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**THE CONTRIBUTION OF UNIVERSITIES TO EUROPE'S  
COMPETITIVENESS**

***1. Modern growth theory, a renewed Lisbon strategy and China***

Here in Vienna, it may be appropriate to begin by pointing out that modern growth theory has rediscovered a central idea of Joseph Schumpeter, a member of the Austrian School of Economics, namely: growth derives from quality-improving innovations, triggered by an investment in human capital<sup>1</sup>.

As long as Europe lagged behind the US technologically, it could rely on imitation as a main source of growth. Emphasizing primary/secondary education and practical, vocational training sufficed to catch up. However, after the growth potential of imitation wore out during the 1980s, Europe should have rapidly adopted a

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<sup>1</sup> See Philippe AGHION and Peter HOWITT's Joseph Schumpeter Lecture at the Annual Congress of the European Economic Association, Amsterdam, August 25, 2005.

frontrunner strategy: investment in research and higher education in order to generate “frontier innovations” (Aghion-Howitt). In a frontrunner strategy<sup>2</sup>, general higher education fostering generic, methodological skills occupies centre stage in order to seek quality-improving innovations, either to implement them or solely to maintain them. Not surprisingly, universities and other higher education institutions, surrounded by science parks, have now emerged as engines for regional growth and job offerings.

The renewed Lisbon strategy, suggesting reforms as turning points towards growth and jobs in Europe, is indebted to these lessons of modern growth theory. The Commission, in its communication to the Spring European Council on “Europe on the move: working together for more growth and jobs” (Annual Progress Report, February 2006) strongly recommends investing more in knowledge and innovation. Member states are first asked to set, as was done previously, an R&D expenditure target for 2010 so that the European Council can finally set a credible R&D target for the Union as a whole. This exercise of setting ambitious targets is not new; one only wonders why, since 2001, the actual R&D/GDP ratios have stagnated. In addition to the R&D target, the Commission suggests a second target: to increase EU’s investment in higher education, from currently 1.28 % of GDP to at least 2 % of GDP by 2010!

An outside observer looking at the global developments since 2000 would be puzzled. Despite strong econometric evidence supporting the relevance of modern growth theories, despite the many commitments of EU member states to the (renewed) Lisbon strategy, gross expenditure in R&D and in higher education has stagnated in nearly all of Europe. China, on the other hand, has fully adopted the Lisbon objectives. Although China has been experiencing high real annual growth rates of nearly 10 % since the early 1990s, it has also managed to boost its R&D/GDP ratio from 0.7 % in 1998 to more than 1.4 % in 2004. With this R&D level of 1.4 %, China already ranks in the upper half of the 25 EU member states (after Slovenia’s rank as

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<sup>2</sup> See Dirk KRUEGER, Krishna B. KUMAR, US-Europe Growth Differences: The Role of Education. Austrian National Bank, 32<sup>nd</sup> Economics Conference 2004, Vienna 2004, pp. 37, and by the same authors, U.S.-Europe Differences in Technology-Driven Growth: Quantifying the Role of Education. *Journal of Monetary Economics* Vol.51 (2004), 161 -190.

number 12). China's increased input into R&D is accompanied by a return of overseas scholars in vast numbers. Policies of Chinese governments at various levels have effectively supported this return. "As a result, 81 % of the members of the Chinese Academy of Sciences and 54 % of those of the Chinese Academy of Engineering are returned overseas scholars"<sup>3</sup>. Both increased investment in R&D and the massive return of emigrants have resulted in a spectacular growth in the number of Chinese scientific publications, even outpacing the growth in the number for science in South Korea. What should be alarming for Europe is not only that China regards the US and Japan, and not Europe, as its potential peers to be matched in research and higher education, but also that in newly emerging scientific fields, such as nano-relevant ones, China and Hong Kong have succeeded in doubling their share of publications in the three core journals of the world: from 5 to 10 percent within two years (2002–2004)<sup>4</sup>. As announced officially, China aims at matching the US and Japan with respect to innovations by 2020<sup>5</sup>.

Given Europe's stagnation and the dynamics in East Asia, one can easily predict the day when East Asia — and not Europe — will possess "the world's leading knowledge-based economy" (Lisbon 2000).

