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BUILDING A DIGITAL ECONOMY: THE IMPORTANCE OF SAVING JOBS IN THE EU'S CREATIVE INDUSTRIES

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EXECUTIVE SUMMARY

Building a Digital Economy: The Importance of Saving Jobs in the EU's Creative Industries

1. OBJECTIVES OF THE STUDY

The production and distribution of works by creative industries, including movies, music, television programmes and software, has been recognised as having a positive effect on economic growth and the creation of jobs. Unfortunately, over the last decade digital piracy (copyright infringement of digital media) has increasingly threatened the economic performance of the industries responsible for these creative works.

For this reason, stemming the rising tide of digital piracy should be at the top of the agenda of policymakers in the European Union and elsewhere. But to make well-informed decisions in this area, policymakers would benefit from understanding the extent of the economic contributions of these industries and of the losses resulting from digital piracy.

In the European Union, previous studies have attempted to define the scope of the creative sector and to measure its economic contributions. Building a Digital Economy: The Importance of Saving Jobs in the EU's Creative Industries, however, is the first EU-based study to measure both the economic contributions of the creative industries and the economic losses due to piracy, primarily digital piracy. This study also differs from earlier research by using a more accurate and comprehensive definition of Europe's creative industries, one that expands the EU definition of core creative industries and also encompasses the economic contributions of non-core creative industries. These non-core creative industries are suppliers to and customers of the core creative industries, and their economic strength is heavily dependent upon the core industries. The study focuses primarily on the effects of digital piracy, which refers to various forms of online piracy, including file-sharing via peer-to-peer (P2P) networks. Digital piracy is growing rapidly and accounts for the majority of economic losses to the creative industries.

2. FINDINGS OF THE STUDY

The study focuses on three questions :

- 1) What is the contribution of the creative industries to the European economy in terms of GDP and jobs?
- 2) What are the consequences of piracy on retail revenue and jobs?
- 3) If current policies do not change in the EU, what will these losses be by 2015?

The analysis determined the following:

- In 2008 the European Union's creative industries, based on the more accurate and comprehensive definition, contributed 6.9%, or approximately €860 billion, to total European GDP, and represented 6.5% of the total workforce, or approximately 14 million workers.
- In 2008 the European Union's creative industries most impacted by piracy (film, TV series, recorded music and software) experienced retail revenue losses of €10 billion and losses of more than 185 000 jobs due to piracy, largely digital piracy.
- Based on current projections and assuming no significant policy changes, the European Union's creative industries could expect to see cumulative retail revenue losses of as much as €240 billion by 2015, resulting in 1.2 million jobs lost by 2015.

3. METHODOLOGY

This study by TERA Consultants builds upon a wide variety of prior studies and survey results. To measure the economic contributions of the creative industries to the EU economy, the study considers research and statistical data developed or sponsored by EU member nations, by the European Commission and by the World Intellectual Property Organisation (WIPO).

To estimate the impact of piracy in creative industries most at risk (recorded music, film, TV series and software), the study analyses and integrates country-specific and industry-specific survey results in Europe's five largest markets (the UK, France, Germany, Italy and Spain). In gathering the data for this study, the authors relied largely on data relating to digital piracy. In the case of markets in which the transition to digital entertainment is less advanced, the data also reflects residual physical piracy. This study does not quantify direct losses affecting all creative industries. For example, the loss estimates reported here omit the total piracy losses experienced by TV sports broadcasters and sports interests throughout the EU.

To estimate the future effects of digital piracy in Europe, the study analyses industry forecasts of broadband penetration and Cisco System's forecasts of Internet traffic in Europe. These forecasts are combined with TERA's own estimates of the current effects of piracy.

EXECUTIVE SUMMARY – CHAPTER 1

The Contribution of the Creative Industries to the European Economy

The economic contributions of the creative industries are measured by value added to Gross Domestic Product (GDP) and by number of employees.

Differing from previous research in this field, this study combines an expanded, comprehensive definition of “core creative industries” and adds “non-core creative industries” to form a more complete picture of Europe’s creative industries:

- The core creative industries have been identified in prior studies prepared on behalf of the European Commission. These core industries manufacture and distribute creative products, including film, television, music, publishing and advertising. The more comprehensive definition used in this study includes relevant sectors such as software and online distribution of content.
- The non-core creative industries convey creative goods and services to consumers and produce products that are consumed interdependently with creative goods. These industries include activities such as the manufacture and sale of hardware (TVs, music-playing devices, etc.) and non-dedicated industries such as transport.

As shown in Tables A and B, the core creative industries in the 27 countries of the European Union were estimated to generate almost €560 billion in value added to GDP in 2008. This contribution was approximately 4.5% of total European GDP in the same year. The value added by the total creative industries (core creative industries plus non-core creative industries), also shown in Tables A and B, was approximately €860 billion in 2008, representing an estimated 6.9% share of GDP.

The creative industries also account for a significant number of jobs throughout Europe. As shown in Table A, employment in the core creative industries in the 27 countries of the EU was approximately 8.5 million in 2008, or 3.8% of total European workforce. Employment in the total creative industries (core creative industries plus non-core creative industries) was approximately 14 million, or 6.5% of the total EU workforce.

Table A – Economic weight of the creative industries in EU27 (2008)

		VALUE ADDED		EMPLOYMENT	
Creative Industries		VA 2008 (billion €)	% of EU VA	Jobs (million)	% of EU employment
Core		558	4.5%	8.5	3.8%
Non Core	Interdependent	213	1.7%	4.2	1.9%
	Non dedicated support	90	0.7%	1.7	0.8%
TOTAL creative industries		862	6.9%	14.4	6.5%

Source — TERA Consultants analysis

Table B – Economic weight of the creative industries in the main European markets (2008)

		VALUE ADDED (BILLION €)		EMPLOYMENT (MILLION)	
Creative Industries		Core	Total	Core	Total
Total EU 27		558	862	8.5	14.4
UK		113	175	1.6	2.7
France		95	142	1.0	1.6
Germany		105	162	1.6	2.7
Italy		60	93	0.8	1.4
Spain		40	62	0.7	1.2

Source — TERA Consultants analysis. Note : 'total' includes core and non-core creative industries

EXECUTIVE SUMMARY – CHAPTER 2

The Impact of Piracy on the Most Affected European Creative Industries

A principal goal of the study is to evaluate the economic consequences of piracy, primarily digital piracy, on the creative industries.

This study concentrates on retail revenue and job losses experienced by the creative industries that are most impacted by piracy, namely those that produce and distribute films, TV series, recorded music and software. The study also measures retail and job losses in the five largest EU markets (the UK, France, Germany, Italy and Spain), which collectively represent approximately 75% of European GDP. In gathering the data for this study, the authors relied largely on data relating to digital piracy. In the case of markets in which the transition to digital entertainment is less advanced, the data also reflects residual physical piracy. Table C shows that approximately €10 billion and more than 185 000 jobs were lost in Europe in the selected creative industries due to piracy in 2008.

Table C – Piracy-driven losses in Europe to creative industries (2008)¹

	Retail losses (billion €)	Job losses
Total EU 27	9.9	186 400
UK	1.4	39 000
France	1.7	31 400
Germany	1.2	34 000
Italy	1.4	22 400
Spain	1.7	13 200

Source — TERA Consultants analysis

¹ Losses refer to recorded music, movie, TV and software industries.
For the TV industry, the assessment is limited to TV series.

EXECUTIVE SUMMARY – CHAPTER 3

The Economic Impact of Piracy in Europe by 2015

In coming years, growth in broadband penetration and the ongoing digitisation of creative industry products will accelerate, while physical piracy will represent an increasingly smaller share of overall piracy.

Without sustained and effective action, these trends will facilitate the continued expansion of digital piracy in Europe. This study provides two scenarios of estimated piracy-driven losses looking forward to 2015, both based on Cisco System’s Internet traffic forecasts and assuming that no measures are taken to address piracy.

In Scenario 1, the assumption is made that digital piracy activity will grow in line with file-sharing traffic, thus providing a conservative estimate of losses. From 2008 to 2015, file-sharing traffic in Europe is expected to grow at an annual rate in excess of 18%. If the losses from digital piracy were to grow at this rate, the result would be revenue losses in recorded music, film, TV series and software of approximately €32 billion in 2015 (Table D). Absent significant changes in government policies, and given the rise in piracy losses year on year, this means jobs lost in one year are not expected to return, thus resulting in incremental job losses in the sector. This will mean job losses in the EU will reach approximately 610 000 by 2015, up from slightly more than 185 000 in 2008.

Table D – Piracy losses in Europe, 2008 to 2015 – “File sharing” trend scenario

	2008	2009	2010	2011	2012	2013	2014	2015
Retail losses (billion €)	10	12	15	19	22	26	30	32
Cumulative job losses	186 600	227 500	276 900	351 500	422 400	491 800	555 700	611 300

Source — TERA Consultants analysis

In Scenario 2, the assumption is made that digital piracy growth will follow global consumer IP traffic trends in Europe (i.e., communications made via the Internet Protocol). This scenario includes online streaming activity as well as file-sharing, thus providing an upper limit of the impact of digital piracy.

From 2008 to 2015, consumer IP traffic is expected to grow at a rate in excess of 24%. If digital piracy in Europe were to mirror this rate of growth, the result would be losses in the recorded music, film, TV series and software industries of €56 billion in 2015, up from approximately €10 billion in 2008. Absent significant changes in government policies, and given the rise in piracy losses year on year, this means jobs lost in one year are not expected to return, thus resulting in incremental job losses in the sector. This will mean job losses in the EU will reach 1.2 million by 2015, up from slightly more than 185 000 in 2008 (Table E).

Table E – Piracy losses in Europe, 2008 to 2015 – “Consumer IP traffic” trend scenario

	2008	2009	2010	2011	2012	2013	2014	2015
Retail losses (billion €)	10	13	17	24	32	40	48	56
Cumulative job losses	186 600	253 800	345 000	490 200	655 100	834 800	1 027 000	1 216 800

Source — TERA Consultants analysis

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Introduction

Over the past decades, major industries have emerged in Europe that depend on creativity and innovation to deliver products and services to their customers. Encompassing a wide range of activities such as the production and distribution of film, music, books, television, software and videogames, these industries make significant contributions to economic growth and job creation throughout Europe. Building a Digital Economy: The Importance of Saving Jobs in the EU's Creative Industries has been undertaken to measure the sizeable contribution, both in terms of GDP and employment, of creative industries to the European economy.

The growth of broadband Internet access in Europe has given consumers valuable new ways of communicating, sharing information and shopping. It also represents an extraordinary opportunity for the creative industries to develop new markets and products, and contribute even more to economic growth and employment.

Unfortunately, digital technology can also facilitate intellectual property theft, i.e., digital piracy, on a massive scale. Indeed, as this study shows, Europe's creative industries have experienced revenue losses due to piracy, primarily in digital format, in the tens of billions of euros.

Creative industries have been focused on developing new business models for the digital environment, such as online music platforms and video on demand, but these innovations have not been enough to offset the decrease in revenues from the unauthorised access of content online. Moreover, these innovations and new business models for the digital age are hard-pressed to thrive in a world where digital goods are readily available for free, without licenses, to those who wish to access them illegally.

For the sake of its overall economic health, Europe must preserve the viability of its creative industries by creating a sustainable environment for continued innovation and growth. This study is an attempt to contribute to this effort, by providing an analysis of the economic contributions of the creative industries and the extent of the current and potential future losses resulting from piracy.

