But the authors of the papers that we draw on argue strongly that CGT changes played a role, and we find their analysis convincing (18).

46. Looking first at the CGT rate, we would argue for a very low overall rate, purely from the point of view of encouraging finance into high technology early stage investments. There is a very strong case for applying such a rate without any qualifying period, to provide comparable incentives to those that seem to have had a significant effect in the US. This is because these investments, as noted above, carry excess risk, perceived and often in reality, compared with investments in established businesses, and they characteristically require the investor to stay in the company' stock for a lengthy period. This proposal has been widely sought in recent years, by the CBI, the BVCA and others. If there is to be a qualifying period, it is not possible to identify a single objective definition that will suit the circumstances of every technology and sector in which the UK has some real or potential competitive advantage. We understand the rationale for the Government's ten year period, and that there are arguments for longer as well as shorter periods.

47. We think there is a very strong case for radical reform. It is not only US experience that leads to that conclusion. The Netherlands, for example, is one of the liveliest capital markets in Europe, with a very positive attitude to inward investment, venture capital and encouraging early stage technology companies. It has a CGT regime aimed both at encouraging minority shareholdings by high net worth individuals and corporate investments. We would like to see the UK introduce a radical regime for high tech early stage companies that would charge 20 per cent on gains realised within a year, falling to zero within five years.

Chart 6: Capital Gains Tax Taper: Business Assets



48. We welcome the Budget changes, legislated in the 1998 Finance Act, as a significant step forward. They demonstrate the Government's understanding of the significance of CGT in encouraging long term investments in venture capital, and in particular the merits of a low marginal rate in that context. For the 1999 Budget we propose an urgent examination of the business assets test, which we believe is too restrictive. The thresholds of 5% and 25% above which employee and non-employee shareholdings qualify for the enhanced rate of CGT tapering is likely to result in a significant proportion of high technology founding entrepreneurs

and initial investors being unable to benefit from the enhanced rate. The requirement of the business for multiple rounds of follow on investment is likely to dilute their initial stake below these levels. The effects of this may be counter-productive in discouraging long term commitment from founding investors or creating internal resistance to adequate company capitalisation for growth. We recommend that these thresholds be removed or reduced.

49. If the radical reform described in paragraph 47 is not possible, we recommend that the Chancellor should plan a move to a regime which allows gains to be taxed at 20 per cent after 3-5 years, and the lowest rate of 10 per cent to apply after 7 years. To be truly effective this regime needs to be combined with rollover arrangements which encourage long-term investment in general rather than locking investors into a particular business. Where an investor re-invests the proceeds from the sale of a business asset in a second (or subsequent) business asset, then the number of years qualifying for CGT taper relief on the gains on each asset should equal the total length of time that the individual has been investing including reinvestment. The individual should be taxed on the combined holding period for all these investments. For example, at present if an investor buys shares, which qualify as a business asset, in Company A in year one, he will qualify for the 10 per cent rate at present after 10 years, only if he retains that shareholding for the full period. In our approach the investor could sell those shares after say four years, re-invest the full proceeds in Company B for a further three years, and get the full seven years CGT taper relief. The definition of a business asset should be that used in the Finance Act, subject to our comments above on that definition. In other words the CGT system should be neutral between encouraging long term investment in a sequence of investments over time on the one hand, and investment in a single company for a sustained period on the other. What matters is that individuals are encouraged to make long term investments in the high technology sector, whether in a variety of companies or one, according to their own market-based judgement. Decisions on particular investments within the sector should be driven by business reasons, not tax considerations. We are concerned that the 1998 Finance Act changes to the CGT regime would lock investors in longer than is economically or commercially rational, without the changes we propose. Our objective should be to encourage liquidity in individual company equity, as in the US and elsewhere, while providing an environment in which overall investment in the technology sector grows in the longer term. If a way could be devised of applying such a regime only to early stage high technology companies, we would support that. Alternatively, a general reform along these lines would also help the sector that we are examining.

(ii) VCTs and EIS

50. We welcome the changes announced in the Budget to the EIS and VCT schemes. These should help to ensure that the schemes are better targeted and that as a result more finance is available for start-up and early stage investments in high tech companies. To help that effort, it would be worth raising the limit on individual investments in VCTs from its present £100,000 to £150,000. On the basis of the first three years' experience, we believe that this could increase the venture capital raised under the scheme by 15%.

