



# Harvesting Technology:

Financing technology-based  
SMEs in the UK

by Craig Pickering

*Foresight*

Making the future work for you

**CSFI**

Centre for the Study of  
Financial Innovation

The Centre for the Study of Financial Innovation is a non-profit think-tank established in early 1993, to look at future developments in the international financial field - particularly from the point of view of practitioners. Its goals include identifying new areas of business, flagging areas of danger and provoking a debate about key financial issues. The Centre has no ideological brief, beyond a belief in open and efficient markets.

## Foresight

Making the future work for you

About *Harvesting technology* ...

The Foresight Directorate of the Office of Science and Technology commissioned and financed this report in response to the recommendations of the final report of the Foresight Financial Services Panel, published in December 2000. The Panel recommended that the issue of early stage finance should be considered further.

The views expressed in this report are the personal opinions of the author, and do not necessarily represent the official views of the government. It is hoped that the report will stimulate debate of the issues and their potential impact on the future

The Panel report and further details of the Foresight programme can be found at [www.foresight.gov.uk](http://www.foresight.gov.uk).



# CSFI

## **Trustees**

Minos Zombanakis (Chairman)

David Bell

David Lascelles

Sir Brian Pearse

## **Governing Council**

Sir Brian Pearse (Chairman)

David Bell

Rudi Bogni

Robert Bench

Manny Bussetil

Peter Cooke

Bill Dalton

Professor Charles Goodhart

John Heimann

Henry Kaufaman

John Langton

Judith Mayhew

John Plender

David Potter

Sir Brian Williamson

Minos Zombanakis

## **Staff**

Director

Andrew Hilton

Co-Director

David Lascelles

Director of Studies

Alexander Evans



## Harvesting Technology: financing technology-based SMEs in the UK

by Craig Pickering

### Preface

This report is the result of discussions with the Foresight directorate of the Department of Trade & Industry, whose funding enabled it to be produced (though responsibility for the content rests entirely with the author and the CSFI). It stems from a widely-appreciated need and a less widely-appreciated realisation:

- The *need* is for the UK to find a way of boosting private sector investment in early-stage small and medium-sized enterprises - particularly in the technology sectors that will constitute the building blocks of the twenty-first century economy.
- The *realisation* is that the UK government (both New Labour and Conservative) has already spent a lot of time - and money - looking at this issue over the last few years, and that it would be extremely silly for a small and parsimonious institution like the CSFI to repeat the exercise *ab initio*.

What we and our friends at the DTI agreed was needed, therefore, was an intelligent trawl through the work that had been done already (particularly the half-dozen major studies listed in Box 1 on pages 6 and 7) to ascertain which of their main recommendations stand the test of time, which have actually been implemented (with what effect), and which remain as a priority for action. Inevitably, the process of trawling through these reports - and through many others that bear more or less tangentially on the problem - has thrown up a number of other thoughts that are our own contribution to the debate. Same with the many interviews that were conducted (with investors, academics, entrepreneurs) as part of this paper; what started off as a *tour d'horizon* of secondary sources has ended up as a lot more than that.

The reason for this is the tremendous effort that the author, Dr. Craig Pickering, has put into his work (the DTI has, I venture to suggest, seldom got better value for the taxpayers' money). Craig is a former senior Treasury official who has served on a number of high-level committees dealing with the problems of smaller quoted companies and tech-based SMEs. Unusually, he saw the error of his ways, joined the private sector and now runs a small company himself - which gives him a unique perspective on the interface between government initiatives and the marketplace.

Craig's report is not an easy read. It covers a huge amount of ground, and the issues it raises are both complex and controversial. But we believe it is important that its message gets across.

This is not a knocking exercise. Craig makes it clear that a great deal has been done recently to boost venture capital, to change the culture of UK universities, and to change the attitudes of institutional investors. Plus, there are encouraging signs that the government is now serious about harnessing the power of the Internet to the SME sector. But no one should be conned into thinking there is nothing more to do - or that the UK's leadership in Europe, as far as venture capital or investment in SMEs is concerned, is secure. Indeed, one of the more disturbing revelations in Craig's review is just how far behind some of its Continental competitors the UK now is when it comes to channelling investment into high-tech firms. There is an awful lot more to do.

At the cost of oversimplification, I want to highlight some of Craig’s more striking findings and recommendations. As noted, some come from the various studies that were reviewed for this report, while others come from interviews and from Craig himself. All (in our opinion) are worth following up:

- We should have a good look at the links between high-tech SMEs and academic institutions in the UK. Contrary to the conventional wisdom, tech-based SMEs are *less* likely to collaborate with higher education institutions than conventional firms. Why?
- Why is it that UK companies in most industrial sectors still spend less than half as much as their US and Continental competitors on research investment?
- There must be (much) more that can be done to use experienced industrialists to provide management input into early stage SMEs; one-on-one ‘mentoring’ seems particularly fruitful.
- More needs to be done to guide investors to well-run SMEs: a sort of “S&P index” could be built to measure quality of management and other variables in a company. Equally, wider use of share options in the UK could boost the quality of management in SMEs.
- Although the changes made to the treatment of “sophisticated” and “high net worth” investors in the FS&M Act are welcome (in that they make it easier to advertise venture capital opportunities to both these groups, particularly in electronic form), as things stand, legislation appears to make it easier to sell to the former. They should both be placed on the same footing. (On the same issue, the EU’s draft Prospectus Directive should be amended so that it permits an exemption for investment promotion to these two groups.)
- It would be worth reviewing “sub-prime” leasing, factoring and discounting (perhaps even trade credit) as sources of finance for tech-based SMEs - none of which has yet been seriously looked at.
- In its review of the Minimum Funding Requirement (and, indeed, in the whole debate over pensions), the government needs to give serious consideration to Paul Myners’s recommendation for a UK equivalent of ERISA legislation in the US.
- There seems to have been little progress made in the UK corporate venturing area - despite corporation tax relief. Why is this? And why, anecdotally, has the amount of UK corporate venturing activity fallen in the last couple of years? Better data is needed here.
- Support needs to be given to the various ideas that are currently floating about for stock exchanges geared to local or early stage companies (AngelBourse, ShareMark, Trading Post, Landmark, etc.). There is a lot of innovation going on here that would benefit from a helping hand.
- We need a much better database on how UK universities exploit their knowledge - in particular, how they profit (if they do) from spin-offs, licensing and related activities. Linked to this, we need some procedure that recognises the value of commercialisation to a university - and, specifically, that does not penalise departments that are successful at commercialising when it comes to allocating research funding. For academics whose research has commercial possibilities, but who themselves don’t want to play a commercial role, there should be a process whereby returns on research flow back to the academic’s own research budget (or the departmental budget).
- We need more “technology brokers” in the UK - people who specialise in bringing together sources of funding and high-tech firms. It would be worth looking at how many currently exist, whether they are profitable and how more could be encouraged.
- There needs to be more US-style payment-in-kind for legal and accounting services in the UK, so that early stage entrepreneurs are not starved of high-quality professional assistance when they need it most.
- Although schemes like the Enterprise Investment Scheme are valuable (and successful), there are little wrinkles that need ironing out. In the EIS, for instance, the restrictive treatment of “connected persons” seems to disadvantage business angels, and should be rectified.
- There is a general point about the tax treatment of debt and equity. The principle of equivalence supports the CBI’s call for tax relief on the cost of raising equity (as does the general sense that equity is to be preferred as the main source of finance for tech-based SMEs).
- Although previous reviews have come down against the establishment of US-style Small Business Investment Companies, they have been successfully exported to several other countries (notably Australia and Germany), and may be worth another look. The same applies to the US Small Business Innovative Research Program, which gives smaller, innovative companies a bigger slice of the government procurement pie.

- There remains a good case for helping tech-based SMEs to protect their intellectual property - often a time-consuming and expensive process.
- At the broader cultural or societal level, more could probably be done to promote entrepreneurialism in the UK and to bring potential investors and investees together in educational forums. The Bank of England already does some of this; it could do more.

That's not all; there are many other nuggets that can be dug out of this report. But it is very clear that, notwithstanding the real progress that has been made, there is a lot more that can still be done.

Andrew Hilton  
Director, CSFI

## Executive summary

In the eighteenth century, the British discovered that they were good at commercialising technology. In the nineteenth century, they discovered that they had competition. In the latter part of the twentieth century, they perceived a problem in financing new technology-based businesses in their early stages (as did the rest of Western Europe) - particularly when they looked across the Atlantic, where technology start-ups appeared to flourish.

This paper reviews reports that have been prepared over the last six years on this problem, as well as the progress that has been made (and not made). It suggests what proposals should be dusted off and considered (or implemented), as well as what new ideas have developed over the period.

Undoubtedly, much has been done to help the financing of this sector in the last few years. All the reports under review have been associated with the issues raised and the actions taken, and those involved deserve a share of any credit that is going.

That said, our knowledge of the issues is still limited. Every part of the process, from research into technologies through the management and investment chains, needs to be addressed. In particular:

- Venture capital has had some good times in the UK and has made some significant investments, though it is yet to achieve the ambitious objective of a US-style industry. It probably has more to learn from the rest of Europe than is generally recognised, at least in early stage finance (while acknowledging the leading role in Europe of UK private equity).
- There are encouraging signs of change in the culture of British universities, though a shift in culture on spin-offs is yet to happen on a significant scale and needs to be stimulated. So do better links between early stage technology companies more generally and the universities.
- The other big question is the attitude of institutional investors. Here, too, there is change, but no cultural shift.
- Bank debt is usually not a suitable vehicle for early stage financing, but other products are now widely available in the US, and should be exported on a much larger scale to the UK and elsewhere in Europe.
- It is undoubtedly true that UK pension funds, insurance companies and their fund managers still lag behind their US counterparts. However, technology-based Venture Capital Trusts could narrow the gap, for insurance companies at least.
- The Internet looks set to provide new opportunities for improving the efficiency of the early stage capital market. Although the dot.com boom (and bust) has led to understandable scepticism, we need to look at the specific benefits the Net can bring. It will also be a valuable tool for educating management and investors, if used well.
- Cultural change cannot be the sole responsibility of government, though it can help. Tax incentives to individual investors in early stage ventures have already had a marked impact, especially Venture Capital

Trusts, the Enterprise Investment Scheme and, above all, Capital Gains Tax. They should now be allowed to bed down in the market – save for the odd tweak (for example, to make it easier to invest as an angel). There is, however, more scope for Public Private Partnerships.

-As for regulation, it seems broadly appropriate, and this state of affairs needs to be maintained. The law must continue to be implemented with a light touch.

A detailed set of proposals is provided below – along with some suggestions on how action should be initiated to build on the progress that has been made in recent years.

## This paper reviews six reports published between 1996

*The Financing of Technology-Based Small Firms (the 1996 Bank of England Report)*: This flowed from annual meetings on smaller firms and the commercial banks, chaired by the Governor of the Bank of England. Published October 1996, Bank of England. Foreword by Howard Davies, then Deputy governor.

Authors: Adrian Piper and Melanie Lund

Terms of Reference: “This report focuses on the financing (seed-corn, start-up and early stage) of small technology-based firms in Britain, in general, and the role played by the British venture capital industry, in particular.”

*Tech Stars: Breaking the growth barriers for technology-based SMEs ('The Tech Stars Report')*: Chairman of CBI Tech Stars Working Group: Norman Price. Members were drawn from high-tech early stage companies, stockbroking, banking, incubators, and venture capital. CBI. Published 1996.

Principal author: Dr Lauren Read

Terms of reference: “This report, prepared by a group of CBI members with specialist expertise, explores the key barriers to growth for Tech Stars and suggests ways in which government and the financial, academic and business communities can overcome them. In particular, it focuses on the importance of adding effective management teams to technology and finance.”

*The Final Report of the Working Group on the Financing of High Technology Businesses ('The Williams Report')*: Chairman, Dr Keith McCullagh, then Sir Peter Williams. Members were drawn from venture capital, high-technology companies, fund management, the CBI, the Association of British Insurers, the Bank of England, the DTI and HM Treasury (which also provided the secretariat). Final report published by the Chancellor in November 1998.

Terms of Reference: “To identify barriers experienced by UK high-technology companies and to bring forward proposals to help overcome those barriers.”

*Funding Technology: lessons from America ('Funding Technology')*: Published March 2000 London by Wardour Communications. The report was based on some 50 interviews towards the end of 1999 in the Boston area, North Carolina, California and the Pacific North West of the US.

## and 2001 on financing tech-based SMEs ...

Authors:

David Gill	Head of Innovation and Growth Unit, HSBC
Chris Martin	CEO, Xenova Ltd
Tim Minshall	Project Manager, St John's Innovation Centre, Cambridge
Martin Rigby	Egon and Talbot Capital Ltd

Terms of reference: "This report sets out specific recommendations for legal, technical or commercial changes which the authors believe will help the UK in catching up with the US experience."

*Financing of Technology-Based Small Firms (the 2001 Bank of England Report)*: Published in February 2001 by the Bank of England's domestic finance division.

Authors: Adrian Piper and Victoria Cleland

Terms of Reference: "This report examines the financing environment for technology-based small firms in the UK. It considers, in particular, small firms operating in the communications, IT, computing, biotechnology, electronics and medical/life sciences industries. The report is a follow-up to earlier work published by the Bank of England in 1996." Conclusion: "In a number of areas, there have... been significant changes since the Bank published its report in 1996... a number of issues remain to be tackled."

*Financing the Enterprise Society: Financial Services for Small and Mid-Sized Enterprises in 2010 (The Foresight 2010 Report)*: A report by the Foresight Financial Services Panel SME Sub-Group. Published by DTI/Office of Science and Technology as a Foresight Report March 2001.

Chairman of Sub-Group and principal author: Finlay McPherson

Members of the sub-group were drawn from accountancy, on-line finance, banking, newspapers, IT, the London Stock Exchange and the DTI's Future and Innovation Unit

Terms of reference: To examine possible changes in SMEs and the financial services which cater for them over the next decade; and to identify policy changes needed in government, the private sector and the universities. Not solely focused on high-tech SMEs, but technological change (for SMEs and financial service providers) is one of the report's major themes.

# Conclusions and summary: Is half the harvest in?

## What have the last six years achieved?

Is the climate for tech-based SME investment improving? The Bank of England certainly thought it had improved between 1996 and 2001.<sup>1</sup> But was that just a hangover from the dot.com boom of 2000, or are we seeing genuine structural change? In particular, what has been achieved since 1996 to encourage a more efficient flow of finance to early stage technology firms that have the potential to mature?

This report concludes that there are certainly some grounds for optimism:

- Business angels do seem to be growing in number - and in funding. The new FSA legislation on 'sophisticated investors' is a major step forward, if used skilfully by the private sector and if it is regulated sensibly.
- Incubators have developed considerably - though there is more to do, with private sector action a priority.
- Private equity has flourished, and venture capital has had some good times – though it is still not a US-style industry in scale or in its focus on early stage high-tech. There are also some interesting developments in Continental Europe that warrant further scrutiny.
- Stock exchanges – in the UK and around the world – have made it easier for early stage high-tech (and other) companies to list.
- Some UK universities are becoming much more aware of the need to commercialise their research, without damaging their central purposes.
- On the tax front, there has been a good deal of progress, particularly in providing incentives to individuals to invest in venture capital funds and early stage investments.
- There have been several regulatory improvements in UK legislation - for example, on the definition of high net worth and sophisticated investors.

