

Baake, Pio; Wey, Christian

Research Report

Telecommunications Policies in Comparison: Industrial Policy Indicators. Research Project on behalf of Deutsche Telekom AG

DIW Berlin: Politikberatung kompakt, No. 44

Provided in Cooperation with:

German Institute for Economic Research (DIW Berlin)

Suggested Citation: Baake, Pio; Wey, Christian (2008) : Telecommunications Policies in Comparison: Industrial Policy Indicators. Research Project on behalf of Deutsche Telekom AG, DIW Berlin: Politikberatung kompakt, No. 44, ISBN 978-3-938762-35-6, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin, https://nbn-resolving.de/urn:nbn:de:0084-diwkompakt_2008-0447

This Version is available at:

<https://hdl.handle.net/10419/129171>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Politikberatung kompakt

44

Pio Baake • Christian Wey

**Telecommunications Policies in
Comparison: Industrial Policy Indicators**

Berlin, 2008

IMPRESSUM

© DIW Berlin, 2008

DIW Berlin
Deutsches Institut für Wirtschaftsforschung
Mohrenstraße 58
10117 Berlin
Tel. +49 (30) 897 89-0
Fax +49 (30) 897 89-200
www.diw.de

ISBN-10 3-938762-35-7
ISBN-13 978-3-938762-35-6
ISSN 1614-6921
urn:nbn:de:0084-diwkompakt_2008-0447

Alle Rechte vorbehalten.
Abdruck oder vergleichbare
Verwendung von Arbeiten
des DIW Berlin ist auch in
Auszügen nur mit vorheriger
schriftlicher Genehmigung
gestattet.

DIW Berlin: Politikberatung kompakt 44

Pio Baake, Christian Wey*

Telecommunications Policies in Comparison: Industrial Policy Indicators

Based on contributions by:

Michel Berne, Département SGES, France

Peter J. Curwen, Sheffield Hallam University, United Kingdom

Fernando Gallardo, Universidad Autónoma de Madrid, Spain

Daniel Nepelski, DIW Berlin

Teodosio Pérez-Amaral, Universidad Complutense de Madrid, Spain

Gérard Pogorel, TELECOM ParisTech, France

Enzo Pontarollo, Università Cattolica del Sacro Cuore Milano, Italy

Vanessa v. Schlippenbach, DIW Berlin

Jason Whalley, University of Strathclyde, United Kingdom

Research project on behalf of Deutsche Telekom AG

Berlin, 18. August 2008

Executive Summary

1. The objective of this study is to identify and compare policy measures that different countries adopt to promote their telecommunication markets. The analysis covers industrial policy measures that are relevant for the development of telecommunication markets and have a direct impact on incumbents. Five European countries are analysed: France, Germany, Italy, Spain and the UK.
2. The following fields of industrial policy have been selected as significant for telecommunication markets: fiscal measures, labour market conditions, competition policy, state support and state shareholding.
3. Results are presented in the form of combined indicators. Scores are attributed to reflect whether national policies are comparatively favourable to the incumbents. Policy measures are considered as being favourable to the incumbent if they spur demand for telecommunication services, if they do not restrict the incumbent's business strategies or if they directly affect the incumbent in a positive way.
4. The main results from the analysis and the ranking of the different countries can be summarized as follows:
 - The combined indicator shows France and the United Kingdom as the countries with the most favourable industrial policies. Spain and Italy are ranked above Germany which is scored lowest.
 - This result expresses a strong willingness of the **French** government to use its position as a major shareholder to protect the incumbent. Additionally, competition policy in France is most favourable to the incumbent.
 - In the case of the **United Kingdom**, a strong support of e-government activities, very liberal labour market regulations and favourable fiscal measures result in a high overall score.
 - **Spain's** rank can be explained by a reluctance to engage in indirect support of the telecommunication industry, relatively restrictive labour market regulation and the absence of state ownership in the incumbent. On the other hand, competition policy in Spain is relatively favourable to the incumbent.

- The **Italian** incumbent benefits from a wide range of fiscal measures and other measures that promote telecommunication markets. However, competition policy is most unfavourable to the incumbent. While the state keeps a golden share in Telecom Italia, this involvement does not concern day-to-day decisions or strategic issues. It rather reflects the fact that Telecom Italia is considered a national asset. Taking all this in to account, we find that Italy is ranked below Spain.
 - **Germany's** scores are mostly below average. This can be explained by modest state support in terms of fiscal measures and state demand, as well as a rather unfavourable competition policy.
5. Analysing the different policy measures in greater detail leads to the following observations:
- Regarding **fiscal measures**, two indicators were used: ICT related tax incentives and the taxes paid by incumbents relative to their profits. In all countries apart from Italy the general attitude is that tax advantages are considered as inappropriate measures to enhance growth in telecommunication markets. Indirect effects might occur through support for innovation related activities in SMEs, for R&D and for the training of personnel in technology oriented occupations. However, the indicator for 'fiscal measures' shows some relevant variation among countries: Italy scores highest combining a wide range of tax incentives to support the diffusion of computer and communication technology usage with a rather unfavourable position with respect to the tax burden of the incumbent. In France the absence of tax incentives for ICT goods and services together with relatively high tax payments result in very low scores for this indicator. Germany is in a rather disadvantageous position due to the lack of ICT related tax incentives.
 - **Labour market** conditions are measured by two indicators. The first indicator measures the overall labour market rigidity of each country's employment regulations. The second indicator measures the flexibility each incumbent has concerning its personnel strategies to optimize its productivity. Considering the combination of these indicators, the UK labour market conditions are most favourable to the incumbent. Germany and Spain are the countries which are ranked lowest in this respect.

- **Competition policy:** We started the generation of our competition policy indicator with a country-wise investigation of merger cases. Overall, we found that competition regimes differ substantially from country to country. This observation holds both with regards to political influence and procedural issues. Overall, the competition policy environments under which mergers in the telecommunications sector have to be contemplated and executed differ considerably. While we have to deal with unobserved heterogeneity, our assessments based on the facts collected in the country studies allow us to rank the countries according to whether competition policy is more or less favourable to the incumbent. Countries in which merger activity of the incumbent has not been inhibited by competition measures obtain a relatively higher score. The highest scores are reached in France and Spain. In those countries none of the major acquisitions of the incumbent has been blocked or restricted by the imposition of unduly obligations. Taking the political climate into account, we found that competition policy in France (and - with some qualifications – in Spain) appeals most strongly to the idea of “big is beautiful” and the building of national champions. Accordingly, we consider competition policy as most favourable to the incumbent in France with Spain following in close distance. In the case of the United Kingdom we observed a rather lenient policy, but the absence of major merger cases, makes it almost impossible, to come to a decisive conclusion. The United Kingdom, therefore, ranges between France and Spain on the one hand and Italy and Germany on the other hand. Italy obtains the lowest score and Germany a slightly better one. In Italy, the competition authority virtually blocked the proposed takeover of a very small firm by Telecom Italia while mergers among competitors were never challenged. With respect to Germany, we found that competition policy in the form of merger control in the telecommunications industry takes a restrictive pattern when the core business of the incumbent is involved. Moreover, our analysis of merger control in Germany vis-à-vis competitors has shown that the competition authority is willing to let otherwise anti-competitive mergers go through if they create a threat to the incumbent’s assumed dominant positions telecommunications markets; a fact which we regard as unfavourable to the incumbent.
- **State support:** Measures that promote the use of telecommunication services are represented in three sub-indicators. ‘Infrastructure aid’ measures the extent to which the state promotes telecommunication infrastructures. In addition, government priorities

for the promotion of ICT and the success of government policies in this field have been measured ('ICT support'). State demand has been approximated by an indicator for the realisation of e-government. Italy stands out from the rest of the countries due to a vast range of programmes that promote ICT infrastructure and diffusion. The UK is next in line with decisive infrastructure support and relatively high state demand as factors driving this score. Germany shows relatively low scores. This is true for ICT support as well as state demand.

- **State as shareholder:** The shareholder indicator observes the development of debt of the incumbents in the reference countries and the level of state ownership. In addition qualitative evidence has been used to answer the question of whether governments would tolerate a foreign takeover of the incumbent. Figures show that those firms with a major share of state ownership show higher debt over the years. The net debt / EBITDA ratios present a less pronounced relationship between state ownership and debt levels. Taking the levels of indebtedness tolerated by financial markets, there seems to be considerable advantage in the support incumbent firms can get, if the state is a major shareholder. Thus, the indicator positions France Télécom at the top of the scale, followed by Deutsche Telekom and – followed by a lag – Telecom Italia and Telefónica. In the UK, the special relationship between the former monopolist and the state is only marginally visible.

6. A few points need to be mentioned when interpreting the results:

- The indicator system only presents relative positions and no absolute judgment on the adequacy of industrial policies or regulatory measures is made.
- The indicators are related to whether policies are favourable to the incumbent. No judgement is implied as to whether the adopted policies (or the support of a national champion) are beneficial for telecommunication markets or the economy as a whole.
- Results presented in the form of intensity scales tend to create greater differences between countries than results based on quantitative figures. This effect is due to the construction of the indicator. Choosing a shorter scale would reduce these differences and result in indicators that lie even closer together.

Table of Contents

Executive Summary	I
I Scope of the study and methodology	1
I.1 Scope of the study	1
I.2 Methodology	1
II Industrial Policy	3
II.1 The industrial policy indicator system	4
II.2 Fiscal measures	6
II.2.1 Country comparison	7
II.2.2 The Indicator	17
II.3 Labour market regulation	18
II.3.1 Country comparison	19
II.3.2 The Indicator	33
II.4 Competition policy	35
II.4.1 Country comparisons	36
II.4.2 The indicator	44
II.5 State Support	46
II.5.1 Infrastructure aid	46
II.5.1.1 Country comparison	47
II.5.1.2 The Indicator	63
II.5.2 ICT support	64
II.5.2.1 Country comparison	64
II.5.2.2 The Indicator	71
II.5.3 State demand	73
II.5.3.1 Country comparison	73
II.5.3.2 The Indicator	95
II.6 State as a shareholder	96
II.6.1 Country comparison	96
II.6.2 The Indicator	117
III Industrial policy indicators	119
III.1 Incumbent and market related indicators	119
III.2 The overall picture	121
III.3 Changing the weighting scheme	123
IV Summary	124
V Appendix	127
VI References	130

List of Tables

Table II-1 Indicators: Definition, data sources, weights	5
Table II-2 Nominal and effective average tax rates in %	8
Table II-3 Actual tax rates of incumbents based on aggregate tax payments and aggregate profits (2003- 2005)	8
Table II-4 Profit, taxes and tax rates of Deutsche Telekom.....	9
Table II-5 Profit, taxes and tax rates of France Telecom	10
Table II-6 Profit, taxes and tax rates of Telecom Italia.....	11
Table II-7 Profit, taxes and tax rates of Telefónica.....	12
Table II-8 Goodwill additions of Telefónica.....	12
Table II-9 Profit, taxes and tax rates for British Telecom.....	15
Table II-10 Tax burden indicator	17
Table II-11 Tax deductions indicator	17
Table II-12 Fiscal measures indicator	18
Table II-13 The OECD Employment Protection Legislation Index (1990 and 2003)	20
Table II-14 The World Bank Employment Regulation and Legislation Index (2006)	22
Table II-15 Main lines per employee: Development	23
Table II-16 Civil servants in Deutsche Telekom and France Telecom.....	24
Table II-17 Contributions by Deutsche Telekom to the pension fund (estimates)	28
Table II-18 Development of personnel	32
Table II-19 Labour Market Reform in Spain	33
Table II-20 Employment protection sub-indicator	34
Table II-21 Employment flexibility sub-indicator	34
Table II-22 Labour market regulations	35
Table II-23 Phase II merger decisions of the German Cartel Office (2000-2006)	37
Table II-24 Competition policy indicator.....	44
Table II-25 Irisé.....	50
Table II-26 Teloise	50
Table II-27 Pau Broadband Country	51
Table II-28 Albacom.Amps – Parma	54
Table II-29 Lepida – Region Emilia-Romagna.....	54
Table II-30 ENS Gestor Project	58
Table II-31 Proyecto Mercurio.....	59
Table II-32 Guadalinfo.....	59
Table II-33 Connected Communities – Western Isle (Infrastructure).....	62
Table II-34 Cambridgeshire Community Network (Infrastructure).....	63
Table II-35 Infrastructure aid indicator	64
Table II-36 ICT support	65
Table II-37 Support of broadband access.....	68

Table II-38 Support of digital television decoder	69
Table II-39 ICT prioritisation.....	71
Table II-40 ICT support measures	72
Table II-41 ICT support indicator	72
Table II-42 e-Government 2006.....	74
Table II-43 e-Government development in selected countries.	75
Table II-44 IT spending for e-government (2004 and 2008) in million €.....	75
Table II-45 State demand indicator	95
Table II-46 Shareholding of the state in %	96
Table II-47 Development of net debt burden in million €.....	97
Table II-48 Net debt ratios 2005	97
Table II-49 State representatives.....	102
Table II-50 Shareholdings of Telecom Italia	105
Table II-51 Timeline of government involvement in BT.....	110
Table II-52 Analysis of BT's shareholdings	112
Table II-53 Contributions to debt reduction (2001-2002) in million \$	114
Table II-54 BT's credit ratings.....	115
Table II-55 Shareholder indicator	118
Table III-1 Incumbent related indicator	120
Table III-2 Incumbent related indicator including infrastructure aid.....	120
Table III-3 Market related indicator for industrial policy	121
Table III-4 Aggregate indicator for industrial policy.....	122
Table III-5 Industrial policy indicators: weighting scheme II.....	124
Table V-1 Main lines and employees in Germany.....	127
Table V-2 Main lines and employees in France.....	127
Table V-3 Main lines and employees in Italy	128
Table V-4 Main lines and employees in Spain	128
Table V-5 Main lines and employees in UK.....	129

List of Figures

Figure II-1 Goodwill amortization in Telefónica.....	13
Figure II-2 Corporate tax savings for Telefónica.....	13
Figure II-3 Fiscal measures indicator.....	18
Figure II-4 Labour market regulation indicator	35
Figure II-5 Competition policy indicator	45
Figure II-6 Shareholder indicator	119
Figure III-1 Overall indicator.....	123

List of Boxes

Box II-1 Calculation of effective average tax rates (Devereux, Griffith, Klemm (2002))	7
Box II-2 Public Private Partnerships	47
Box II-3 Carte Vitale.....	82
Box II-4 MINEFI Story	83
Box II-5 EPIC.....	101

List of Abbreviations

3G	3rd Generation Mobile Telecommunication System (e.g. UMTS)
ADELE	ADministration ELEctronique (France)
AdER	Administration En Réseau (France)
ADSL	Asymmetric Digital Subscriber Line
BMBF	Federal Ministry for Education and Research (Germany)
BMF	Federal Ministry of Finance (Germany)
BT	British Telecom
CFC	Congé de fin de carrière (France)
CMT	Comisión del Mercado de las Comunicaciones (Spain)
CNIPA	National Agency for the Information Technology in the Public Administration
CNS	National Services Card (Italy)
CPA	Central Public Administration (Italy)
DG	Directorate General (EC)
DSL	Digital Subscriber Line
DT	Deutsche Telekom (Germany)
DTI	Department for Trade & Industry (UK)
DTT	Digital Terrestrial Television (Italy)
EATR	Effective Average Tax Rate
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EC	European Commission
ECDL	European Computer Driving Licence (Italy)
eGU	e-Government Unit (UK)
EPIC	Etablissement public à caractère industriel ou commercial (France)
EPL	Employment Protection Legislation
EU	European Union
FT	France Telecom (France)
GSI	Government Secure Intranet (UK)
ICT	Information and Communication Technology
IP	Internet Protocol
IPC	Index of Prices (Italy)
IPO	Initial Placement Option
IS/IT	Information Services/Information Technology (UK)
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
IST	Information Society and Technology
IVBB	Berlin-Bonn Information Network (Germany)
IVBV	Federal Administration Information Network
IWF	Internet Watch Foundation
JISC	Joint Information Systems Committee (UK)
KDG	Kabel Deutschland GmbH (Germany)
KfW	Kreditanstalt für Wiederaufbau (Germany)
LLU	Local Loop Unbundling [‘unbundled local loop’?]
LPA	Local Public Administration (Italy)
MAN	Metropolitan area network

MAP	Ministry of Productive Activities (France)
MINEFI	Ministries of Finance, Budget, Trade and Industry (France)
NHS	National Health Service (UK)
NPV	Net Present Value
OGC	Office of Government Commerce (UK)
OLO	Other Licensed Operator (Italy)
ÖPP	Öffentlich-private Partnerschaften (Germany)
PFI	Private Finance Initiative (UK)
PISTA	Advanced Telecommunications Emerging Services Identification Promotion (Italy)
PPP	Public Private Partnerships
PSA	Personnel Service Agency (Germany)
PSC	Public System of Connectivity (Italy)
PSTN	Public Switched Telephony Network
QXN	Qualified eXchange Network (Italy)
R&D	Research and Development
R-LAN	Radio Local Area Network (Italy)
RUPA	Unitary Network of the Public Administration (Italy)
SAT	Advanced Telecommunication Services (Italy)
SEM	Mixed-economic municipal enterprises (France)
SME	Small and Medium Enterprises
TI	Telecom Italia (Italy)
TMT	Telecommunications, Media, Technology
UK	United Kingdom
UMTS	Universal Mobile Telecommunications System
VAT	Value Added Tax
VCS	Vivento Customer Services GmbH (Germany)
VoIP	Voice over IP
VPN	Virtual Private Network
VTs	Vivento Technical Services GmbH (Germany)

I Scope of the study and methodology

I.1 Scope of the study

National governments can use various instruments to enhance the growth and competitiveness of telecommunication markets. This study will analyse industrial policy approaches taken in different countries with respect to their impact on incumbents in telecommunication markets. The policies analysed belong to different areas such as national tax system, legal provisions for mergers and acquisitions, measures that directly promote the demand and/or the supply in specific markets. The countries considered are: France, Germany, Italy, Spain and the UK.

The following fields of industrial policy have been selected as significant for telecommunication markets:

1. Fiscal measures
2. Labour market conditions
3. Competition policy
4. State support
5. State shareholding

The results from comparing the policy measures in each field will be presented in form of indicators that allow the ranking of different countries' policies with respect to their impact on incumbents. High scores are attributed to policies measures that are comparatively more favourable to national incumbents.

I.2 Methodology

The study will rely on two methodological approaches: (1) starting with indicators for specific policy measures a combined indicator will be developed to express the relative position of a country's policy; (2) quantitative and qualitative analysis will be used to present detailed background information about policies that affect the incumbent's position in telecommunication markets.

The indicators are calculated from data sets that allow the comparison of countries. We use international studies and data collected by the project team. Indicators based on qualitative information have been derived on the basis of intense discussions and evaluations by the pro-

ject team. This approach allows us to take into account quantitative as well as qualitative information providing background information.¹

For each policy measures, one indicator has been constructed. In order to cover different topics, several sub-indicators have been used to derive the final indicators. Indicators or sub-indicators are normalized such that the maximum value is equal to ten. The indicator values for the other countries are calculated according to their proportion to the maximum value. The country with the highest score for an indicator or sub-indicator has been attributed the value 10 and the other countries have been ranked accordingly.

Figure I-1

Indicator values for policy measures that are relative favourable to the incumbent

least <div>□</div> increasingly more <div>□</div> most										
favourable favourable favourable										
<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>	<div>□</div>
0	1	2	3	4	5	6	7	8	9	10

In comparison to other more easily manageable ranking system(s), this scoring procedure allows us to document the relative distances between countries for each indicator more accurately (see Grupp and Mogege (2004)).

In order to take into account the varying importance of different policy measures for the incumbents the indicators have been weighted. Weights express the relative importance of different policy measures and reflect the different impact that more or less favourable policies in the respective fields could make for the incumbent.

The scoring and weighting procedures result in a combined indicator which can be expressed by the following formula:

$$I = i_1 \cdot a_1 + i_2 \cdot a_2 + i_3 \cdot a_3 \dots + i_n \cdot a_n \quad \text{with} \quad \sum_{j=1}^n a_j = 1,$$

¹ The sources of information that are publicly accessible have been given in the list of references at the end of this paper. Additional information has been gained from informal sources on which much of the expertise of the authors is based. These are, for example, newspaper articles published over many years, discussions in peer groups, informal conversations with representatives of regulatory authorities or market players.

where I is the combined indicator, i_i , $i = 1, \dots, n$, are sub-indicators and a_i are the weighting factors. In some cases sub-indicators i_i have been differentiated into further detail, and a combined indicator has been generated in an analogous procedure for each sub-indicator:

$$i_i = i_{i1} \cdot a_{i1} + i_{i2} \cdot a_{i2} + i_{i3} \cdot a_{i3} + \dots + i_{in} \cdot a_{in} \text{ with } \sum_{j=1}^n a_{ij} = 1.$$

Since we use an weighting scheme, only sub-indicators have been normalized. This allows us to construct the aggregated indicators from sub-indicators in a straightforward manner. Furthermore, it gives us the opportunity to combine several sub-indicators such that overall indicators covering different aspects can be easily constructed.

II Industrial Policy

While industrial policy can generally be more or less favourable towards a specific type of enterprise, several aspects have to be considered when evaluating different policies. First, industrial policy is embedded in country-specific styles of market economies that differ with respect to the market dynamics, economic and political institutions, innovation patterns and governance styles.² Thus, the impact of specific measures can differ across countries. Second, while governments may deliberately decide to act in favour of a group of companies (or even an individual company) such policies may have no or counterproductive effects. For example, public support of investment in competing infrastructures may not lead to the intended investments if there are no clear rules governing the post investment use of new infrastructures. Third, the effects of economic policy depend on market conditions. Policies that act in favour of the incumbent in one situation can be neutral or even negative if exercised in a different market situation.

Additionally, ‘best practice’ in terms of policies that are most favourable to the incumbent can never be attributed to a country as a whole or advertised as exemplary for others, as each country has to adopt policies suitable for its own strategic aims, its current state of development, structural composition of the economy and political priorities. Moreover, no judgement will be made in this report as to whether policies that favour the incumbent are beneficial or detrimental for the telecommunication markets or the economy as a whole. The purpose of this analysis is only to identify the impact of industrial policy measures on the incumbents.

² See Hall and Soskice (2001)

II.1 The industrial policy indicator system

Two types of indicators have to be distinguished, those that refer to policies that support and stimulate telecommunication markets in general and those that are related to policies which are favourable to the incumbent in a more narrow sense. We assume that all measures that support and enhance the development of telecommunication markets will also be beneficial for the incumbent – at least in those markets, where it holds more than a 50% market share. Hence we regard all initiatives that promote the supply and the use of telecommunication technologies as favourable to the incumbent.³ In addition to that there are industrial policy measures that have a direct impact on the position of the incumbent in telecommunication markets. Examples are the tax burden of the incumbents, the incumbents' flexibility with respect to their employment decisions and competition policy.

The weighting scheme adapted is intended to express the relative importance different policy measures have for the incumbents (see Table II-1). State support in terms of infrastructure aid, ICT support and state demand have been given the highest weight. Competition policy, i.e., decisions about mergers, vertical integration or disintegration affects companies directly. Accordingly, competition policy has been given the second highest weight. In contrast, fiscal measures are valid for the market in general, and given the tightness of state budgets, their impact is considered to be rather low, thus they have the lowest weight.

This indicator system is 'indicative' in the sense that it does not give a complete representation of all features favouring one market participant or another. Instead the system documents issues that express trends and attitudes of industrial policy.

The indicators are calculated from data sets that allow the comparison of countries and from intense discussions and evaluation of qualitative information by the project team.⁴ Many indicators cannot be substantiated by 'hard facts'. Whether a certain share of civil servants is a burden for an operator, cannot be said by only comparing the related figures, many other circumstances have to be considered in order to judge the meaning of this quantitative indicator. Similarly, whether a certain decision by competition authorities is particularly favourable

³ This assumption is not unproblematic, as promoting growth in telecommunication markets can provide a strong incentive for potential competitors to enter the market.

⁴ The sources of information that are publicly accessible have been given in the list of references at the end of this paper. Additional information has been gained from informal sources on which much of the expertise of the authors is based. These are, for example, newspaper articles published over many years, discussions in peer groups, informal conversations with representatives of regulatory authorities or market players.

to an incumbent depends on the legal situation, the individual case and the decisions made in comparable cases. Therefore, attributing a 'score' to indicators in terms of country comparison requires expert judgement based on knowledge of the economic and political context. Furthermore, the impact of specific policy measures on either the market or the incumbent can only be roughly estimated in various cases. The scoring will show only small differences between countries whenever the available information does not allow for precise assessment.

Table II-1

Indicators: Definition, data sources, weights

Indicator	Definition	Type of indicator	Data source	Weight
Fiscal measures				0.1
tax burden	Effective average tax rates	quantitative	Klemm (2005)	0.25
	tax rate based on aggregated tax payments and profits for the last three year	quantitative	incumbents annual reports	0.25
tax exemptions	deductions from taxable income or from tax payments related to ICT investment	intensity (substantial, marginal)	tax laws	0.5
Labour market conditions				0.2
employment protection	flexibility of labour markets	quantitative, relative scores	OECD	0.25
	flexibility of labour markets	quantitative, relative scores	World Bank	0.25
employment flexibility	development of main lines per employee	quantitative	annual reports: incumbents and regulators	0.5
Competition policy				0.25
merger control	cases decided against/in favour of the incumbent			
State support				0.3
infrastructure aid	State spending on infrastructure and PPP projects targeting at infrastructures	qualitative/quantitative	government, Art Telecom (2005)	0.33
ICT support	measures to promote the diffusion and use of telecommunication services	qualitative/quantitative	government	0.33
e-government	number of services available online	quantitative, relative scores	EU benchmark on e-government	0.11
	degree of online realisation			0.11
	number of services available online and degree of online realisation	quantitative, relative scores	Accenture (2005)	0.11
State as shareholder				0.15
	control exercised versus protection received from state by the incumbent	qualitative	incumbents, financial markets	

Finally, as weighting is subjective to a certain extent and plays a significant role for the overall indicator, two sets of weights have been tested. The results did not differ significantly showing that the weighting scheme does not dominate indicator values. The results are presented in section III.

II.2 Fiscal measures

National tax policies can be used in several ways to influence market outcomes and industry structures. Low marginal and average tax rates on firms' profits generally tend to increase investment incentives and economic growth. Specific tax exemptions and tax credits as well as depreciation rules can be designed to promote investment in particular sectors, technologies or regions. Additionally, tax reductions for small and medium sized enterprises can foster market entry which may lead to less concentrated market structures and higher innovation rates.

Considering personal income tax, policy measures can lead to the stimulation of demand for goods and services provided by the incumbent. Furthermore, tax deductions which support the demand for specific goods or services can be particularly important if new products and markets are characterized by network effects.

Applying this general reasoning to the telecommunication sector, our indicator for fiscal measures consists of two sub-indicators: The first of which refers to the tax burden of incumbents. The second indicator captures tax reductions aimed at promoting demand for telecommunication services.

While national tax measures affect the incumbent directly when corporate income tax or investments in specific regions or technologies are considered, fiscal measures result merely in a shortening of depreciation periods which in the case of standard equipment, i.e. computers, does not contribute substantially to lowering the overall tax burden. Moreover, taking into account that the tax burden carried by large and internationally operating firms depends crucially on where profits are realized, the impact of the national tax system in the home country becomes increasingly less important. Similarly, the overall magnitude of tax related incentives can be considered of minor importance for the demand for telecommunication services.

Overall, it is not expected that fiscal measures will substantially affect the position of the incumbent. The indicator for 'fiscal measures' has been given the weight '0.1'.

II.2.1 Country comparison

Starting with the sub-indicator for the tax burden a comprehensive calculation of effective tax rates would require an in depth analysis of national tax laws, i.e., an analysis of the corporate tax base definition, allowances for capital expenditure, deductibility of contributions to pension reserves, the valuation of assets, etc. Since it is not feasible to present a measure which reflects all of these factors we focus on effective average tax rates (EATR) as calculated by Klemm (2005) (see Box II-1) and complement the analysis by taking into account the actual tax expenses by incumbents.⁵

Box II-1

Calculation of effective average tax rates (Devereux, Griffith, Klemm (2002))

“EATR denotes the proportion of total profit taken in tax. It is defined for a particular project and takes into account only the broad structure of the tax system as it applies to a mature firm. The treatment of losses or other forms of tax exhaustion is not considered.

The project is a simple one period investment, in which a firm increases its capital stock for just one period. Investment by 1 at the beginning of the period, and reduced by $1 - \delta$ at the end of the period, where δ represents economic depreciation.

The higher capital stock generates a return at the end of the period of $p + \delta$, where p is the financial return. The discount rate is r . Inflation is ignored.

One unit of capital generates a tax allowance with a net present value (NPV) of A .

Introducing tax reduces the cost of the asset to $1 - A$, while the saving from the subsequent reduction in investment becomes $(1 - \delta)(1 - A)$. Total return $p + \delta$ is taxed at the tax rate τ .

The NPV of the investment with tax is therefore: $R = [(p + \delta)(1 - \tau) - (r + \delta)(1 - A)] / (1 + r)$.

The cost of capital is the value of p , denoted p^v , for which the investment is marginal, i.e., for which $R = 0$.

Effective average tax rate (EATR) - for a given value of p - is defined as the NPV of tax payments expressed as a proportion of the NPV of total pre-tax capital income, $V^* = p / (1 + r)$.

The project is assumed to have an expected rate of economic profit of 10%, i.e.,

$$p - p^v = 0.10$$

The following Table II-2 shows the development of the nominal and effective average tax rates in the five countries.

Although nominal and effective tax rates decreased during the period 2000 to 2005 in Germany, the German nominal and effective tax rates were still the highest. Tax rates in UK and

⁵ The method to calculate EATR was first developed by Devereux, Griffith, Klemm (2002) and focuses on nominal tax rates and the tax base as implied by possible depreciation.

Spain have been stable over time and are the lowest in Spain. In Italy the tax rate increased in 2004 and was the second highest in 2005 but still much lower than in Germany.

Table II-2

Nominal and effective average tax rates in %

Tax rates	2000		2001		2002		2003		2004		2005	
	nom.	eff.	nom.	eff.	nom.	eff.	nom.	eff.	nom.	eff.	nom.	eff.
Germany	52,0	37,0	38,9	32,0	38,9	32,0	40,2	33,0	38,9	32,0	38,9	32,0
France	37,8	27,0	36,4	27,0	35,4	27,0	35,4	27,0	35,4	27,0	35,0	25,0
Italy	37,0	22,0	36,0	21,0	36,0	21,0	34,0	20,0	33,0	26,0	33,0	26,0
Spain	35,0	21,0	35,0	21,0	35,0	21,0	35,0	21,0	35,0	21,0	35,0	21,0
UK	30,0	24,0	30,0	24,0	30,0	24,0	30,0	24,0	30,0	24,0	30,0	24,0
Sources: OECD (2006), Klemm (2005)												

Comparing the EATR with the actual profits and tax expenses of the incumbents shows that the EATR does not reflect the actual tax burden of the incumbents in all countries.⁶ Firstly, tax expenses by incumbents vary substantially as they depend on depreciation strategies and extraordinary influences, such as major investments or acquisitions. Secondly, overall tax expenses depend also on international activities. Taking these two observations into account, aggregate average tax expenses and profits of incumbents over the years 2003-2005 provide only a rough picture of the incumbents' tax burden (detailed numbers are given below):

Table II-3

Actual tax rates of incumbents based on aggregate tax payments and aggregate profits (2003- 2005)

Country	Deutsche Telekom	France Telecom	Telecom Italia	Telefónica	British Telecom
Average tax rate in %	25	42	44	29	25
Source: Deutsche Telekom (2003 to 2005), France Telecom (2003 to 2005), Telecom Italia (2003 to 2005), Telefónica (2003 to 2005) British Telecom (2003 to 2005a) and own calculations					

While the BT figures correspond quite well with the EATR, tax rates in France, Spain and Italy are higher than the respective EATR. However, the high tax rate for FT is mainly driven by the year 2003 in which FT paid extraordinarily high taxes. The average tax rate for 2004 and 2005 corresponds quite well to the EATR measures. Lastly, the low average tax rate for

⁶ Tax expenses include both actual tax payments and deferred taxes.

Germany results from very low tax expenses in 2005 whereas the tax rates for 2003 and 2004 were 40,4% and 43,5%.

Germany

The reduction of German nominal and effective tax rates since 2000 was due to tax reforms aimed at lower tax rates and simplified tax systems. In 2001, the corporate tax system was changed from a full offset system to a classical system with partial inclusion where 50% of received dividends are included as part of taxable income at the shareholder level. While in the course of this reform tax rates were generally decreased, the financing of the reform was partially based on a reduction of allowed depreciation rates.⁷

Considering tax payments by Deutsche Telekom, the following table shows profits and tax expenses by Deutsche Telekom.⁸

Table II-4

Profit, taxes and tax rates of Deutsche Telekom

	2003	2004	2005
Profit	4226	3569	6212
Taxes	1709	1552	196
Tax rate in %	40,4	43,5	3,2
Sources: Deutsche Telekom (2003 to 2005); Profits = profit/income before taxes in million €.			

While the average tax rates in 2003 and 2004 exceed the EATR, the low tax expenses in 2005 are mainly due to a tax loss carry-forward and do not reflect reductions in actual tax payments.

