

The Role of Universities for Economic Growth: A European Perspective

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University Funding for Austria: International Perspectives

Vienna, 23 September 2008

An Agenda for a Growing Europe

July 2003

Main findings

- Declining growth...
- ...is a symptom of the failure to change in a rapidly changing world
- Europe must change priorities and policies

Low growth is a symptom of a

- failure to adapt the economic system based on
 - Assimilation of existing technologies
 - Mass production
 - Large firms with stable markets & labour relations

Globalisation & Technological change

- failure to become an innovation-based economy
 - Entry
 - Labour mobility within & across firms
 - Retraining
 - External financing
 - Investment in R&D and higher education

The European response

The 2000 Lisbon Strategy

To make Europe “the most competitive and dynamic knowledge-based economy in the world” by 2010

Lisbon addresses the three shortcomings of the earlier European growth strategy, the SMP

- Problem of implementation
 - Completion of the Single Market (services)
- Problem of complementary policies
 - Modernisation of labour & social policies
- Problem of design
 - Promotion of innovation and knowledge
(Lisbon/Barcelona target for R&D: 3%)

**What has changed since
since 2000?**

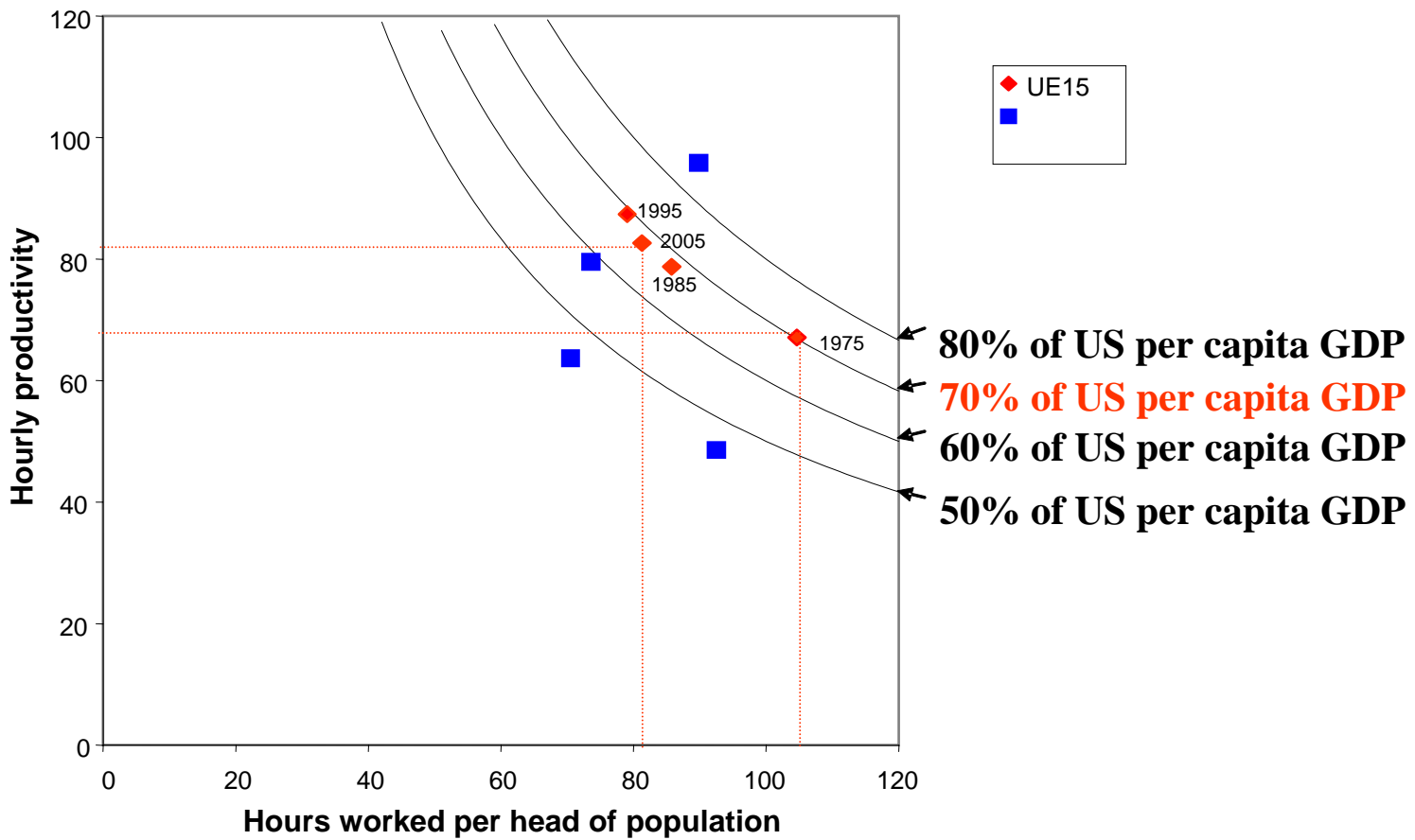
In fact, the growth decline continues

<i>Period</i>	<i>GDP</i>		<i>Employment</i>		<i>Productivity</i>	
	EU-15	USA	EU-15	USA	EU-15	USA
<i>1971-1980</i>	3.0	3.2	0.3	2.1	2.7	1.1
<i>1981-1990</i>	2.5	3.2	0.7	1.7	1.8	1.5
<i>1991-2000</i>	2.2	3.3	0.6	1.6	1.6	1.7
<i>2001-2008</i>	2.0	2.5	1.0	0.9	1.0	1.6

Labour market conditions have improved, but productivity growth continues to fall

And the gap in per capita GDP remains unchanged

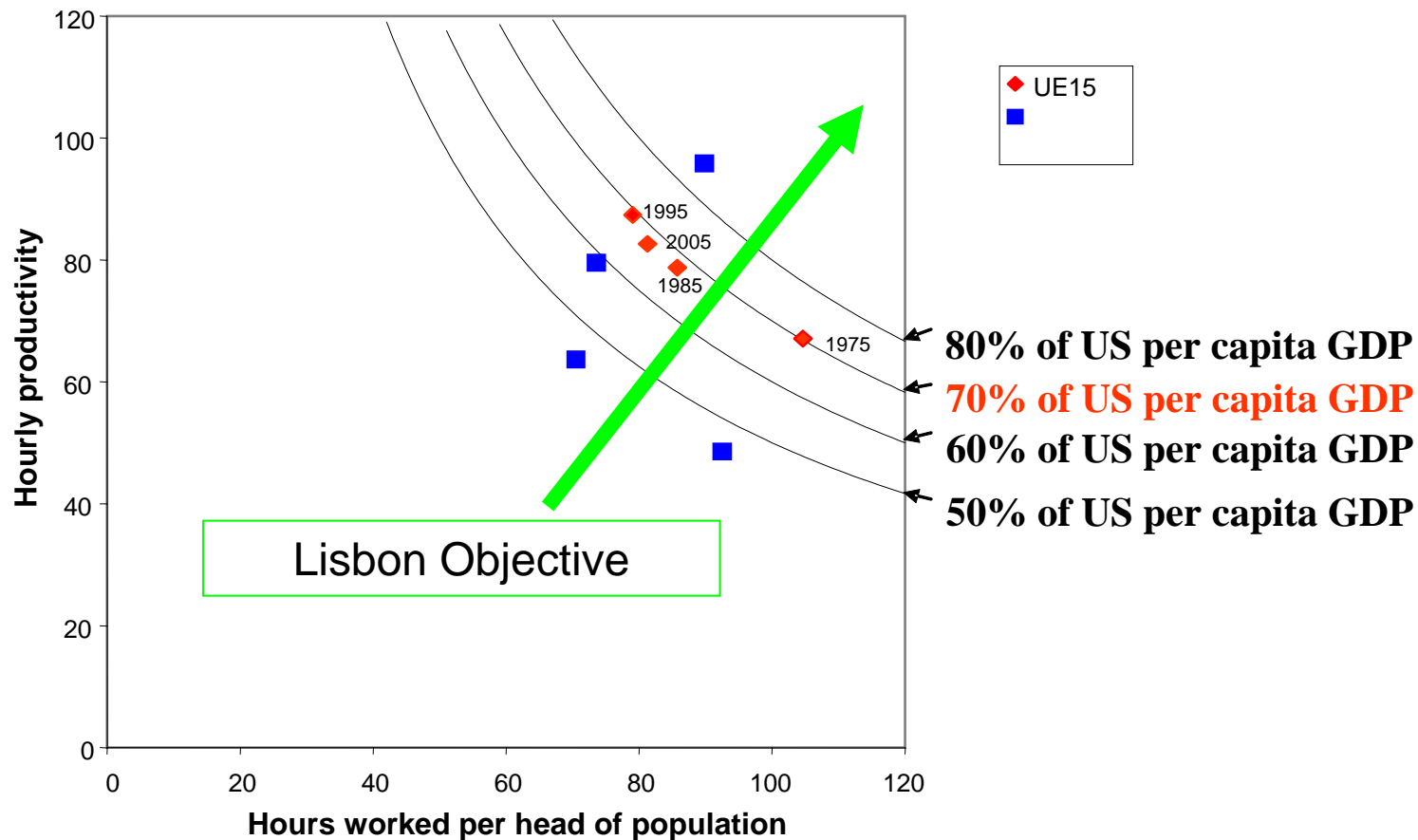
GDP per capita, hourly productivity and labour effort (US=100)



