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Effective innovation policies for Europe – the missing demand-side

This paper is a contribution to the project *Globalisation Challenges for Europe and Finland* organised by the Secretariat of the Economic Council. The project is a part of Finland's EU Presidency programme and its objective is to add momentum to the discussion in the European Union on globalisation, Europe's competitiveness policy and the Lisbon strategy.

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SUMMARY

The pressures of globalisation have brought innovation to the fore as a key element in increasing productivity and underpinning industrial competitiveness. Trends such as open innovation have created a networked innovation ecology which requires new kinds of policy support. Innovation policy is a global concern for governments but Europe faces particular challenges. Negative indicators such as a growing cumulative economic growth gap and productivity growth which has fallen further behind the USA for over a decade are linked to underperformance in innovation. Any policy which seeks to help firms, singly or collectively, to improve their capacity to innovate may be seen as an innovation policy. A taxonomy of research and innovation policies is presented which distinguishes between supply-side (finance and services) and demand side support.

It is contended that the demand side (systemic policies, regulation and public procurement) has been under-exploited. This is especially so for Europe where the problem of under-investment in business R&D and other innovative activities is strongly linked to the fragmented condition of European markets in scale, regulation, IPR terms etc). The recent report "Creating an Innovative Europe" put the need for markets friendly to innovation at the core of its proposals for reviving the Lisbon Agenda. New policy documents have responded positively and now feature promotion of lead markets in a central role. The paper concludes by assessing what implementation of policies based upon procurement and regulation would require. It notes the reluctance to pursue the kind of bold large scale actions that would be needed to begin the transformation of Europe as an environment for innovation.

1 THE IMPORTANCE OF INNOVATION

The pressures of globalisation have brought innovation to the fore as a key element in increasing productivity and underpinning industrial competitiveness. Since the industrial revolution innovation has transformed industries from textiles to power supplies. In more recent years microprocessors and the internet are but two examples of technological drivers of change which have at the same time created massive opportunities and changed the international economic order. The ability to successfully exploit new ideas is not confined to technology-based activities in manufacturing industries – service sector innovation is one of the most dynamic areas of activity at the moment and there is a strong desire for improvements in the cost and quality of public services is unlikely to be met without major innovative changes.

Business cannot afford to opt out of innovation, though the advent of "open-innovation"[2] has broadened the range of knowledge sources that a firm may draw upon. Thus, traditional corporate R&D is supplemented and in some cases replaced by outsourcing of R&D, acquisition of small technology intensive firms by larger companies with market power. The new ecology of innovation[3] is completed by a complex web of collaborative relationships linking firms and knowledge suppliers (public labs, private R&D contractors and universities), customers and suppliers of goods and services, and government at different levels and in multiple roles including regulator, facilitator, funder and purchaser. This intensive drive towards networked approaches has come about in response to ever shortening product cycles which mean that the innovation process has to be agile, efficient and above all fast. Becoming more efficient to meet global competitive pressure means that firms strive to share and re-use competitive platforms – for example the EUREKA Initiative's ITEA Cluster Project supported development of a software platform which underpins most of Nokia's mobile and network products and the majority of those from Philips Medical Systems.

1.1 Europe's position under threat

While all countries seek constantly to improve their innovation performance – see for example the new emphasis upon innovation in Japan's 3rd Basic Plan for Science and Technology by contrast with its predecessors, the USA's Innovate America report[4] expressing particular concerns about the capability of the

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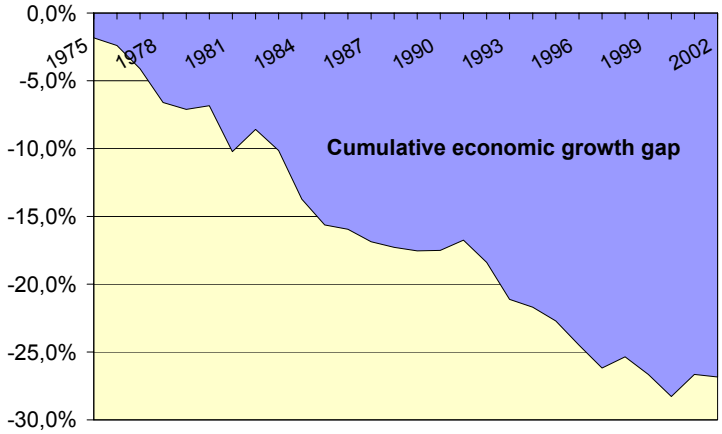
2 Chesbrough, H., Open Innovation: The new Imperative for Creating and Profiting from Technology. 2002, Harvard Business School Press.

