Intangible Investment, Innovation and Productivity
t the National Institute of Science and Technology Policy (NISTEP),

Workshop

Tokyo, January 27

Intangible Investment: Contribution to Growth and Innovation Policy Issues, The Franco-German Round Table Agenda

Ahmed Bounfour
Professor, University Paris-Sud
European Chair on Intellectual Capital Management
ahmed.bounfour@u-psud.fr

1- The Agenda rationale

The Franco–German Round Table on intangibles and knowledge assets is ***a***

research and policy initiative taken by two major universities in the two countries (as well in Europe) – The University Paris-Sud and Heidelberg University- who decided to join their recent and on-going research efforts, in order to:

- Come up with conceptual instruments
- Provide a stimulating platform for research and action for progress among different stakeholders in France and Germany
- Contribute, more generally, to the large dialogue in Europe and more globally, on the role of intangibles in value creation
- The Round table will bring together **researchers, policy makers, Executives and Media** from the two countries, who are interested in sharing experiences and coordinating efforts towards understanding the dynamics of intangibles and their impact on sustainability in European societies, and beyond.

2- The Agenda rationale

- The project will deal with strategic business issues as well as with meso and macro/societal issues, taking into account the importance of linking these different perspectives
- Societal issues such as sustainability will be integrated into the analysis

The Round table has been initiated, based on two ideas:

- ❖ The importance of linking research to action
- ❖ The existence of a high potential for benchlearning between different targeted communities in the two countries with regards to intangibles' investment and value creation

3- Key topics for the agenda

Among the topics to be considered:

- The status of intangibles and knowledge in our societies
- Accounting, reporting and valuing intangibles: recent experiences and projects.
- Risks related to intangibles
- The new forms of business modeling and their societal implications
- The importance of the public infrastructure for intangibles and contracting (for instance strategic funds for supporting innovation and valuing IPRs)
- The degree of European and international mobility of knowledge /intangibles (the job creation dimension in Europe)
- How to take advantage of aging population

4- The agenda planning and sequences

The Round Table includes three workshops

- The first workshop in Paris (26 September 2011)
- The second workshop in Heidelberg (September 2012)
- A third workshop (place to be determined, possibly at the European parliament)
- In parallel to these formal meetings, several research initiatives and working groups will be initiated under the umbrella of the Round table
- Each of the workshops will be organised around short technical presentations, to stimulate dialogue among participants and partners of the Round Table

5- The first workshop

Paris, The Ministry of Econom t and Finance , September 26 2011

Session 1. Intangible investment and economic growth a comparative analysis of France and Germany	**Session 2**. Information systems and organisational capital as complementary assets	**Session 3.** Reporting and valuing intangibles: The financial analyst perspective
Session 4. Reporting and valuing intangibles (with a specific focus on SMEs)	**Session 5**. IPRs, public funding and open innovation practices	**Session 6.** Looking at the future : Value creation in Knowledge markets, networks and communities

The Franco-German RoundTable on Intangibles
The main discussed points in the First workshop

UNIVERSITÉ PARIS SUD
European Chair on Intellectual Capital Management

RUPRECHT-KARLS-
UNIVERSITÄT
HEIDELBERG

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

MINISTÈRE DE L'ÉCONOMIE
DES FINANCES ET DE L'INDUSTRIE

The New Club of Paris

http://www.chaironintellectualcapital.u-psud.fr/

6- The first workshop:
Key points and minutes from the first workshop

i. intangibles , economic growth, a macroperspective

ii. information systems, organisational capital as complementary assets

iii. Reporting and valuing intangibles: the financial analysts point of view

iv. reporting, valuing intangibles (with a specific focus on SMEs)

v. IPRs, public funding and open innovation phenomenon

vi. knowledge markets, networks and communities

7- Intangible Investment:

Contribution to Growth and Innovation Policy Issues

(Delbecque, Bounfour, 2011)

Methodology

List of intangibles

- Software & database
- R&D
- Artistic originals
- Architecture and engineering design
- Advertising
- Organisation
- Training

- Long time series
- Panel data analysis

10

Estimation - production function

- Cobb-Douglas production function

$$Y = F(K, L, I) = AK^{\alpha} L^{\beta} I^{\gamma}$$

- Y= real GDP including new intangibles

K= real stock of tangible fixed capital

L= labour input (nb of employees)

I = estimated real stock of intangible capital

Estimation - Data

- *Tangible capital:* Stock of real capital (EUKLEMS)
- *Labour*: Average Number of employees per year (OECD)
- *Intangible capital*: CHS-type stock of real intangible capital (CHS, Fukao et al., COINVEST, own calculations),

Estimation - parameters

- Panel data
  - Country x time dimensions
  - Allowing for fixed-effects country specific productivity parameter :

$$Y_{it} = A_i K_{it}^{\beta_1} L_{it}^{\beta_2} I_{it}^{\beta_3}$$

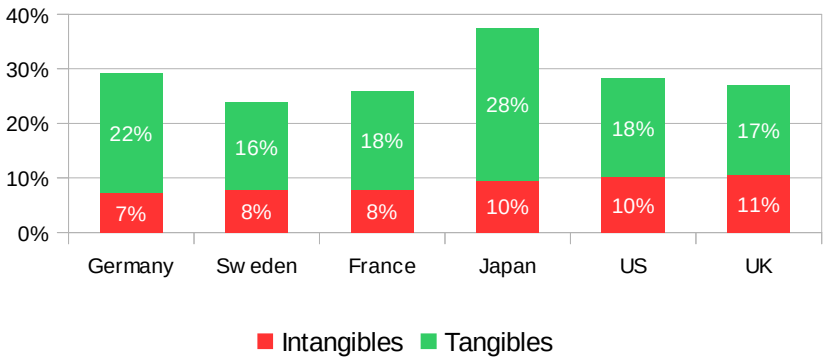
  - Using log-log form :

$$\log Y_{it} = \beta_{0i} + \beta_1 \log K_{it} + \beta_2 \log L_{it} + \beta_3 \log I_{it} + \beta_4 TIME + \varepsilon_{it}$$