Data Source:
Groningen Growth and Development
Center, Total Economy Database

Lisbon needs both labour market and innovation reforms

GDP per capita, hourly productivity and labour effort
(US=100)



Data Source:
Groningen Growth and Development
Center, Total Economy Database

**Meanwhile globalisation is
accelerating**

The continuous rise of (East) Asia

- Since 2001, East Asia (JP, CN, TW, SI, KO) spends more € of R&D than the EU
- Since 2006, China is the third largest R&D spender, ahead of Japan.
- In 2006, East Asia's share of world of GDP at PPP was 21%, the same as the EU-27.

INNOVATION AND KNOWLEDGE

Two views on the EU-US productivity differential

- Difference in efficiency of product and factor markets
- Difference in R&D and higher education systems

Both views are probably correct

- Europe needs more competitive markets
- Europe needs more knowledge investment

More investment in knowledge

- Higher spending for research & higher education
- Better spending for research & higher education
- This requires changes at both EU & MS levels

Europe has a double deficit vs. US

- R&D: 2 versus 3%
- Higher education: 1.3 versus 3.3%
 - Public money: 1.1 1.5%
 - Private money: 0.2 1.8%
 - Total: 1.3 3.3%

Less money for higher education means

- Less population with higher education
 - 25/64: ~20 versus ~40%
 - 25/34: ~30 versus ~40%
- Less top research universities
- Less growth

Growth and higher education

- Empirical evidence: was weak until recently.
“After all, the Asian tigers grew fast while mainly investing in ‘low brow’ education.” (Aghion).

Aghion et al. - Theory

- Growth can be generated either by innovating or by imitating the frontier technology.
- In addition
 - “Low brow” education provides skills for imitating
 - “High brow” education provides skills for innovating
- Then, as a country moves closer to the frontier, higher education becomes increasingly important for growth.

Aghion et al. - Empirics

- Cross-OECD country and cross-US state regressions indicate that investment in higher education is more growth-enhancing for countries/states closer to the technological frontier

Higher aspirations: An agenda for reforming European universities

BY PHILIPPE AGHION, MATHIAS DEMATRI PONT,
CAROLINE HOBY, ANDREU MAS-COLELL AND ANDRÉ SAPIR



European Space of Higher Education

- European universities are often dysfunctional in their two functions: teaching & research
 - The Bologna process is breaking down some barriers and structures higher education in 3 cycles:
 - Bachelor
 - Master
 - Doctorate
- Undergraduate education**
- Graduate education**
- Bologna focuses on undergraduate education. We focus on graduate education: **where Bologna meets Lisbon**

The graduate level

- The EU produces as many doctorates, even in science and engineering, as the US.
- But too many universities produce doctorates. Hence the level of excellence is too low.
- The graduate level is where **Bologna meets Lisbon**:
 - Advanced professional Masters provide high-skilled human capital for technology-based enterprises (engineers)
 - Research Masters and Doctorates provide the human capital for research in universities and the private sector