51. But more could be done. We would like Government to legislate for a new tier of tax incentive under VCTs, directed at those firms alone, called the Technology VCT. VCTs have proved an excellent vehicle for raising venture funding, over £500 million in the first three

years of the scheme's operation. But only 18% of funds in 1997-98 went to high technology firms, and only 20% to early stage (23) There therefore seems a strong case for much more targeting of VCTs on the high technology early stage sector. This raises two major possibilities:

the front end reliefs for VCTs for such investments should be increased. Technology VCTs would attract full relief from income tax to investors in the year of their investment, as well as CGT exemption after 5 years. Relief should be at the tax-payer's marginal rate, to maximise the incentive to invest in this high risk area. This would certainly make such investments extremely tax efficient and therefore help to attract venture capital into the high technology Emerging Stage sector;

or the existing reliefs could be applied to Technology VCTs, with other investments losing some of their reliefs eg only income tax relief at the basic rate. This would help avoid criticism that the Technology VCTs would be merely tax-driven investments, and provide safe havens for investors, but it would reduce the attractions of a scheme which has attracted significant finance, over half a billion pounds in its first three years. We therefore do not recommend it.

52. Since the current scheme is established and successful, we recommend the first approach.

53. Rules would also have to be put in place to ensure that Technology VCTs were invested solely, at the outset, in qualifying high technology early investments, though rules would have to be put in place to ensure that these companies were able to expand their businesses on commercial lines during the qualifying period for reliefs.

54. That raises the issue of how 'start-up and early stage high technology company' should be defined in legislation for this purpose. The drafting is a matter for the Government. We are conscious that much work remains to be done to devise a satisfactory definition for the purposes of a Finance Act. We suggest that the following points should be considered:

It would be best to start with a restrictive definition and err on the side of caution. This would avoid the excesses that were associated with the Business Expansion Scheme and, in a much more limited way, VCTs, before the recent changes. It would also allow the Government and the private sector to evaluate the scheme, before its expansion is considered.

Many approaches to definition are possible, although they generally fall into two types: those that address the issue at company level and those that do so at sectoral level. Both are covered in more detail at Annex B.

First, a definition drawing on the US definition discussed in Annex B could be used. We could start with a group of included sectors, precisely defined. Excluded sectors could be listed, as an alternative, but inclusion looks, at first

sight, more straightforward.

Second, quantified limits, as in the OECD and other definitions discussed in Annex B, could be used.

We have no a priori preference between these two alternatives. The test must be what is practicable, as a matter of law and in administering the scheme. We assume that a subjective definition would not meet these tests.

Such a definition should be developed solely for the purposes of Technology VCTs. Among our proposals, only that one and Equity Incentives require Finance Act provisions, and the latter is addressed to a quite different policy issue. We believe that each proposal should be considered on its merits and, if accepted, legislation, including the definition of the eligible companies, should be tailored accordingly. That adds to complexity, but the corresponding risk of making a definition bear more weight than it should is, we believe, greater.

55. If the scheme were successful, fresh kinds of company or sector could be added, perhaps by secondary legislation. The Government could also consider extending the reliefs to a new category of the EIS, on the same proviso.

56. The total cost of the initial Technology VCTs scheme would be an estimated £50 million, but that is of course highly subject to the success of the new variant in attracting venture capital, and the tax payments of the companies which benefit, in the longer term.

57. The Group also considered whether VCT reliefs should be extended to institutions. For insurance companies, funds under management total around £750 billion. A re-focusing of only 1% of that total, at the margin, would make a significant difference to the availability of venture capital to early stage high technology funds. We understand that the French Government has recently announced proposals for encouraging their life insurance industry to invest in venture capital. We propose that Technology VCTs should be made available to insurance companies, with a tax regime tailored to their special circumstances. Life and non-life companies should be eligible to invest.

58. For pension funds, given their tax position, a tax relief along these lines cannot be implemented. The Group considered a subsidy on the expenditure side, but rejected it on the grounds that pension funds already enjoy considerable tax privileges. But we would like all institutions to be able to invest in VCTs.

59. Such schemes would have to be capped and time-limited. Their rationale is to encourage financial institutions to get more involved in investing in early stage high technology companies, to overcome the misperceptions about returns, but not to provide an indefinite subsidy.

60. We would also be happy for the Government urgently to consider other ways of targeting individuals' investments, via VCTs and EIS, on the high technology Emerging Stage sector. On the EIS, we would also like to see the detailed provisions of the EIS amended to

make it possible for private investors (“business angels”) to make full use of this important vehicle for high risk investment, given the importance we attach to great involvement by business angels, often with valuable management experience and talent, in this sector. The rules on disallowing EIS relief if a company is controlled by another company can make it impossible for a business angel investing alongside a venture capital firm to receive EIS relief. The revised connected persons rules proposed in the Budget may frustrate legitimate business angel investment. These issues need to be addressed.

(iii) Equity Incentives

61. On stock options, we are very conscious that the present treatment partly followed the adverse public reaction to the tax privileges of senior managers in well established UK corporates, which led to the tax changes implemented by the previous Administration following the publication of the Greenbury Report. We have no desire to revive that controversy.