Using tax reductions to promote demand, we find that there are no tax incentives directly related to the purchase of ICT goods or services. An analysis of tax benefits lists all privileges accruing to economic sectors, but no such privileges occur in the telecommunication industry (Institut für Weltwirtschaft (2003)). The relatively short depreciation period for computers (3 years) has to be seen as adequate in terms of the average usage period for such equipment.

⁷ Later tax reforms followed a similar approach.

⁸ Tax expenses include actual tax payments and deferred taxes.

Plans to increase depreciation time in order to restructure the German tax system⁹ will lead to inadequate and unrealistically assumed usage times.

France

When France Telecom was a state administration, and later a para-statal entity (before 1997), the entity benefited from a special tax regime (for example: no VAT; no local taxes were imposed). During the long transition stage all these fiscal exemptions disappeared. As part of the transition, the European Commission obliged France Telecom to pay the tax dues owed to the French state. Currently France Telecom follows the rules applied to all public companies.

Table II-5

Profit, taxes and tax rates of France Telecom

	2003	2004	2005
Profit	1137	5687	7928
Taxes	2591	1998	1568
Tax rate in %	227,9	35,1	19,8
Sources: France Telecom (2003 to 2005); Profits = profit/income before taxes in million €			

The general possibility to consolidate losses and profits of French subsidiaries (when holding more than 95% of shares) affected Orange and Wanadoo only as long as they were France Telecom' subsidiaries. The ISP activity of Wanadoo was effectively absorbed within Orange in 2006, which is to become FT's umbrella brand in most markets. These fiscal measures, however, cannot be counted as measures that are specific to telecommunications markets, when considering that large conglomerates have similar possibilities in all countries. The same applies to tax credits granted for investment in R&D.

Italy

While the EATR for Italy is lower when compared to the EATR in Germany, the actual tax expenses of Telecom Italia are rather high:

⁹ A stepwise abolishment of advantages deriving from depreciation rules in favour of a general reduction of tax rates is part of tax reform strategies.

Table II-6

Profit, taxes and tax rates of Telecom Italia

	2003	2004	2005
Profit	3442	4956	5535
Taxes	1014	2654	2395
Tax rate in %	29,5	53,6	43,3
Sources: Telecom Italia (2003 to 2005); Profits = profit/income before taxes in million €			

Tax incentives comprise deductions from taxable income amounting to 10% of total costs related to investments in R&D, digital technology and stages for students. This results in an overall depreciation of 110% of purchase prices. On top of this, if companies increase their investments in ICT compared to the 3 preceding years, 30% of the increase can be deducted from taxable income. These deductions apply to costs faced by

- companies for industrial research and pre-competitive development;
- consortia of at least 10 SMEs created for innovating their ICT equipment.

The maximum amount of benefit may reach 20% of the average income from the 3 preceding years.

The benefit applies only to costs sustained in 2004. According to Confindustria's¹⁰ estimates, the benefit corresponds to 3.3% of the investment and could cover €200m of costs.

Companies involved in developing activities of e-commerce can take advantage of additional tax credits: The benefits cover up to 60% of the costs incurred in the projects. The resources available from 2001 to 2003 amounted to €190.5m. In 2004, this benefit was not renewed, however, €13m of the available funds still have not been claimed.

Spain

Similar to the situation in Italy, Spanish EATR is low while actual tax rates for Telefónica during the years 2003-2005 are substantially higher:

¹⁰ The Italian association of industries and employers.

Table II-7

Profit, taxes and tax rates of Telefónica

	2003	2004	2005
Profit	3362,5	4866,4	6796,2
Taxes	913,4	1512,8	1969,2
Tax rate in %	27,2	31,1	29,0

Sources: Telefónica (2003 to 2005); Profits = profit/income before taxes in million €

According to Spanish tax laws firms were generally allowed to amortize goodwill as a fiscal expense till 2004. The maximum amount to be amortized per year was 5% of the goodwill generated from the acquisition. These rules applied to all firms with headquarters in Spain, regardless of the industry or sector.

Considering Telefónica's acquisition strategy, additions to goodwill since 2001 are shown Table II-8. Net goodwill as of December 2005 amounts to €9.960m. In 2006 the acquisition of O2 generated additional goodwill of about €9,316m.

Table II-8

Goodwill additions of Telefónica

Main additions to Telefónica's consolidation goodwill (2001-2005)		
Year	Firm	Mill. €
2001	Mediaways	1,474.66
	Endemol	268.61
	Data Brasil	233.55
	Grupo Corporativo del Norte	230.51
	Celular de Telefonía	137.86
	Corporativo del Norte	135.14
	Uno e Bank	130.25
	Telefónica Móviles	113.21
	Portugal Telecom	76.00
	Other	218.93
2002	Telefónica Móviles México	598.44
	Brasilcel	268.69
	Endemol	89.98
	Telefónica Centr. Guatemala	41.40
	Emergia	49.65
	Others	73.38
2003	Sogecable	607.23
	TCO (Brasil)	227.67
	Endemol France	112.10
	Antena 3 TV	63.91
	Terra	58.57
	Other	66.34
2004	Olympic	501.85
	Otecel	397.44
	Telcel	376.24
	Portugal Telecom	344.52
	Telefónica Móviles Panamá	252.18
	Brasilcel	111.68
	Others	247.64
2005	Radiocomunicaciones Móviles	547.22
	Telefónica Móviles Chile	219.40
	Cesky Telecom	912.66
	Eurotel Praha	443.56
	Telefónica Móviles México	90.95
	Others	239.08
TOTAL		9,960.50

Goodwill amortisation has contributed to the reduction of Telefónica's debt burden over the last years. While there is no data about how high these reductions were, tax savings can be estimated by analysing the financial statements of Telefónica from 1995 onwards. The highest benefits came from the acquisitions of Endemol and the mobile operators that Bellsouth sold to Telefónica. Moreover, it could be said, that these circumstances, although they were advantageous for Telefónica, they were not decisive for the success of the strategy. This advantage was not enjoyed by France Telecom or Deutsche Telekom.

For acquisitions made since January 2004, Telefónica registered the losses of goodwill according to a fair valuation, using methods of discounted cash flows to assess the firm which generated the goodwill. Data on goodwill amortisations since 2001, as well as the corporate taxes saved by Telefónica due to goodwill amortisation, are shown in Figure II-1 and Figure II-2.

Figure II-1
Goodwill amortization in Telefónica

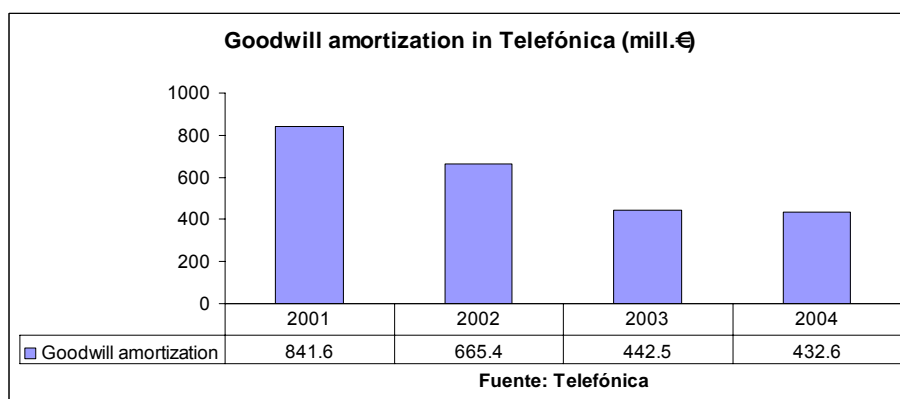
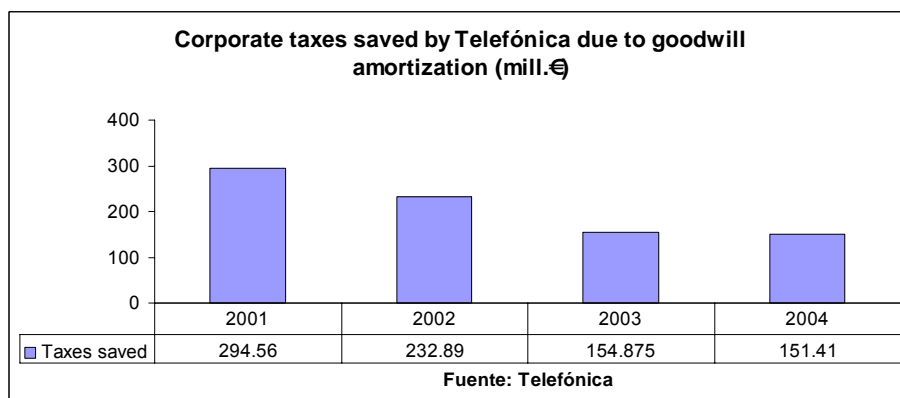


Figure II-2
Corporate tax savings for Telefónica



However, the requirements for tax savings due to reductions of goodwill have become more restrictive since 2005. Although the new legislation does not allow goodwill amortization, reductions of goodwill may nevertheless generate tax savings with the same quantitative limits established as before. Tax savings can be realized if the following three requirements are satisfied: First, the goodwill has to be based on an acquisition in the market. Second, the acquiring firm must not have the majority in the government of the acquired firm. Third, the acquiring firm must have created a reserve to absorb the deterioration of the goodwill.

Thus, while Telefónica may still be able to take financial advantage of goodwill reductions, the second requirement just mentioned reduces the possibility of tax savings considerably. The financial reports of Telefónica have not stated any tax savings due to goodwill deteriorations since 2005.

In addition, it should be noted that in 2002 Telefónica wrote off third-generation mobile telephone operations outside Spain. This asset write-off, plus the expenses of restructuring the UMTS business in Germany, Austria, Italy and Switzerland, amounted to an extraordinary negative net result of €4.958,2m. Likewise, Terra-Lycos made some net write-offs in 2006 (€420.7m). These extraordinary losses were also considered as expenses for corporate fiscal purposes and Telefónica saved about 35% of these expenses in tax payments. This year Telefónica registered a negative net profit. However, the fiscal credit could be applied (for) in the following years reducing the fiscal burden.

All firms and all regions benefit from tax breaks for the promotion of information and communication technologies. Ten per cent of the amount invested and of other expenses related to the improvement of access capacity, transactions, and processes based on ICT can be deducted from taxes to be paid.

There are no fiscal incentives or direct subsidies towards customers when purchasing telecommunications or IT products or services. Only the autonomous region of La Rioja allows instalment deductions when acquiring personal computers, with the objective of promoting the use of new technologies in a domestic environment. The amount to be deducted is €100. For the Canary Islands special tax incentives hold.

United Kingdom

In contrast to all other countries, EATR in the UK and tax rates of British Telecom coincide quite well during the years 2003-2005.

Table II-9

Profit, taxes and tax rates for British Telecom

	2003	2004	2005
Profit ¹⁾	3019,5	3023,3	3134,9
Taxes ¹⁾	809,4	759,6	753,9
Tax rate	26,8	25,1	24,1
Notes: 1) As at March 31th of the following year; Profit = profits before taxation, goodwill amortization and exceptionals in million € Sources: British Telecom (2000 to 2005a) Currency rates: 2003: 1,5017; 2004:1,4524; 2005: 1,436			

Educational institutions are granted VAT related exemptions when purchasing computers and other ICT equipment. However, this applies only to limited area of research, such as medical research.

The so-called *home computing initiative* was launched in 1999. It is underpinned by an annual £ 500 tax exemption on the loaned computer, and allows companies to loan computers to employees as a tax-free benefit. The rules governing the scheme were clarified by Inland Revenue in 2004.¹¹

The scheme allows employees to work at home, though it does require some salary sacrifice on the part of the employee. At the end of the scheme, the computer can be returned to the employer or transferred to the employee for, what is normally, a small amount.

The website of the Home Computing Initiative – www.ukhomecomputing.co.uk – highlights the popularity of the scheme. 18 case studies are listed on the website, ranging from Air Products on the one end to BT, Siemens and the Royal Mail on the other. These cases illustrate some of the benefits of the scheme such as:

- Increased IT literacy
- Attract and retain employees
- Potential reduction in training costs

¹¹ See Home Computing Initiative (2006a)

- Improved employer-employee relations
- Reduced National Insurance contributions
- Enhanced productivity
- Accelerated implementation of other salary sacrifice schemes
- Employees save on the purchase of a computer
- Cost-neutral delivery model¹²

Many of the schemes proved to be more popular than expected. For instance, 38% of eligible Siemens employees signed up for the scheme in the UK whilst BT's scheme attracted 6,500 people or 6% of the company's workforce in its first year of operation (Sept 2002 – Sept 2003).¹³ 25% of Air Product's UK employees joined their company scheme.¹⁴

Despite the popularity of the scheme, the tax credit underpinning the home computing initiative was removed in early 2006. In his budget statement of the 22 March, the Chancellor scrapped the scheme effective from 6 April 2006. Existing arrangements would be allowed to continue, as would those that have been signed and awaiting delivery of the computer.¹⁵ After April 2006, employees could use employer owned equipment at home for work related activities and private use as long as it is not significant. Presumably significant private use would necessitate a tax declaration of a benefit in kind to be made, though 'significant' is not defined.

It is worth noting that possible explanations for the scrapping of the scheme are provided in the House of Commons debate on the budget. The Paymaster General stated in the Parliamentary debate that 1) take-up of salary sacrifice schemes was often low 2) it did not directly help those on low pay 3) the cost of equipment has dramatically fallen since the scheme was launched.¹⁶

Interestingly the HM Revenue & Customs notification of the withdrawal of tax credit also mentions mobile phones. The Budget changes introduced, for the first time, a limit on the

¹² See Home Computing Initiative (2006b)

¹³ See Home Computing Initiative (2006b)

¹⁴ See Home Computing Initiative (2006b)

¹⁵ See HM Revenue & Customs (2006)

¹⁶ See Hansard (2006)

number of mobile phones that an employer may loan to employees and that no financial limit is set on its use. The number of mobile phones per employee for tax-free use is now limited to one.¹⁷

II.2.2 The Indicator

Since it is difficult to make a conclusive statement about the actual tax burden of incumbents in the different countries, we decided to construct the indicator values based on an ordinal comparison of the average EATR for 2003-2005 and the incumbents' actual tax rates and to weight these two indicators equally (lower tax rates and tax expenses are valued as being more favourable to the incumbent):

Table II-10
Tax burden indicator

Indicator	Germany	France	Italy	Spain	UK
Eff. average tax rates	7,0	8,0	9,0	10,0	9,0
Tax payments	10,0	8,0	7,0	9,0	10,0
Tax burden	8,5	8,0	8,0	9,5	9,5

Turning to the second sub-indicator, namely tax deductions, policy instruments adopted differ considerably. Germany and France have yet to establish measures specifically targeting the telecommunication sector. In Spain, only the region La Rioja admits tax deductions for personal computer purchases but there are no nationwide measures. However, the UK and Italy provided tax advantages in order to foster the usage of computers, the adoption of ICT technologies and the development of e-commerce.

These observations lead to the following figures for the tax deduction indicator:

Table II-11
Tax deductions indicator

Indicator	Germany	France	Italy	Spain	UK
Tax deductions	3,0	3,0	10,0	7,0	7,0

Combining the two sub-indicators and weighting them equally, we obtain the following aggregate indicator for fiscal measures.

¹⁷ See HM Revenue & Customs (2006)

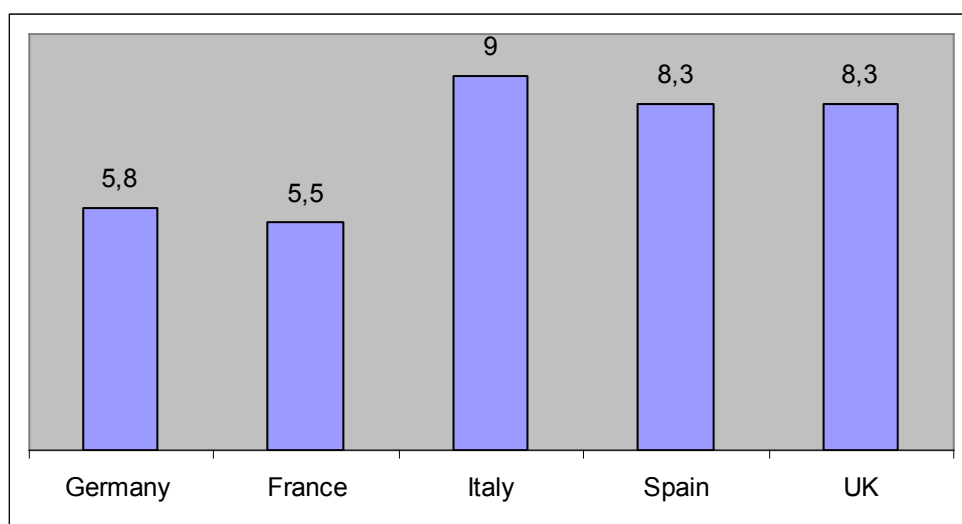
Table II-12

Fiscal measures indicator

Indicator	Germany	France	Italy	Spain	UK
Fiscal measures indicator	5,8	5,5	9,0	8,3	8,3

The indicator shows some variation among countries: Italy scored the highest having the most decisive programmes to support the diffusion of ICT. In the UK and Spain, a rather favourable tax system is combined with specific measures supporting the adoption of computers. The absence of tax incentives for ICT goods and services together with relatively high tax payments result in low scores for Germany and France.

Figure II-3

Fiscal measures indicator

II.3 Labour market regulation

Incumbents are affected by labour market regulations in two ways: First, as a large employer in a country, their personnel strategies are constrained by labour laws and collective employment contracts that govern labour relations in large enterprises. Second, incumbent telecommunications operators often have to deal with particular constraints on labour relationships, as for example in the case of civil servants and/or public employees inherited from the former state-owned monopolist. For these employment relationships specific rules with respect to dismissal procedures, salary scales, pension arrangements and other fringe benefits typically exist.

A comparison of all relevant labour market institutions and regulations in the five countries is far beyond the scope of this study. We therefore rely on standardized data to construct our indicator for labour market regulation. We use two sub-indicators: The employment protection sub-indicator measures the overall labour market rigidity of each country's employment regulations. This indicator is based on two indicators published by the OECD and the World Bank. Our second sub-indicator – which we call “employment flexibility indicator” – measures the incumbents' actual ability to increase their labour productivity in the time period between 2000 und 2005. Labour productivity is measured in terms of main lines per employee. Our summary indicator for each country's labour market regulations then integrates both sub-indicators into one single indicator.

Additionally, we provide some information about the specific labour market conditions the incumbents face in their countries. Here, besides other things, we will also touch on the contentious issue of the alleged burdens incumbents may face when a significant share of their workforce owns a civil servant status.

II.3.1 Country comparison

Employment protection and employment flexibility

The employment protection sub-indicator measures rigidities associated with restrictive labour market regulations, in particular, employment protection legislations. We derive this indicator from recent comparative studies provided by the OECD in the Employment Outlook (OECD (2004 and 2006)) and the World Bank in its “Doing Business” report (World Bank (2006)).

Employment Protection Legislation

The OECD collects information on labour market regulations in all its member states. This information is compiled and summarised in the form of an Employment Protection Legislation (EPL) index. This index summarizes the extent to which employment protection regulations effectively restrict employers' lay-off policies. More precisely, it covers i) procedural inconveniences, ii) the overall difficulty of dismissal, iii) timing constraints, iv) possible claims to severance pay, and iv) restrictions on fixed-term employment contracts.

The EPL index itself consists of three sub-indices which refer to regular employment, temporary employment, and to collective dismissals. In the case of regular employment relationships the index includes regulatory measures concerning notification procedures, notice periods, severance payments, procedures related to dismissals and trial periods. With respect to temporary employment, the conditions for fixed-term contracts and rules for temporary work agencies are considered. The index for collective dismissals includes notification requirements, delays and special costs imposed on employers in case of collective lay-offs.

The OECD index ranges between zero and six and represents the intensity of regulation. A low score means little regulatory intensity while a high score indicates that regulations impose heavy constraints on firms' personnel policies. Table II-13 presents the relevant information of the latest OECD 2006 study. The Employment Protection Legislation (EPL) index is the sum of the three indices for regular employment, temporary employment, and collective dismissals, respectively.

Table II-13

The OECD Employment Protection Legislation Index (1990 and 2003)

	Regular employment 2003	Temporary employment 2003	Collective dismissals 2003	EPL 2003	EPL 1990
Germany	1,12	0,73	0,63	2.5	2.6
France	1,03	1,51	0,35	2.9	2.8
Italy	0,74	0,89	0,81	2.4	3.1
Spain	1,09	1,46	0,52	3.1	3.0
UK	0,46	0,16	0,48	1.1	1.0

Source: OECD (2006) and Statlink: <http://dx.doi.org/10.1787/280428587352>

In Table II-13 we also compare the 2003 results with the EPL of the year 1990. As can be readily seen, the EPL index does not change much over time within each country. Only the score for Italy has decreased significantly, so that Italy ranks second place among the five countries in 2003. UK performs best with an index of 1.1 while the remaining four countries obtain rather similar scores with values ranging between 2.4 and 3.1.

Rigidity of Employment

In 2006, the World Bank published an alternative index, the Employment Regulation and Legislation index – or in short, the Rigidity of Employment index. The construction of the

World Bank Index rests on a particular employee-employer constellation where the worker and the employer have some specified characteristics. For instance, the worker is a nonexecutive, full-time male employee who has worked in the same company for 20 years and earns a salary plus benefits equal to the country's average wage during the entire period of his employment. On the business side it is assumed that the firm belongs to the manufacturing sector and is a domestically owned limited liability company. Moreover, it is supposed that the firm operates under collective bargaining agreements.

The rigidity of employment index is the average of three sub-indices: a difficulty of hiring index, a rigidity of hours index and a difficulty of firing index. All the sub-indices have several components taking values between 0 and 100, with higher values indicating more rigid regulation.

The difficulty of hiring index measures – besides other things – the ease to hire workers on a temporary basis and minimum wage requirements. The rigidity of hours index mirrors constraints on working time, e.g. concerning night work or weekend work.

The difficulty of firing index has eight components which touch all sorts of dismissal restrictions imposed by law and collective agreements. Precisely, it checks (i) whether redundancy is not considered as a fair ground for dismissal; (ii) whether the employer needs to notify the labour union or the labour ministry to fire a redundant worker; (iii) whether the employer needs to notify the labour union or the labour ministry for group dismissals; (iv) whether the employer needs approval from the labour union or the labour ministry for firing a redundant worker; (v) whether the employer needs approval from the labour union or the labour ministry for group dismissals; (vi) whether the law mandates training or replacement before dismissal; (vii) whether priority rules apply for dismissals; and (viii) whether priority rules apply for re-employment.

Table II-14 presents the relevant information from the 2006 World Bank study. The overall rigidity of employment index is the arithmetic mean of the three sub-indices that measure the difficulty of hiring, rigidity of hours, and difficulty of firing.

Table II-14

The World Bank Employment Regulation and Legislation Index (2006)

	Difficulty of hiring	Rigidity of ours	Difficulty of firing	Rigidity of employment index
Germany	44	80	40	55
France	78	80	40	66
Italy	61	80	30	57
Spain	67	80	50	66
UK	11	20	10	14
Source: World Bank (2006)				

The World Bank index basically confirms the ranking presented in the OECD study. In particular, the unique position of the UK is confirmed by the World Bank study, and again, the other four countries follow after a large distance while the differences between the other countries are relatively small.

There are, however, some differences. The EPL index of the OECD ranks Italy slightly better than Germany, which is reversed in the World Bank report. In addition, the World Bank index tends to exhibit more pronounced differences between the countries. For example, Germany's labour market rigidities appear to be relatively more stringent under the World Bank Index than under the EPL index of the OECD.

Employment flexibility indicator

Our second sub-indicator approximates the labour productivity developments of the incumbent operators over the last years. Specifically, we take the change in the number of main lines per employee in the fixed-lines business between 2000 and 2005 as our employment flexibility indicator. The variable main lines counts the number of access lines to the incumbent's network including internet connections. This rather broad definition (which comprises more than the standard cooper lines to the customer) intends to cover not just the size and extent of the incumbent's network but also the overall services offered through the incumbent's network. Therefore, our variable of main lines includes narrowband and ISDN lines (S0x2 and S2Mx30 for ISDN lines) as well as DSL connections. We also incorporated unbundled and wholesale lines, as the associated relevant network elements remain operated by the incumbent in those cases.

Our employment variable includes mainly the share of the incumbents' workforce that deals with fixed-line businesses and not other branches as, e.g., mobile services or other IT businesses.

Table II-15 depicts the development of main lines per employee in the broadband/fixed line segments over the period 2000-2005 for the five countries.¹⁸

Table II-15

Main lines per employee: Development

	2000	2001	2002	2003	2004	2005
Deutsche Telekom	341,6	336,2	356,2	416,9	482,8	497,4
France Telecom	262,1	279,6	302,1	335,1	375,1	470,6
Telecom Italia	408,3	475,1	523,6	574,3	611,2	574,7
Telefónica	493,2	505,4	460,1	542,4	542,4	623,5
British Telecom	346,6	362,6	383,7	420,7	529,3	554,4
Source: Deutsche Telekom (2000 to 2005), France Telecom (2000 to 2005), Telecom Italia (2000 to 2005), Telefónica (2000 to 2005), British Telecom (2000 to 2005a), own calculations.						

Country specific labour market conditions

The labour market conditions and regulations in the five countries differ in many regards. One such feature is the presence of civil servants as part of the incumbent's workforce. However, civil servants are only an issue in France and Germany. Table II-16 presents the number of civil servants in Deutsche Telekom and in France Telecom.

Germany

Even before the first reforms in the telecommunication sector (Postreform I)¹⁹ were realised, civil servants were considered as an obstacle for the flexibility of a private company. The second part of the reform (Postreform II) regulated the conversion of the German Federal Postal enterprises into stock corporations²⁰ and covered particular provisions concerning civil servants employed by the former state monopolist.

¹⁸ See the Appendix for more detailed information.

¹⁹ The German Federal Post was organised as a state monopoly. The Postreform I regulated the fragmentation of the monopoly into three organisational units: postal service, bank and telecommunication.

²⁰ The Postreform II is based on the Post and Telecommunications Reorganisation Act (Gesetz zur Neuordnung des Postwesens und der Telekommunikation – Postneuordnungsgesetz (PTNeuOG) from September 1994.

Table II-16

Civil servants in Deutsche Telekom and France Telecom

		2000	2001	2002	2003	2004	2005
DT	Employees Germany	179,2	178,3	177,8	173,3	170,8	167,9
	Number of civil servants	80,9	77,1	74,4	71,7	70,7	69,5
	active	59,9	54,6	50,8	49,8	47,2	46,0
	ISB*	6,5	8,2	8,4	8,3	8,4	8,5
	working for subsidiaries	14,5	14,3	15,2	13,7	15,1	15,1
	Share of civil servants	45,1	43,2	41,8	41,4	41,4	41,4
FT**	Employees France	148,8	145,3	141,1	130,1	123,8	118,4
	France Telecom SA	130,5	123,4	117,5	111,0	106,9	102,2
	Domestic Subsidiaries	20,9	22,8	23,5	19,1	16,9	16,2
	Number of civil servants	n.a.	108	102	94	87	85
	Share of civil servants (France Telecom SA)	n.a.	87,5	86,8	84,7	81,4	83,2
* ISB (Insichbeurlaubung) = on temp. leave from civil-servant status							
** Average number of employees (full time equivalent)							
Sources: Deutsche Telekom (2000 to 2005), France Telecom (2000 to 2005)							

While the civil servants status was to be maintained, it had to be adapted to the conditions of a privately organized enterprise. To achieve this goal, the German Constitution and the postal employee representation act (Postpersonalvertretungsgesetz) was changed and a new legal basis for labour relations was introduced: Deutsche Telekom AG was entitled to exercise the rights and duties of the Federal Republic as the employer of civil servants (Dienstherrenbefugnisse). However, the supervision (Dienstaufsicht) over the fulfilment and compliance of the responsibilities remained with the regulatory authority (Aufsichtsbehörde).

Civil Servants and Personnel Measures of Deutsche Telekom AG 2000 – 2005

To foster restructuring and efficiency Deutsche Telekom and the union agreed in 1999 that there would be no dismissals due to rationalization till 2004. Job cuts had to be carried out mainly by outsourcing logistic activities. Furthermore, the collective bargaining round in 2000 led to the introduction of a variable income component. This was the first step towards a new market-and demand-orientated pay scheme (Neues Bewertungs- und Bezahlungssystem, NBBS) within Deutsche Telekom.

Till 2001 23.000 employees were transferred to expanding subsidiaries with the right of return to Deutsche Telekom. Furthermore, Deutsche Telekom ended payment conditions adjusted to the public sector for employees covered by collective labour agreements. Factors such as family status, age or seniority in the company no longer had any influence on wages. Payment was to be dependent only on the function actually performed. The intention of the new payment system was to enhance performance of the labour force and to make personnel costs more transparent. However, the new scheme was applicable to non civil-servants only.

In 2002 Deutsche Telekom announced that the company had to follow a stringent consolidation course because of its bad economic shape. Traditional and classical instruments of personnel reduction such as compensations for voluntary leave and early retirement programs were adopted to a large extent. In mid-2002, Deutsche Telekom and the unions signed a collective agreement on protection against rationalization (till 2004). The agreement protected employees with collectively agreed employment relationships and junior staff in training within Deutsche Telekom. Furthermore, an in-house Personnel Service Agency (PSA) was established.

The primary intention of the PSA was to absorb employees who were affected by rationalization and to reintegrate them into jobs in- and outside of the company after retraining. Employees without appropriate job offers would be assigned to temporary²¹ jobs. The employees kept their contractual rights. Apprentices who successfully completed their education were also transferred to the PSA for a period of one year.

The PSA was reorganized and – renamed Vivento, the personnel and business service provider of Deutsche Telekom. Additional services were added to the agency's tasks. They included arranging contracts and temporary work agreements (in- and outside of the company), providing Vivento employees with individual support, retraining and placement in permanent jobs. As in 2002, Vivento's activities were based on the collective agreement on protection against rationalisation. The corresponding regulations also applied to civil servants within Deutsche Telekom. At the beginning of 2003 the activities of TTC und T-Systems Training GmbH were bundled in Telekom Training which is now the group-wide full-service provider for training and development. In addition, the service provider developed its own business line (call center market and network infrastructure services on the internal and external mar-

ket). Additionally, some other arrangements should be mentioned. Firstly, Deutsche Telekom made an agreement with the Ministry of Finance (BMF) which allowed the placement of civil servants from Deutsche Telekom in jobs at the federal administration. Secondly, civil servants from Deutsche Telekom supported regional agencies of the Federal Employment Services (Bundesagentur für Arbeit) during the implementation of an unemployment pay reform (Hartz IV-Reform).

In March 2004, Deutsche Telekom and the union (ver.di) concluded an alliance for ‘innovative employment at Deutsche Telekom’ to ensure employment within the company. The agreement covers the following aspects:

- Shortening of weekly working hours (from 38 to 34) for both, non-civil-employees and civil servants, accompanied by a partial reduction in salaries and no increase of income in 2004. As a result, approximately 9800 employees should gain secure employment.
- In addition to the alliance, the Act concerning the Legal Provisions for Staff of the Former Deutsche Bundespost (Postpersonalrechtsgesetz – PostPersRG) was amended (November 2004). A complete cancellation of the year-end bonus was introduced. Combined with the reduction of vacation allowances this was to fund the reduction in work-time. Furthermore, the amendment gave Deutsche Telekom the option to delegate civil servants to other companies and to eliminate the time limit for temporary leave (Insichbeurlaubungen).

Till 2005 about 34.200 employees had entered Vivento. 18.900 of them successfully moved to other jobs so that Vivento had about 15.300 employees in 2005. 700 were ranked as permanent staff/management and about 7.200 were employed in the business lines of Vivento (Vivento Technical Services GmbH (VTS) and Vivento Customer Services GmbH (VCS)). 4.700 employees were moved to subcontracted labour or temporary work positions. However, in its decision on the 22th of June 2006, the Higher Administrative Court (Bundesverwaltungsgericht) declared the transfer of civil servants to Vivento as illegal.

During 2006 Deutsche Telekom launched a staff restructuring program. The main goal was a further reduction of employees on a voluntary basis and without the need for compulsory redundancies. According to the program, around 32.000 employees in Germany are expected to have left the Group by the end of 2008. The program provides measures like partial retire-

²¹ This provision is based on the German Law Concerning Employee Secondment (Arbeitnehmerüberlassungsgesetz - AÜG).

ment arrangements, voluntary redundancy and severance payments. On May 31, 2006, the Federal Cabinet adopted a “Draft Second Bill to Amend the Act for the Improvement of the Staff Structure at the Residual Special Asset of the Federal Railways and the Successor Companies of the Former Deutsche Bundespost” and introduced it into the legislative process. The act entered into force on November 16, 2006 and enabled Deutsche Telekom to include civil servants in staff restructuring measures. Civil servants who are working in areas where there is a surplus of staff and for whom employment in another area is not possible or cannot reasonably be expected in line with civil service legislation, will be able to apply for early retirement from the age of 55.