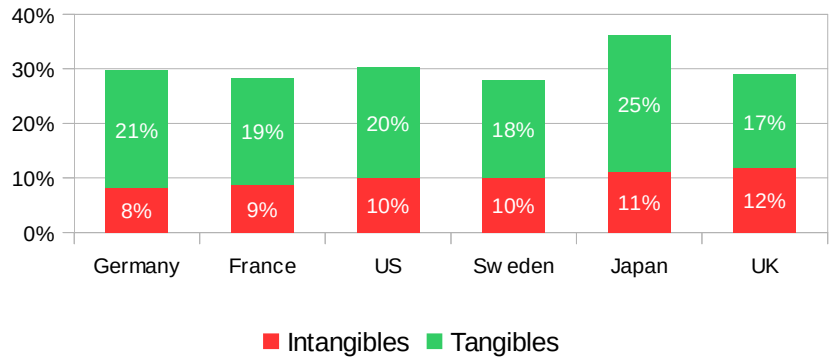
- Individual country OLS

Data – Tangible vs intangible investment

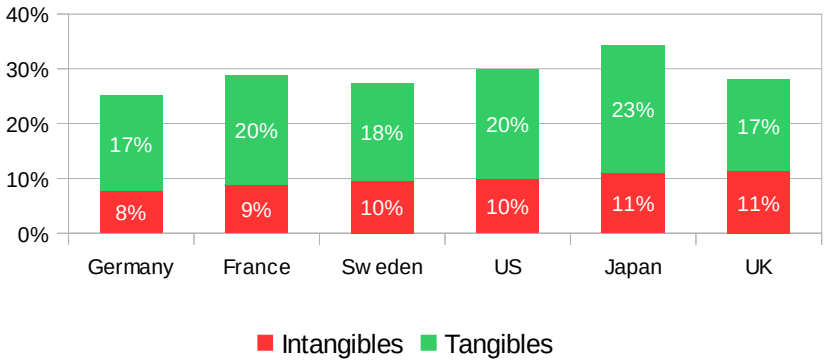
1995



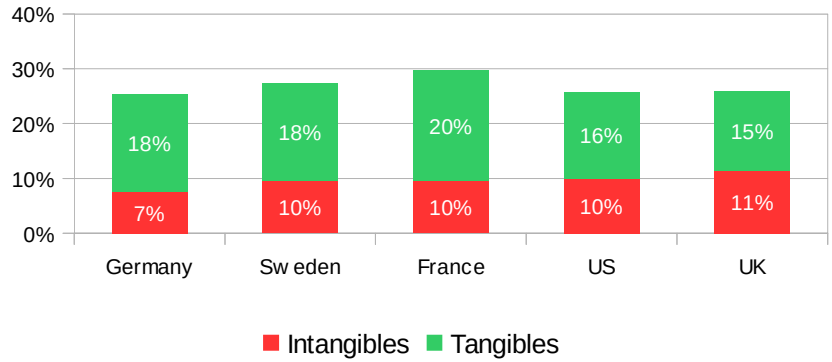
2000



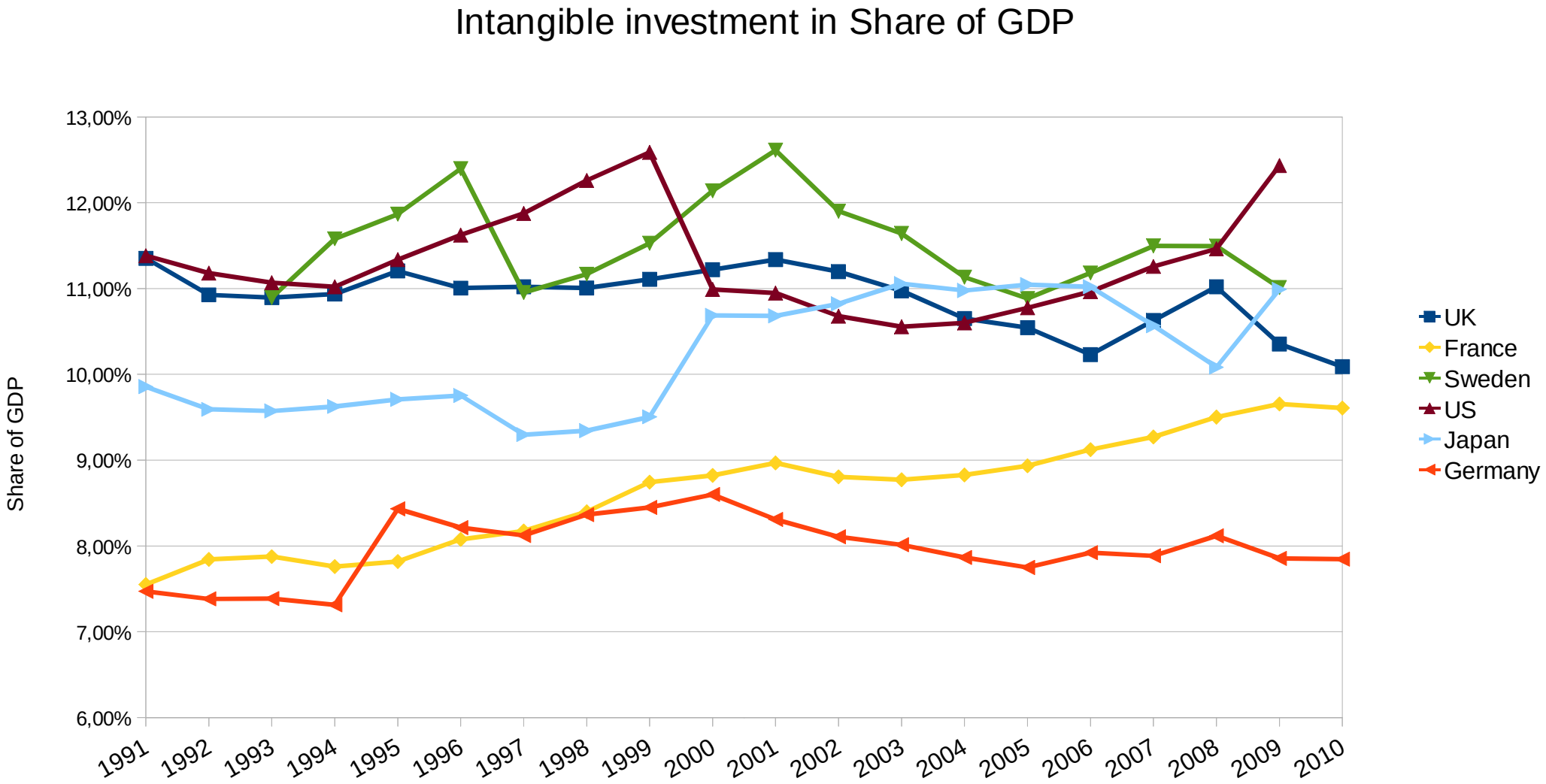
2005



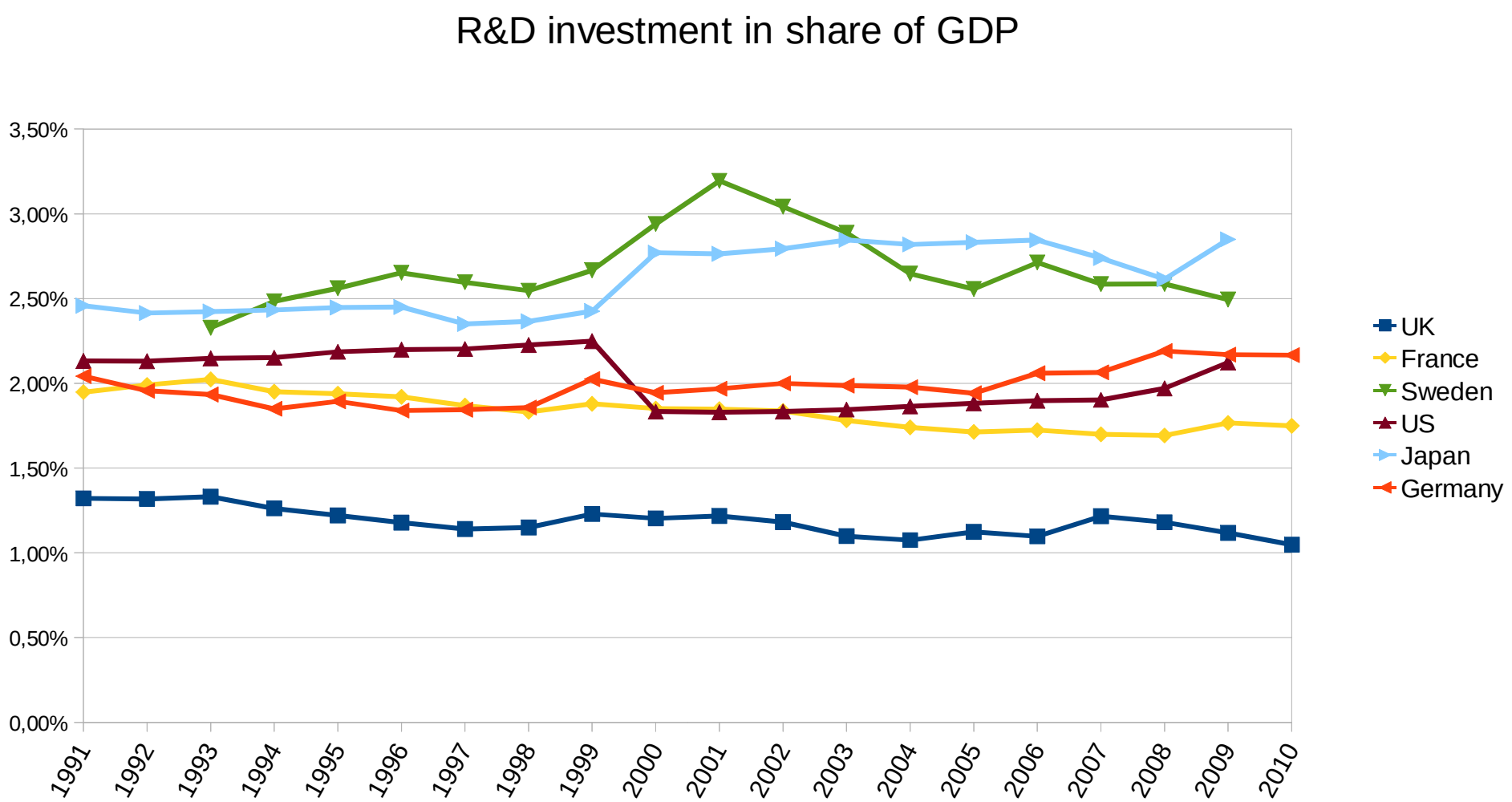
2010



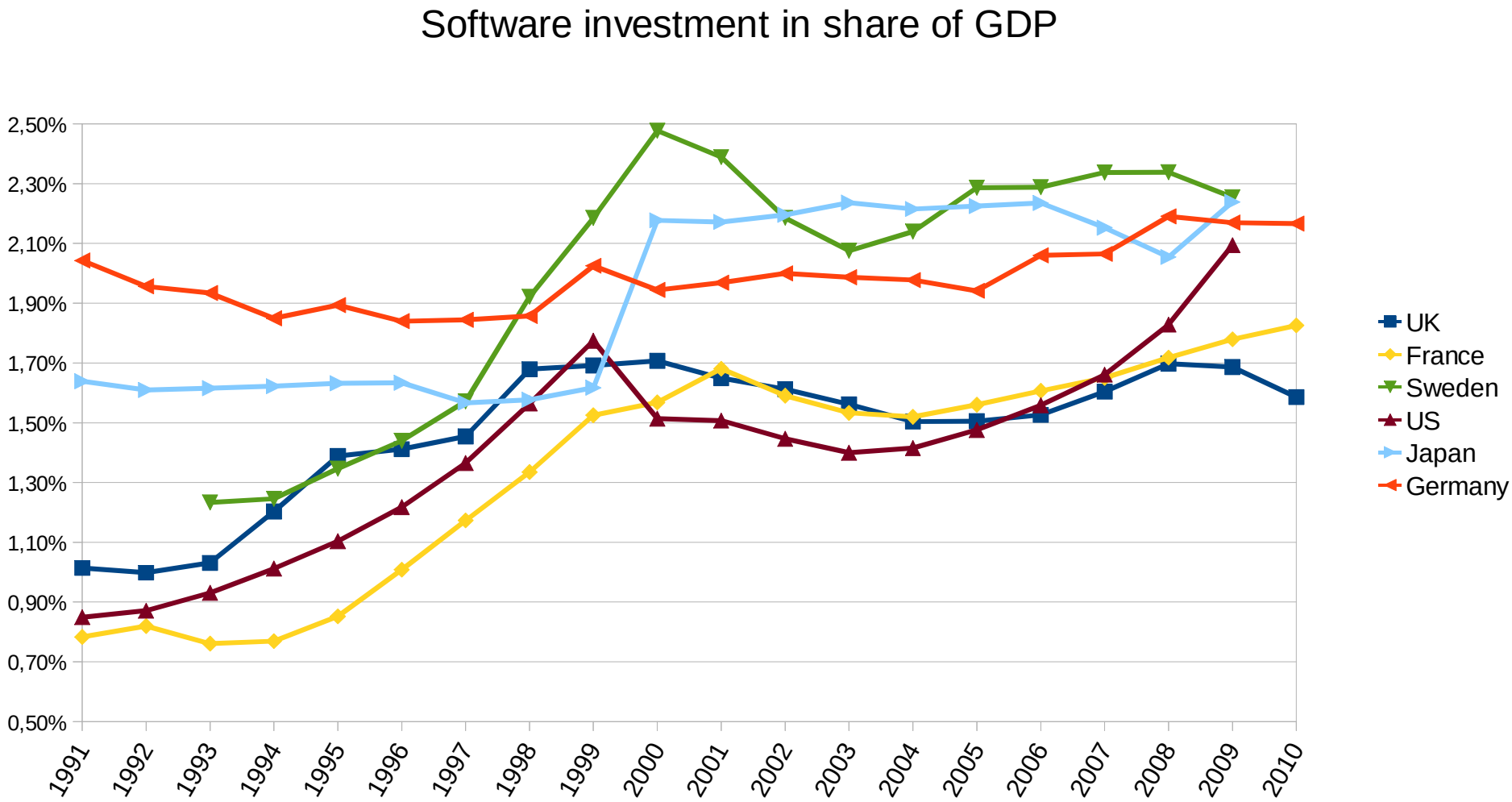
Data – intangible intensity



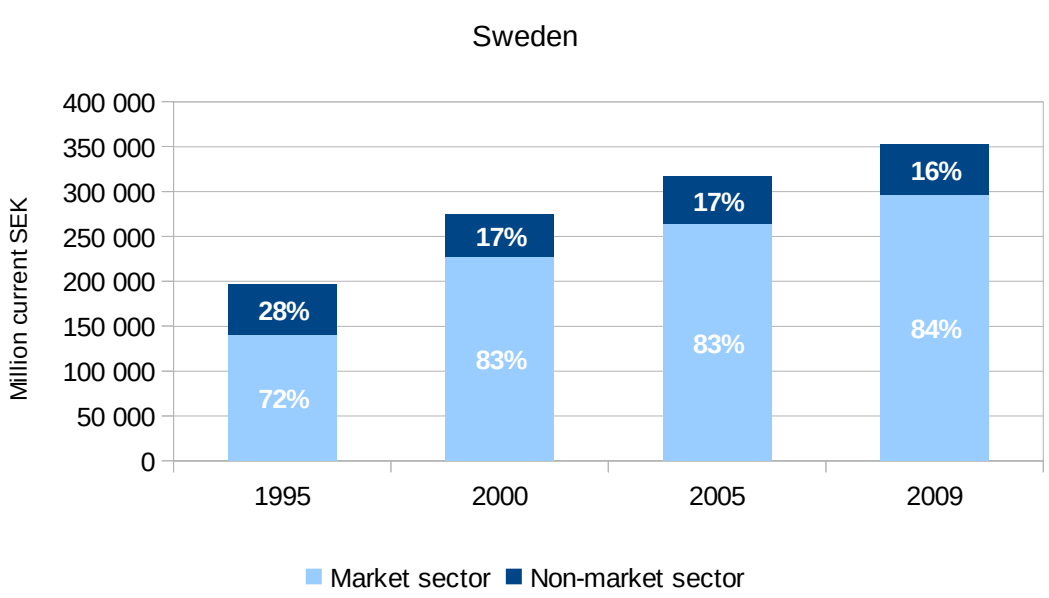
Data – R&D intensity

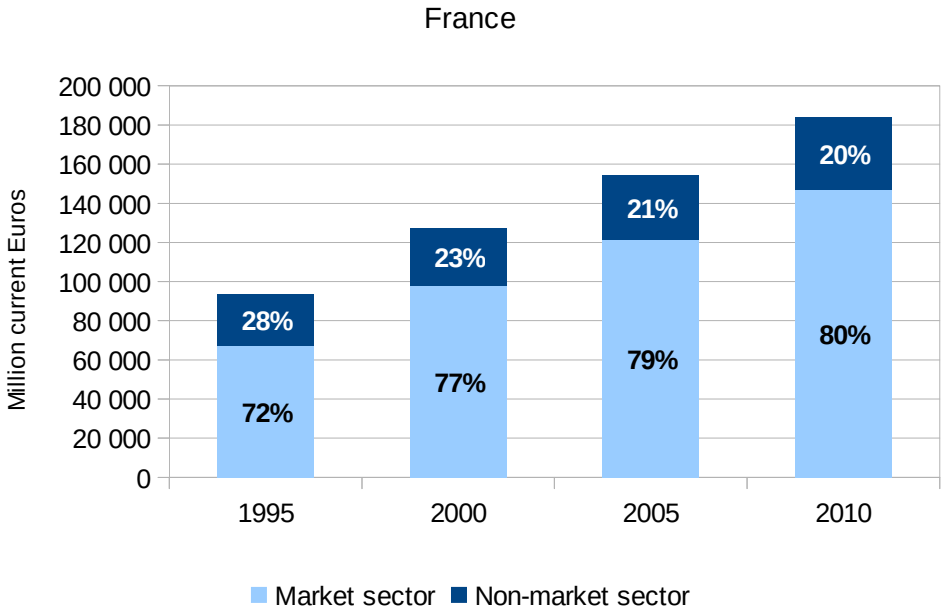


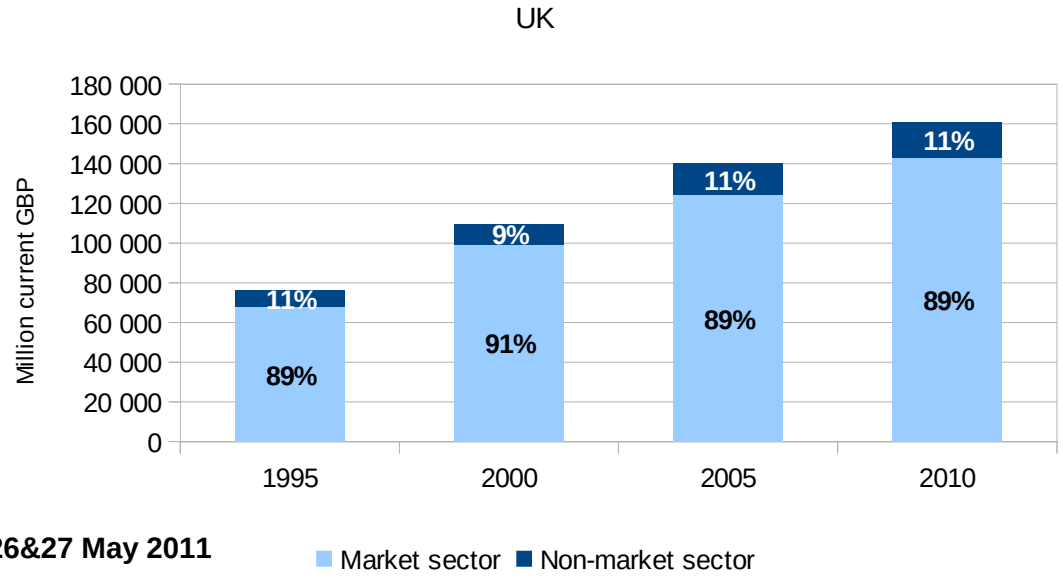
Data – Software intensity

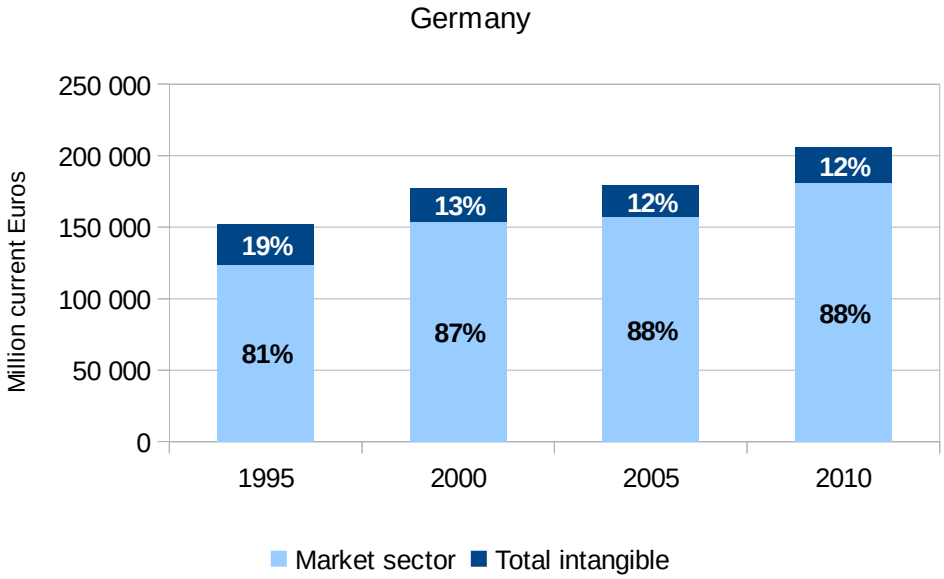


Data – market vs non market









Data - partial correlations

	Labour	Tangibles	soft_data	rd	training	org	copy	arch	fininnov
Labour	1.00000								
Tangibles	**-0.67772** **<.0001**	1.00000							
soft_data	-0.17637 0.1064	0.42040 <.0001	1.00000						
rd	**-0.81355** **<.0001**	**0.83939** **<.0001**	**0.55340** **<.0001**	1.00000					
training	**0.70607** **<.0001**	**-0.75003** **<.0001**	**-0.69613** **<.0001**	**-0.84872** **<.0001**	1.00000				
org	**0.58014** **<.0001**	0.00148 0.9893	**0.52177** **<.0001**	-0.12437 0.2568	-0.04599 0.6760	1.00000			
copy	**0.85482** **<.0001**	-0.39654 0.0002	-0.28319 0.0086	**-0.69652** **<.0001**	**0.67306** **<.0001**	**0.56549** **<.0001**	1.00000		
arch	**0.77608** **<.0001**	**-0.61440** **<.0001**	-0.20187 0.0639	**-0.74219** **<.0001**	**0.62747** **<.0001**	0.29542 0.0061	**0.67007** **<.0001**	1.00000	
fininnov	-0.29375 0.0064	**0.75321** **<.0001**	**0.50569** **<.0001**	**0.59395** **<.0001**	**-0.64781** **<.0001**	0.41642 <.0001	-0.01510 0.8909	-0.38498 0.0003	1.00000