---

<sup>1</sup> Bank of England, Financing of technology-based small firms (London: 2001) p77.

## What is left to do?

# What should the next six years bring? A summary of the report's recommendations

Given what has happened in the last few years, what remains to be done?<sup>2</sup>

Some areas – business angels and venture capital especially – have been relatively well researched by the academic community (though that is not to say there are no issues there to examine). But a number of other policy and commercial areas have been pretty well left alone. In particular:

- It is not obvious that much has happened over the last few years to improve the quality of management in early stage high-technology firms. Various university initiatives and the Enterprise Management tax incentive should help, but there is more to be done.
- Big financial institutions still seem fairly disconnected from the early stage high-tech sector. Bank debt is usually not an appropriate vehicle for this sector, but other products, such as venture asset finance and lending, may well be. Pension funds, insurance companies and their fund managers need to be better wired in, perhaps via a relatively new breed of technology broker.
- Corporate venturing hardly seems to exist in the UK, outside pharmaceuticals and one or two other sectors.
- It is not clear that a genuine cultural change is happening in British universities on spin-offs. Some 'elite schools' may be about to pull ahead of the pack, but what is needed is a much wider and deeper shift.
- Professional advisers – solicitors and accountants – can play an important role, but their image and behaviour are not always positive. Both professions should examine their role in the early stage high-tech sector, and should concentrate on spreading best practice.
- The Internet is opening up many more possibilities for fund-raising via equity issues and other vehicles. But it is very early days. Regulators need to be deft and the private sector, especially the bigger institutions, needs to be much more creative.
- There are still some unresolved tax issues.

---

<sup>2</sup> Specific recommendations in this report are classified as follows:

\* a recommendation of one of the reports under review;

\*\* a recommendation from other papers or interviewees/correspondents; and

\*\*\* my own recommendations.

All recommendations flow from the ground covered by the reports under review.

## Cyber-holes: Areas where further research would be useful

There are several areas where academic research (and, in particular, good data) would be helpful:

- How common are university spin-offs in the UK, relative to the eurozone (to complement research already available on the UK and North America)? If there are substantive differences, why? How good are UK academics in terms of patents registered, relative to other countries? How many academics are directors, in executive or non-executive roles, of early stage technology companies?\*\*\*
- How much corporate venturing is there? Are there sectoral differences? If so, why? What about corporate spin-offs more generally? Some work has been done, but it does not seem to be widely known to the policy community.\*\*
- We are still a long way from understanding the role of institutional investors in early stage high tech. There is now a good deal of data on how little they invest in this sector. But why? In particular, why are US institutions (apparently) so much more venturesome?\*\*\*
- And, to address the supply side, what would encourage more 'investment-ready' ventures, which will provide the giants of tomorrow?\*\*\*
- In particular, we need to know more about early stage companies' attitudes to research investment.<sup>3\*\*</sup>

## Entrepreneurial drivers: Private sector actions that need urgent attention

Inside the firm:

- The CBI should consider how to extend its proposals on better investor relations, including the use of the Internet, to the early stage high-tech sector.\*\*
- The CBI should also consider reviving its proposal for senior businessmen to mentor early stage companies, especially to provide financial expertise (perhaps with the CBI and others in collaboration.\*
- The Williams report wondered why the UK did not have a '*New Scientific Entrepreneur*' to parallel the '*New Scientist*'.<sup>4</sup> The national press gives high-tech quite a lot of coverage, but is there a market gap here?\*

<sup>3</sup> I am grateful to Professor Cyril Hilsum for this proposal.

<sup>4</sup> HM Treasury, [The financing of High Technology Businesses: A report of a group chaired by Sir Peter Williams](#) (1998), p13.

- The DTI should consider (perhaps in collaboration with private sector bodies) whether some kind of ‘quality of management index’ might help potential funders to evaluate early stage investments.\*\*

## Angels...

For business angels and other private investors:

- Since further legislation is unlikely in the near future, it would be helpful if the Financial Services Authority issued guidance on what companies are permitted to do by way of asking individuals to invest in their company, summarising all the relevant legislation that is now on the statute book and providing representative examples.\*\*\*
- The DTI should consider whether additional education for potential angels would be worthwhile. There are probably private sector opportunities here too.\*\*\*
- Investment clubs have some complicated arithmetic to do when assessing their members’ tax, which should be eased administratively.\*\*

## Incubators...

For incubators:

- The DTI should fund a UKBI study of how to encourage more ambitious US-style incubators, with the emphasis on seeing how the private sector can lead.\*\*

For venture capitalists:

- The BVCA might look at its European counterparts, to see if there are any lessons for the industry as a whole or for public policy.\*\*\*
- It might also be worth looking at the Bank of England’s own thoughts on encouraging business angels to work more closely with venture capital.\*
- The BVCA could launch a training initiative for managers in private equity houses (and private equity arms of financial institutions) for dealing with small-scale high-tech venture capital opportunities.\*

## Venture capitalists...

For pension funds and insurance companies:

- The NAPF and ABI could encourage their respective memberships to examine their own role in early stage investments. The BVCA might also be involved. A joint committee might be appropriate.\*\*\* Topics for them to consider might include:
  - ways of linking up with incubators, via fund managers or, more likely, ‘technology brokers’ (perhaps they could collaborate with government on a study of the latter, to kick off work to encourage this sector);
  - the quality and composition of data on UK venture capital and its dissemination among the pension funds and insurance companies; and
  - Paul Myners's recommendation that the UK should consider legislation along the same lines as US ERISA regulations.\*\*

## Funds...

For the banks:

## Banks...

- The priority is to generate greater competition to provide banking services to the early stage high-tech sector. The Competition Commission's report in this area is welcomed.
- Venture asset finance is a potentially interesting area. The November 2001 call for bids from the Enterprise Fund gives an opportunity to the government and the DTI to move forward on this.<sup>5</sup> The initiative now lies with the private sector.\*\* An alternative would be for the Treasury and the Inland Revenue to devise a tax incentive, drawing on their experience of, and the forthcoming evaluation of, venture capital trusts.\*\*\* But the onus is on the banks themselves to show creativity, given the unsuitability of short term debt as external finance for early stage high-tech (and other) firms.

For corporate venturers:

## Corporate venturing...

- While a considerable effort has been made to publicise the new tax incentive in this area, it could take some time for the effects to become noticeable. The measures should, therefore, be reviewed within two years.\*\*
- The CBI might also consider a review of corporate venturing in the wider sense: the attention paid by large companies here, in the US and Europe, to spin-offs, and how to encourage more such activities in the UK.\*\*\*

For exchanges:

## Exchanges...

- It is for the private sector to lead here. There are some radical ideas around, and stock exchanges and other players need to move ahead on those which are commercially viable. There are no obvious legal or regulatory barriers, though the Internet is likely to throw up new issues on this front as elsewhere. Regulators should encourage innovation and operate with a light touch. Listing requirements and costs remain a concern. It would be helpful if the FSA made a policy statement on new exchanges and listing requirements.\*\*\*

For universities:

## Universities...

- The OST and DFES should report, in collaboration with Universities UK, on the extent to which there is already a framework within which academics and universities can pursue scholarship and commercialise research, and what improvements should be made: Technology Transfer Offices, the role of the Research Assessment Exercise, intellectual property etc. They should also review the extent to which universities welcome collaboration with early stage high-tech companies more generally.\*\*\*
- One specific proposal that might be examined in this context is an annual UK Academic R&D Scoreboard giving R&D income from Research Councils, charities and industry, with income from licensing and equity sales, plus the number of patents applied for and those granted, with the annual intellectual property rights expenditure.<sup>6\*\*</sup>

---

<sup>5</sup> See *Early Growth Funding* Small Business Service (November 2001)

<sup>6</sup> Also a suggestion by Professor Hilsum.

- The Research Councils and the OST should consider how to reward academics who produce research with commercial potential who do not themselves want to participate in commercial activity.\*\*

For lawyers and accountants:

## Professionals...

- The Law Society (and its counterparts elsewhere in the UK) should consider a review of the role of the legal profession in the financing of early stage companies, in particular whether the training of young solicitors pays sufficient account to this topic. The emphasis should be on helping such companies to navigate through the relevant law on tax, IPR, the Internet etc, in the most economical way.\*\*\*
- The accountancy bodies should do the same.\*\*\*
- Firms from both professions might devote more space to the early stage high-technology sector in the guidance notes and other publications that they circulate to clients and others from time to time.\*\*

## The Internet as a market-place for finance

As fresh ways of attracting capital and of advertising investment opportunities develop on the Net, regulators at UK and EU levels need to ensure that they operate with a light touch.\*\*\*

Early stage companies can already shop around on a few sites. These opportunities will grow. Larger financial institutions should also consider using the Net for advertising their facilities and for attracting investment to a much greater extent than hitherto.\*\*

On-line financial education for early stage companies should be developed by both the public and private sectors. This could cover financial management, communications with potential and current investors, listing on various exchanges and other topics that are useful to such companies but which are not widely understood in the technology community. The DTI/OST and/or DFES should consider involvement in this.\*\*\*

## Getting the right policy framework: Government actions that need urgent attention

### Tax...

## Good progress on tax

On tax, a good deal has been achieved since 1995. The replacement of the Business Expansion Scheme by Venture Capital Trusts (VCTs) and the Enterprise Investment Scheme (EIS), and a number of changes in capital gains tax, especially the cut in the marginal rate to 10% after two years holding (a better rate than the US), have all made the tax climate for investment in early stage ventures much more favourable. We should await the evaluation of the first two, due in summer 2002, before considering further action on those incentives, except on 'connected persons'. The Enterprise Management Incentive should also be allowed to bed down.

The Capital Gains Tax regime is also being polished, and then should be left alone for a while, though it should be evaluated within three years.

Turning to the tax incentives proposed by the reports under discussion that are still unimplemented, they can be viewed from two principal standpoints. First, they can be seen as interfering with the simplicity of the tax system, setting up biases, rough edges and so forth. Nigel Lawson's 1984 corporation tax reforms best illustrate this approach in recent times. The Foresight 2010 Report's well-founded fear, on the basis of past experience, that complexity would continue in the taxation of SMEs reflects such a view.<sup>7</sup>

But most Chancellors have taken a contrary view. They have preferred to introduce tax measures – sometimes new tax incentives, sometimes modifications of existing taxes - aimed at individual economic and financial issues. From that standpoint, the following measures seem worth considering:

- Technology VCTs – the scheme to incentivise insurance companies to invest in early stage high-technology companies – should be re-examined.\* The Williams group had constructive discussions with the Inland Revenue on how to define technology, so there should be no insurmountable drafting issues. Fiscal and commercial issues need to be balanced, but there is still a case for the incentive. The Myners proposals are very helpful, but not the whole story.
- There could be an easing of the restrictions on ‘connected persons’ using the EIS.\*\*
- Subject to the results of the current evaluation, the limit on VCT individual investments should be raised, at least to £150,000.\*\*
- The Inland Revenue has just completed a review of its relations with large businesses, aimed at improving administration and communications.<sup>8</sup> It should do a similar exercise for small businesses, starting, (to keep the review manageable), with early stage high-technology companies.\*\*\*
- The Inland Revenue could usefully issue a short summary of tax incentives for early stage investment, on its website and in print.\*\*\*
- The taxation of investment clubs should be simplified. I recommend that the Inland Revenue examine this as a matter of some urgency. This is an administrative issue, rather than one where an additional incentive is needed.\*\*\*
- Tax relief should be given on the costs of raising equity, to give equal treatment with debt.\*\*
- National insurance contributions should be dis-applied from share options.\*\*
- The Treasury and the Inland Revenue should consider a tax incentive to kick-start venture asset finance.\*\*

---

<sup>7</sup> Foresight Financial Services Panel SME Sub-Group, Financing the Enterprise Society: Financial Services for Small and Mid-sized Enterprises in 2010 OST (2001), p23.

<sup>8</sup> ‘Review of links with business’ Inland Revenue (November 2001).

## Public funding and PPPs...

There is now quite a long list of public initiatives, including PPPs, that address the financing of high-tech and other early stage companies in one way or another. Together, they demonstrate that government is taking the issue seriously. There are two major risks, however: confusing the early stage company with a plethora of schemes, and paying insufficient attention to the impact on the sector and on UK economic performance more generally.

Assessing achievements and risks in this area should, in my view, be a theme in the 2002 Comprehensive Spending Review. The DTI, in discussions for this report, recognised the need to avoid confusion and insisted that rationalisation is under consideration. Business Link and SMART, as well as the newer initiatives, should be included in this work. (Raising SMART thresholds should be considered in particular.)

Which specific proposals in this area, from the reports under discussion, should be followed up? Two stand out:

- US-style SBICs look much more sophisticated instruments than the UK's Loan Guarantee Scheme. The Enterprise Funding programme may unearth some similar activities, but - even though the Small Business Service doubts their relevance - SBICs deserve another look by government and/or the Bank of England (drawing also on German and Australian experience).\*
- The Office of Government Commerce should consider a US-style regime for public procurement from early stage technology suppliers.\*

One interviewee also suggested increased secondments between the civil service and early stage high-tech companies and *vice-versa*. The Whitehall and Industry Group might consider something along these lines.\*\*

## Regulation...

The biggest regulatory challenge in this field is probably the need to regulate sensitively Internet marketing of venture funding and investment opportunities. This is an infant science, but one that seems set to grow rapidly in the next few years. Unfortunately, there is a risk that an over-protective attitude will damage the potential of the Net to help early stage ventures raise funds. Views on this from interviewees varied, from seeing current UK legislation as broadly benign to seeing it as putting far too much emphasis on the role of 'authorised persons'.

On the specifics:

- The consulting actuaries should report on progress on the 'Prudent Person Rule' since their press release of July 6, 1999.\*
- The Patent Office should report on the protection of early stage high-technology firms, and what steps it is taking to improve the situation.\*
- It is vital that the final version of the EU's Prospectus Directive embodies the progress

made in the 2001 UK legislation on the marketing of venture opportunities to ‘sophisticated investors’ (and ‘high net worth individuals’). It would be helpful if the FSA issued a clear and short statement of its policy on promoting investment opportunities to such investors.\*\*

- For listings outside bio-science, the FSA should monitor the rules on early stage businesses to ensure that they are not too onerous for viable businesses.\*
- The IASC should agree an accounting standard on the treatment of share options that is ‘early stage friendly’ (though several interviewees remarked that prospects do not look good, and one thought all companies should account under the same standard).\*

## Talking the talk ...

Two proposals are worth considering here:

- Someone – say the Whitehall and Industry Group – should take up the idea of entrepreneurs talking to school-children and students about their experiences, developing a programme of speakers and visits, and working with local and regional bodies (Chambers of Commerce, Regional Development Agencies etc).\*
- The Bank of England should convene another ‘Williams meeting’ (of the various stakeholders: institutions, fund managers, early stage high-tech companies, actuaries, government) etc. It would be helpful to see a regular report from the Bank on action taken following these meetings. Technology brokers should be invited, as well as the previously-involved parties.\*

# Harvesting technology – main report

For many years, the focus of debate on the financing of smaller firms was the perceived equity gap.<sup>9</sup> It was not always clear which firms were under the microscope here, but clearly they had to be in the market for equity, or at least trying to enter it. In the 1970s and 1980s, the focus of attention was the small firm, with a wider look at financing needs.<sup>10</sup>

Small firms remain a concern of policy-makers and analysts,<sup>11</sup> in general and those with a potential for high growth. But, in the 1990s, stimulated particularly by comparisons with the United States, attention also turned to the financing of early stage high-technology firms. The Williams report gave some telling statistics on the prizes that might be won:

“Twenty 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 1,383,000.”<sup>12</sup>

A series of reports<sup>13</sup> by the government, the Bank of England and the private sector (sometimes separately, sometimes jointly) has highlighted the need to get the right financing environment for these firms, as a potentially key contributor to faster UK growth and higher productivity.

