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"Creativity, innovation and role of higher education in economic development – Financing of tertiary education"

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1. Introduction – innovation, knowledge and economic development

1.1 The themes for this session are creativity, innovation, the role of higher education in economic development and the financing of higher or tertiary education. This is a very substantial set of issues. What are the connections between them and why are they important? The answer is that in the modern global economy *innovation* is the key to economic advantage and to increasing prosperity and creating higher living standards. A dynamic and creative tertiary education sector (which I understand to include post compulsory second level or high school education as well as research carried out in tertiary level institutions) is necessary (though not sufficient) to underpin the processes of innovation. The opening section of this paper will explore this argument in a little more detail. The later sections consider the design and policy issues involved in creating a public financing framework for tertiary education which underpins a successful innovation system.

1.2 It is useful to begin with the concept of *comparative advantage*. Economists are familiar with this concept but unfortunately it is often misunderstood, or not understood at all, by policy makers and interest groups. The results of this failure of comprehension include bad policies such as protectionism. The 19th century British economist David Ricardo used the concept of comparative advantage to explain the gains from trade as opposed to self sufficiency. Simply stated a country has a comparative advantage in the production of a good or service if it can produce it at a lower opportunity cost than its trading partners i.e. if it has to forgo the production of a smaller amount of other goods and services to produce it. The law of comparative advantage states that trade can benefit all countries if they specialise in goods in which they have a comparative advantage. A country need not necessarily have an *absolute advantage* (i.e. the lowest production costs) in the production of particular goods or services in order to enjoy a comparative advantage.

1.3 In his famous example Ricardo argued that the inhabitants of Britain and Portugal through trading with one another would both be better off if the British concentrated on producing cloth (in which they had a comparative advantage) and the Portuguese focused their efforts on producing wine (in which they had a comparative advantage) and both purchased their requirements of the other commodity from their trading partner - even though both countries could produce both commodities. In this theoretical framework a country or a region could be lucky or unlucky. If its comparative advantage was in the production of cheaper goods and services, often characterised by low relative prices and value added, incomes would be low. The converse was also the case. Specialisation in the production of goods and services where a country enjoys comparative advantage is not sufficient to generate prosperity. Living standards also depend on the terms of trade – i.e. the ratio of unit export and import prices.

1.4 As originally understood there may have been a tendency to understand comparative advantage in static terms. It was seen as a result of natural endowments such as geographical location, climate, soil quality, mineral deposits etc although the quality (productivity) of labour and capital were also part of the framework. Thinking, and particularly policy thinking, has evolved. For example, the US economists and commentators Michael Porter, Jeffrey Sachs and their colleagues identify three stages of development in their dynamic model of economic development. The first stage is the *Factor Driven Economy* where economic advantage results from the control of input costs. Here the analysis is close to the Ricardian model. This stage of development describes economies which rely essentially on the use of their so called *factor and natural endowments* (capital and labour, climate, land and mineral resources). The second category is characterised as being *"Investment Driven*". In these countries economic growth is driven to a considerable extent by foreign direct investment (including the importation of technology). Efficiency (as measured by the rate of return) in the use of capital investment is the key determinant of competitiveness in this group of countries. The *"Innovation –Driven Economy"* is the third and final stage in this model. The critical capacity for economic advantage of economies at this stage of development is their capacity for *innovation* in producing marketable goods and services.

1.5 *Innovation* is the creative process that transforms ideas, knowledge (new and existing) and technology into commercial value. It has been described as the profitable marriage of science, engineering and capital. The conventional understanding of innovation includes the introduction and commercial sale of new or improved products *(product innovation)* and the introduction and commercial use of new methods of production *(process innovation)*. However, innovation should not be seen simply in technological terms. *It also has essential economic and social dimensions*. It includes a number of other activities which can be described under the general heading of *business innovation*. These include

- *the introduction of a new form of business organisation***,** such as franchising, co-operatives, joint ventures and outsourcing agreements, and just in time manufacturing.
- *Finding new uses and applications for existing products,* and
- *Developing new markets for existing products and services, and new channels of sale and distribution (*such as market differentiation and developing internet based tools for selling goods and services).