Data - principal component analysis

	Overall Innovation index	Training vs Organisation	Training & Organisation vs R&D	Mainly architecture	Software vs R&D	Organisation vs advertising
	1st PC	2nd PC	3rd PC	4th PC	5th PC	6th PC
Share of total dispertion	52%	26%	16%	3%	2%	1%
Software	0.513809	-.160726	-.243217	0.207315	0.776944	-.066264
R&D	0.468470	0.024126	-.513608	0.350021	-.530415	0.335121
Advertising & Market research	0.509460	-.105767	0.346576	0.031269	-.319327	-.711478
Architecture and design	0.396276	0.506428	-.076072	-.751131	0.029969	0.124954
Training	0.118292	0.657634	0.505818	0.493437	0.102326	0.209096
Organisation capital	0.293187	-.522921	0.543413	-.160781	-.040976	0.563709

Estimation - panel data results

Inputs	A	B	C	D	E	F	G
L	1.97***	1.32***	1.45***	1.70***	1.76***	1.41***	0.91***
K	0.42***	0.39***	0.48***	0.39***	0.35***	0.48***	0.65***
I		0.18***					
I_{Soft}			0.16***				0.24***
$I_{R\&D}$				0.05			-0.13***
I_{adv}					0.11**		-0.06
I_{org}						0.10***	0.15***
R^2	**0.99**	**0.99**	**0.99**	**0.99**	**0.98**	**0.99**	**0.99**

***,** and * denoting estimators significant at 1%, 5% and 10% level respectively

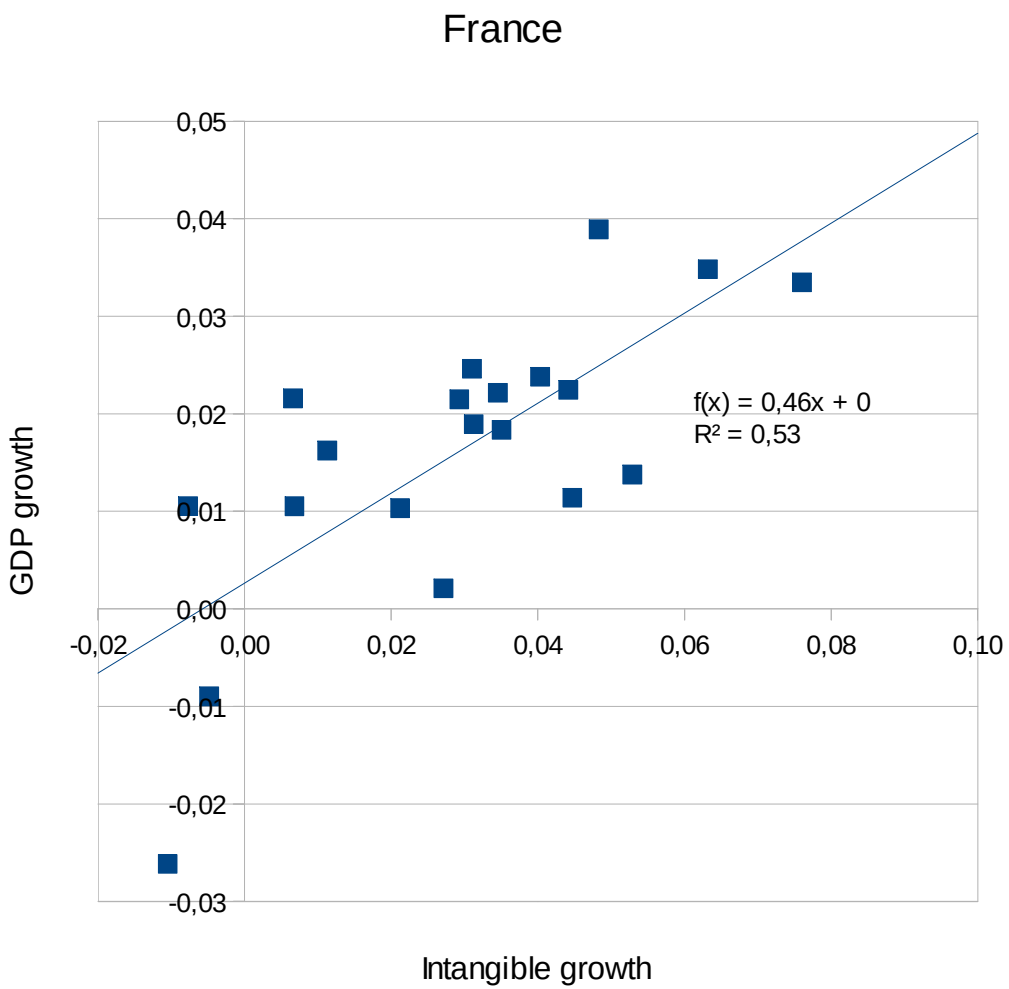
21

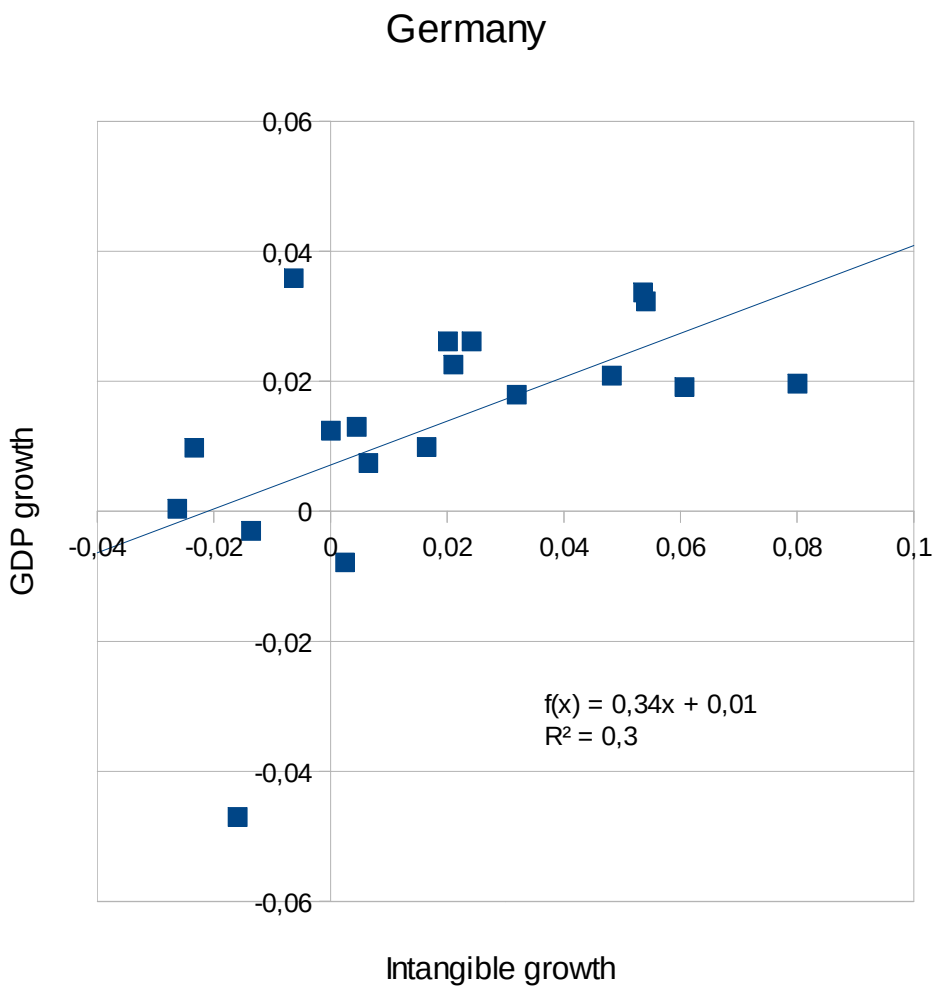
Estimation - panel data results (1)

Inputs	A	B	C	D	E
L	1.97***	1.32***	1.14***	0.80***	1.36***
K	0.42***	0.39***	0.18**	0.38***	0.30***
I		0.18***			
$I_{activated}$			0.01		
$I_{not\ activated}$			0.36***		
Overall index				0.03***	
Training (+) vs Org (-)				-0.01	
Org-training (+) vs Soft-R&D (-)				0.01	
I_{proc}					0.39***
I_{prod}					-0.12*
R^2	**0.99**	**0.99**	**0.99**	**0.99**	**0.99**

