

Financing innovation activity in the EU, US and Japan: a comparison
by Professor Ruth Taplin
Wednesday 1 July 2012

1. Innovation derives mainly from the Small, Medium Enterprise (SME) sector.

2. All innovation in the SME sector whether in Europe, the US and Japan can be high risk.

There are a number of ways to deal with such high risk financing of innovation whether dealing with low, medium or high technology. Pooling resources through business partnering is one as seen in European, American and Japanese cases.

a. Business partnering can take place inside or outside normal company supply chains. Just as the cost of R&D for high technology companies is beyond the capabilities of only one company, so too, is the task for the vast majority of medium and low technology SME companies with limited resources progressing towards higher-value products .

b. As research knowledge is very specialist , it follows that SME companies will need to look beyond their national boundaries to link up with the best companies and technology service providers to contribute.

c. One of the most effective ways to do this is to undertake a project together with an innovation facilitator or sometimes known as an innovation coach who already has a network of research contacts to choose from including companies, institutes and universities or even other innovation facilitators.

d. Companies in Europe use the richness and abundance of available resources they have at their disposal in the form of existing suppliers or other associates who hold research information or practical expertise that is lacking in a new project or undertaking.

e. Existing knowledge links are essential for the success of SME companies whether through innovation facilitators or for example European research databases.

f. Pooling existing expertise and contacts keeps the costs low and in the case of the European Framework Programme or American funding programmes, can also attract cash to match the company effort to fund the hiring of world class technology developers to create the solutions they need.

g. Innovation facilitators who are able to assist small firms create new product ideas and facilitate them through the "consortium innovation" process are being seen as the next major tool for industrial growth and gross value added improvements to industry.

h. Innovative consortia do not have to work on just one level such as only sharing basic technical knowledge and skills. Partnering to access a market that one company knows better than the other is useful as is having an innovation facilitator share their wealth of experience in creating new products and services to improve an innovative idea inside a company. This makes funding high risks projects less risky.

3. Innovative practices in America

a. Americans are interested in competitive success and taking risks in all facets of their lives. SMEs are seen as the heroes of the business world as small risk takers who ultimately find economic success. People such as Steve Jobs or Bill Gates started out as small SME companies willing to take high risks as entrepreneurs. Their spirit of competition and individual drive underpins the growth in innovation and of the corporate sector in the US.

b. Business failure is accepted in the US and seen in a positive light as a learning experience. There is no negative stigma associated with failure or cultural consequences. The US Small Business

Administration (SBA) found that 53 per cent of small business persons who failed in their first company proceeded on to form another often successful second SME company.

c. American business welcomes the most talented and brightest from cultures around the world.

d. Since the founding of the United States in 1776, the protection of intellectual property has been considered paramount and recognised as a fundamental foundation for innovation. The first US patent was granted in 1790 to Samuel Hopkins of Philadelphia for creating a cleaning formula made from pot and pearl ashes. From such a humble beginning the US has depended upon a strong regime of protection of Intellectual Property Rights (IPRs) to promote the advancement of science and the commercialisation of innovations.

e. Strong investment in the US for R&D both from the public and private sector. The US government supports the majority of the nation's basic research which is largely information technology, nanotechnology and biotechnology as the ultimate source of new knowledge driving the innovation process which will advance society in the future. Federal funding for R&D which supports innovation has strong roots in the US. The National Science Foundation (NSF) has a central role in boosting the competitiveness of the US through R&D. American universities have been funded generously from the inception of the legislation that encouraged US innovation, the Bayh-Dole Amendment of 1980. In the most recent speech by President Obama on the importance of innovation in September 2011, support for university based innovation and for students of engineering and the sciences receives great support.

f. There are a number of programmes funded by the US government that support SME innovation. One is the Small Business Innovation Research (SBIR) programme which provides federal funding for R&D directly to SME companies with a view to improving the competitive capability of small R&D businesses with special emphasis on emerging and underserved small enterprises. Since its establishment in 1982, the SBIR programme has become the nation's single largest source of early stage research and technology development funding.

Another source of funding is the Small Business Technology Transfer Programme (STTR) which funds partnerships between small businesses and non-profit research institutions, including universities. Five federal agencies are required to allocate a portion of their budgeted funds for STTR, with competitive awards made in three phases which is similar to the SBIR programme.

The Advanced Technology Programme (ATP) of the National Institute of Technology which is part of the Department of Commerce offers direct project grants up to US\$ 2 millions for up to three years to close the gap between the research laboratory and the market place.

g. As the US is organised around the Federal, State and City/Community levels there is even greater funding available for innovative SME companies through the 50 states to support regional economic growth.

h. Anti-trust laws-If SME companies are not protected by anti-monopoly laws at both state and federal levels as in the US, large corporate firms would block entry in many different ways. Anti-trust laws are very complex but they are strictly enforced creating an environment in which SMEs have opportunities in the face of monopolistic practices.

i. Taxation- In the US both personal and corporate taxes are transparent, predictable and gradual according to income level rather than a lump sum. Corporate taxes vary according to federal state with five states levying no taxes at all on corporate income. Regions in the US that have the most business friendly tax structures are also the most conducive to the growth of innovation based SMEs showing the highest rates of entrepreneurship meaning the highest rates of new start -up SMEs per capita. Taxes are made affordable as they are based on income and expectations are stabilised allowing for strategic planning.

j. Tax credits for corporations that make investments in research and development and/or experimentation are complex but they provide great impetus for innovation development. Corporations may offset their liability by a percentage of investments in R&D with some SMEs

even receiving a cash sum in return for their R & D investments. In both cases incentives are provided to invest in R & D and promote innovation.