This paper will audit these reports, identifying those recommendations and proposals which have already been adopted, with a judgement on their success and failure, and those which have not been implemented. For the latter, it will suggest proposals and recommendations which deserve to be re-visited or implemented in the near term.

It is not an attempt to-reinvent the wheel (or indeed any other technology). The aim is to see what progress has been made in legislation, in government policy and in actions by the private sector, and what actions look worth considering or taking. For the most part, I will focus on the unrealised proposals of the reports under review. Interviewees have made a number of useful and interesting proposals which are discussed in their appropriate context. Sometimes I have drawn on my own experience (in the Treasury and particularly as a member of the Williams Committee, and now as the chairman of an early stage company) and some new ideas that have come out of the interviews that I have done. But it is primarily an audit, not a piece of original research.

---

<sup>9</sup> David Kynaston, The City of London: Volume 3 1914-45 (London: Pimlico 2000) on the Macmillan Report and related developments.

<sup>10</sup> See especially the seminal Report of the Committee of Enquiry on Small Firms, chaired by Sir John Bolton (London: HMSO 1971) and the Wilson Report (London: HMSO 1981). There is a useful survey of the whole debate in ‘*The long-term financing gap: does it still exist?*’ by Dr Neil Cross, in his inaugural lecture as Chairman of the RSA on October 3, 2001. Edited version published in the RSA Journal 4/4 2001, p48-51.

<sup>11</sup> Most recently, and taking account of current developments in markets, in Financial Services for Small and Mid-sized Enterprises in 2010 Final Report by the Financial Services Panel SME Sub-Group, (London: Office of Science and Technology 2001), though they also refer to ‘new economy’ businesses p27-28.

<sup>12</sup> H M Treasury The financing of High Technology Businesses: A report of a group chaired by Sir Peter Williams (London: HMSO 1998) p1.

<sup>13</sup> Listed at Annex A and outlined in Box 1.

The main reports under review are briefly described in [Box 1](#), on pages 6 and 7. They are:

- the 1996 Bank of England Report;
- the 1996 'Tech Stars' Report;
- the 1998 Williams Report;
- the 2000 Funding Technology Report;
- the 2001 Bank of England Report; and
- the Foresight 2010 Report.

## Financing technology start-ups and early stage businesses today

### A problem of definition

There is no universally accepted definition of an early stage high-technology company. Nor will there ever be. A low-tech firm can flourish in a high-tech sector. High-tech can refer to products or processes, or to both. But the reports under discussion, while having different emphases, all examine those companies which are developing or using high-technologies of various kinds, with biotechnology and IT looming large, but not to the exclusion of other technologies.<sup>14</sup>

The companies may be starting up, using the funds of 'family, fools and friends'.<sup>15</sup> They may have moved on to seek external funding from banks or venture capital/private equity houses. They may be ready for a trade sale or a listing, on AIM, the Main List of the London Stock Exchange (as it is colloquially known) or on an overseas exchange. Williams called them the 'Emerging Growth' sector.<sup>16</sup> Only when they are established on a major exchange do they leave the population that these reports study.

The CBI Tech Stars report estimated that, in 1996, about four per cent of all businesses were technology-based.<sup>17</sup> In their latest survey of the financing of SMEs, Cambridge academics Alan Hughes and Andy Cosh found that (using a different definition of technology firms from the CBI and looking only at SMEs), on the basis of a national sample, 13.6% of the firms in the ESRC Centre for Business Research (CBR) sample survey were high-tech.<sup>18</sup> All the reports surveyed accept that that fostering high-tech ventures is crucial to the UK's economic future.<sup>19</sup>

There is a consensus that funding is too difficult for these companies, in relation to the opportunities for profitable growth that they offer. There is more controversy about whether there are market failures or simply inefficiencies in UK capital markets, especially when compared with their US equivalents.<sup>20</sup> There is an issue about whether relatively small-scale opportunities

<sup>14</sup> See [The Financing of Technology-based firms](#) (London: Bank of England, October 1996) p10, [Financing of Technology-based Small Firms](#) (London: Bank of England, February 2001) p5 on definitions (the Bank's definition was followed by Williams, see p8) and the Foresight 2010 Report, p19. On relevant technologies, the analogy with the film industry (p20) is interesting.

<sup>15</sup> I first heard Hermann Hauser use this version of a well-known phrase. It remains apt.

<sup>16</sup> Op cit p16-17.

<sup>17</sup> [Tech Stars: Breaking the growth barriers for technology-based SMEs](#) (London: CBI 1997) p8.

<sup>18</sup> See Andy Cosh and Alan Hughes 'The Growth and Performance of Small High-Tech Firms in the UK Economy', in Andy Cosh and Alan Hughes (Editors), [British Enterprise in Transition](#) (University of Cambridge: ESRC Centre for Business Research, 2000) p66.

<sup>19</sup> See Williams (op.cit.) p10 for a particularly eloquent statement of this view.

can be assessed economically by venture capital - or, to a much more marked degree, by financial institutions. For whatever reasons, it is believed that one factor in the superior economic performance of the US in the nineties was its lively and creative capital market, catering for, among others, the early stage high-technology sector. Others in Europe share this view.<sup>21</sup>

Particular issues that were identified include:<sup>22</sup>

- A lack of management skills, especially in marketing and finance: founders are typically from a technology background.<sup>23</sup> This aspect is particularly associated with what the CBI Tech Stars report called 'the Empathy Gap', the lack of sympathy and understanding (in both directions) between early stage technology companies and the financial community.
- The long lead time over which funds may be needed before a technology-based product gets to market.<sup>24</sup>
- Funders' lack of knowledge.
- The associated difficulties, time and cost of properly appraising and monitoring a firm's technology, for sources of finance.<sup>25</sup>
- The tendency of early stage technology businesses to lack physical assets.
- The perceived high risks of early stage investments (though Williams<sup>26</sup> believed that these were exaggerated, while the 2001 Bank report<sup>27</sup> thought the evidence 'inconclusive' and hinted that these fears may diminish as data on returns bed down in the financial markets).
- The requirement for 'hands-on' involvement, which may be incommensurate, from the investor's perspective, with the money at stake, especially for large funds.<sup>28</sup>

A potentially massive source of financing is the money invested by insurance companies and pension funds. But traditionally the UK lags well behind the US. Quoting Bank of England

---

<sup>20</sup> See the 2001 Bank of England Report, op.cit. p5-8 and p73-76, for a good summary of the debate. For a clear view that there is a gap, see the Foresight report p7 and p24. For a more targeted approach, see the Williams report, p8.

<sup>21</sup> See, for example, the European Commission's working paper on enterprises' access to finance (Brussels, October 19, 2001, SEC(2001) 1667) p16 and the draft report on the Commission's Communication to the Council and Parliament on the implementation of the risk capital action plan, by Peter William Skinner, the rapporteur, Committee on Economic and Monetary Affairs, European Parliament, para H, December 7, 2001.

<sup>22</sup> See Tech Stars: Breaking the growth barriers for technology-based SMEs (London: CBI 1997) p20.

<sup>23</sup> See Williams p1-2, 20.

<sup>24</sup> See Williams p2 and p18-19.

<sup>25</sup> Williams p2, p 8.

<sup>26</sup> Ibid p2,15, 19.

<sup>27</sup> Ibid cit p19-25.

<sup>28</sup> See Williams p2, 19.

research and other data, the Williams report said in 1998 that only around 0.75 per cent of UK pension funds' investments were in venture capital, whereas US pension funds were often investing 5% of their funds in venture capital, sometimes as high as 15%.<sup>29</sup> A year later, according to BVCA statistics, US pension funds averaged 5% of their assets in venture capital, compared with 0.53% in UK pension funds.<sup>30</sup> Myners's summary of 1999 data suggested the picture had not changed by then. <sup>31</sup> BVCA data shows UK pension funds increased their investment in venture funds from £437 million in 1999 to £817 million in 2000. Less encouragingly, investment in private equity by UK insurance companies fell by 14%, comparing 2000 with 1999.<sup>32</sup>

The ESRC Centre for Business Research (CBR), at Cambridge, gives far and away the most detailed picture of early stage technology firms in its biennial survey of UK SMEs. No doubt there is room for further research, discussed below, but this is the best data I have encountered. Alan Hughes and Andy Cosh's 2000 paper gave the most up to date picture available, based on CBR data collected in 1999. The main points:

- The distribution of such firms by employment size does not differ, in statistical terms, from 'conventional firms' in the same sector, either in manufacturing or in services.<sup>33</sup>
- The percentage of micro-firms in high-tech manufacturing is lower than for conventional manufacturing, indicating that the former do not focus on niche markets, relatively speaking.<sup>34</sup>
- High-tech SMEs face the same serious domestic competition as conventional firms, but are more likely to face overseas competition.<sup>35</sup> Conversely, another study concluded that the majority of UK (and German) high-tech young firms have international sales, with UK firms having higher levels than their German counterparts (though the latter internationalise more quickly).<sup>36</sup>
- High-tech SMEs are more likely to be dependent on a single customer.<sup>37</sup>
- High-tech SMEs are more likely to collaborate with others, especially in manufacturing. They are as likely as conventional firms to collaborate with their suppliers, but, surprisingly (as the authors say), are less likely to collaborate with higher education institutions, especially in manufacturing. They are much more likely to collaborate with their customers

---

<sup>29</sup> Ibid p31-2.

<sup>30</sup> Cited in David Gill, Chris Martin, Tim Minshall and Martin Rigby Funding Technology: Lessons from America (London: 2000), p 9, para 2.13.

<sup>31</sup> Op cit p 175. Tony Golding thinks the 5% is far too high. More work needs to be done. See his '*Not much ventured ..*' in Financial News, February 5, 2001: also discussed in e-mails to me.

<sup>32</sup> See BVCA Press Release on its Annual Report on investment Activity, May 2001. I am grateful to the Bank of England for drawing my attention to these figures.

<sup>33</sup> Op cit p66.

<sup>34</sup> Op cit p66.

<sup>35</sup> Op cit p67.

<sup>36</sup> O Burgel, G Murray, A Fier and G Licht, The rapid internationalisation of high-tech young firms in Germany and the UK (January 2000).

<sup>37</sup> Op cit p67-68.

<sup>38</sup> Op cit p68-70.

## How different are SMEs?

in manufacturing.<sup>38</sup>

- Their employment record in services is much better than conventional firms (median growth during 1994-99 of 21.4% and 6% respectively), with a much less marked difference in manufacturing (13.2% to 12.5% over the same period).<sup>39</sup>
- High-tech SMES in services are significantly more profitable than their cousins in manufacturing. High-tech companies are generally less profitable than conventional SMEs, but not to an extent that is statistically significant. High-tech firms are more likely to make a loss, 'consistent with the higher risk profile of this sector' (but the profitability data is much weaker evidence for that profile). Profits in high-tech manufacturing fell between 1997 and 1999, in contrast to the other groups of firm surveyed.<sup>40</sup>
- High-tech SMEs are significantly more innovative in introducing new products, as we might expect. However, they seem similar to conventional firms in their propensity to introduce new processes.<sup>41</sup>
- Among constraints on achieving business objectives, finding suitable property is the only one surveyed that seems to give high-tech SMEs more difficulty than conventional SMEs.

In sum, small high-tech business share some features with their small conventional cousins. Their employment record is perhaps the most striking difference. Their relatively poor links with higher education institutions are surprising - and noteworthy.

The ESRC Cambridge study also had some findings on finance that are particularly relevant here:

- There was no statistically significant difference between high-tech and other firms, in terms of financial constraints. (This may have changed after the dot.com boom and bust: we shall have to see what the 2002 Survey tells us.)
- Only high-tech SMEs in services report more difficulties than their conventional counterparts in getting access to finance. The 1999 survey was more optimistic than the 1997 Cambridge survey on high-tech SMEs getting access to finance,<sup>42</sup> perhaps a symptom of an economy enjoying a long period of growth (plus, in some cases, the dot.com boom).

These findings suggest that high-tech firms behave differently to conventional SMEs, but probably do not have significantly worse problems in getting finance than conventional firms. This does not mean that finance is not an issue. It means simply that high-tech SMEs have friends in the lifeboat.

---

<sup>39</sup> Op cit p70-71 and table 7.6.

<sup>40</sup> Op cit p71.

<sup>41</sup> Op cit p71-73.

<sup>42</sup> Op cit p73-74.

## How can early stage technology companies with growth potential be better funded?

A word of caution is in order. Not every proposal to fund an early stage technology business is well-founded. Management may be too weak. The product may be too far from the market. It may not have any great chance of being developed into a commercial form, however visionary the concept. The business plan may be ill thought-through. Market conditions may be too adverse.

What is needed is a financing environment that identifies those proposals which seem to have the best opportunity to succeed. That includes firms that are ‘investment-ready’ and firms with the potential to be so.<sup>43</sup> Success means growth to profitability on a realistic time-scale. That is not six months. But it isn’t fifteen years either.

Against this objective of a supportive financial environment for the sector, reports in recent years have made a wide variety of proposals to stimulate action in the private and public sectors. It is convenient to look at both sectors separately and in partnership. Progress has been made, but many proposals lie on the shelf. Which should be dusted down and actioned?

Growing a company, and financing that growth, are not linear processes. There are many possible paths.<sup>44</sup> You could produce one of those PowerPoint slides full of circles and lines familiar to any conference participant these days, but it would come nowhere near capturing the anarchic nature of the early high-tech sector and its financing. The issues raised tend to arise in the firm itself; among private investors; and in financial institutions (venture capital, banks, pension funds, insurance companies, fund managers, stock exchanges). Other players involved include big companies (via corporate venturing), universities and the professions. The Internet has also raised some huge and new opportunities, obscured by the dot.com hype of 2000 and early 2001, but deserving of much more thought and action. And government action (or inaction) plays a significant role. Let us look at each in turn.

Private  
and  
public  
players  
in the  
tech  
area

### The role of the private sector

#### Inside the technology firm ...

The case for better management in early stage companies is often made. Charles Ross set the scene well when he wrote to me that “creating an innovative venture from scratch is arguably the most difficult task in all capitalism”.<sup>45</sup> Of the reports under review, the Tech Stars report placed most emphasis on it.<sup>46</sup> But the 1996 Bank report was keen.<sup>47</sup> So was Williams.<sup>48</sup>

<sup>43</sup> I am grateful to Professor Colin Mason for this distinction.