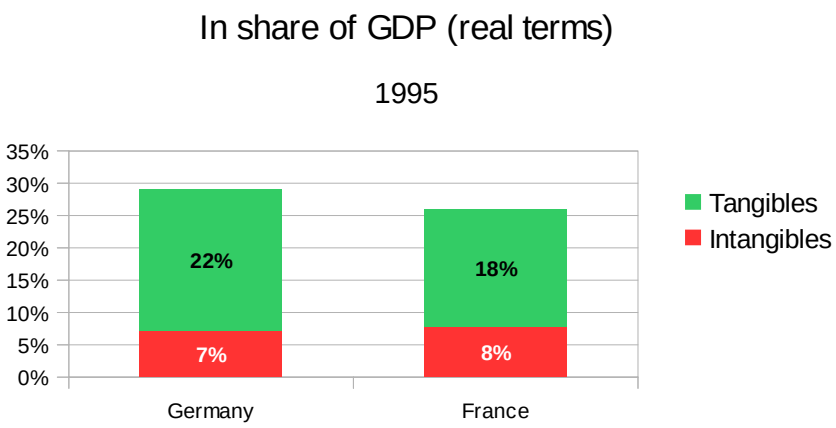
***,** and * denoting estimators significant at 1%, 5% and 10% level respectively