One of the most important barriers to growth faced by high technology SMEs internationally is the cost and availability of credit. This can be seen in Britain during the current recession and crisis in Europe. Banks are not lending and SME companies do not trust banks to lend and especially on good terms. This is leading many SME owners to use their own personal possessions such as expensive cars as collateral rather than relying on bank funded credit. In the US reliable credit is easier to obtain even in times of economic crisis as in today's markets as the banking and equity markets are generally stable. In addition to the government funded assistance mentioned above, there is another SBA initiative, the Section 504 Programme , which provides direct long term financing to SMEs to acquire or construct new facilities for their operations or to purchase machinery equipment with a useful life of ten years or more.

4. Comparison with Japan

a. Japan which has a more collective based social organisation became the second largest economy after the US and the leading innovator in Asia. Recently, China has overtaken Japan as the second largest economy in the world.

b. Partnering is not a new phenomenon in Japan among large corporations but an essential part of Japanese SMEs which have traditionally been subcontractors to large manufacturers at the bottom of Japan's industrial pyramid.

c. SMEs in Japan also have a horizontal network. An example of this is a back street factory that makes metal cutting machine tools that cooperates with 100 workshops as its suppliers and subcontractors. The latter were located not only in Tokyo but also in Saitama, Kanagawa, Aichi, Osaka , Sweden, Germany and the US. The nature of their businesses varied from casting to can making, heat treatment, boring, gear cutting, polishing, electric wiring in addition to noise and vibration insulation.

d. A phrase has existed in Japan that of the "cross-industry association" . Many of these associations are actually pan-industry social event groups or study groups without manufacturing any products at any one time who invite specialists for example to give them lectures. In many cases they are cooperative societies that share their workload at the time of both booms and busts.

e. In recent years a new form of cross industry association has arisen and one of the most active using innovative business partnering which is Rodan21.

Rodan21 is a group of small and medium-sized enterprises who are manufacturers based in Higashi(East)-Osaka City. They support companies in their manufacturing activities by means of a cross-industry network that provides planning, design, marketing and other services.

In 1997, Higashi-Osaka City Office publicly sought companies who would like to participate as a cross-industrial association group. Thirteen of the twenty-five companies that applied for the scheme established Rodan 21 Inc. in April 1998 becoming a joint stock company or standard corporation.

Rodan 21 is managed by fifteen companies and one secretariat. Company names are not used. Instead, the names of the businesses of each company are used such as;

1) plastic and rubber packing factory; 2) insulating rubber and rubber packing factory 3) industrial cutter factory; 4) screws factory and drilling specialist; 5)factory manufacturing arrows for darts and portable ashtrays; 6) cutting and drilling specialist; 7)precision sheet metal processing specialist; 8) cutting fashion bags factory; 9) high-precision processing of plastic specialist; 10) industrial waste contractor; 11)engineering consultant; 12) plastic goods moulding specialist; 13) factory manufacturing cork goods, parts of bicycles and parts of shoes; 14)factory making educational materials and kits for art classes;15 labour and social insurance specialists; 16) secretariat of Rodan21 and manufacturing coordinator.

Rodan21 operates as a coordinating company that provides a whole gamut of services from production to the commercialisation of articles by using a network of factories, designers, sales agents trading companies and licensed tax accountants. It therefore, not only introduces relevant supplies, designers, distributors and other related companies but also coordinates the production and commercialisation process to companies who introduce ideas for products.

They follow the business partnering idea by having established a related research institute called the Rodan Total Institute-Rodan Research and Development. This institute is capable of handling all business details and conducting initial trials concerning the efficacy and quality of the manufactured products. This is similar to the Pera or Fraunhofer Institutes in England and Germany respectively, which have engineers who test the innovative products and then make recommendations for improvements and share databases for those to sell to and marketing purposes. In Rodan21 they call themselves member clusters who are specialists in a wide range of fields and sign a confidentiality agreement. They participate in a Planning and Development Committee who conduct discussions in which they express their opinions concerning different fields and answer the development needs of specific products and assist in the manufacturing.

Other than basic hands on assistance with criticising and improving new innovative products, Rodan21 has also established an academic-industrial alliance. A forecasting programme was developed with the Japanese Institute of System Research to analyse the trends of the Japanese economy and to make demand forecasts which would be beyond the financial capabilities of the individual SME companies part of the Rodan21 grouping. This programme assists them in stimulating their sales and profits under unexpected circumstances such as macro-economic shocks as the appreciation of the yen.

f. TLOs - Japan has largely followed the American innovation strategy such as that found in the Bayh-Dole amendment and the Stevenson-Wydler Act which calls for government -funded research results to be transferred from academia, government and private research institutions to industry. University-industry collaboration and technology licensing from university to industry coupled with the clustering economy have been the key phases to retrieve the failing Japanese economy through innovative practices. The laws to create technical licensing organisations have been crucial in creating university start-up ventures to rejuvenate the Japanese economy through diversifying its industrial structure from mass manufacturing to high technology based on advanced research results in new materials, information and biotechnologies performed at the universities.

g. Japanese innovation practices therefore, are a combination of following American policies mentioned above coupled with using traditional cooperative networking methods and applying them to an industrial and SME form of business partnering which allows a lack of resources found in individual SME companies to become larger and more viable by pooling the resources. The resources as noted are labour, skill sets, intellectual property and other intangibles and tangibles which make the financing of high risk innovation less risky for all concerned.