Pensions regulations for civil servants of Deutsche Telekom

Civil servants employed by Deutsche Telekom are entitled to pension benefits provided by the Federal Republic pursuant to the German Civil Servant Pension Act (Beamtenversorgungsgesetz). In accordance with the provisions of the Post and Telecommunications Reorganization Act (Gesetz zur Neuordnung des Postwesens und der Telekommunikation) in the context of the privatisation of Deutsche Telekom, the company is required to make annual contributions for pensioners to a special pension fund (Unterstützungskasse). The pension fund makes pension and allowance payments to retired employees and their surviving dependents who are entitled to pension payment as a result of their civil servant status. From 1995 through 1999 Deutsche Telekom was obliged to make annual contributions to this pension fund to the amount of €1.5bn. From 2000 on, Deutsche Telekom had to make annual contributions equal to 33 % of the gross remuneration of its active civil servant employees (including civil servant employees on unpaid and temporary leave).²² As a result of the new arrangement, Deutsche Telekom expected a significantly lower annual contribution than was required from 1995 to 1999. The Federal government complements the special pension fund for differences between payment obligations and the fund’s capacity.

²² In 2000 the special pension funds Deutsche Telekom, Deutsche Post AG and Deutsche Postbank AG were merged to the joint pension fund (Bundes-Pensions-Service für Post und Telekommunikation e. V. (BPS-PT)). The BPS-PT works for the funds of all three companies and also handles the financial administration for the Federal Republic on a trust basis.

Table II-17

Contributions by Deutsche Telekom to the pension fund (estimates)

	1995-1999	2000	2001	2002	2003	2004	2005
million €	1.500	895	845	838	809	911	862
Source: Deutsche Telekom (2008a)							

France

Civil servants represented 84,2% of the staff of France Telecom in 2005. In 2003 the FT group shrank by 7% (in comparison to 2002) while staff with private contracts increased by 5.1% over the same period of time. The trend is presently levelling. However, accelerated retirement of civil servants is expected to take place during 2006-2010, due to numerous retirements of baby-boomers hired in the early seventies, during a period of rapid take-off of telephony in France accompanied by staff extensions.

France Telecom has some personnel with temporary contracts. However, their share is smaller than one per cent and has decreased since 2001.

The transition of France Telecom from state administration to private enterprise was a long-run affair. Concerning the “civil servant status”, a decision was made in 1990 (2nd July 1990 law), that FT would not recruit any civil servants after 2001. All civil servants in FT would stay until retirement (Collective Agreement of July 9th 1990 for a new employee policy: “Volet social de la Réforme”). A new Employee Status was negotiated in July 1992 including a new classification for employees. High-level managers were classified in 1993, and other employees were classified in 1994.

On November 18th, 1993, “Conseil d’Etat”, the Government counsel and French higher administrative court, decided that civil servants could work in a private company only if (1) the government still held the majority of shares directly or indirectly and (2) the company was in charge of a public service (Conseil d’Etat (1993)).

Two majors decisions were taken for civil servants:

- First, the new 1992 status offers specific positions and incentives for senior management. If senior managers accept this new status (with rules for appreciation, promotion, etc. almost like those in the private sector) s/he receives a new retribution with a substantial bonus.

- Specific dispositions were taken to help transfers to other French administrations (and education) or firms. Details for this specific arrangement are shown below.

In the meantime an enormous training effort was made to transfer staff to commercial positions (60 000 people transferred in 5 years) since there was an agreement that no lay-offs would be imposed.

Back in 1997, more than 80% of France Telecom personnel were civil servants and France Telecom met the two conditions imposed by Conseil d'Etat. However, in 2003 two changes appeared. On the one hand, the new European telecom regulatory package was enforced, demanding that Universal Service be tendered. Therefore, France Telecom could, in theory, lose Universal Service (Journal Officiel de la République Française (2004b)). On top of that, the Raffarin government (centre-right) opened the way to a sale of more France Telecom shares. The law voted in Parliament at the end of 2003 (Journal Officiel de la République Française (2004a)) allows, in a derogatory way, civil servants who still worked in France Telecom at the time to remain in the company until they retire.

Even though the status of civil servants is now stable in France Telecom, this situation clearly creates a management problem in terms of costs and flexibility of labour. Several steps have been taken to decrease both the number and the cost of civil servants for France Telecom.

1. In 1997, France Telecom paid €5.7bn to the state as a lump sum to be used to pay the extra costs of the pensions of its retiring civil servants: the government was happy to receive funds lowering the budget deficit while France Telecom was happy to get rid of an enormous pension debt looming in the future.
2. Civil servants aged 55 or more were encouraged to take early retirement leave ("Congé de fin de carrière, or CFC). On November 30, 1995, an agreement was signed with the major trade unions (CFDT, CFTC, CGT, FO) so that France Telecom civil servants using the CFC system kept 70 % of their wages between 55 and 60 years and do not have to work. 3700 civil servants left for a CFC in 2001, 4200 in 2002 and 4400 in 2003. From a financial point of view, this represents large expenditures. In 1997, France Telecom estimated the total cost of CFC to about €27bn At the end of 2004, the corresponding provisions made in the consolidated accounts were equal to €3.5bn The "Congé de Fin de Carrière" early retirement scheme ended in 2006, but a similar plan is expected to substitute it.

3. France Telecom encourages its civil servants to leave for “regular” civil service jobs. In 2003, an agreement was signed with the trade unions to help civil servants willing to leave the company by the end of 2005. France Telecom pays them (1) training; (2) any wage differential between France Telecom and their new job over a two-year period; (3) a bonus equivalent to four monthly wages (France Telecom (2004)). The law adopted at the end of 2003 (Journal Officiel de la République Française (2004a)) gives similar benefits to civil servants leaving France Telecom for other government jobs till the end of 2009. Furthermore, administrations accepting former France Telecom civil servants also receive additional benefits (including an amount equivalent to 4 monthly wages). In 2004, 711 civil servants have left France Telecom and joined other government jobs (2/3 in state administrations and 1/3 in local administrations). At the end of 2004, 12 % of France Telecom civil servants (that is, 11,000 employees) were listed on the company intranet, devoted to job mobility towards other public jobs (France Telecom (2004)). This endeavour, as a whole, has had limited impact.

Italy

Italy's Telecom Italia never had civil servants as part of its workforce, because *SIP*, the predecessor of Telecom Italia exclusively relied on private employment contracts.

Telecom Italia's labour productivity (as measured by main lines per employee) has increased from 2000 to 2005 considerably (see below). One of the main explanations for this development is linked to Telecom Italia's business strategy to eliminate inefficiencies, duplications, and thus, to increase the overall productivity of the company. A second reason relies on organisational changes, in particular, the spinning-off and outsourcing of several activities, while new activities have been become part of Telecom Italia's business activities. A realistic estimate is that at least two-thirds of the decrease in the company's employment is attributable to productivity improvements, while one-third comes from spin-offs, outsourcing and other unspecified sources.

Law 30/2003 on the reform of labour market regulation - the so-called “Biagi law” – has given some momentum towards more flexible forms of employment. In most cases, the social partners are to agree on the conditions under which companies may use these forms of employment, which include new forms of part-time work (alongside forms such as on-call work, 'project' work, staff leasing and job-sharing). According to the law, these conditions must be

set by collective bargaining either at national/sectoral level or at the regional level (i.e. at the level of a geographical unit such as a province). While the Biagi law can be seen as a recent attempt to remove restriction on temporary and fixed-time employment, latest developments in the policy arena are ambiguous.

More specifically, until the beginning of the new century, it was very difficult in Italy to hire temporary workers: rules governing temporary employment were very restrictive, such that the associated costs of temporary labour were too high to make this form of employment attractive. In sum, those regulations largely discourage any hiring of workers on a temporary basis. As a result, all sorts of illegal employment flourished – typically, in call centres.

The “Biagi Law” intends to promote more flexible labour relations. It also aims at making temporary work easier to handle and to implement so as to make it more attractive from a pure cost perspective. It can be attributed to the Biagi law that temporary and fixed-term employment relations greatly increased in call centres and other sorts of telecommunication based information centres, which are run by Telecom companies. Recently, however, the new government has declared to cut back those liberalizations in order to transform temporary occupations into permanent employment relations. As these latest developments have been causing a great uproar among telecommunication service providers, the future direction of Italy’s labour market policy in this domain remains rather unclear.

Spain

Telefónica never had civil servants as employees, even when it was a public firm. From 1945 to 1996, the Spanish State had enough of stake to control Telefónica. It was considered as a *public firm* because the State was the main shareholder, but Telefónica never was a *public administration*.

Telefónica suffered an overcapacity problem due to technological progress. However, the number of employees has been reduced through three main initiatives:

- Anticipated retirements,
- incentive and voluntary dismissal and
- by moving people to other subsidiaries, such as Telefónica Móviles, subsidiaries in America, etc.

It is not extremely difficult to get rid of employees in Telefónica, if proposals for employees are attractive. From the beginning of the 1990s, Telefónica has carried out a strategy of reducing personnel in traditional business in Spain, namely fixed communications. This business is now operated by “Telefónica de España”, a 100% subsidiary of Telefónica S.A. In the table below there is an evolution of the number of employees in Telefónica de España.

Table II-18
Development of personnel

Telefónica de España	2000	2001	2002	2003	2004	2005
Employees (end of year)	43.009	42.245	43.952	38.464	36.425	35.055

Source: Telefónica (2000 to 2005)
 Note: Telefónica has made some changes in the personnel statistics. We include the note provided by Telefónica: “In 2003, Katalyx and Emergia became part of Telefónica Empresas Group, and in 2004, Telefónica Empresas became part of Telefónica de España and Telefónica Latinoamérica. As a consequence of this reorganization and in order to have comparable figures for prior years , we have re-classified certain employees to Telefónica de España (1779 in 2002, 1878 in 2003, and 2091 in 2004) and to Telefónica Latinoamérica (2346 in 2002, 2621 in 2003 and 2571 employees in 2004).

Considering labour market reforms, Spanish stakeholders, trade unions, central government and entrepreneurial associations were in contact since March 2006 in order to get a general agreement that allows the improving of labour conditions in Spain, especially the promotion of initiatives that may increase the percentage of workers with a permanent job contract. By mid 2006, 30% of the workers had a temporary contract. This rate is very high if compared to the about 13% that represents the European Union.

The agreement was reached at the beginning of June and a Royal Decree (a legislative norm elaborated by the central government) was released on the First of July. The main changes of this new norm are as follows:

- The new regulation established a limit of 30 months to employ a worker with two or more temporary contracts that imply at least 24 months of work during that time. If that limit is reached, the firm must convert the temporary contract into a permanent one.
- In order to promote permanent employment contracts, the Royal Decree has increased the allowance to be received by the firms that hire new workers of certain categories with permanent contracts (see Table II-19 below).
- Workers fired will receive a cash compensation of 33 days of salary for each year of contract, instead of the 45 days before the Royal Decree.

- The contribution that the firm pays to the Unemployment Fund for every permanent job contract is reduced by 0.50 points of the salary. Before the Royal Decree the rate was 6%. After the modification the new rate is 5.75%, and there will be a new reduction in July 2008 at 5.5%.

Table II-19

Labour Market Reform in Spain

Allowances to be received by the firms for new permanent job contract			
Category	Description	Yearly allowance	Duration of the allowance
Women	Unemployed, and those that have been victims of gender violence	850 euros	4 years
	For contracts for women within 24 months after the childbirth	1.200 euros	4 years
	For contracts for women after 5 years of labour inactivity, and only if the women worked before 3 years at least.		
	For contracts for women with contract interrupted (permanent or temporary) that are willing to reincorporate after the maternity period.		
People aged more than 45 years		1.200 euros	Duration of the contract
Young people	Between 16 and 30 years old	800 euros	4 years
Other cases	Unemployed people during, at least 6 months and esocial excluded people	600 euros	4 years
	Conversion into permanent of learning and substitutions contracts	500 euros	4 years
		3.000 euros and 3.200 euros if it is a case of severe disabled capacity	Duration of the contract
	Disabled people		

United Kingdom

In UK labour market regulations do not constrain the incumbent's business practices much. There are no civil servants employed at BT. The transition occurred before the period of this study begins. It is worth noting that BT downsized its labour force without a strike being called and more or less entirely through voluntary redundancy schemes.

II.3.2 The Indicator

We now turn to the construction of our labour market regulation indicator. We transform the 2003 EPL Index of the OECD and the World Bank rigidity of employment index (see Table II-13 and Table II-14) according to our normalization method. The aggregated indicator for the countries' employment protection is presented in Table II-20.

Table II-20

Employment protection sub-indicator

	Germany	France	Italy	Spain	UK
Employment protection indicator	3,2	2,9	2,9	2,7	10,0

The indicator gives UK the highest score with the other countries following after a considerable distance.

The employment flexibility sub-indicator approximates the labour productivity developments of the incumbent operators over the last years. As it was extremely difficult to harmonise data for employment and for main lines²³, the indicator will be based on changes in main lines per employee between 2000 and 2005. Since this approach does not take into account initial differences in absolute labour productivity, the indicator tends to overestimate flexibility if initial employment was inefficiently high and technological progress was roughly the same in all countries. However, any adjustment with respect to initial values would require an implicit comparison of absolute values which in turn would require adjustments with respect to country specific effects like geographic conditions. In order to avoid these difficulties we rely on the development of main lines per employee and consider the changes between 2000 and 2005. Using Table II-15, calculating the differences between the main lines per employee for the years 2005 and 2000 and transforming the results according to our normalization procedure we arrive at the results presented in Table II-21.

Table II-21

Employment flexibility sub-indicator

	Germany	France	Italy	Spain	UK
Employment flexibility	7,5	10,0	8,0	6,2	10,0

The employment flexibility indicator shows that UK and France perform best in this regard. Italy ranks third with a score of 8,0, while Germany and Spain obtain values of 7,5 and 6,2, respectively.

²³ Employment data differed with respect to annual averages or year-end date, full-time equivalents or head counts, concern or company data, national or international coverage. Main lines were counted as access lines in some countries and as channels in other (adjusting for the incidence of ISDN and broadband lines). The published figures did not allow for a complete harmonisation of figures.

Combining the two sub-indicators we get the ranking shown in Table II-22. The ranking summarises the two sub-indicators presented above assuming that both affect the incumbents' flexibility with respect to personnel strategies roughly to the same extent. The weights are therefore one-half for each sub-indicator.

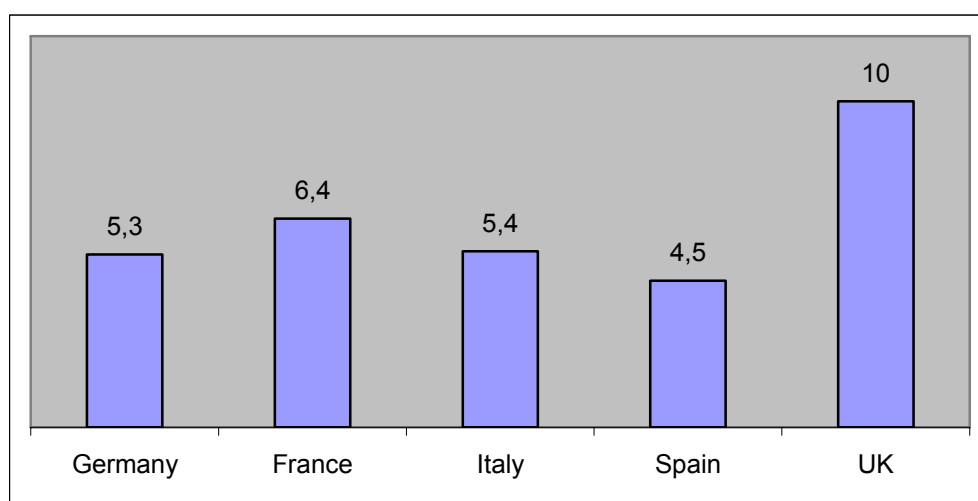
Table II-22

Labour market regulations

Indicator	Germany	France	Italy	Spain	UK
Labour market regulation	5,3	6,4	5,4	4,5	10,0

Our overall ranking shows that the incumbent in the UK benefits from its high ranking with respect to both sub-indicators. France – which follows at significant distance – obtains the second best score of 6,4. Germany, Italy and Spain suffer from both their low rankings with respect to employment protection and their relatively low increases in labour productivity.

Figure II-4

Labour market regulation indicator

II.4 Competition policy

Competition policy affects incumbents mainly by challenging their merger and acquisition activities. In some countries anticompetitive behaviour of the incumbent is also dealt with by competition authorities, while in the majority of cases it remains exclusively under control of the national regulatory authority. In this section we focus on competition authorities interventions in non-regulated markets, so that our competition policy indicator addresses the re-

sponses of competition authorities to mergers, purchases and re-integrations of firms into the incumbent operator.

Overall, our indicator mirrors the restrictions competition policy imposes on the incumbent's strategies that involve selling, purchasing, separating and re-integrating firms or parts of firms as well as mergers with other firms in the sectors. The indicator also covers merger cases that affect the incumbent's competitors. In those instances we analyse how the competition authority's decisions of mergers between competitors affect the competitiveness of the incumbent.

The next section presents key facts about competition authorities' activities in the five countries, where we also assess those actions in terms of being favourable to the incumbent. Thereafter, we derive our competition policy indicator which summarizes the results of the country studies.

II.4.1 Country comparisons

Germany

In the telecommunications sector market power and the abuse of market dominance is typically controlled by the regulatory authority for telecommunications, while merger control is part of the competence of the Federal Cartel Office (*Bundeskartellamt*).²⁴ To understand how the practice of competition policy in Germany affects the competitive environment of the incumbent in the telecommunication sector, we will have a closer look at stage II merger decisions which occurred in the last years in the telecommunications industry and the closely related cable business. The following Table II-23 shows that there were only 7 cases in the last seven years.

²⁴ The Federal Cartel Office is also responsible for the prosecution of cartels in the telecommunications industry. The delineation of competencies between the Federal Cartel Office and the National Regulatory Authority are described in Schroeder (1999), p. 27. Though, cartels have not been a problem the telecommunications industry so far.

Table II-23

Phase II merger decisions of the German Cartel Office (2000-2006)

Industries	Number of cases	Number/percentage of prohibited cases
Cable	2	1 / 50 %
Telecom	5	0 / 0%
Source: Bundeskartellamt (2008), own calculations.		

As Table II-23 shows, no major merger was prohibited in the telecommunication sector while one out of two phase II mergers in the cable industry was blocked by the cartel office. We will examine merger cases in the telecommunications and the cable sector more closely and we consider both mergers where the incumbent was involved and those between competing firms. We will focus on stage II merger. In those instances, the cartel office undertook in-depth investigations which allow us to learn more about the authority's attitude towards the telecommunications industry, and in particular vis-à-vis the incumbent.

In 2000 the acquisition of the software IT-service firm debis Systemhaus by Deutsche Telekom was approved by the German cartel office. While there were some concerns that Deutsche Telekom may gain an informational advantage through the merger, the overall assessment was that the competitive pressure in the software service market will counter possible anti-competitive effects, so that neither competition in the software service market nor in the incumbent's core businesses would be harmed.

In 2001 the German cartel office approved the acquisition of Netcologne - which is a city carrier in the area of Cologne - by Callahan Nordrhein-Westfalen GmbH (CNRW) which provides access for cable television channels. It was asserted that the merger would lessen competition in the cable transit level. However, the German cartel office took the view that competition in the fixed telephony market and the broadband access market would increase, so that the positive effects of the merger would outbalance the anticompetitive effects of the undertaking. In its biannual report, the German cartel Office expressed the view that the pro-competitive effects in the local loop market vis-à-vis the dominant position of the incumbent should outweigh the anticompetitive effects in the cable market. Hence, the decision to let the merger go through was mainly driven by an argument that relied on the alleged positive competitive effects resulting from strengthening the merging firms and weakening the market power of the incumbent.

In 2002 the cartel office approved the acquisition of 49 % of the shares of Nexnet GmbH by T-Venture which is a subsidiary of Deutsche Telekom.²⁵ The acquired firm serves as a clearing house for telecommunication services – a market with only three major firms at the time of the proposed acquisition. T-Ventures provides venture capital for new firms entering new markets in the telecommunication industry. In its decision the cartel office stated that the market for clearing services is still in its very early stages and that Nexnet faced considerable problems. Moreover, the cartel office argued that Deutsche Telekom would not gain an informational advantage as all relevant customer data must be made available to all competitors on a non-discriminatory basis. As a consequence, no additional potential for an abuse of Deutsche Telekom's dominant position in the telephony market was assumed.

Overall, these cases may indicate that the German cartel office is prepared to take a balanced approach in cases where the incumbent intends to acquire firms that do not belong to the core businesses of the incumbent. In other words, there are little signs that competition policy restricts the incumbent's activities significantly, when conglomerate mergers are at stake. The balanced approach the German cartel office took in those cases seems to indicate that an acquisition is likely to be approved whenever it is very unlikely that such a merger will strengthen the incumbent's market power in its core businesses. However, the attitude expressed in the Netcologne takeover also shows that the cartel office is willing to neglect competitive harm caused by mergers among rival firms which may threaten the incumbent's market position.

To obtain a more complete grasp of the overall approach of the German cartel office vis-à-vis merger activities where a dominant network operator is involved, it is instructive to examine the merger decisions in the cable market. The German cable market is rather fragmented. Deutsche Telekom controlled the cable operator Kabel Deutschland GmbH (KDG) but the German cartel office has demanded Deutsche Telekom to sell its shares of KDG.

Because of its fragmented structure the German cable market is characterized by intense consolidating activities. Consolidation takes place between cable operators operating in the same stage of the value chain, and mergers are therefore often horizontal in nature. While many mergers between rather small operators have been approved by the cartel office in Germany, there were also two phase II cases. Most prominently, in 2001 the German cartel office pro-

²⁵ See Bundeskartellamt (2002), p.1

hibited the takeover of VIOLA Kabelgesellschaft (which controls the Kabel Deutschland GmbH, which in turn is the cable network operating subsidiary of Deutsche Telekom) by the Liberty Media Corporation, an international media and communication technology firm. In this case the cartel office argued that the merger would diminish remaining competition for accesses between cable operators. At the same time possible efficiencies due to higher network investments were played down.

An interpretation of the decision could be that the cartel office cares mainly about dominance in the short run and is not much inclined to consider possible positive effects on dynamic competition. This view is somehow reassured by a 2005 press announcement concerning takeover of the cable operators ish, KBW, and iesy by KDG, where the cartel office has revealed a similar reasoning. Namely, substantial mergers between network operators are regarded as not constructive for the dynamic development of the cable market.

We obtain additional information about the attitude of the cartel office in Germany by looking at mergers that did not reach the second stage of investigation. Those cases are summarized in the biannual reports of the Federal Cartel Office, and it is instructive to notice that all of those mergers among competitors of the incumbent were approved without further in-depth investigations (for illustrative purposes, the takeover of o.tel.o communications' fixed line business by Mannesmann has been approved without further investigations).

Overall, we can conclude that competition policy in the form of merger control in the telecommunications industry takes a balanced approach conglomerate cases, while in horizontal cases between network operators a more restrictive pattern has been revealed. However, regarding the incumbent this statement only follows from observed cases which reached the cartel office. We can only speculate about the deterrence effects the cartel authority exerts on the incumbent's integration and merger strategies. There are some indications that those deterrence effects are real and potentially quite large. Finally, our analysis of merger control vis-à-vis competitors demonstrates that the cartel authority is willing to let otherwise anti-competitive mergers go through if they create a threat to the incumbent's assumed dominant positions telecommunications markets. Taking everything together, it appears to be fair to evaluate competition policy as rather unfavourable to the incumbent in Germany, in particular, with regard to its core business.

France

The relative assessment of the situation in France depends first of all on the observation that governmental as well as competition policy is in general merger-friendly. This is true for the entire economy and also for the telecommunications industry. This statement is validated by merger investigations led by the European Commission, where the French authority has always sided with the merging parties (see, e.g., Légrand /Schneider and Sanofi-Synthelabo /Aventis involving French companies falling EC jurisdiction).²⁶ As is widely acknowledged, the political establishment in France seems to appeal to the idea that “big is beautiful” and “national champions” even more so. It is, therefore, not surprising that no objection has been raised against France Telecom re-folding its Internet access subsidiary Wanadoo and the mobile unit Orange within the FT Group. Interesting though, this attitude also has been applied towards mergers among firms which compete with the incumbent operator. Namely, a significant number of smaller mergers occurred in the telecommunications sector, in particular, Telecom Italia/Tiscali and Cegetel/9Telecom. Relatedly, we observe no interventions in the media sector in the heydays of Vivendi taking over Canal+ and Universal.

Overall, we obtain the impression that competition policy neither restricts the incumbent’s acquisition strategies nor the competitors’ merger decisions much. As a consequence, we cannot regard competition policy in France, as being unfavourable to the incumbent. The general appeal to the idea that large national champions are desirable rather point towards the opposite conclusion that competition policy must be evaluated as favourable to the incumbent. The only qualifier to this assessment – from the incumbent’s perspective – however, is that the “big-is-beautiful” reasoning has also been applied to the incumbent’s competitors.

Italy

In order to understand the attitude of the Italian competition authority towards the incumbent operator in the telecommunications business, the most relevant observation is the proposed merger between Telecom Italia and Megabeam, examined in 2003. Telecom Italia intended to acquire Megabeam, a very small company at that time, which provided R-LAN infrastructure and Wi-Fi services. The R-LAN (Radio Local Area Network) allows the connection of a final user to fixed networks via radio technology and it is crucial for providing Wi-Fi services. The

²⁶ See European Commission (2001) and (2004).

competition authority assumed that the proposed merger will strengthen Telecom Italia's dominant position in the market for access to Wi-Fi services. In addition, it argued that the merger will strengthening Telecom Italia's dominant position in the backward market of access services, in the market for broadband connectivity, and in the market for final broadband services.

Even though the market size of the takeover target was negligible from a standard market structure point of view, the competition authority did not let the announced acquisition go through without imposing substantial obligations as preconditions for an approval of the merger; in particular:

- a) Telecom Italia had to renounce to all exclusive rights belonging to the same firm or Megabeam. Telecom Italia should separate all the activities related to the provision of Wi-Fi services from its other activities.
- b) Telecom Italia and Megabeam had to agree to roaming conditions on a non-discriminatory basis by adopting the principle of internal-external parity.

As direct result of those obligations imposed by the competition authority, Telecom Italia decided to give up the proposed acquisition of Megabeam.

Quite generally, this case highlights the conviction of Italy's competition authority that structural separation between the network operator and providers of services is a necessary precondition for achieving effective competition in markets that rely on network access. Accordingly, competition policy has been friendly to mergers among rival firms, in particular, whenever a weakening of the incumbent operator's business was part of the assessment. We are, therefore, left with the assessment that competition policy appears to be particularly unfavourable to the incumbent in Italy.

Spain

In Spain – and quite similar to France – we first of must acknowledge that political interests heavily influence competition policy when it comes to large national firms. While competition policy can be regarded as rather neutral vis-à-vis the incumbent, such an assessment is premature in the case of takeovers concerted by foreign firms. In those instances, the decision to approve or block the merger may depend eventually on the central government. Not surprisingly, political criteria likely to be higher, and neutrality may not be assured.

In line with that observation we find cases where interests of national groups over those of foreign origin have been favoured. Some recent mergers have gone through this process, as e.g., the proposed merger of digital satellite platforms, cable mergers, and LDMS merger.

While the so-called “golden share rule” has been abolished recently,²⁷ it has been used (or, threatened to be used) to abort the merger Telefónica/British Telecom and Telefónica/KPN mergers. As a consequence, both mergers were not realized.

Digging deeper into the Spanish competition policy system we are confronted with the Servicio de Defensa de la Competencia. It is part of the Ministry of Economic Affairs, and serves as a first instance in competition cases. This authority, however, does not exert tight restrictions on businesses. In 2003 alone it analysed a total of 79 proposed mergers across the economy. Of that total, 72 were authorized in a first instance, one was archived, five were sent to the Tribunal de Defensa de la Competencia and four were resolved as a decision of the Council of Ministers (Central Government).

Since 1999 there were three major merger cases in the telecommunications industry. All have been approved under conditions. *First*, in 2003 (case no. N-0303) the acquisition of Retevisión by Abertis Telecom was eventually approved, however with conditions to guarantee competition in Catalonia. This case involved competitors of the incumbent. *Second*, in 2002 (case no. N-280) the merger of Sogecable and Via Digital, two digital satellite TV platforms, was approved with minor conditions. Again, that case involved competitors of the incumbent. *Third*, in 2000 (case N-093 BBVA) Telefónica acquired Movilpago, a takeover which was approved subject to conditions.

Overall, the competition policy environment under which the incumbent operates is rather unfavourable. Competition policy – backed by the central government’s hostility against foreign takeovers – does not restrict the incumbent’s integration and merger decisions much. Takeover threats by foreign firms targeting the incumbent firm have been successfully blocked.

²⁷ In a famous ruling by the European Union Court of Justice on June 4, 2002 the Spanish golden share rule has been abolished in 1995. Nevertheless, the central government succeeded in retaining the possibility of blocking takeovers or mergers by foreign firms, whenever the general interest, public order, or national security is at stake.

United Kingdom

Looking back over the period under study, it is evident that most mergers go through without an in-depth investigation. This observation is validated by the fact that proportion of referrals to qualifying cases is quite small and can be found to range between 5% and 10% per year. However, after allowing for the negotiation of undertakings by the affected parties, it is clearly very uncommon for a proposed merger to be struck down as being ‘against the public interest’. Nevertheless, it should also be borne in mind that some mergers are abandoned once it is evident that they will be struck down, or because the delay in examining the case has put off the buyer, so it is perhaps fair to say that 1 in 20 or so of qualifying mergers are prevented one way or another.

Insofar that network industries are concerned, these are mostly transportation and power cases, rarely involving communications. So we are left with the fact that the United Kingdom did not produce significant empirical evidence for our investigation. Overall, we can conclude that a proposed merger in the telecommunications industry is almost certain to be allowed subject, in some cases, to acceptance of certain conditions. We refer to the case of the Vodafone Group/Project Telecom merger which is reassuring. Vodafone Group offered £ 155 million to buy Project Telecom, an ISP. This potentially affected competition in the market for retail mobile communication services, and met the minimum turnover test for qualification under the Enterprise Act 2002. However, it made little difference to the degree of concentration in a well-supplied market and there were few objections of any consequence, so the merger was cleared.

The following list summarizes decisions of the Office of fair Trading concerning the communications sector:

- 18/09/03: Allowed without remedies [Vodafone/Project Telecom]
- 24/10/01: Allowed without remedies [NTL/Viatel Global & UK]
- 16/08/01: Allowed without remedies [Marconi/Easynet Group]
- 08/05/01: Allowed with remedies imposed [BSkyB/BIB]
- 23/01/01: Allowed without remedies [Wanadoo/Freeserve]
- 08/11/00: Allowed without remedies [Microsoft/Telewest (23.6%)]

- 18/04/00: Allowed without remedies [Vivendi/BSkyB (24.4%)]
- 22/03/00: Allowed without remedies [NTL/C&W Communications]

Quite obviously, we observe a rather lenient policy in the United Kingdom. However, the absence of major merger cases, makes it almost impossible, to come to a decisive conclusion regarding the incumbent-friendliness of competition policy in the United Kingdom. The absence of large merger cases involving the incumbent operator could also be the result of a deterrence effects exerted by the competition authorities so that acquisitions are not even considered as a business strategy at the incumbent's top management level.

II.4.2 The indicator

We started the generation of our competition policy indicator with a country-wise investigation of merger cases. Overall, we found that competition regimes differ substantially from country to country. This observation holds both with regards to political influence and procedural issues. Overall, the competition policy environments under which mergers in the telecommunications sector have to be contemplated and executed differ considerably. While we have to deal with unobserved heterogeneity, our assessments based on the facts collected in the country studies allow us to rank the countries according to their incumbent friendliness as summarized in Table II-24.

Table II-24
Competition policy indicator

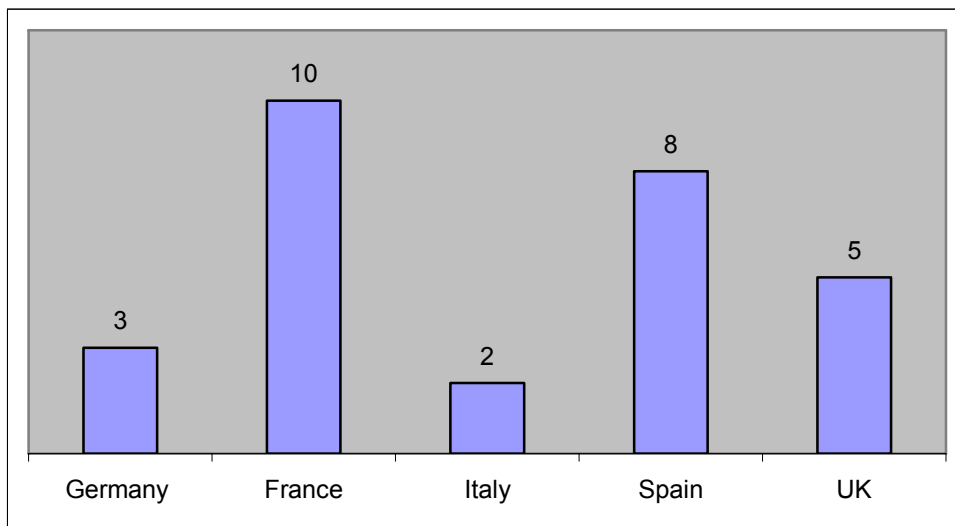
	Germany	France	Italy	Spain	UK
Competition policy	3,0	10,0	2,0	8,0	5,0

Countries in which merger activity of the incumbent has not been inhibited by competition measures obtain a relatively higher score for incumbent friendliness. The level of incumbent friendliness of competition policy reaches the highest levels in case of France and Spain. In those countries none of the major acquisitions of the incumbent has been blocked or restricted by the imposition of unduly obligations. Taking the political climate into account, we found that competition policy in France (and - with some qualifications – in Spain) appeals most strongly to the idea of “big is beautiful” and the building of national champions. Accordingly, we consider competition policy as most favourable to the incumbent in France with Spain following in close distance.