3 Coombs R and Georghiou L (2002). A New Industrial Ecology, Science Vol 296 p.471 April 19 2002.

4 Council on Competitiveness, National Innovation Initiative (NII) Final Report - Innovate America: Thriving in a World of Challenge and Change (2005) , http://innovateamerica.org/

workforce, and China's worries about excessive reliance on foreign direct investment as a driver of innovation, our concern here is with the specific predicament of Europe. Here too national governments and other actors have been paying increasing attention to innovation policy[5]. Other papers in this series address the wider economic picture but we may cite a few indicators to emphasise the problem.

Figure 1 Cumulative economic growth gap between the EU and the other industrialised countries (current prices and current PPPs).



Note: For both the EU-15 OECD countries and the non-EU-15 countries, 1974 GDP at current prices and current PPPs (billions of dollars) has been taken as 100. For all following years, GDP growth in percentages relative to the 1974 amount has been calculated. Then the series for the non-EU-15 OECD countries (Australia, Canada, Iceland, Japan, Korea, Mexico, New Zealand, Norway, Switzerland, Turkey, US) has been set to 100 and the difference with the series for the EU-15 calculated.

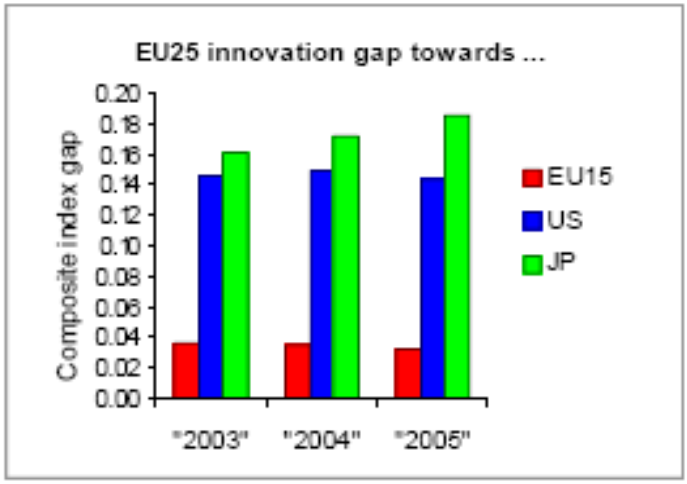
Source: DG Research Impact Assessment of FP7, 2005 . Data: OECD.

Figure 1 shows that despite good performance by a few Member States in recent years, over the last quarter of a century European growth as a whole has underperformed by comparison with the world economy. A demographic challenge which will see a sharply rising dependency ration with the proportion of people over 65 rising from 16.4% in 2004 to 29.9% in 2050 points to the need for a sharp increase in productivity. This against a background whereby, for the first time in the post WW2 era, both labour productivity and total factor productivity have continued to fall further behind those of the USA for a period of almost a decade. Relative failure to capitalise on the application of

[5] See for example the UK Government's Innovation Report Competing in the global economy: the innovation challenge, December 2003; The Finnish Ministry of Trade and Industry's Evaluation of the Finnish Innovation Support System (publication 5/2003); France's Association nationale de la recherche technique (ANRT) producing the Futuris foresight in the research and innovation system; Malta's National Strategic Plan Research and Innovation 2007-2010 Building and Sustaining the R&I Enabling Framework, 2006; Portugal's Technological Plan 2005 etc.

information and communication technologies has been a major explanatory factor[6].

Figure 2 EU Innovation Gap with US and Japan.



EU25 = 0.00

Source: European Innovation Scoreboard 2005, Trendchart on Innovation.