- **Chapter 1** estimates the economic contribution of these industries, both in terms of GDP and employment.
- **Chapter 2** appraises losses in terms of revenues and employment due to piracy, primarily digital piracy, in Europe, both in audio and audiovisual industries (recorded music, film, TV series) and in software. The assessment is extended to five European markets: the UK, Germany, France, Italy and Spain.
- **Chapter 3** quantifies the extent to which the harmful impacts of piracy are likely to increase by 2015 if current trends continue.

CHAPTER 1

The Contribution of the Creative Industries to the European Economy

This chapter defines Europe’s “creative industries” and assesses their economic contribution.

First, creative industries are defined for the purposes of this study. We identify industries that are fully or predominantly based on copyright (“core” creative industries) and industries that depend to a lesser extent on copyright-protected materials (“non-core” creative industries). Then we measure their economic contribution, both as an aggregate for the European Union and individually for five European countries.

1.1. DEFINING “CREATIVE INDUSTRIES”

In Europe, two different models have been used in recent years to define “creative industries.” One was developed by KEA² in 2006 for a study produced for the European Commission, and another was developed by the World Intellectual Property Organisation (WIPO).

The KEA model

KEA’s study aimed to capture the direct and indirect socioeconomic impact of the cultural sector in Europe. KEA defined and categorised the sector in the following ways:

- Industrial sectors producing cultural products aimed at mass reproduction, mass dissemination and exports. These “cultural industries” include film and video, videogames, broadcasting, music, books and press publishing.
- Non-industrial sectors producing goods and services for on-site consumption (e.g. live concerts, art fairs and exhibitions). These are “core art fields” for which the outputs are “potentially copyrighted works”; i.e., these works have a high density of creation that could be eligible for copyright, and therefore subject to piracy, even if they are not systematically copyrighted, as is the case for most craft works, some performing arts productions and visual arts, etc.
- Other sectors, including design, architecture, and advertising, for which outputs are based on copyright, but may include other intellectual property inputs (e.g. trademark).

The WIPO model

The WIPO definition of creative industries is much broader than KEA’s. WIPO makes a distinction between the “core copyright industries” producing intellectual property related to creative products and the “non-core copyright industries” necessary to convey these goods to the consumer.

Compared to KEA, WIPO adds software, databases and printing activities to the core copyright industries, recognizing these activities as major contributors to the creative economy.

Regarding the “non-core industries,” two sector categories are included in WIPO’s approach:

- “Interdependent industries” include activities engaged in the production, manufacture and sale of equipment whose function is to facilitate the creation, production or use of works and other protected subject matters. E.g. the manufacturing, wholesale and retail sale of television sets, radios, CD players, DVD players, electronic games equipment, computers, musical instruments, blank recording material, paper, photocopiers, and photographic and cinematographic instruments.
- “Non-dedicated support industries” include activities related to facilitating broadcast, communication, distribution or sales of works. They include a fraction of general wholesale and retailing, general transportation, telephony and the Internet.

² “KEA European Affairs” is a Brussels-based strategic consultancy specialising in providing advice, support and research in relation to creative industries, cultural, entertainment, media and sport sectors.

Table 1 – KEA and WIPO approaches

		WIPO's approach	KEA's approach
CORE COPYRIGHT INDUSTRIES	Music, Theatrical, Film and Video Radio and Television, Software and Databases, Design, Architecture Photography, Advertising Visual and Graphic Arts Performing arts, Heritage	Included	Included, except : - Software and database services - Printing services - Reproduction of recorded media - Other publishing (cards, directories, etc.)
INTERDEPENDENT COPYRIGHT INDUSTRIES (manufacture, wholesale and retail)	TV sets, radio sets, VCR, CD, Cassettes, and other equipment Computer and Equipment Musical Instruments Photographic and cinematographic instruments, Photocopiers, Blank Recording, Material, Paper	Included	NOT Included
NON DEDICATED SUPPORT INDUSTRIES	General wholesale and retailing (wholesale and retail trade except motor vehicles and motorcycles; repair of personal and household goods)	Included	NOT Included
	General transportation (railways, land, water and air transport, storage and warehousing, National post activities)	Included	NOT Included
	Telephony and Internet (Telecommunications, database activities and on-line distribution of electronic content)	Included	NOT Included

Source — TERA analysis based on WIPO Guidelines and KEA (2006)

The TERA methodology

This study uses the KEA results as a baseline for the core creative industries, and then adds relevant sectors not taken into account by KEA, mainly software and databases and printing activities, as we view these sectors as major contributors to the creative economy. This constitutes the definition of the core creative industries that is used in this report.

In addition, to determine the “non-core” creative industries, we draw upon and include relevant sectors listed by WIPO, namely sectors involved in “interdependent” and “non-dedicated” activities.

We did not attempt to estimate the economic contributions of the “partial copyright industries” to the economy of the EU member states. If we had included these contributions, the impact of the creative industries on the EU economy would have been greater than the global figures presented here, which represent, for this reason, conservative estimates.

We calculate the weight of the “non-core” industries based on Eurostat data³ by allocating to the creative

activities a proportion of some large sectors included in the “non-dedicated support” industries (e.g. transport, telecom, post). This allocation was implemented by applying a “copyright factor”.

This copyright factor is calculated on the sum of the value added for all other copyright-based industries (core and interdependent) to GDP minus the transportation trade and telecommunication sectors (i.e. the non-dedicated industries). This weighting is built on the assumption that the proportionate contribution of the copyright-based industries to the total distribution industry value added (transportation and trade sectors) is the same as the percentage contribution of the copyright industries to the total non-distribution industries.

Our methodology for defining the creative industries, which draws from KEA’s study and WIPO’s definitions, yields a more accurate assessment of the true scope of the creative industries in Europe since, for the first time, both core and non-core sectors are taken together to estimate the economic weight of the whole creative ecosystem.

Table 2 – Sector delineation of the “core” creative industries⁴

Economic activity	Description	NACE
Press and literature	Other publishing Printing and service activities related to printing	DE2215 DE222
Music, Video, Software	Reproduction of recorded media	DE223
Database	Computer and related activities (software consultancy and supply, data processing, and database activities and on-line distribution of electronic content)	K72

Source — TERA analysis based on WIPO Guidelines and KEA (2006).

³ <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>

⁴ The Statistical Classification of Economic Activities in the European Community, commonly referred to as NACE, is a European industry standard [classification system](#).

Table 3 – Sectors related to “non-core” creative industries

INTERDEPENDENT INDUSTRIES			NON DEDICATED SUPPORT INDUSTRIES		
Economic activity	Description	NACE	Economic activity	Description	NACE
TV, radio, CD, DVD players	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods	DL323	General wholesale and retailing	Wholesale on a fee or contract basisated goods	G511
	Retail sale of electrical household appliances and radio and television	G5245		Wholesale of household goods	G514
	Renting of personal and household goods n.e.c.	K714		Wholesale of machinery, equipment and supplies	K714
Computers and equipment	Manufacture of office, accounting and computing machinery	DL300		Wholesale of machinery, equipment and supplies	G518
	Wholesale of computers, computer peripheral equipment and software	G5184		Other wholesale	G519
	Wholesale of other machinery, equipment and supplies	G5185		Non-specialized retail trade in stores	G521
	Renting of office machinery and equipment (including computers)	K7133		Other retail trade of new goods in specialized stores	G524
Musical instruments	Manufacture of musical instruments	DN363		Retail trade not in stores	G526
Photographic and Cinematographic Instruments	Manufacture of optical instruments and photographic equipment	DL334	General transportation	Transport via railways equipment	I601
	Manufacture of other chemical products n.e.c.	DG2466		Other land transport	I602
Blank Recording Material	Wholesale of electronic and telecommunications parts and equipment	DL334		Water transport	I61
	Manufacture of pulp, paper and paperboard	DE211		Air transport	I62
Paper	Wholesale of other intermediate products, waste and scrap	G515		Cargo handling	I6311
	Wholesale of other household goods	G5143		Storage and warehousing	I6312
Other	Other retail sale in specialized stores	G5248		Other supporting transport activities	I632
			Telephony and Internet	Telecommunication (excluding distribution of TV/ radio programmes)	I642

Source — TERA Consultants analysis based on WIPO Guidelines. Eurostat categories.

1.2. ECONOMIC CONTRIBUTION OF CREATIVE INDUSTRIES AT EU AND NATIONAL LEVELS

We measure here the contributions of the creative industries in terms of value added to Gross Domestic Product (GDP) and number of employees in 2008. Based on our definition of the core creative industries, we estimate that:

- The whole creative ecosystem in Europe (“core” and “non-core” industries) generated approximately €860 billion of value added and represented approximately 14 million jobs in 2008, corresponding to 6.9% of European GDP and 6.5% of the European workforce.
- The core creative industries generated almost €560 billion of value added and represented approximately 8.5 million jobs in 2008, respectively corresponding to 4.5% of European GDP and 3.8% of European workforce.
- The non-core creative industries generated more than €300 billion of value added and represented approximately 6 million jobs in 2008, respectively corresponding to 2.4% European GDP and 2.7% of the European workforce (“interdependent copyright industries” amount to 1.7% of EU GDP and employ 1.9% of the European workforce; “non-dedicated support industries” amount to 0.7% of EU GDP and employ 0.8% of the European workforce).

Table 4 – Economic weight of the creative industries in EU27 (2008)

		VALUE ADDED		EMPLOYMENT	
Creative Industries		VA 2008 (billion €)	% of EU VA	Jobs (million)	% of EU employment
Core		558	4.5%	8.5	3.8%
Non Core	Interdependent	213	1.7%	4.2	1.9%
	Non dedicated support	90	0.7%	1.7	0.8%
TOTAL creative industries		862	6.9%	14.4	6.5%

Source — TERA Consultants analysis

We have estimated the economic contributions of the creative industries at a national level for the five main European countries (the UK, France, Germany, Italy and Spain), representing three-fourths of European GDP contributions. The core creative industries can be assessed with the same methodology as at the European level.

Regarding the non-core creative industries, there is a technical difficulty in determining the weight of the non-core industries on a country level because of gaps in the Eurostat data, which form the basis of the calculation. To overcome this limitation we

calculated the “core/non-core” ratio observed at the European level, resulting in the non-core industries representing 54% of the value added of the core creative industries and 70% of the employment of the core creative industries. We then applied this ratio at a national level.

Given this procedure, these results shall be considered with caution. However, our assumptions remain valid since the objective is to provide orders of magnitude of the weight of creative industries in order to portray the economic ecosystem at risk from widespread piracy.

Table 5 – Weight of the creative industries in UK, France, Germany, Italy and Spain (2008)

	UK		FRANCE		GERMANY		ITALY		SPAIN	
Creative Industries	VA	Jobs	VA	Jobs	VA	Jobs	VA	Jobs	VA	Jobs
Core	6.2%	5.4%	4.9%	3.7%	4.2%	4.1%	3.8%	3.6%	3.6%	3.5%
Interdependant & support	3.4%	3.8%	2.6%	2.6%	2.3%	2.8%	2.1%	2.5%	2.0%	2.4%
TOTAL creative industries	9.6%	9.2%	7.5%	6.2%	6.5%	6.9%	5.9%	6.1%	5.6%	5.9%
Creative GDP (billion €)	175		142		162		93		62	
Creative employment (million)		2.7		1.7		2.7		1.4		1.2

Source — TERA Consultants analysis

1.3. CONCLUSION

Our analysis of the weight of the creative industries based on the KEA findings and the WIPO Guidelines provides a more complete assessment of the true scope of these industries in Europe, exceeding previously reported results. We estimate that the creative industries represent a major European economic force, corresponding to 6.9% of European GDP, and 6.5% of the European workforce. This translates into €860 billion revenues and 14 million jobs, reinforcing the importance of these sectors to Europe’s economy. The creative industries’ economic contribution is comparable to other key traditional industries, like automotive, and with greater weight than utilities or chemical industries. This major European economic area is being challenged by the threat of piracy.