We found that the idea of national championship does not play a significant role in the remaining countries. In the case of the United Kingdom we observed a rather lenient policy, but the absence of major merger cases, makes it almost impossible, to come to a decisive conclusion regarding the incumbent-friendliness of competition policy there. The United Kingdom, therefore, ranges between France and Spain on the one hand and Italy and Germany on the other hand. Italy obtains the lowest score and Germany a slightly better one. In Italy, the competition authority virtually blocked the proposed takeover of a very small firm by Telecom Italia while mergers among competitors were never challenged.

With respect to Germany, we found that competition policy in the form of merger control in the telecommunications industry takes a restrictive pattern when the core business of the incumbent is involved. Moreover, competition policy appears to exert significant deterrence effects on the incumbent's integration and merger strategies as it is also the case in Italy. Finally, our analysis of merger control in Germany vis-à-vis competitors has shown that the competition authority is willing to let otherwise anti-competitive mergers go through if they create a threat to the incumbent's assumed dominant positions telecommunications markets; a fact which we regard as unfavourable to the incumbent.

Figure II-5
Competition policy indicator



II.5 State Support

Although state aid that distorts or threatens to distort competition is generally declared to be incompatible with the common market in the EU if it affects trade between member states (see European Union (2006), art. 87 (1)), several exemptions exist under which public intervention is or may be accepted (see European Union (2006), art. 87 (2) and (3)). These exemptions include, in particular, measures that aim to promote the economic development of less developed areas and state aid to facilitate the development of certain economic activities or areas without adversely affecting trading conditions. More specifically, the Commission has underlined the existence of a geographical digital divide in Europe and highlighted the need for a growing information society. In this regard, the scope for public intervention has also been emphasised (see for example the *eEurope* 2005 action plan²⁸).

This chapter is based on a selection of some measures through which governments can support the development of markets, technology diffusion and innovation:

- Infrastructure aid (including public private partnerships (PPPs) targeted at infrastructure investments)
- ICT support
- State demand

II.5.1 Infrastructure aid

The supply of broadband access is considered of vital interest for the economy and for citizens' participation in social life in many countries. However, the extent to which national governments support infrastructure investments differs considerably. For example, investment in telecommunication infrastructure is regarded as an issue for the private sector in Germany whereas in Italy, particularly in the southern regions, infrastructure investment is considered a public task, for which public financing should be available. Differences between countries also exist with respect to the extent to which PPPs are used to spur infrastructure investments. PPPs are not relevant in Germany, while they are used in the other countries.²⁹

²⁸ See Commission of the European Communities (2002)

²⁹ Information about PPPs is based on Lattemann (2006) and a report commissioned by the French regulator, see Art Telecom (2005).

Box II-2

Public Private Partnerships

Broadly defined, public private partnerships can be considered as co-operations between governments and private firms. PPPs can differ with respect to the share of responsibility between the private and public sector. Goods and services may be provided by the private sector while the state provides basic infrastructures, or the state may support investments by tendering projects and sharing investment costs.

The private sector can contribute to the success of PPPs through:

- Commercial incentives increasing efficiency of investments and the supply of goods and services.
- Harnessing of private sector innovation by the public sector.
- Increased customer awareness and focus.

By sharing risks of conducting large projects, such as those derived from delays in building time, from exceeding budget limits or from problems in the operation of plants, private investment incentives can be aligned with overall economic efficiency considerations or political goals.

The main reason for risk sharing is that private enterprises are better able to assess business risks. The basic principle is to attribute risks where they can best be dealt with and to make sure that there is a balanced distribution of risk among partners.

“Risks should be transferred to the party that may deal with them in the best possible way.”

Public authorities as risk carrier

Shared or retained risk

Private sector as risk carrier



preliminary building licence
discriminating legislative risk

volume risk
inflation risk
general legislative risk
force majeure
detailed building licence

planning
building
launch
operation
project funding
technological deterioration

Source: Based on Bereszowski (2005)

II.5.1.1 Country comparison**Germany**

As just mentioned, investment in telecommunication infrastructure is regarded an issue for the private sector in Germany. The stimulation of infrastructure investment is supported only

indirectly by telecommunications regulation, the promotion of competition and measures which increase the demand for telecommunication services.

Additionally, there are no PPPs that focus on infrastructure investment explicitly. While different studies indicate a strong increase of PPP-solutions in Germany, their amount is relatively small compared to other European countries and there are only initiatives, while concrete financial programmes are observed in other countries.³⁰

In June 2005, a bill to speed-up the implementation of public private partnerships ('ÖPP - Beschleunigungsgesetz') was discussed and later approved by the German Parliament with the exception of amendments concerning tender, allocation and investment law. The law was designed by a special PPP Task Force composed of representatives from the political system and industry. The Task Force also intends to allocate an extensive research assignment within the scope of the 'Aufbau-Ost'-Programm.

One of the most important initiatives in Germany is the "Initiative D21". This initiative aims at improving Germany's competitiveness in the information and knowledge society. However, until now no PPP focusing on broadband infrastructure has been implemented.

France

There does not exist a national program that supports infrastructure investments in France. However, in 2004 local governments were authorised to put in place broadband deployment plans. Some of the related projects were financed via European structural funds, while others have been implemented as PPPs. Most notably, some of the French PPPs in the broadband sector aim at an intensification of competition in regions where France Telecom acts as a monopolist, and at an improvement of availability of broadband technologies in rural areas.³¹

In January 2004, France Telecom launched its planned "*Département innovant*" convention aimed at local and regional administrations. The convention takes the form of a straightforward declaration of intent by the signatories: France Telecom indicates the calendar for implementing ADSL in its distribution frames and the extra measures it might consider taking, whilst the *département* specifies its priorities in terms of ADSL requirements. While France

³⁰ See Lattemann (2006) and Deutsches Institut für Urbanistik (2005) for an overview over current PPPs in Germany.

³¹ Information about PPPs is based on Lattemann (2006) and a report commissioned by the French regulator, see Art Telecom (2005).

Telecom has refused to provide copies of the conventions that have already been signed, France Telecom confirms that no signed or prepared convention entails payment of any subsidies.

The financial effort of France Telecom represents a supplement of €100m for investments in ADSL for the period 2004-2005. The global plan of complementary investments for ADSL reached €700m during 2003 – 2005, in addition to the €3bn of investment designed for renewing and modernising fixed networks in France during 2003 – 2006.

Given the extent of the operation (by April 2004 some 50 départements had already signed conventions), the ART asked for the *Conseil de la concurrence*'s opinion from the point of view of competition law.

The observations of the *Conseil de la concurrence*'s are the following:

- The standard convention is quite unclear concerning the exclusivity or privileges in terms of information, promotion and financial assistance that France Telecom might receive.
- A "*Département innovant*" partnership may affect local competition conditions, because France Telecom may gain a competitive advantage by collecting data on local demand.
- For any potential call for tender the construction of certain infrastructures or the provision of certain services France Telecom may benefit in terms of access to information on local requirements, the way specifications are defined and the conditions under which the local or regional administration might decide to grant subsidies.

Public Private Partnerships

PPPs between public authorities and private enterprises are realised as SEM – mixed-economic municipal enterprises. This concept cannot be compared to the classic PPP-model because SEMs are only corporate enterprises where French cities and communities participate. The maximum municipal shareholding is confined to 85%. The private partner holds at least 15% to 49% of the shared investment capital. SEMs operate in fields like public transport, effective urban development, housing, tourism, waste, water, and energy industries as well as in information and telecommunication technologies. In 2003, around 1200 SEMs with a total of 63000 employees and an annual turnover of €13bn existed in France. The number of planned SEMs amounts to 2000 for the year 2003 in very different segments, such as community health, the operation of ports and airports, tourism and the energy industry.

Table II-25

Irisé

Description		Organized by SIPPEREC in the region of Ile de France
Objectives		Establishing a ICT-based infrastructure with more than 280km linking 81 communities; infrastructure offered to local net providers and associations in order to enhance competition; Irisé = manager of infrastructure; main objectives = supporting local planning, enhancing local attractiveness to business and finally enlarging the offers of broadband services on final consumer markets
Actors	Public	Caisse des Dépôts et Consignations (34%), Telcité (10%), Dexia (5.9%)
	Private	LDCollectivités (50.1%) = affiliate of Neuf Télécom
Financial Dimension		€50m, proportionally shared by project partners
Operator Model		Until 2019 the technological infrastructure will be owned by Irisé and then devolves to the community
Results		Successful – enhanced competition and faster connections, innovative services developed by schools and universities, model not sufficient for regions with less inhabitants than in the region of Ile de France, LDC opens the net for other providers leading to intensified competition for Neuf Télécom; but better services than provided by France Telecom
Source: Lattemann (2006).		

Table II-26

Teloise

Description		Rural area with 133 inhabitants/km ² ;
Objectives		Establishing a broadband infrastructure in order to make the suburban area of Paris more attractive to business; Potential customers in particular net and service providers and local authorities; reasons for the PPP: improving quality and efficiency of the project, access to private capital and knowledge
Actors	Public	CDC (private Fonds for financial support of projects)
	Private	LDCollectivités (Marketing, Negotiations about user rights and the development of the passive infrastructure), Sogretel (Conception, construction, maintenance), Crédit Agricole (long-term credits)
Financial Dimension		In total €50m shared equally by private and public partners, EU not involved, direct subsidies to private firms prohibited but in the framework of “public services” and “public contracts” financial support possible. After break-even – profits are equally shared between public and private partners.
Operator Model		Teloise remains the right-holder of the network for the next 22 years. After the PPP cycle, the infrastructure will be passed on local authorities. The network will not be operated by Teloise but by other parties. Thus, Teloise acts as the licensor.
Results		Demand of network usage by Free, Neuf Télécom, Cegetel, Option Service, Completel, Bouygues Telecom and Sanef Telecom; Competition enhanced, full provision of broadband in so called white areas difficult to achieve, thus even if passive infrastructure is available in remote areas, alternative net providers are more interested to invest in areas with higher population densities
Source: Lattemann (2006).		

Considering telecommunication infrastructures, the main objectives of French PPPs are related to an intensification of competition in regions where France Telecom acts as a monopolist and an improvement of availability of broadband technologies in rural areas.

According to article L.1425-1 CGCT, communities are allowed to establish their own telecommunication infrastructures if infrastructure construction by private firms is limited for certain reasons. The adoption of article L.1425-1 CGCT has increased the willingness of communities to invest in broadband technologies since the communities are now allowed to construct, administrate and take advantage of active infrastructures.

The extent of PPPs differs substantially from low-budget projects to projects with an investment volume of €50m. At the beginning of 2006, a total of €827m has been invested in broadband PPPs.

Table II-27

Pau Broadband Country

Description		Introduction of high-speed internet (100Mbit/s) for the first time in France, in the communities "Pau-Pyrénées" with a population density of 150 inhabitants/km ² in average.
Objectives		Realisation of high-speed internet, improving attractiveness to business of the region
Actors	Public	Agglomération Pau Pyrénées and the region « Pyrénées-Atlantiques » ; EFRE
	Private	Axione (« neutral » provider, marketing, SPTH (French concern producing high technology products)
Financial Dimension		Total investment: €35m thereof subsidies of €7.5m (EFRE) and €1.1m of the region.
Operator Model		After the end of the PPP, ownership of the network will be passed to the public authorities who will then decide whether to self-provide or delegate maintenance of the network.
Results		<p>Numerous criticisms – delayed creation of infrastructure; the potential of the project referring to the increase in the regional attractiveness to business has been overestimated – no enhanced employment; insufficient quality of services and inadequate price</p> <p>Insufficient demand for provided services; thus expectations not fulfilled, although demand is increasing</p> <p>Existing infrastructure have not been considered in the planning such that an alternative net provider could enter the market and offers ADSL-access without using the new established infrastructure; thus effects of the PPP in terms of broadband diffusion were slight as the region has been partly opened up by France Telecom</p>
Source: Lattemann (2006).		

Italy

The realisation of broadband access throughout the country is a major concern for the Italian government. The government intends to promote the creation of a broadband network in less developed areas of the South (Sicilia, Puglia, Basilicata, Calabria, Sardegna, Abruzzo, Molise). Infrastructure investment in these areas is considered a public task, for which public financing should be available. The rationale of this policy is guided by continuous attempts to integrate less developed regions into the national economy. EU funding plays a major role, especially in Target I regions. Furthermore, PPPs have been used to stimulate infrastructure investment. There is no ex ante exclusion with respect to the participation of Telecom Italia in PPPs.

Infratel Italia (Infrastructures and Telecoms for Italy) aims at reducing the technological gap among the different areas of the country through the roll-out of broadband infrastructures. Infratel Italia is a company created by the Ministry of Communications and by Sviluppo Italia, a public Agency, whose task is to attract investments and favour the creation of new companies in underdeveloped areas of Italy. Infratel has started the procedure for laying down 1800 km of optical fibres in 265 municipalities of the South with the aim of reducing the technological gap of 20% existing in the southern regions. The project intends to build a MAN (600 km) in 30 cities of the South and a link connecting the various backbones and those municipalities that still lack a broadband network (1200km). Telcos will then be able to hire the network at market prices and without discrimination. This first project costs €127m. Over a 3-year period €930m will be spent.

Public Private Partnerships

Considering PPPs in telecommunications, several projects have been launched since liberalisation (1998). The most famous and innovative one was created by the AEM (the electricity and gas utility of the Milano Municipality) and a group of private investors in 1999. The aim was the provision of telecom services through optical fibres. The venture was based upon two companies: the first one, Metroweb, was created by AEM in order to exploit the ducts of the electricity and gas networks and to deploy naked optical fibres throughout the city of Milan. The second one, E-Biscom, was created by a group of financiers and managers (led by Silvio Scaglia, former CEO of the mobile company Omnitel) with the aim of providing triple play services (voice, data and video) on the Metroweb's network. Six months after the creation of

E-Biscom and before it became operative, the company was listed through an IPO on the Milan Stock Exchange, and got a huge amount of resources (3,237bn lira). E-Biscom invested this sum in the network and strengthened its own structure, becoming one of the most interesting competitors active in Italy. E-Biscom was incorporated into Fastweb in 2004 and has become the most successful Italian city operator.

The Fastweb business model has been very successful, though the company has never made profits, but it has provided Milan with the largest network of fibre optics in Italy. Furthermore, Fastweb replicated the model experienced in Milan in a few other towns, like Genoa, where, creating a partnership with AMGA, the Municipality controls electricity and gas utility.

Fastweb is certainly the most popular Telco of the country and can be considered a very good example of a PPP, aimed at achieving two important objectives: deploying fibre on the one hand, and increasing competition on the other hand even within the local loop. In June 2006, the Milan Municipality sold 75% of Metroweb's shares to the Sterling Square private equity fund, maintaining a 25% participation in the company. The Municipality has kept the right to use 15% of the fibre for 10 years, for the provision of public services.

The Fastweb experience has been imitated by many other utilities, which were unfortunately unable to exploit the euphoria experienced by the Stock Exchange, and therefore had to limit their expansion to their own areas which had mixed results.

Projects with limited success include the ambitious project of ACEA, the Rome multi-utility, Fiat and Spanish Telefónica. The project aimed to deploy 280 km of fibre in the city of Rome, and to expand into the local loop, putting it in direct competition with Telecom Italia. The venture was not successful and a few years later Telefónica and Fiat withdrew from it.

More successful was the PPP developed by Acegas, the Municipality of the city of Trieste, which deployed 41 km of fibre, connecting public buildings, the University, shopping malls and the Port Authority.

The utility of La Spezia (Acam) created Acamtel, through a partnership with Edisontel, to deploy fibre within the city and the province.

In some of these cases, the partners (public and private) have jointly built the infrastructure, and then hired it out to the Telcos, (as in the case of Cremona electrical utility, which created AEMCOM, deployed the fibre and then leased the network to Fastweb). Often, the partners

build the infrastructure together with an OLO and then provide the service in competition with Telecom Italia i.e. Albacom.Amps Parma (see Table II-28). The number of projects started to decline from 2002, when it became clear that it was difficult to reach the break-even point.

Table II-28

Albacom.Amps – Parma

Description		AMPS is a multi-utility offering public services in Parma. In 1999, AMPS formed a joint venture with the national operator Albacom (represented by British Telecom, ENI, Mediaset and BNL – since 2004 100% British Telecom) in order to accelerate the diffusion of ICT. Since 2000, Albacom.Amps holds a licence as operator of telecommunication.
Objectives		ICT support, provision of broadband technologies and Parma and its surrounding.
Actors	Public	AMPS (access to existing infrastructures and knowledge about local markets)
	Private	Albacom (knowledge about the telecommunication industry)
Financial Dimension		Turn-over (2003): €341,54m
Results		Increased competition, realisation of alternative access to infrastructure; hardly lower prices; favouring the development of ICT-based services provided by local authorities (e-government) due to the existence of a local operator
Source: Art Telecom (2005).		

Table II-29

Lepida – Region Emilia-Romagna

Description		With about 4m inhabitants and 360.000 firms, the region Emilia-Romagna constitutes one of the most important and dynamic regions in Italy.
Objectives		Constructing a private broadband infrastructure favouring the development of innovative service (in particular e-government); Increasing public demand; Increasing the attractiveness to business;
Actors	Public	341 communities; 9 provinces; 5 universities; public utilities
	Private	Telecom Italia (providing HSDL connections and satellite), presently no other operators are joining the project
Financial Dimension		The total investment account for roughly €58m out of which 40% are financed by public funds.
Results		Development of a market for telecommunication services in public administration; Provision of broadband technology at lower prices compared to the market price; competition is enhanced in peripheral areas, where operators normally are not interested in developing infrastructures and providing services.
Source: Art Telecom (2005).		

A new interest for PPP, however, has emerged since 2004/2005 when public opinion and the politicians, in regional governments and municipalities, became aware of the digital divide existing between the different areas of the country, affecting a significant part of the Italian

territory. Local governments have decided to promote initiatives aimed at reducing this gap in different ways. Private enterprises or private resources as well as public funds and funds from European Union are regularly involved. One example within in this group of projects is the Lepida-Region Emilia-Romagna project (see Table II-29).

Another project has been promoted by the province of Florence, which intends to deploy a broadband network connecting 16 villages located on the upland area of the province, 6 small towns located in the surroundings of Florence and a large part of Florence itself. The connection of the 16 villages on the mountains implies the deployment of an optical backbone. The main partner of the Province in the project is Infracom, a joint-venture created by the company running the motorway Brescia-Padova, the Saving Bank (Cassa di Risparmio) of Padova and Verona, and by a big insurance company (Cattolica Assicurazioni). The technological partners are Siemens and Selex Communications. The services offered by the new network include Internet, VPN, Voice Telephony, IP and VoIP, videoconferences and security.

The province of Brescia aims at reducing the digital divide in a number of villages and small towns of the province, where no broadband is available. The project involves the participation of Megabeam, a very small company, specialized in the deployment of wireless networks, based on Wi-Fi and Wi-Max technologies. Megabeam is supposed to provide broadband in 80 villages of the province which cannot be reached by ADSL. The new network will be totally wireless.

The main PPP involving Telecom Italia is a project in the Piemonte region. Last June, the regional government and Telecom Italia reached an agreement for developing broadband networks and services in 900 villages with 1 million people and 125.000 companies. The investments will be completed in 3 years and is estimated at €30m, half of which will be funded by the Region and the other half by Telecom Italia.

Finally, a new investment fund, named PPP Italia, was established in December 2006. The fund is run by Fondaco Sgr, a company created by a number of outstanding banking institutions, such as Fondazione San Paolo (40%), Fondazione Cariparo (23%), Fondazione Caribo (17%) and Ersel Finanziaria (20%). The Fund has a capital endowment of €120m.

Spain

In line with the EU Treaty, the Spanish Telecom Act (2003) contains an explicit rule stating that direct subsidies to specific telecom operators, in order to develop a technology, can distort market competition and are against the principles of the Telecom Act.

Despite the general reluctance to finance infrastructure with public funds, regional governments provided funding to Telefónica when the company extended basic telephone services to rural areas. These telephone lines required a huge amount of investment to be deployed and the revenues subsequently generated were very low. The technological solution was to implement mobile networks with fixed handsets. The costs were shared between Telefónica and the Spanish regional governments.

Project no. ITC/701/2004/17 aims at providing broadband access to rural and isolated areas through

- infrastructures and equipment investments and
- net infrastructures installation costs and access to final user

Beneficiaries are network providers, users and the suppliers of electronic communications services; individual or business associations can take advantage of their support. However, only SMEs are eligible for funds (with some exceptions) and investments are to be made in target zones according to the European Commission' definition. The modalities of the project were

- refundable credits at an interest rate of 0%, with 10 years for the recovery of instalments and a 3-year lag as well as
- and a 3-year lag non-recoverable subsidies

PPP initiatives are not used in Spain for telecom infrastructures. Nevertheless they have been implemented in order to develop other public works and infrastructures, such as railroads, highways and hospitals. Central and regional governments, as well as some municipalities, are involved in these initiatives. Additionally, there are many initiatives in the Spanish regions not based on network investment but on training and consulting for SME. One good example is Centro de Competencia in Galicia, whose aim is to promote e-commerce among all the Galician SMEs. Its main tool is dissemination through free training courses (see www.e-negociogalicia.com).

The following reasons may explain why PPPs targeted at telecom infrastructures have not been initiated: First of all, CMT, the Spanish regulator very strictly monitors any initiative that could distort competition. Secondly, the Spanish regulator tries to protect consumers using an indirect approach consistent with the encouragement of market entry and competition.³² Therefore, the implementation of PPP initiatives seems to be very difficult as such initiatives are assumed to distort the competitive environment.

Nevertheless, some public initiatives have been implemented:

1. Some public initiatives targeted at establishing Wi-fi areas have been implemented by some municipalities. In some cases, CMT was obliged to dismantle them. The most significant case is “Sensefils BCN”, the Wi-Fi area of Barcelona’s City Hall. The Spanish regulator went against this network because the network operated without a licence and because there was public funding for its maintenance. It should also be noted that the Wi-fi area allowed only access to the municipal web and to other public administration webs.
2. The case of Euskaltel deserves some specific comments: Euskaltel is a global carrier of telecom services in the Basque Country. Three savings banks (Cajas de Ahorros) have control over the firm with a 64% stake (See Euskaltel (2008)). These savings banks have a very special status. They are neither public entities nor private banks. But according to the Spanish normative, the regional government can decide to participate in the management of the banks. The law allows regional governments to control up to 50% of the corporate board. All the Spanish regional governments have decided to make use of this prerogative and, therefore, the regional government of the Basque Country is involved in the management of Euskaltel, which is the leading operator in that region.
3. There are only a few infrastructure projects in Spain. All of them are located in very concrete areas, such as Andalusia (2), Catalonia (2) and Pais Basque. The projects in Catalonia have been either stopped by the regulators or they experienced difficulties before reaching the commercial stage. The ENS Gestor project in Catalonia is not a genuine case of collaboration between public and private partners since the purpose is to build the network using public funding only.

One of the projects located in Andalusia is the Proyecto Mercurio. Sandetel (entity of the Regional Government of Andalucía) collaborates with Iberbanda (private company). This

³² Recently, CMT has reduced wholesale prices for local loops in order to spur new entry.

firm received funding from Sandetel to carry out network deployment in order to try and reach the objective of making broadband available to rural areas (see Sandetel (2008)). This provides an example of Spanish State subsidies.

Table II-30
ENS Gestor Project

Description		Developing a fibre network in Catalonia to link the region's population centres with Barcelona
Objectives		Promoting and allowing the delivery of advanced broadband services to all citizens and businesses of Catalonia; fostering the final operators to do it. This is perceived as imperative in context of the region remaining competitive in Europe.
Actors	Public	Generalitat de Catalunya, Centre de Telecomunicaciones i Tecnologies
	Private	As the network is expected to be built by the public sector, there is a limited role of the private sector in the project.
Financial Dimension		Approximately €50m per year for four years with an expected internal rate of return of more than 7% over 25 years. The risk is expected to be minimized by covering the largest population first where there is already proven demand for broadband services. The network is expected to be funded with public debt.
Operator Model		<p>Uses the infrastructure that is already owned by the Generalitat. The regional railway company which is owned by the Generalitat will provide access to ducts and rights of way along the railway lines to build the network. It is also expected that the big companies located in the region will agree to provide rights of way or to use their duct infrastructure.</p> <p>Once the network is constructed, it will be managed by the limited liability company created by the Generalitat and the Localret strictly as an operator neutral network and providing open access to all interested parties. The plan is to avoid putting switches in the network and provide only dark fibre services in the first stage.</p>
Source: Art Telecom (2005).		

The other project in Andalusia is Guadalinfo. The main characteristics are included below. As common to Mercurio, private firms received financial subsidies to develop public centres. Funding came from Junta de Andalucía (regional government), 50%; Diputaciones Provinciales (provincial institutions), 24%; and municipalities, another 25% (see Guadalinfo (2008)).

Table II-31

Proyecto Mercurio

Objectives		Response to the lack of broadband coverage in rural areas in Andalusia. Promotion of economic development in rural areas by providing a broadband infrastructure which is assessed to be necessary for local firms to remain competitive
Actors	Public	Sandetel – formed by the Instituto de Fomento de Andalucía and Radio Televisión de Andalucía
	Private	Iberbanda
Operator Model		The project started in October 2003 and the objective was that in the first year of development Iberbanda would reach 60% of the target towns. The company has already reached almost 80% in the first year. Iberbanda is using a combination of satellite with WiFi distribution and LMDS on the 3.5 GHz band (pre WiMAX technology).
Results		At the end of October 2004, there were 1200 customers, 867 residential and 320 businesses. At present all services are similar to those provided nationally for ADSL. The initial connection fee is higher than for ADSL, but the monthly fee is comparable. A range of products are on offer with different bandwidths and contention ratios. Sandetel is already starting to think of the next phase of intervention in the broadband market in Andalusia and is examining whether there is a requirement to invest in fibre optic backbones in the region.
Source: Art Telecom (2005).		

Table II-32

Guadalinfo

Description		Pilot stage for 26 public centres for Internet access in rural areas of Andalusia with less than 20.000 inhabitants. Populations in the locations that were chosen ranged between 223 to 13.000 inhabitants.
Objectives		Economic development in rural areas of Andalusia by enabling web-based activities
Actors	Public	Sadesi, a public company owned by Sandetel which in turn is owned by the Government of Andalusia.
	Private	Telefónica de España, British Telecom, Iberbanda, and Auna
Financial Dimension		€3.9m provided by ERDF, €2.0m provided by Junta de Andalucía €3.1m provided by private sector
Operator Model		Software at the centres is all based on open-source software, in each centre two full-time members of staff were appointed to manage and promote the centre. Additionally, a range of services are provided via the portal “guadalinfo.net” designed by Sadesi: Digital maps of towns in which centres were established E-administration services from local authorities such as building and planning applications Services available from central government which were designed for a urban population have been adapted to the needs of a rural audience including: health cards, hunting and fishing licences, benefits to retired people
Source: Art Telecom (2005).		

United Kingdom

For the UK, the Department of Trade & Industry publishes ‘The State Aid Guide’. This document defines what is meant by state aid, and details the circumstances under which it may be provided. Whilst industries such as coal and shipbuilding are mentioned, telecommunications is not. The only exception to this is broadband – the government provided £ 30m in assistance via the regional development agencies to form the Broadband Fund. Furthermore, there are several PPPs aimed at infrastructure investments where British Telecom is partly involved.

The aim of the Broadband Fund is to develop broadband networks and run pilot projects. Although the total size of the fund is repeatedly stated in government publications, financial support for specific projects is rarely stated. Having said this, the following was stated:

- Wales received £ 2.67m and Northern Ireland £ 1.46m from the Broadband Fund,
- £ 12.5m was given under EU objective one status to Cornwall ActNow. This will provide broadband to SMEs in Cornwall.

Several demand stimulation grants were mentioned in connection with London. It was, however, unclear whether or not the sums mentioned were the entire amount, or that provided by the Broadband Fund. The broadband fund also supports the Remote Area Broadband Inclusion Trial (RABBIT).

The government has announced that it will spend £ 1bn on ensuring public sector broadband connectivity (Department for Business Enterprise & Regulatory Reform (2003), p. 1). There is also a broadband aggregation programme. The aim of this is to aggregate demand for broadband so that public sector parties benefit from the scale economies that emerge. Interestingly this is all done at the regional level.

Public Private Partnerships

Although PFI (which is mainly a procurement tool) and PPP have been widely adopted in the UK, relatively few projects involve ICT. As of September 2006 the Partnerships UK database contained 743 PFI & PPP projects, of which 81 were ICT related. While 48 ICT related projects are characterized as infrastructure projects, it is clear that a range of projects fall under this one heading. Projects vary from computerisation of functions to the management of desktop computers within a government agency, provision and maintenance of shared computing

facilities and community broadband in Cambridge. A useful distinction that can be made is between those projects that provide a specific service/function and those that provide an infrastructure that supports a range of services/functions. The first is illustrated by the project providing document imaging services to Derby City Council whilst the latter is exemplified by projects in Northern Ireland that will bring connectivity to schools.

All of the infrastructure projects are PFI projects with relatively small financial values. The collective capital of all PFI projects amounts to £ 1.719m, whereas BT plans to spend £ 10bn to build its 21 Century Network across the UK. Cable operators have also invested considerable amounts in the past to build their networks.

Infrastructure assistance in the Western Isles as well as the Highlands can be described in more detail. The main points from these cases are as follows:

- The projects intend to improve the *quality of infrastructure* that is available in rural and remote areas of Scotland. PFI has been used to provide infrastructure without breaking budgetary limitations (at both national and local levels).
- Funding is drawn from a variety of sources, with individual contributions often being relatively small. This highlights the *limited financial support* available from each body.
- The financial size of the Connected Communities project is relatively small when compared to BT's spending in rural and remote areas. However, the Highland Council Partnership for IS/IT services and Pathfinder North are reasonably sized, especially when the entire period of the contract is taken into consideration. The long-term nature of some PFI contracts has led them to be described as mortgaging the future.
- The projects combine *private and public stakeholders*, with each undertaking a different role. In the case of the Connected Communities project, the public sector acts as hubs that private sector users connect to. In the case of the Highlands, the role of the public sector is largely one of being the project's client.
- The *sustainability* of the projects can be questioned. Price reductions due to national competition may undermine the Connected Communities project's ability to generate funds to pay for activities such as maintenance. In contrast, the PFI projects in the Highland may strain the general council budget.

- The *delivery of infrastructure* through the PFI/PPP process is not immediate. Where information is available, the period between advertising and delivery is around three years.
- The *project structure is often complex*, either to accommodate the range of interested stakeholders or the variety of funding sources.

Additional infrastructure initiatives are also very small in comparison:

- The 2001 funding awards of the UK Broadband Fund amounted to £ 27.863m³³.
- Regional Development Agencies (RDAs) have used their Single Pot Funding allocation to provide broadband funds. Although the RDAs have been limited by the need to evenly split funding between capital and running costs, some have funded broadband schemes. For instance, £ 5m was set aside by South East of England Development Agency.

Table II-33

Connected Communities – Western Isle (Infrastructure)

Description		The Western Isles consist of 55 individual islands inhabited by 26.620 persons. The region is characterized by a decreasing and ageing population.
Objectives		The projects intend to improve the quality of infrastructure that is available in rural and remote areas of Scotland. In particular on the five main islands, the project aims at providing a wireless broadband technology with regard to the remoteness of the islands. PFI has been used to provide infrastructure without breaking budgetary limitations (at both national and local levels).
Actors	Public	Department of Trade and Industry, Scottish Executive, Western Isles Enterprise, Comhairle nan Eilean Siar, EFRE
	Private	among others British Telecom
Financial Dimension		Funding is drawn from a variety of sources, with individual contributions often being relatively small. This highlights the limited financial support available from each body. With € 7.5m, the financial size of the Connected Communities project is relatively small when compared to BT's spending in rural and remote areas. Half of the investment is paid by EFRE, while the other half is afforded by the other public actors involved.
Operator Model		The projects combine private and public stakeholders, with each undertaking a different role. In the case of the Connected Communities project, the public sector acts as hubs that private sector users connect to. In the case of the Highlands, the role of the public sector is largely one of being the project's client.
Results		The sustainability of the projects can be questioned. Price reductions due to national competition may undermine the Connected Communities project's ability to generate funds to pay for activities such as maintenance. In contrast, the PFI projects in the Highland may strain the general council budget.
Source: Lattemann (2006).		