The European Trendchart on Innovation has produced a composite innovation performance index based on a set of comparable data for 16 indicators[7]. Figure 2 shows that the US and Japan are still far ahead of the EU25. The innovation gap between the EU25 and the US is close to stable, while that with Japan is increasing. The main drivers of the gap in both cases include USPTO patents and population with tertiary education. For the USA ICT expenditures are the other major distinguishing factor, while for Japan the third driver is superior performance in Triad patents. The evidence points the same way at a sectoral level even in Europe's traditionally most strong areas. Hence in pharmaceuticals in 1990 Major European research based companies spent 73% of their world-wide R&D expenditure in EU territory while by 199 it had fallen to 59% with most of the transfer being to the USA.[8] The effect on market performance is clear – in 1992 six out of the top ten pharmaceuticals were produced by European companies while by 2002 it was two out of ten.

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6 European Economy, European Commission Directorate-general for economic and financial affairs Economic papers N° 208 July 2004 An analysis of EU and US productivity developments (a total economy and industry level perspective) Cécile Denis, Kieran McMorrow and Werner Röger.

7 European Trendchart on Innovation, Innovation Scoreboard 2005, http://trendchart.cordis.lu/scoreboards/scoreboard2005

8 Data from European Federation of Pharmaceutical Industries and Associations

1.2 Creating an Innovative Europe

It was the combined force of these and other indicators which raised the concerns of the authors of the report "*Creating an Innovative Europe*". Despite the important and necessary measures being undertaken in fulfilment of the Lisbon agenda, our concern was that rhetoric exceeded action and that temporarily and partially favourable economic conditions were inducing a sense of complacency among the public and a reluctance on the part of governments to undertake reforms on the scale necessary to maintain a viable competitive position in the face of globalisation. A holistic approach to policy was proposed along with a range of actions not only by government but also by the other stakeholders in industry, academia and even more broadly by the public at large. The package of interdependent changes that are needed involve:

- Creating a market friendly to innovation;
- Providing sufficient resources for R&D and innovation
- Improving the structural mobility of Europe, and
- Building positive attitudes and a culture favourable towards entrepreurship and risk taking.

The central position of the need to create a market friendly to innovation rests upon both direct and indirect evidence from industry of the negative effect Europe's fragmented markets have upon its R&D and other investment decisions. Most recently companies replying to the EU 2005 Survey of R&D Trends[9] indicated that market demand for new products and services is clearly the most important factor influencing the level of R&D investment while market access is the most important factor influencing mobile R&D location decisions. The rest of this paper focuses on how innovation policy can engage successfully with the concept of the "innovation-friendly market".

[9] European Commission Directorate General Joint Research Centre and Directorate General Research, Monitoring Industrial Research: the 2005 EU Survey on R&D Investment Trends in 10 Sectors, http://iri.jrc.es/

2 INNOVATION POLICY

In writing about innovation policy it is as well to begin with a definition. Here we mean any policy which seeks to help firms, singly or collectively, to improve their capacity to innovate may be seen as an innovation policy. This includes the provision of scientific infrastructure in research and education and direct and indirect support for research and technological development. It also includes a wide range of policies which aim to build networks, to make markets more conducive to innovation, to facilitate the transfer of technology, to help firms to acquire relevant capabilities, and to provide a supporting infrastructure in areas such as standards and intellectual property. Many other public policies also affect innovation, though this is not their main object. This group includes macro-economic policies, education more generally, public procurement, regulation (pollution or health and safety), and competition policy.

There are long-running debates concerning the degree to which it is legitimate for government[10] to intervene in support of innovation in the economy. A broad consensus exists that it is a government's duty to provide effective education and a strong science and engineering base. More recently that consensus has extended to the need for the public science base to be effective in knowledge transfer or exchange with industry. The other area of general agreement is that government should provide the necessary framework conditions including at a higher level macroeconomic stability, competition policy and general infrastructure but also more directly the infrastructures referred to in the preceding paragraph and others such as physical standards. Economic rationales for innovation policy rest upon two main foundations, market and systemic failures, which in some senses compete and in others are complementary. We shall return to these in the discussion below.

