

RDA's Have Been Regarded as Money Wasting



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How would you define national innovation system?

The general way that people define innovation systems brings together the various institutions that have to do with technology encouragement. We can include the intellectual property regime, the tax regime as it relates to research and development, the support for entrepreneurs in the way in which small businesses are encouraged to go into innovation activities and a number of other things that might bring together industrial policy, education policy, and trade policy.

The UK has been very conscious of its role as a generator of innovation. Historically British scientists and engineers have been very successful in generating patents, in coming up with new designs and products. However, there is a perception in Britain that these developments have not been sufficiently exploited in the UK. I don't think that this is a very easy claim to document and analyze but the fact that it is widely believed has made a lot of people focus on the need to ensure that a large comprehensive system of innovation is in operation nationally, so that advances that come out of scientific laboratories or engineering departments of large corporations or university activities can be exploited commercially within Britain. For this reason there is a very self-conscious innovation system and there are bodies in Britain, in government and in particular in organizations like the Department of Business, Innovation and Skills and those branches of government that are responsible for higher education and science and technology all to coordinate as much as possible.

The ability to coordinate in Britain is not nearly as good as it is in some other countries because the responsibilities of these different arms of government are fragmented. That's because they have portfolios of activities that are very wide ranging and innovation coordination activities are only one part their responsibilities. The system doesn't always do particularly well. One example is the way in which the tax law has dealt with the investments that the companies make in R&D and the manner in which they categorize capital investment as opposed to operating expenditure and the way that these are taxed. At various times in the recent history of the UK they've changed the structure of incentives. They worked in that direction to

try to coordinate innovation activities in a better way, so that economic incentives for firms can be taken into account along with the incentives that firms may have to look to new scientific activities that come from universities or national research labs, or that come from the competitive market place.

Britain has, probably, the oldest patent system but in terms of modern patent practices Britain's patent system is well respected and is operating well. Intellectual property elements of the innovation system are pretty well in place. The perceived failure or the weakest point is with entrepreneurship and the ability of entrepreneurs' innovative product ideas to be commercialised. But these perceived failures are always taken into account in comparison to the US. While Britain has a relatively high proportion, maybe the highest proportion of small businesses, Germany has more medium size businesses, and the growth of small businesses is relatively healthy. And venture capital, which is very small by American standards, is still considerably larger than anywhere else in Europe. So, it depends on who you compare with to decide whether the system has sufficient inputs in terms of monetary support and other kinds of incentives and sufficiently well operating institutions.

There is one institution you should be aware of which was established as a quasi autonomous non-governmental organization called the National Endowment for Science, Technology and the Arts (NESTA). They have an arena to promote innovation in the British economy, within British business. Although they operate a little bit as venture capital firm themselves, their main purpose is to create infrastructure.

Are government incentives mostly direct – in the form of grants – or non-direct – in form of tax breaks?

With the new government and new financial constraints over the past couple of years we've seen fewer and fewer direct incentives. For example, there used to be a very healthy functioning set of Regional Development Agencies (RDAs). The current government is going to eliminate them. But they provided one form of grant system for innovative companies, especially small start ups. That was a direct incentive. They also provided infrastructure services including advisory services, network opportunities for companies, and allowed companies to meet on a neutral territory with the regional development authority supervising negotiations.

Those are also the kinds of direct services that NESTA provided, along with some direct funding. NESTA's money comes from the National Lottery. It's a large amount of money, but it's not money that passes through a normal budget. In this way lottery money goes into the NESTA's coffers and is distributed to promote innovation. That's an interesting way in which a non-governmental activity is using the official lottery. The lottery is a private enterprise also but it has responsibility to channel a certain proportion into this purpose.

Why does the government want to eliminate the RDAs?

There are two reasons. One is that they are relatively easy targets for cost reduction. The second reason is that they had inconstant records in different regions. Some of them are highly successful and have been influential in promoting business and others have not. They've been regarded as money wasting. It's hard to judge these things. First of all,

there is a sort of counter-factual analysis that people have to do which is: if they didn't exist would the business have been as healthy as it is? Or if they didn't exist would these declining areas have declined more quickly than they did?

What is the relationship between universities and companies?

There's been ambivalence in Britain historically and I think it still exists about the relationship between universities and companies. And that ambivalence has meant that both companies keep distance from universities and universities don't really know how to deal well with companies. There's not the kind of smooth exchange that we find commonly in the United States or in Germany for example. This is improving. I'm involved a lot from the LSE with companies, and Cambridge of course has the best experiences, Oxford has got very good experiences, Imperial College is extremely successful institution in fostering government – industry relations. But it's not so widespread or deep as it is in leading American institutions.