<sup>44</sup> For an interesting set of sketches of some possible paths, see Lindy Beveridge, Cambridge Entrepreneurs in the Business of Technology (Cambridge: Granta Editions 2001). Sponsored by HSBC.

<sup>45</sup> E-mail to me.

<sup>46</sup> Op cit passim. See p6 for a summary.

<sup>47</sup> Op cit p45-46.

<sup>48</sup> Op cit p18.

## Management is key

Management has responsibility for a firm's fortunes. Many external influences can have an impact, sometimes a huge impact. But it is important to see management as dealing with these stresses, strains and encouragements. Finance has a dual significance in this context. A good management team lures in investors. The Bank's 1996 Agents' survey suggested that technology-based firms were conscious of this. The DTI's Creative Quality Report, though aimed at smaller quoted companies, has some useful lessons for unlisted companies as well.<sup>49</sup> But not all is rosy here. Professor Cyril Hilsum noted that the data from the DTI R&D Scoreboard made it clear that UK companies in most industrial sectors spend less than half as much as their competitors abroad on research investment.<sup>50</sup> A firm also needs to cultivate the skill of presenting its business plan persuasively to potential investors.<sup>51</sup>

The Tech Stars report suggested setting up networks of experienced industrialists, in particular sectors, to provide management input to early stage companies.<sup>52</sup> It is an interesting idea. Perhaps business angels provide the same service, but there are not so many that other ways of helping with management expertise could not be found. It was emphasised to me, at my meeting with the Future and Innovation Unit at the DTI, that such mentoring had to be, in the view of several members, one-on-one for senior management if it was to be valuable. Professor Colin Mason noted the value of schemes which encourage networking among novice and experienced entrepreneurs, such as the Connect scheme.<sup>53</sup>

At the same DTI meeting, it was suggested that a sort of 'Standard and Poor's index', for the management of early stage tech companies might help potential funders. This index would score companies on the basis of the quality of management and a number of other factors. The score would then be of help to all kinds of funders when looking at investment opportunities and it might encourage management to improve - and thus improve its score. The principal objective would be to provide some objective yardstick that investors could use when companies and their management may not have a long track record. One obvious issue that would need to be considered is who would do the measuring.

Share options matter in this context. Their taxation has been a concern in several of the reports under review. We will look at that in detail. My own experience is that their rationale is still not well understood. If used well, they can provide incentives for all staff, not just a few.

## Business angels ...

As with pretty well every other funding source for the sector, angel finance is on a far bigger scale in the US, even allowing for the disparity in national income.<sup>54</sup>

Williams cited a figure of \$2.33 billion for individuals' investment in venture capital in the US from 1986-92, compared with £16 million in the UK in 1994-1995.<sup>55</sup> The Bank of England 2001

---

<sup>49</sup> Creating quality dialogue between smaller quoted companies and fund managers' DTI 2000.

<sup>50</sup> Interview for this review.

<sup>51</sup> There are many other non-financial management issues that need to be tackled, but they are beyond my remit.

<sup>52</sup> Op cit p6.

<sup>53</sup> Correspondence.

<sup>54</sup> See '*Funding Technology*' p23.

<sup>55</sup> Op cit p17.

## They do it better over there

report cited academic research suggesting that in the US around 250,000 business angels invest between \$10 and \$20 billion a year. The equivalent figure for the UK was about 18,000 individuals investing around £500 million.<sup>56</sup> The Foresight 2010 Report took an optimistic line, noting that around 1.5 million people in the UK have over £100,000 in financial assets.<sup>57</sup>

It has been estimated that the UK market comprises 20,000 to 40,000 business angels who invest £0.5bn to £1bn per year in 3,000-6,000 businesses.<sup>58</sup> A number of my interviewees emphasised that this is an essentially local or regional market. There have been attempts in the past to start national angel networks, but they have not succeeded. Not all high net worth individuals are actual or even potential angels for technology-based early stage ventures. But more could probably be done at the margin to encourage such involvement.

Dr Gordon Murray suggested to me that there might be a Groucho Marx problem here: who would join a club that might have me as a member? He has a point. Entrepreneurs usually have a strong sense of self, and anyone entering this arena has to manage that psychology.

The 1996 Bank report called for the encouragement of ‘technology angels’, with more research and more co-financing with venture capital.<sup>59</sup> The research, at least, is being delivered.

Thanks principally to the efforts of Professor Colin Mason and his colleagues, this is probably one of the best-researched areas in the field of financing early stage companies. There seems to be less data available on co-financing with venture capital.<sup>60</sup> Professor Mason says that Allan Riding at Carleton University in Canada reports that 57% of angel-financed firms subsequently raised venture capital, compared with only 10% of firms without angel funding.<sup>61</sup> It seems likely that such dealings shot up during the dot.com boom, collapsed for a while and will get back to ‘normal’ in the fairly near future. So the Bank’s point probably remains valid. The Bank’s 2001 Report takes a very similar line, with updated statistics and research quoted.<sup>62</sup>

The ‘Funding Technology’ study proposed more US-style legislation to make it easier to form clubs of angels.<sup>63</sup> The Foresight Report thought that changes in the law under the new Financial Services and Markets Act (presumably secondary legislation passed in April 2001 on ‘sophisticated’ and ‘high net worth’ individuals) would have this effect. That legislation looks, on the surface, aimed at making it easier to advertise venture investment opportunities that are aimed at these two groups of investors. However, it seems to make it easier to promote investments to sophisticated investors than to high net worth individuals. There also seems to be an overlap between the definition of a sophisticated investor in the 2001 Regulations and the definition of a “sufficiently knowledgeable” person in the 1995 Public Offers of Securities Regulation 1995. And finally, there are provisions in the draft EU Prospectus Directive that could set the clock back in this context, at least in the UK, to the detriment of the European market. These provisions

---

<sup>56</sup> Op cit p38.

<sup>57</sup> Op cit p24.

<sup>58</sup> See Mason, C M and Harrison, R T ‘The size of the informal venture capital market in the UK’, *Small Business Economics*, (15, 2000) p137-148.

<sup>59</sup> Op cit p28-9. See also Myners p177.

<sup>60</sup> See Colin Mason and Venture Capital (Vol 2, 2001).

<sup>61</sup> Letter from Professor Mason.

<sup>62</sup> Op cit p39-41.

<sup>63</sup> Op cit p25.

do not, in the Commission's proposal, allow any relaxation of the rules for financial promotion if sophisticated investors are being targeted, in contrast to the UK 2001 regulations.

## Incubators ...

### A (relative) success story

The idea of business incubators – which provide office/manufacturing space for new companies along with a variety of services, from shared telephony to financial advice – was promoted in the UK by the Enterprise Panel.<sup>64</sup> The Tech Stars report had called for Business Links to start 'empty hives' and for better links between universities and incubators and science parks, building management teams around technological innovations. But another route to the same goal was chosen.

UK Business Incubation, better known as UKBI, the body tasked with encouraging the development of incubators, was set up after the Enterprise Panel's report. It is flourishing, and the incubator movement is too. The number of projects or programmes has quadrupled over the last few years to over 220. However, there is still room for growth. The Foresight 2010 report was right to look forward to a growing involvement by financial institutions in incubators.<sup>65</sup> The 'Funding Technology' report gave an update on US developments.<sup>66</sup> It has been put to me that we need more ambitious incubators on a US model, which foster bigger enterprises; 'Funding Technology' gives some US examples.<sup>67</sup> The government has now put in place £75 million of funding for science parks and incubators. That funding should be properly digested before further government initiatives are contemplated. But we do not seem to have a private sector in the incubator movement on anything like the scale of the US. There have been failures there as well as successes, as in any market. But the lessons of both markets should be learned, as well as other European experience. In the words of UKBI: "There is still room for growth, particularly in more sophisticated business-led incubation which can convert technology commercially and get the early stage finance for young companies, which is still a critical issue."<sup>68</sup>

## Venture capital/private equity ...

### Is the UK lagging?

Venture capital (or private equity as it increasingly likes to be known, following the US parlance) became a much more prominent source for the sector as the 1990s progressed. Some see venture capital as a sub-set of private equity, focusing on early stage investments<sup>69</sup> (and I will follow that usage here). It is a significant source for more ambitious ventures, beyond "lifestyle" and other small businesses that are content (no doubt with good reason) to remain small.

Interestingly, the Bank of England pointed out as early as its 1996 report that, according to EVCA data, early stage venture capital was bigger, in absolute terms, in Germany, Italy and The Netherlands than in the UK. German early stage seed-corn capital, for instance, was over three

<sup>64</sup> Growing Success – helping companies to generate wealth and create jobs through Business Incubation, The Enterprise Panel (H M Treasury 1996).

<sup>65</sup> Op cit p38.

<sup>66</sup> Op cit p27-29.

<sup>67</sup> Op cit p28.

<sup>68</sup> Communication from chief executive, February 7, 2002.

<sup>69</sup> See Myners, for example, p152.

times its UK equivalent. Williams noted that as early as 1992, 27.6% of German venture capital had gone into early stage companies, just below the US at 28.7% and well ahead of the UK at 16.8%.<sup>70</sup> Myners pointed out that as a percentage of GDP, UK venture investment was ranked fourth in the EU. Early stage investment found the UK at tenth, below the EU average.<sup>71</sup> At the same time, in absolute terms, the UK industry was the biggest in Europe, 42% of the total in 1995, with the balance going into MBO/MBIs<sup>72</sup>. It remained the biggest in 2000.<sup>73</sup> Unfortunately, the 2001 Bank Report did not make European comparisons.

The Bank did, however, make the equally striking point that, in both 1998 and 1999, the majority of total investment in UK private equity came from the US.<sup>74</sup> The last BVCA Annual Investment Report also shows that overseas investors were the largest source for UK private equity, including venture capital, in the four years to 2000.<sup>75</sup>

One lesson of all this is that the UK should probably spend more time learning lessons from Continental Europe and less time preaching, in this area at least.

It has also been put to me that we should be cautious about the data. It may be that there is some under-reporting in the UK, though it is not clear why this should be a bigger problem than elsewhere. The Germans (and others, including the US) may have made some mistakes, but we need to understand what they have achieved and not achieved. This is not to diminish the achievements of the UK industry. But the data (and anecdotal evidence) suggest that Europe, and particularly Germany, deserves a closer look. We will return to the role of UK and US financial institutions in funding UK venture capital. Comparisons are usually made with the US, an older and much bigger industry, and one tracked closely by its UK counterpart.

Returns have been better in MBOs than in early stage investments, though the latter sector improved its performance markedly in the period under discussion.<sup>76</sup> Dr Gordon Murray of the London Business School and colleagues have done work indicating that UK venture capital firms took an increased stake in technology investments in the late 1990s, but thought “a bias is likely to remain against VC firms’ involvement in the earliest ... stage of the technology investment cycle”.<sup>77</sup> One interviewee quoted views, which I have heard elsewhere, that venture capitalists expect too high returns. My own view is that the market decides; and a skilful venture capitalist can add value far beyond the finance provided. Early stage firms should examine their financing choices carefully. (The BVCA’s website is an excellent place to start.<sup>78</sup>) Professor Mason and colleagues have done work on the returns achieved by business angels, which shows that the returns profile of high-tech and non-high tech ventures are not significantly different.<sup>79</sup>

---

<sup>70</sup> Op cit p16, citing Steven Abbott and Michael Hay, *Investing for the Future* (London: FT and Pitman Publishing, 1995) p16.

<sup>71</sup> Op cit p162.

<sup>72</sup> Op cit p20 and table 3.3. See also Williams p15, for a discussion of the market up to 1998.

<sup>73</sup> See Bank’s 2001 Report p9. See also Myners p 161.

<sup>74</sup> Op cit p13.

<sup>75</sup> Op cit p4.

<sup>76</sup> See Myners p168, citing WM/BVCA data.

<sup>77</sup> *Do UK venture capitalists still have a bias against investment in new technology firms*’ G Murray, A Lockett and M Wright 2001, to be published.

<sup>78</sup> <http://www.bvca.co.uk/>

<sup>79</sup> Professor Colin Mason and Harrison, R T, *Is it worth it? The rates of return from informal venture capital investments*, *Journal of Business Venturing*, (17, 2002) 211-236.

The reports under discussion spent much more space on asking for public intervention to encourage venture capital into the high-tech sector than on looking at what venture capital might do itself to change. The public sector has responded positively. In particular, successive governments have introduced a variety of tax incentives, and the Labour government has provided funding for a range of public sector venture funds, all discussed below. The Myners report also made a number of proposals to the venture capital sector and its representative body, the British Venture Capital Association, all of which look worth following up.

It was good that the BVCA's initial response was positive. For example, it has embarked on a wholesale review of its well respected Valuation Guidelines (in consultation with its members and other interested parties, including the NAPF) and it has worked with the NAPF to provide a guide on "*How to invest in venture capital*". Such collaboration looks worth taking further.

Are there unanswered questions about the scope for reform within venture capital? Are managers trained to deal with early stage high-tech companies? How many private equity houses do significant work in this sector? In addition, are we learning as much from Europe as we could? It looks likely that US lessons are being picked up efficiently, but are they being learned on the right scale? There were a number of new entrants in the second half of the nineties. Did this indicate structural change, or has the market fallen back since 2000? Are funds getting so big that, coupled with a shortage of management talent, appraising early stage investments is, (as one of my interviewees suggested) getting more difficult?

## Financial institutions (especially banks, pension funds, insurance companies)

### Banks...

The small business set up in a den or garage may look to banks for external finance, and bigger ventures look that way too. The Bank of England's 1996 report thought that "banks are not normally an appropriate source of risk capital for small technology-based firms at early stages", though the report went on to say that banks "do, however, have an important role to play in providing working capital and assisting such firms to obtain packages of appropriate finance, as well as providing other banking services".<sup>80</sup>

The clearing banks have made steps in recent years to educate their branches and regional networks about technology financing proposals. For example, the Technology and Innovation Unit at HSBC (whose head, David Gill, co-authored '*Funding Technology*') has put considerable efforts into making branches better equipped to handle borrowing proposals from early stage technology companies. Over 300 lending managers have attended a bespoke training course at Brunel University, and a network of 15 specialist managers in leading clusters is dedicated to technology finance. HSBC also has formal relations with the Universities of Brunel and York to assist technology-based firms and encourage commercialisation. The 1996 Bank of England report also gave prominence to Natwest's efforts in this area,<sup>81</sup> and its 2001 Report mentioned

<sup>80</sup> Op cit p16.

<sup>81</sup> Op cit p16.

## What role for banks?

that Natwest now has 225 Technology Business Managers operating, assisted by a Technology Business Managers Appraisal Service. Barclays is participating in the DTI-sponsored proposal for regional venture capital funds and, according to the 2001 Bank Report, has already set up 15 Technology Centres.<sup>82</sup> But, overall, the reports under discussion do not give much prominence to banks' activities in early stage technology finance.