CHAPTER 2

The Impact of Piracy on the Most Affected European Creative Industries

In Chapter 1, we estimated the economic contribution of the creative industries, in terms of GDP and employment.

In Chapter 2, we estimate the risks for Europe's creative industries represented by the growing threat of piracy, primarily digital piracy. Our analysis does not cover the entire scope of the creative industries but rather is centred on the sectors currently most affected by piracy. Using a conservative methodology, we calculate piracy's impact on the audio and audiovisual industries, including recorded music, films and TV series, and on the software industry, in terms of lost retail revenues and lost jobs. The impact of piracy on sectors such as books, newspapers, TV sports broadcasting and videogames is not covered in this study.

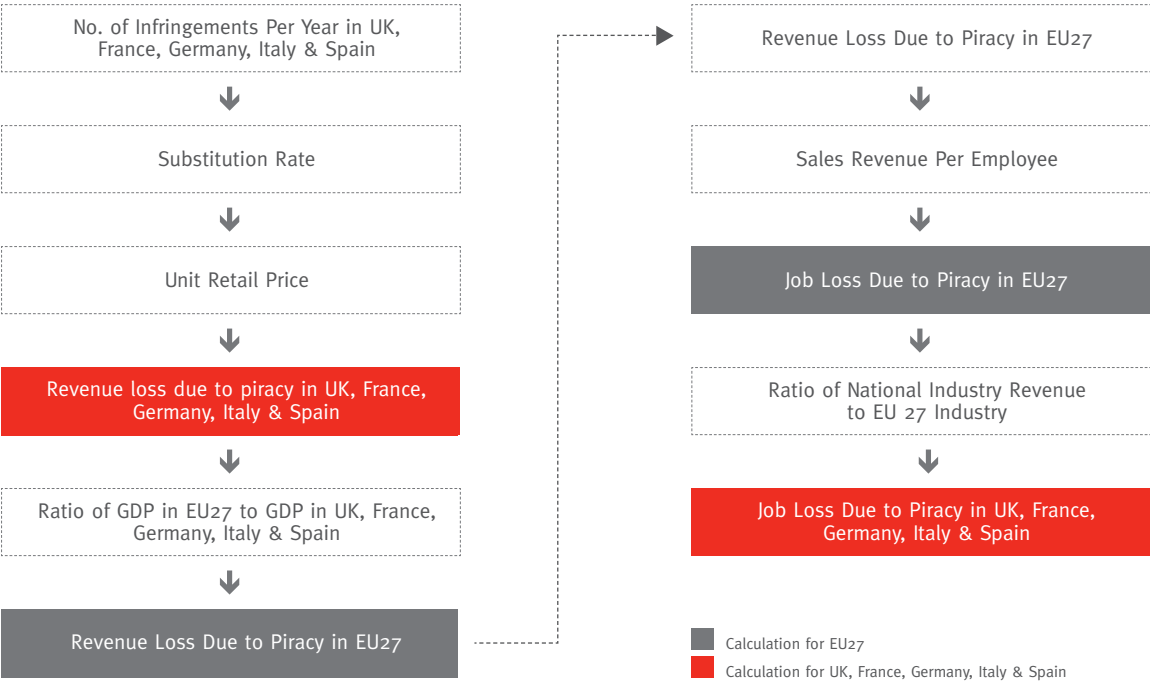
This chapter is divided into four sections. First we outline the methodology used in our calculations; then we measure the impact of piracy on the audio and audiovisual industry (recorded music, movies and TV series) at the national level (the UK, Germany, France, Italy and Spain), then we assess the impact of piracy on the software industry, and we conclude by outlining the combined impact of piracy on the audio and audiovisual and software industries at the EU level.

2.1. METHODOLOGY

Two forms of piracy are analysed:

- **Commercial physical piracy** involving the sale of illegally duplicated and distributed copyrighted physical works (CDs, DVDs).
- **Digital piracy** involving the illegal distribution of copyrighted content using the Internet. P2P (peer-to-peer) exchanges are the most pervasive source of digital piracy in Europe today and hence the focus of this study. The impact of growing non-P2P piracy is considered in Chapter 3.

Figure 1 – Calculating the Impact of Piracy



Our methodology for calculating the impact of piracy is based on the number of copyright infringements per year corresponding to the illegally downloaded files (plus streamed files in the case of film/TV series) and the number of physical counterfeit products sold each year (see Appendix 1).

We then applied a substitution rate to the overall volume of copyright infringements per year. The substitution rate represents the number of units that would likely have been sold if piracy were eliminated.

In the recorded music context, we have based our assumptions on a conservative 10% substitution rate, while acknowledging that this rate could be

much higher. This rate has been selected after reviewing the academic studies devoted to music piracy (see Appendix 2). Studies confirming the negative effects of illegal music downloading on sales find substitution rates between 10% and 30%. Based on a study by Ipsos⁵, we have applied a 45% substitution rate for physical music piracy⁶.

Regarding movies and TV series, we used the results of an Ipsos study⁷ to take into account the variation in substitution rates at different moments along the release timeline, i.e. the likelihood and form of piracy will vary depending on whether a film, for example, is in the cinema, has reached the TV, or is available broadly on DVD.

⁵ Ipsos, Music Piracy in GB, March 2006

⁶ To introduce a national differentiation, the substitution rate has been weighted by the GDP per inhabitant at PPP (purchasing power parity), leading to range the national rate from 9% in Spain to 11% in the UK, for digital piracy (and from 41% to 48 for physical piracy).

⁷ Ipsos, Digital & Physical Piracy in GB (Movie and TV), November 2007

Table 6 – Substitution rates for films and TV series

Film substitution rate	Digital	Physical
Cinema	5%	10%
DVD sell through	10%	5%
DVD rental	0%	5%
Official download	0%	0%
VoD/PayPerView/official download	10%	1%
TV	10%	10%
Film substitution rate	Digital	Physical
TV	30%	30%
DVD sell through	5%	5%
DVD rental	2%	2%
VoD/PayPerView	2%	2%

Source — TERA Consultant analysis based on IPSOS [2007]⁸

The next step in our methodology is to introduce the unit retail price of legal products in order to translate volume losses into revenue losses. For digital music piracy, we assume that 90% of lost sales due to illegal downloading would go to legitimate digital music services and that 10% would go towards CD sales (meaning the legitimate digital music is the “preferred substitute”). Regarding physical music piracy, a counterfeit is considered the equivalent of a physical CD. For pirated film/TV series, the retail price varies depending on the distribution channel (theatre ticket, unit sales price of a DVD or VoD) (see Appendix 1).

We have generally aimed to assess the economic impact of piracy at a national level and also to consider its impact separately on different creative industries. This approach presents some challenges. In particular, there is a strong cross-border element both in terms of the legitimate revenues of the industries in question and in terms of the impact of piracy (see Appendix 7).

To assess the economic impact of piracy in the selected industries in Europe, retail losses are determined in five countries (the UK, France, Germany, Italy and Spain), representing nearly 75% of Europe’s GDP⁹.

The loss of legitimate revenues translates into job losses, both direct and indirect. Based on revenue losses assessed at the European level, jobs directly lost due to piracy are obtained by dividing revenue losses by the average sales revenue per person employed in each sector, from production to retail distribution level (based on figures provided by the industries). In this context, we calculate that the music industry employs one person for every €70 000 in sales and the film/TV industry employs one person for every €85 000 in sales (see Appendix 5).

⁸ The rates above correspond to respondents' claimed cannibalisation rates, downweighted then by respondent's commitment to view scores and then downweighted further to represent the fact that not all would have got round to seeing it in the cinema, DVD, VoD, TV, etc. The rates have been eventually rounded down to be as conservative as possible.

⁹ As well as nearly 75% of European revenues in recorded music and video (film and TV series) sectors [PWC 2009].

Based on the previous step, we get a global assessment of jobs lost at the European level. To determine the losses in the five main European countries, we have made the assumption that the local impact was proportionate to the size of national retail market. This method takes into account the weight of each national industry and avoids an allocation of job losses based solely on the national tendency to pirate goods or services (see Appendix 7).

To determine the complete impact of piracy activities in terms of jobs, the indirect effects of piracy were integrated. Physical and digital piracy in the sectors considered not only causes losses in terms of jobs and industry sales, but also induces indirect effects on intermediate consumption suppliers. When revenues (salaries, profits) directly associated with the goods involved decrease because of piracy, intermediates receive fewer orders.

Based on available international studies, we chose to retain a very conservative multiplier when estimating that one “direct” job sustains one “indirect” job, meaning that a job lost in the media industries generates an additional job loss in the overall economy¹⁰.

With this original method, we then obtain:

- Retail losses for audio and audiovisual products at the EU 27 level, and for the five main countries,
- Direct and indirect job losses at the EU 27 level, and for the five main countries.

As detailed later, the general principles applied to the software industry (section 2.3) will be the same (applied on BSA data), as to obtain a consistent global assessment integrating audiovisual and software products.

2.2. THE IMPACT OF PIRACY ON THE AUDIOVISUAL INDUSTRY

Due to the small size of the files, music was the first creative product to widely circulate via the Internet. The music industry has been hard hit by piracy since the rollout of internet access and broadband, with global recorded music sales peaking in 1999. Napster became the first P2P software to reach widespread popularity and since then the number of music infringements online has been growing.

Many studies have been devoted to the analysis of the link between Internet diffusion and the decrease in recorded music sales. A majority of studies (summarised in Appendix 2) conclude that the impact of digital piracy on record sales is negative and of significant magnitude.

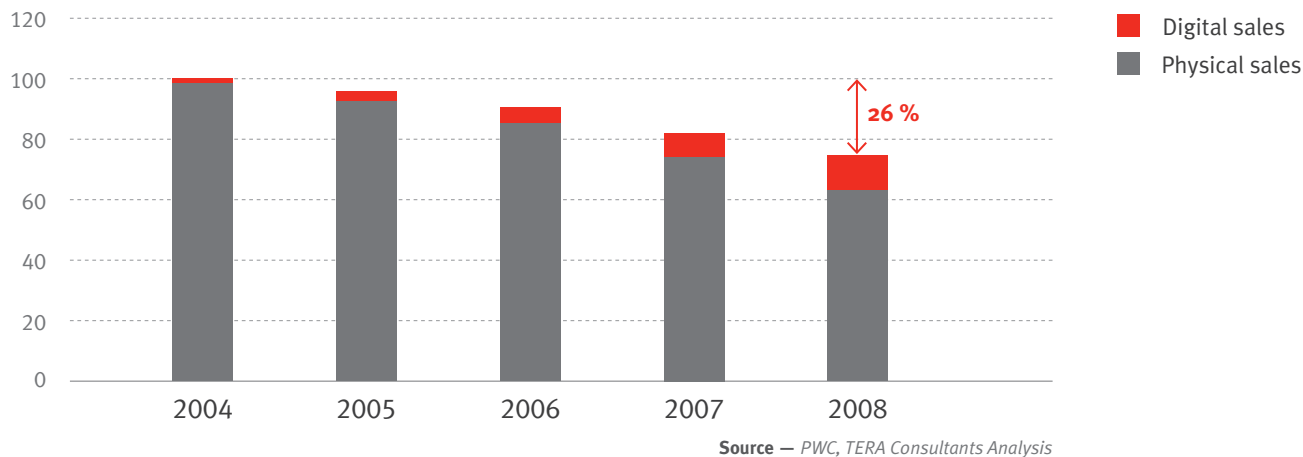
This is reinforced by market indicators at the macro level. The decline in recorded music sales across the EU is too dramatic to imply a simple coincidence: the physical recorded music market dropped by 36% between 2004 and 2008 at the retail level, representing losses of close to €4 billion in five years (from €10 billion to €6 billion)¹¹. While digital sales have made noted progress, new business models are still generating limited revenues, since the overall retail market declined 26% between 2004 and 2008.