62. What we do want is to encourage high quality senior managers to join and stay with early stage high technology ventures, marrying management expertise to the scientific and technological knowhow of other founders in the way that success demands. We also want to encourage them to own shares - as opposed to share options - in their companies, to strengthen their commitment to the firms’ success. (24) We welcome the Chancellor’s decision to consult on management recruitment incentives for the high tech sector (25). We would like our proposal below to be considered in that context.

63. We would like the tax treatment of options to be changed, for managers in those early stage high technology companies alone. For tax purposes, the Government would need to define the group strictly, as we note in the Introduction. Even restricting the changes to unquoted companies would, we believe, be too wide and be open to abuse. The new tax treatment would apply only to managers prepared to take a significant risk with their careers, and reward only success, not failure nor mediocrity.

64. We propose that, using the definition of high technology Emerging Growth business developed above, managers in such firms would be awarded Equity Incentives:

They would be taxed on their gains only at the point that they sell their shares, and be taxed as a capital gain, not as income. This change would remove the perverse incentive to sell shares to pay the Inland Revenue, at a time when companies are keen for senior managers to demonstrate their commitment to the firm by retaining a significant shareholding.

Equity Incentives should also be subject to half the top rate of CGT obtaining at the time, provided they were held for the qualifying period, in order to bring key managers who make the commitment to join and stay with an early stage technology business into an equivalent position to early stage investors in respect of CGT. This would extend the 1998 Budget changes, for this group. Key executives should be eligible, whether they are recruited from inside the

company or elsewhere, because these people are in an internationally mobile market. We do not wish to stipulate an arbitrary numerical limit, but we would only expect a few senior executives to be covered by the scheme, for that reason.

The present £30,000 limit for Company Share Option Plans ('approved' schemes) should not apply to Equity Incentives, because it is too low. Nor should a higher limit be substituted. In this international labour market very significant remuneration packages are necessary to recruit managers out of established companies.

Finally, the three year qualifying rule used in approved schemes should also not apply.

(iv) Regulatory issues

65. Our group frequently raised regulatory concerns. This is a field replete with complexity, in primary legislation, regulatory bodies' own rules, the rules and guidance of the actuarial profession, and the practices of fund managers and institutions.

66. A draft bill changing the regulatory structure of the financial services industry was published this summer. The key change is that the existing regulatory bodies will be replaced by one regulatory body, the Financial Services Authority (FSA), based on the old Securities and Investments Board. It will have responsibility for regulating much of the financial services industry including banking, building societies, insurance and investment business.

67. This Bill follows some key changes in recent years, including the changes in 1995 to the Insurance Companies Regulations and the Pensions Act 1995.

68. The essence of insurance regulation is that an authorised insurance company has to maintain assets which exceed its liabilities by a stipulated 'solvency margin' (of about 8-18% of those liabilities). The formula for the solvency margin is precisely laid down in EU law. Rules for the valuation of assets for this purpose are contained in UK and EU law. Until 1995 these rules did not allow investments in a new unquoted company to be counted towards the margin until it started making profits (Regulation 44 of the 1981 Insurance Company Regulations) so plainly they heavily deterred insurance companies from investing in such business.

69. However in 1995 the rules were amended. They now (under Regulation 51 of the Insurance Companies Regulations 1994 as subsequently amended) have the effect of allowing insurance companies to count the "full current value" of such investments, that is to say the value which "ordinary prudent investors" would place on them in a (non-forced) purchase or sale. This is subject to a "not too many eggs in one basket" rule, but this only bites if more than 1 per cent of the assets matching liabilities are invested in a single venture capital company or if the total investment in all venture capital and other unquoted companies exceeds 10 per cent of total assets. For the largest insurance companies these are very high limits. The

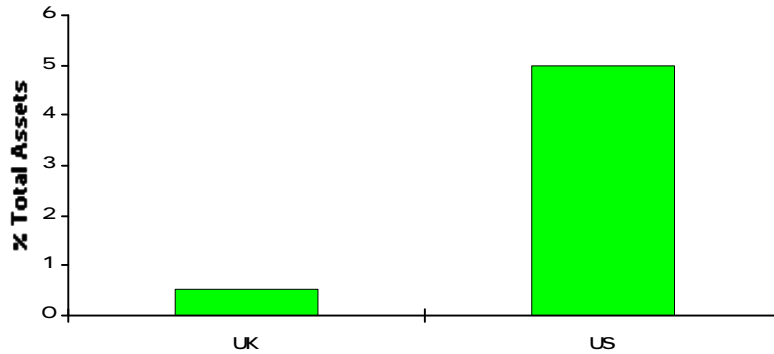
largest insurance company would be able to invest up to about £2 billion in venture capital, of which £200 million could be invested in a single company. Therefore the insurance regulations do not on the face of it present a barrier to high technology businesses.