The Tech Stars Report wanted banks to be more creative in providing finance to the sector.<sup>83</sup> The '*Funding Technology*' study noted the existence in the US of banks specialising in fast growth technology companies, and suggested that there was a market opportunity in the UK.<sup>84</sup> In the relatively short time since that study was published, these US players have not entered the UK market - and, as noted above, there is now some UK clearing bank activity (but room for a lot more). In that context, it is not reassuring that, in the latest CSFI survey of risks facing banks, with UK respondents by far the biggest group, competition from new entrants has slipped from ninth to thirtieth among those risks.<sup>85</sup>

'Sub-prime' leasing, factoring (both for start-ups and early stage) and discounting (for early stage only) probably all play a bigger role currently than is generally realised. It is unlikely that there is a huge potential market for debt in this sector. A little more creativity (perhaps a lot more) is needed to meet the sector's circumstances.

One possible range of US products for introduction to the UK by banks (and non-bank competitors) is venture leasing or venture asset finance, where asset finance companies come in after private equity providers, often taking warrants. Anecdotally, this is more common in the MBO market, as is private equity. The UK Finance and Leasing Association (FLA) organised a workshop on the concept in 2000, with Stephen Timms MP, then financial secretary to the Treasury, as the keynote speaker.

There has been little sign of any market development since then - though GATX, a US finance house, has opened a business in London (GATX European Technology Ventures). Since 2000, the UK business has done four deals, all in early stage high-tech sectors, featuring venture asset finance and venture loans (though not always both in the same deal).<sup>86</sup> Perhaps some academic work in this area might stimulate action. The Foresight 2010 Report saw a bright future for the product, and the European Commission's recent paper on enterprises' access to finance also saw it as having potential for SMEs throughout Europe.<sup>87</sup> It has an audience and a potential market.<sup>88</sup>

Tim Hoad, of the DTI's Future and Innovation Unit, also drew my attention to the significance of trade credit as a source of finance for early stage companies. Here, too, there may be room for more innovation by banks.

---

<sup>82</sup> Op cit p37.

<sup>83</sup> Op cit p7.

<sup>84</sup> Op cit, p15.

<sup>85</sup> Banana Skins 2002: a CSFI Survey of the risks facing banks. Centre for the Study of Financial Innovation, London, February 2002.

<sup>86</sup> I am grateful to Anders Vestergaard (GATX European Technology Ventures) for this information.

<sup>87</sup> Op cit p27.

<sup>88</sup> Op cit p36.

## Pension funds and insurance companies ...

The Tech Stars report flagged up the reluctance of UK pension funds, insurance companies, and their fund managers to invest in early stage companies.<sup>89</sup> Myners noted that overseas institutions have been the key driver for the growth of UK private equity, including venture capital, since the mid-nineties. They accounted for some 70 per cent of the funds raised by BVCA members in 1999.<sup>90</sup> *'Funding Technology'* called for the Minimum Funding Requirement (MFR) and defined contribution regulations to be reviewed.<sup>91</sup> The 2001 Bank Report also took up the cudgels in its polite way.<sup>92</sup> Myners recommended the MFR be replaced by a more transparent regime for pensions regulation, which the government has promised to do.<sup>93</sup> The defined contribution regulations remain an open question. *'Funding Technology'* also called for a UK 'Prudent Man' rule', imitating the ERISA regulations in the US, which would encourage UK pension funds to invest in venture capital.<sup>94</sup> This was attempted in 1999, when the Prime Minister made a speech mentioning the subject to the BVCA's Annual Conference, followed by a statement from the actuarial profession.<sup>95</sup> The Bank's 2001 report thinks the climate of investment has improved as a result.<sup>96</sup> Paul Myners, however, went much further. He wanted ERISA embodied in fund management mandates and legislation.<sup>97</sup>

Williams thought that the reluctance of institutions to invest in early stage technology was much more of a cultural than a regulatory issue (though his report foresaw the problems that the MFR causes). So it emphasised better dissemination of information about the sector, plus tax incentives.<sup>98</sup> The relative roles of US and UK institutions in funding UK venture capital, noted earlier, suggests that there is a good deal of force in this view. In that context, AltAssets is an interesting website, aimed at informing institutional investors about the private equity market.<sup>99</sup> But more needs to be done, by government and the private sector.

Myners also called for reform of the way investment consultancy is provided.<sup>100</sup> Reform is certainly due, in an industry that is over-concentrated and too small for the task it faces.<sup>101</sup>

It is worth saying that there are general commercial and legislative constraints on institutions and their ability to invest. They will always have to have a good proportion of their investments in fairly liquid form, whatever the regulatory environment. The debate is about getting the balance right, not tipping too far in any particular direction. There are also real issues about the costs to institutions and their fund managers of appraising relatively small early stage investments; these are addressed further below.

<sup>89</sup> Op cit p7.

<sup>90</sup> Op cit p172.

<sup>91</sup> Op cit p10.

<sup>92</sup> Op cit p32-33.

<sup>93</sup> Paul Myners [Myners Review of Institutional Investment: Final Report](#), HMT 2001, Chapter 8.

<sup>94</sup> Op cit p10.

<sup>95</sup> Bank 2001 Report, p28.

<sup>96</sup> Op cit p28.

<sup>97</sup> Op cit p14.

<sup>98</sup> Op cit p22 and p29-31.

<sup>99</sup> See <http://www.altassets.net/default.asp>. I am grateful to Tony Golding for drawing my attention to this site.

<sup>100</sup> Op cit p22.

<sup>101</sup> See Tony Golding *'Private Equity Advice - A Yawning Chasm'*, available from the AltAssets website.

## Corporate venturing...

Corporate venturing – established companies investing in early stage companies, usually in their own food chain - is ‘prevalent’ in the US but seems much less common in the UK.<sup>102</sup> Both the 1996 Bank study<sup>103</sup> and ‘*Funding Technology*’ pointed this out. In 1999, the Treasury launched consultations on tax incentives, which the Tech Stars report had called for, without giving any detail of what it had in mind.<sup>104</sup> In the 2000 Budget, corporation tax relief at 20% was announced for corporate venturing investments.<sup>105</sup> The Tech Stars report, on another tack, wanted the DTI and CBI to set up a centre of expertise on ‘corporate alliances’. The Small Business Service has now given the National Business Angels Network funding to do work on corporate venturing. It’s another area where more UK academic research would be helpful.

Anecdotally, corporate venturing has only flourished in the pharmaceuticals and IT sectors, and even there less than in the US.<sup>106</sup> Dr Gordon Murray has told me that it grew in the UK rapidly between 1995 and 2000, then fell back sharply in 2001.<sup>107</sup> It is difficult to believe that there is a market failure here; but will the tax relief prove to be good value for money by signalling an under-explored market? Among my interviewees, views were mixed.

Several of my interviewees have mentioned that corporate spin-offs should be viewed more generally. As well as corporate venturing, UK corporates should take a more systematic approach to spinning off ideas and businesses that are non-core for the mother business though with commercial potential.

## Stock exchanges...

In the 1990s, a number of stock exchanges marketed themselves as welcoming early stage companies, often on lists with lower requirements than the main list of the exchange in question. NASDAQ was the most dramatic success. In Europe, the LSE started AIM, Frankfurt the Neuer Markt and Paris the Nouveau Marché. These have all made a contribution to financing early stage companies in Europe. Indeed, in the UK, in recent years listings on AIM have been more frequent than on the main list.

New competition is also springing up in the world of exchanges: Virt-x and Jiway, both in London, for example; EASDAQ (now NASDAQ Europe) in Brussels. Though only NASDAQ Europe is listing early stage companies, and Jiway has had to restructure, they all indicate that there may be new opportunities for listing opening up, in the right business and regulatory environment.

The market for exchange services looks set to develop further in the near term, spurred particularly by de-mutualisations in London and elsewhere. So exit from early stage financing should get easier, which can only be positive if well-managed. The concept of the ‘economic

<sup>102</sup> ‘*Funding Technology*’ p35.

<sup>103</sup> Op cit p30-31.

<sup>104</sup> Op cit p7.

<sup>105</sup> See 2001 Bank report p70.

<sup>106</sup> One interviewee mentioned BAe Systems, Thales and Nortel as good examples.

<sup>107</sup> Comment on previous draft, drawing on as yet unpublished research.

**Lots of  
change in  
this  
space**

pipeline', used at the London Stock Exchange, where a variety of institutions feed early stage financing and the Exchange competes with others for corporate business on a UK, European and global level, looks a plausible scenario, though not the only possible one.

Taking up this theme, the Foresight 2010 report looked forward to new style local exchanges,<sup>108</sup> perhaps inspired, at least in part, by the proposal of Tim Mcroft and Dr Keith Haarhoff to develop virtual local equity markets.<sup>109</sup> These would be web-based, but would attract capital at a local or regional level (though not to the exclusion of other sources). The recent CBI report on SQCs has also drawn attention to the Share Centre's electronic platform 'ShareMark', which might develop into an exchange for early stage companies.<sup>110</sup> In addition, AngelBourse is a site due to launch soon, which will allow entrepreneurs seeking funding to meet investors in cyberspace, partly prompted by legislative changes mentioned earlier on high net worth and sophisticated individuals.<sup>111</sup> It plans to provide a marketplace for shareholders to trade their shares in small and medium companies. Beyond that, Chris Prior-Willeard, of PricewaterhouseCoopers, took me through his concept of the Trading Post, which would, from the perspective of SMEs (with a market cap between £5 million and £250 million) and investors, revive regional stock exchanges in the UK and elsewhere in Europe, while using the benefits of electronic communication across the whole market.

The London Stock Exchange sees AIM and Techmark as its chief contribution to the financing of the high-tech sector. Their Landmark, which divides over 2,200 of their Main List companies by region, can be seen as a link to the idea of a 'virtual local' exchange.

The Net has enormous potential here. It looks likely to blur the distinction between exchanges and other institutions in the capital markets, including those which raise and invest early stage capital. Chris Prior-Willeard's concept of 'self-listing' is very relevant here. The world he foresees - in which large companies self-list, specialised exchanges aimed at particular sectors and regions develop, and exchanges' geographic location becomes much less relevant - is thought-provoking and identifies key current developments that are opening up possibilities for radical change.<sup>112</sup> The impact of electronic communication on equity markets deserves much closer attention, in early stage markets and elsewhere. Exchanges nowadays all have electronic platforms. On-line dealing is a commonplace. Clearance and settlement are already on an electronic battlefield.

There is a feeling in the market that there are regulatory barriers. I have not identified any specific pieces of legislation that set obstacles. Applying to be a Regulated Investment Exchange would carry a cost, perhaps too high a cost for the more early stage sites that are developing. And listing costs and information requirements remain a concern, as several interviewees and correspondents reminded me. This is an issue that needs attention as the market develops.

---

<sup>108</sup> Op cit p24.

<sup>109</sup> Tim Mcroft: Bridging the Equity Gap: A New Proposal for Virtual Local Equity Markets (London: Centre for the Study of Financial Innovation, 2001).

<sup>110</sup> Op cit p21.

<sup>111</sup> See [www.angelbourse.com](http://www.angelbourse.com).

<sup>112</sup> See '*Why we need more rather than fewer Exchanges*', Chris Prior-Willeard, March 1999 (unpublished).

## The role of universities ...

Universities are strange beasts in this context. Government statisticians now classify them as private sector, but the dominance of government funding through the Higher Education Funding Council for England (and the other UK equivalent bodies) gives them more than a hint of the public sector in many perceptions. Traditionally, there has been hostility in many academic quarters to academics engaging in enterprise, though this is changing rapidly. Scholarship is crucial; but universities have economic and commercial significance and more needs to be done to recognise that. Too often, debate about universities' role in spin-offs tends to migrate to a debate about university funding more generally. Those deep political waters are beyond my remit, though there is no doubt that there is a link.

The 'Funding Technology' authors wanted UK universities to be much more like their US counterparts, and went into much more detail than previous reports.<sup>113</sup> They drew attention to:

- Offices of Technology Licensing (OTL), common in US universities;
- their resourcing - higher academic salaries in the US and the freedom to take part-time executive or non-executive positions in technology ventures;
- the need for more entrepreneurship courses; and
- the conflict between the research objectives implied by the UK Research Assessment Exercise (RAE) and commercial activities by academics.

Some UK universities do have OTL-style bodies. Glasgow, Oxford and Cambridge are often mentioned in this context, and there are others. They have different approaches, especially to the licensing of intellectual property, but they (and others) see technology business spin-offs as a priority. It seems a more open question as to whether technology transfer offices (TTOs) are properly resourced everywhere, in staff and funding. It has also been suggested to me that there may be an 'empathy gap' between TTOs and venture capitalists.<sup>114</sup> In this context, it is interesting that Paul Myners thought that other EU governments were better at investing actively in spin-offs, though he did not develop the thought or provide evidence.<sup>115</sup>

The picture may be changing. Research carried out by Newcastle University's Centre for Urban and Regional Development Studies, on behalf of the four funding bodies for UK higher education and the Office of Science and Technology, said that 199 enterprises were established in 1999-2000 to exploit knowledge from academic research, compared with an average of fewer than 70 annually over the previous five years. The 199 spin-offs were, however, concentrated in a relatively small number of institutions. Only 24 had seen more than two spin-offs involving some form of ownership by the university or college.<sup>116</sup>

On this evidence, we may be speeding up the flow, though the stock remains low compared

---

<sup>113</sup> Op cit p17-21 and p40.

<sup>114</sup> Interview with David Gill.

<sup>115</sup> Op cit p162.

<sup>116</sup> See David Charles, Cheryl Conway and Paul Bennenworth *Higher Education Business Interaction Survey* (2001). Available from [www.hefce.ac.uk/Pubs/hefce/2001/01\\_68.htm](http://www.hefce.ac.uk/Pubs/hefce/2001/01_68.htm).

with the US. Other European countries are not covered, and there may still be too few universities participating in the shift. Several of my interviewees thought so. Moreover, we still lack data on the extent to which universities are profiting from spin-off, licensing and related activities.<sup>117</sup>

The RAE raises very deep issues about academic freedom and the purpose of universities and teaching. The pursuit of scholarship is, and should be, the central purpose of universities. The RAE has its flaws, but it is at least geared to measuring universities' performance on that central purpose.

Given the economic and commercial significance of the fruits of that research, however, the story cannot end there. What is needed are frameworks, procedures and cultures that encourage the commercialisation of that research, without damaging the pursuit of scholarship. Returns may go to the academic, the department, or the university – but as a private return on investment, not as a measure of academic excellence.

The Williams report led to University Challenge, a scheme for providing venture capital to campus business opportunities, which should be helping.<sup>118</sup> There have been two rounds of funding, with the government having contributed £25 million, the Wellcome Trust £18 million and the Gatsby Charitable Foundation £2 million. Forty-four spinouts were financed in the first two years, across a range of technologies, and 13 patent applications.<sup>119</sup> In addition there has been a number of more recent initiatives, especially following the 2000 White Paper on science and innovation. These include:

- Science Enterprise Centres (with 13 now up and running);
- the Higher Education Innovation Fund;
- five University Innovation Centres; and
- University Business Fellowships.

Taken together, they are steps in the right direction.