1.6 Finally, finally it includes *public policy innovation* which encompasses the development of policies and policy frameworks which stimulate and support innovation. The concept of *creativity* (which is also in the rubric for this session) is closely related to innovation in that we can understand creativity in this context as including the ability to generate novel and useful ideas and solutions to problems and challenges.

1.7 The importance of the concept of innovation for policy makers is that in contrast with a simplistic interpretation of a Ricardian world where countries

and regions effectively had to settle for the comparative advantage which they were naturally endowed, the introduction of innovation into the model allows policy makers to design policies which will change comparative advantage – and more importantly *to try to achieve it in the production of high value added goods and services and thereby increase prosperity.*

1.8 Successful innovative societies are underpinned by *knowledge and its exploitation.* Their labour forces contain significant proportions of so called *knowledge workers* (i.e. those with high level skills and theoretical knowledge relevant to their areas of work) including those working at the *knowledge frontier* (i.e. research workers engaged in creating new knowledge and others involved in the economic and social application of new knowledge). *The importance of the tertiary education and research system (including the universities) is that it is an agent, which through teaching, learning and research, creates and renews the base of human capital, knowledge capital and innovation potential. Investment in tertiary education and research can enable a country or region to change both its comparative advantage and the terms of trade in its favour- and thus increase prosperity and living standards*[2].

2. The challenge for tertiary education policy and financing

2.1 This view of the role of tertiary education and tertiary education institutions (TEIs) as agents of innovation coexists with several other perspectives and policy objectives as to the role of tertiary education and research. Indeed, in some countries this view is only developing. Universities were originally established in the middle ages to protect and advance scholarship and to provide teaching to small, privileged elites in society. Over time the role of TEIs expanded to include education and training for the professions (including medicine, law and engineering), technical education (sometimes through non-university institutions) and later to encompass a more vigorous role for research. Within society there are also a variety of views and expectations. Academics place a high value on academic freedom and on institutional autonomy. There is growing public pressure for access to tertiary education which is seen to have social and economic value for individuals. Governments wish to promote access not just for economic policy reasons but also as a means of improving equity and life chances for less well off and other disadvantaged groups in society.

2.2 Public policy and financing has therefore to contend with a number of different policy objectives and pressures – and powerful interests and traditions. It is therefore not surprising that the policy in this area (particularly the implementation of proposals for policy change) can often be difficult and characterised by controversy and confusion. At government level, the policy

[2] It is important to note that although an effective education, training and research system is a necessary contribution to a successful knowledge economy, it is not a sufficient condition. Effective policies are also required in other areas such as fiscal and macroeconomic policy and the provision of physical infrastructure.

interest in tertiary education tends to be increasingly shared across a range of ministries. Traditionally, the education ministry tended to be the most significant stakeholder ministry. These ministries are traditionally concerned with issues such as sectoral financing, overall student participation rates, student numbers and financial support, access for traditionally underrepresented groups in society, staffing policies, standards of teaching and latterly of research as well as the financing, viability, management and governance of tertiary education institutions (TEIs). Finance or treasury ministries were concerned about cost. Other ministries are increasingly developing an increasing policy interest in tertiary education. For example, health and agriculture ministries are concerned about the education and training of people with essential sectoral skills and with research and its applications. Defence ministries, which in some countries have substantial research budgets, are interested in the teaching and research outputs of TEIs. In many countries an increasingly influential policy and financial interest is coming from the ministries concerned with economic and industrial development and with employment and science and technology policy. Their interest, and the financing they direct towards TEIs, tends to be focused on meeting the skills needs of the economy and enhancing its innovation capacity.

2.3 In all countries and societies the State is a major stakeholder in tertiary education –as a "customer", a regulator and as a funder. The focus of this paper is on the criteria for the design of public funding systems which are capable of addressing a range of policy issues and challenges sketched out in the earlier paragraphs. The objective is to develop public finance structures and policies which coherently address a wide range of policy objectives and expectations and which allow for the engagement of a number of stakeholders – particularly government ministries and agencies. A framework for doing this is set out later in this paper but before doing so it may be useful to consider the issues of academic freedom and institutional autonomy which invariably arise in debates on tertiary education policy. These issues are important for policy development in an economy and society which wishes to place creativity and innovation at the centre of its development strategy.