³³ Broadband Stakeholders Group (2004)

Table II-34

Cambridgeshire Community Network (Infrastructure)

Objectives		Developing a county-wide telecoms network for the public sector in addition to a community network: It was intended that the development of this network would help to address inequalities between the wealthy population centres and the isolated and socially deprived rural areas. Furthermore, the project focuses on aggregating demand for the public sector. The original plan was to focus on delivering services only to the County Council but the project then expanded to support other local government needs in addition to developing the community network. The intention to support e-government initiatives by building the underlying infrastructure was also important.
Actors	Public	Cambridgeshire County Council
	Private	Ntl
Financial Dimension		Total budget of the project was £ 29m of which £ 12m was funded through PFI credits.
Operator Model		If the public sector is satisfied with service performance by the private firm, it can draw an amount from the fund to pay the private contractor, which decreases with time and lasts for 25-30 years. The county council gets access to ntl's financial model. There are annual reviews when tariffs can be renegotiated according to a number of key performance indicators. Ntl has to demonstrate acceptable levels of profitability from this project, although the meaning of acceptable levels is not clearly defined.
Results		The council is already thinking about the next phase for the project. It is looking to extend the network to other public sector bodies such as the police or fire brigade. The council believes that the CCN has had a positive impact in a few areas such as: social inclusion through the provision of community outlets and the provision of broadband to schools that hitherto did not have access to the fast Internet.
Source: Art Telecom (2005).		

II.5.1.2 The Indicator

Converting these observations into an indicator, one has to take into account several aspects. First, while state aid increasing infrastructure investments is obviously beneficial for the firms involved, network effects may also lead to an increase in the overall demand for services which in turn benefits other network operators. On the other hand, the case of France shows that PPPs can be used to foster market entry and competition. Hence, the evaluation of whether or not state aid and PPPs are favourable to the incumbent depends on both the monetary value of the respective measures as well as the basic parameters set by governments. PPPs in France have to be evaluated as being rather unfavourable to the incumbent, while PPPs favour the incumbents in Italy, Spain and the UK.

In addition to the PPP approach chosen in the respective countries, the indicator for infrastructure aid is also based on the support for specific infrastructure projects, the establishment of dedicated agencies and the conditions under which capital is made available.

Table II-35

Infrastructure aid indicator

Indicator	Germany	France	Italy	Spain	UK
Infrastructure aid	5,0	3,0	10,0	9,0	9,0

Italy ranks highest due to the extension to which infrastructure investment is promoted by the state. While in Spain and UK policy measures to spur infrastructure investment are used the financial volume of the respective programs are rather limited. The low rank of Germany is due to the absence of any infrastructure programs. The French incumbent suffers from PPPs targeted at increasing competition.

II.5.2 ICT support

ICT support defined for the purpose of this study comprises state aid given to individuals or firms in order to enhance the diffusion of technology. In addition, general measures to raise information levels and awareness of new technologies and their adoption, such as e-business or broadband access, have to be considered.

Most policy instruments adopted are confined to awareness programmes. Competence centres and consulting offices spread information to small- and medium-sized enterprises. Relatively small amounts of money are spent on competitions which are supposed to have demonstration effects and induce a larger number of applicants to conceive programmes and projects related to ICT adoption.

In order to cover these relatively heterogeneous topics in a comparable manner our indicator builds on two sub-indicators published by the World Economic Forum (2006) as well as on assessment of country specific information.

II.5.2.1 Country comparison

The first second sub-indicator is based on the assessments of ‘government success in ICT promotion’ and of ‘government prioritisation of ICT’³⁴ published by the World Economic

³⁴ The assessment is based on experts’ opinion about specific issues.

Forum (World Economic Forum (2006)). A comparison of the countries monitored in the present report leads to the scores given in Table II-36. The scores are organised as follows: 1 stands for not very successful, and 7 for highly successful programmes and activities.

Table II-36
ICT support

	Germany	France	Italy	Spain	UK
Government prioritization of ICT ¹⁾ (Score)	5,0	4,9	4,1	4,7	5,6
Government success in ICT promotion ²⁾ (Score)	4,4	4,8	3,7	3,6	4,2
Notes: 1) Def.: "Information and communication technologies are an overall priority of the government (1 = strongly disagree; 7 = strongly agree. 2) Def.: "Government programs promoting the use of ICT are (1 = not very successful; 7 = highly successful). Source: World Economic Forum (2006)					

Germany

The Federal Government supports the development of ICT and e-business practices in two major ways. One way is to support innovative multimedia services and another is to accelerate the diffusion of ICT and reinforce the framework of the information society. This kind of state support does not address the telecommunication sector directly, but aims at supporting disadvantaged regions or SMEs. Hence these measures have an impact on the demand for telecommunication services and software solutions.

Supporting innovative multimedia services

The rapid diffusion of internet communication standards together with technological progress in the production of ICT, drive the process of convergence of media and ICT. As a result, new media services emerge. One of the objectives of the "Information society Germany 2006" action plan is to support the development and assessment of new multimedia-based applications and services. In 2005, federal state financed multimedia projects belonging to the following areas:³⁵

- Multimedia start-ups and user-friendly and safe multimedia technology (€7m),
- Major multimedia projects such as MEDIA@Komm-TRANSFER, VERNET, LERNET or WissensMedia (€14.5m),

- Mobile multimedia services (MobilMedia) and other value-added services (€8m),
- Related research, evaluation and monitoring (€1.6m),
- Other (€1.75m).

Accelerate the diffusion of ICT and reinforce the framework of the information society

The Federal Government regards e-business as a way of improving the competitiveness of SMEs. A large share of companies have already realized the benefits of e-business and begun to use simple ICT applications such as internet and e-mail. However, they face a challenge to move beyond passive usage of ICT tools and ensure extensive use of ICT in all business processes. This requires the implementation of comprehensive, interconnected solutions instead of separate stand-alone applications. The Federal Government has for several years been implementing various schemes to support this move. The regional and sector-related Centres of Excellence in Electronic Commerce, for instance, offer neutral consulting and training.

One of the most important initiatives in Germany constitutes “Initiative D21”. This initiative aims to improve Germany’s competitiveness in the information and knowledge society. The focus is on the use of ICT in schools, government agencies, associations and enterprises. “Initiative D21” is engaged in supporting the diffusion of broadband-technologies in Germany by creating a study on broadband strategies, preparing policy documents, conducting workshops and taking part in the activities of Germany’s federal states in various international broadband events.³⁶ The initiative concentrates on four subject areas:

- Growth and competitiveness,
- Information and Communications Technologies in Healthcare,
- Education, Qualification and Equality of Opportunity,
- eGovernment / Security and Trust in the Internet.

In 2005 (2006), €15.2m (€16.2m) were granted in support of ICT adoption and to reinforce the framework of the information society.³⁷ The program aims in particular at the following areas:

³⁵ Bundesministerium der Finanzen (2005)

³⁶ See Initiative D21 (2008)

³⁷ Bundesministerium der Finanzen (2006a)

- Modernization and expansion of electronic information systems in the area of technology and materials: €1.7m (€1.9m),
- Improving the awareness of SMEs' on technology, economy and knowledge management €2.8m (€3m),
- Facilitating the process of setting e-commerce standards €1.7m (€2m),
- Supporting e-commerce competence centres, networks and e-business €4m (€4.1m),
- Improving the security of commercial IT use €2.8m (€2.9m),
- Developing and supporting digital integration of the society €1.3m (€1.5m),
- Consulting and administrative support €0.9m (€0.8m).

Although there has been an increase in state spending supporting the diffusion of ICT among SMEs in the last two years, the amount of money devoted to some determinants of e-business development was reduced. For example, despite the fact that IT-security is still regarded as a key driver of the ICT and e-business diffusion, the amount of money devoted to this aim was reduced compared to the 2004 budget (€3m).

France

The French government does not finance technology adoption directly. Some support arrives in the country via European structural funds while measures are also taken to promote the use of the internet, mainly by making usage safer. However, most programmes regarding IT security that have been undertaken in France so far, aim at ensuring a functioning economy, national security and the promotion of e-commerce. The most important initiatives include:

- The Information Society Act, which is intended to clarify the legal framework for e-commerce as well as to reinforce the level of network security. For example, it has been proposed to totally liberalize the use of encryption mechanisms (compared to a limitation to 128 bits today). Most of articles of the Act concerning cyber crime have already been adopted just after the September 11th events.
- Adoption of electronic signature: The electronic signature is recognized and has been used since March 2000. It is used in a growing number of public online services, such as tax declaration for companies and residential, administrative online procedures or medical insurance transactions.

Italy

The Italian government supports the industry in various ways. However, due to the EU rules opposing state aid, state aid has been substantially reduced, compared to the past. The most important law is 488/92 which provides grants for capital investment realised in the areas of Objective 1 (Calabria, Puglia, Basilicata, Campania, Sicilia and Sardegna) and, in a more limited way, for industries located in the areas of Objective 2. A second important instrument, which has been crucial for the industrialisation of the country and for this reason has always been refinanced, is Law 1329/65, the so called Law Sabatini. It finances the purchase or the leasing of machine tools and other industrial machinery. The law provides a rebate on the interest, while more recently the regional governments have also introduced grants. It must be pointed out, however, that these forms of state support towards industrial investments, have a negligible impact on telecommunication markets. More significant are the following policy measures:

- The state awarded a grant of €75 to each new subscriber of broadband lines for the years 2003 and 2004. In 2005 the contribution amounted to €50, with the exception of less developed areas (European Council (1999), Objective 1) where the contribution continued to be €75. The table below presents the development of broadband access support.

Table II-37

Support of broadband access

Grants to customers	Number	Total costs (million €)	Companies	% grants per telcos
2003	360000	27	TI	74.96
			Fastweb	7.34
			Wind	5.83
2004	400000	30	Tiscali	5.54
2005	480000	30	Others	6.33
			Total	100.00
Affecting incumbent	As the figures show, this measure has affected heavily the incumbent.			
Source: Telecom Italia (2005)				

- The state awarded a grant of €150 for purchasing a decoder for Digital Terrestrial Television in 2004. In 2005, the amount of the grant was reduced to €70.

Table II-38

Support of digital television decoder

Grants to customers	Number	Total costs (million €)
2004	733333	110
2005	1541430	110
Affecting incumbent	This contribution affects the incumbent negatively since it increases competition among different platforms.	
Source: Telecom Italia (2005)		

- The state awards a grant of €172 to young people (16 years) for the purchase of a computer and €172 for getting ECDL (European Computer Driving Licence) (total budget €90m in 2004)
- Grant of €200 to households with an income of less than €15000 for purchasing a computer (total budget €30m in 2004).
- Teachers can buy portable computers at the same favourable conditions that the State Agency for Public Procurement (Consip) offers to the public administrations.
- The state is creating a network of public internet access centres and of centres of tele-working in less developed areas of the country. The centres of tele-working provide opportunities for e-learning (total budget €80m).

These measures clearly set Italy apart from other countries in terms of indirect state support for the use of telecommunication services. However, compared to last year, grants for the purchase of decoders for Digital Terrestrial Television have decreased. In 2006, the total amount made available for purchasing the decoders was established at €10m, and it was allotted to the people living in 2 regions; Sardinia and Aoste Valley, where the introduction of DTT had to be anticipated at the end of 2007.

Furthermore, the new government has decided to postpone the introduction of DTT to 2012, and as a consequence, the grants for the purchase of decoders have been discontinued as of 2007. In the meantime, the new Financial Law for 2007, envisages a fiscal deduction of a maximum of €200 (€149 on average) to families that buy a new digital TV set.

Spain

There are some projects that aim at the promotion of ICT and internet usage:

- Project (CTE/249/2004/10) supports organisations that provide a capital base for technological firms. It provides interest free loans to high tech start ups during the first and second year. Loans are provided without collateral or additional guarantees.
- Another project provides a training programme for the use of telecommunication services. It provides funds nationwide. Last year €6.5m were provided for users' training, €6.8m for professional training (23rd March 2005).
- The @rte program (February 8th 2001) subsidises small- and medium-sized organizations in order to integrate them into the Information Society. It is implemented by co-financed projects based on electronic commerce incorporating SAT (Advanced Telecommunications Services).
- The PISTA programme (Advanced Telecommunications Emerging Services Identification Promotion) helps to realise the effective implementation of Information Society services in the government, public services and other areas of public interest. The total budget for 2003 was €4.66m.
- The Digital Cities Programme promotes the Information Society and its implementation in a local environment, based on high speed telecommunication networks. Beneficiaries are communities and self-governing cities. The budget for the period 2000-2006 was €51.3m.

United Kingdom

In the UK the support for adopting telecommunication technology shows mainly in the initiatives for the promotion of broadband adoption. These measures have been included in the infrastructure aid indicator. However, aspects of the programmes also address the diffusion of broadband technology among users (support of access for SMEs). Some of the major measures include:

- In 2000, the Government acknowledged that its existing cyber crime initiatives were inadequate and launched a new £ 25m package of initiatives.³⁸
- Part 1 of the Electronic Communications Act 2000 introduced digital signatures. The Act gave the secretary of state powers to establish a statutory body. These powers have not

³⁸ Out-Law News (2000)

been invoked as tScheme, an industry self-regulatory body, was established in May 2000.³⁹ tScheme approves providers of trust services, evaluating them on five criteria – is the provider properly established and resourced, is the service sufficiently defined, is the service fair and reasonable, is the service being delivered according to its definition and is it secure enough?⁴⁰ The intention is to increase the security of electronic transactions and provide voluntary regulation for cryptographic services.

- The Cyber Crime Knowledge Transfer Network was established in April 2006 to act as a single national platform that draws security expertise together from industry, academia and government.⁴¹ The network has an initial budget of £ 1.8m. Industry appears to prominently feature in the project, which will be chaired by Roberta Ghanea-Hercock from BT.⁴²
- Internet Watch Foundation (IWF) was established to protect children on the Internet. The IWF is a joint venture between industry and law enforcement agencies focusing on removing indecent images of children from the Internet.

The relationship between these and other initiatives can be understood through reference to *Connecting the UK: the Digital Strategy*, which was published by the Cabinet Office in April 2005. This document identifies 8 actions grouped under three headings:

- Making the UK a world leader in digital excellence
- Constructing a robust strategy to achieve our vision and
- Tackling social inclusion and bridging the digital divide.⁴³

II.5.2.2 The Indicator

Translating the indicators published by the World Economic Forum (see Table II-36) into our scoring system and using equal weights leads to results shown in Table II-39.

Table II-39

ICT prioritisation

Indicator	Germany	France	Italy	Spain	UK
ICT priorities and policy success	9,1	9,4	7,5	8,0	9,4

³⁹ See tScheme (2008)

⁴⁰ See tScheme (2008)

⁴¹ See Security Park (2006)

⁴² See QinetiQ (2006)

⁴³ Cabinet Office (2005), p. 3

The country specific information is transformed into a sub-indicator for ICT support by using an intensity scale where we focus on measures that involve financial support rather than on information and awareness measures. This restriction and the use of an intensity scale are due to the fact that it was not possible to investigate all policy measures adopted in a country that might contribute to the diffusion of telecommunication services and to estimate the impact they have on markets.

Table II-40

ICT support measures

Indicator	Germany	France	Italy	Spain	UK
ICT support measures	3,0	3,0	10,0	3,0	5,0

Italy takes the first position due to the grants awarded to households for broadband subscriptions and the purchase of computers. Favourable to the further development of telecommunication markets are also the state initiatives focusing on internet access centres and the promotion of tele-working. Policies of similar to these measures do not exist in the other countries. In Germany the focus is on multi-media services, the promotion of e-commerce and security. Many programmes, however, focus on awareness. While security issues are also very prominent in France, there are no national policy measures that support technology adoption in the field of telecommunications directly. ICT support in Spain comprises training programmes for the use of advanced telecommunication services, subsidies for SMEs as well as support for implementing digital services in local governments. In the UK, main initiatives are devoted to cyber crime and internet security. However, considering the financial dimensions of the different programmes in Germany, France, Spain and the UK shows that there are no big differences between these countries when direct financial support is considered. The slightly higher score for the UK can be justified by the recent investments in security related issues.

Combining the ICT support measures sub-indicator with the World Economic Forum's indicators for ICT prioritisation and for success of ICT promotion yields the following aggregate indicator for ICT support (equal weights have been used):

Table II-41

ICT support indicator

Indicator	Germany	France	Italy	Spain	UK
ICT support	6,0	6,2	8,8	5,5	7,2

II.5.3 State demand

The state is itself a major customer for telecommunication companies. At various levels, the national, regional and local level, the endowment of public entities with communication equipment and the running of routine procedures leads to substantial demand for telecommunication services. An early and comprehensive adoption of new technologies by government entities has several benefits for telecommunication markets:

- it increases demand and, thus, helps to reach critical mass
- it induces communication partners to start using ICT as well
- it creates demonstration effects which stimulate usage and reduce barriers to adoption
- it accelerates the search for solutions for technical, legal, political and economic problems, such as digital signatures, intellectual property rights, consumer protection etc.

There are no complete statistics on state expenditure that allow the identification of the amounts spent on telecommunication services and equipment. Often the costs for telecommunications are integrated in other budget items, for example, the modernization and restructuring of public buildings. Therefore, it has been decided to take the degree of realisation of e-government as an approximation. It can be assumed that this indicator expresses the willingness of governments at various administration levels to invest in advanced telecommunication systems. Furthermore, the level of realisation of e-government shows to which extent money has actually been invested.

Data for the indicator was derived from two studies on e-government realisation conducted by Capgemini (2006) and Accenture (2005). Both studies primarily emphasise the supply side and do not take into account the actual usage of public services. Nevertheless, they are used for the purpose of this study because they allow for a comparison between the studied countries.

II.5.3.1 Country comparison

The survey conducted by Capgemini (see Capgemini (2006)) entails two indicators.⁴⁴ The first one, the online sophistication indicator, assesses the degree of online sophistication of

⁴⁴ The study is part of the eEurope programme and covers all Member States (EU-25) plus Iceland, Norway and Switzerland. The current study reports the results of the sixth analysis of e-government in Europe. The main

basic public services available online. Services providing information only are ranked lowest while the possibility of full electronic case handling corresponds to the highest degree of sophistication. The second indicator, the full online availability indicator, assesses the share of public services that are fully available online.

The 20 public services are divided into two groups: 8 services for business and 12 services for citizens. With a maximum score of 100 for each service category, the results are presented in the Table II-42. The UK seems to have the most advanced e-government services infrastructure. In contrast, out of the five countries, Germany ranks as the lowest in terms of online sophistication and the percentage of services fully available online.

Table II-42
e-Government 2006

Indicator	Germany	France	Italy	Spain	UK
Online sophistication	74	85	80	79	89
Full online availability	47	65	58	55	71
Source: Capgemini (2006)					

In order to ascertain an objective picture of e-government advancement in the analysed countries, the results discussed above are compared with a similar study, which was conducted by Accenture (2005). The scoring of the Accenture study consists of two components. The first is service maturity, which measures the level to which a government has developed an online presence. Service maturity takes into account service breadth (the number of national services available online) and service depth (the level of completeness at which the service is offered (publish-, interact- or transact-level service)). The second component is customer service maturity, which measures the extent to which government agencies manage interactions with their customers (citizens and businesses) and deliver service in an integrated way. The customer service maturity score considers how well governments have addressed the four dimensions of leadership in customer service: citizen-centered, multi-channel, cross-government service delivery and proactive communications about the services to the citizens and businesses that are the end recipients. By combining these two elements of maturity into an overall maturity score, a ranking of all 22 countries was developed. Countries whose overall maturity scores were within two percentage points of each other were allocated a joint ranking.

objective of this benchmark study is to enable participating countries to analyse progress in the field of e-government and to compare performance within and between countries. The survey was conducted in April 2006.

Because the focus was expanded beyond the e-government-only aspects of governments' service programs, the multiple facets of leadership in customer service across all channels were included in the analysis.

It has to be noted that both, i.e. Capgemini and Accenture, studies derive data from a web-based survey of public institutions. This method already bears the danger of overestimation of e-government efforts, as a certain bias can be expected, because service suppliers that are reluctant to use the internet, and thus, have no interest in realising e-government in the departments they control, will not participate in the survey. In addition, managers in charge of establishing e-government solutions will tend to overstate the sophistication and the degree of online availability of online services in order to make their projects appear successful.

Table II-43

e-Government development in selected countries.

Indicator	Germany	France	Italy	Spain	UK
Service maturity breadth	86	99	86	89	92
Service maturity depth	73	67	57	64	63
Overall customer service maturity	32	45	41	32	38
Overall maturity scores	48	55	45	45	48
Source: Accenture (2005)					

Germany's low rank in the Capgemini study cannot be attributed to low spending on e-government development. Table II-44 exhibits IT spending for e-government across all studied countries. In 2004, Germany spent the highest amount of money. According to the data, this will not change in the immediate future. In 2008, Germany will spend €1.1bn on e-government development and, will thus hold the leading position.

Table II-44

IT spending for e-government (2004 and 2008) in million €

Time	Germany	France	Italy	Spain	UK
2004	795	791	299	161	668
2008 (estimated)	1.100	1.050	420	242	968
Source: Epractice (2004)					

Germany

The German Federal Government's e-Government strategy is defined in the BundOnline 2005 initiative. It is designed to ensure that citizens, industry, academia, as well as other administrations, can use the services of the federal administration more simply, rapidly and cost-efficiently.⁴⁵

By the end of 2005, the BundOnline 2005 scheme made it possible to place online around 400 public services.⁴⁶ Many of the new online services are quite popular, as a comparison between the number of persons using offline and online services demonstrates. For example, compared to its 136,600 conventional, paper transactions each year, the Federal Securities Administration handles 36,100 electronic transactions using a fully automated process, already accounting for 21% of all transactions. It also recorded 456,000 online account enquiries. Every month, the Federal Court of Justice receives 916 offline requests for expert information, compared to 100,000 online requests. And publications from the German Patent Office are ordered online frequently: 450 offline orders, as compared to 1.75m internet downloads. But not all federal e-government offerings have such high user numbers. One important reason is that many people are not aware of these services. According to an online user survey carried out by the BundOnline Project Group, 54% of individuals and 41% of businesses surveyed said that lack of awareness was a key factor limiting the use of e-government services. Another reason for low numbers of online users is a lack of acceptance of electronic services. Furthermore, legal framework conditions continue to pose obstacles to designing user- and agency-friendly electronic services and thus reduce user numbers. Another obstacle to the comprehensive integration and optimisation of administrative processes – on and across all administrative levels – is the heterogeneous IT landscape. Different offices have developed different IT applications for the same purposes; the federal government, federated states and municipalities operate over 7,000 websites that are minimally integrated; consistent electronic processes between the federal government, federated states and municipalities are still the exception rather than the rule; and the fragmented public investment in IT is not being used optimally. Such fragmentation, if not addressed, could lead to the development and implementation of expensive, isolated and redundant technology solutions and processes.

⁴⁵ See IDABC (2006)

⁴⁶ BundOnline (2005)

Main e-Government components in Germany include:⁴⁷

- **Portal:** Bund.de is the German e-government services portal, providing central access to the online services provided by the Federal Authorities and the Federal Administration, as well as an entry to German States and Municipalities.
- **Network:** The infrastructure supporting internal communications between the federal authorities is the Berlin-Bonn Information Network (IVBB). The IVBB provides the main federal authorities with central internet access and networking services. On 24 July 2006 the IVBB intranet was replaced by the Federal Intranet (Intranet des Bundes). Besides the services offered by its predecessor, the new intranet portal features new content, services and workflows, such as a person and federal agencies search engine, a travel management system and access to information and document databases. The Federal Administration Information Network (IVBV) is a private IP-based communication network, which serves as intranet between the different public administration departments. It has been introduced with the target to become the comprehensive communications platform for the whole Federal Public Administration. The network allows access only to pertinent authorized users. Its infrastructure facilitates the incorporation of the Berlin-Bonn Information Network (IVBB) as well as of other networks of the Federal Administration into a comprehensive IP-based network. The IVBV network connects over 300,000 employees in the Federal Public Administration.
- **National electronic identification system:** There is currently no central e-Identification infrastructure in Germany.
- **e-Procurement:** Federal e-Procurement platform (e-Vergabe), launched in May 2002, allows authorities to publish and notify calls for tender electronically, and enables bidders to submit offers completely and bindingly over the Internet. It also comprises electronic catalogues enabling public bodies to procure goods and services electronically from a series of pre-concluded framework contracts and without the need for calls for tender. In addition to the e-Vergabe, all public tenders are published online in the national gazette of public contracts (Bundesausschreibungsblatt).

⁴⁷ See IDABC (2006)

- **Knowledge Management:** There is currently no central knowledge management infrastructure in Germany. However, a number of knowledge tools are available through the Federal Government Information Network (IVBB/IVBV), such as tools for closed user groups or a portal of (for) federal libraries, which makes documents of federal authorities accessible to federal employees over the federal Intranet.

In order to enhance the use of new media in the *education* sector, a support programme “New Media in Education” (Neue Medien in der Bildung 2000-2004) has been issued by the Federal Ministry for Education and Research (BMBF) including more than 100 projects.⁴⁸ In addition, about thirty projects are observed which are financed by other institutions. Most of them are addressed to content providers of e-learning programmes. But the financial support for most of the projects ended in 2004. In 2005, a second round of projects supporting the diffusion of e-learning programmes has been initiated by the Federal Ministry of Education. Under this umbrella 20 projects are financed in order to implement a sustainable e-learning framework. Furthermore, other projects – particularly in universities – have been started. Among them so called business models for e-learning at universities constitute a strategic element to develop universities’ profiles and to improve their competitiveness. To save money, several pioneers are already working in this field among domestic and international universities:⁴⁹

1. One example for the implementation of new support structures can be found at Ulm University. Here, the computer center, the media center and the library have been merged into a single “communication and information center”. Through the synergy effects contributed by all three partners the services have been bundled and improved for the benefit of users, i.e. lecturers and students. The range of services will be extended in the field of new media.
2. At the Deutsche Sporthochschule Köln (German Sports University Cologne), a university-wide knowledge management system has been installed. Here, existing knowledge is made available via an intelligent management system connected not only to the university itself but also to professional associations, schools and, through an appropriate interface, also to individual users who can be won as external customers.

⁴⁸ See Revermann (2006).

⁴⁹ See Hoyer (2005).

3. With the “Dual Mode University” concept of Darmstadt Technical University, students are supported in their learning process on campus, at home and on the way. This gives Darmstadt Technical University a profile which meets the expectations of the “gameboy generation” – the students who are now entering the universities accompanied by their own laptops.
4. The FernUniversität in Hagen a distant learning institution has developed the “Virtual University Learning Environment”, proceeding directly from the university’s 30 years of success in distance education. Thanks to its didactic skills and far-reaching experience in network-supported teaching, this university has become a pioneer in developing multi-media and online study materials and thus set an example of a university, providing opportunities for mobile learning to a mobile society. This model, which has already been tested in practice in all its essentials, is especially suited for executive programs. The Virtual University Learning Environment model goes beyond currently available approaches to multi-user, media-supported study courses by integrating the university’s whole range of teaching facilities and making them available via communication networks, thus being the first institution to implement a complete, homogeneous system.

In the *healthcare* sector, information based management processes, i.e. controlling, administration etc., become more and more important. Between 20% and 40% of the achievements in healthcare account for data collection and communication processes, indicating a high potential for rationalization.⁵⁰ Considering the demographic development of Germany, this potential will become even stronger in the near future. Despite the potential rationalization effects of e-health, the German healthcare sector does not tap the full potential of ICT based technologies. However, e-health constitutes one major task in the agenda of “Information Society Germany 2006” (Informationsgesellschaft Deutschland 2006). In this framework the development of a standardized ICT-based infrastructure and a sectorwide medical documentation, the implementation of both electronic receipts and electronic business in the field of pharmaceuticals are intended. Furthermore, almost all members of the healthcare sector should be part of the healthcare network.

Under this umbrella, lots of projects have been started. One of the most important e-health projects in Germany states the forthcoming introduction of the Electronic Health Card, a new

⁵⁰ Bundesministerium für Bildung und Forschung and Bundesministerium für Wirtschaft und Arbeit (2003)

patient insuring card that facilitates the cooperation of all members in the health care sector by connecting over 80m patients with approx. 270,000 physicians, 77,000 dentists, 2,000 hospitals, 22,000 pharmacies and more than 300 health insurance companies. The card will be used for both medical and administrative purposes. Thereby, it is supposed to increase the efficiency of the healthcare system in Germany by protecting against unnecessary double examination, recognizing adverse reaction to medication faster and by strengthening data security. Medical information will be stored in the system.

However, the distribution of the Electronic Health Card, expected to be completed in 2006, has been delayed. This is due to the fact that the funding of necessary equipment in medical practices is still an open question. Furthermore, it is not clear if the implementation of the health card really leads to the expected reductions of administrative expenses.⁵¹ Moreover, the introduction of the card is heavily disputed for privacy reasons since the collection of medical information about individual patients will be transferred from medical practices to a central server.⁵² At present, the electronic health card has been introduced in eight different regions for testing purposes.

France

The French eGovernment strategy was set in the ADELE (ADministration ELEctronique) programme in February 2004.⁵³ It provides a detailed roadmap for the coherent and coordinated development and implementation of electronic services. With a total budget of €1,8bn for its four years of implementation, the ADELE programme represents an opportunity to generate important productivity gains. The Government estimates that ADELE will deliver €5 to 7bn cost savings in the State budget per year, as of 2007.

The national e-government programme includes the following components:

- **Portal:** Launched in October 2000, Service-Public.fr, the French e-government portal for citizens and, since November 2003, for businesses. Apart from providing a unified and simplified access to the whole set of administrative services, it allows users to store all

⁵¹ See *Ärzte Zeitung* (2006)

⁵² See *Ärztammer Nordrhein* (2006)

⁵³ See IDABC (2006)

their personal information, forms and administrative documents on a personalised and secured site. This new portal should be launched at national level by summer 2007 and provides a comprehensive access point for public information and services.

- **Network:** Launched in May 2000, AdER (Administration En Réseau) is an inter-ministerial intranet launched in May 2000. Based on a Virtual Private Network (VPN), it provides around 450.000 desktops in the French central administration (over 75% of the total) with secure services including messaging, directory, high-speed data transfer, document storage as well as access to a number of information management applications. The AdER/SETI network is connected with the trans-European administrative network TESTA.
- **National electronic identification system:** There is currently no central e-Identification infrastructure for e-Government in France.
- **e-Procurement:** All French public entities are obliged to accept bids submitted electronically in response to formal call for tenders over a legal threshold published as of 1 January 2005. All central government ministries – with the exception of the Ministry of Defence, can meet the new requirement by using the new government-wide e-Procurement platform Marches-Publics.gouv.fr. The platform allows public sector bodies to publish call for tenders online and receive electronic bids. The platform is commercialised by UGAP, an inter-ministerial service. Its use by local authorities is optional.
- **Knowledge Management:** There is an extranet designed to enable joint working and knowledge sharing between ministries and other central administration bodies. It gives access to a number of groupware and cooperative working tools such as document libraries, forum, distribution lists, etc.

Among the recent significant steps taken with regard to the full realisation of online services, two seem to provide an adequate illustration of the present situation in France:

- The “Carte Vitale”: a health insurance and social security card, is being enhanced to carry more references,
- On-line income tax declaration, which has reached a 20% penetration in 2006. The online declaration mode is coupled with automated bank transfer for payments. Online taxpayers benefit from a €20 deduction.

These two cases are described in detail in Box II-3 and Box II-4.

Box II-3

Carte Vitale

As a result of a two-decade long effort, the smart chipset health insurance card (“Carte Vitale”) is now deployed among the entire adult population (above 18). It includes personal data (social security number and affiliation) only. The integration of personal medical records is planned for 2006 or 2007. The card provides its holders access to third party payment at pharmacies, and automated processing of reimbursement at private medical facilities (already generalized at public medical facilities).

VITALE SESAM is a system of protected electronic exchanges between health professionals and the health insurance agencies. It is based on a family microprocessor card technology (VITALE Health Insurance card) with an extensive networking element

The VITALE card is the health insurance card. It is diffused and personalized by the Health insurance agencies. It allows the identification of the person and the immediate recognition of the rights of ensured, by indicating its agency affiliation and by attesting its rights in the event of third party payment. In the future, the Ministry of Health would like to add a photograph on the card, allowing the physician a visual monitoring of the identity of the patient.

The card contract is a contract which binds the insurance policy-holder to VITALE SESAM; the policy-holder has rights (guaranteed payment) but also duties (prohibition to lend it, to use it fraudulently...) It should be noted that the physician currently does not check the identity of the patient, because on the reimbursement form paper, it says "according to the indications provided by the person".

About 80m reimbursement forms are electronically transmitted monthly in 2005.

The objectives of Vitale 2 are:

- to face the evolution of the workload through an increase in productivity;
- to take part in the medical control of the evolution of health expenditures while facilitating and making the collection of medical and administrative information resulting from the coding of the acts reliable;
- to simplify and accelerate the administrative steps and the operations of refunding of the insurance policyholders.

The ordinances envisage the introduction of the personal health record into the forthcoming card Vitale 2. Health records are then obligatory for all. Initially, they will be on paper, but in the long term, the medical file embedded in the card Vitale 2 will replace it.