2.1 Policy measures

The range of explicit innovation policies being applied today is very much concerned with the supply side and even more with R&D support of various types, ranging from funding of science in public institutions through to fiscal incentives for firms to increase R&D spend. Much less attention has been paid to policies which could increase either the motivation or the likely success of innovation by acting upon the demand side, that is the specification and purchase of innovative goods and services. In Figure 3 we present a first taxonomy that attempts to balance those discussed above by showing both demand and supply-side innovation policy measures, and also emphasising

[10] The term government here encompasses all levels including national, regional and supra-national and combinations thereof in multi-level governance.

again that broader policies not specifically targeted at research and innovation (here called framework conditions) can also influence these activities.

It may be seen that demand side policies can be presented in three main groupings:

1. systemic policies which provide an environment which may amplify other innovation policy measures by optimising relationships between actors – promotion of clusters being an example;
2. regulation which in many markets such as environmental technologies defines the competitive space and can be used to extend it; and
3. procurement where the purchaser can specify goods and services in terms of a function which offers higher performance than what is currently available off-the-shelf and hence requires an innovative step to achieve it.

2.2 Systemic policies

What we term systemic policies are by now quite well understood. Cluster policies essentially are concerned with creating or strengthening linkages between actors in a value or knowledge chain, often but not always in a regional context. The highly uneven regional distribution of innovative activity in almost any national context emphasises the importance of such effects. Much of the policy effort towards clusters goes into facilitation and incentivisation of such linkages, and may involve actions such as foresight exercises to help build a common vision. In the context of the trend towards open innovation discussed above, the importance of building networks and clusters is critical for a well-functioning innovation system. Clusters also have a market dimension, providing a useful arena within which regulators and purchasers (private or public) may come into early contact with the producers of innovations in goods and services. The approach could be summarised as providing a means by which the full range of innovation policies may be combined and amplified to achieve a greater effect. Similar benefits of coordination may be achieved within the context of the more recent concept of the technology platform.

2.3 Lead markets

The concept of "lead users" is a long-standing one in innovation through the work of von Hippel and others[11]. Early users take the risk of working with a technology that may not be fully optimised in return for access ahead of their competitors or achieving a desired solution to a problem more quickly. Innovators benefit from the learning and feedback that this environment offers. For small firms there is the added benefit of credibility gained by having an installation of their technology as the beginning of a reference list.

To extend the concept of a lead user to that of a lead market requires early adoption of an innovation to become widespread through multiple users of this type or else through a single user with sufficient purchasing power to constitute a market on its own. In such cases the learning benefits are supplemented by a reduction of risk in the investment necessary to perform R&D and to innovate. The expectation is that other markets would then adopt the design so established giving it international dominance. Characteristics of a lead market include customers willing to pay a premium for the particular characteristics of the innovation, or even in some consumer markets for its novelty per se. This could imply a high degree of customer "intelligence", meaning anticipatory knowledge of the technology. Compatible infrastructure may also be a factor. In general such markets should have sufficient scale for the costs of innovation to be viable. Market requirements should also be sufficiently generic to allow for expansion/export into wider markets as costs fall through continuing innovation or increasing scale of production. Finally, a lead market should provide the more general conditions favourable to innovation such as an efficient and responsive regulatory structure, security for intellectual property etc.

It should be noted that there are inherent risks in this concept, notably that the lead market requires product or service characteristics that are so specific (idiosyncratic) that the possibility of extension to other markets is foreclosed. An example is the UK's System X telephone exchange developed by the then Post Office and launched in 1980 but failing to penetrate export markets. The French Minitel experience is a case where domestic success was not matched by exports in the face of emerging competition from the internet.

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[11] Erich von Hippel introduced the concept of lead users in innovation – defined as those whose present strong needs will become general in a marketplace months or years in the future – see von Hippel, Eric (1986) "Lead Users: A Source of Novel Product Concepts," Management Science 32, no. 7 (July):791-805.

Successful examples of such markets include Japan for facsimile machines, the USA for pharmaceuticals and Germany for ecological consumer products.