3. Why autonomy and freedom are necessary

3.1 An important assumption in this paper is that national policy makers and administrators should see academic freedom and institutional autonomy as desirable features of higher education systems and not as problematic constraints.

3.2 The ethical arguments for freedom and autonomy, including (as is stated in the Irish Universities Act, 1997) the right of members of the academic staff of a university to "*....question and contest received wisdom, to put forward new ideas and to state controversial or unpopular opinions…"* are well rehearsed.

Their value and necessity are accepted in democratic societies.

3.3 The (in the absence of a better word) "efficiency" arguments for freedom and autonomy are perhaps less often invoked. Efficiency and effectiveness are rarely served by central controls. Higher education systems in all countries are facing challenges and pressures for change from both external and internal sources. Centralised control systems are invariably inflexible and slow to respond to change. If the rate of environmental change exceeds the capacity of a system to adapt, that system, and its institutions will decline in relevance, vitality and capacity.

3.4 Centralised control systems generally fail to exploit the full extent of potential resources in order to address challenges and opportunities. They fail to tap fully into the innovation and energy of individuals operating outside the centre. They also muddy the balance of responsibility for project implementation. Where such control imposes pre-set methodologies or systems, it is unlikely that people operating in such a structure will accept full responsibility for failure to achieve desired outcomes. Efficiency and effectiveness are better served by decentralised decision making within a framework of institutional autonomy. This argument is particularly relevant to developing policies directed to the promotion of creativity and innovation though investment in tertiary education and research.

Accountability and autonomy

3.5 The arguments for autonomy and decentralisation have implications for accountability to stakeholders – in particular, accountability to the state in systems which are predominantly funded from state revenues. Accountability considerations are sometimes invoked as arguments in favour of centralised and detailed state control. However, the contrary argument that centralised control diminishes accountability at institutional level is, in my view, more persuasive. How can institutional leaders and governors be held accountable if important decisions have to be referred for clearance to external authorities?

3.6 The challenge facing policy makers is to devise funding systems and accountability frameworks which are compatible with real institutional autonomy but which provide for meaningful accountability by the institutions to their stakeholders – particularly in the case of publicly funded systems - to the state and its stakeholders and which are responsive to public policy priorities.

3.7 TEIs (including the academic communities) and the state approach this issue with very different perspectives. The academic communities and the leaderships of TEIs strive for freedom from constraints and for the financial means and capacity to work for excellence in scholarship. Unfortunately, in the mind of policy makers this can sometimes appear to be self-regarding and inward looking. On the other hand policy makers have an array of concerns some of which have been discussed in previous paragraphs – which can appear short sighted and excessively utilitarian to the academic. The concerns of the academic communities (and their resistance to change) can be intensified by

the tendency of policy makers to seek to apply a wide range of performance conditions to public funding – accompanied perhaps by a bewildering, and not always consistent, array of measures and metrics.

3.8 The tensions between autonomy and accountability will, I suspect always continue to be a source of controversy and difficulty in the relations between governments and TEIs. Perhaps the best we can hope for are positive (if not conclusive outcomes) which are a source of creativity and innovation?

4. A framework for the public financing of TEIs

4.1 Notwithstanding the complexities of the policy landscape, including the difficulties in reconciling autonomy and accountability, it is possible, I believe, to develop a set of design principles for public funding of third level institutions which will establish a creative dynamic and reflect the needs and aspirations of the many stakeholders. The key elements of such a framework are as follows:

1. Institutional "bedrock" or "core" funding is necessary for undergraduate education and learning. It should be capitation based. Money should "follow the student". The funding rates and criteria should be relatively simple, transparent, rationally based and equitable as between institutions as well as reflecting cost differences between subject disciplines and student categories.

2. Performance related elements can be included in "core" funding formulas. These should reflect a limited number of important, and consistent, public policy objectives (e.g. in relation to course intake numbers and completion). Ideally these should be benchmarked by reference to best national and international practice and outcomes.