## ***2. The Modernisation of Europe's universities***

Many of Europe's universities can claim to belong to the oldest institutions on the continent; the oldest, the University of Bologna, dating back to 1088. By tradition, universities reflect the ethical dimensions of education and research, contribute to the social underpinning of the economy, and act as cultural institutions, especially in the fields of the humanities. This ethical, social and cultural mission is, of course, complemented by the very objective universities pursue: to prepare their graduates for future jobs in the labour market for the highly skilled.

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<sup>3</sup> Ping ZHOU, Loet LEYDESDORFF, The emergence of China as a leading nation in science. *Research Policy* Vol. 35 (Feb. 2006), p. 83. ZHOU-LEYDESDORFF cite a work published by L. XING.

<sup>4</sup> See ZHOU, LEYDESDORFF (2006), Figure 12.

<sup>5</sup> Urs SCHOETTLI, Chinas Führung setzt auf Innovation, *Neue Zürcher Zeitung* 24.2.2006, p. 13.

The recent emergence of knowledge-based societies has placed universities under increasing competitive pressures. Knowledge in modern societies has become too important to leave its production and its transfer solely to universities. Of course, universities have also benefited from the intensified demand for knowledge in the triangle of research, innovation and education. However, this intensified demand has given rise to market-oriented suppliers. New institutions have emerged, specialised in teaching, in research or in innovations only. With focused missions, these new institutions challenge traditional universities, contrasting the latter's effectiveness and efficiency. Originally, European universities reacted to this competitive challenge from polytechnics and others with condescending neglect, since effectiveness and efficiency seemed to contradict traditional academic scope and values. Now, rather recently, universities have realized that it is important to maintain the interest of the society at large (and the taxpayers) and began to offer professional solutions geared to the needs of modern knowledge-based societies.

The term "mass university" highlights this ambivalence of effects in a negative way: universities experienced an enormous growth of the size of their institutions, especially in terms of student numbers. But due to bureaucratic rigidities, institutional inertia, and lack of funding, they have failed to cope with this growth in an adequate way.

It is evident that the European university system needs to broaden access on a more equitable basis, that it has to reach out to increased excellence and that it must allow for more diversification within the system. In the US, with about 300m inhabitants, there are 16m students of which 14m complete their studies with a bachelor degree and 2m obtain Masters or Doctorate degrees. In the European Union (EU-25) with a population of 450m, there are only 12m students, many of them — often the ones with limited financial means — end as drop-outs (in some countries, e.g., Austria, the drop-out fraction reaches 50% of the student population). Hence, more access should be granted and more students should have a chance to really complete their studies. With respect to research excellence, 80% of the top 20 and more than 50% of the top 100 universities of the world are located in the US<sup>6</sup>. In Europe, only two universities

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<sup>6</sup> according to the Higher Education Supplement of "The Times" or the Shanghai list

rank among the top 20 and only some thirty among the top 100. American universities undertake research and advanced research education only if they have a critical mass: only 260 US universities offer PhD programmes, whereas there are about 1000 such institutions in the EU-25! The American university system is, as the President of the American Council of Education, David Ward, put it, “elitist at the top, and democratic at the base”; the European university system seems to be neither.

European universities need to be more on the move! To make them fit for the future challenges to the Europe of Knowledge, three lines of action are needed:

- (1) Universities should escape the shadows of governmental bureaucracies, where governments still decide all details of running a faculty. They should be *autonomous institutions*, legally *and* actually, accountable to the general public only. Universities should be strong actors in the field of higher education and research, with good institutional strategies. Universities should not just be conglomerations of departments of faculties or of study programmes but should overcome their fragmentation.

Obviously, the world of knowledge needs to be organised similarly to advanced economies: the decisions about the supply of goods and services are left to agents (firms) who compete or cooperate and who only have to comply with predetermined rules set by law and governments. Public accountability and systems of quality assessments assure that the performance delivered to society becomes sufficiently transparent and can be evaluated. In the case of universities, competition leads to a contest in reputation, manifesting itself by attracting public awareness, brains and money.

It is worth noting that in the US, without any national planning and with very few regulations, autonomous universities have created a system that, as a whole, grants broad access to students and achieves world-class research excellence in an enormous range of scientific fields distributed among a number of universities.

