

An innovation system of the dreams

In my column 4/2010 I concluded that a research unit working only through direct project funding, for sure, can never reach the global top level in its field. *A real top university will get a head start of one to two years on research on new ideas, and it can take valid ideas forward to the next phase of the innovation process. This means that the academic impact and also the effect on creating new business exceed many fold what the Finnish system could possibly accomplish.*

Research funding is an important part of the entire national innovation system.

The effectiveness of the national innovation system can be measured by terms of trade in exports/imports. During the past decade, the terms of trade in Finland has continuously weakened: the prices of exports are falling while our imports prices are rising. Hence Finland has lost position as a country of innovations compared with, for example, Sweden and Denmark. Simultaneously, a billion Euros invested in research and development in Finland will produce only a fraction of the number of new companies generated with a corresponding investment in, let us say, Israel. We have concentrated on refining the existing methods of earning, and our system was criticized for this even by an international innovations evaluation panel a couple of years ago.

But what would be the best way to organize research funding? Key factors that will release researchers' time from administration and grant applications generation for the research itself are, in my opinion, (1) continuity and (2) encouragement.

On these, international comparison is needed. In Sweden, our colleagues can receive funding for as long as ten years. In the USA, it is not uncommon for a research unit to receive as much as 20-year funding. The best universities in China have so much money that they do not always know what to do with it. In Israel the state provides an annual sum for academic research to be shared between universities as they best agree. Long-term funding makes research free, because allocation of money cannot be based on detailed research plans.

In Finland, good cooperation between universities and business enterprises is a strength. How can this strength be retained if research is free? I believe that there is a way, if there is a will. The academic research funding system should guarantee that all professors, who have been shown to be amongst the best researchers in the field already when nominated to the position, have access to a reasonable amount of funding with no extra administrative duties involved. This might represent, for example, half of the average level of the external funding allocated for the technology fields at Aalto University. This would enable the professor to support a couple of post-doc students and a couple of research assistants.

Allocation of additional funding could be based on peer-review based international research assessments, industrial panels, measuring the social impact of the unit (providing employment, generating new enterprises, etc.) and, as a small addition, some strategic consideration. This additional funding should also be long-term, extending over 5 – 20 years. Only after this funding is clear, the research unit should get involved with projects that are, after all, necessary in fields where the target of research cannot be carried into a laboratory. From the research unit's point of view, the peer-review and industrial panels provide advantages over having to compete for project money, in the form of encouragement and advice of development.

The funding model reform in research concerns only the initial chain of innovation. In order to generate new enterprises in Finland, we need a cultural change and a sufficient amount of risk capital to pull innovations from universities onto the market. As part of this, a state investment dependent on capital stock might attract investors who have previously initiated successful companies.

Why then should we change the system that we have been used to praising for a couple of decades, and why should the change take place now? Finland experienced the rise in electronics and IT business in the 1990s, and the field gave wings to our exports during the first years of the new millennium. Over these years it was acceptable to concentrate on refining the existing ways of earning our living, for more than half of the R&D activities in Finland are carried out in these fields. The most recent recession has taught us that these means of earning are no longer sufficient. As in the ICT field, also in innovation systems our competitor countries have caught us and are overtaking, if they are not already ahead. Now we need totally new innovations to build added value into products and services to facilitate exports. Since we know for sure that the current innovation system cannot *efficiently* produce totally novel innovations, it is time to change the system. If this is not done, the impact of the entire university reform will be little. Renewing the research and innovation system should be introduced as an important element of the next government's agenda.

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