While piracy, in both physical and digital formats, is not the only reason behind the decline in recorded music sales, it is undoubtedly the major reason for such a fast decline. The inability of a variety of legitimate digital business models to offset the decline in physical sales is at the heart of the problem, with free unauthorised content posing unfair competition for new digital music services.

¹⁰ See especially: Siwek S. (2007), *The true cost of sound recording piracy on the US economy*, Institute for Policy Innovation, Policy Report 188.

¹¹ Source: PriceWaterhouseCoopers – Global entertainment and media outlook 2009-2013 – 10th annual edition – 2009).

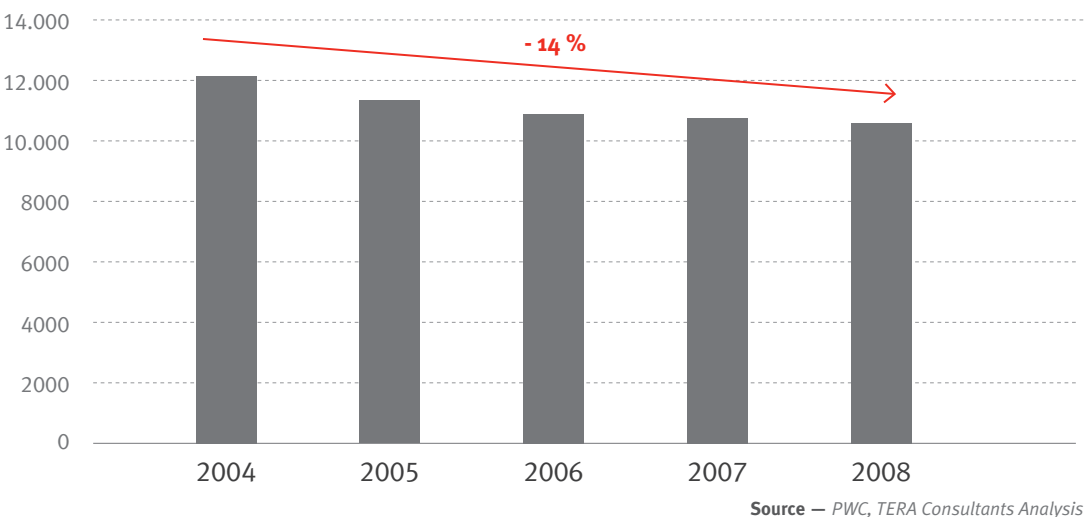
Figure 2 – Recorded Music Sales in Europe (100=2004)



With the diffusion of broadband Internet connections, pirating movies and TV series is also becoming a widespread phenomenon.

In the movie industry, admissions in European movie theatres posted a 5% drop between 2004 and 2008, representing 57 million lost entries over five years. Physical DVD sales and rental revenues have also been impacted, falling by 14% between 2004 and 2008. The drop in revenues is estimated at around €2 billion (from €12 billion to €10 billion), taking into account sell-through sales and DVD rentals¹². In Spain, where piracy rates are particularly high, these markets lost 30% between 2004 and 2008.

Figure 3 – Physical DVD sales (sell-through and rental) between 2004 and 2008 (€ million)



¹² Source: PriceWaterhouseCoopers – Global entertainment and media outlook 2009-2013 – 10th annual edition – 2009.

2.2.1. France

In 2008, the French spent nearly €4 billion on audio and audiovisual products (recorded music, film, TV series), accounting for 15% of overall European spending in these sectors. In five years, audio and audiovisual products retail spending dropped by 20% [PWC 2009].

Table 7 – Recorded music, film and TV consumer/end-user spending in France (M€)

Creative Industries	CONSUMER / END-USER SPENDING		GROWTH
	2004	2008	2004-2008
Recorded Music	1 613	1 061	-34%
Physical market	1 597	941	-41%
Digital market	16	120	633%
Filmed entertainment	3 284	2 578	-22%
Box office market	1 139	1 138	0%
Physical sell-through	1 960	1 340	-32%
In-store rental	185	100	-46%
TV VOD + PPV	120	352	194%
VoD and subscriptions VoD	4	226	5417%
PPV	115	126	9%
TOTAL	5 017	3 991	-20%

Source — PWC Global entertainment and media outlook [2009]

In 2008, the audio and audiovisual creative industries in France lost approximately €740 million in one year due to physical and digital piracy:

- €192 million related to music.
- €412 million related to films.
- €140 million related to TV series.

Table 8 – French revenue losses due to pirated audiovisual products (2008)¹³

France	Digital piracy	Physical piracy	Total piracy
Music (M€)	184	7	192
Film (M€)	404	8	412
Theatre	46	3	49
DVD sell through	241	4	245
DVD rental	–	1	1
official download	–	–	–
VoD/PayPerView	116	0	116
TV	1	0	1
TV (M€)	139	1	140
TV	1	0	1
DVD sell through	130	1	131
DVD rental	5	0	5
VoD/PayPerView	3	0	3
TOTAL losses (M€)	727	16	743

Source — TERA Consultants calculation

¹³ National assumptions for copyright infringement are detailed in Appendix 1.

2.2.2. Germany

In 2008, the Germans spent nearly €4 billion in audio and audiovisual products (recorded music, film, TV series), accounting for 15% of overall European spending.

While new online business models are gaining ground, they have been unable to offset the decrease in traditional revenues (CD, DVD physical sales and rental), since in five years, audiovisual products retail spending dropped by 10% in Germany [PWC 2009].

Table 9 – Recorded music, film and TV consumer/end-user spending in Germany (M€)

	CONSUMER / END-USER SPENDING		GROWTH
Creative Industries	2004	2008	2004-2008
Recorded Music	1 753	1 559	-11%
Physical market	1 742	1 450	-17%
Digital market	11	109	900%
Filmed entertainment	2 639	2 390	-9%
Box office market	893	795	-11%
Physical sell-through	1 440	1 325	-8%
In-store rental	306	270	-12%
TV VOD + PPV	15	34	127%
VoD and subscriptions VoD	–	15	–
PPV	15	19	27%
TOTAL	4 407	3 983	-10%

Source — PWC Global entertainment and media outlook [2009]

In 2008, the audio and audiovisual industries in Germany lost approximately €450 million in one year due to physical and digital piracy:

- €121 million related to music.
- €251 million related to films.
- €74 million related to TV series.

Table 10 – Revenue losses in Germany due to pirated audiovisual products (2008)

Germany	Digital piracy	Physical piracy	Total piracy
Music (M€)	86	36	121
Film (M€)	222	29	251
Theatre	30	13	42
DVD sell through	119	13	132
DVD rental	–	3	3
official download	–	–	–
VoD/PayPerView	73	1	74
TV	1	0	1
TV (M€)	69	4	74
TV	1	0	1
DVD sell through	64	4	68
DVD rental	3	0	3
VoD/PayPerView	2	0	2
TOTAL losses (M€)	378	69	446

Source — TERA Consultants calculation

2.2.3. Italy

In 2008, the Italian spent nearly €1.7 billion in audio and audiovisual products (recorded music, film, TV series), accounting for 7% of overall European spending. In five years, audiovisual products retail spending dropped by 15% [PWC 2009].

Table 11 – Recorded music, film and TV consumer/end-user spending in Italy (M€)

	CONSUMER / END-USER SPENDING		GROWTH
Creative Industries	2004	2008	2004-2008
Recorded Music	1 753	1 559	-11%
Physical market	1 742	1 450	-17%
Digital market	11	109	900%
Filmed entertainment	2 639	2 390	-9%
Box office market	893	795	-11%
Physical sell-through	1 440	1 325	-8%
In-store rental	306	270	-12%
TV VOD + PPV	15	34	127%
VoD and subscriptions VoD	–	15	–
PPV	15	19	27%
TOTAL	4 407	3 983	-10%

Source — PWC_ Global entertainment and media outlook [2009]

In 2008 the audio and audiovisual creative industries in Italy lost an estimated €790 million in revenues in one year due to physical and digital piracy:

- €298 million related to music¹⁴.
- €388 million related to films.
- €105 million related to TV series.

¹⁴ Italy is characterised by a high piracy rate (see Appendix 1), both in physical and digital terms. The losses at retail level are equivalent to 92% of the recorded music sales in 2008. It shall be stressed that the local market experienced a drop of 41% since 2004.

Table 12 – Revenue losses due to pirated audiovisual products in Italy

Italy	Digital piracy	Physical piracy	Total piracy
Music (M€)	262	36	298
Film (M€)	285	102	388
Theatre	28	44	82
DVD sell through	152	44	196
DVD rental	–	11	11
official download	–	–	–
VoD/PayPerView	94	3	96
TV	1	1	2
TV (M€)	90	15	105
TV	1	0	1
DVD sell through	82	13	96
DVD rental	4	1	5
VoD/PayPerView	3	0	3
TOTAL losses (M€)	637	153	790

Source — TERA Consultants calculation

2.2.4. Spain

In 2008, the Spaniards spent nearly €1.6 billion in audio and audiovisual products (recorded music, film, TV series), accounting for 6% of overall European spending. In five years, audiovisual products retail spending dropped by 24% [PWC 2009].

Table 13 – Recorded music, film and TV consumer/end-user spending in Spain (M€)

	CONSUMER / END-USER SPENDING		GROWTH
Creative Industries	2004	2008	2004-2008
Recorded Music	626	269	-57%
Physical market	620	240	-61%
Digital market	6	29	367%
Filmed entertainment	1 417	1 056	-26%
Box office market	692	551	-20%
Physical sell-through	425	315	-26%
In-store rental	300	190	-37%
TV VOD + PPV	130	324	149%
VoD and subscriptions VoD	–	74	–
PPV	130	250	93%
TOTAL	2 173	1 648	-24%

Source — PWC_Global entertainment and media outlook [2009]

In 2008 the audio and audiovisual creative industries in Spain lost approximately €1.4 billion in revenues in one year due to physical and digital piracy:

- €436 million related to music¹⁵.
- €703 million related to films.
- €218 million related to TV series.

¹⁵ Spain is characterised by the highest piracy rate in our panel (see Appendix 1), both in physical and digital terms. The losses at retail level are equivalent to 165% of the recorded music sales in 2008. It shall be stressed that the local market experienced a drop of 57% since 2004.

Table 14 – Revenue losses due to pirated audiovisual products in Spain

Spain	Digital piracy	Physical piracy	Total piracy
Music (M€)	413	23	436
Film (M€)	675	29	703
Theatre	84	12	96
DVD sell through	367	13	381
DVD rental	–	2	2
official download	–	–	–
VoD/PayPerView	221	1	222
TV	2	0	3
TV (M€)	214	4	218
TV	2	0	2
DVD sell through	198	4	202
DVD rental	7	0	8
VoD/PayPerView	6	0	6
TOTAL losses (M€)	1 301	56	1 357

Source — TERA Consultants calculation

2.2.5. UK

In 2008, the British spent nearly €6.3 billion in audio and audiovisual products (recorded music, film, TV series), accounting for 25% of overall European spending. In five years, audiovisual products retail spending dropped by 13% [PWC 2009].