Several of my interviewees from the business world argued that more radical action was needed. Hermann Hauser, for example, argued for 100% university-owned companies, with Boards and control over intellectual property (in exchange for the equity). These views deserve a wider hearing. I was struck by the distance between such views and those held in the academic world. Neither community is unanimous. One academic wrote to me that the RAE reduces incentives to undertake “the scholarship of application”. Another noted that the RAE introduced “very strong signals that research is more ‘valuable’ to a department than commercialisation”. One non-academic correspondent asked whether some measure of successful commercialisation could be included in the RAE, so that, say, 10% of a department's funding was based on its commercialisation record. After all, the UK universities prominent in commercialisation all seem to score highly on their academic research as well. It is not obvious that there is an inherent conflict, although the two activities have to be kept sufficiently separate to guarantee commercial realism in one and academic freedom in the other.

---

<sup>117</sup> Interview with Professor Cyril Hilsum.

<sup>118</sup> See Williams p5.

<sup>119</sup> Source OST.

There will always be differences because of different interests and experiences, but we still have a way to go before any kind of consensus can emerge. And we need one to achieve the kind of culture shift advocated in several of the reports under review.

For those academics who have research with commercial possibilities but who do not themselves wish to play a commercial role (or get a return), even in a non-executive capacity, it would be good to devise some way of rewarding their research budgets. I recommend the Research Councils and OST examine this suggestion.<sup>120</sup>

The 1996 Bank report advocated encouraging entrepreneurship in universities.<sup>121</sup> The Foresight report agreed.<sup>122</sup> The Tech Stars report saw the then Teaching Companies Scheme and the Shell Technology Enterprise Scheme as helpful in this context. It proposed that the Engineering and Physical Sciences Research Council should extend the training of scientists to include small business awareness and business management skills.<sup>123</sup> Williams also wanted the government to encourage the Cambridge School of Entrepreneurship (and similar initiatives elsewhere) aimed at encouraging students of science and technology to acquire business skills.<sup>124</sup>

Both the government and a number of universities have responded positively. The Judge Institute at Cambridge, for instance, is now setting master's programmes in train to meet this objective.<sup>125</sup> Imperial College runs engineering and physics courses which require students to undertake business planning exercises with the business school. Strathclyde has been offering entrepreneurship courses to undergraduates (and latterly postgraduates and alumni) since 1996. The London Business School and London School of Economics do similar work. The government is also addressing this issue. The OST Science Enterprise Challenge provides government funding to universities to:

- enhance their technology transfer operations; and
- fund the teaching of entrepreneurship to science and engineering students.

However, it is not clear how widespread such operations and courses are.

Picking up on the slightly surprising Cambridge Centre for Business Research findings mentioned earlier on collaboration between early stage high technology companies and higher education, this is not a prominent theme in the reports under review. It should be examined now.

## Technology brokers...

There are a small number of 'technology brokers' in the UK. They seek to bring together sources of funding with early stage high-tech companies.

I first became aware of them (appropriately in the context of this paper) at a conference to

---

<sup>120</sup> I am indebted to Fields Wicker-Miurin (Vesta Capital) for this suggestion.

<sup>121</sup> Op cit p32.

<sup>122</sup> Op cit p9.

<sup>123</sup> Op cit p6 and 11.

<sup>124</sup> Op cit p5-6 and p35.

<sup>125</sup> I am grateful to Professor Alan Hughes for this information.

discuss the CBI Tech Stars report and the first Bank of England report at the Royal Society on March 3, 1997.<sup>126</sup> I subsequently called - in an article in *Nature* in 1999 - for an expansion of the role and size of this community.<sup>127</sup> In particular, brokers could help to resolve the disjuncture between large institutions which cannot handle small investments efficiently and do not have the expertise to judge technology firms' business plans. Their contribution would be to help early stage firms explain their products, the underlying technology and their business plan to finance providers - and to help financial institutions to understand all that and map it on to their own businesses' models of appropriate risks in relation to the potential rewards. The client would pay, and could come from either end of the funding chain. Such brokers would help to make the costs of appraisal manageable.

## The accountancy and legal professions...

Silicon Valley, unlikely though it may sound, has entrepreneurial lawyers: they advise ventures and will take remuneration in equity (in tune with the state of the market at any stage in the cycle, no doubt). The *Funding Technology* report wanted more UK examples.<sup>128</sup> There are a few scattered around the UK but this is certainly not a mature market.<sup>129</sup> The Centre for the Study of Financial Innovation held a successful round table on professional advisers taking equity (and other payment in kind) in return for their services. So it is present in the UK; but it is not yet a mature concept.

The accountancy profession does not figure in any of these reports, yet is clearly an important influence on the sector. It needs to be seen as more of an enabler and less of a cost.

One current issue in accounting that is relevant is the accounting treatment of share options, which the International Accounting Standards Board is considering. The final standard must allow early stage firms to use options to attract high quality people. It must not weigh down their already pressurised finances.

## The Internet as a market-place for finance

Electronic communication is already a pervasive influence in equity markets: think of the massive US and European clearance and settlement systems, the platforms possessed by the big stock exchanges around the world, and the alternative trading systems and electronic communications networks that have grown up in recent years. But these are developments that impact primarily on trading in listed companies, and most of all in the shares (and bonds) of big established companies. The development of the Internet has opened up possibilities for improving the flow of finance to early stage companies - and high-tech companies, with their understanding of technology, are well placed to take advantage of these developments. It will certainly ease secondary market dealings; but used skilfully and properly resourced, it could help the primary market as well.

## Potential of the Net...

<sup>126</sup> Thanks to David Gill for the date.

<sup>127</sup> 'Towards a more venturesome Europe' *Nature*, vol 401 16 September 1999.

<sup>128</sup> Op cit p33.

<sup>129</sup> The BVCA has more than 150 associate members, including lawyers and accountants: not an enormous figure considering the size of the two professions, though a good start.

Only one of the reports under review looks at the Internet in any detail: the Foresight study of financial services for SMEs in 2010.<sup>130</sup> It foresaw the development of new internet-based fora for business plan 'posting' to attract venture capital, and new electronic markets to make public equity capital more accessible to SMEs.

This seems right. There are issues of course. How can you trust the other party? What is the quality of the information on offer? Who is offering to do business? And so on. But most such issues occur in any business. The Net will cope with them like any other sector - and add its own value. In the US, there are already sites that have made a start - see for example the New York Private Placement Exchange<sup>131</sup> and Private Trade.<sup>132</sup> On new markets, the Share Centre's ShareMark illustrates the possibilities of on-line equity trading outside the established exchanges.<sup>133</sup> It is not difficult to see how, if it sought and obtained Recognised Investment Exchange status, ShareMark could become a funding source for a greater range of SMEs than those that achieve AIM status in the UK.

Electronic trading also makes the process of trading in overseas equities much easier, albeit still with risks. There is a clear European dimension. Governments and the European Commission need to ensure that the right regulatory framework is in place to allow these services to flourish. Consumer and investor protection are no doubt important, but economic and business dimensions should be given full recognition too. In present economic circumstances, growth needs to be given more emphasis than investor protection (and better education would do much to reduce the need for the latter).

Given current developments and prospects, the Foresight panel is right that much better broadband access by SMEs and government is vital - and that financial service providers should exploit it to the maximum that is commercially viable in the SME market.<sup>134</sup> Their ideas on how the Net might allow financial services for SMEs to develop are well worth reading, and it is probable that high-tech customers would be among the first adopters of such services. Currently, financial service providers all have websites outlining their services. Some have genuine on-line operations, especially in consumer markets (on-line banking, on-line share dealing, funds supermarkets etc). There does not seem to be the same creativity in b2b markets, or among larger financial institutions. This needs to change, rapidly.

The Net changes the economics of education. High quality material can be disseminated cheaply. Students' work and performance can be monitored, by themselves and by the education provider. Financial education for the management of early stage companies could be developed in this way, by the public and private sectors. Investor education is already available.<sup>135</sup> It is very early days and a couple of interviewees expressed scepticism. But there is a technology available to be exploited, if used well. The chief advantages are that the entrepreneur and staff could do courses related to their business at times and places to suit themselves and the needs of the business, that performance can be monitored by the participant and the firm, and that the

---

<sup>130</sup> Final Report by the Financial Services Panel SME Sub-Group Financial Services for Small and Mid-sized Enterprises in 2010 (Office of Science and Technology 2001).

<sup>131</sup> At [www.nyppe.com](http://www.nyppe.com).

<sup>132</sup> At [www.privatetrade.com](http://www.privatetrade.com).

<sup>133</sup> See CBI *A bigger share: encouraging growth in smaller quoted companies* (November 2001) pp 20-21. Though this report goes beyond the range of companies studied here, many of its proposals are relevant to the early stage high tech sector as well as smaller quoted companies.

<sup>134</sup> Op cit p7, pp 20-21, p34 and p39-40.

<sup>135</sup> My own company Equity Education, for example, runs an on-line course in the taxation of early stage investments. See [www.equityeducation.com](http://www.equityeducation.com).

education can be delivered much more cost effectively than ‘terrestrial education’. The advantages of face-to-face learning are lost, but there is a balance to be struck here.

The Internet is not just a delivery vehicle of commercial and other services. It is a set of technologies in its own right. The development of ‘streaming’ audio and video, and the development of applications using these techniques, is a good example. There is a lot going on here, and it is for the private sector to lead.

## The role of the state

The state can tax, finance, regulate and exhort.

## The role of the tax system ...

We have already looked at some of the areas in which tax incentives have been proposed. All the reports under discussion paid some attention to them, and some made it a major focus.

*Funding Technology*, for instance, proposed a tax break for business angels, alongside micro measures to facilitate investment, such as those presently undertaken by the National Business Angels Network and other angel networks.<sup>136</sup> This remains on the drawing board. It is difficult to see what is missing, given tax changes in the treatment of investment in early stage companies during the last decade.

The main innovations of the 1990s in providing tax incentives to early stage investments, including technology investments, were aimed at venture capital and wealthy individuals: Venture Capital Trusts, the Enterprise Investment Scheme and (probably most important) changes in capital gains tax. The Bank’s 1996 Report advocated regular reviews of the performance of the first two.<sup>137</sup> It took a while, but the Inland Revenue launched a welcome evaluation of them in 2001, due to be completed in mid-2002 by the Cambridge consultancy PACEC. The results should be very useful. Williams wanted the limit on individual investments in VCTs raised from £100,000 to £150,000.<sup>138</sup> This remains on the drawing board.

One EIS issue of particular relevance here is the treatment of ‘connected persons’, which seems to make it more difficult than it need be to use the scheme if you are an active business angel. (The Tech Stars report had made the related suggestion of using the EIS to encourage owner-managers to invest more in their own businesses.<sup>139</sup>)

Most investors and companies would probably like a period of stability for both VCTs and the EIS, but we shall have to see the evaluation. The 2001 Bank Report sounded a rare note of scepticism about US capital gains tax reforms having fuelled the boom there in venture capital during the 1980s,<sup>140</sup> but generally the reforms have been welcomed (and were earlier requested,

---

<sup>136</sup> Op cit p25.

<sup>137</sup> Op cit p7 and p29.

<sup>138</sup> Op cit p25.

<sup>139</sup> Op cit p28.

<sup>140</sup> Op cit p70.

**Support for share options**

especially in the Williams report<sup>141</sup>). The 2001 Bank report thought in general that - thanks mainly to action following the Williams report - ‘the fiscal regime for technology-based small firms has improved significantly’ since its 1996 Report.<sup>142</sup>

Share options are a continuing concern. The Tech Stars report found the regime unlikely to help attract executives into early stage companies.<sup>143</sup> The Williams report wanted special incentives for managers of early stage high-tech businesses, with gains taxed only at the point of sale, not on exercise or award.<sup>144</sup> *Funding Technology* welcomed the Enterprise Management Incentive Scheme – the Government’s reply to these points - while calling for further reform of it.<sup>145</sup> It has been reformed since then, and will be further reformed in the 2002 Finance Act.<sup>146</sup> It should probably be allowed to bed down before further change is contemplated. Several interviewees wanted national insurance contributions dis-applied from share options.

The Williams report considered the role of institutions. It felt it would not prove possible to give pension funds a tax incentive to invest in early stage companies, given their privileged tax status, even after the 1997 corporation tax changes. Insurance companies were a different matter, with a tax regime of their own. The report proposed the introduction of Technology Venture Capital Trusts,<sup>147</sup> with appropriate tax incentives. These would be aimed at individual investors, but could also be provided in a form suitable for providing incentives to insurance companies to invest in this sector. Good progress was made initially in a dialogue between the Williams group and the Inland Revenue on defining ‘technology’, but discussions came to nothing.<sup>148</sup> On banks, a possible tax incentive for venture asset finance has already been discussed.

The Tech Stars report called for tax relief on the cost of raising equity.<sup>149</sup> The CBI is still campaigning for this, principally on the grounds that debt and equity should be treated equally.

**Public financing and PPPs ...**

Various interventions, using public spending as a way of funding early stage ventures, have been proposed in the reports under review, sometimes with private funding, sometimes without:

- The 1996 Bank Report wanted to maximise the use of Business Link and other agencies in the context of early stage technology businesses. Technology firms told the Bank’s agents that Personal Business Advisers sometimes lacked the right background for advising technology businesses.<sup>150</sup> The Tech Stars report took a similar line.<sup>151</sup> The 2001 Bank Report simply noted that some Business Link activities were targeted on high-tech early stage businesses.<sup>152</sup>

---

<sup>141</sup> Op cit p2-3, 21-25.

<sup>142</sup> Op cit p4.

<sup>143</sup> Op cit p13.

<sup>144</sup> Op cit p4, 28-29.

<sup>145</sup> Op cit p40, 43 and 46.

<sup>146</sup> See Gordon Brown’s 2001 Pre Budget Report.

<sup>147</sup> Op cit p3-4, p25-26.

<sup>148</sup> See Williams p26-7 and annex B for a discussion of this issue.

<sup>149</sup> Op cit p7 and 28.

<sup>150</sup> Op cit p7 and 46.

<sup>151</sup> Op cit p6.

<sup>152</sup> Op cit p69.

- Business Link does provide innovation and technology counsellors as part of its Innovation and Technology programme. My own limited experience was that Business Link, in its earlier stages, was measured more by inputs than outputs. Anecdotally, good advisers were in short supply. The impact of Business Link on the early stage technology sector should be re-assessed at the next evaluation, with an emphasis on the growth of clients in this sector, rather than intermediate measures. I understand that the OST SCALE 21 'Foresight' Associate Programme aims to raise awareness of the need to train people for all the intellectually creative professions of the 21st century: design, invention, research, computing and entrepreneurship.<sup>153</sup> Financial education should be part of that agenda, if it is not already.
- Reverting to the role of the banks, the 1996 Bank Report wanted greater use made of the DTI's Small Firms Loan Guarantee Scheme for technology businesses.<sup>154</sup> The 2001 Report noted that between 1986 and 1996, only 6% of loans under the Scheme went to high-tech firms.<sup>155</sup> The Labour Election Manifesto promised action in 1997, and some changes were introduced in 1998: in particular a few more providers were added to the scheme (as the Tech Stars report had recommended<sup>156</sup>). High tech businesses received 9% of the loans from April 1996 to March 2000.<sup>157</sup> Remembering the CBI's estimate, mentioned earlier, that 4% of firms in 1995 were high-tech, this looks a respectable performance. Compared with the Cambridge study's 13.6% cited earlier, there may be more to do. But the priority, given the scale of this scheme, seems more likely to lie in introducing more competition in the provision of banking services to this sector, as discussed earlier.
- SMART and (formerly) SPUR were introduced by the DTI to encourage innovation. Anecdotally and according to the Bank's 1996 Agent survey, they are popular with the recipients, though criticised in 1996 for bureaucratic administration.<sup>158</sup> Williams was keen.<sup>159</sup> Professor Hilsom mentioned the LINK scheme as deserving a re-appraisal to make it less bureaucratic and more user-friendly. The issue again is the final impact on the growth of the client firms.
- Drawing on work by the CBI and others, the Williams report proposed the Emerging Growth Rebate, on various tax payments, in exchange for reduced tax losses allowable against corporation tax.<sup>160</sup> Subsequently, the government has introduced R&D tax credits for SMEs (and is proposing to do so for large companies). Perhaps that answers the point.