If we consider briefly the promotion of lead markets in terms of policy rationales we could assert that the existence of fragmented markets meets the criteria of market failure, for example that there is a deficiency and an asymmetry in the information available to those intending to undertake or to purchase innovations. Fragmentation also increases the risk involved in innovation (and early purchase). Convergence on a standard allows firms to internalise spillovers and hence to increase the incentive to invest in R&D. The system failure rationale also favours this approach with the emphasis it places upon the need for effective linkages between the actors and institutions of an innovation system. Under conditions of fragmentation such information is unlikely to flow effectively and the value of each individual element of information – say on customer requirements – is diminished by its specificity. Regulation is potentially an area of "government failure" in that these have been designed without taking into account a sufficiently broad range of policy considerations – in this case the benefits of innovation.

This leaves us with the central slogan of non- intervention – the need to avoid picking winners – in essence saying that any choices made by public authorities will be inferior to those put forward by the market under conditions of competition. In this situation this is a false analogy. Picking winners was about selecting firms (national champions, sometimes ailing national champions) or about selecting technologies (specific solutions). Here we are selecting whole market areas in terms of their importance in the economy, their apparent ripeness for innovation and a current situation of fragmentation in Europe relative to the rest of the world. No specification is to be made of which firms or even of which solutions should be pursued in the first instance. Eventually under competitive conditions preferred solutions and suppliers will emerge but this happens in all markets. What must be achieved is an open process the result of which is that winners emerge. It is possible to deal with other concerns by the ways in which lead markets are promoted as a policy. First of a demonstrated level of commitment from business should be a prerequisite for action – a sector where the desire for coordination has already emerged. Secondly, the measures taken within that sector should preserve competition wherever this is feasible. For example in procurement second sourcing, perhaps from an innovative SME could keep alternative options open.

3 POLICIES TO PROMOTE INNOVATION-FRIENDLY MARKETS

In *Creating an Innovative Europe* it was noted that Europe already had the favourable conditions of relatively high incomes and a willingness to purchase higher quality goods but that four key steps were needed to create functional markets:

- Providing a harmonised **regulatory environment** across the EU favourable to innovation and based on early anticipation of needs;
- Using **standards**-setting powers to demand high technical performance levels and reach agreement on new standards quickly and efficiently;
- Using **public procurement** to drive demand for innovative goods, while at the same time improving the level of public services; and
- A horizontal factor, fostering a **cultural shift which celebrates innovation** and a desire to possess innovative goods and experience innovative services, such that Europe develops as a natural home for innovators.

A discussion paper from the Finnish EU Presidency[12] set out its own list 1) competition and innovation-friendly regulation, 2) innovation-oriented public services, 3) an adaptable research infrastructure and 4) a strong culture for entrepreneurship. Here we shall explore briefly the topics of standards and regulation and that of procurement in more detail.

3.1 Regulation and standards as instruments of innovation policy

The setting of standards is largely the responsibility of industry bodies but is also an area which induces competitive positioning between different industry groupings which attempt to get their de facto standards adopted as a key source of market advantage. European successes in this respect include GSM and ADSL. The Presidency paper points out that intelligent setting of standards can reduce the risk for innovator and purchaser by aggregating demand in fields that might otherwise be spread too widely over multiple solutions. Standards can also encourage innovation if they are set at a demanding level of functionality without specifying which solution must be followed, hence opening

[12] Market Demand As A Driver Of Innovation – Towards A More Effective European Innovation Policy *Discussion note to the informal meeting of the competitiveness ministers Jyväskylä, Finland, July 10-11, 2006.*

the door for innovation. While agility is certainly a characteristic to be aspired to in standards-setting the actual timing is a matter of fine judgement – too soon means that a technology may not be sufficiently advanced to deliver high performance and too late may allow unwanted divergence to emerge.

Regulation is an area where pan-European action by governments can make a critical; difference. Despite the numerous directives in force it remains the case that Europe is operating with essentially 25 markets in many areas either through lack of reach of harmonising measures or because local variants or complementary rules and practices prevent the benefits of harmonisation from being felt. One example of such post-regulatory fragmentation is the e-signature directive and another at an earlier stage is the proliferation of some 40 e-invoicing solutions. Supporters of de-regulation might also argue that the less regulation there is, the less need is there to harmonise it (though of course deregulation must also be harmonised across the EU).