Table 15 – Recorded music, film and TV consumer/end-user spending in UK (M€)

	CONSUMER / END-USER SPENDING		GROWTH
Creative Industries	2004	2008	2004-2008
Recorded Music	2 456	1 644	-33%
Physical market	2 422	1 224	-49%
Digital market	34	420	1130%
Filmed entertainment	4 655	4 370	-6%
Box office market	966	1 082	-12%
Physical sell-through	3 110	2 949	-5%
In-store rental	579	339	-41%
TV VOD + PPV	148	309	109%
VoD and subscriptions VoD	57	186	228%
PPV	91	123	35%
TOTAL	7 258	6 323	-13%

Source — PWC_ Global entertainment and media outlook [2009]

In 2008, the audio and audiovisual creative industries in the UK lost an estimated €670 million in revenues in one year due to physical and digital piracy:

- €282 million related to music.
- €308 million related to films.
- €78 million related to TV series.

Table 16 – Total revenue loss due to pirated audiovisual products in the UK

UK	Digital piracy	Physical piracy	Total piracy
Music (M€)	230	52	282
Film (M€)	219	89	308
Theatre	32	40	73
DVD sell through	112	35	146
DVD rental	–	11	11
official download	–	–	–
VoD/PayPerView	74	2	77
TV	1	1	2
TV (M€)	67	12	78
TV	1	0	1
DVD sell through	60	11	71
DVD rental	4	1	4
VoD/PayPerView	2	0	3
TOTAL losses (M€)	515	153	668

Source — TERA Consultants calculation

2.2.6. From revenue to job losses for the audiovisual sectors

This section studies Europe’s five main national markets (the UK, France, Germany, Italy and Spain), representing nearly 75% of Europe’s GDP¹⁶. Extrapolating from the retail losses in theses five countries, the EU 27 revenue losses approximate €5.3 billion.

As explained previously, this loss of legitimate revenues translates into job losses, both direct and indirect (see Appendix 5). Considering these retail losses, it can be inferred that the estimated economic fingerprint of piracy represents close to 135 000 direct and indirect job losses for the EU 27.

Table 17 – Economic impact of audiovisual piracy in Europe

Audiovisual	UK	FRANCE	GERMANY	ITALY	SPAIN	TOTAL PIRACY IN EU27
Retail losses (M€)	668	743	446	790	1 357	5 340
Direct and indirect job losses	30 400	19 800	25 400	14 800	10 600	134 400

Source — TERA Consultant calculation

2.3. PIRACY OF SOFTWARE PRODUCTS

In terms of physical piracy, counterfeit computer software ranks near the top of the most purchased pirated products, just after music and movies¹⁷. In a study released by BSA in 2009¹⁸, software piracy rose by 6 points worldwide in 5 years, with a piracy rate of 41% and 35% respectively for the years 2008 and 2004¹⁹.

The five European countries studied in this report (the UK, Germany, France, Italy and Spain), represented 70% of European losses claimed by BSA.

“Software piracy” refers to a variety of techniques to provide access to downloadable copies of pirated software, to advertise and market pirated software that is delivered through the mail, or to offer and transmit codes or other technologies to circumvent anti-copying security features [BSA 2009].

There are a number of factors that impact rates of software piracy year on year, These include hardware deployments, the availability of counterfeit software in P2P networks or on auction sites, and in particular, “under-licensing” wherein a single license is utilised across more computers than is permitted by the license.

In order to measure the magnitude of losses in revenues and jobs for the software industry in a consistent manner to the audiovisual sectors, we have applied a substitution rate (50%) closer to that of the audiovisual products – a very conservative assumption, particularly with respect to business software.

On this basis, we estimate that software piracy overall represents close to €4.5 billion in losses to the software industry in Europe over one year.

¹⁶ As well as nearly 75% of European revenues in recorded music and video (film and TV series) sectors [PWC 2009].

¹⁷ The Economic Impact of Counterfeiting and Piracy, OECD, June 2008.

¹⁸ BSA-IDC 2008 Global Software Piracy Study, May 2009. We will base our own calculation of that study, in adjusting certain BSA assumptions.

¹⁹ The piracy rate provided by BSA is defined as the ratio between the pirated software units and the total software units installed during the year. Losses also include PC games.

To translate these losses in terms of jobs, we need to consider that, based on the results of “The Economic Benefits of Lowering PC Software Piracy” published by BSA, every job is worth €169 000 in sales²⁰. As a consequence, revenue losses to the software industry represent 26 000 direct jobs lost in Europe per year. These jobs are incorporated in the software industry, as well as in the services and

distribution channel activities that revolve around software. Software piracy has ripple effects across the entire economy. As in the context of audiovisual piracy, we again assume that a direct job in the IT sector supports at least one other job in the rest of the economy. We can, therefore, infer that pirated software in Europe resulted in a total direct and indirect loss of over 50 000 jobs.

Table 18 – Economic impact of software piracy in Europe

Software	UK	FRANCE	GERMANY	ITALY	SPAIN	TOTAL PIRACY IN EU27
Retail losses (M€)	742	938	732	644	350	4 541
Direct and indirect job losses	8 600	11 600	8 600	7 600	2 600	52 000

Source — TERA Consultant calculation, BSA data

It shall be noted that software piracy threatens not only the software industries, but also the IT industry value chain. BSA estimates that for every US\$1 of PC software sold in a country, there is another US\$3 to US\$4 of revenues for local IT service and distribution firms, and 90% of these benefits stay within the country²¹.

A study conducted by IDC for BSA in 2007 estimated the economic benefits to domestic economies that could be gained from a ten-percentage-point reduction in PC software piracy, finding that lowering piracy by 10 points over four years, from 2008-2011, would create 600 000 additional new jobs worldwide and generate US \$24 billion in higher government revenues without a tax increase²². The study found that a reduction in software piracy translates into new high paying jobs, growth in the domestic economy, and an increase in tax revenues to support local services.

The videogame industry is also widely exposed to piracy. While we have not attempted to measure the full impact of piracy in this sector, growing broadband access is a major factor contributing to the spread of online games piracy. It is likely that our estimate of piracy losses in software includes some losses from pirated PC videogames.

Even if family and friends continue to be the largest reported source of illegal copies (50%), peer-to-peer sites appear to be an increasingly important source for pirate games (34%)²³. As reported by the Entertainment Software Alliance (ESA), while the first pirated versions of games continue to appear on FTP sites, the files are found almost instantaneously in peer-to-peer environments, like e-Donkey or BitTorrent, with large volumes of copying and transmissions by growing numbers of users across the world.

²⁰ See Appendix 6.
²¹ BSA-IDC 2008 Global Software Piracy Study, May 2009.

²² The Economic Benefits of Reducing PC Software Piracy, IDC, January 2008.
²³ Nielsen – Video Gamers in Europe – 2008 Piracy and Digital Downloading.

In 2008, ESA’s outside monitoring service detected a monthly average of more than 700 000 infringements of the 200 member titles that the ESA monitored²⁴. Thus, three in ten (29%) European

gamers own at least one pirated or copied game. Among this group the average number of counterfeit games owned stands at 17, representing around two-fifths of their total videogame collections (39%)²⁵.

2.4. THE IMPACT OF PIRACY ON THE CREATIVE INDUSTRIES REVENUES AND EMPLOYMENT IN EUROPE

In Chapter 1, the economic contribution of the creative industries in Europe (in terms of value added and employment) was assessed, while in Chapter 2, the economic impact of piracy for the most pirated creative works is determined (in terms of retail revenue losses and of job losses).

Of the four creative industries covered in this chapter (i.e. recorded music, film, TV series, software), we estimate that the economic impact

of piracy in these sectors represents close to €10 billion in revenue losses and more than 185 000 direct and indirect job losses.

Other creative products also subject to piracy, including books, newspapers, magazines and videogames were not covered by our assessment.

Table 19 – The economic impact of piracy on Europe’s creative industries

	UK	FRANCE	GERMANY	ITALY	SPAIN	TOTAL PIRACY IN EU27
Retail losses (M€)	1 410	1 681	1 178	1 434	1 707	9 881
Direct and indirect job losses	39 000	31 400	34 000	22 400	13 200	186 400

Source — TERA Consultant calculation

In view of the magnitude of the losses reported in Figure 5, there is no doubt that piracy is a major threat to the EU economy, at a time when Europe is challenged to resume economic growth and create new jobs.

²⁴ ESA – 2008 Annual Report.
²⁵ Nielsen – Video Gamers in Europe – 2008 Piracy and Digital Downloading.

CHAPTER 3

The Economic Impact of Piracy in Europe by 2015

Digital piracy has increased dramatically in the last 10 years, driven by faster download speeds, which have facilitated the illegal distribution of content such as films, games and recorded music.

In addition, mobile piracy is becoming more common as smartphone penetration and Wi-Fi access increase. Web services (such as RapidShare and Megaupload) also facilitate the distribution of unlicensed content and account for an increasing share of Internet traffic.

Digital piracy has been a major factor affecting revenues for the creative industries studied in this report. Without concerted action to address the problem, this trend is projected to continue. This chapter considers the economic impact of piracy for selected creative industries in 2015 if no action is taken.

3.1. FACTORS DRIVING FUTURE PIRACY IN EUROPE

The growth in digital piracy in Europe is being driven by three main factors:

- Increasing use by consumers of fixed-line and mobile digital technology.
- The diversification of piracy techniques that can be used for copyright infringement.
- The continuing digitisation of creative products from books to television programs.

3.1.1. The increasing use by consumers of digital communications technology

European consumers have sharply increased their use of digital technology in the last decade as broadband has been rolled out across the continent. Users have signed up for broadband motivated by enhanced access quality, cheaper tariffs and the increased availability of content, including large quantities of illegal content.

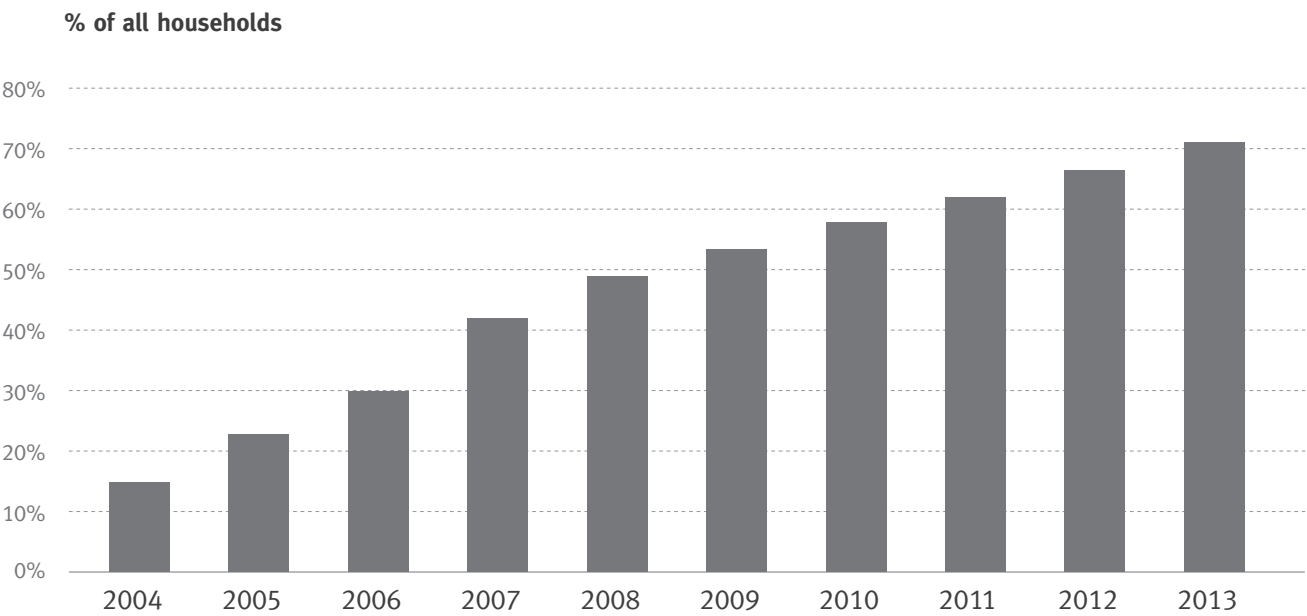
Internet penetration is forecast to increase between 2010 and 2015. Research by Forrester suggests:

- Household broadband penetration in Europe is set to hit 85 percent by 2013. The highest rates of penetration will be in Scandinavian countries and the Netherlands.
- By 2013, the UK (82%), Germany (72%) and France (69%) are predicted to close the broadband penetration gap that exists between them and these Scandinavian countries.
- Broadband penetration will remain lower in Italy (58%), Portugal (55%) and Spain (61%) by 2013, although these countries will see a more dramatic increase in penetration rates than the more mature markets.