Box II-4

MINEFI Story

The Ministry of the Economy, Finance and Industry (MINEFI), jointly with the Ministry of Health, is a main actor of the e-government effort in France.⁵⁴

On the occasion of the Ministerial Joint Technical Committee on 15 June 2004, the Minister vowed to transform the Ministry of the Economy, Finance and Industry (MINEFI) into a beacon of administrative efficiency: the “Ministry of Administrative Performance”. Consequently, the ministerial strategy for reforming MINEFI has now become “Bercy ensemble” (Bercy composed), a programme underpinned by a three-pronged perspective. Firstly, administrative performance is not an end in itself: the search for it is driven by the concern to improve administrative efficiency for the benefit of the national community as a whole. An effective MINEFI, implementing proactive economic, financial and industrial policies, is supposed to be a powerful force for job-creation. Secondly, this search for administrative performance entails overhauling the organisation and operation of services to make them more efficient and productive. MINEFI has a special role to play in this process by virtue of its central position in the State machinery both as provider and controller of all governmental resources. It thus guarantees the proper use of the taxpayers’ money. For all these reasons, it has a duty to set the example and to set the benchmark for public management. One reflection of efficiency, in this sense, is the capacity to save money for the benefit of the national community through sound management of the Ministry’s main item of expenditure, namely its workforce.

Reorganization, therefore, should seek, among other things, to reduce Ministry staffing levels by replacing only one person out of every two retiring, overall. The Ministry is committed to a process of radical change in order to achieve this. This change is also an opportunity: it spells new career opportunities, new working conditions and a new working environment. Its success depends not only on the intrinsic quality of the programme’s components, but also on the technical and social measures accompanying them. Hence the third perspective, which gives its title to the new plan instigated by the Minister: “Bercy ensemble”, sending a signal of encouragement to change. Change should not be imposed from above, but explained and discussed. It should not come suddenly but with appropriate supporting measures. It should not be one-sided; it should come with accompanying compensatory measures designed to improve civil servants’ conditions and share with them the savings achieved through their efforts. Change, and the adjustments it entails, must be rewarded. MINEFI staff that play an active part in seeing through these changes will qualify for an internal promotion plan recognizing their skills and experience, on the one hand, and also for a collective performance bonus payable to those teams that contribute significantly to the reforms in hand.

Towards e-government:

In a ministry that processes huge volumes of bulk data, with large numbers of officials dealing with tens of millions of users, the deployment of new technologies is a priority. MINEFI is consequently introducing a wide range of online procedures for its different categories of users (private citizens, businesses, local authorities, other government departments) aimed at improving service to users. The www.impots.gouv.fr tax portal allows private citizens to consult their tax status online, to file their tax returns and pay their taxes online and opt in

⁵⁴ The following analysis is based on the Ministry’s own presentation of the e-government component of its “Ministry of Administrative Performance” June 2004 Plan.

for direct debit as well as to have access to comprehensive up-to-date tax information. Looking to 2005, the online tax account will record taxpayers' payments, which will be accessible via the Internet and call centres. The www.minefi.gouv.fr MINEFI portal now provides personalized access according to specific user profiles (young people, students, pensioners), while MINEFI's specialized portals (customs and excise, General Directorate for Competition Policy, Consumer Affairs and Fraud Control, etc.) contain sections dedicated to individual taxpayers. Finally, the MINEFI portal has recently deployed a new "MINEFI online" section allowing one-click access to an array of services geared to different user categories: businesses, private citizens and local authorities. Under "Your online formalities", all of the Ministry's online services are brought together in one place, enabling users to perform administrative procedures from their own home or office.

A dedicated site for business, provides comprehensive access to MINEFI directorates' services to businesses. MINEFI offers them a wide range of online services, including remote payment of corporation taxes, online VAT returns and payment, online declaration of trade in goods, paperless transit customs procedures, online access to MINEFI procurement contracts, etc.) as well as free access to its legal databases (competition, tax and industry) and statistics (the ALISSE database and INSEE's SIRENE directory, together with SESSI's industrial statistics).

The www.colloc.minefi.gouv.fr website offers complete information on local government related issues (budget, public procurement, and regulations). Also, the local public sector administration information system is currently being remodelled under the HELIOS programme, in order to offer high value added budgetary and financial services to local authorities and other institutions.

All MINEFI staff have access to the Ministry's Alizé intranet and e-mail. They also benefit from a bunch of online services (online registration for examinations, training programmes, web diary, etc.). In addition, the "E-Bercy" plan now enables paperless internal exchanges within MINEFI. For example, exchanges of circulars within the Ministry are now 100% paperless. The establishment of a Ministry Human Resources Information System (SIRH) will modernize MINEFI's human resources management.

MINEFI is responsible for managing the "Accord" plan vis-à-vis other government departments. The scope and timetable for this plan were recently reformulated in order to guarantee the priority for implementation of the Constitutional Bylaw on Budget Acts (LOLF) on 1 January 2006. This inter-ministerial project is contributing to the modernization of budgetary and accounting processes by implementing a single EDP application for monitoring and controlling government expenditures and revenues, excluding income taxes and revenues from government properties.

Several projects have been incorporated in ADELE e-government programme, which is being managed by the e-government development agency (ADAE). They may be consulted online via the MINEFI portal:

http://www.minefi.gouv.fr/minefi/entreprise/nouvelles_technologies/psae/index.htm.

Together, these projects reflect the many facets of MINEFI's modernization drive. The overriding goal is to provide easily accessible services (multi-channel access, one-stop contacts, etc.) combining personalised access for the public with a high level of confidence (secure online formalities, separation of advisory and control missions, respect for professional secrecy) for all of the different publics dealing with MINEFI. "MINEFI online" is contributing to the provision of high value added services.

Italy

The e-Government policies were defined in the Government Guidelines for the Development of the Information Society' published in June 2002.⁵⁵ The Italian model for e-Government has been developed, and is composed of six key elements: Service provision, digital identification, access channels, service provision agencies, efficient and low-cost back office operations for service providers, interoperability and cooperation, communication infrastructure. The national e-government infrastructure comprises the following components:

- **Portal:** www.italia.gov.it is an e-Government portal for citizens, launched in 2002. A separate portal, www.impresa.gov.it, has been built for online services to businesses, which was fully launched in early 2005.
- **Network:** Unitary Network of the Public Administration (RUPA) is a broadband network interconnecting all public administration bodies across the country. By 2007, RUPA is due to be incorporated into a Public Connectivity System (Sistema Pubblico di Connettività - PSC). The first phase of the administration's migration to PSC is currently being carried out with the transition from the former infrastructure to new broadband technologies.
- **National electronic identification system:** The Italian electronic ID card was launched in 2001. Following the successful completion of two experimental phases in 2003 and 2004, the card is now being rolled out across the country and distributed to citizens older than 15. The card contains a set of personal data, a biometric key and a digital signature. In order to enable citizens to securely access e-government services even before the widespread dissemination of electronic ID cards, the Italian Government has also developed a National Services Card (CNS), a smart card allowing to securely identify citizens online. Contrarily to the e-ID card, the CNS does not constitute a 'proof of identity' and is not a legal identity document nor travel document.
- **e-Procurement:** The portal Acquisti in Rete (Public Procurement Online) provides access to a fully functional e-procurement platform operated by CONSIP, a company owned by the Ministry of Finance. The platform facilitates the use of three main tools for public e-procurement. Furthermore the platform provides information on e-procurement activities

⁵⁵ IDABC (2006)

as well as newsletters, best practice cases and community on e-procurement. The system can be used by central as well as local administrations.

- **Knowledge Management:** There is currently no central knowledge management infrastructure in Italy.

Both government and local authorities pay much attention to such programs, but this interest clashes with the difficulties of public finance, mainly due to the increase of public deficit and to the amount of public debt. For example, in the financial year 2003, the Ministry of Innovation and Technology had required €2101m from the State Budget, but at the end the resources made available amounted only to €1139m.

The resources were allotted as follows:

- | | |
|---|-------|
| • Projects of the central public administration | €125m |
| • Information of schools | €285m |
| • Digitalisation of the artistic patrimony | €585m |
| • Broadband connectivity of local government | €144m |

To these figures, €150m have to be added (derived from UMTS licences revenues) to be spent in the “electronic identity card” project.

The resources made available at national level are relatively limited however, the more relevant expenditure is that of local authorities, who spent €1102m in 2003 for initiatives in the field of e-government. The financing came partially from the sale of UMTS licences (€250m) and from budgets of the regional governments (€852m).

In 2004, a second phase of the e-government plan was launched by the regional and local authorities, who received €200m from the central government. The objective was to spread online availability of public services in all regions of the country, but especially in small communities comprising of 11 million people.

RUPA was planned from 1995 till 1999, and became operative in 1999. Its mission was to combine and rationalise all the fragmented telecommunications and information technology networks of the different Ministries and Agencies of the Central Public Administration (CPA), in order to have one unified network for the CPA. In 6 years, RUPA has managed to connect, through 17,000 access points, almost all the locations of CPA and also the networks of 15 regions (out of 20) and 80 different public agencies.

For those services requiring switched access or broadband access, government institutions exclusively used the network of Telecom Italia which is not dedicated to government agencies but shared with Telecom Italia's other business customers. This construction aimed at optimising infrastructure use. Telecom Italia, as the successful bidder for carrier services on the RUPA network, was engaged through its subsidiary Path Net in the development and running of RUPA and its related carrier services, as well as their marketing.

In 2005, a new system, called Public System of Connectivity (PSC) was promoted which was to absorb RUPA by 2007, and to interconnect all the Italian public administrations (central and local), which were to share common interfaces and a common environment for applications.

The change originated from the need to include the Local Public Administration (LPA) i.e. regional governments, regional agencies and municipalities within the unified network, since the reform of the Constitution transferred a growing number of powers to such institutions.

In this new situation, RUPA was clearly inadequate, since it mainly connected the CPA and the interoperability of the different networks of the CPA and that of the LPA was not guaranteed.

In a short period of time (around one year), under the supervision of CNIPA (the National Agency for the information technology in the public administration), interoperability has almost been reached, and all networks (central and local) share the same standards of quality and security. The global investment for the PSC planned from 2005 till 2009 amounts to €800m, with a saving of €400m with regard to the planned expenditure forecasted by RUPA (€1,2bn).

The introduction of the PSC has also implied a more open procurement. RUPA had only one supplier for each activity: Path Net, a Telecom Italia's subsidiary, for the transport services, while EDS-Infonet had to guarantee the interoperability of networks.

CNIPA has adopted new rules for procurement, so as to have more suppliers.

The tender, completed last May, was won by 4 competitors:

1. The grouping of Fastweb and EDS;
2. BT-Albacom;

3. Wind;

4. Telecom Italia.

Each of the winners received a decreasing share of the orders (60, 25, 10, 5%). The 4 winners have to create a consortium in order to build the Qualified eXchange Network (QXN), the infrastructure that will interconnect the networks of the 4 companies to all the Italian Public Administration's Offices.

It has been estimated that, as a result of the tender, the expenditure for the connectivity concerning the CPA will decrease in 2007 from €130m to €65m.

Another significant effect is that Telecom Italia has lost its leading position in the supply of connectivity to the Public Administration.

Spain

The Spanish Government's current e-Government strategy laid down in the 'Public Administration Technological Modernisation Plan 2004-2007' was presented in September 2004.⁵⁶ The plan has a budget of €84m to 2007, to be spent on 43 projects in five key areas, i.e.:

- CERTIFICA: The Plan aims at developing information systems supporting electronic interaction between public administrations and citizens.
- EDNI: Implementation of the electronic national identity document.
- CIUDADANO.ES: A new citizen portal has been set up in order to bring the administration closer to the citizen. The portal provides access to interactive and transactional services and a set of new services for communicating with public administrations.
- SIMPLIFICA: Simplification and rationalisation of public management, with a view to reduce costs and service processing as well as delivery times. Key projects include the development of electronic procurement, of geographical information systems, of human resources information systems, the completion of the administrative intranet linking central, regional and local administrations, and the establishment of an observatory of electronic administration.

⁵⁶ IDABC (2006)

- **MAP.ES:** Improvement of the IT infrastructure of the Ministry of Public Administration. Unification and improvement of web pages of the State administration. Key projects include the implementation of a multi-services corporate network for the Ministry, of video-conferencing, the use of electronic signatures for internal processes and the development of e-Learning in the Ministry.

Main e-Government components include:

- **Portal:** www.060.es, launched in June 2006, the portal substitutes the previous portal “administración.es”. This is part of a global network dedicated to the citizens, constituted by a 060 office network and a 060 phone line also dedicated to the citizens, thus shaping a unique multi-channel system for the administrative services of the entire country.
- **Network:** MAP en Red’s main objective is to technologically modernize government delegations, the sub delegations and their services, ensuring that citizens have access to them, thus simplifying the work process and administrative procedures.
- **Government Intranet:** The design, architecture, technologies, services, and security of this IP-based backbone are very similar to the EU pan-European TESTA network.
- **National electronic identification system:** The Public Certification Authority issues digital certificates for use in electronic administrative transactions. The Government has introduced electronic cards containing electronic signatures in 2006. The Spanish eID card will make it possible to digitally sign electronic documents and contracts, and to identify and authenticate citizens in a secure digital environment.
- **e-Procurement:** The Centralised Procurement System was developed and is operated by the Sub-Directorate General of Procurement in the Directorate General for Patrimony of the Ministry of Economy and Finance. It provides access to catalogues of generic products and services used by multiple public bodies. The system can be used by central, regional and local administrations to purchase online from any computer with a login and an advanced eSignature. Currently, 2,200 public institutions have access to this system, which also enables businesses to respond to tenders online. The bidders have access to their catalogues, so that they can easily modify the description of their goods/services or add prices, products, etc.
- **Knowledge Management:** There is currently no central knowledge management infrastructure in Spain.

In Spain, both the availability of public services and their sophistication is more advanced for services used by enterprises than for the ones dedicated to citizens. There are several reasons for this. First, enterprises have to process a number of transactions with the administration online (social security, taxes, etc). Second, Spanish economic policy was explicitly designed to reduce operational costs of enterprises. This has been done by supplying more productive public services and higher service quality resulting in reduced costs for enterprises. Lastly, citizens have not integrated the use of electronic tools in their perceptions of how to communicate with administration. Furthermore, the diffusion of personal computers in households and the use of the Internet has been slow.⁵⁷

Due to the active promotion of e-government services, the awareness of e-government services among enterprises has steadily increased. For example, in 2003, 55% and 52% enterprises with more than 10 employees used the internet to obtain information and to get forms respectively. However, at the same time, only 37% of enterprises returned filled-in forms and 27% complete electronic formalities online.⁵⁸

Recently there has been an increased interest in *e-learning* for regular public and private universities. Roughly one third of higher education courses use e-learning to complement classroom teaching. Most of the infrastructure required for virtual campuses is already in place. There are two public universities, UNED and Ouverta from Cataluña, that offer an almost full range of e-learning courses. All the services are 100% online, except summer courses. A number of other public and private universities and teaching institutions also offer online courses. These include BA's, MA's, PhD's courses. Continuous learning and extension courses are also provided.

The market potential for e-learning courses in Spanish is very large since the market includes most of Latin America. However, due to the economic conditions in these countries, the actual demand is still quite low.

⁵⁷ At the end of 2004 in Spain only 34,2% of the population were users of the internet, 11 percentage points below the average of EU-25 countries, and more than 20 points of distance from the countries surrounding Spain, computer usage has increased at a rate of nearly 20% annually over the last 3 years (see Internet World Stats, IWS). In December 2003 only 30,8 % of Spanish households had an internet connection, which is again far from the levels reached in the neighbouring countries, and 35 points below the countries with the highest penetration, such as Holland, Denmark, and Sweden.

⁵⁸ See Instituto Nacional de Estadística (2004)

The above programmes can be regarded mostly as state demand: demand that has been induced by public initiative, since private higher education institutions represent only a small fraction of higher education.

United Kingdom

The UK's current e-Government strategy is set in the document 'Transformational Government - Enabled by Technology' published in November 2005.⁵⁹

Main e-Government components include:

- **Portal:** Launched in March 2004, Direct.gov.uk is the UK Government's citizen portal. It provides citizens with a single entry-point to online public services. Unlike its predecessor, UK online, Direct.gov.uk is not organised on a "life-cycle episodes" model but on the basis of major public services areas (e.g. health, education, employment, etc.) and of target customer groups (parents, disabled people, young people, etc.). Since April 2004, the Direct.gov service is also available via digital TV, enabling the more than ten million UK households equipped with digital television to access public services information through their TV sets. A separate e-Government portal for businesses, BusinessLink.gov.uk, was launched in November 2003, providing access to government information and services for businesses, business owners and managers.
- **Network:** Initially launched in April 1998, the Government Secure Intranet (GSI) is the primary network infrastructure for connecting and joining up central government departments and agencies. An upgraded and improved version of the GSI went live in February 2004, providing users with restricted-level access to better services and functionalities. The new service is based on an IP Virtual Private Network, is capable of carrying voice and video data, involves broadband technology, and allows for separate virtual private networks for closed user groups. It also expands beyond the boundaries of the previous network to cover local authorities. Already connecting over 350.000 users in central and local government, the new GSI is designed to become a central infrastructure for e-government countrywide. It could be extended to organisations such as the National Health Service and the Ministry of Defence, and may ultimately link a million users.

⁵⁹ See IDABC (2006)

- **National electronic identification system:** The most generic central UK identification platform is the Government Gateway, which, launched in February 2001, is a central registration and authentication engine enabling secure authenticated e-government transactions to take place over the internet. Users need to register with the Gateway in order to enrol for using online government services and subsequently transact securely with government departments. Built on open standards, the Gateway also enables the joined-up delivery of government services by allowing different systems in different departments to communicate with the Gateway and with each other.
- **e-Procurement:** There is currently no central e-procurement infrastructure in the UK. However, the Office of Government Commerce (OGC) operates (through its trading arm OGCbuying.solutions) Catalyst, a catalogue-based electronic procurement scheme. Catalyst provides public sector organisations with a simplified means of procuring and contracting for a wide range of products and services, based on a series of Framework Agreements signed by OGCbuying.solutions with a number of suppliers. OGC and OGCbuying.solutions have set up an e-Procurement platform called Zanzibar, which went live in March 2006.
- **Knowledge Management:** The Knowledge Network is a government-wide electronic communication tool helping government departments to share knowledge with each other, and providing an online collaborative working environment across government. The KN was launched in October 2000 and is currently available to around 55.000 users through the Government Secure Intranet.

That the UK has progressed and done well in the survey is no surprise given the political support that the move of public services online has received. The Prime Minister enthusiastically backed online services and established the Office of the e-envoy to oversee the government's adoption of new technologies like the Internet. Significantly, this office was located in the Cabinet Office and not a department such as the DTI. However, more recently the public support for online services has been less headline grabbing and the Office of the e-envoy has been absorbed within a new e-government unit (eGU) located within the Cabinet Office. The responsibilities of this unit are as follows:

- Formulating information technology strategy and policy
- Developing common IT components for use across government

- Promoting best practice across government
- Delivering citizen centred online services (eGU website).

The aim, according to the Prime Minister, is “ensuring that IT supports the business transformation of Government itself so that we can provide better, more efficient, public services” (eGU website). In late 2004, the head of the eGU Ian Whitmore, stated that he wanted to make government more efficient through IT. This will, however, involve a degree of standardisation and centralisation so that, for example, the cost of hosting 4,000 or so government websites is reduced (Cross (2004)). Maintenance of these websites costs around £ 500m a year.

The commitment of the British government in combining e-government with the general promotion of telecommunication services shows in an effort to bundle demand for broadband services. The government has announced that it will spend £ 1bn on ensuring public sector broadband connectivity (Department for Business Enterprise & Regulatory Reform (2003), p. 1). This will be an important incentive for investment in broadband networks, and it will stimulate the diffusion of broadband technology throughout the country.

For the UK some figures are available for the usage of government services:

- In early January 2005, around 4800 people an hour were filing their tax returns online (Cross (2005)). It is expected that the number of people filing would break the 2002/03 record of 1.1 million
- 40% of the eligible population of self assessment filers filed online (ibid)
- 65% of university applications were filed online in 2004 (ibid). However, the actual number was not stated.
- The Public Records Office 1901 Census was placed online in January 2002, generating hits of 1.2 million per hour. This led to its closure for 10 months, and when it reopened it received between 8,000 and 10,000 hits a day (ibid).
- The Land Registry website cost £ 1.3m to establish, and charges £ 4 for access to title deed and plan information so that these costs can be recovered (ibid).
- No medical records are yet online. It is, however, likely that a soon to be published report on the modernisation of the Scottish health system will recommend that medical records are moved wholesale online (Martin (2005)). Not only would this facilitate the movement

of information within the health system, but it would also give patients access to their medical records.

Having said this, several caveats regarding e-government are necessary. Anecdotal evidence would suggest that:

- The central government does better than the devolved administrations of Scotland and Wales.
- Considerable variation exists with respect to the range of services that cities provide. Most cities have focused on informational services, though a substantial number do offer the opportunity for residents to pay their council tax online.
- UK wide IT contracts, such as those for, e.g. the NHS, Inland Revenue or Passport Office, often overrun in terms of both their budgets as well as the timeframe. Although the NHS has received substantial IT investment in recent years, it remains largely paper based.
- The database and service integration that e-government implies has civil liberty implications. These are at the heart of much of the discussion of IT contracts in the UK. Indeed, it could be argued that these are the focal points of the discussion, and issues such as efficiency gains, better services etc., are very much incidental.

The adoption of *e-learning* has been encouraged by JISC (Joint Information Systems Committee) which has established an e-learning programme covering four areas: e-learning and pedagogy, frameworks and tools, distributed e-learning and innovation. The findings are disseminated through www.elearning.ac.uk. JISC has also co-sponsored research with the Australian Department of Education, Science & Training to focus on the development and integration of computers into learning, research and education administration. The Higher Education Academy, which seeks to support academics in their daily activities, also has an e-learning programme.⁶⁰

According to a broad definition of e-learning of the use of computers to aid teaching and learning, then almost every educational institution in the UK has embraced e-learning. This is perhaps not a surprise given the strong emphasis that the government has placed on IT in education of late. The government's strategy document – Harnessing technology – has identified six priorities:

⁶⁰ See Higher Education Academy (2008)

1. Integrated online information service for all citizens,
2. Integrated online personal support for children and learners,
3. A collaborative approach to personalised learning activities,
4. A good quality ICT training and support package for practitioners,
5. A leadership and development package for organisational capability in ICT,
6. A common digital infrastructure to support transformation and reform.⁶¹

Whilst the first of these could be viewed as being generic in nature, the remaining five priority areas are clearly focused on education in general rather than any particular educational area such as schools, vocational courses or colleges.

If we focus solely on universities, it is abundantly clear that many now view IT to be an integral part of teaching and learning. Within the university environment, e-learning takes many forms such as class specific websites, interactivity and online assessment. Online courses, whether modules, continued professional development type courses, or entire degrees, are also offered. On the one hand these courses allow those at a distance to participate, whilst on the other hand they also facilitate quick updating and customisation. The quick customisation means that largely the same material can be made available to different types of students.

II.5.3.2 The Indicator

Transforming the e-government scores from Capgemini (see Table II-42) and the overall maturity scores from Accenture (see Table II-43) into a state demand indicator results in the following indicator (equal weights have been used):

Table II-45

State demand indicator

Indicator	Germany	France	Italy	Spain	UK
state demand	7,9	9,6	8,5	8,3	9,6
Source: Own calculations.					

The country with the highest score is the UK, followed by France at the same level and - with some distance - by Italy, Spain and Germany. The high ranking of the UK results mainly from the fact that e-government is particularly well developed with respect to 'online sophistication' and the high number of services which are fully available online. With respect to the

‘overall maturity’ indicator developed by Accenture, UK shows the same score as Germany but is ranked lower than France.

II.6 State as a shareholder

Despite privatisation of telecommunication operators, in many countries, governments continue to have shares in the incumbent firm. These shares are being reduced gradually, but the state still has the possibility to influence the incumbent’s strategies. This can have the beneficial effect that financial markets tolerate higher debt rates which – at least in the short term – gives the incumbents more flexibility to deal with excessive debt. On the negative side, state ownership might oblige the incumbent to integrate political and social aims in its business strategy. However, this aspect seems to be of minor importance, as the authors were not aware of any pressure exercised on the social responsibility of incumbents. If such pressure exists, it will be dealt with in the chapters on labour market conditions and state support in this report.

The shareholder indicator observes the debt development of the incumbents in the reference countries and the level of state ownership. In addition qualitative evidence has been used to answer the question of whether governments would tolerate a foreign takeover of the incumbent.

II.6.1 Country comparison

The following Table II-46 shows the development of state ownership in the five countries.

Table II-46
Shareholding of the state
in %

	2000	2001	2002	2003	2004	2005
Deutsche Telekom	60,0	43,0	43,0	42,7	38,0	37,0
France Telecom	55,5	55,5	56,5	58,9	42,2	32,45
Telecom Italia	3,5	3,5	-	-	-	-
Telefónica	-	-	-	-	-	-
British Telecom	-	-	-	-	-	-
Source: Bundesministerium der Finanzen (2006b)						

⁶¹ Department for Education and Skills (2005)

The debt situation of incumbents has been analysed using net debt figures.

Table II-47

Development of net debt burden

in million €

	2000	2001	2002	2003	2004	2005
Deutsche Telekom	57.400	62.800	61.100	46.600	39.900	38.600
France Telecom	60.998	60.734	68.000	44.200	44.167	43.938
Telecom Italia	35.728	38.362	33.399	33.346	29.529	39.858
Telefónica	26.951	28.942	22.533	19.235	23.694	30.067
British Telecom ¹⁾	45.126	22.351	13.882	12.652	11.464	10.818
Notes: 1) As at March 31th of the following year; conversion £ into €: annual rates. Sources: Deutsche Telekom (2000 to 2005), France Telecom (2000 to 2005), Telecom Italia (2000 to 2005), British Telecom (2000 to 2005a) and: France Telecom (2008), Telecom Italia (2008)						

Table II-47 indicates that those firms with a major share of state ownership show considerable levels of debt during the period since 2000. However, it should be noted that debt levels of Deutsche Telekom and France Telecom decreased during the last four years while the debt levels of Telecom Italia and Telefónica were higher in 2005 than in 2000. Moreover, the major difference between these countries and the UK is that British Telecom had to reduce its debt level drastically.

The incumbents' indebtedness has resulted in the following debt/EBITDA rates:⁶²

Table II-48

Net debt ratios 2005

	Deutsche Telekom	France Telecom	Telecom Italia	Telefónica	British Telecom
net debt/EBITDA rates as reported by incumbents	1,9	2,6	3,2	1,9 ¹⁾	2,1 ²⁾
Notes: 1) Based on OIBDA (operating income before depreciation and amortization). 2) In the 2006 Annual Report BT states on p.31: "EBITDA is defined as the group profit/loss before depreciation, amortisation, interest and taxation. This is a non-GAAP measure and may therefore not be directly comparable to the EBITDA of other companies." Sources: Deutsche Telekom (2005), France Telekom (2005), Telecom Italia (2005), Telefónica (2005), British Telecom (2005a)					

The net adjusted debt/EBITDA ratios confirm that there is no relationship between state ownership and debt levels.

⁶² Some companies have published ratios which differ from those of Standard & Poors, as the credit analyst firm tend to apply more severe criteria. For the sake of comparability, the Standard & Poors data have been used here.

Germany

Until the end of 1994 - before starting the privatisation program - the German state owned the telephone operator company completely.⁶³ Initially 26% of the shares were issued after a major campaign to attract small private equity holders by offering them special conditions if they signed in for the IPO (initial placement option). Privatisation of the Deutsche Telekom is aimed at establishing a broader shareholder culture in Germany, because Germany was and is lacking such a culture, particularly when compared to the Anglo-Saxon-countries. Privatisation was based on a law (Postreform 2); this law decreed that the money earned by selling the shares could not be withdrawn by the state until the end of 1999. Due to this restriction imposed on the state owner, the capital base of Deutsche Telekom could be increased significantly by the privatisation program. Afterwards the federal government reduced its share holdings by transferring the property rights of its holding to the state owned KfW (Bank of Reconstruction). The purpose of this move was mainly to receive cash to cover deficits in the state budget. In 1997, 13.5% of the federal state's shares were transferred legally to KfW. The Bank was entitled to sell off part of these shares but had to take care that the value of its share holdings was not endangered by the selling of these assets. Through these transactions the shareholdings of the KfW of DT AG increased from 13.5% in 1997 to 23.9% in 1998. In 1999 the government made a second public offering to reduce its share holdings from 48.1% in 1998 to 43.2% in 1999 (DT2).

Since the New Economy bubble reached its final state in 2000, the government placed another public offering (DT3) reducing its share holdings to 60% (43.2% government and 16.8% KfW). After the bubble burst, the price of the DT AG stock fell dramatically, just as those of many other telecommunication companies, from €103.50 in spring 2000 to less than €20 in 2001. This rapid devaluation put the privatisation process on hold. The government was hoping for a recovery of the stock market and postponed further privatisation in 2001 and 2002. However, with the acquisition of Voicestream and Powertel by DT AG in the US via equity swaps and some cash payments, the German government's share holdings of DT AG decreased further. In 2003, the government shifted its holdings again from the government account to those of KfW, increasing the Bank's holdings from 12.1% in 2002 to 16.7% in 2003.

⁶³ For a documentation of these processes see Bundesministerium der Finanzen (2004)

In 2004, the further privatisation of DT AG stocks was shifted from public offerings towards large scale sell offs to institutional investors. Through one of these operations KfW could reduce its holdings by about 4.7%, thus, lowering the overall holding of the state to 37.5%. In December 2005, 15% of shares were held by the government, 22% by the KfW. Institutional investors held 46%, while retail investors owned 17%.

A further step towards privatization was taken in April 2006 when 4.5% of the shares held by KfW were sold to the private equity fund, Blackstone. Most recently, the switching of conversion bonds into shares as well as the merger between T-Online and Deutsche Telekom has increased the number of shares that are freely available to the investing public. Currently, the government holds 14.8% and KfW 16.6% of shares.⁶⁴ Furthermore, the government emphasises that while considering the requirements of the capital market it will reduce its shareholdings further.⁶⁵

While the credit rating of Deutsche Telekom improved during 2005 and was raised to A- by Standard & Poors, the rating was decreased during 2006. In September 2006 Standard & Poors changed the forecast for the long term rating A- from stable to negative. This downgrade was justified by expenditures for US mobile licenses that were higher than expected. The longterm ratings of Fitch and Moody's remained unchanged A- and A3, respectively.⁶⁶

With respect to state interventions in business activities, it should be noted that the German federal government has taken an active position when considering that the CEO Ron Sommer was replaced by Kai-Uwe Ricke. However, press reports at this time informed the public that the final decision was made by the former chancellor Gerhard Schröder himself, which illustrates that the government took a very strong interest as to who was staffed as CEO. The recent replacement of Kai-Uwe Ricke by René Obermann was mostly forced by Blackstone but supported by the German government.⁶⁷ The additional claim of Blackstone to displace Klaus Zumwinkel, chairman of the board and head of Deutsche Post, however, was rejected by the German government.⁶⁸

⁶⁴ See Deutsche Telekom (2005) and Deutsche Telekom (2008b)

⁶⁵ See again Bundesministerium der Finanzen (2004)

⁶⁶ See Deutsche Telekom (2006)

⁶⁷ See Lambrecht (2006)

⁶⁸ See Clausen, Hulverscheidt (2006)

Considering the influence of the German government on the business activities of Deutsche Telekom, there were no reports that high ranking government officials influenced other strategic decisions. This has particular importance with respect to restructuring plans which also involve a reduction of staff.

France

Privatisation timetable

In the case of France Telecom, the full privatization process had four steps.

1 – The first one was the transformation of the post and telecommunications administration into two para-statal entities – this has been done by an act voted in on July 2, 1990 (Journal Officiel de la République Française (1990a)) creating La Poste and France Telecom. La Poste and France Telecom became “exploitants publics”, a special kind of EPIC (see box below). A large-scale public debate was organized beforehand by the Ministry of PTT to prepare the move (Prévot (1989)). The unions were satisfied by the guarantee that, the personnel would remain mostly public servants and that no further change was prepared, except for another act voted in on December 29, 1990 (Journal Officiel de la République Française (1990b)) introducing the changes needed by the new European regulatory regime after the 1987 Green Book on telecommunications. However, more changes soon were needed to cope with the decision, taken in 1993 at the European level to have full competition by 1998 in the telecommunication sector. The French government, pushed by the top management of France Telecom, decided to go public in 1995. The change of statute was mainly justified by the international ambitions of France Telecom, after several promising deals abroad (Argentina, Mexico, and above all a strategic alliance with Deutsche Telekom and Sprint). However, the IPO was delayed by protests from the trade unions and the many social difficulties encountered by the government at that time. In 1995, after the general elections, a new CEO was named (Michel Bon) with a clear mandate to manage the change of statute and the IPO. To prepare the introduction of full competition in 1998, a second telecommunications act was passed in 1996 to transpose European directives.

Box II-5

EPIC

An EPIC (Etablissement public à caractère industriel ou commercial) is a state entity with mixed features. On one hand, it belongs to the state system: its mission is defined by law and cannot be easily extended (this is called the “specialty principle”); it cannot default financially as it benefits from state backing; it does not always pay taxes like a normal company; it has a Board nominated by the state and all its main decisions have to be approved by a posteriori. While on the other hand, it conducts quasi-normal commercial operations, can enter partnerships and own subsidiaries. Variations exist in the actual statute of the many EPICs found in France. From 1991 to 1996 France Telecom was an “exploitant public” (public operator), a special kind of EPIC.

The telecom regulation act (Journal Officiel de la République Française (1996a)) of 26 July 1996 was accompanied by another act which was also adopted in 1996 transforming the parastatal entity France Telecom into a quasi-standard private company (Journal Officiel de la République Française (1996b)).