3. The share of total annual recurrent funding represented by performance related payments should be sufficiently large to be meaningful as a positive incentive. But it should not be so proportionately significant that failure to secure the financial 'rewards' over relatively short periods (e.g. one to two years) would cause a sudden and severe financial crisis for individual institutions. However, institutions which consistently fail to secure adequate performance based funding over a period of time should not receive financial compensation.

4. Major new initiatives e.g. the funding for major new facilities, faculties or programmes (including large scale research programmes) should be funded through open competition between institutions. The criteria and marking schemes should, of course, be published in advance. Particular attention should be given to ensuring confidence in the assessment procedures and the selection of the assessors. In many countries, particularly smaller countries, confidence in the assessment processes will be enhanced if the assessment panels contain a significant number of non- national assessors chosen for their expertise and reputation. The

decisions of the assessors should be final.

5. A similar approach could be used, but perhaps more cautiously, to encourage innovation and experimentation e.g. in respect of institutional strategic planning, change and reform, new teaching methods, quality assurance initiatives, technology diffusion and commercialisation, promotion of cooperation between institutions and measures to encourage participation from underrepresented groups in society. In general individual programmes should not be funded indefinitely but after a stated period of between three and five years they should be reviewed and either abandoned or incorporated into mainstream funding.

6. Research funding should ideally contain the following elements

   - 'foundation' funding allowing institutions to develop research capacity; funded on a non-competitive basis
   - performance based institutional funding programmes e.g. to develop postgraduate schools; funded on a competitive basis
   - competitive funding for research projects, programmes and fellowships.

   External, non national assessors have an essential role to play in generating confidence in competitive research funding processes and particularly in enhancing quality through the application of international standards and implicit benchmarking. The decisions of the assessors should be final.

7. Financial sanctions (i.e. the "stick" or negative incentives) for unsatisfactory performance have a limited role. Levying fines on institutions can have perverse effects i.e. the main brunt can fall on the resourcing of teaching or teaching facilities resulting in negative outcomes for students, rather than on those responsible within the institution for the unsatisfactory performance. Should sanctions on leaders and employees be appropriate these should in the main be matters for the institutions themselves – not for the funders.

8. The funding systems should be complemented by efficient information systems which allow the state funders to monitor budgetary balances and outcomes, and institutional performance in respect of key outcomes. These arrangements should not be heavily intrusive or create disproportionate compliance costs.

9. The public funding mechanisms should not only be consistent with institutional autonomy but they should also support it. *Diversity of funding sources is perhaps one of the most powerful guarantors of autonomy and of the capacity for institutional development.* The state funding mechanisms should be such as to incentivise institutions to develop sources of private funding on terms consistent with their missions and objectives.

4.2 A simple illustration of the proposed funding framework is shown in Figure 1.

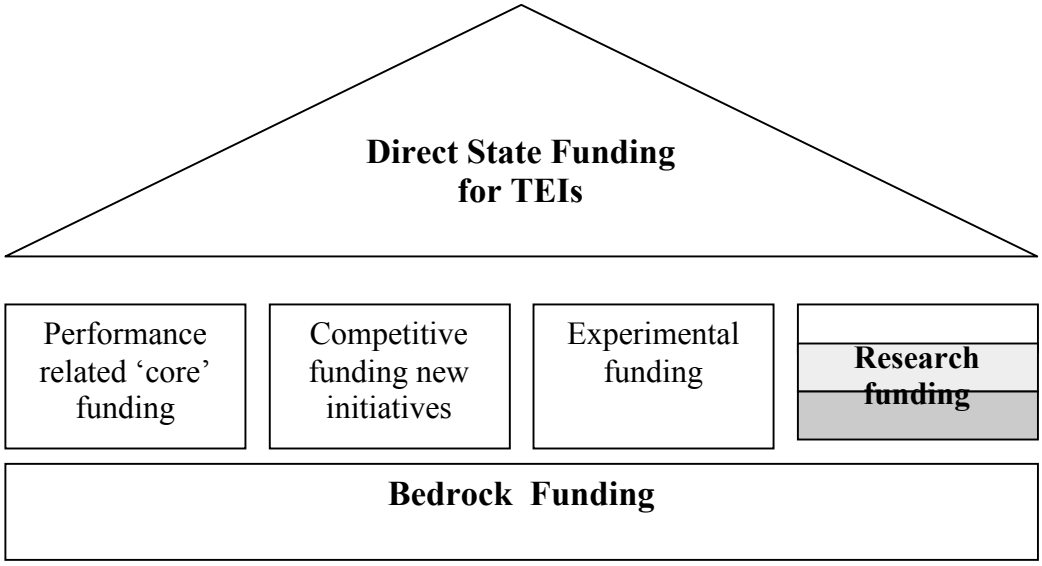

Figure 1.