70. The 1995 Pensions Act specified a minimum funding requirement. Most actuaries reckon that this will tend towards slightly greater investment in gilts and other fixed interest securities, slightly reducing the scope for investment in equities including higher risk securities. Given the relatively small role of venture capital in the UK, compared with the US, such a change could have a disproportionately significant effect on the availability of venture capital. But we came across no evidence that this was so, and several of the institutions represented on our group have discussed the subject with the pension funds and investing community in recent years. So once again, we conclude that culture is more significant than the regulatory process.

71. However when we turn to private investors, and particularly experienced entrepreneurs and managers acting as “business angels”, the situation is different. Rules made by the current regulators recognised by the FSA restrict the ability of entrepreneurs to solicit investment from unseasoned investors who lack professional insight. The main controls in this area that affect the promotion to the public of high technology businesses are in the Financial Services Act, which restricts the advertising of investment opportunities by unauthorised persons and prohibits the promotion of unauthorised collective investment schemes to the general public . There are a number of exemptions from the advertising regime, for example for advertisements issued to persons sufficiently expert to understand the risks involved. We understand that these exemptions will be replicated in the proposed new financial services regulatory reform legislation. We would like the exemptions to be as widely defined as is consistent with protecting less expert investors, to maximise the flow of capital into the early stage high tech sector, particularly from high net worth individuals. We would also like to see a more flexible approach adopted to controls on the promotion of unauthorised collective investment schemes. It should be easier, for example, to market venture capital partnerships’ side funds to high net worth individuals, to replicate the success these funds have had in the US.

72. Our broad view, against this background, is that the statutory and regulatory regime is not a significant barrier to investment by institutions in high technology early stage investments. Rather, we believe that the culture of the institutions and professions which operate within this regime has been too slow to adapt to an economy in which high technology looks set to play an increasing role. This does not mean that we want pension fund trustees, insurance company managers, fund managers, actuaries or anyone else to throw caution to the winds. There are risks inherent in investing in the high technology sector, as we note above, and the regime must pay full heed to them. Boards and trustees have fiduciary responsibilities to shareholders, policy holders and pensioners, which must continue to be respected. But we believe a better balance could be struck, between prudential considerations and investment in a sector which contains some firms with outstanding commercial and financial potential, and a better financial track record than is perhaps generally recognised . It is not unknown for fund managers to be instructed not to invest in high technology and early stage firms, because of the perceived risks. More positively, some major consultants are beginning to advise on pension funds’ opportunities in high technology early stage investments. We reiterate the significance of the data we cite in our Introduction, as a signal that institutional investors, fund managers and advisers could revisit the place of the high technology early stage sector in investors’

Chart 7: Pension Fund Assets Invested in Venture Capital



UK pension funds: end 1995; US pension funds: average allocation
Source: BVCA Website

portfolios. We believe that the larger institutions are likely to take the lead in any change that occurs here, since they are best placed to spread the risks.

73. In the US, pension funds and other financial institutions have provided an increasing share of venture capital in recent years: around 51% in 1995 and 'close to half in 1996' (26). US pension funds are said to allocate around 5 per cent of their funds to alternative assets, primarily venture capital, sometimes as high as 15%. (27) In the UK the picture is more complex. Insurance companies have been building up the share of venture capital, reaching 25% of total venture capital raised by BVCA members in 1997. Pension funds are traditionally the biggest source for UK venture capital, though their share of BVCA members' funds raised fell back in 1997, from 51% the previous year to 31% in 1997 (28). And the National Association of Pension Funds estimates that only approximately 0.75 per cent of pension funds are invested in venture capital (29). Levels are also of course crucial. We noted above that UK venture capital accounted for a perceptibly lower proportion of national output than in the US. The institutions have the major role to play in filling that gap.

74. From this background, it is clear that changing the culture of institutional investment in venture capital would have a significant impact, providing it were married to the right mix of investment skills. It would spread the risk inherent in such investments. It would provide a larger pool of finance. It would increase the opportunities to identify those rare companies that have the potential for enormous growth, seen to such effect across the Atlantic.

75. In 1992 the London Stock Exchange allowed the first full listing of a development stage UK biotechnology company. New regulations detailing the criteria required for listing such companies were subsequently published by the Exchange as Chapter 20 of the Listing Rules. Since that time approximately 30 biotechnology and life science companies have successfully floated shares on the London market, creating a new life science technology

sector of public companies in the UK. Access to substantial amounts of capital available through the London Stock Exchange has been an important enabler of growth for public companies in the sector but it has also been a catalyst for enhanced venture capital interest and investment in bioscience start-up businesses. We believe that the obvious benefits to the UK bioscience sector which have resulted from the Chapter 20 regulations can and should be made available more widely to high technology businesses as a whole. We recommend that the criteria of chapter 20 should be relaxed and broadened to enable and encourage loss making technology businesses outside the biosciences sector to seek public market finance.