2 – These changes opened the way for the second step in the privatization process, the Initial Public Offering (IPO) of France Telecom in 1997. The IPO was planned for the spring of 1997 and a lengthy internal communication process took place to overcome the strong opposition from the unions despite the promise of the government that the state would keep control of the firm. However, the centre-right Juppé government lost the legislative elections at that time and was replaced by the Jospin government (socialist). The new Prime Minister asked for a “social audit” of the whole process (the socialists being traditionally against privatization) but finally gave a green light to the IPO, understanding that the government was unable to finance the development of France Telecom in the new international competitive context.

The IPO took place in the Fall of 1997 and amounted to €29bn. The state kept 75 % of the capital; 4 million individual shareholders asked 3 times the number of available shares and finally got 10.55 % of the capital. Financial institutions obtained 11.95 % (they had asked 20 times the number of available shares) and 70 % of the personnel of France Telecom bought 2.5 %. A second public offering took place in 1998 and amounted to €9bn.

The percentage of France Telecom owned by the state has not decreased since 1997. In 2002-2003, the government had to rescue France Telecom, due to its enormous debt (see below). On this occasion, part of the state participation was allocated to a state-owned financial holding company, originally devoted to the oil sector, ERAP. At the end of October 2003, the total share held by the state was 58.9 % of the capital of France Telecom.

3 – The third step happened when the Raffarin government (center-right) asked the Parliament to permit the percentage of France Telecom shares held by the state to be below 50 %. The law was voted in 2003 (Journal Officiel de la République Française (2004a)). In September 2004 the government sold 10.58 % such that the share of capital held by the state was 41.08 % on January 1st, 2005.

4 – The last step will be in effect when the state sells its last share of France Telecom. The government has declared it was to keep a significant share of the capital of France Telecom in the middle-term. There is no “golden share” rule.

Role of the state as a shareholder of France Telecom

Until 2004, the majority of members in the board of directors of France Telecom were state representative. They were mostly high-ranking officials from the ministries of economics, finance, industry and external trade. France Telecom, as all other large state firms, is under the permanent scrutiny of “contrôle d’Etat” (state controller, part of the Ministry of finance).

Table II-49

State representatives

	2001	2002	2003	2004	2005	2006
State representatives on the incumbent board	10 out of 21	10 out of 21	10 out of 21	7 out of 21	7 out of 21	5 out of 16
Note: Until 2003, 7 members of the board were representing France Telecom employees; in 2004, this number decreased to 3, in 2006 it is up to 4.						

However, as the government has been consistently promoting the introduction of competition in the telecommunications sector, it has been difficult for the state to act as an active shareholder (Diefenbacher (2003)). Any move by the state could, indeed, be interpreted as too favourable or too detrimental to France Telecom.

This uncomfortable situation was acceptable as long as France Telecom was reasonably profitable. Unfortunately, in 2002, France Telecom incurred enormous losses (€20.7bn) due to several factors: purchase, in cash, of Orange for €42bn; purchase of UMTS licenses in Germany and the UK; drop of market value making all additional creation of shares impossible. The debt level became unacceptable at €63.4bn, representing 5.6 times the EDITDA in 2002. The CEO, Michel Bon, was fired and replaced by Thierry Breton. The latter launched a drastic rescue plan called to cut costs and restructure the debt. In December 2002, the French government offered an exceptional loan of €9bn. Eventually, this loan was not used but was

taken by the financial markets clearly as a signal that the government would not let France Telecom default.

On January 30, 2003, the European Commission launched an inquiry regarding this promise of a €9bn loan as state aid is regulated by competition law. Some lawyers believed that France Telecom had benefited from psychological, or virtual state aid and should be fined. In a decision published on July 20, 2004, the Commission has ruled that the loan was incompatible with the European regulation of state aid, but has not imposed any fine. In October 2004, the French government asked the European court of justice to cancel the decision of the Commission. The French government believes it is its right, as shareholder, to support the companies it owns. Eventually, the EC approved €9.6bn Government bailout.

State ownership of France Telecom was down to 31% in 2006. No further plans for the future have been made public at the moment.

Italy

A few years before the privatisation process of Telecom Italia, Law 474/1994 attributed special powers (the so called golden share) to the Treasury (now Ministry of the Economy and Finances).

Such powers consisted of:

- Necessity of government approval of each shareholder holding 3% of the capital;
- Necessity of government approval of any pact among shareholders holding 5% of the shares;
- A right to veto certain arrangements such as mergers, transfer of the company, dissolution of the company itself, change or abolition of the special powers attributed to Treasury.
- The government's right to name one member of the board and one auditor of Telecom Italia.

The Treasury's special powers were introduced in the statutes of Telecom Italia on 26 March 1997, a few months before privatisation, which took place in October 1997.

Moreover such statutes required that each single shareholder could not own more than 3% of the shares of the company. This limit was removed on 10 August 2000.

In May 1999, just after the successful take-over bid for Telecom Italia from the group of investors led by Roberto Colaninno, a decree of the Prime Minister (D.P.C.M. 4 May 1999) and then a further Decree (D.P.C.M. 11 February 2000) redefined the special powers of the Treasury, somewhat reducing their scope. According to these decrees, the special powers were bound to safeguard the vital interests of the State, in the fields of public security, public order, health and defence, and had to be coherent with the objectives of privatisation and of competition policy.

On 22 May 2003, in the framework of merger between Olivetti and Telecom Italia, the Ministry of Economics has modified the golden share rule, eliminating two of the original items, that is:

- The necessity of government approval of any shareholders acquiring more than 3% of all shares.
- The right to name one member of the board and one auditor.

Then, the Law 350/2003 modified another aspect of the golden share rule. In its original definition, the Government had to agree with new shareholders acquiring participation over the ceiling of 3%. Now, the Government must express its opposition to the admission of new shareholders, if this admission would damage vital interests of the State.

It is clear from what has been said so far that, despite the full privatisation of Telecom Italia, the state still keeps a “limited”, but “real” involvement in Telecom Italia, in defiance of rulings by the European Commission.

This involvement does not concern day-to-day decisions, not even strategic issues (such as acquisitions or foreign alliances) but is a sort of public statement that Telecom Italia is a national asset.

It is interesting to note that the government approved the two take-overs which have considerably shaped Telecom Italia (the first rather openly, the second in a more reserved way). This means that in case of crisis the government would use its “influence” on banks, investors and financial institutions to help the company, and prevent bankruptcy or a sell-out to foreign interests.

Table II-50

Shareholdings of Telecom Italia

Indicator		State as shareholders			
Years	% state shareholding	Golden share rule	Major shareholders %	Gross debt (m €)	EBITDA (m €)
1999	3,46	Yes	Tecnost 55,02 Foreign shareholders 19,77 National shareholders 13,36 Others 6,89 Bank of Italy 1,14 Employees 0,36	22.849	12.226
2000	3,46	Yes	Olivetti S.p.A. 54,99 Foreign shareholders 29,56 National shareholders 11,06 Others 0,72 Employees 0,21	35.622	13.118
2001	3,46	Yes	Olivetti S.p.A. 54,96 Foreign shareholders 22,82 National shareholders 10,00 Others 8,76	37.482	13.619
2002	The Ministry of the Economy has sold its residual shares on 9/12/2002	Yes	Olivetti S.p.A. 54,94 Foreign shareholders 22,42 National shareholders 10,55 Others 12,09	31.870	13.964
2003	=	Yes	Olimpia S.p.A. 17,00 Foreign shareholders 41,35 National shareholders 11,85 Others 29,80	53.307	14.280
2004	=	Yes	Olimpia S.p.A. 16,97 Foreign shareholders 31,60 National shareholders 15,76 Others 35,77	50.587 (1)	14.528 (1)
2004	=	Yes	Olimpia S.p.A. 16,97 Foreign shareholders 31,60 National shareholders 15,76 Others 35,77	43.416 (2)	12.864 (2)
2005			Olimpia S.p.A. 18,00 Foreign shareholders 20,00 National shareholders 27,06 Others 34,94	52.101 (2)	12.987 (2)
(1) Drawn up according to the accounting principles of IT GAAP					
(2) Drawn up according to the accounting principles established by the Accounting Standard Board and approved by the IFRS					

The recent events in September regarding TI are a good example of intrusiveness into the life of the major Italian telecom operator. On the 11th of September, the Chairman and main shareholder of TI, Mr. Tronchetti Provera, announced a plan to split the company in three parts:

- A utility business which would own the fixed wire network;
- A media company, combining the wholesale and retail activity of the fixed network with a content division, in order to transform the new entity into a media company, which would become the core of T.I.'s activity;
- A third company, running the mobile business.

Public opinion has been very negative: all the observers have tried to understand the meaning of a project that implies a radical U-turn of the strategy, which led, in 2005, to the merger between TI and TIM, its mobile company, the real cash-cow of the group. Even the Government expressed its dissatisfaction of this radical change of strategy and for a plan, that according to a spokesman of the Government, had not been disclosed to the government, despite the fact that only one week before the announcement Mr. Tronchetti Provera, had met the Prime Minister, Romano Prodi. The statement of the Prime Minister's spokesman and of other government's members created much uproar, since the government wanted to reaffirm its right to take part in decisions affecting "the vital interests of the country".

Mr. Tronchetti Provera reacted harshly, leaking a document to the press from the Prime Minister's Office and prepared by the economic advisor of the Prime Minister, in which it was envisaged that the Cassa Depositi e Prestiti, a financial institution controlled by the Treasury (similar to KfW) could acquire the fixed network of TI, in order to solve the financial problems of TI, and prevent it from selling the mobile company. After this clash, Mr. Tronchetti Provera resigned, and was replaced by Mr. Guido Rossi, a well reputed business lawyer, linked to Mr. Tronchetti, but politically close to the Government.

From the end of September the debate has calmed down, Mr. Rossi has withdrawn the former restructuring plan, and the Government and Telecom Italia have started a policy of appeasement while it is still not clear which will be the strategy of Telecom Italia in the near future.

What is clear to everybody is that the Government intends to play a central role in the future of a company considered "vital" for the country.

Since the privatisation of TI, intrusiveness no longer means interference in daily activities of the company, but the necessity of strong ties with the government, as the incumbent is still considered a national champion.

Spain

If we compare Telefónica's debt ratios with those of other telecom companies, Telefónica exhibits much better performance. Nevertheless the burst of the Internet bubble, and its impact on the TMT sector, have impelled the debt ratio of Telefónica in the years 2000 and 2001. Two kinds of explanations can be put forward. First of all, Telefónica had better ratios before the crisis because:

- (i) It was very sensitive to financial ratios because for a long time Telefónica acted as a private firm in raising funding in international financial markets, both debt and equity. Moreover, Telefónica quotes its shares in foreign stock markets (New York, London, Paris and Tokyo) since 1985. International financial activity means that Telefónica is permanently under surveillance by institutional investors.
- (ii) Telefónica carried out a lot of acquisitions in the years prior to the crisis. This could have triggered the debt ratios. However, a lot of these acquisitions (Endemol, Lycos and some Latin American transactions, for example) were paid by issuing new Telefónica's shares. These new shares were delivered to the stock sellers in exchange for its shares. Therefore, Telefónica did not increase its debt yet simultaneously increased its equity.

Telefónica managed its financial issues appropriately during the years of the TMT crisis. Some comments might underline this:

- (i) Telefónica stopped services that were not mature and even abandoned some of the riskier ones: mobile UMTS in Europe (Germany, Austria, Italy and Switzerland), content industry (for example Antena 3, a TV channel) and did not provide support to Terra, the emblematic subsidiary for internet business that had suffered the worst of the crisis. In doing so Telefónica limited the contagion effect of the financial crash of Terra.
- (ii) Telefónica concentrated its main strategies in less risky business, such as ADSL deployment, and carried out a very selective strategy of acquisitions.

Golden Share Rule

The State is "proprietary" of a golden share in Telefónica since 1996. This golden share expires in 2007. It provides the State the right to veto mainly in the following cases:

- Merger with another company
- Acquisition by another company
- Change in the social aim of the firm
- Selling strategic assets

The golden share does not allow the government to intervene, neither directly nor indirectly, on management issues related to the investment policy or in any other day to day decision. Although the EU has watered down golden share rules (2002 European Court of Justice decision), Telefónica needed to have the permission of the government if it wished to carry out a merger with an other company.

The government has threatened to use the golden share to impede the merger between KPN and Telefónica just before the TMT crisis began. However, the real question was a personal dispute between the chairman of Telefónica and some members of the Spanish government.

On April 3th of 2006, the Spanish parliament approved a law that suppresses the rights of the Spanish state as the owner of “golden shares” in Spanish firms. The new law satisfies the requirements made by the European Commission. The European court stated that the golden share limits market freedom. The initiative came from the Spanish government before the takeover bid launched for Endesa by the German company E.on. Nevertheless, even though the proposal was submitted to the Parliament after that bid, the government party supported the change.

Therefore, the Spanish government gave up the right to veto in the E.on bid, although it will use other instruments in order to affect the final result of the takeover. With regard to Telefónica, the removal of the golden share implies less protection by the state in case of a takeover bid.

Other major holdings of incumbent shares

After complete privatisation in 1996, two Spanish bank entities (BBVA and La Caixa) appear as “hard core” stakeholders. Their current participations, both of them have been always around 10%, are as follows:

- BBVA: 6,63%
- La Caixa: 5.09%

These Spanish bank institutes are involved in the control of the company. They have six seats in the Board of Directors. One of them is the vice president of the firm.

In addition to these two banks several other financial institutions can be mentioned as shareholders of Telefónica: The financial institution Citibank, NA holds about 231 million of shares, 4.66% of the stock of Telefónica. In addition to being shareholder, this bank acts as depositary of other shares. If we consider these shares, Citibank holds about a 10% stake in Telefónica's stock. The Chase Manhattan Bank Nominees Ltd holds about 9.90% of shares, the State Street Bank&Co about 7.61%.

The high participation of these three US banks as depositaries reveals the relevance of the ADR (American Depositary Receipt) for Telefónica. Therefore, US investors, both retail and, especially institutional, have a significant stake in Telefónica's capital stock.

Finally, it should be put forward that the new strategy of La Caixa, is to sell industrial participations. Therefore it is forecasted that, in future, its stake in Telefónica will decrease.

General assessment

What could the Spanish State do in favour of Telefónica if a strong crisis affected the company? There is no record of that issue in the Spanish telecom industry, and Spanish laws do not consider this problem. Nevertheless we could imagine what the role of the State will be in this potential situation. First of all, the state will provide funding as necessary in order to guarantee the telecommunication system in Spain if the problem arises suddenly. If the problem appears gradually, the state will try to solve it by promoting changes in the ownership of Telefónica and/or promoting mergers in the Spanish market. However, currently, we feel that there are no relevant possibilities of a financial collapse of Telefónica.

United Kingdom

There is no state shareholding in BT. A timeline that lays out the equity position of the UK government in BT can be found below:

Table II-51

Timeline of government involvement in BT

Date	Event
1981	BT created as a separate public entity
1984, December	50,2 % of shares sold
1991, December	25,6 % of shares sold
1993, July	21,9 % of shares sold
1997, July	Golden share relinquished by government
Source: Curwen (1994).	

British Telecommunications, as it was originally called, was first privatised in December 1984 and this was the first occasion when privatisation as a strategy could truthfully be said to have passed the point of no return. The details of the three-tranche privatisation – the other tranches were in December 1991 and July 1993 - were as follows:

1. Shares issued – 3012m; 1598m; 1312m
2. Percentage sold – 50.2%; 25.6%; 21.9% (rest set aside for bonus shares).
3. Amount raised – £ 3.916m (including a debt write-off of £ 1.280m); £ 5.240m; £ 5.335m.
4. Minimum investment – £ 260; £ 335; £ 492.

A ‘special’ or ‘golden’ share was issued and kept in place throughout the three tranches. This stipulated:

1. Redemption – any time.
2. Special voting rights – no.
3. 15% voting restriction per individual – yes.
4. 15% foreign ownership cap – no.
5. Restrictions on winding up – no.
6. British CEO – yes in the first two phases; no in the third.
7. Government appointed directors – 2 during all three phases.

Special shares were a fairly standard element of privatisation strategy, being applied to all utilities and the largest non-utilities. In terms of the seven categories above it may be noted that:

1. Some were time limited whereas others, like BT's, were not.
2. Special voting rights were used for all utilities bar telecommunications.
3. 15% vote caps were normal for utilities.
4. Foreign ownership restrictions only applied to BAe, British Airways, Rolls Royce.
5. Requiring a British CEO was unusual.
6. Government appointed directors were very unusual.

The 'golden share' effectively gave the UK government the ability to block any takeover of BT, and to appoint two non-executive directors to the company's board⁶⁹. The 1996 and 1997 Annual Reports do not state whether any of the executive directors of BT were appointed by the UK government, though an ex-minister – Lord Tebbit – was a non-executive board member of the company.

Major shareholders of BT

BT does not explicitly identify who its largest shareholders are. Instead its annual reports note the distribution of shares by size of holding and draw attention to a distinction between retail (private individuals) on the one hand and institutional shareholders on the other hand. No shareholder owns a stake of more than 5%. The table below, taken from the 2004 Annual Report, shows the distribution of BT shares.

There has been a continuation of the trend towards the accumulation of stakes in the hands of the largest (institutional) shareholders during the past two years.

⁶⁹ See British Telecom (2005b)

Table II-52

Analysis of BT's shareholdings

Number of shares	Number of holdings	Percentage of total	Ordinary shares of 5p each	
			Number of shares held (m)	Percentage of total
1 – 399	541,503	39,2	115	1,4
400 – 799	404,779	29,3	226	2,6
800 – 1.599	260,411	18,8	290	3,3
1.600 – 9.999	169,048	12,2	489	5,7
10.000 – 99.999	5,220	0,4	100	1,2
100,000 - 999,999	824	0,1	306	3,5
1.000.000 – 4.999.999	347	0,0	821	9,5
5.000.000 and above ^{a,b,c,d}	216	0,0	6,288	72,8
Total	1.382,342	100,0	8.635	100,0

Notes: a) 31 million shares were held in trust by Illford Trustees (Jersey) Limited for allocation to employees under the employee share plans b) Under the BT Employee Share Ownership Scheme and the BT Group Employee Share Investment Plan, 7m and 39m shares respectively were held in trust on behalf of 105,657 and 89,129 participants respectively who were beneficially entitled to receive shares. 137m shares were held in the corporate nominee BT Group EasyShare on behalf of 124,279 beneficial owners. c) 208m shares were represented by ADS. Analysis by size of holding is not available for this holding. d) 14.3% of the shares were in 1572571 individual holdings, of which 135432 were joint holdings, and 85.7% of the shares were in 31694 institutional holdings.
Source: British Telecom (2004) p. 143

BT's financial troubles

The full story of what happened at BT can be found in Curwen and Whalley (2005). Summarising this heavily:

1. BT was financially sound in the mid-1990s, having become much more efficient during the decade post-privatisation.
2. It fancied itself as a global powerhouse and acquired a large number of foreign assets, albeit largely via minority stakes, as well as attempting to create a global joint venture in the form of the first version of Concert (with MCI).
3. The plan began to unravel when BT was beaten to the post by WorldCom in October 1997 while attempting to buy MCI.

4. The strategic replacement, Concert version 2 with AT&T, proved to be more of a model of disharmony than the contrary, and failed utterly to resolve BT problems during the late 1990s.
5. With revenues in decline at home – due to competition in basic telephony and BT's perverse decision to ignore the Internet – and a global venture consisting largely of bits and pieces with no coherent strategy, BT's response was to pump up its debt via further, mostly foreign, acquisitions (Cellnet, Esat Telecom, Yellow Books USA).
6. Due to the ramping of telecoms market valuations in 2000/01, BT became too expensive to buy, yet was simultaneously pumping up its debt by buying 3G licences in e.g. the UK and Germany while also investing heavily to upgrade its networks to cope with broadband.
7. Thus, when market valuations collapsed in 2001/02, BT's debts became excessive in relation to its capitalisation.

The debt reduction plan, as originally envisaged, appeared as shown in Table II-53. As can be seen, the rights issue, comprising 1.98 bn shares priced at £ 3, a 47% discount to the ruling market price, issued on a 3-for-10 basis, played a major role in the debt reduction strategy. However, a further crucial aspect was the IPO of mmO₂ (subsequently O₂) with only £ 500m of debt and with each BT share being split into one BT Group share and one mmO₂ share. On 19 November 2001, the latter began life at £ 0.83p, valuing it at £ 7bn. Subsequently, further disposals have taken place and the BT Group debt is now comfortably below £ 10bn.

In essence, once the financial markets began to implode, the pressure on BT to clean up its balance sheet became intense. Needless to say, there was also a severe effect upon the boardroom resulting in a directors "merry-go-round" at the BT Group.

The credit rating of BT is flexible but has been constant for some time. As noted, the net debt position is stable in absolute terms and hence is falling relative to other financial indicators. The present credit rating by the three main agencies – Moody's, S&P and Fitch – is shown below (as of May 2005).

According to the BT website (op cit), these ratings should be interpreted as follows:

Short-term ratings by these agencies assess the ability of the company to repay short-term debt obligations. A1/P1/F1 ratings (highest short-term rating) by Moody's, S&P and Fitch respectively indicate a superior ability to repay short-term debt obligations;

A2/P2/F2 indicates satisfactory ability and A3/P3/F3 indicates adequate ability to meet the short-term financial liabilities.

In other words, BT is viewed as being able to repay its borrowings.

Table II-53

Contributions to debt reduction (2001-2002)

in million \$

Current (effected or agreed end-June 2001)			
<i>Debt outstanding</i>	-39.600		
<i>Rights issue</i>		+8.600	
<i>Assets sold</i>			
Airtel		+1.600	
Bharti Cellular		+175	
Japan Telecom/J-Phone		+5.300	
Maxis Communications		+500	
Rogers Wireless		+380	
Yell		+3.050	
Telenordia		+15	
stake in BSkyB		+180	
<i>Sale & leaseback¹⁾</i>			
Property ²⁾		+ 3.500	
Sites		+ 3.000	
Vehicles		+ 1.500	
<i>Pension shortfall (annual)</i>	-400		
TOTAL	-40.000	+19.715	+8.000
Future			
<i>Disposals</i>			
Clear Communications		+180	
<i>Savings (2001-02)</i>			
Dividend reduction		+1.600	
Capital spending reduction		+730	
Cost base		+850	
Credit rating downgrade	-50		
<i>Additional charges (2001-02)</i>			
Pension costs	-900		
Asset write-downs ³⁾			
Impsat/SmarTone/StarHub	- 1.000		
Concert/AT&T Canada	- 1.500		
Additional stake in Blu	-95		
<i>Potential sales/revenue raising</i>			
Syntegra		offered then withdrawn June 2001	
Cégétel (26%)		worth, at best, \$ 4bn	
LG Telecom (22%)		under negotiation	
SmarTone		under negotiation	
Eutelsat (18%)		under discussion for perhaps \$ 350m	
Further shares in BSkyB		acquired in May 2001 and November 2002	
Notes: 1) Not counted as part of debt reduction process by credit rating agencies. 2) Delayed to November 2001 due to legal problems. The property transactions are discussed in detail in the BT Group Annual Report and Form 20-F 2002, pp.37-38. 3) Of which \$ 750m was announced in September 2001 to include Impsat in Argentina, plus \$ 1bn potentially arising against AT&T Canada depending upon the outcome of the Concert break-up, plus possible write-offs against SmarTone in Hong Kong and StarHub in Singapore. The actual write-offs resulting from the closure of Concert are separately itemised.			
Source: Curwen (1994)			

Table II-54
BT's credit ratings

	Moody	Standard & Poor	Fitch
Long term	Baa1	A-	A
Short term	P2	A2	F1
Source: British Telecom (2005c)			

State protection

BT's special share was neither unusually liberal nor unusually restrictive, and no other privatisation followed the exact same pattern. It is particularly noteworthy that:

1. The government did not want any individual party to obtain a significant slice of BT.
2. On the other hand, it had no objections to a widely dispersed share ownership held largely in foreign hands.
3. It was not prepared to state in advance when it intended to terminate the special share.

The special share was eventually terminated in BT's case in July 1997, and it may reasonably be asked whether it, or any other for that matter, had achieved any real purpose. Broadly speaking, the answer is 'no'. One can understand that, launching the world's first major privatisation programme, the government did not want it to appear that it cared nothing at all about what happened thereafter, but it is of particular interest that the restriction of most concern to Continental Europeans – that on foreign ownership – was only used for companies with specific technological/defence interests/secrets that needed to be protected. BT did not fall into that category!

Did the government ever expect to exercise its special shares other than to keep the shareholding registers limited in the ways suggested? There is little evidence to suggest that this was the case. Of course, it just so happened that the Conservative Party held on to power throughout the 1980s and it is arguable that, had the Labour Party won an election during that period, it would have behaved differently. Equally, the present government, albeit Labour in name, appears to be largely indifferent to issues of ownership so some of the Tory philosophy of the 1980s appears to have spread its tentacles!

This then raises the issue of 'National Champions'. By definition, a major utility such as BT is a national champion, but there are two wholly divergent views on this matter. In the first

place, it may be argued that ownership is an irrelevance, and that a company should be owned and run by whoever is willing to put the highest valuation upon it since that in turn obliges the owners to seek to achieve the greatest possible efficiency and, hence, profitability. Such an approach is also the only one compatible with efficient worldwide capital markets. Against this, there is the argument that ‘capitalists’ run companies for the benefit of shareholders and hence neglect the ‘public interest’, neglect the welfare of employees and are ultimately willing to see the company go to the wall rather than struggle on unprofitably.

It is not our role to discuss the merits of these views. Arguably the key issue is whether, if all alternatives had failed, the UK government would actually bail out a national champion. Here again, it may be thought that this boils down to a question of political leaning, but in the UK this no longer can be said to be the case. Wherever the current Labour government may consider itself to be in the political spectrum, it learned one harsh lesson while out of office in the 1980s, namely that the British people just want things to work properly without the need for them to pay higher levels of taxation. Its recent willingness to ignore the troubles at Marconi, and to do little more than pay lip service to the demise of Rover-MG (where the Chinese, extraordinarily, were seen as perfectly acceptable buyers), demonstrates this point clearly but it may be noted that so much of the utility sector is now foreign-owned – without a reciprocal enthusiasm for UK companies to invest in continental Europe in every case – and prices appear to be rising so sharply that there is something of a backlash against ‘excessive’ foreign ownership of utilities building up.

So: would government allow BT to be taken over by a foreign company? Answer: ‘Yes’. In fact, it would have no legal grounds to prevent it and BT is unpopular so the general public would probably be enthusiastic – the recent takeover of O₂ by Telefónica barely caused a ripple in the popular press. However, it might just prove to be one foreign utility takeover too far so the government might introduce some new regulatory controls (even retrospectively) although as noted elsewhere, there is a general view that BT’s regulatory regime is already fairly exacting.

So: would it allow BT to go bust? This is somewhat hypothetical since BT is profitable and still controls 60% of local lines, but the issue is what is meant by going bust. In the first place, we could be saying that BT is inherently unprofitable because it is so inefficient that it cannot make a profit when others could, in which case presumably there will be a queue of potential buyers to buy the company from the administrators in the style of MCI. Who the buyers are

would not matter at all. If, however, we are saying that local loop provision cannot be provided profitably by any commercial operator because of competitive forces, end of story, then obviously the government must make arrangements for basic telephony services to be provided. Presumably, taking BT back into public ownership, the obvious response, would then be fully compatible with EU rules. This would not be an issue of whether or not BT was a national champion, but rather an issue of needing to prevent the telephony service from crashing.

II.6.2 The Indicator

To convey the development of the incumbents' debt and the qualitative information about the influence governments exert on the incumbents we use the following reasoning:

First, it seems to be impossible to show a clear casual link between shareholding of the state and the incumbents' debt levels (see Table II-47 and Table II-48). However, the following argument nevertheless points to a beneficial effect of state shareholding: If a company takes on seemingly 'excessive' debt, its credit rating would be expected to fall, leading to higher rates of interest. This and the possibility of a collapse to 'junk bond' rating would seriously disadvantage existing lenders who would then insist that something radical be done to forestall such an eventuality. For example, the sudden collapse of BT's debt in 2002 as a result of the mobile subsidiary sale can be interpreted as a reaction to its 'excessive' debt that was not even considered in France and Germany. Hence, one benefit to incumbents with state shareholders is that they can run up the debt in the first place without much prejudice to their credit rating and that they need not take short-term radical and strategic action to deal with the problem of 'excessive' debt – however, there will be pressure to look for longer-term solutions (in light of general improvement in incumbent finances post-2002, debt in excess of €30bn can still be considered to be 'excessive'). Using this argument and taking the levels of indebtedness tolerated by financial markets into account, there seems to be considerable advantage in the support incumbent firms can get if the state is a major shareholder.

Second, while state shareholding can also lead to interventions in the incumbents business strategies, the general attitude a government has towards its incumbent tend to be more favourable the higher the government's shareholding is. The same holds for a government's attitude towards national champions. The more telecommunication incumbents are considered

as national champions the more favourable governmental interventions should be. However, in both cases judgements have to rely on a case-by-case analysis.

Considering state shareholding, state interventions in actual business strategies as well as the likelihood of state intervention in the case of strategic long-term decisions and in the case of a crisis as further criteria, the following scores have been attributed:

Table II-55

Shareholder indicator

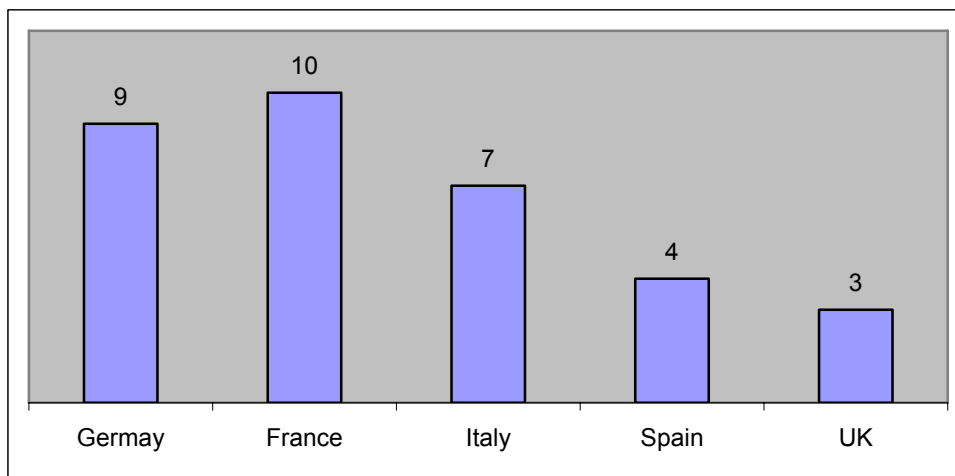
	Deutsche Telekom	France Telecom	Telecom Italia	Telefónica	British Telecom
State as shareholder	9,0	10,0	7,0	4,0	3,0

The high score given to France relies on two factors: First, the high level of debt France Telecom relies in large part on state guarantees. Second, the controversial, but eventually EC approved €9.6bn government bailout. Germany's second rank is due to the relatively high state shareholding and the observation that there were no government interventions with respect to business strategies or restructuring plans.

The lower ranking of Italy and Spain is based on the following observations: In Italy the government intervened when the split of Telecom Italia in three parts was considered. While Telecom Italia is considered a national champion, the government did also show its willingness to intervene in strategic long-term decisions. In Spain, the modest rights associated with the initial golden share and their removal in 2006 are taken as clear indications that the Spanish government has no specific instruments to protect its incumbent.

Finally, the lowest rank of the UK is due to general attitude of the government towards British Telecom. There were no state interventions during the financial troubles British Telecom had starting in 2001 and there is no protection against foreign takeovers.

Figure II-6
Shareholder indicator



III Industrial policy indicators

The indicators outlined in the previous chapters are combined to derive several overall indicators. Two different approaches are used. The first approach relies on the distinction between incumbent and market related policy measures. The second approach combines all indicators to get one industrial policy indicator.

III.1 Incumbent and market related indicators

Among the policy measures discussed in the previous sections we consider the following measures as primarily affecting the incumbent:

- Tax burden of incumbents as measured by the average tax rates of the incumbents
- Employment flexibility represented by the development of main lines per employee
- Competition policy
- State as a shareholder

The inclusion of competition policy is based on the observation that competition policies mainly affect the business strategies of large and dominant firms.

Adapting the weighting scheme outlined in Table II-1 to this reduced set of indicators and using the respective indicator values we get the results shown in Table III-1.

Table III-1
Incumbent related indicator

Weights	Indicator	Germany	France	Italy	Spain	UK
0.14	Fiscal measures Tax payments	10,0	8,0	7,0	9,0	10,0
0.29	Labour market Employment flexibility	7,5	10,0	8,0	6,2	10,0
0.36	Competition policy	3,0	10,0	2,0	8,0	5,0
0.21	State as shareholder	9,0	10,0	7,0	4,0	3,0
Total incumbent related indicator		6,6	9,7	5,5	6,8	6,7

France stands at the highest position due to its high scores for competition policy and state as a shareholder. Spain benefits from relatively low tax payments as well as its high indicator value for competition policy. While UK shows the highest scores for fiscal measures and employment flexibility, Germany's rank is due to relatively low tax payments and its second rank for state as a shareholder. Italy is ranked lowest due to the combination of low scores for tax payments, competition policy and state as a shareholder.