4.3 This is a dynamic, not a static, model. All advanced societies have decided that the funding of tertiary education cannot be left to the private sector alone and to market forces. Public funding is seen as playing an essential role[3]. Nonetheless, there are considerable advantages in introducing "market –like" mechanisms into funding models. In this model competition is a central element. All the constituents depend on institutional performance and will stimulate quality and higher standards. This applies even to the non-competitive[4] elements including the so- called "bedrock funding" which is based on student numbers and rational transparent and readily understood funding rates. Students will "vote with their feet" for the better performing institutions. The model will create important internal pressures for change

[3] This view of course can be challenged. It reflects political and ideological perspectives. It can also be argued that tertiary education has some of the characteristics of what economists describe as a "public good" i.e. a product or service which will be "under produced" because of so called "market failure" in the absence of State intervention.

[4] In the sense of not being subject to formal competitions and calls for proposals.

within institutions which otherwise run the risk of financial failure. The model also has the long term advantage of being non- discriminatory between institutions. Legal and ownership status are not criteria for funding but quality should be. The funding model also creates conditions for institutional cooperation and mergers as well as for the entry of new institutions which will compete for students and funding.

5. Good design of funding systems is necessary – but not sufficient

5.1 Wider 'environmental' conditions are also essential preconditions for efficiency and effectiveness. Markets do not function efficiently without choice and information. Likewise, funding systems are likely to be more successful and accountability enhanced if systems are open – for example, if student admissions and entry systems are based on merit, transparent criteria, and are openly competitive. Transparency and access to information by the media, the public and stakeholders are also important. There should be transparency in relation to institutional structures and processes, curricula, standards and quality as will as on student and labour market outcomes External comparative reviews have a role to play as has internal self-evaluation subject to external review and evaluation.

5.2 Internal governance and management structures are also significant. Within institutions there should be clear distinctions between the roles of governance on the one hand and leadership and management on the other. Operational management and control should be the responsibility of the leaders - presidents, rectors and vice-chancellors, directors, etc.. Strategic policy and review of outcomes should be the responsibility of the governors. Planning and implementation is the role of the leaders of the executive – not the policy making boards of governors. In the final analysis, and in the (hopefully) rare instances where poor institutional performance becomes a matter of major concern, the institutional leadership should be accountable to the governors and the governors in turn should be accountable to the stakeholders. The legislative and policy frameworks within which the institutions function should be such as to give clear expression (both legally and in practice) to the implications of these accountabilities and to mechanisms for enforcing them if and when required.

5.3 These suggestions are, of course, based on the assumption that institutions have the organisational structures and capacity for self-governance and self-management. If they don't – for example if they do not have the capacity to carry out key functions in relation to finance and human resource management - these capacities need to be developed in advance of any major devolution initiative.

5.4 The assumption underlying this paper is that where possible the government and its agencies, in predominantly state funded systems, will find it more effective to pursue public policy objectives through setting the policy framework and putting appropriate 'macro-policy' instruments in place, rather than through micro-management and detailed interventions.

5.5 There may however, depending on the circumstances of the country and of the system, be situations where governments would need, for public policy reasons, to reserve certain powers in relation to the higher education institutions - for example in relation to rules regarding institutional budget balance and borrowing powers, academic and other employee pay rates and controls on student intake by subject/discipline[5]. Governments or state authorities may also need to retain the capacity for intervention in circumstances of institutional mission or financial failure and crisis. Such reserve powers, if required, should be used parsimoniously and under carefully defined conditions.