Broadband penetration will be driven by government and private investment in areas where accessibility is still limited, notably rural areas. EU figures show that 93 percent of Europeans have potential access to broadband networks, but this figure drops to 70 percent in rural areas and as low as 50 percent in some member states. Indeed, figures published in 2009 suggest that one-third of people in EU member states have never accessed the Internet, with usage lowest among older people and economically inactive citizens [EC 2009].

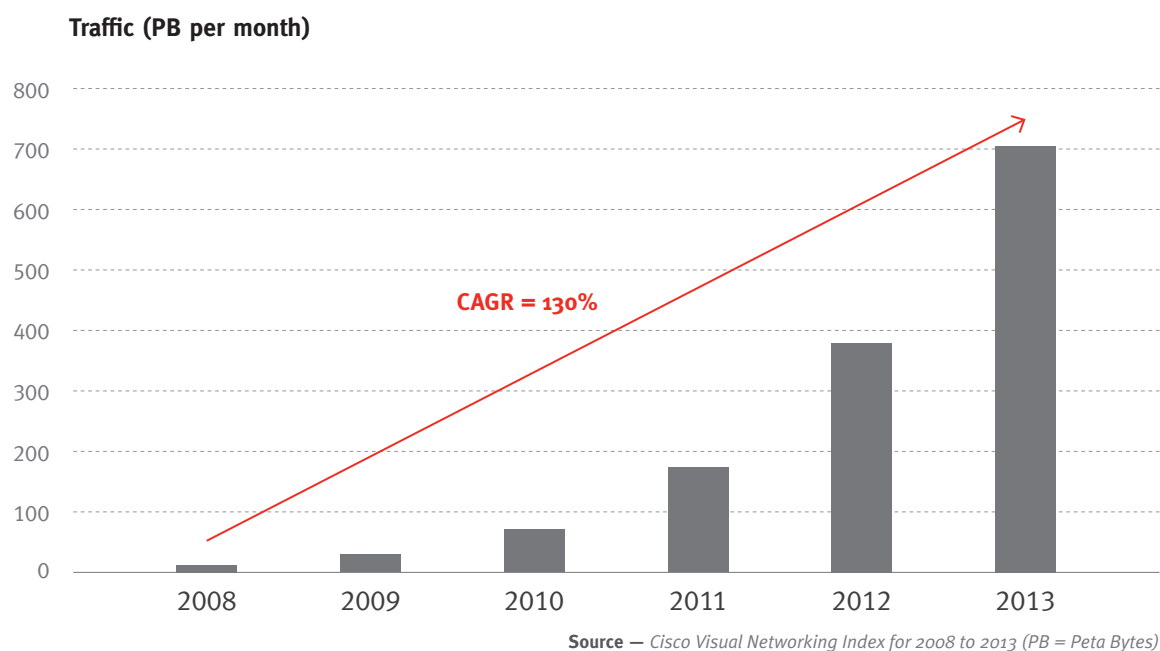
Increased broadband penetration will broaden the potential market for the creative industries, enabling more consumers to access products online. Yet broadening access without tackling piracy risks increasing digital piracy rates.

Figure 4 – EU27 broadband penetration, historical series and forecast



Source — Eurostat (2004-2008), Forrester Research (from 2009), TERA Consultants analysis

While users have traditionally accessed the Internet from fixed line connections at home or at work, wireless outdoor access through Wi-Fi (or WiMax) in public spaces such as coffee shops, libraries and railway stations is growing, which means that users will increasingly access the Internet from portable devices.

Figure 5 – Internet traffic and mobile data growth in Europe, 2008-2013²⁶

Internet users are also becoming increasingly sophisticated in their use of digital technology.

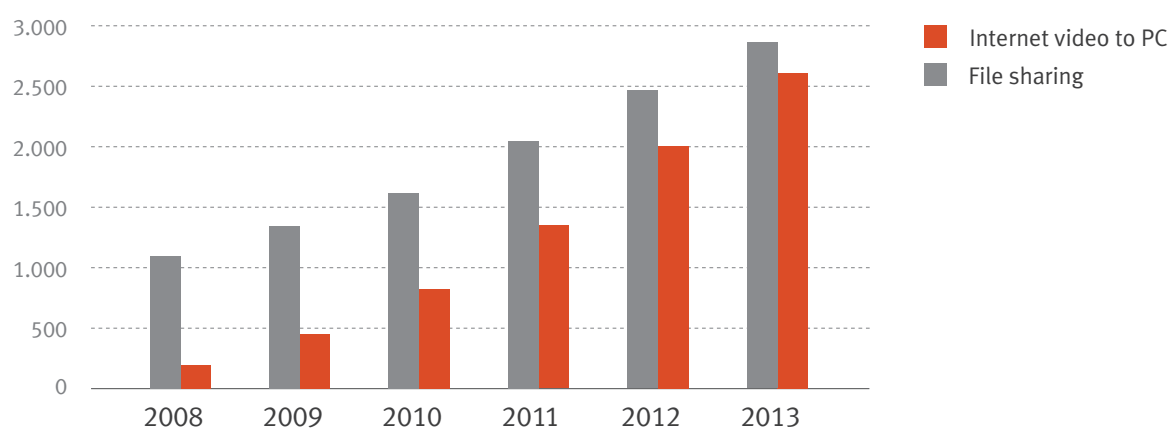
A European Commission report in 2009 suggested 73 percent of Internet users aged 16 to 34 access advance communications services – twice the rate of the average population. For this cohort, uploading and distributing content poses no technical challenges.

²⁶ The Cisco Visual Networking Index Forecast includes estimates for 14 countries, relying on analyst projections for Internet users, broadband connections, video subscribers, mobile connections, and Internet application adoption. Mobile data traffic is also covered by the forecast including handset-based data traffic (text and multimedia messaging, handset video services). Mobile Internet traffic is both generated by handsets and wireless cards for portable computers.

3.1.2. The diversification of piracy techniques

While P2P remains the prevalent form of illegal content distribution, other techniques, such as streaming and direct downloading^{27/28}, are gaining in popularity.

Figure 6 – File sharing and “Internet video to PC” traffic growth in Europe, 2008-2013²⁹



Source — Cisco Visual Networking Index for 2008 to 2013

As broadband penetration increases, users are able to access content quickly not only by using P2P networks but through streaming sites and direct download links as well.

Real-time entertainment is increasingly preferred by Internet users, with real-time traffic doubling from 2008 to 2009 [Sandvine 2009]³⁰. By definition, content streaming is immediately visible while via direct download access time is limited to 10 minutes with premium offers (as illustrated in the next figure).

²⁷ Streaming media are multimedia that are constantly received by, and normally presented to, an end-user, contrary to P2P media which are downloaded and definitely stored on the end-user's computer.

²⁸ Direct download is based on a client-server architecture versus other forms of peer-to-peer (P2P) downloading architectures. In a client-server architecture 100 percent of the file is stored on a single file server or in parallel across multiple file servers in a server farm.

²⁹ Direct download is based on a client-server architecture versus other forms of peer-to-peer (P2P) downloading architectures. In a client-server architecture 100 percent of the file is stored on a single file server or in parallel across multiple file servers in a server farm.

The June 2009 update of the Cisco Visual Networking Index Forecast includes country-level estimates for 14 countries. The core methodology relies on analyst projections for Internet users, broadband connections, video subscribers, mobile connections, and Internet application adoption. The file sharing category includes traffic from P2P applications such as BitTorrent and eDonkey, as well as web-based file sharing. The P2P category is limited to traditional file exchange and does not include commercial video-streaming applications delivered through P2P, such as PPStream or PPLive. "Internet Video to PC" refers to online videos which can be downloaded or streamed and viewed on a PC screen. It excludes peer-to-peer downloads, and differs from Internet-delivery of video to a TV screen through a set-top box (STB) or equivalent device.

³⁰ Sandvine [2009].

Figure 7 – “Real-time” access through specialised portals

MEGAUPLOAD Login | Register English

Free Membership Premium Rewards Top 100 Mega Tools Support FAQ

Filename: **Bienvenue chez les chtis.DVDRIP...avi** Film

File description: a

File size: 699.75 MB

Download link: <http://www.megaupload.com/?d=DES85BZQ>

[View on MegaVideo](#) [Streaming link](#)

Feature	Premium	Free
High-speed download with Mega Manager	✓	✗
Download speed priority	Highest	Lowest
Maximum parallel downloads	Unlimited	1
Download limit per 24 hours	Unlimited	Very limited
Waiting time before each download begins	None	45 seconds
Advertising	Little	maximum
Online storage with file manager	Unlimited	None
Support for download accelerators	✓	✗

Premium download

Regular download

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Premium offer: €9.99 per month
Download speed: highest
(depends on ISP connexion offer)
Download time: ~ 10 min for a
700 MB file at 1000 KB per sec.

Free offer
Download speed: lowest (~ 30 KB
per sec.)
Download time: ~ 16 days for a
700 MB file at 30 KB per sec.

Source — www.megaupload.com

Non-P2P piracy methods are not limited to streaming and direct downloads (although they represent the potentially most damaging methods). Instant messaging, e-mail, music blogs, Bluetooth and iPod ripping are also commonplace.

3.1.3. The extended digitisation and online availability of creative products

Currently, digital piracy of creative content mainly affects music, movies and TV series. Yet other sectors are increasingly facing the opportunities and threats posed by the digital age.

The impact of piracy on the book publishing industry has been felt for some time, although book piracy is less severe than on the recorded music industry worldwide.

Several websites allow titles to be downloaded without charge, mainly in a PDF format, following a simple and free registration. One of the best-known websites dedicated to free book downloads was the recently closed Textbook Torrents (more than 5 000 titles available for download). These websites are opening across the world. An academic author testified that six of the first 10 Google results for one of his books were for illegal downloading websites³¹.

A number of book industry experts consider piracy to be a major threat to the industry. The Association of American Publishers estimated that there were thousands of pirated copies available online and Harvard Business Publishing launched a team to detect unauthorised digital books on their network. Due to the relatively low penetration of e-book readers on the market today, files are mainly read on a computer screen, a far cry from a hardcopy. Several signs indicate however that the publishing industry is readying for

massive, and illegal, digital consumption :

- Manufacturers have invested in the digital market, with the Amazon Kindle and the Sony Reader, offering an increasing number of titles. Moreover, 2010 will see the launch of the Apple tablet computer, aimed at tapping into the books market. These developments will quickly increase the rate of adoption of devices for e-book reading.
- The media and networks are also developing: mobile technology (Wi-Fi, Bluetooth, etc.), multi-application terminals (laptops, smartphones, etc.), improved batteries, etc.
- Libraries are spending an increasingly large portion of their budgets on digitising content, most notably in university libraries.
- Consumer habits are changing, especially among the younger generations, who are used to reading on screens.

Looking forward, once the use of electronic readers has been broadly adopted, we can anticipate massive piracy of written, and copyrighted, content. Downloading will be even easier since users will be dealing with files that are generally smaller in volume and, unlike video files, easily downloadable.