The role of regulation in stimulating innovation was explored in a study for the Commission which proposed a "Third generation innovation policy"[13]. This emphasised regulatory and institutional reform to involve:

- Content of regulations (for example of market liberalisation);
- Reducing the regulatory burden;
- Building more flexible regulatory approaches; and
- Innovation in regulatory policy itself.

Within the domain of innovation policy, regulatory reform is seen to affect innovation indirectly through affecting the funds available for investment and market size and structure, and directly through its impact upon the perceived profitability of particular lines of development. As with standards, regulation can be used to set targets for innovation (so-called performance based regulation). For example an environmental emissions target beyond current capability may anticipate and aim to stimulate innovation. It is no coincidence that eco-innovation is often cited as a crucial area for the lead market principle to be applied.

A comprehensive study of the relationship between regulation and innovation has emphasised this role of regulations in shaping new markets but also pointed out that from the perspective of companies regulations have both positive (quality-raising) and negative impacts (slowing time to market) on aspects

[13] Louis Lengrand and Associates, PREST and ANRT, 2003, Innovation tomorrow – Innovation policy and the regulatory framework: Making innovation an integral part of the broader structural agenda, Directorate General for Enterprise Innovation Papers No 28, EUR 17052

related to the introduction of new products and services[14]. Positive impacts also arise from protection from liability claims, increased user acceptance while negative impacts are mainly on the costs of labour, energy and materials. The study found a strong consensus among firms that approval procedures are both too costly and too long, – public help regarding the fulfillment of regulations is not sufficient and that regulations are perceived to be too numerous, inflexible and non-transparent.

It is of course necessary to remember the purpose of regulations in protecting consumers and worker health and safety and also the interests of companies in relation to their competitors. Nonetheless, bodies responsible for regulation in these areas should also consider the benefits that innovation may offer to their central missions.

In general terms the requirement is for a much more agile regulatory system that again uses foresight and other approaches to anticipate technological development and to foster the integration of new products and services through more rapidly approved and harmonised regimes. This cannot be achieved without bringing regulators into contact with innovators in the type of supply-demand coordination which is the theme of this paper.

3.2 Procurement

When it comes to the specific use of procurement there are three main categories of policy:

1. Public procurement of innovative goods and services;
2. Public procurement of R&D and demonstrators; and
3. Support for more effective private procurement of either of the above through initiatives in e-procurement or training of private procurers in innovative procurement.

Procurement of R&D is of interest because it is exempted from certain regulatory constraints (notably it can be limited to European suppliers) and may be used to bring goods to a market state. However, we do not deal with it further here, focusing instead on procurement of goods and services. Similarly for reasons of space the issue of stimulating private procurement for innovation is only noted here as a potential arena for action.

The potential for the use of public procurement as an instrument to stimulate innovation has received policy has received growing emphasis in Europe in

[14] Blind K et al, Fraunhofer Institute for Systems Research, New Products and Services: Analysis of Regulations Shaping New Markets, European Commission, 2004.

recent years. Representing 16.3% of European GDP, public procurement is both a key source of demand for firms in sectors such as construction, health care and transport, and a major area in which governments are striving to improve effectiveness in their delivery of public services.

The 1990s saw the first systematic approaches in some countries to utilise state procurement and the promotion of private procurement to create new markets and diffuse innovations (for a selection of cases, see Edquist et al.[15]). Procurement for innovation is currently on several national agendas. In the United Kingdom the Government's Innovation Report of 2003 proposed a series of measures aimed at increasing the research and innovation impact of public procurement. Consequent actions, include the production by the Office of Government Commerce of a guide on "capturing innovation". The National Health Service is a leading example of efforts to change practice. Also in 2003, the Irish Science and Technology Policy Agency Forfás carried out a scoping study on Public Procurement for Increased Innovation. The Spanish foundation COTEC produced a report on "Public Procurement and Technology". In the Netherlands, an internal group of experts from the government is defining the potential of state procurement for innovation policy, and in Germany the "Impulse Group Innovation Factor State" is working on the possibilities of promoting innovation dynamics from the market place by adjusting procurement practice in general, as well as through strategic procurement measures in selected technology areas.