6. Student tuition fees

6.1 The question of whether, how and to what extent students should contribute to the costs of their tertiary education is a controversial issue in several countries[6]. The World Bank hosted workshop in Warsaw on *Sustainable Financing for Higher Education* in late June concluded that:

- *there is a strong demand to continue to expand enrolments in Higher Education in all countries of Europe and Central Asia;*
- *more resources are required in order to improve the quality and labour market relevance of higher education everywhere;*
- *as it is neither feasible nor equitable to rely solely on public finance for Higher Education, an increase in the amount of private financial flows is necessary;*
- *tuition fees are already in place in many countries but the dual track system of charging fees is unfair* [7]

[5] A government may decide for example to support the retention of critical levels of capacity in disciplines or areas of study regarded as being of strategic or national importance even though student intake is low and where the rigorous application of capitation based funding might otherwise lead to the closure of these departments and faculties

[6] For example, changing the regime for tuition fees proved to be one of the most difficult political issues encountered by the Labour Party government in the UK

[7] "dual track" means fee-free education for regularly admitted state-supported students with a special fee-paying track for those who fail to gain such admission. Evidence suggests that those who are currently benefiting from free places are those who come from better-off families and have had access to better secondary education; see the background paper prepared for the Warsaw workshop – EU 8 Finance Reform Cross Country Study – Financing Higher Education written by Mary Canning, Martin Godfrey and Dorota Holzer.

6.2 There are compelling arguments to support these conclusions. The first is the public finance argument. In all except a very small number of countries (e.g. countries with extensive resources of oil and natural gas) governments will not be able to fund expanding tertiary education sectors to the required level of internationally competitive quality from tax payers' funds alone because of tax revenue constraints and competition from other demands and the financing needs of other sectors. Equity arguments are also persuasive. The very considerable private rates of return enjoyed by graduates from TEIs, and the substantial income gaps in many countries between TEI graduates and those who have lower level qualifications (or none), suggest that students (and/or their families) should make a substantial contribution to the costs of their education. This argument is further strengthened by data which show that students attending TEIs tend to be from the better off groups in society. A "no tuition fees" policy creates an anomalous situation whereby taxes paid by less well off members of the population contribute to subsidising the tertiary education and the enhanced future life chances of students from better off groups.

6.3 Despite the power of these arguments the political challenges to introducing or increasing tuition fees are very considerable. Opposition from vested interests is an important obstacle to change. A further consideration is that the gains to society from wide spread access to tertiary education are significant. Governments considering the introduction of tuition fees or policies to re-define the dual-track systems as single track systems need to be careful to design policy instruments which ensure that the high rates of social return are not jeopardised due to declining enrolments. In particular it is important that students from less well off backgrounds are not confronted with disincentives which deter them from participation in tertiary education. Financial support systems to support students from less well off backgrounds are needed – and they need to be carefully designed to take account of national circumstances[8]. Income –contingent loan systems are a potentially powerful instrument for enhancing access and releasing new funding for tertiary education but care needs to be taken that risk aversion in the form of reluctance to incur future debts does not deter students – particularly those from less well off backgrounds. These are all substantial challenges. Responding to them requires careful policy design and analysis – and political skill. Nonetheless, the potential gains from successfully addressing them are considerable.

[8] For example, means tested student grants based on student or parental income thresholds are unlikely to be effective unless there is public confidence in the functioning of the national systems for income measurement and assessment for taxation and social welfare benefits.

Questions

1. How would increased investment in tertiary education in your country contribute to an increase in its comparative advantage in high value added products and services? Is it a top priority investment or would public investment in other areas such as primary and second level education and physical infrastructure be higher in your list of priorities?
2. Should core funding be capitation based? Should money follow the student?
3. Do you accept the argument in this paper that institutional autonomy is an essential requirement for a dynamic and creative tertiary education system which can make the optimum contribution to national economic and social goals? If you have difficulties with this argument could you explain why and could you put forward an alternative approach which would ensure a dynamic contribution from tertiary education to meeting societal needs?
4. Do you think that it would be desirable in your country to allow an important TEI to "fail" as a result of its inability to secure sufficient funding under a competitive funding model along the lines set out in this paper? Would the government allow this to happen or would political pressures prevent it?
5. Do the conditions exist in your country for a fair, equitable and transparent system of income support for students from less well off backgrounds? Would the absence of such conditions be an insuperable barrier to the introduction of substantial student tuition fees?