This kind of cooperation between industry and universities usually takes place in innovation parks. How efficiently do they work?

I'm not sure that they mainly take place in that form. Cambridge works well because there is a lot of financial control and influence that Cambridge University institutions have on the Cambridge Science Park. They have opportunities for venture capital funding, opportunities for formal links with the university; they have opportunities to ensure that there is a good flow of information about both research activities and individuals including research students. It works in Cambridge for a few industries in that one area. It works slightly different in Oxford where the focus has been more on biomedical industries, not exclusively of course. But it's less formalized and it's less of a direct mechanism than exists in Cambridge. Other industrial science park experiments I think are less successful in promoting innovation and ensuring that there is a lively, replicable, sustainable community of innovating companies. Cambridge has pretty much succeeded and I don't know whether we would regard Oxford as having succeeded in the same sort of way. But I think that all these efforts to replicate Silicon Valley fall short of the features that Silicon Valley has.

Is Silicon Valley today as efficient as it was 20 years ago?

I don't know what measure of efficiency you would use. I think that it's extremely successful still. There were obituaries written for Silicon Valley 9 – 10 years ago. In 2002 there was a lot of journalistic writing about the death of Silicon Valley. And I had some data about the extent to which Silicon Valley companies reduced their R&D investments at the time of the economic downturn of 2002. But then by 2005 – 2006 people were saying – "How can we explain the revival of Silicon Valley? What features of Silicon Valley allow it to reinvent itself repeatedly?" If you look at the long history of Silicon Valley it's not a history of smooth growth and success in one industry. It's a variety of cycles, a change in industrial focus from its historical origins to new kinds of businesses. The one thing you can say is that it still exists because it's been able to reinvent itself so many times and it's that kind of vitality that really characterizes Silicon Valley and is a distinction from almost every other effort, with the possible exception of Cambridge. We'll see.

How important is the government role compared to that of market?

The most important institutions are government institutions. Other institutions like the financial institutions and the infrastructure developing institutions like the law practices, and the construction industry, and the consulting and advising industry, and the job search industry – all those things will thrive only where government institutions are working well and are trustworthy in themselves and become trusted because of the constituency, the predictability of their behavior. One of the key things in California was the way the labour laws work. They don't work so well in Britain and some other European countries. In Europe there is still a great deal of ambivalence about the trustworthiness of labour market institutions, labour law and the mobility of labour in general because of the other things that are associated with this workforce mobility. That is an example of how the Silicon Valley institutions are highly successful in ways that European institutions including British ones are less so.

Do they want to decrease the role of government in the innovation process?

The government role was supposed to be decreased across the board anyway. That was partly ideological, partly explained by financial constraints. We see a reduction across the board in universities. Funding has dropped considerably. The direct subsidies dropped considerably. Some of the close indirect subsidies like the services of the Regional Development Agencies, and, perhaps, the influence of NESTA, these kinds of things have been diminishing. The Department for Business, Innovation and Skills has been reduced in size and in power. The government has given a narrow commitment to ensure that science, technology, engineering and medicine in the universities continue to be supported. But I'm not sure that the level of continuing support will compensate for the other reductions in funding that the universities will suffer through the procedures for direct grants to research and through the general grants for universities receive.

Why the flow of investments is low?

Because of the inconsistencies in government policy. The investors both in the financial services industry and individual entrepreneurs investor always want a feeling of stability about the things around them: the legal structure, the accounting standard, the taxation regime. They want to feel that these are stable, so that they could go and innovate in areas where they have some control. Investors will immediately shy away from activity when they see too many things changing at once. They are trying to look at the innovative capacity of a company they might want to invest in. But if they fear that the taxation regime is going to affect it next year they are going to be reluctant to maintain long standing investment risk portfolios in those companies. The course right now we've spoken about is the reduction of direct incentives and subsidies to the industry, which is a problem. I don't think it's a dramatic problem though but it is one of the things that create uncertainty in the industry.

The proportion of venture capital available in Britain relative to the US is dropping. I think it's dropping in absolute terms. It certainly dropped in 2008 and 2009 but I'm not sure whether we can take a 5 year period and see. But I think the availability of venture capital is insufficient. And I don't think that the government will in the foreseeable future make any effort to compensate for that through government supporting venturing.

What helps the development of the British innovation system?

The presence of big companies of course helps the innovation system. Most of the R&D takes place in big companies. The fact that some of these sectors are most healthy in Britain such as the pharmaceutical sector and specialist engineering. These are big investors in R&D everywhere where there is a significant industry – in the US, Germany, France, Switzerland and elsewhere. The fact that those big companies are successful companies helps both internally and also helps the environment which they are part of. Sectors such as aerospace, where there is a very large number of small and medium size companies in Britain doing high quality work in engineering and avionics – these companies are healthy and I think work well. That's what helps.