³¹ The New York Times, A Book Author Wonders How to Fight Piracy, May 2009.

Table 20 – Size in KB of digital books and download speeds

Type of books	Size in bytes	Download Time (56K modem)	Download Time (broadband connection)
Short story (50 pages)	150 Kb	37 sec.	3 to 6 sec.
Novel (300 pages)	1 Mb	4 min.	20 to 40 sec.
Educational book with tables (200 pages)	1.5 Mb	6 min.	30 to 60 sec.
Illustrated book with photos	10 Mb	41 min.	3 to 6 min.

Source – www.numilog.com

This threat is not limited to books but will impact the whole publishing industry, including newspapers and magazines.

Some websites, such as mygazines.com in 2008, encourage users to upload scanned copies of large parts, if not all, of magazines and newspapers without the permission of the publishers. The scanned copies may usually be viewed using reading software integrated into the site and, in addition to uploading, users can browse, share, archive and customize magazines. This emerging phenomenon is combined with a widespread reutilisation of newspapers on websites, without license.

Newspapers and magazines have suffered from the collapse of the advertising market during the recession, the migration of promotion to legal online sites and the aggregation of their content on third-party websites. Digital piracy is another threat to their long-term viability.

In the US, several newspapers or magazines have either closed or moved to online-only formats. There is no doubt that if market conditions do not improve, many titles across Europe will face a similar fate.

3.2. ASSESSING THE IMPACT OF DIGITAL PIRACY ON EUROPE'S CREATIVE INDUSTRIES IN 2015

This chapter projects the impact of digital piracy in Europe in 2015. Two traffic trends are introduced in our model, which we use to derive year-by-year impacts up to 2015, both in terms of GDP and of employment. Our goal is not to provide a sector by sector analysis of the impact of piracy in 2015, but rather to determine the magnitude of the problem and its economic consequences, if no action is taken. Considering this objective of demonstrating the Europe-wide risk, we do not present national splits for these estimates.

There are two reasonable future scenarios for the growth of digital piracy in Europe :

- **Scenario 1: digital piracy growth follows “file-sharing” traffic trends**

This scenario is based on file-sharing growth, and assumes that piracy behaviour continues to be centred on P2P. Considering file-sharing traffic forecasts, this scenario represents a lower limit of the impact of piracy.
- **Scenario 2: digital piracy growth follows “global consumer IP” traffic trends**

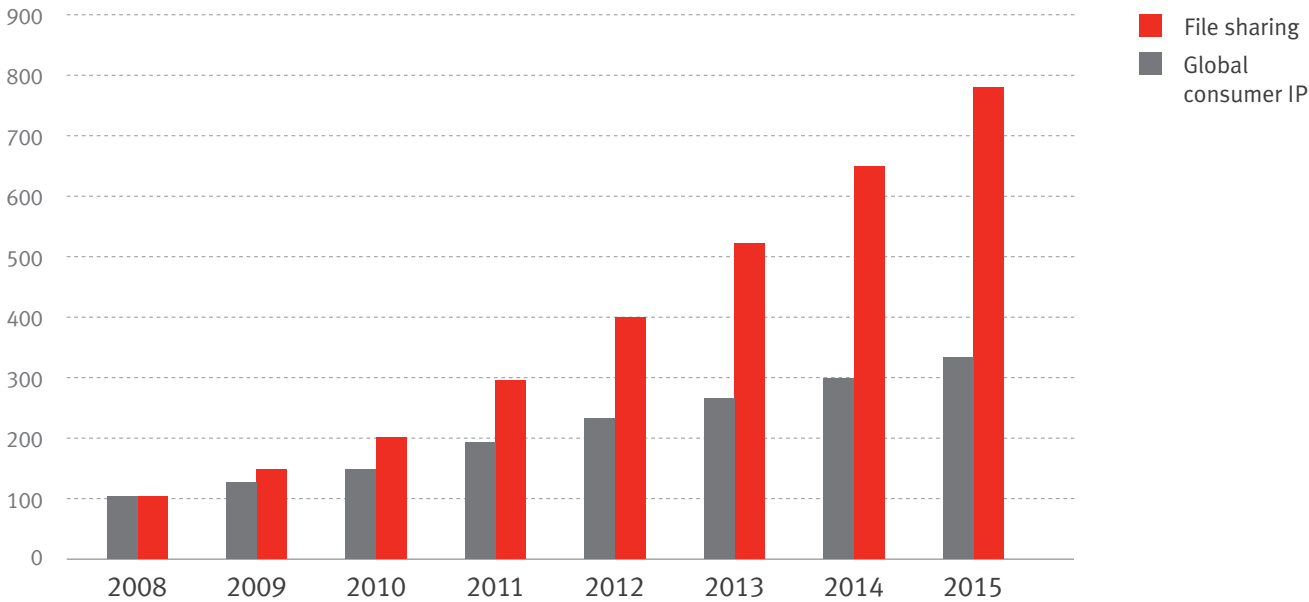
This scenario assumes that piracy techniques will expand beyond P2P (streaming, for example, is taken into account). This scenario provides an upper limit of the impact of piracy.

Traffic forecasts are based on a Cisco System white paper, “Cisco Visual Networking Index: Forecast and Methodology, 2008–2013”, which we have extrapolated to prolong the trends up to 2015.

According to Cisco :

- **File-sharing**³² networks now “transport” 1.3 exabytes³³ per month in Europe and will continue to grow at a “moderate” pace with a CAGR of 18% from 2008 to 2015³⁴.
- During the same period, **Global consumer IP** traffic will be multiplied by 8, growing at a CAGR of 34% from 2008 to 2015³⁵.

Figure 8 – “File-sharing” and “Global consumer IP” traffic growth in Europe between 2008 and 2015 (2008 = 100)



Source — Cisco Visual Networking Index for 2008 - 2013, TERA Consultants extrapolation for 2014 - 2015

³² This category includes traffic from P2P applications such as BitTorrent and eDonkey, as well as web-based file sharing.

³³ 1.3 billion gigabytes.

³⁴ The June 2009 update of the Cisco Visual Networking Index Forecast includes forecasts ranging between 2008 to 2013. We extrapolated the forecast up through 2015, based on trends provided by Cisco. The data provided cover both Western & Eastern/Central Europe.

The file sharing category includes traffic from P2P applications such as BitTorrent and eDonkey, as well as web-based file sharing. The P2P category is limited to traditional file exchanges and does not include commercial video-streaming applications delivered through P2P, such as PPStream or PPLive.

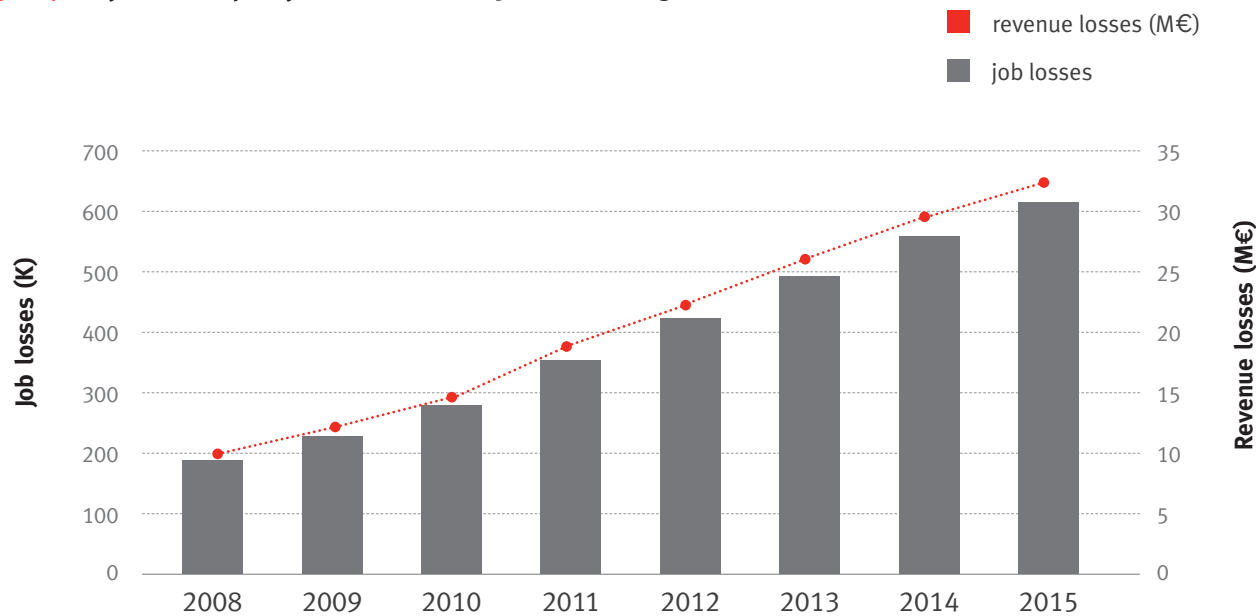
³⁵ Global consumer IP traffic category encompasses all IP traffic over the Internet, as well as other traffic, such as IPTV and VoD traffic.

Scenario 1: digital piracy growth follows file sharing traffic trends

By the end of 2015, considering the dynamics of file-sharing traffic in 2008, we estimate the impact of the piracy of creative works to represent more than €30 billion in lost retail revenues in 2015 and €165 billion in cumulative losses over the period of 2008 to 2015. The cumulative job losses are predicted to increase from approximately 185 000 in 2008 to 610 000 in 2015.

Compared to our starting point in 2008, revenue and job losses are thus multiplied by three. This level has to be considered as a baseline, since it is based on P2P, without integrating the variety of other piracy techniques such as streaming. Therefore, a threefold increase in losses is the minimum impact forecasted.

Figure 9 – Dynamics of piracy from 2008 to 2015 – “file sharing” trend scenario



Source — TERA Consultants calculation

Scenario 2 : digital piracy growth follows global consumer IP traffic trends³⁶

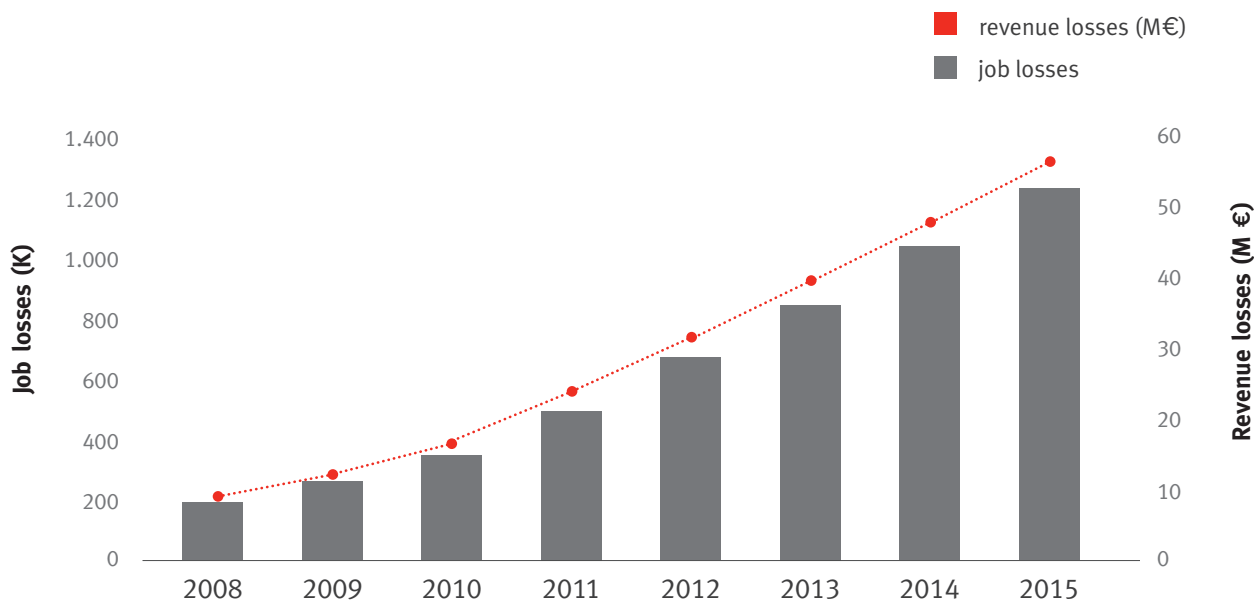
Considering the dynamics of global IP consumer traffic, and assuming piracy traffic will follow this trend through 2015, we estimate the impact of the piracy of creative works will represent more than €55 billion in lost retail revenues in 2015. The cumulative job losses are predicted to increase from approximately 185 000 in 2008 to 1.2 million. Compared to our starting point in 2008, revenue and job losses are thus multiplied by a factor of more than five.