Other possible Public-Private Partnerships include:

- Small Business Investment Companies are private investment firms which finance US small businesses via equity investments, loans and other finance. They are licensed in the US by the Small Business Administration. Similar organisations have been set up in

---

<sup>153</sup> I am grateful to Charles Ross for this information (e-mail, January 1, 2002).

<sup>154</sup> Op cit p7 and 16.

<sup>155</sup> Op cit p66.

<sup>156</sup> Op cit p7 and 21.

<sup>157</sup> Bank 2001 Report p66.

<sup>158</sup> Op cit p 44.

<sup>159</sup> Op cit p35.

<sup>160</sup> Op cit p4-5 and p33-34.

Australia and Germany.<sup>161</sup> UK commentators have long advocated the adoption of a UK SBIC. The 1996 Bank Report did<sup>162</sup>, and *Funding Technology* described US SBICs in positive terms.<sup>163</sup> One interviewee thought that the recent initiatives on regional venture capital traversed some of the same ground, which may be right (indeed the Small Business Service has been sceptical). Nevertheless, they are a major US programme, and they deserve further examination by government and / or the Bank of England to see if they would be a useful addition to the policy armoury.

- The House of Lords Select Committee on Science and Technology also recommended that the UK introduce a scheme drawing on US experience, particularly its Small Business Innovative Research Programme, which allocates a fixed percentage of government contracts for small innovative companies.<sup>164</sup> There are value-for-money issues here; but the history of public purchasing is littered by poor value for money from large suppliers. It seems worth closer examination. This would build on recent initiatives to encourage SMEs to tender for public sector contracts, most recently the Chief Secretary's announcement of October 16, 2001.<sup>165</sup>
- Calls for further investment by venture capital in early stage high tech companies have stimulated, mainly without any explicit encouragement in the reports under discussion, public sector interventions. The biggest in financial terms are the UK High Technology Funds (financed by public funds and commercial investors), the Enterprise Fund (an umbrella fund covering a number of initiatives), the new Regional Venture Capital Funds (where the European Investment Fund, which has re-launched as the European Investment Bank's venture capital arm, has joined the DTI and the banks to fund these regional initiatives), as well as University Challenge. That seems enough such initiatives, frankly, for the time being. The priority is to invest the available funding using the best available management and see if the investment works.

## Regulation ...

The Tech Stars report wanted sectoral organisations to help firms protect their intellectual property, as well as a working party to look at ways of helping the sector to reduce the costs of protecting its intellectual property.<sup>166</sup>

Though not directly a financial issue, protecting intellectual property, or not protecting it, can certainly have significant financial consequences. Deep pockets are often needed to protect intellectual property, and there are prizes to be won if the right framework is in place. Myners noted an apparent link between venture capital investment and innovation. He cited some research which suggested that venture capital accounted for eight per cent of US industrial innovations in the decade to 1992.<sup>167</sup> The Patent Office was mentioned favourably to me a couple of times in this context, as taking the issue seriously.

---

<sup>161</sup> I am grateful to Dr Gordon Murray for this information.

<sup>162</sup> Op cit p7 and 49.

<sup>163</sup> Op cit p42-44.

<sup>164</sup> House of Lords The innovation-exploitation barrier (Third Report of Select Committee, 1997).

<sup>165</sup> See OGC/HMT/DTI Press notice of 16 October 2001.

<sup>166</sup> Op cit p6.

<sup>167</sup> Op cit p166.

The Williams report found no significant regulatory barriers set up by the financial regulators in the provision of finance to the sector, though it wanted to make it easier to market venture investment opportunities to high net worth individuals.<sup>168</sup> It took a little while, but the Treasury took secondary legislation through Parliament on both high net worth and sophisticated individuals in April 2001. This legislation is a real step forward, and the government should be complimented for putting it into place.

The two categories of investor are treated, however, differently - with less regulation on material aimed at the sophisticated investor than at the high net worth investor. The rationale for this different treatment is not clear. From the point of view of encouraging capital into the companies discussed in this report, it would be better for both categories to be merged, at the level of supervision used for the sophisticated in the new legislation. This would bring to a happy conclusion a story that began in 1936, when the UK made advertising such opportunities illegal in the Prevention of Frauds Act.<sup>169</sup> The priority would then be (and to an extent already is) to get the legislation working. This is largely the responsibility of the private sector, though the FSA also needs to operate with a light touch in this area. Moves are already afoot, and much more needs to be done. Traditional and Internet-based methods of financial promotion need to be mobilised to use the new legislation well.

Williams also wanted changes in the Listing Authority's requirements for companies seeking a listing, to make it easier for early stage companies outside the bio-science area. This would be difficult to argue in the present investment climate. But it should be monitored by the FSA, to ensure that viable companies do not find it too difficult to get funding from the market.

And Williams wanted changes in planning procedures, to take into account the needs of high tech companies. The government has set changes in train in planning, which may help.

## Talking the talk ...

A couple of ideas emphasised "talking the talk", to help change the culture:

- The 1996 Bank Report suggested using serial entrepreneurs as role models. Alan Sugar has been active in speaking to schools about his business experience and the case for becoming an entrepreneur, at the request of the Treasury. Other entrepreneurs, such as Chris Evans (the bio-tech and venture capital businessman, not the disc jockey) and Hermann Hauser, have been active in government-sponsored work on related subjects. This is an activity – especially talking to schools and universities - that is of real value. No doubt, quite a lot happens in an *ad hoc* way. Business schools are active, as are others. Professor Hilsum mentioned a scheme called Young Enterprise, for 'schoolchildren entrepreneurs'. He said it deserved much more publicity. Sir Howard Davies, chairman of the FSA, has been reviewing the awareness of business, enterprise and the economy across schools and further education. He reported to Gordon Brown, Estelle Morris and Patricia Hewitt on February 14.<sup>170</sup> Perhaps the idea of role models can be taken forward in

---

<sup>168</sup> Op cit p30.

<sup>169</sup> See Charles Ross 'The cold climate for British entrepreneurs' *The Computer Bulletin* (Vol 6 Part 6, December 1994) p2.

<sup>170</sup> See Treasury Press Notice 67/01 18 June 2001 'Enterprise For All – The Challenge For The Next Parliament' and Sir Howard's report 'Enterprise and the Economy in Education' (further information available on <http://www.daviesreview.org>).

that context.

- The Williams report suggested that the Bank of England convene meetings of investing institutions, venture capitalists, high-tech firms, and others to promote better understanding of early stage technology firms in the institutions.<sup>171</sup> Two gatherings have occurred to date, plus related events organised by the Bank. They look worth continuing, judging by the evidence presented in the Bank's 2001 Report.<sup>172</sup>

## Europe...

Europe is not a footnote. Some examples of issues that are pan-European (though often taking different forms in different countries) have already been mentioned.

If I had the time and space, there is much more to be said about the need to open up a single market in finance for early stage high-tech across the EU and beyond. A debate has grown up in recent years about encouraging early stage companies, especially in high-tech, across the European Union. It was stimulated by a paper issued by the European Commission in 1998.<sup>173</sup> The UK Presidency that year made 'risk capital' one of its themes, including a successful conference at the Guildhall, following the Williams report's recommendation to take this debate seriously.<sup>174</sup> I am grateful to Professor Cyril Hilsum for drawing my attention to a report issued the same year by the European Council of Applied Sciences and Engineering, on engineering and venture capitalism in Europe. It was instructive to see how the issues that the council raised and the solutions recommended paralleled so closely the reports under review here.<sup>175</sup>

The Commission's report and other developments - principally a widely held view that the EU has to emulate the US - led to the European Council at Lisbon adopting an economic reform agenda. The controversies aroused by the proposed Prospectus Directive, however, illustrate how far there is to travel; but at least there is a widespread recognition that there is a shared mission. Anecdotally, venture capital in Europe does quite a lot of cross-border business, in relative terms, which must be a positive development (if it is really happening).

## Cultural shifts...

There is a cultural shift underway in UK attitudes to and practices on the financing of early stage high-technology firms.

I first encountered public policy on early stage investment in 1980, when the Business Start-Up Scheme was in development. Much has been done since then, and the pace of change has quickened in the last five or six years. Policy formation is too complex a process to say unequivocally that any of the reports discussed here *caused* any of these changes, but I have

---

<sup>171</sup> Op cit p5 and p32.

<sup>172</sup> Op cit p28.

<sup>173</sup> European Commission Risk Capital: a key to job creation in the European Union (April 1998).

<sup>174</sup> Op cit p36.

<sup>175</sup> European Council of Applied Sciences and Engineering Engineering and Venture Capital: a Euro-CASE pragmatic approach (Paris: October 1998).

no doubt that they all helped. Indeed, one interviewee thought that we might be suffering policy overload. That is always a danger in a complex area like the subject of this review, and some suggestions for simplification have been flagged. The other part of the solution is to break up the issues and possible solutions into manageable chunks and tackle them in appropriate ways. The will seems to be there, in both the UK public and private sectors.

The wide measure of agreement on the issues to be tackled and the policies to be adopted is impressive. All the agents discussed here have further work to do. Government, the financial institutions and the universities have not been selected as scapegoats; but it does seem that they have more to do than most others, if we are to emulate American performance (as everyone in this debate seems to want to do, rightly). However, it is not a simple matter of following US practice. We are ahead in some respects, as on capital gains tax. There are also lessons elsewhere which can be adapted to UK circumstances. And looking across the Channel will help the UK to share experiences in this common mission. Cultural shifts take a long time. This one looks set to continue for a good while yet. Time for another review in 2005?

## REFERENCES

### The reports under discussion

Bank of England, *The financing of technology-based small firms* (London: HMSO 1996)

CBI, *Tech Stars – Breaking the growth barriers for technology-based SMEs* (London: 1997)

Andy Cosh and Alan Hughes (editors), *British Enterprise in Transition* (University of Cambridge, ESRC Centre for Business Research: 2000)

H M Treasury, *The financing of High Technology Businesses* report of a group chaired by Sir Peter Williams (London: 1998)

David Gill, Chris Martin, Tim Minshall and Martin Rigby *Funding Technology: Lessons from America* (London: 2000)

Alan Hughes and Andy Cosh, *The financing of small firms* (ESRC Centre for Business Research, various editions: 1996, 1998, 2000)

Bank of England, *Financing of Technology-based small firms* (2001)

Paul Myners, *Myners Review of Institutional Investment: Final Report* (London: HM Treasury 2001). Particularly the section on venture capital.

Foresight Financial Services Panel SME Sub-Group, *Financing the Enterprise Society: Financial Services for Small and Mid-sized Enterprises in 2010* (London: Office for Science and Technology 2001)

### Other relevant papers etc

Steven Abbott and Michael Hay, *Investing for the Future*, (London: FT and Pitman Publishing, 1995).

Lindy Beveridge *Cambridge Entrepreneurs in the Business of Technology* (Cambridge: Granta Editions 2001). Sponsored by HSBC.

BVCA Press Release on their Annual Report on Investment Activity (BVCA, May 2001)

O Burgel, G Murray, A Fier and G Licht 'The rapid internationalisation of High-tech young firms in Germany and the UK' January 2000

Centre for the Study of Financial Innovation *Banana Skins 2002: a CSFI Survey of the risks facing banks* (London: CSFI, February 2002)

The work of the Tech Stars Group (1998-99), chaired by (now Sir) Ronald Cohen (no report but networked on subject)

CBI *A bigger share: encouraging growth in smaller quoted companies* (Report of a working group. November 2001)

David Charles, Cheryl Conway and Paul Benneworth, *Higher Education Business Interaction Survey* (London: CBI 2001)

Dr Neil Cross 'The long-term financing gap: does it still exist?' Inaugural lecture as Chairman of the RSA on 3 October 2001. Edited version published in RSA Journal 4/4 2001, pp 48-51.

Department of Trade and Industry, *Creating quality dialogue between smaller quoted companies and fund managers* (London: DTI 2000)

The Enterprise Panel, *Growing Success – helping companies to generate wealth and create jobs through Business Incubation* (London: HM Treasury 1996)

European Commission *Risk Capital: a key to job creation in the European Union* (EU: April 1998)

The European Commission's working paper on 'Enterprises' access to finance' (Brussels, 19 October 2001, SEC(2001) 1667) p16.

European Council of Applied Sciences and Engineering '*Engineering and Venture Capital: a Euro-CASE pragmatic approach*' (Paris, October 1998).

Tony Golding, *Private Equity Advice—A Yawning Chasm*, available from the AltAssets website.

Tony Golding '*Not much ventured...*' in 'Financial News' (5 February 2001).

House of Lords '*The innovation-exploitation barrier. Third Report of Select Committee* (1997).

Inland Revenue '*Review of links with business*' (November 2001)

David Kynaston, '*The City of London*' volume 3 1914-45 (London: Pimlico 2000).

Professor Colin Mason and Harrison, R T, '*Is it worth it? The rates of return from informal venture capital investments*', *Journal of Business Venturing*, 17, (2002) 211-236.

Professor Colin Mason and Harrison, R T 'The size of the informal venture capital market in the UK', *Small Business Economics*, 15, (2000) 137-148.

Tim Mcroft, *Bridging the Equity Gap: A New Proposal for Virtual Local Equity Markets* (London: Centre for the Study of Financial Innovation 2001).

G Murray, A Lockett and M Wright 'Do UK venture capitalists still have a bias against investment in new technology firms' forthcoming 2001

Craig Pickering 'Towards a more venturesome Europe' *Nature* September 1999

Charles Ross 'The cold climate for British entrepreneurs' 'The *Computer Bulletin*' vol 6 part 6, December 1994, pp 2-3.

Peter William Skinner, the rapporteur, Committee on Economic and Monetary Affairs, European Parliament, 7 December 2001 'The draft report on the Commission communication to the Council and Parliament on the implementation of the risk capital action plan.'