(2) Universities in Europe still operate mostly in small national systems or sub-systems, resulting in a lack of recognition of foreign degrees and in low levels of trans-national or trans-sectoral mobility of staff and students. As a consequence, the creation of the *Europe of Knowledge*, comprising the *European Higher Education Area* (Bologna Process) and the *European Research Area*, is a goal which needs to be pursued with great efforts and which should be reached by 2010.

In Bergen 2005, Europe's universities reaffirmed their commitment to the Bologna process. Universities are certainly cognisant that the Bologna process reaches beyond the introduction of a common study architecture in Europe. It requires a "fundamental reconsideration of the curriculum and of pedagogic methods in every discipline, to ensure a student-centred approach and the achievement of appropriate learning outcomes at every level and in every subject."<sup>7</sup>

The European Research Area (ERA) is not yet a reality. After 1 January 2007, when the 7<sup>th</sup> Framework Programme will also include the European Research Council, a plan warmly welcomed by universities, a true European dimension with respect to research excellence in Europe might be reached. The ERA, however, should also include a trans-national labour market for researchers in Europe. The implementation of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, adopted by the Commission in March 2005, and since then supported by many universities throughout Europe, might be a first step into this direction. What is most needed, however, is the full transferability of pension rights for academic staff across all of Europe.

(3) The European university system suffers from a severe *funding gap*. The growth in student numbers has not been accompanied by an adequate growth in public funding. Universities were not allowed or did not succeed in compensating the stagnating public funds by revenues from private sources. Calculations by the Commission suggest that in order to close the funding gap with the US, Europe

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<sup>7</sup> EUA (vision paper, point 16)

would need to spend on average an additional 10,000 € per student per year. That would result in almost doubling the European universities' revenues and would, furthermore, as the Commission has suggested, set a standard of at least 2% of GDP for higher education.<sup>8</sup>

### **3. Hampton Court Follow-Up**

As many analyses have pointed out, the main directions of the agenda for the modernisation of the European university system are clear. They have also been adopted by the Commission in response to the discussion at the informal meeting of the European Council at Hampton Court ("Hampton Court Follow-Up"). With input from experts<sup>9</sup> the following ideas about the contribution of universities to the Lisbon strategy were developed<sup>10</sup>:

- a) Break down the barriers surrounding European universities.
  - There should be a major effort to achieve — by 2010 — the core Bologna reforms in all EU countries
  - By 2010, at least one third of all graduates at the Master's level and one fifth of those at the first degree level should have spent at least one term/semester abroad
  - No applicant should have to wait longer than 2 or 3 months for a decision about qualification recognition
  
- b) Provide the appropriate skills and competences for the labour market
  - Member States should treat the preparation for the labour market (in terms of specific skills and transversal competencies) as an important — but never an exclusive — indicator of the quality of universities' performance.

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<sup>8</sup> Commission, Delivering on the modernisation agenda for universities: education, research and innovation. Draft based on discussions with an expert group as a Hampton Court Follow Up activity (January 2006), p. 4

<sup>9</sup> Hampton Court follow-up: authoritative figures to be consulted: external experts – Universities (Olivier Blanchard, Ivor Crewe, Frederico Mayor, Mario Monti, Linda Nielsen, Jan Sokol, Georg Winckler)

<sup>10</sup> See footnote 8

c) Reduce the funding gap and make funding more effective in education and research

- Member States should adopt the target that by 2010 *total* funding for a *modernised* higher education sector should not be less than 2% of GDP. They should also renew their commitment to raise their level of investment in research to 3% of GDP by 2010.
- With or without substantial tuition fees or not, Member States should nonetheless critically examine their current funding model

d) Create genuine autonomy and accountability for universities

- Member States should draw up a framework of rules and policy objectives for the university sector as a whole
- In this context, universities should possess the freedom and the responsibility to set their own missions, priorities and programmes
- Member States should build up and reward management and leadership capacities within universities

e) Acknowledge and reward excellence at the highest level

- All Member States should review their provision at postgraduate (master and doctorate) levels and the disciplines concerned
- Financial support should be made available at a European level to develop excellence at graduate/doctoral schools and networks meeting key criteria
- Strengthen competition for excellence through the European Research Council

f) Build-up an attractive image of European universities in the world

I personally am convinced that adopting these six points will reinvigorate the European university system and will substantially increase the contribution of universities to the competitiveness of Europe.