Measure of research performance

- We start from the Shanghai index
 - it exists and it is objective
 - it focuses solely on basic research, and mostly on ‘hard sciences’
 - it could and should certainly be improved
- We use it to construct a ‘Country Performance Index’
 - sum of Shanghai scores
 - divided by population

Country performance index

Top 50 Top100 Top 200 Top 500

EU 15

13

26

41

67

EU 25

10

21

32

54

Country performance index

Top 50 Top100 Top 200 Top 500

EU 15	13	26	41	67
EU 25	10	21	32	54
Spain	0	0	0	14
Italy	0	0	11	34
France	3	15	29	45
Austria	0	0	0.4	53
Germany	0	17	37	67
Belgium	0	0	61	122
UK	72	86	99	124
Netherlands	20	51	76	131
Denmark	0	75	114	161
Sweden	7	117	179	217
Switzerland	97	166	229	230

Red
means a
score of at
least 75

Explaining university performance

- Bruegel survey of European universities
 - 200 European universities in Shanghai 500
 - 71 responses, but focus on countries with
 - Response rate of at least 25 percent per country
 - At least 2 respondents per country
 - Final sample: 66 universities in 10 countries

Sample universities characteristics

	Number of students	Budget per student	Faculty with in-house PhD (%)
Belgium	21.7	11.3	63
Denmark	18.2	11.4	40
Netherlands	21.4	20.5	33
Germany	26.2	9.6	40
Sweden	27.1	16.2	58
Spain	44.8	7.0	69
Italy	44.9	10.1	24
Switzerland	12.8	26.2	24
UK	14.6	24.5	9
Ireland	16.3	12.7	49

Sample universities characteristics

	Public status	Budget auton.	Hiring Auton.	Wage-setting autonomy
Belgium	0.5	0.4	1.0	0.0
Denmark	1.0	1.0	0.5	0.5
Netherlands	0.8	0.8	0.8	0.2
Germany	0.9	0.0	0.9	0.0
Sweden	0.8	0.9	1.0	1.0
Spain	1.0	0.5	0.5	0.0
Italy	1.0	0.9	0.4	0.0
Switzerland	0.8	0.1	0.8	0.0
UK	0.5	0.9	1.0	0.9
Ireland	0.5	0.5	1.0	0.0

Correlation with university performance

Characteristics	Correlation coefficient
Budget per student	+ 0.61
University governance	
Public status	- 0.35
Budget autonomy	+ 0.16
Hiring autonomy	+ 0.20
Wage setting autonomy	+ 0.27
Faculty with in-house PhD	- 0.09

Multiple regression analysis

Variable	Effect on research performance
Size of the university	+
Age of the university	+
Budget per student	+
Budget autonomy	+
Interaction between budget and autonomy	+

- Need to control for size and age of the university
- **Main explanatory variable is budget per student**
- But budget autonomy (not the other governance variables) is also important
- Interaction between money and autonomy: having budget autonomy doubles the effect of additional funding on university research performance

Summary of findings

- Large EU/US gap for top universities
- Large variance within Europe
- There is more than one model that works:
Sweden/Switzerland vs. UK
- Money is key
- Autonomy is also important
- Money and autonomy are complementary

What to do?

1. Increase university funding
2. Increase university autonomy
3. Increase competition and mobility

Funding

- Level of funding: increase by 1% of GDP
- Source of increased funding: private or public?
- Fees? Undergraduate vs. graduate
- Student aid
- Gifts and endowments

Autonomy and governance

- Every university should be autonomous: legal standing, hiring policy, pay scale, etc.
- (Self-) governance: find a balance between external and internal constituencies, between efficiency and cohesion

Competition and EU mobility

- General principle: fostering excellence
- Competition for and mobility of **students**: need for a Standardized European Test (SET)
- Competition for and mobility of **faculty**: portability of pension rights. Also: no-endogamy principle.
- Competition for **research funds**: extend the **ERC** example
- EU budget:

1/10 of 200 top universities, 50 fields

 - graduate schools: 1,000 x € 1 million = € 1 billion
 - graduate fellowships: 3,000 x € 40 thousand = €120 million