Adding infrastructure aid and changing the weights accordingly leads to quite different results. Table III-2 shows that the relative position France is weakened as infrastructure aid and especially public private partnerships are used to spur competition. On the other hand, the relative positions of Spain, UK and Italy improve since there are explicit programs to extend broadband infrastructures on both countries. Moreover, the incumbents in these countries participate in these programs.

Table III-2
Incumbent related indicator including infrastructure aid

	Germany	France	Italy	Spain	UK
Total incumbent related indicator	6,1	7,7	6,9	7,4	7,4

Turning to the market related policy measures we consider average tax rates, tax exemptions as well as employment protection and state support as the relevant policy measures mainly affecting overall supply and demand conditions on the telecommunication markets. Adapting the weighting scheme to this subset of policy measures we get the results shown Table III-3.

The market related indicator for Germany confirms the reluctance of the government to generally support telecommunication and ICT markets. There are no specific tax exemptions and the impact of state demand is relatively low as compared to the other countries.

Table III-3

Market related indicator for industrial policy

Weights		Indicator	Germany	France	Italy	Spain	UK
0.17		Fiscal measures					
	0.33	Effect. average tax rates	7,0	8,0	9,0	10,0	9,0
	0.67	Tax exemptions	3,0	3,0	10,0	7,0	7,0
0.33		Labour market					
	1	Empl. protection	3,2	2,9	2,9	2,7	10,0
0.5		State support					
	0.5	ICT support	6,0	6,2	8,8	5,5	7,2
	0.5	State demand	7,9	9,6	8,5	8,3	9,6
Total market related indicator			5,2	5,7	6,9	5,7	8,8

Again, the high score of the UK in the market related indicator reflects the indicator construction that rewards low tax burdens and government activities as boosting demand for telecommunication services. A similar explanation holds for Italy that has the second highest score for market related issues. While Italy's scores for fiscal measures and state support are relatively high, Italy suffers from low scores for employment protection.

III.2 The overall picture

Table III-4 gives the weighting factors and the scores and then sums them up creating the overall industrial policy indicator.

The resulting industrial policy indicator shows France and the UK as the countries with the most favourable industrial policy in a consolidated perspective. In the case of France, high indicators for state demand, for the role of the state as a shareholder and for competition policy have led to this outcome. The high position for the UK is somewhat surprising, as the country is not known for a particularly articulated industrial policy. However, the country has high scores with respect to tax burden, labour market issues and state demand. The rationale of the indicator implies high indicator values for a strong role of the state as a consumer of telecommunication services. The

indicator also awards low tax burdens and an abstinent state with respect to state intervention in the labour market. When these components are combined in one country, the seemingly paradox situation occurs where low intervention levels on the one hand and active support on the other lead to a favourable climate for the development of the incumbent operator.

Table III-4

Aggregate indicator for industrial policy

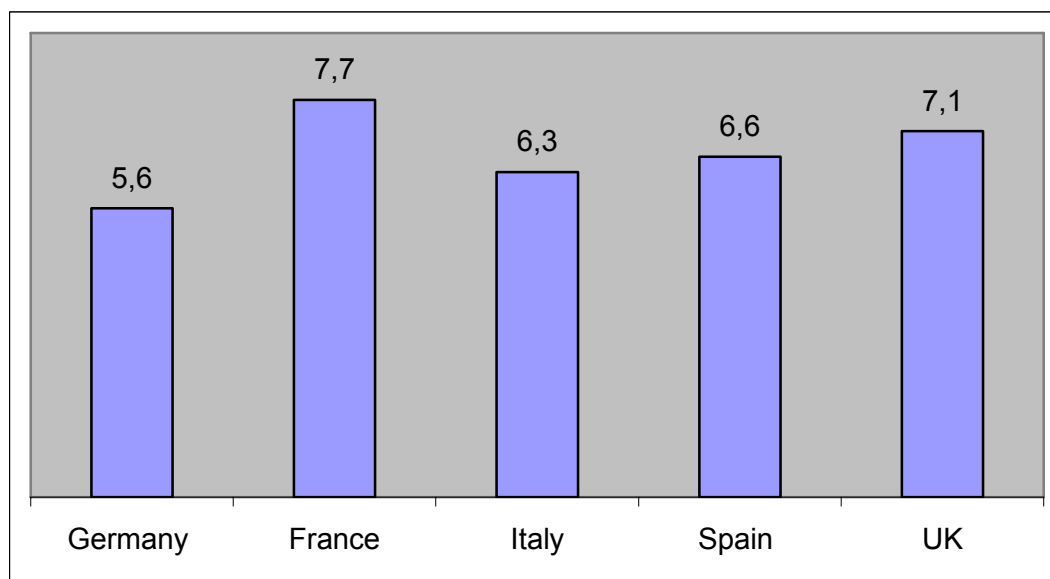
Weights	Indicator	Germany	France	Italy	Spain	UK
0.1	Fiscal measures					
	0.5 Tax burden	8,5	8,0	8,0	9,5	9,5
	0.5 Tax exemptions	3,0	3,0	10,0	7,0	7,0
0.2	Labour market					
	0.5 Empl. protection	3,2	2,9	2,9	2,7	10,0
	0.5 Empl. flexibility	7,5	10,0	8,0	6,2	10,0
0.25	Competition policy	3,0	10,0	2,0	8,0	5,0
0.3	State support					
	0.33 Infrastructure aid	5,0	3,0	10,0	9,0	9,0
	0.33 ICT support	6,0	6,2	8,8	5,5	7,2
	0.33 State demand	7,9	9,6	8,5	8,3	9,6
0.15	State as shareholder	9,0	10,0	7,0	4,0	3,0
Total Indicator		5,6	7,7	6,3	6,6	7,1

The Spanish case marks a situation where the incumbent is not favoured by any influence stemming from the times as a monopolist. Moreover, labour market conditions are not very favourable in general and state support is ranked as being relatively low. On the other hand, the Spanish incumbent benefits from a rather favourable competition policy and a relatively favourable situation with respect to its tax burden.

Italy benefits from an active state in terms of ICT support, infrastructure aid and tax advantages as instruments to promote demand in telecommunication markets. However, the anti-trust authorities are less favourable to the incumbent as compared to other countries. Anti-trust authorities in Italy are traditionally characterised by greater independence from the political system. Furthermore, a rather strict regulation of the labour market also disadvantages Italy.

Germany is ranked among the lowest positions with respect to fiscal measures, labour market regulation, i.e., flexibility, competition policy and state support. Its low rank for the overall indicator signals an attitude of the government which is reluctant to intervene in the market. Many measures targeting technological performance and the promotion of internet usage underlie the condition of financial neutrality. The conviction that telecommunication services should be provided in a free market regime adds to the relatively abstinent approach. Alternatively, the support experienced from state shareholding reduces the disadvantages as evidenced in the other sub-indicators. Overall, Deutsche Telekom neither benefits substantially from a consequent free market regime (as British Telecom does from favourable labour market regulations) nor from massive support as a partly government owned company (as does France Telecom to a certain extent).

Figure III-1
Overall indicator



III.3 Changing the weighting scheme

Although there are strong arguments in favour of the weighting scheme adopted for the calculations for Table III-4, other weighting schemes may also bear a high level of plausibility. Therefore a second weighting exercise has been conducted which resulted in the figures presented in Table III-5 (the weights for the sub-indicators have not been changed).

In the second weighting scheme, labour market issues have been given a higher weight in order to reflect the importance of these issues for incumbents. State support received a higher weight in order to take into account the current debate on infrastructure aid for broadband networks. Finally, the weight for competition policy has also been increased, because some experts held that incumbents' essential strategic decisions were impeded by antitrust authorities.

The changes in the weights do change the country ranking. The UK appears more favourable to the incumbent relative to the ranking of France. The relative scorings of Germany, Italy and Spain do not change. While there are some changes in the absolute scores, the differences in the indicators are rather small and remain within the limits covered by the generally rough method of indicator scoring.

Table III-5
Industrial policy indicators: weighting scheme II

	weights	Germany	France	Italy	Spain	UK
Fiscal measures	0.05	5,8	5,5	9,0	8,3	8,3
Labour market	0.3	5,3	6,4	5,4	4,5	10
Competition policy	0.3	3,0	10,0	2,0	8,0	5,0
State support	0.3	6,3	6,3	9,1	7,6	8,6
State as shareholder	0.05	9,0	10,0	7,0	4,0	3,0
Total indicator		5,1	7,6	5,7	6,6	7,6

IV Summary

The analysis of industrial policies in five European countries has revealed a great deal of similarities with only slightly differing priorities. However, the overall indicator shows that there is some variation between the extent up to which national policies are favourable to the incumbents. To understand these differences, the results of the five sub-indicators need to be taken into consideration. The individual indicator values can be substantiated by specific country scenarios observed. These qualitative descriptions are an essential part in the interpretation of the final results.

At first glance the positioning of France and the UK in relatively close proximity at the top of the indicator scores seems contradictory, as one country is characterised by a strong interest of the state in the incumbent and the other by a large institutional and political distance be-

tween the political layer and the incumbent operator. However, as the indicator system awards state protection for the incumbent in case of crisis (France) as well as liberal labour markets and favourable fiscal measures (UK), the result becomes plausible.

Germany is characterised by low range positions and almost all scores are below average. This can be explained by modest state support in terms of fiscal measures and state demand as well as a rather unfavourable competition policy when compared to the other reference countries. A further liberalisation of labour markets and an increase in state support could quickly lead to a diminution of the gap.

Best practice cases, such as the Italian state support for infrastructure aid, the British labour market regulation or the French state protection for the incumbent's debt, are not easily transferable to the German case. These policies are either part of a longer reform process (labour market flexibility) or they are subject to EU scrutiny (direct support measures for the incumbent).

A few points need to be mentioned, however, when interpreting the results:

- The indicator system leads to relative positions only and no absolute judgment can be deduced.
- Results presented in the form of intensity scales tend to create greater differences between countries than results based on quantitative figures. This effect is due to the construction of the indicator. Choosing a shorter scale would immediately reduce these differences and result in indicators that lie even closer together.
- The indicators are related to whether policies are favourable to the incumbent. No judgment is implied as to whether the respective policies (or the support of a national champion) are beneficial for telecommunication markets or the economy as a whole.

The analysis has clearly shown the need for a more thorough evaluation of basic determinants. In particular, the following issues need closer attention:

- While the state demand indicator used here relies on e-government, the indicator does not say anything about whether the services are actually used by the addressees. It can be assumed that many services might be available, but using them has not become general practice in companies and private households yet. Hence, only usage related indicators could document the actual relevance of an electronic government service.

- State support in the form of ICT support and infrastructure aid could only be documented approximately. Again the institutional structures of support prohibit one-to-one comparisons. It can be assumed that a more detailed analysis might result in a more accurate picture of policy efforts.
- The assumption that market-related support eventually results in an advantage for the incumbent needs to be verified. Its validity depends to a large extent on market conditions and the further development of competition in individual markets.

The analysis has revealed scope for improvement in German industrial policy towards telecommunication markets. In those fields where scores are higher in the reference countries, policy measures might be examined in the sense of identifying margins for better industrial policy. Measures that promote the development of telecommunication markets will benefit all market participants, therefore best practice cases, for example in infrastructure development or in ICT diffusion policy might help to guide the improvement of industrial policy.

V Appendix

The following tables show more detailed numbers on main lines and employees in the different countries (all numbers in thousands).

Germany

Table V-1

Main lines and employees in Germany

	2000	2001	2002	2003	2004	2005
PSTN+ISDN equivalent lines	49100	50200	49300	48700	47900	45000
ULL lines	320	620	940	1350	1960	3240
PSTN+ISDN+LLU lines	49420	50820	50240	50050	49860	48240
DSL connections (retail)	100	1400	2800	4000	5600	6300
DSL connections (wholesale)	0	0	0	0	200	1600
<i>(DSL total)</i>	<i>100</i>	<i>1400</i>	<i>2800</i>	<i>4000</i>	<i>5800</i>	<i>7900</i>
Total number of connections	49520	52220	53040	54050	55660	56140
Employees*	145,0	155,3	148,9	129,6	115,3	112,9
* 2000-2003: Number of employees T-Com as of Dec. 31 of each year; 2004-2005: Average number of employees Broadband / fixed network Source: Deutsche Telekom (2000 to 2005)						

France

Table V-2

Main lines and employees in France

	2000	2001	2002	2003	2004	2005
Network connections	34200	34500	35500	37200	40100	48100
Employees France Telecom SA	130,5	123,4	117,5	111,0	106,9	102,2
Sources: France Telecom (2000 to 2005)						

Italy

Table V-3

Main lines and employees in Italy

	2000	2001	2002	2003	2004	2005
PSTN+ISDN equivalent lines	27153	27353	27142	26596	25957	25049
ULL lines		6	125	539	840	1342
PSTN+ISDN+LLU lines	27153	27359	27267	27135	26797	26391
DSL connections (retail)		258	683	1652	3412	4901
DSL connections (wholesale)		132	167	388	598	890
Total number of connections	27153	27749	28117	29175	30807	32182
Employees	66,5	58,4	53,7	50,8	50,4	56,0

The employment figures are given as full-time equivalents, and refer to 31 December of each year, they cover national activity and fixed line business only.

Spain

Table V-4

Main lines and employees in Spain

	2000	2001	2002	2003	2004	2005
Network connections	20316	20647	18706	19100	19835	20750
Employees	43	42,2	43,9	38,4	36,4	35,1

United Kingdom

The following table includes all possible definitions. As can be seen, the number of exchange lines is broadly unaffected until broadband begins to be introduced on a widespread basis in 2004. It is not known how many hours, on average, a BT employee works, and there may be more part-time work in recent years. Presumably, BT now outsources a significant amount of work to overseas call centres. UK-based employees are not necessarily employed on UK-based business activities. However, in revenue terms, the UK/non-UK breakdown is currently roughly 85/25 which is close to that for employment.

Table V-5

Main lines and employees in UK¹⁾

	2000	2001	2002	2003	2004	2005
Total employees	136.8	137.0	108.6	104.7	99.9	102.1
Exchange lines ²⁾	28485	28950	29165	29566	29661	29630
UK employees	126.0	106.4	100.1	96.3	91.6	90.8
Lines per UK employee	226	272	291	307	324	326
Exchange lines ^{3),5)}	28495	28966	29221	29646	29998	30567
Exchange lines ^{4),5)}	28500	28975	29224	29930	31297	33877
BT Retail/Wholesale Employees ⁶⁾	99.0	83.6	80.6	78.0	74.4	64.0
Lines per R/W	288	347	363	384	421	529

Notes: 1) All data as of 31 March of relevant year (end of the financial year). 2) Total retail connections in the UK comprising business plus residential connections. 3) Total retail plus service providers. Annual Report 2005. 4) Total retail plus wholesale connections in the UK. Annual Report 2006. 5) The difference between the numbers in columns 6 and 7 appears to be the approximate number of broadband lines supplied to non-BT ISPs. This has surged since 2004. 6) Excluding BT Global Services and Other categories.

VI References

- Accenture* (2005): Leadership in Customer Service: New Expectations, New Experiences. The Government Executive Series.
- Art Telecom* (2005): Synthèse de l'étude internationale sur l'intervention publique dans le secteur des telecommunications. 2005-04-29. Available on the internet: http://www.arcep.fr/index.php?id=2231&tx_gspublication_pi1%5BuidDocument%5D=160
- Ärztammer Nordrhein* (2006): Essener Resolution. 2006-02-01. Available on the internet: www.aekno.de/htmljava/frameset.asp?typ=b&seite=nachrichtenmeldung.asp%3Fid%3D354%26jahr%3D2006
- Ärzte Zeitung* (2006): Eine böse Panne für die E-Card, *Ärzte Zeitung*. 2006-11-28. Available on the internet: <http://www.aerztezeitung.de/suchen/?query=e-card&concat=and&period=-&sh=210>
- Bereszewski, M.* (2005): PPP: Public Private Problemships. In: *Informationweek*, 03/2005. Available on the internet: <http://informationweek.de/showArticle.jhtml?articleID=193002879&queryText=PPP%3A+Public+Private+Problemships>
- Bundesministerium für Bildung und Forschung and Bundesministerium für Wirtschaft und Arbeit* (2003): Informationsgesellschaft Deutschland 2006, Aktionsprogramm der Bundesregierung. 2003-12. Available on the internet: http://www.bmbf.de/pub/aktionsprogramm_informationsgesellschaft_2006.pdf
- British Telecom* (2000): Annual Report 2000. Available on the internet: <http://www.btplc.com/report/1999-2000/>
- British Telecom* (2001): Annual Report 2001. Available on the internet: <http://www.btplc.com/report/2000-2001/>
- British Telecom* (2002): Annual Report 2002. Available on the internet: <http://www.btplc.com/report/index.shtml>
- British Telecom* (2003): Annual Report 2003. Available on the internet: <http://www.btplc.com/report/report03/index.htm>
- British Telecom* (2004): Annual Report 2004. Available on the internet: <http://www.btplc.com/report/report04/index.htm>
- British Telecom* (2005a): Annual Report 2005. Available on the internet: <http://www.btplc.com/report/report05/index.htm>
- British Telecom* (2005b): Homepage. BT's history. Available on the internet: www.btplc.com/thegroup/btshistory/1984-1990.htm
- British Telecom* (2005c): Homepage. Share information. Available on the internet: <http://www.btplc.com/sharesandperformance/Shareinformation/Ratings/ratings.htm>
- Broadband Stakeholder Group* (2004): 3rd Annual report and strategic recommendations. 2004-01-26 Available on the internet: http://www.broadbanduk.org/component/option,com_docman/task,doc_details/gid,48/
- Bundeskartellamt* (2002): Beschluss. 7. Beschlussabteilung B7- 64200 – U- 206/01. 2002-02-20. Available on the internet: www.bundeskartellamt.de/wDeutsch/download/pdf/Fusion/Fusion02/B7_206_01.pdf
- Bundeskartellamt* (2008): Decisions and press releases. Available on the internet: <http://www.bundeskartellamt.de>

- Bundesministerium der Finanzen* (2004): Beteiligungsbericht 2004. Available on the internet: www.flegel-g.de/Beteilig_x.pdf
- Bundesministerium der Finanzen* (2005): Bundeshaushalt 2005. Available on the internet: <http://www.bundesfinanzministerium.de/bundeshaushalt2005/index.html>
- Bundesministerium für Finanzen* (2006a): Bundeshaushalt 2006. Available on the internet: <http://www.bundesfinanzministerium.de/bundeshaushalt2006/index.html>
- Bundesministerium der Finanzen* (2006b): Bundesbeteiligungsbericht 2006.
- BundOnline* (2005): Final Report – Current Status and Outlook. Available on the internet: <http://www.kbst.bund.de>
- Cabinet Office* (2005): Connecting the UK: the digital strategy. 2005-03. Available on the internet: www.berr.gov.uk/files/file13434.pdf
- Cap Gemini* (2006): Online Availability of Public Services: How is it progressing? Report of the 6th measurement, 2006-06.
- Clausen, Sven-Oliver; Hulverscheidt, Claus* (2006): Amerikanisches Pulverfass. In: Financial Times Deutschland. 2006-12-04. Available on the internet: http://www.ftd.de/technik/it_telekommunikation/138052.html
- Commission of the European Communities* (2002): eEurope 2005: An information society for all. 2002-06-21/22. Available on the internet: http://europa.eu.int/information_society/eeurope/2002/news_library/documents/eeurope2005/eeurope2005_en.pdf
- Commission of the European Communities* (2008): Report on Competition Policy. Several issues. Available on the internet: http://ec.europa.eu/comm/competition/annual_reports/
- Conseil d'Etat* (1993): Avis n° 355 255 du 18 novembre 1993. Conseil d'Etat, Paris.
- Cross, M.* (2004): Hoping to become a favourite. In: Guardian, 2004-10-07
- Cross, M.* (2005): Point of no return. In: Guardian, 2005-02-03
- Curwen, P.* (1994): Privatization in the UK: the facts and figures. Ernst & Young, London.
- Curwen, P., Whalley, J.* (2005): Telecommunications Strategy, Cases, Theory and Applications. Routledge, London.
- Department for Business Enterprise and Regulatory Reform* (2003): Government response to the second annual report of the Broadband Stakeholder Group.
- Department for Education and Skills* (2005): Harnessing technology – transforming learning and children's services. London.
- Deutsches Institut für Urbanistik* (2005): Public Private Partnership Projekte – Eine Bestandsaufnahme in Bund, Ländern und Kommunen. Studie im Auftrag der PPP Task Force. Berlin.
- Deutsche Telekom* (2000): Jahresbericht 2000. Available on the internet: <http://www.deutschetelekom.com/dtag/cms/content/dt/de/8820;jsessionid=F6C761E59AAB80B528EB8BF0F87B06EB>
- Deutsche Telekom* (2001): Jahresbericht 2001. Available on the internet: <http://www.deutschetelekom.com/dtag/cms/content/dt/de/8820;jsessionid=F6C761E59AAB80B528EB8BF0F87B06EB>
- Deutsche Telekom* (2002): Jahresbericht 2002. Available on the internet: <http://www.deutschetelekom.com/dtag/cms/content/dt/de/8820;jsessionid=F6C761E59AAB80B528EB8BF0F87B06EB>

- Deutsche Telekom* (2003): Jahresbericht 2003. Available on the internet:
<http://www.deutschetelekom.com/dtag/cms/content/dt/de/8820;jsessionid=F6C761E59AAB80B528EB8BF0F87B06EB>
- Deutsche Telekom* (2004): Jahresbericht 2004. Available on the internet:
<http://www.deutschetelekom.com/dtag/cms/content/dt/de/8820;jsessionid=F6C761E59AAB80B528EB8BF0F87B06EB>
- Deutsche Telekom* (2005): Geschäftsbericht 2005. Available on the internet:
http://www.geschaeftsbericht2005.telekom.de/de/lb/risiko_und_chancenmanagement/index.php
- Deutsche Telekom* (2006): Konzern-Zwischenbericht 1. Januar bis 30. September 2006,. Available on the internet: <http://www.interimreport.telekom.de/site0306/de/we/index.php>
- Deutsche Telekom* (2008a): Reports to SEC 1995-2005. Available on the internet:
<http://www.deutschetelekom.com/dtag/cms/content/dt/de/8818;jsessionid=77B51D42072CBE412F7CA47EDEA4A12C>
- Deutsche Telekom* (2008b): Kapitalentwicklung. Available on the internet:
<http://www.telekom3.de/dtag/cms/content/dt/de/9848>
- Devereux, M.P., Griffith, R., Klemm, A.* (2002): Corporate Income Tax Reforms and International Tax Competition. In: *Economic Policy*, Vol. 35, pp. 451-495.
- Diefenbacher, M.* (2003): Rapport de la commission d'enquête sur la gestion des entreprises publiques afin d'améliorer le système de prise de décision. Commission Douste-Blazy, Assemblée nationale, Paris.
- Epractice.eu (2004): EU: IT spending on e-government continues to grow in Western Europe, <http://www.epractice.eu/document/1265>
- European Commission (2001): Case M 2283, Schneider / Legrand, 10-10-2001, http://ec.europa.eu/comm/competition/mergers/cases/index/by_dec_type_art_6_2_conditions_and.html
- European Commission (2004): Case M 3354, Sanofi-Synthelabo / Aventis, 26-04-2004, http://ec.europa.eu/comm/competition/mergers/cases/index/by_dec_type_art_6_2_conditions_and.html
- European Council* (1999): Regulation CE N. 1260/1999 (general instructions on the Structural Funds)
- European Union* (2006): Consolidated Versions of the Treaty on European Union and of the Treaty establishing the European Community. In: *Official Journal of the European Union*, 2006-12-29. C 321/E/1
- Euskaltel* (2008): Homepage. Available on the internet: www.euskaltel.es
- France Telecom* (2000): Annual Report 2000. Available on the internet :
http://www.orange.com/en_EN/finance/documentation/annual-reports/#
- France Telecom* (2001): Annual Report 2001. Available on the internet :
http://www.orange.com/en_EN/finance/documentation/annual-reports/#
- France Telecom* (2002): Annual Report 2002. Available on the internet :
http://www.orange.com/en_EN/finance/documentation/annual-reports/#
- France Telecom* (2003): Annual Report 2003. Available on the internet :
http://www.orange.com/en_EN/finance/documentation/annual-reports/#
- France Telecom* (2004): Annual Report 2004. Available on the internet :
http://www.orange.com/en_EN/finance/documentation/annual-reports/#

- France Telecom* (2005): Annual Report 2005. Available on the internet :
http://www.orange.com/en_EN/finance/documentation/annual-reports/#
- France Telecom* (2008): *Homepage. Key Figures*. Available on the internet:
http://www.investis.com/reports/ft_ar_2004_en/report.php?type=1&zoom=2&page=7
- Grupp, H., Moge, M.E.* (2004): Indicators for national science and technology policy: how robust are composite indicators? In: *Research Policy*, Vol. 33, Issue 9, pp. 1373-1384.
- Guadalinfo* (2008): *Homepage*. Available on the internet: www.guadalinfo.net
- Hall, P., Soskice, D.* (eds.) (2001): *Varieties of Capitalism: the Institutional Foundations of Comparative Advantage*. Oxford University Press.
- Hansard* (2006): Computer Equipment, Division 220 (Finance (No2) Bill). (2006-05-02) Available on the internet:
<http://www.publications.parliament.uk/pa/cm200506/cmhansrd/cm060502/debtext/60502-19.htm>
- Higher Education Academy* (2008): *e-Learning*. Available on the internet: www.heacademy.ac.uk/e-learning.htm
- HM Revenue & Customs* (2006): Exemptions for Computers and Mobile Phones. Available on the internet: www.hmrc.gov.uk/budget2006/bn30.htm
- Home Computing Initiative* (2006a): *Inland Revenue*. Available on the internet: www.ukhomecomputing.co.uk
- Home Computing Initiative* (2006b): *Siemens, Lothian and Borders Police, Helphire, Air Products and BT case studies*. Available on the internet: www.ukhomecomputing.co.uk
- Hoyer, H.* (2005): *Business Models for eLearning and Using ICT in German Universities*, paper presented at the 2nd International SCIL Congress. Available on the internet:
<http://www.scil.ch/congress-2005/programme-10-12/docs/workshop-5-oyer-text.pdf>
- IDABC* (2006): *eGovernment Factsheets (EC)*. Available on the internet:
<http://ec.europa.eu/idabc/en/chapter/203>
- Instituto Nacional de Estadística* (2004): *Survey on Information and Communication Technologies (ICT)usage and e-commerce in enterprises*. Available on the internet:
http://www.ine.es/en/welcome_en.htm
- Initiative D21* (2008): *Homepage*. Available on the internet: www.initiaved21.de
- Institut für Weltwirtschaft* (2003): *Eine Strategie zum Abbau der Subventionen*. Kiel. Available on the internet:
http://www.chancenfueralle.de/Downloads/PDF_-_Dateien/Schriftdokumente/Ergebnisbericht.pdf
- Journal Officiel de la République Française* (1990a): *Loi n° 90-568 du 2 juillet 1990 relative à l'organisation du service public de la poste et des telecommunications*. In: *Journal Officiel de la République Française*, p. 157.
- Journal Officiel de la République Française* (1990b): *Loi n° 90-1170 du 29 décembre 1990 sur la réglementation des telecommunications*. In: *Journal Officiel de la République Française*, p. 303.
- Journal Officiel de la République Française* (1996a): *Loi n° 96-659 du 26 juillet 1996 de réglementation des telecommunications*. In: *Journal Officiel de la République Française*, p. 174.
- Journal Officiel de la République Française* (1996b): *Loi n° 96-660 du 26 juillet 1996 relative à l'entreprise nationale France Télécom*. In: *Journal Officiel de la République Française*, p. 174.
- Journal Officiel de la République Française* (2004a): *Loi n° 2003-1365 du 31 décembre 2003 relative aux obligations de service public des telecommunications et à France Télécom*. In: *Journal Officiel de la République Française*, p. 1.

- Journal Officiel de la République Française* (2004b): Loi n° 2004-669 du 9 juillet 2004 relative aux communications électroniques et aux services de communication audiovisuelle. In: *Journal Officiel de la République Française*, p. 159.
- Klemm, A. (2005): Corporate tax rate data. Available on the internet: http://www.ifs.org.uk/publications.php?publication_id=3210
- Lambrecht, M. (2006): Zumwinkel umgeht Arbeitnehmervertreter. In: *Financial Times Deutschland*. 2006-11-12. Available on the internet: http://www.ftd.de/technik/it_telekommunikation/130995.html
- Lattemann, C. (2006): Public Private Partnerships im Breitbandsektor – Fallbeispiele aus den Ländern Schweden, Großbritannien, Frankreich und Deutschland.
- Martin, L. (2005): Patients' medical records to go online. In: *The Observer*, 2005-05-22.
- OECD (2004): *Employment Outlook 2004*. Paris.
- OECD (2006): *Employment Outlook 2006*. Paris.
- Out-Law News* (2000): Government launches £25 million initiative against cybercrime. 2000-11-14. Available on the internet: <http://www.out-law.com/page-1159>
- Prévot, H. (1989): Rapport de synthèse remis par Hubert Prévot à Paul Quilès, Ministre des Postes, des télécommunications et de l'espace. Ministère des Postes, des télécommunications et de l'Espace, Paris
- QinetiQ (2006): *QinetiQ to lead DTI funded cyber security network*. In: *QinetiQ*. 2006-04-11. Available on the internet: www.qinetiq.com
- Revermann, C. (2006): eLearning in Forschung, Lehre und Weiterbildung in Deutschland. Sachstandsbericht zum Monitoring eLearning, Arbeitsbericht 107 des Büros für Technologiefolgeabschätzung beim Deutschen Bundestag. Available on the internet: <http://www.tab.fzk.de/de/projekt/zusammenfassung/ab107.pdf>
- Sandetel (2008): Homepage. Available on the internet: www.sandetel.es
- Schroeder (1999): Telekommunikationsgesetz und GWB. In: *Wirtschaft und Wettbewerb* 1/1999.
- Security Park (2006): The DTI-Funded security network to tackle cyber crime, ID management and biometrics will be managed by QinetiQ. In: *Security Park*. 2006-04-11. Available on the internet: www.securitypark.co.uk
- Telecom Italia (2000): Annual Report 2000. Available on the internet: <http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/browse.do?tabId=5&pageTypeId=-8662&LANG=EN&channelId=-9765&channelPage=/ep/channel/default.jsp>
- Telecom Italia (2001): Annual Report 2001. Available on the internet: <http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/browse.do?tabId=5&pageTypeId=-8662&LANG=EN&channelId=-9765&channelPage=/ep/channel/default.jsp>
- Telecom Italia (2002): Annual Report 2002. Available on the internet: <http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/browse.do?tabId=5&pageTypeId=-8662&LANG=EN&channelId=-9765&channelPage=/ep/channel/default.jsp>
- Telecom Italia (2003): Annual Report 2003. Available on the internet: <http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/browse.do?tabId=5&pageTypeId=-8662&LANG=EN&channelId=-9765&channelPage=/ep/channel/default.jsp>
- Telecom Italia (2004): Annual Report 2004. Available on the internet: <http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/browse.do?tabId=5&pageTypeId=-8662&LANG=EN&channelId=-9765&channelPage=/ep/channel/default.jsp>

- Telecom Italia* (2005): Annual Report 2005. Available on the internet:
<http://www.telecomitalia.com/cgi-bin/tiportale/TIPortale/ep/browse.do?tabId=5&pageTypeId=-8662&LANG=EN&channelId=-9765&channelPage=/ep/channel/default.jsp>
- Telecom Italia* (2008): Homepage. Innovation. Available on the internet:
http://www.telecomitalia.it/cgi-bin/tiportale/TIPortale/ep/programView.do?channelId=9765&LANG=EN&contentId=17480&programId=9570&programPage=%2Fep%2FTIinvestitori%2Feditorial_bilanci.jsp&tabId=2&pageTypeId=-8662&contentType=EDITORIAL
- Telefónica* (2000): Annual Report 2000. Available on the internet:
<http://www.telefonica.es/accionistaseinversores/ing/html/financyreg/informesanuales.shtml>
- Telefónica* (2001): Annual Report 2001. Available on the internet:
<http://www.telefonica.es/accionistaseinversores/ing/html/financyreg/informesanuales.shtml>
- Telefónica* (2002): Annual Report 2002. Available on the internet:
<http://www.telefonica.es/accionistaseinversores/ing/html/financyreg/informesanuales.shtml>
- Telefónica* (2003): Annual Report 2003. Available on the internet:
<http://www.telefonica.es/accionistaseinversores/ing/html/financyreg/informesanuales.shtml>
- Telefónica* (2004): Annual Report 2004. Available on the internet:
<http://www.telefonica.es/accionistaseinversores/ing/html/financyreg/informesanuales.shtml>
- Telefónica* (2005): Annual Report 2005. Available on the internet:
<http://www.telefonica.es/accionistaseinversores/ing/html/financyreg/informesanuales.shtml>
- tScheme* (2008): Homepage. Available on the internet: www.tscheme.org/about/index.html
- World Bank* (2006): Doing Business in 2006. The International Bank for Reconstruction and Development. The World Bank, Washington.
- World Economic Forum* (2006): The Global Competitiveness Report 2006-2007, Geneva.