76. A good deal of work has been done in recent years to address the cultural issues surrounding financial institutions' investments in growing companies, including high tech early stage. The Myners Group produced a very useful report in 1995, updated in 1996, on best practice for larger quoted companies. DTI and CISCO, the representative body for smaller quoted companies, are beginning work adapting the Myners guidelines for that sector. We propose that the Governor of the Bank of England should convene an annual forum, along the lines of his meetings on small business and the banks, to bring together senior representatives of the major financial institutions and high tech early stage companies, to improve communications in both directions, building on previous work in this area.

(v) Boosting the high tech startup

77. To help remove the disadvantages suffered by the high tech startup, with little or no income and steadily (and at times unsteadily) rising losses at a time when various payments have to be made to the state, we propose a new scheme, the Emerging Growth Rebate. It has been proposed, in different forms in recent years, by the CBI and the BioIndustry Association, among others. Following our Interim Report we are pleased that the DTI are leading a Whitehall analysis of our proposal, in the context of the Government's Comprehensive Spending Review.

78. The basic idea is that firms receive a rebate from various tax payments, in exchange for cancelling their carried forward R&D tax losses, to help them over these early years of expensive technology investment, before income then profits start to flow. The tax payments which we believe are most appropriate in this context are PAYE and National Insurance Contributions, because they are employment-related. Since the scheme's rationale is to promote output and jobs in the high technology sector, these payments seem appropriate limits. The scheme would help finance a firm for a limited number of years, say five.

79. There can clearly be no question of employees' income tax not being collected and paid, nor of employees not making their National Insurance Contributions (NICs). The firm would receive a rebate up to a ceiling determined by the firm's payment of those two taxes, and its carried forward tax losses for the year, which it would absorb at a discounted tax rate. The loss of the latter would encourage the firm to focus on the rebate, and whether it was an appropriate form of financing, in the short and longer term. But tax and NICs would continue to be collected and recorded in the usual way, without any change to employers' obligations and employees' access to benefits financed by NICs.

80. We understand from Treasury experts that this scheme would probably be classified as

public expenditure, despite the fact that the financing would take the form of relief from paying taxes.

81. From an economic and industrial perspective the classification seems to us irrelevant. We understand that as spending it would have to be the responsibility of a Minister with a spending programme. We see that as a matter for the Government. The same is true of how the scheme is administered, though we would like that to be as light and unbureaucratic as is consistent with the rules governing the proper use of public funds. We confine ourselves to the substance of the case.

82. Once again we would wish the scheme to be open only to Emerging Growth high technology companies. The definition would also draw on the discussion in Annex B, probably with size limits, for example on turnover, as well as a definition of high technology. We understand that the definition would be contained in administrative guidance, if it were implemented by the Department of Trade and Industry, rather than primary legislation. To limit the costs, at least until the scheme's value could be evaluated, it would be worth focusing the scheme on the smaller end of the firms that we are discussing, firms in the very early stage of development.

83. The scheme has the following advantages:

it meets a real need among a well defined category of high technology ventures, to reduce cash outflows and to enable employment while extending the periods between financing and therefore improving overall success rates;

it redresses a situation partly created (unintentionally) by government, via the tax system, which results in unequal treatment between early stage technology companies which are unable to offset R&D expenditure against revenues for tax purposes and established companies who can, and it does so by a correcting mechanism run by Government;

the scale of the scheme could be modest, at least initially: say annual expenditure of £50 million a year (with a budget ceiling fixed in advance, allocated via a queue if necessary), while its effectiveness is monitored and evaluated; we are very conscious of the need to respect the wider pressures on the Government's fiscal policy;

it is market driven. The firm has to make a commercial judgement on giving up its carried forward tax losses for the discounted benefit of the rebate and the desirability, if the scheme goes down that road, of going into partnership with the public sector;

it can be ring fenced from the other firms which make losses for quite separate reasons.

(vi) Other ways of boosting the high tech startup

84. The Group was glad to be associated with the University Challenge scheme announced in the Budget. This will provide at least £50 million in the coming year to finance venture capital funds on UK university campuses. The Government is providing £20 million, the Wellcome Trust £18 million, the Gatsby Trust £2 million and a further £10 million is planned to come from local sources. This is an excellent initiative, aimed at encouraging our scientists to collaborate with venture capital and industry to commercialise scientific discoveries in Britain, by providing early stage funding. The UK's record in this respect is better than often described, but we still have a long way to go to meet the best US standards.