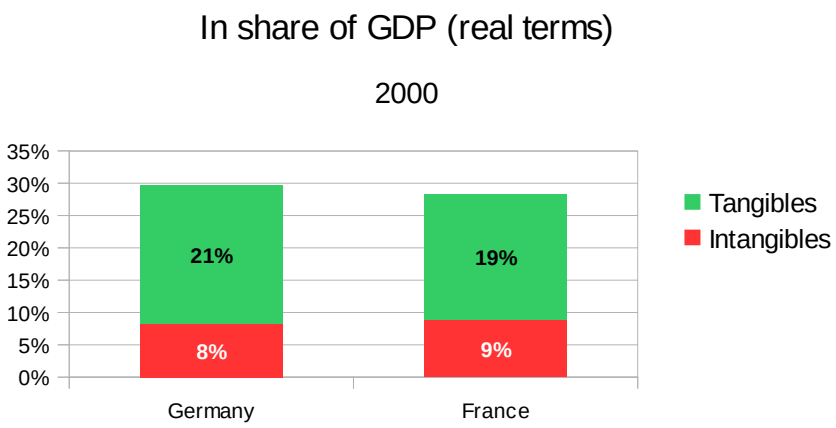
France and Germany - highlights

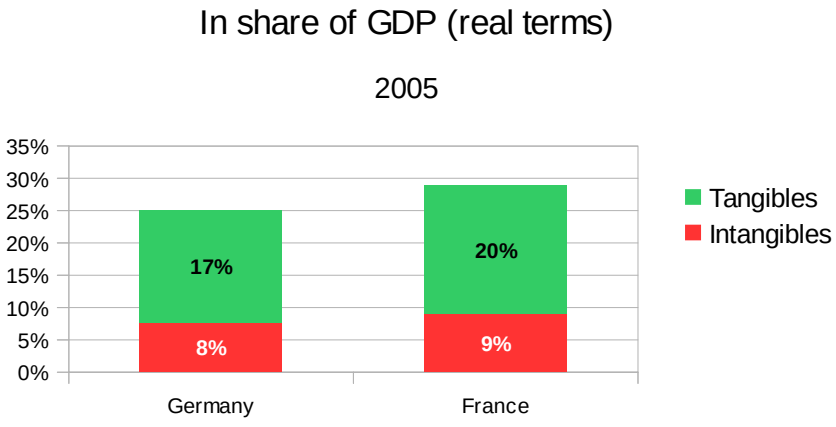


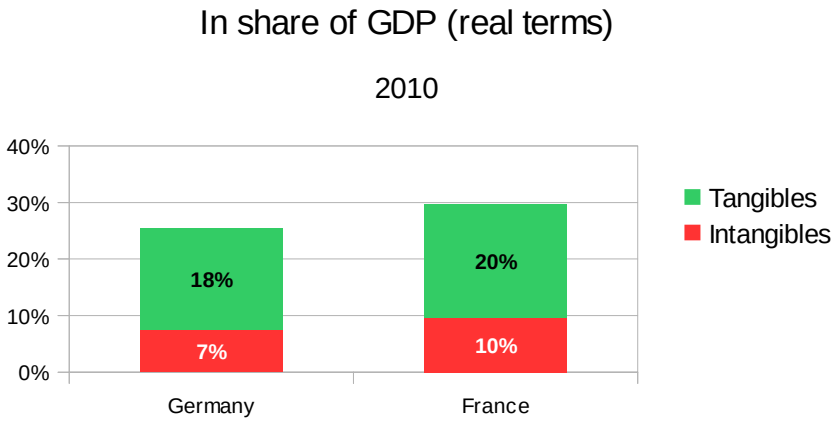


Tangible vs intangible investment in France and Germany

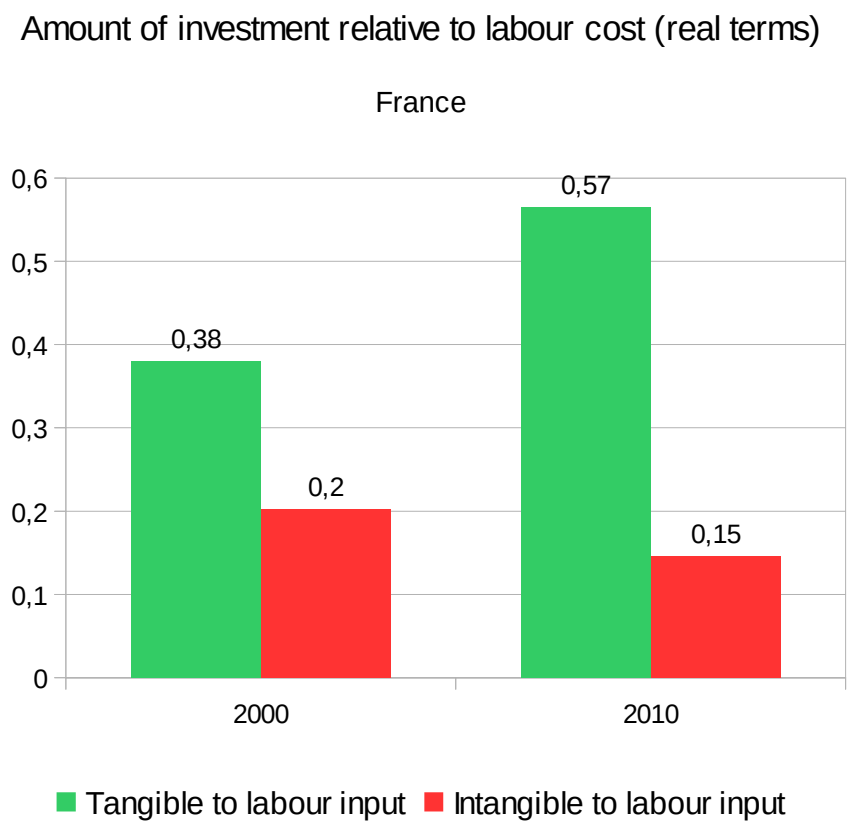


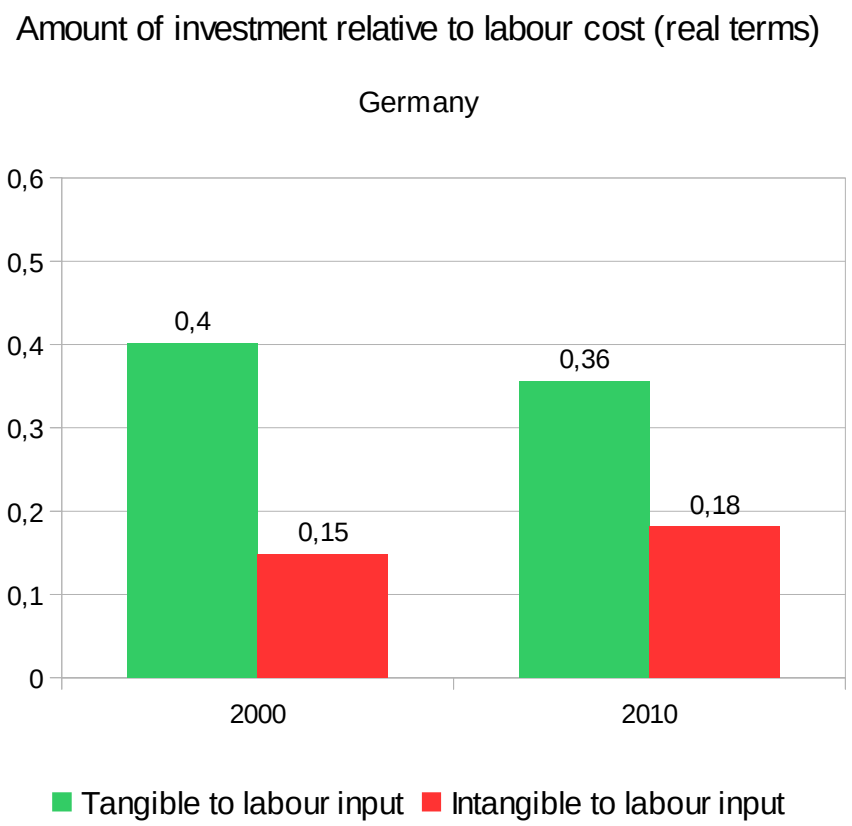






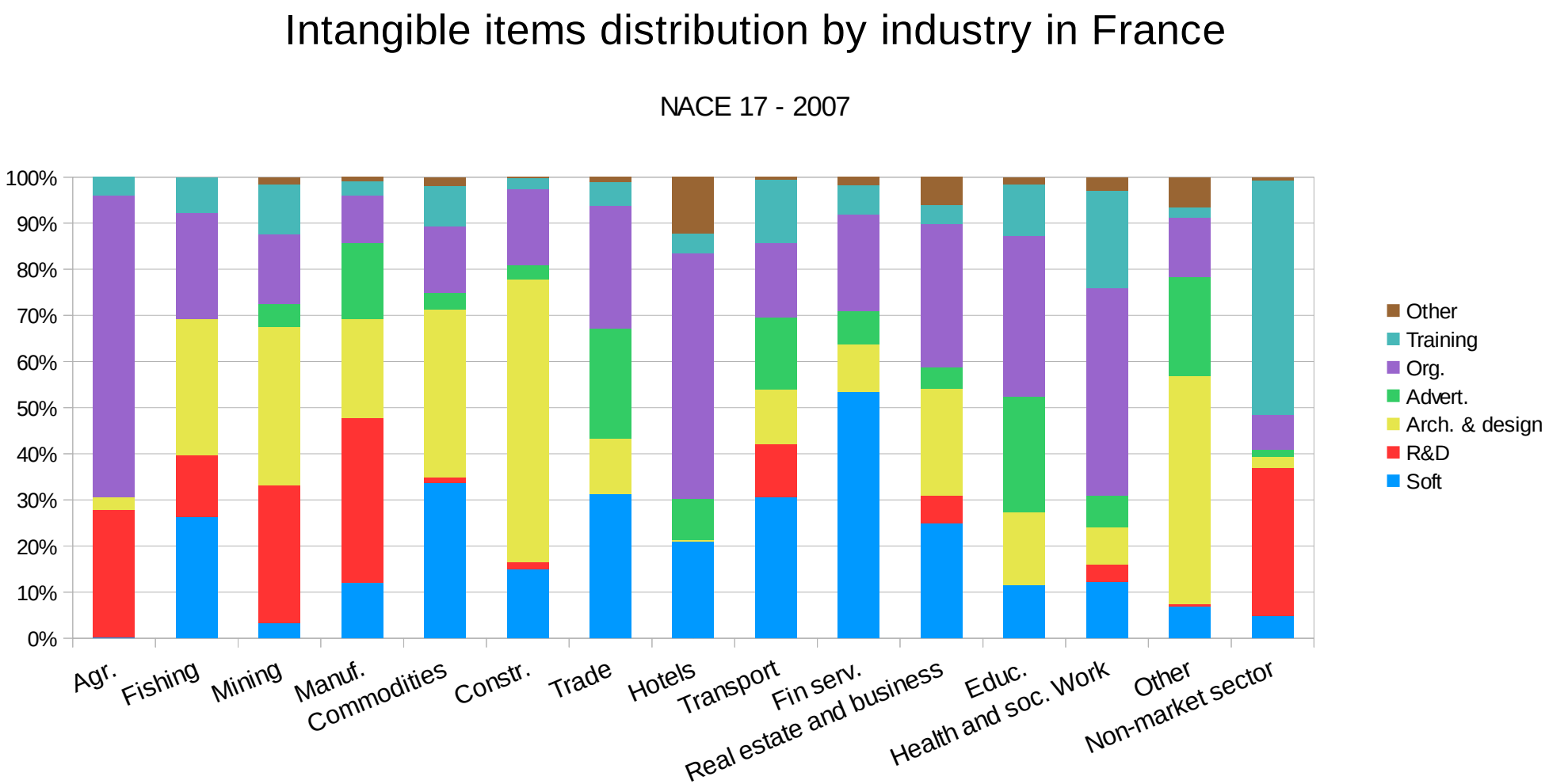
Tangible vs intangible investment in France and Germany



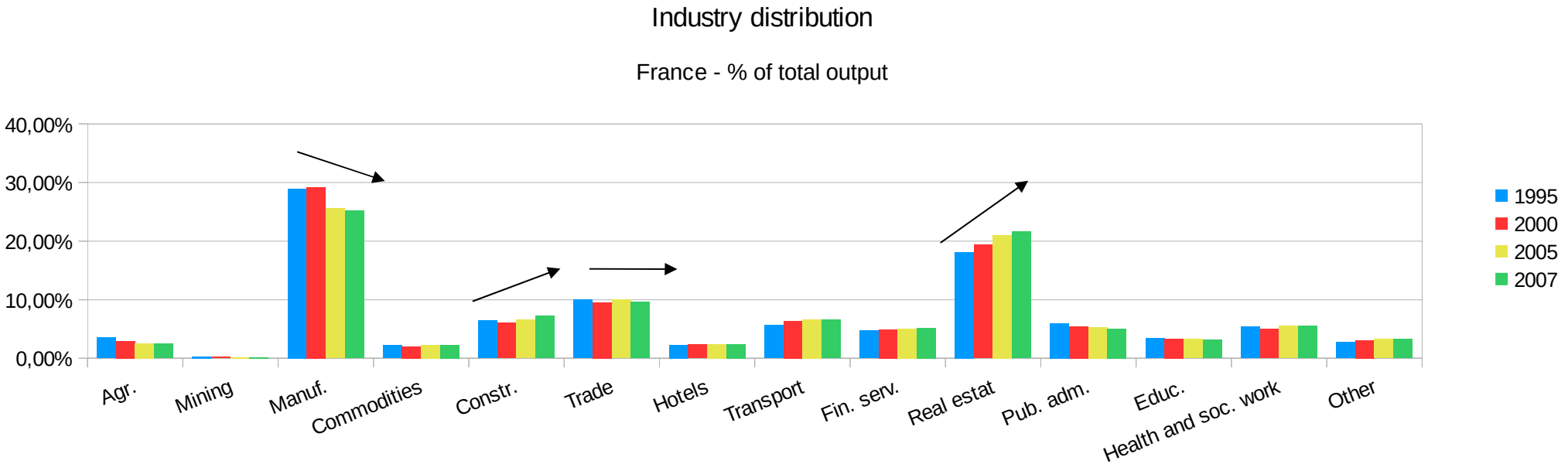


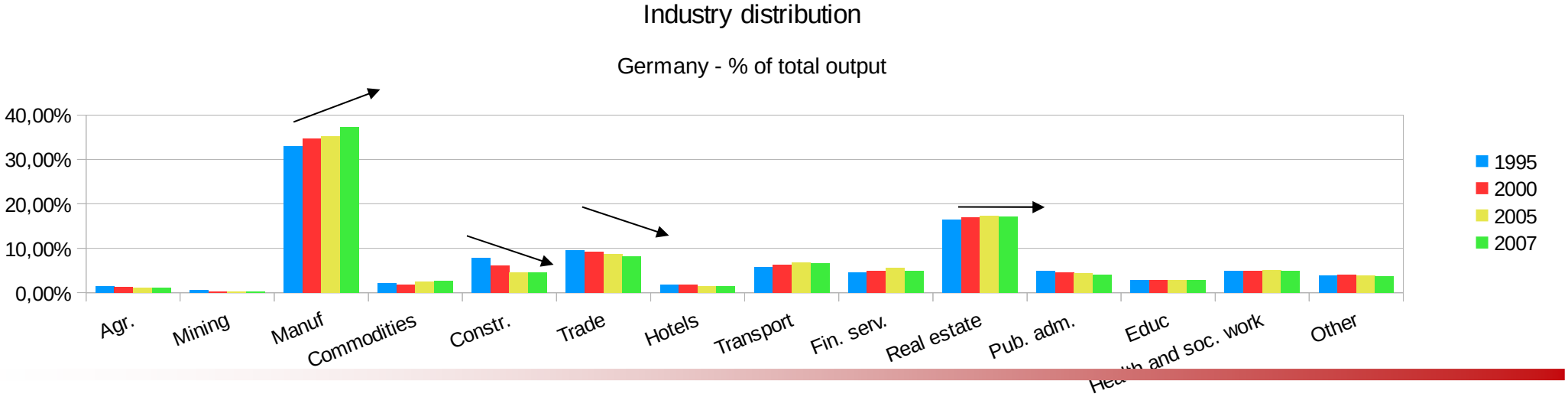
Source: COINVEST, EUKLEMS, own calculation