The courts help. The courts are important. They enforce laws well, they have a lot of knowledge about things related to intellectual property law, the way in which contracts are written and enforced in courts of law is extremely important. It gives contracting parties the confidence that they need and it gives outside investors a perception of the environment here as one where rights are protected and if infringements occur it doesn't take a long time to get redress, they'll find a miscreant and the fine will be paid quickly. That kind of thing makes people feel that they can take risks and be relatively well protected.

The other thing that helps is the expertise of the City of London. They have a great deal of expertise about innovating sectors. They know the industries well; they understand the relationship between technical risks and other kinds of innovation risks that companies are taking and financial risks that are being associated with it. That's an extremely important thing. There is a lot of complaint about the quality of manpower in Britain but I don't really believe that this is critical. I don't think that it is much worse than competitors'. I would say that the quality of the labour force and, in particular, the mobility of the labour force – this is something that helps. Employment law is better than most for innovation purposes, better than most in Europe but not as congenial as employment law in California or Texas.

How will the fact that big pharmaceutical companies close their R&D facilities in Britain and take them to India, for instance, influence the innovation process?

There is a lot of discussion about the Pfizer research facility in Kent that is closing. I don't think it will do systemic damage. In that case we are talking about 2400 employees, of whom a half or a third, I suppose, were centrally involved in R&D. I think that high proportion of that capacity will stay within the country and other investors will exploit the fact that these high skilled labour forces are now available to them.

In terms of a signal for foreign investors engaged in high tech or innovative capacity building I guess it's bad. But it's part of a very long trend. A very large proportion of UK companies' pharmaceutical R&D has been in the United States for 30 years and more.

It hasn't gone to India. It didn't stay in the UK. It got located in places like North Carolina and elsewhere around the US because these were companies' decisions that were based on specialization, competitive trends within particular kinds of research based product development, like Pfizer's. I think it's too easy to generalize and jump to conclusions about particular events like that. I don't think that there will be a large scale trend of moving research facilities away from the UK. I also think that the opportunity to use Indian labour for high skilled

jobs like this is a net benefit to the UK and the UK industry.

The Economist magazine some years ago did an analysis of the job effects of outsourcing in general. They found that for the US and for the UK the net job effect was positive: the more outsourcing – the more jobs there are domestically. This is not true of German industry. When German jobs are outsourced, they reduced employment. This is not a simple, direct, linear relationship between things like Pfizer moving out or companies like Philips that has long had very big R&D facilities in India. Philips is not a healthy company but that is not because they move their R&D to India. That was one of the strategies that helped them to at least slow down their decline.

In which areas are the results of innovation the most impressive in the UK?

One way to analyze that is to look at patents and just see how many patents come out of different sectors in which case its same old sectors: pharmaceuticals, precision engineering, avionics and software development, the creative industries. In particular design – fashion design but also industrial design, including elements of architecture. It's the same as those industries in Germany, France to some extent also the US.

What sectors failed to produce results?

Some sub-sectors in engineering lost capacity to assemble cars with British branded companies. But the automobile industry still exists both with foreign companies in Britain and also with the supply chain of smaller companies that are British that are servicing those firms. In one sense the loss of the automobile industry is an example but I don't think that it's a very clear example. The chemical industry is one that, I think, really did decline, except for pharmaceuticals. People were expecting much more from it. 50 years ago Britain had a few of the most important chemical companies in the world. Those companies did not leave much of the legacy of innovative capacity.

Were there any obvious reasons why it happened?

Some of the reasons have to do with overall change in the character of those industries. Some sectors that were successful in Britain when those companies were growing quickly are no longer high value added, high profitability parts of the industry, investors expect smaller returns. They withdraw their funding from them. Competition does that. Some elements are, probably, explicable by managerial blunders, strategic mistakes. I think that these are important often in describing the fate of individual companies but not so clearly when you look at the competitive profile of a whole industry. But the chemical industry is an interesting case.

What is your forecast for the development of the innovation system in the UK? Do you think there will be an improvement?

People constantly try to improve it, yes. I think that they might be doing the right things. I guess the underlying question is whether the improvements that are being made here are going to be rapid enough to keep up with the improvements that have made elsewhere. We'll see, I think, relative decline. Rapidly growing economies in East Asia in particular are able to make rapid improvements from a much lower base in every sense. But as they improve quickly, they demonstrate relative superiority. The US has a very resilient economy. There is always a feeling that there is that competition between United States and Britain.