At a European Union level the emphasis has been upon the link between procurement and perceived under investment in R&D by business. Following the work of an expert group[16], procurement for innovation was incorporated as an element of the European Commission's Research Investment Action Plan[17]. This seeks to promote the implementation of measures to support the objective set by the European Council in March 2002 (Barcelona Objective) of raising European R&D expenditure to 3% of GDP by 2010, with the additional objective of increasing private funding of R&D from 55% to two-thirds of total R&D expenditure. The Action Plan has proceeding both through Commission actions and through the Open Method of Coordination, operating via CREST, a committee which coordinates Members States' R&D policies[18]. There is a specific action to support the development and diffusion of information, for example on best available technologies for public buyers, and also an initiative to set

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15 Edquist, C., & Hommen, L., & Tsipouri, L. (eds) (2000): Public Technology Procurement and Innovation. Kluwer Academic.

16 Georghiou et al, Raising EU R&D Intensity: Improving the Effectiveness of Public Support Mechanisms for Private Sector Research and Development: Direct Measures 2003, EUR 20716.

17 Commission of the European Communities, Research Investment Action Plan, 2003.

18 Committee for Scientific and Technological Research composed of official representatives of Member States and other European countries associated to the Framework Programme.

procurement in the broader context of 'policy mixes' to exploit its synergies with other research and innovation policies, for example technology platforms. Specific follow-ups also included two studies on good practice and a planned handbook[19] but these are only necessary first steps.

3.3 Necessary conditions for success in procurement for innovation

New EU directives have created opportunities for public authorities to purchase innovative solutions, with key changes including:

- Possibilities for technical and competitive dialogues between purchaser and supplier, a necessary condition if each side is to understand the other;
- The facility to specify requirements in terms of functional performance or standards, which allows suppliers to produce any configuration of technology they feel can meet the need;
- Options to permit variants, thus opening up bids to alternative ideas; and
- Conditions that allow transfer of intellectual property to the suppliers, and hence allow them to exploit their innovations in wider markets.

However, to reap the benefits of these changes actions are needed. Demand needs to be coordinated or aggregated to create sufficiently large orders to make innovation worthwhile. On the other hand opportunities need to be opened up for innovative SMEs to have the chance to bid for parts of the larger packages. A key to successful procurement for innovation is the "intelligent customer" who is able to be aware of potential new solutions, and can specify and manage contracts of this kind throughout their lifecycle. This means actions to develop a cohort of trained professionals and to support them through networks to exchange ideas and raise skills. It also means a new attitude to risk among public authorities, matched with an emphasis on the whole-life costs of their purchases rather than the lowest price at the point of purchase. National and European Agencies should assume the role of lead market customers.

Care also needs to be taken to avoid the pitfalls of a procurement-led policy, notably the risk of letting "national champions" emerge, or as noted above in the discussion on lead markets, of unnecessarily over-specifying the public requirement to the point that little scope exists for extension to other markets.

[19] Actions include an expert group report: Wilkinson R. et al, Public procurement for research and innovation, DG Research, September 2005, EUR 21793 and a study leading to a Handbook on raising the technological and innovative intensity of publicly procured goods and services.

4 EVOLUTION OF PRESENT POLICY FOR DEMAND SIDE MEASURES

Following some of the European studies and reports mentioned above, in November 2004 the "Kok Report" on the Lisbon strategy recognised that procurement could be used to provide pioneer markets for new research and innovation-intensive products. The March 2005 European Council endorsed the mid-term review of the Lisbon strategy and the proposal to make jobs and growth its central focus and explicitly called for Member States to refocus public procurement on innovative products and services.

The Aho Group report, while endorsing the "horizontal" measures designed to create more innovation-friendly markets also proposed as a central plank of its recommendations that large scale strategic actions were needed to provide an environment in which supply side measures to raise investment in research and innovation can be combined with this process of creating a demand and a market. The Group identified several examples**:** *e*-Health, Pharmaceuticals, Energy, Environment, Transport and Logistics, Security, and Digital Content. They call for an independent High Level Coordinator to be appointed to orchestrate European action in each area across Member States, different parts of government and the Commission, business, academia and other stakeholders.