85. We also welcome the £1.1 billion announced on 13 July to expand the funding of the UK science base and the £300 million announced for the Higher Education Funding Council. Funding came jointly from the Wellcome Trust and the Government. Some of this funding will help develop the information derived from the human genome project. Wellcome have already committed £240 million to this project. The aim should be to take the UK's share of cracking the human genome from one third to one half. A relatively modest sum - say around a further £30 million - would make a significant contribution, given the significant investment that has already taken place. We recommend that the Government consider financing that expansion. We understand that the National Institute of Health is funding the equivalent research in the United States. The work is crucial to maintaining our pre-eminent position in the research on the human genome, to training scientists to providing the building blocks for the continued success of our pharmaceutical industry.

86. Similarly, we would like the Government to encourage the Cambridge School for Entrepreneurship, and similar initiatives around the country. Such initiatives would help to develop business skills in pupils and students who specialise in science and technology. The effort needs to begin in school and be followed through at university, for undergraduates and postgraduates. This would help enhance the opportunities for researchers to spot the commercial significance of their finds, and enable them to develop those opportunities in tandem with the business and financial communities.

87. We look forward to the Government's proposals on high technology startups and the DTI's Loan Guarantee Scheme. It was clear from our discussions with the British Bankers Association that there is room for more activity in this sector, and that the banks are keen to collaborate with the Government in encouraging it.

88. We examined the DTI's SMART scheme and talked, with the CBI's help, to some users. The scheme is designed to support innovative technological development in English SMEs (and has counterparts elsewhere in the UK). Awards are made for feasibility studies and pre-production development. The scheme seems to operate generally very well. Recent changes have made the bid process more user-friendly, although practice among Government Offices and Business Links can be uneven. The scheme also has a new 'technology acquisition' element, allowing SMEs to receive an award to develop technology originated elsewhere. There are plans for a national promotion of the scheme in the Autumn. We welcome these developments. At the same time, the system for allocating budget for SMART awards among regional government offices could mean that higher quality applications, if made in the wrong

region, might not get funded. This should be monitored. Given the benefits of the scheme we think that it should be expanded when resources allow. We would also urge that more thought should be given to how SMART winners and other applicants can be put in touch with relevant financial networks, and other support networks. Practice seems to vary.

89. The planning system is important. High technology early stage companies often wish to locate on green field sites immediately adjacent to their sources of technology. Needing to attract world class managers, scientists and engineers, such firms can also be keen to site their laboratories and manufacturing in places outside the traditionally industrialised parts of the UK. Such places are pleasant addresses, with good environments, high quality schools and universities and attractive countryside. The planning system means that such location decisions can be fraught with difficulties. Hinxton Hall provides a topical and important example. It is a research centre working on the human genome. It owns land in the surrounding area, suitable for green field startups which would exploit the centre's research. Located near Cambridge, the area has a lot to offer firms and their staff. It is currently awaiting the decision of an inspector on an appeal against the local authority's planning decision. We understand that, there and elsewhere, interests need to be balanced, but we ask whether the balance is right. The speed of the process is also an issue, for a sector that can need to move very fast on the face of global competition and rapidly developing technology. We ask the Government to consider how to take fully into account the value of high technology early stage companies to the economy in planning decisions. US experience has shown conclusively that its major growth points have been clusters of technology-based companies located near the best US research institutions.

(vii) The Sustained Growth Stage

90. Turning briefly to the Sustained Growth Stage of high technology companies, when they are making profits and have considerable growth potential, but they risk not growing further to become global companies. They share some issues - particular the need to recruit and retain high quality management - with their younger cousins in the Emerging Stage. So some of our proposals would help those companies too. They also face fresh challenges. We call for a public debate to identify solutions to those challenges, with action by the Government and private sector in the near term. One general fillip for growing companies, which would help those in the high tech sector too, would be to introduce a starting rate of corporation tax for small companies at, say, 10 per cent. This incentive would encourage them to re-invest in their businesses. Our proposals on Equity Incentives need to be developed further to help these more mature companies too. We recommend above that the criteria of chapter 20 of the London Stock Exchange's Listing Rules should be relaxed and broadened to enable and encourage loss making technology businesses outside the biosciences sector to seek public market finance. We welcome the Tech Stars Group's activities, particularly in encouraging work on corporate venturing. We are delighted that the UK Presidency has launched a debate on risk capital in the European Union, in strong collaboration with the European Commission. We urge the Government to give priority to follow up work on the Action Plan discussed at the Cardiff European Council, with other Member States, in the Council and elsewhere. We would like particularly to see progress on more liquid equity markets in Europe, drawing on the contribution NASDAQ has made to the development of high technology industries in the US.