Small Business Service, *Early Growth Funding* (London: DTI November 2001)

UKBI Incubation Directory

## Interviews

The following were interviewed in the course of writing this report:

David Gill	(HSBC)
Dr Hermann M Hauser	(Amadeus Capital Partners Limited)
Professor Cyril Hilsum FRS	
Professor Alan Hughes	(ESRC Centre for Business Research, Judge Institute, University of Cambridge)
Tom Mackay	(Amhurst Brown Colombotti)
Dr Daniel V McAughan	(McAughan Associates)
Adrian Piper	(Small Business Service)
Chris Prior-Willeard	(PriceWaterhouseCoopers)
Charles Ross	(Real Time Club)
Philip Rutnam	(HM Treasury)
Tim Ward	(London Stock Exchange)
Fields Wicken-Miurin	(Vesta Finance Partners)
Mike Young	(Bank of England)

Members of the Future and Innovation Unit of the DTI:

David Dawson  
Barry Dodd  
Keith Haarhoff  
Tim Hoad  
Tim Mocroft  
Tony Pedrotti  
Norman Price  
Mike Tubbs

Everyone who was interviewed saw this report in draft. I received numerous comments, for which I am grateful (as well as for the time of interviewees taken in seeing me).

In addition I was very grateful for comments on previous drafts received from:

Sir Howard Davies	Financial Services Authority
Jennifer English	BVCA
Tony Golding	
Martin Hall	Finance and Leasing Association
Richard Ireson	Inland Revenue
Professor Colin Mason	Strathclyde University
Dr Gordon Murray	London Business School
Jeremy Peter-Hoblyn	Clean Diesel Technologies
Dr Stephen Sklaroff	Association of British Insurers

I am also grateful to Andrew Hilton for his editorial comments and other encouragement.

Responsibility for the text, including any errors and omissions, is mine alone.



Craig Pickering is principal consultant to the Finance & Leasing Association. Previously, he spent 17 years at HM Treasury, where he was head of the Industry Division (1993-98); UK Alternate, Board of European Bank for Reconstruction and Development (1991-93); and UK Representative to the EC in Brussels (1987-89); before that, he was a lecturer at the London Business School (1983-85). He holds a PhD from the London School of Economics (1977). Dr. Pickering has also been a member of the CBI Group on Smaller Quoted Companies (2001) and of the Treasury's Working Groups on barriers to growth of high-tech early stage companies and smaller quoted companies (both reports published November 1998). He published (with Brian Basham) 'Tomorrow's Giants' in March 1999. Since September 2000, he has also been chairman of Equity Education ([www.equityeducation.com](http://www.equityeducation.com)).

## CSFI PUBLICATIONS

1. **“Financing the Russian safety net”**: A proposal for Western funding of social security in Russia, coupled with guarantee fund for Western investors. By Peter Ackerman/Edward Balls. September 1993 £40/\$65
2. **“Derivatives for the retail client”**: A proposal to permit retail investors access to the risk management aspects of financial derivatives, currently available only at the wholesale level. By Andrew Dobson. Nov 1993 (Only photostat available) £10/\$15
3. **“Rating environmental risk”**: A proposal for a new rating scheme that would assess a company's environmental exposure against its financial ability to manage that exposure. By David Lascelles . December 1993 £25/\$40
4. **“Electronic share dealing for the private investor”**: An examination of new ways to broaden retail share ownership, inter alia, by utilising ATM networks, PCs, etc. By Paul Laird. January 1994 £25/\$40
5. **“The IBM dollar”**: A proposal for the wider use of “target” currencies, i.e. forms of public or private money that can be used only for specific purposes By Edward de Bono. March 1994 £15/\$25
6. **“UK financial supervision”**: A radical proposal for reform of UK financial regulation, (prepared pseudonymously by a senior commercial banker). May 1994 £25/\$40
7. **“Banking banana skins”**: The first in a periodic series of papers looking at where the next financial crisis is likely to spring from. June 1994 £25/\$40
8. **“A new approach to capital adequacy for banks”**: A proposal for a market-based alternative, using the concept of ‘value-at-risk’, to the present mechanistic Basle approach to setting bank capital requirements. By Charles Taylor. July 1994 £25/\$40
9. **“New forms of Euro-Arab cooperation”**: A proposal for a new public/private development finance corporation to promote employment-generating projects in the Arab world. By Jacques Roger-Machart. October 1994 £25/\$40
10. **“Banking banana skins II”**: Four leading UK bankers and a senior corporate treasurer discuss lessons for the future from the last banking crisis. November 1994 £25/\$40
11. **“IBM/CSFI essay prize”**: The two winning essays for the 1994 IBM/CSFI Prize. November 1994 £10/\$15
12. **“Liquidity ratings for bonds”**: A proposed methodology for measuring the liquidity of issues by scoring the most widely accepted components, and aggregating them into a liquidity rating. By Ian Mackintosh. January 1995 £25/\$40
13. **“Banks as providers of information security services”**: Banks have a privileged position as transmitters of secure data: they should make a business of it. By Nick Collin. February 1995 £25/\$40
14. **“An environmental risk rating for Scottish Nuclear”**: An experimental rating of a nuclear utility. By David Lascelles. March 1995 £25/\$40
15. **“EMU Stage III: The issues for banks”**: Banks may be underestimating the impact of Maastricht's small print. By Malcolm Levitt. May 1995 £25/\$40
16. **“Bringing market-driven regulation to European banking”**: A proposal for eliminating systemic banking risk by using cross-guarantees. By Bert Ely (Only photostat available). July 1995 £10/\$15
17. **“The City under threat”**: A leading French journalist worries about complacency in the City of London. By Patrick de Jacquelot. July 1995 £20/\$35
18. **“The UK building societies: Do they have a future?”**: A collection of essays on the future of UK building societies and mutuality. (Only photostat available). September 1995 £10/\$15
19. **“Options and currency intervention”**: A radical proposal on the use of currency option strategies for central banks. By Charles Taylor. October 1995 £20/\$35
20. **“Twin peaks”**: A regulatory structure for the new century” A proposal to reform UK financial regulation by splitting systemic concerns from those involving consumer protection. By Michael Taylor. December 1995 £25/\$40
21. **“Banking banana skins III”**: The findings of a survey of senior UK figures into where the perceived risks in the financial system lie. March 1996 £25/\$40
22. **“Welfare: A radical rethink - The Personal Welfare Plan”**: A proposal (by a banker) for the private funding of health, education, unemployment etc. through a lifetime fund. By Andrew Dobson. May 1996 £25/\$40
23. **“Peak Practice”**: How to reform the UK's regulatory structure. Implementing “Twin Peaks”. By Michael Taylor. October 1996 £25/\$40
24. **“Central bank intervention: a new approach”**: A radical approach to central bank intervention – without foreign exchange reserves. By Neil Record. November 1996 £25/\$40
25. **“The Crash of 2003: An EMU fairy tale.”**: An all too plausible scenario of what might happen if EMU precedes economic convergence. By David Lascelles. December 1996 £25/\$40
26. **“Banking Banana Skins: 1997”**: A further survey showing how bankers £25/\$40

28. **"Call in the red braces brigade... The case for electricity derivatives"**: Why the UK needs an electricity derivatives market, and how it can be achieved. By Ronan Palmer and Anthony White. November 1997 £25/\$40
29. **"The fall of Mulhouse Brand"**: The City of London's oldest merchant bank collapses, triggering a global crisis. Can the regulators stave off the disaster? A financial thriller based on a simulation conducted by the CSFI, with Euromoney and PA Consulting Group, to test the international system of banking regulation. By David Shirreff. December 1997 £25/\$40
30. **"Credit where credit is due: Bringing microfinance into the mainstream"**: Can lending small amounts of money to poor peasants ever be a mainstream business for institutional investors? By Peter Montagnon. February 1998 £25/\$40
31. **"Emerald City Bank... Banking in 2010"**: The future of banking by eminent bankers, economists and technologists. March 1998. (Only photostat available). £25/\$40
32. **"Banking Banana Skins: 1998"**: The fifth survey of possible shocks to the system. July 1998 £25/\$40
33. **"Mutuality for the 21st Century"**: The former Building Societies Commissioner argues the case for mutuality, and proposes a new legislative framework to enable it to flourish. By Rosalind Gilmore. July 1998 £25/\$40
34. **"The role of macroeconomic policy in stock return predictability"**: The 1998 ISMA/CSFI prizewinning dissertation analyses how government policies affect stock values in markets in Japan and the Far East. By Nandita Manrakhan. August 1998 £25/\$40
35. **"Cybercrime: tracing the evidence"**: A working group paper on how to combat Internet-related crime. By Rosamund McDougall. September 1998 £6/\$10
36. **"The Internet in ten years time: a CSFI survey"**: A survey of opinions about where the Internet is going, what the main obstacles are and who the winners/losers are likely to be. November 1998 £25/\$40
37. **"Le Prix de l'Euro... Competition between London, Paris and Frankfurt"**: This report sizes up Europe's leading financial centres at the launch of monetary union. February 1999 £25/\$40
38. **"Psychology and the City: Applications to trading, dealing and investment analysis"**: A social psychologist looks at irrationality in the financial services sector. By Denis Hilton. April 1999 £25/\$40
39. **"Quant & Mammon: Meeting the City's requirements for post-graduate research and skills in financial engineering"**: A study for the EPSRC on the supply of and demand for quantitative finance specialists in the UK, and on potential areas of City/academic collaboration. By David Lascelles. April 1999 £25/\$40
40. **"A market comparable approach to the pricing of credit default swaps"**. Winner of the 1999 ISMA/CSFI prize for financial innovation. By Tim Townend. November 1999 £25/\$40
41. **"Europe's new banks: The non-bank phenomenon"**. A report for euro-FIET on the threat posed by new technology to European banks' traditional franchise. By David Lascelles. November 1999 £25/\$40
42. **"In and Out: Maximising the benefits/minimising the costs of (temporary or permanent) non-membership of EMU"**. A look at how the UK can make the best of its ambivalent euro-status. November 1999 £25/\$40
43. **"Reinventing the Commonwealth Development Corporation under Public-Private Partnership"**. By Sir Michael McWilliam, KCMG. March 2000 £25/\$40
44. **"Internet Banking: A fragile flower"** Pricking the consensus by asking whether retail banking really is the Internet's "killer app". By Andrew Hilton. April 2000 £25/\$40
45. **"Banking Banana Skins 2000"** The CSFI's latest survey of what UK bankers feel are the biggest challenges facing them. June 2000 £25/\$40
46. **"iX: Better or just Bigger?"** A sceptical look at the proposed merger between the Deutsche Boerse and the London Stock Exchange By Andrew Hilton and David Lascelles. August 2000 £25/\$40
47. **"Bridging the equity gap: a new proposal for virtual local equity markets"** A proposal for local stock exchanges, combining Internet technology and community investment. By Tim Mcroft and Keith Haarhoff. £25/\$40
48. **"Waking up to the FSA"** How the City views its new regulator. By David Lascelles. May 2001. £25/\$40
49. **"The Short-Term Price Effects of Popular Share Recommendations"** Winner of the 2001 ISMA/CSFI Essay Prize. By Bill McCabe. September 2001. £25/\$40
50. **"Bumps on the road to Basel: An anthology of views on Basel 2"** This collection of sixteen (very brief) essays offers a range of views on Basel 2. Edited by Andrew Hilton. January 2002. £25/\$40
51. **"Banana Skins 2002: A CSFI survey of risks facing banks"** What bankers are worrying about at the beginning of 2002. Sponsored by PricewaterhouseCoopers. By David Lascelles. February 2002. £25/\$40
52. **"Single stock futures: the ultimate derivative"** A look at a new product being introduced almost simultaneously on each side of the Atlantic. By David Lascelles. February 2002. £25/\$40

#### REGULATORY PAPERS

1. **"Accepting failure"**: A brief paper from the CSFI's regulatory working group on the need for the new FSA explicitly to accept the likelihood that banks will fail. By David Lascelles. February 1998 £6/\$10

- |    |  |         |
|----|--|---------|
| 2. | <b>“Financial education and the role of the regulator: the limits of caveat emptor”:</b> A brief note of warning to the FSA on what can and cannot realistically be expected of financial education. By Victoria Nye. May 1998 | £6/\$10 |
| 3. | <b>”Independence and accountability: tweaking the Financial Services Authority”:</b> A proposal for fine-tuning FSA governance. By Robert Laslett and Michael Taylor. June 1998  | £6/\$10 |
| 4. | <b>“Embracing smoke: The Internet and financial services regulation”</b><br>A new regulatory framework is necessary for the Internet, most important 'lose the paper'.<br>By Joanna Benjamin and Deborah Sabalot. June 1999    | £6/\$10 |

**OTHER REPORTS**

<b>Internet and Financial Services: a CSFI report.</b> In-depth analysis of the industry's key sectors. Please order through City & Financial Publishing. Tel: 01483-720707 Fax: 01483 740603;	£45/\$75
--	----------

*PLEASE MAKE CHEQUES PAYABLE TO CSFI.*

*NB. STUDENTS, ACADEMICS AND CHARITABLE ORGANISATIONS RECEIVE A 50% DISCOUNT.*



**The Centre receives general financial support from the following institutions:**

Abbey National  
Accenture  
Barclays Group  
EFG Private Bank Limited  
International Securities Market Association  
JP Morgan Chase  
Merrill Lynch  
Newsdesk Communications  
PricewaterhouseCoopers  
UBS Warburg

Alliance & Leicester  
AMS  
Andersen  
Aon  
Bank of England  
British Telecommunications plc  
City & Financial  
CGNU plc  
Corporation of London  
CRESTCo  
Deloitte Consulting  
Deutsche Bank  
DTI/OST  
Ernst & Young  
factor-e  
Financial Services Authority  
Fitch Ratings  
GISE AG  
Halifax plc  
HM Treasury  
HSBC Holdings plc  
INVESTEC  
ISMA Centre, University of Reading  
KPMG Management Consulting  
LIFFE  
Lloyd's of London  
Logica Consulting  
London Stock Exchange  
MilleniumAssociates AG  
Misys International Banking Systems  
Moody's Risk Management  
Morgan Stanley International  
National Savings & Investments  
PA Consulting  
Premchand Roychand & Sons  
Prudential plc  
Reuters  
Royal Bank of Scotland  
Securities Institute  
Standard & Poor's Ratings Group  
Swiss Re New Markets  
Virt-x

Banking Code Standards Board  
Bankgesellschaft Berlin  
Brigade Electronics  
Canadian High Commission  
Capclear  
Chown Dewhurst LLP  
City Consultants  
Finance & Leasing Association  
Futures & Options Association  
GCIFinancial  
IFSL  
Lombard Street Research  
Merlin Financial Communications  
Record Currency Management  
Schroders  
SERM Rating Agency  
Stuchfield Consultancy  
TRW Investment Management  
Z/Yen

The Centre receives legal services from Linklaters & Alliance and special support from the *Financial Times* and the British Bankers' Association.

The Centre also receives occasional, special purpose support, from among others, BDO Stoy Hayward, the Building Societies Association, IBM, IMI/Sigeco, *The Banker*, APCO, the World Bank, Chancery Communications, and the G30.

**UK £25**  
**US \$40 / €45**  
©CSFI  
2 0 0 2

**CSFI** Registered Charity Number 1017353  
Registered Office: 8 Baker Street, London W1M 1DA  
Registered in England and Wales limited by guarantee. Number 2788116