The Spring Council made a positive response to *Creating an Innovative Europe*, stating that:

> "A comprehensive approach to innovation policy can be achieved by supporting markets for innovative goods and services and excellence in research in new technologies, including information and communication technologies (ICT) and eco-innovations..". Since that time the concept of demand side innovation policy has been high on the European agenda, in the Finnish Presidency as already noted, and in numerous Commission and business-sponsored reports culminating in a clear endorsement in the Commission's Communication on innovation strategy which "introduces a more focussed strategy to facilitate the creation of areas for action, and in particular introduces a more focussed strategy to facilitate the creation and marketing of new innovative products and services in promising areas – the lead markets"[20].

[20] COM(2006) 502 final, Communication From The Commission To The Council, The European Parliament, The European Economic And Social Committee And The Committee Of The Regions, Putting knowledge into practice: A broad-based innovation strategy for the EU.

5 FUTURE POLICY

We began this essay by emphasising that innovation is today a distributed activity proceeding at an ever faster pace under highly competitive conditions. Both the critical importance and the overall deficiency of European innovation performance were stressed. While *Creating an Innovative Europe* identified a need for action on multiple fronts, its central recommendation was the need to create markets friendly to innovation in Europe. The issue then is what public policy measures are needed to foster this (in addition to actions by industry and others)? We have noted the potential of systemic approaches such as cluster policies, of improving the setting of standards and of the benefits of using regulation. Public procurement is proposed as major instrument by which government can provide a pull-through for innovation.

The common factor to all of these demand-side measures is the central importance of coordination. No demand-side policy can flourish without bringing together the full range of innovation actors involved in the construction of future markets. These include customers, suppliers and regulators, with other stakeholders also having significant roles. This is a much greater challenge than measures targeted solely towards R&D performers or towards intermediaries. Not only are there far more actors to be engaged but also many of them are not sensitised to innovation as an issue, let alone as a priority.

The necessary broader engagement has its analogue in the governance of innovation. It ceases to be the sole preserve of research or industry ministries (important though their contributions are) and instead becomes a shared responsibility right across government. Most of the regulations and procurement requirements we have discussed emerge from sectoral ministries. While there is no single model of how joined-up government can be achieved it is a challenge to all European governments first to realise this at a national level and then to engage in coordination at a European level.

The measures being suggested in recent policy documents are primarily of a horizontal nature and such developments are absolutely necessary. A strong implementation challenge remains. In a climate of rising expectations on the part of business it is a time when governments need to take bold and large scale actions which capture the imagination of those engaged in innovation and the interest of the public at large. It is here that we may return to the vertical measures proposed in the Aho Group report, involving the appointment of high profile coordinators in key sectors of opportunity (and of course giving them the necessary subsequent support to do their job).

Symbolic action is needed. At a minimum two key areas should be selected (preferably on a competitive basis to ensure sectoral commitment) for an immediate launch of large scale pilot projects in the creation of an innovation friendly market. Perhaps one should have ICT at its core and the other the health sector but this is not essential. For the sake of speed these projects could well come from the present technology platforms but it must be recognised that they too must transform their thinking to encompass the broader business picture. The appointed coordinator should then within a period of six months report back to Europe's leaders on a priority agenda for the market to be invigorated in Europe. The Commission and Member States should be prepared to enact fast track legislation where the need is clearly demonstrated. Within these actions aggregating demand is a core feature.

Symbolic actions may also be achieved in the horizontal measures if European leaders are willing to cut through the mire of reputation-damaging long-term disputes and for example announce that under any circumstances agreement will be reached on a European patent framework and other outstanding intellectual property agreements within, say 6 months.

Some may urge caution and confuse demand-side policies with past failures in "picking winners". As argued above, this is muddled thinking – we stress once more that here it is the competitive arenas that are being picked, not the firms or technologies which will win the challenge they present. In all cases they are markets which industry itself has already identified as critical to its future and it is market forces which will drive innovation forward. Creating innovation-friendly markets is a means to progress Europe's internal market and as such touches the very core of the European Union's historical trajectory.

Figure 3 Taxonomy of Innovation Policies