CONCLUDING REMARKS

91. We believe that we have identified some key barriers to the growth of early stage high technology companies. None of them look insurmountable, if all the parties that are involved take an active interest in the task. The prize is enormous: a thriving high technology sector, producing more output and jobs, contributing to the government's aim, which we support, of improving the trend rate of growth of the British economy.

92. We present our proposals as a package. They address different and overlapping barriers. They mobilise the resources of the public and private sectors. They incentivise managers, firms and the financial community. They give a role to Government in ensuring that its policies on regulation, tax and the encouragement of technology give strong support to the companies we wish to see thrive.

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**THE WORKING GROUP ON THE FINANCING OF
HIGH TECHNOLOGY COMPANIES**

| | |
|------------------------|---|
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| Dr Keith McCullagh | British Biotech plc |
| Mr Derek Higgs | Prudential Portfolio Managers |
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| Mr Mike Smith | Bank of England |
| Ms Christine Soden | Chiroscience plc |
| Dr Hermann Hauser | Amadeus Capital Partners Ltd |
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| Mr Robert Mansfield | Vanguard Medica Limited |
| Dr Alistair Keddie | Department of Trade & Industry |
| Dr Craig Pickering | H M Treasury |

The Treasury and DTI are representatives on the Group, without prejudice to Ministers' consideration of their response to the Group's proposals, in the Budget or in any other context.

DEFINING HIGH TECHNOLOGY FIRMS FOR POLICY PURPOSES

Objective

To provide a means of targeting schemes, including spending and tax incentives, in order to encourage a greater flow of funds and talented management into emerging growth high-technology firms.

Background

The term “high-technology” is clearly subjective. In reality there is a sliding scale in the level of use and advanced nature of technologies used by modern companies. However, in order to provide a means to most effectively focus support on the companies identified in the report, it is necessary to put a marker down at some point on this scale, and thereby define “high-technology companies” for the purposes of the measures discussed in the main report.

Although there are several ways in which high-technology could be defined, these generally fall into two types: definitions which address the issue at a company level, and definitions which address the issue at a sectoral level.

At a sectoral level, the following approaches are possible:

1. inclusive approach - list those sectors which are defined by some external criterion to be “high-tech” and thereby classify all companies in those sectors as “high-tech”.

The OECD definition uses this approach - a sector in which the average R&D intensity (R&D/sales) across all 11 OECD countries is no less than 4% is defined as high-tech. The sectors are prescribed using the International Standard Industrial Classification Codes (SIC Codes).

The DTI currently uses a similar approach. The “Butchart” definition uses R&D intensity and proportion of qualified scientists and engineers (QSEs) in the workforce as the measures. Those sectors (based on UK SIC codes) which are defined as high-technology are those for which R&D intensity is at least 20% above the manufacturing average, and for which the QSE proportion is above average.

2. exclusive approach - list those sectors (or types of business activity) which do not constitute high-technology.

This is the approach adopted in the US Federal 1993 Venture Capital Incentive, which is worth quoting to illustrate the approach. It defines qualifying high-

technology by excluding:

- (A) any trade or business involving the performance of services in the fields of health, law, engineering, architecture, accounting, actuarial science, performing arts, consulting, athletics, financial services, brokerage services, or any trade or business where the principal asset of such trade or business is the reputation or skill of 1 or more of its employees,
 - (B) any banking, insurance, financing, leasing, investing or similar business,
 - (C) any farming business (including the business of raising or harvesting trees),
 - (D) any business involving the production or extraction of products of a character with respect to which a deduction is allowable under section 613 or 613A, and
 - (E) any business of operating a hotel, motel, restaurant, or similar business.
- (4) ELIGIBLE CORPORATION - For purposes of the subsection, the term 'eligible corporation' means any domestic corporation:
- (A) a DISC (a US concept) or former DISC,
 - (B) a corporation with respect to which an election under section 936 is in effect or which has a direct or indirect subsidiary with respect to which such an election is in effect,
 - (C) a regulated investment company, real estate investment trust, or REMIC (also a US concept) , and
 - (D) a co-operative.

In either case, the output from strategic considerations such as those that related to Foresight, could be used to define which sectors/industries were to be regarded as high-technology.

The problem with a sector-based approach is that it fails in particular to take account of

firms with activity that crosses conventional SIC code boundaries, of which there is believed to be an increasingly large number;

firms with “high-technology” activities in “low-technology” sectors;
firms with “low-technology” activities in “high-technology” sectors;
firms that develop “high-technology” products as distinct from firms that use off-the-shelf “high-technology” products to deliver “low-technology” products and services to market. In such cases, while the up-front capital costs may be high in either case, a firm of the latter type is unlikely to face the same general cash-flow problems of those in the former group.