Industry heterogeneity

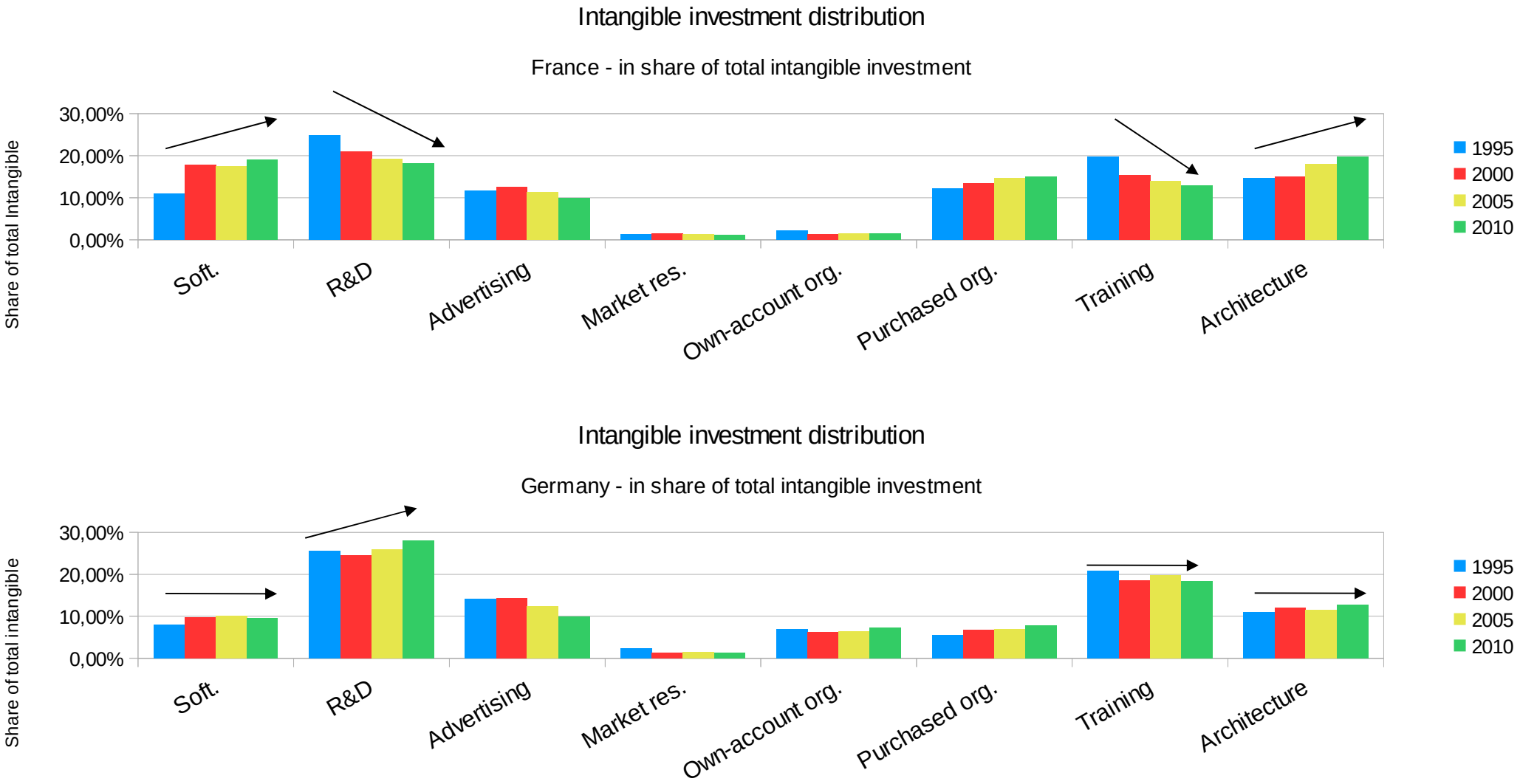


Country heterogeneity



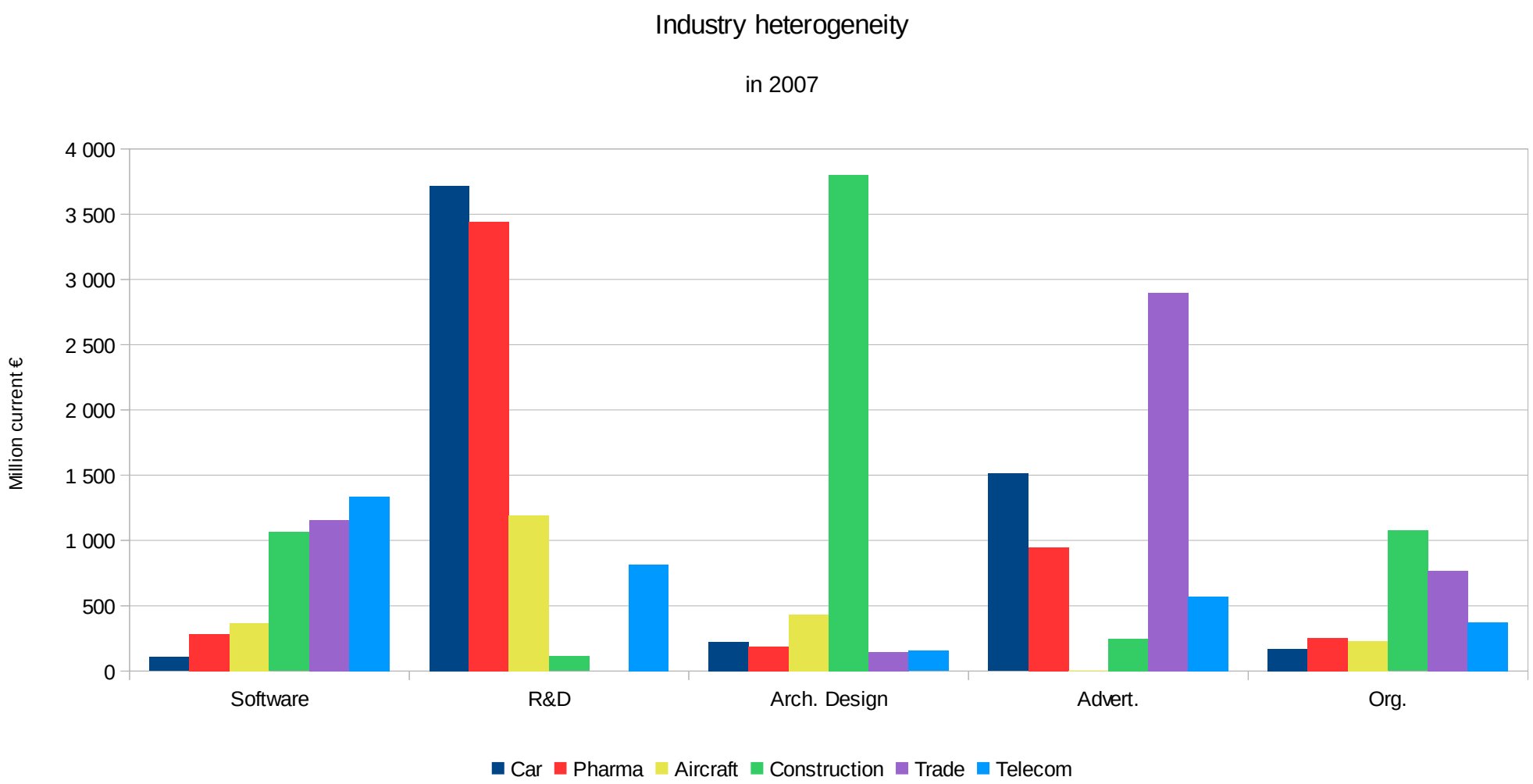


Country heterogeneity

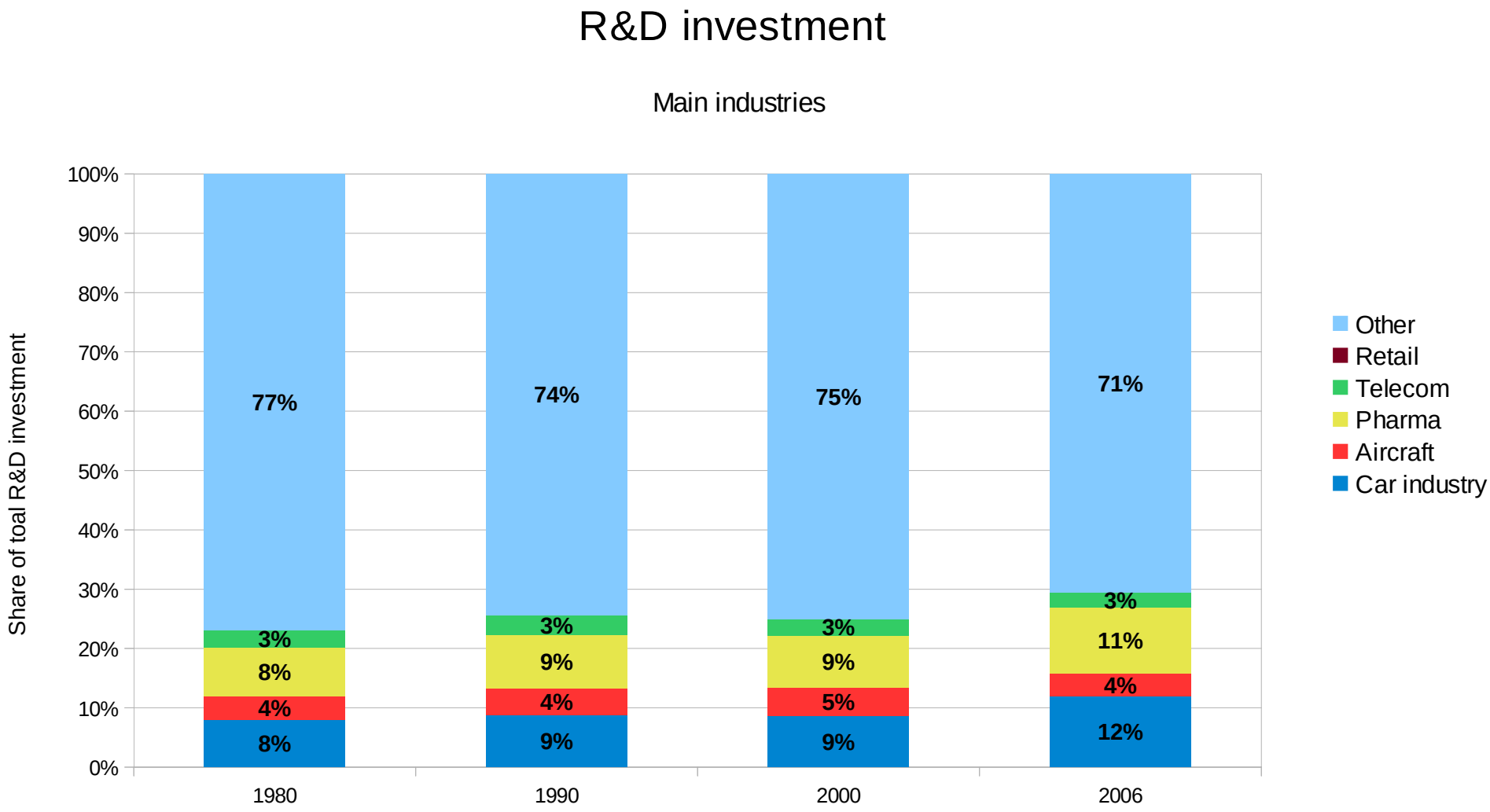


28

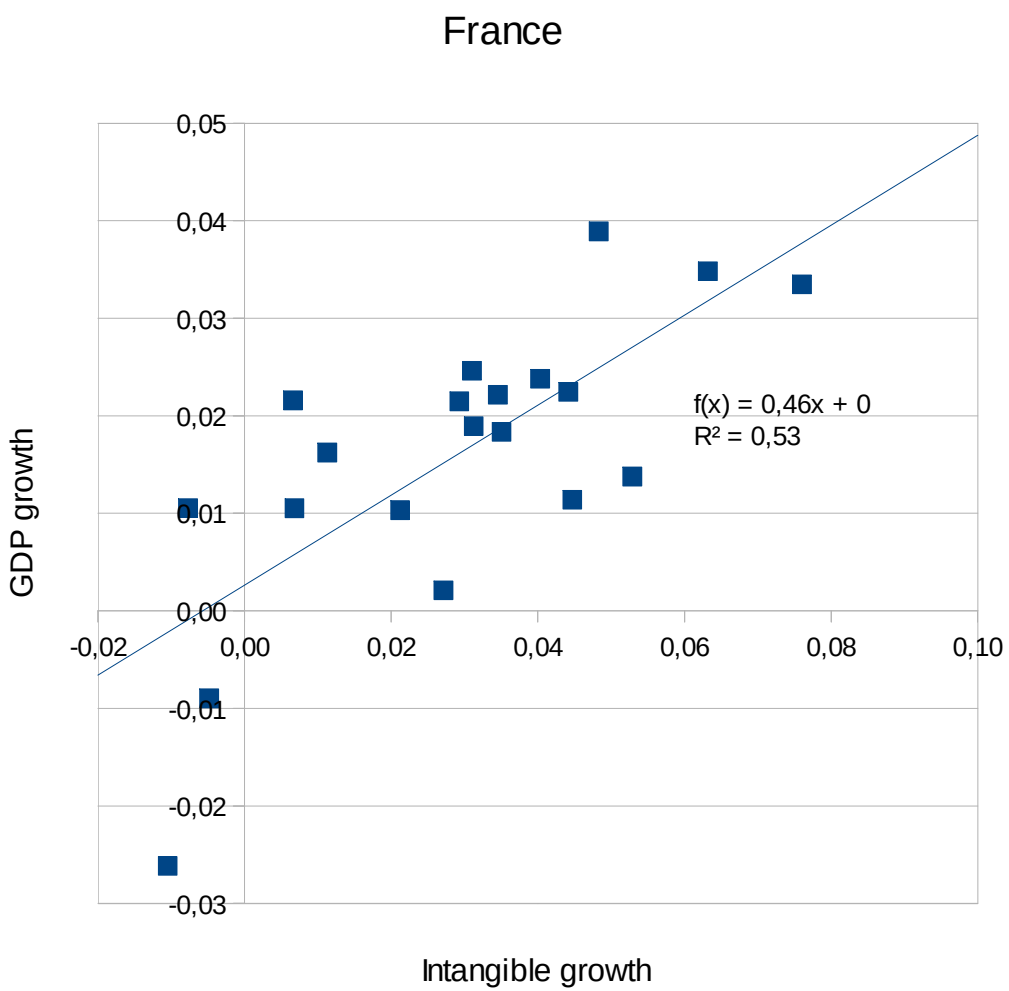
Industry heterogeneity

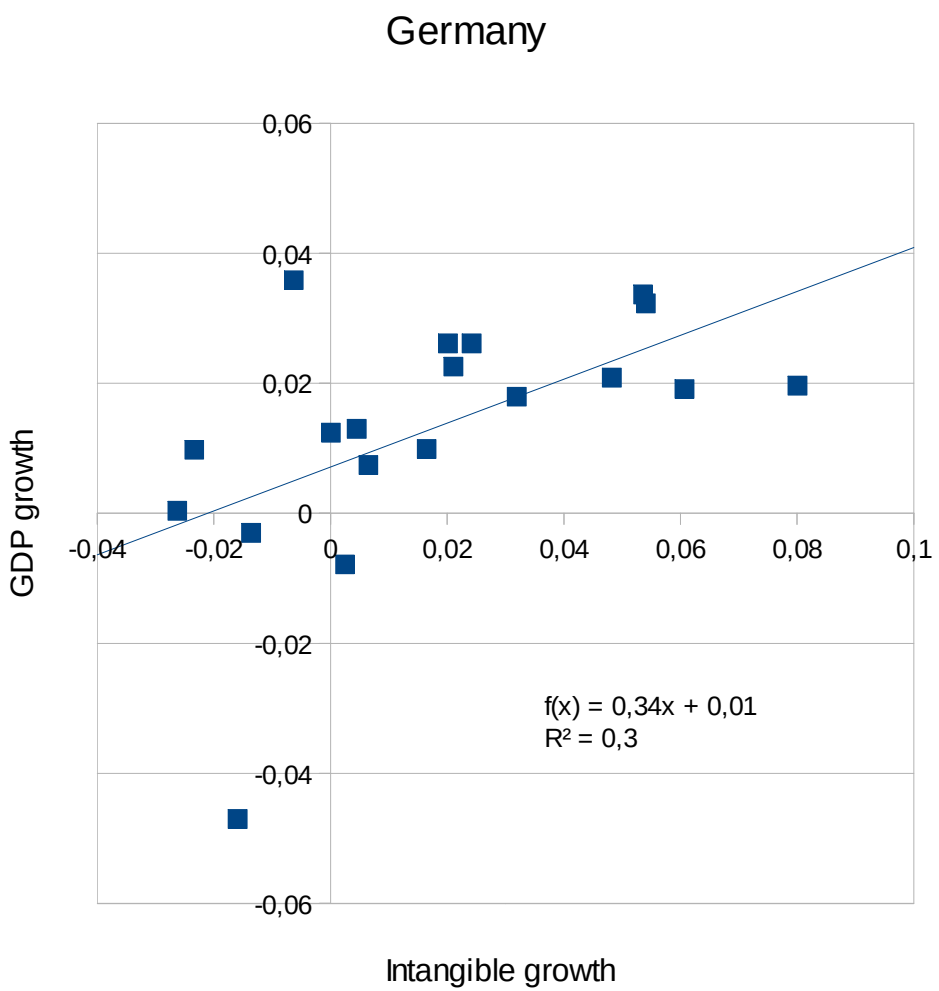


Industry heterogeneity



France and Germany - highlights





Main findings (1/2)

- Intangible capital has a positive impact on growth. Process innovation is more important than product innovation
- Intangible asset complementarity is not straightforwd
- Intangible investment is highly industry-specific
- Need for industry-level innovation policy
- Structures and trends differ between France and Germany

Main findings (2/2)

- Multi-level heterogeneity: need for specific innovation policies (country, industry)
- Deepen the asset complementarity analysis
- Determine industry-level investment strategies
- Include other forms of intangible investment
- Intangible investment differs in trend an structure between France and Germany
- Opportunity for a cross-industry analysis between France and Germany => Advanced innovation policy research through joint analyses

7- The Franco-German Agenda
The Roadmap structure

WP 1 Reporting, Standardards, Conceptual framework	**WP 2** SMEs, Entrepreneurship	**WP 3** Open innovation & IPRs	**WP 4** Knowledge markets, networks and communities
WP 5 Research, public sector and strategic funds	**WP 6** IS & Organisational Capital	**WP 7** New Intangibles New jobs	**WP 8** Macroeconomic, sectoral and cluster /regional performance
WP 9 Demography Social contracts	**WP 10** Cultural, creative industries, creative classes	**WP 11** Fiscal aspects	**WP 12** Dissemination and Benchlearning procedures

UNIVERSITÉ PARIS-SUD 11

European Chair on Intellectual Capital Management

iC 8

Intellectual Capital for Communities
In the Knowledge Economy

Open Innovation, knowledge flow, and the New Innovation Policy agenda

The World Conference on Intellectual Capital for Communities
Eigth Edition

Co-organised by
The European Chair on Intellectual Capital Management, the University Paris-Sud and The World Bank

May 31, June 1st, 2012

World Bank Paris Office,
66, Avenue d'Iéna 75016 Paris, France

With a guest Country: South Korea

Banque européenne d'investissement

OECD OCDE

The New Club of Paris

Thank you for your attention