For these reasons, it is believed that a company-based approach is a more appropriate way of capturing high-technology activity, and in particular where the activity is connected with the development of new technological approaches. In this respect, there are at least two ways of addressing the issue:

1. Use of quantitative indicators which are related to high-tech activities such as R&D intensity and proportion of QSEs. Such an approach would involve defining hurdle rates above which a company would be defined as “high-technology”.
2. Use of qualitative descriptors, such as: “A business whose products or services depend to a significant extent on the application of scientific or technological skills or knowledge, whether it be a novel application of advanced technology to provide a totally new product or service, or an application of existing technology in an innovative manner.” (*John Allen quoted in the Bank of England report*)

While qualitative descriptors are useful for focussing the mind on an intended target group, they lack clarity in relation to determining whether an individual firm should be classified as high-technology. Quantitative descriptors are much more useful in this respect, although even they are not without potential ambiguity.

Set out below is a definition of a high-technology company which uses company-based quantitative indicators combined with qualitative descriptors. The figures have been chosen after consideration of data generated by the Office for National Statistics, although further work will be required to understand in greater detail the policy implications of choosing the hurdle rates shown. We await with interest the data from the Community Innovation Survey in this respect. Although in some sense arbitrary, these figures are therefore believed to provide a workable definition of a high-technology company which is consistent with the Group’s understanding of the nature of the emerging growth companies they wish to assist.

Definition of an “emerging growth high-technology company”

1. The term “high-technology company” is defined as a company [Note 1] whose business growth and success is dependent on the development of one or more technologies or on the development of products or services which require significant technological innovation; and which
 - (i) spends 10% or more of its annual sales revenue [expenditure] on research and development [Note 2] undertaken by itself in the UK with a minimum annual

expenditure on such research and development of £50,000 [Note 3];

2. In addition, such a company [Note 4] must fall within the EU definition of a small and medium sized enterprise and therefore must satisfy the first two criteria and either of the third or fourth

not more than 250 employees

no more than 25% owned, directly or through an intermediary organisation, by enterprises not satisfying these criteria

turnover of not more than ECU 40 million

balance sheet total of not more than ECU 27 million.

3. The company's shares, where applicable, can be quoted or unquoted on any public exchange.

Notes:

1. In this definition, a "company" is defined as a Companies Act company. Where the company is part of a group or is more than 25% owned by a SME, it is the combined or group accounts that should be used when testing against the thresholds in paragraph 1 and the SME criterion in paragraph 2. This is intended to stop "low-technology" SMEs taking advantage of the definition by simply spinning out their R&D section into a separate business.

2. Research and development shall be interpreted according to the Frascati definition, except that research in the humanities and social sciences is to be excluded. In relation to software development, the scope of what is covered by Frascati is somewhat unclear, and while the definition covers several aspects of software development, there may be others which are not covered despite otherwise being "high-technology" or cutting-edge. Given the vital (and increasing) role that sophisticated software plays in the development and delivery to market of high-technology products, we believe that the definition of high-technology companies should be drawn so as to cover such software.

We are pleased that the DTI is consulting experts in the software industry to ascertain whether the Frascati definition is sufficient to capture "high-technology" software development. Given the uncertainty at this time, we suggest an alternative method which could be used to cover "high-technology" software development. This would be to include a criterion based on the ratio of qualified scientists or engineers in the workplace. This could be included as a separate condition following (i) in paragraph 1 above:

"Or for which

- (ii) at least [30%] of its full time employees are qualified scientists or engineers whose work for the company is principally to develop or introduce new technology-based products or processes."

The definition of a "qualified scientist or engineer" is anyone who holds a first degree or equivalent in any scientific or engineering discipline. Qualified scientists or engineers whose

work for the company is not principally to introduce technology-based products, processes or services, for example those whose principal work is in sales or marketing, should not be counted as contributing to the employment criterion.

As this criterion is not associated with an accounting standard, we regard it as less useful than the R&D intensity as a principal quantitative criterion. However, it may be useful in other respects as a means of defining high-technology businesses, possibly combining it with the R&D intensity criterion, and indeed has been used before in the Butchart criterion, albeit at sectoral rather than firm level.

3. A minimum threshold of R&D expenditure of £50,000 has been chosen in order that companies with few or no sales must make a serious commitment to investing in technology research and development before qualifying as a high-technology company. The figure has been chosen since it is approximately the lower end of the “seed” finance often sought by start-up firms for technical feasibility projects.

4. The small and medium sized enterprise (SME) definition is taken from the EC Communication on the definition of SMEs adopted in February 1996. It now applies across the programmes operated by Commission except Framework 4 which has a special derogation for a two year transition and which uses 500 as the employee maximum.