We must underline that this exercise presents some limitations :

- It does not predict the “domino effect” created by the potential failure of major European groups in these creative industries.
- The local impact on national industries cannot be anticipated.
- It is assumed that “all things are equal” with regards to the legislative frameworks.

Whether the digital piracy rate increases by either of the projections shown above, the threat to the creative industries posed is a major problem for the EU and its member states.

Figure 10 – Dynamics of piracy from 2008 to 2015 – “global consumer IP” trend scenario



Source — TERA Consultants calculation

³⁶ Since ‘under-licensing’ of software, primarily by business customers, is likely to remain an important concern for the software industry, the total projected losses in software may not fully track the growth rate in ‘global consumer IP’ traffic that was used to project future losses in audiovisual products. For this reason, in Scenario 2, the same growth rate has been applied to the software as in Scenario 1 (meaning that the average growth rate has been limited to 18% instead of 34%).

Conclusion

Based on a comprehensive and accurate view of creative industries' contributions to the European economy, this study has combined both "core creative industries" and "non-core creative industries" to form a more complete picture of Europe's creative industries. This picture reveals that value added by these creative industries was approximately €860 billion in 2008, or an estimated 6.9% share of the GDP for the EU 27. The creative industries also provide significant employment opportunities throughout Europe, approximately 14 million jobs, or 6.5% of the EU 27 workforce in 2008.

A principal goal of the study was to evaluate the economic consequences of piracy on the creative industries. This study concentrated on retail revenue and job losses experienced by the creative industries that are most susceptible to piracy, namely those that produce and distribute films, TV series, recorded music and software. In 2008, both physical and digital piracy induced €10 billion in revenue losses and more than 185 000 jobs lost in Europe in the selected creative industries.

In coming years, further growth in broadband penetration and the ongoing digitisation of creative industry products will accelerate and, without sustained and effective action, this trend will greatly facilitate the continued expansion of digital piracy in Europe. This study provides two scenarios of estimated piracy-driven losses escalating from 2008 to 2015 based on Cisco System's Internet traffic forecasts and assuming that no measures are taken to address piracy.

In Scenario 1, digital piracy growth follows "file-sharing" traffic trends and assumes that piracy behaviour continues to be centred on P2P. For the same creative industries, retail losses will reach approximately €32 billion by 2015, while cumulative job losses will reach 610 000 in the EU. In Scenario 2, digital piracy growth follows "global consumer IP" traffic trends in Europe. This scenario assumes that digital piracy techniques will be further diversified and leads to retail losses equalling €56 billion in 2015 and to 1.2 million cumulative job losses by 2015.

APPENDICES

Appendix 1: Copyright infringements assumptions for national case studies

FRANCE

App. 1.1 – Criteria to calculate revenue losses due to pirated music in France

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	778 ³⁷	1.10 ³⁸
Substitution rate (%) ³⁹	10%	46%
Unit retail price (€)	2.34 ⁴⁰	14.40 ⁴¹

Source — Criteria to calculate revenue losses due to pirated music in France : TERA Consultants calculation

App. 1.2 – Criteria to calculate revenue losses due to pirated films in France

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	164 ⁴²	5.25 ⁴³
Substitution rate (%) ⁴⁴		
Theatre	5%	9%
DVD sell through	9%	5%
DVD rental	0%	5%
VoD/PayPerView/official download	9%	0%
TV	9%	9%
Unit retail price		
Theatre (€/ticket)		6.00 ⁴⁵
DVD sell through (€/DVD)		15.63 ⁴⁶
DVD rental (€/DVD)		2.72 ⁴⁷
VoD/PayPerView/official download (€/download)		7.50 ⁴⁸
TV (€/film)		0.069 ⁴⁹

Source — TERA Consultants calculation

³⁷ Source SNEP. 2008 estimate.
³⁸ Source SNEP. This corresponds to 2% of total physical units sold in France in 2008.
³⁹ See Appendix 2.
⁴⁰ Source SNEP. 90% *online single price (€1.00) + 10% * physical CD price (€14.40)
⁴¹ Source IFPI. Physical CD price.
⁴² Source SNEP. ⁴³ See Appendix 3. ⁴⁴ See section 2.1. ⁴⁵ Source : PWC [2009].

⁴⁶ Source : International Video Federation – European Video Yearbook 2009. Average consumer price for DVD in 2008.
⁴⁷ Source : International Video Federation – European Video Yearbook 2009. Average rental fee for DVD in 2008.
⁴⁸ Source : NPA Conseil, Video on Demand in Europe, 2008. 50% of official download price (€7.50) and 50% of VoD price (between €1.5 and €6: used €3.75).
⁴⁹ Based on 209 min/day for the average viewing time in 2008 (source : ACTE – Television 2008, International Key Facts) and M€2.870 TV ad spend in 2008 (source : PWC 2009).

App. 1.3 – Criteria to calculate revenue losses due to pirated TV series in France

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit) ⁵⁰	88.39	0.80
Substitution rate (%) ⁵¹		
TV	28%	28%
DVD sell through	5%	5%
DVD rental	2%	2%
VoD/PayPerView	2%	2%
Unit retail price		
TV (€/TV series)		0.03 ³²
DVD sell through (€/DVD)		31.26 ⁵³
DVD rental (€/DVD)		2.72 ⁵⁴
VoD/PayPerView/official download (€/download)		2.00 ⁵⁵

Source — TERA Consultants calculation

GERMANY

App. 1.4 – Criteria to calculate revenue losses due to pirated music in Germany

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	373 ⁵⁶	6.30 ⁵⁷
Substitution rate (%) ⁵⁸	11%	47%
Unit retail price (€)	2 ⁵⁹	11.96 ⁶⁰

Source — TERA Consultants calculation

⁵⁰ See Appendix 4. ⁵¹ See section 2.1.
⁵² Based on 209 min/day as average viewing time in 2008 (source : ACTE – Television 2008, International Key Facts) and M€2.870 TV ad spend in 2008 (source : PWC).
⁵³ Source : International Video Federation – European Video Yearbook 2009. Based on the average consumer price for a DVD in 2008 (TV series DVDs are generally twice as expensive as film DVDs),
⁵⁴ Source : International Video Federation – European Video Yearbook 2009. Average DVD rental fee in 2008.

⁵⁵ Source : NPA Conseil, Video on Demand in Europe, 2008.
⁵⁶ Source : GfK (2008) estimate.
⁵⁷ Source : IFPI Germany. This corresponds to 6% of total physical units sold in Germany in 2008.
⁵⁸ See Appendix 2.
⁵⁹ Source : IFPI. 90%*online single price (€1.1)+ 10%* physical CD price (€11.96).
⁶⁰ Source : GfK. Physical CD price.

App. 1.5 – Criteria to calculate revenue losses due to pirated films in Germany

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	99.4 ⁶¹	6.23 ⁶²
Substitution rate (%) ⁶³		
Theatre	5%	10%
DVD sell through	10%	5%
DVD rental	0%	5%
VoD/PayPerView/official download	10%	0%
TV	10%	10%
Unit retail price		
Theatre (/ticket)		6.11 ⁶⁴
DVD sell through (/DVD)		12.26 ⁶⁵
DVD rental (/DVD)		2.45 ⁶⁶
VoD/PayPerView/official download (/download)		7.50 ⁶⁷
TV (/film)		0.074 ⁶⁸

Source — TERA Consultants calculation

⁶¹ According to the findings of the Brenner Study commissioned by the Filmförderungsanstalt (Film Development Agency) and conducted from January to June 2005, 11.9 million German-language or German-dubbed films were illegally downloaded by 1.7 million Internet users (<http://www.techshout.com/software/2006/01/warner-bros-to-start-file-sharing-of-movies-tv-shows-in-germany-through-in2movies/>), i.e. 14 illegal downloads per P2P users in one year. Source GfK: in 2008, 7.1 million P2P users were recorded in Germany.

⁶² See Appendix 3. ⁶³ See section 2.1. ⁶⁴ Source: PWC [2009]

⁶⁵ Source: International Video Federation – European Video Yearbook 2009. Average consumer price for DVD in 2008.

⁶⁶ Source: International Video Federation – European Video Yearbook 2009. Average rental fee for DVD in 2008.

⁶⁷ Source: NPA Conseil, Video on Demand in Europe, 2008. 50% of official download price (€7.50) and 50% of VoD price (between €1.50 and €6: second-hand €3.75).

⁶⁸ Based on 223 min/day as average viewing time in 2008 (source: ACTE – Television 2008, International Key Facts) and M€4.100 TV ad spend in 2008 (source: PWC).

App. 1.6 – Criteria to calculate revenue losses due to pirated TV series in Germany

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit) ⁶⁹	53.58	3.24
Substitution rate (%) ⁷⁰		
TV	29%	29%
DVD sell through	5%	5%
DVD rental	2%	2%
VoD/PayPerView	2%	2%
Unit retail price		
TV (€/TV series)	0.037 ⁷¹	
DVD sell through (€/DVD)	24.52 ⁷²	
DVD rental (€/DVD)	2.45 ⁷³	
VoD/PayPerView/official download (€/download)	2.00 ⁷⁴	

Source — TERA Consultants calculation

ITALY**App. 1.7 – Assumptions for revenue losses due to pirated music in Italy**

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	1,300 ⁷⁵	6.60 ⁷⁶
Substitution rate (%) ⁷⁷	9%	41%
Unit retail price (€)	2.22 ⁷⁸	13.24 ⁷⁹

Source — TERA Consultants calculation

⁶⁹ See Appendix 4. ⁷⁰ See section 2.1.⁷¹ Based on 223 min/day as average viewing time in 2008 (source: ACTE – Television 2008, International Key Facts) and M€4.100 TV ad spend in 2008 (source: PWC).⁷² Source: International Video Federation – European Video Yearbook 2009. Based on the average consumer price for DVD in 2008 (TV series DVDs are generally twice as expensive as film DVDs).⁷³ Source: International Video Federation – European Video Yearbook 2009 Average rental fee for a DVD in 2008.⁷⁴ Source: NPA Conseil, Video on Demand in Europe, 2008. ⁷⁵ Source: IFPI.⁷⁶ Source: IFPI. This corresponds to 23% of total physical units sold in Italy in 2008.⁷⁷ See Appendix 2.⁷⁸ Source: Forrester Research. 90%*online single price (€1.00)+ 10%* physical CD price (€13.24).⁷⁹ Source IFPI.

App. 1.8 – Assumptions for revenue losses due to pirated films in Italy

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	147.99 ⁸⁰	85.75 ⁸¹
Substitution rate (%) ⁸²		
Theatre	4%	8%
DVD sell through	8%	4%
DVD rental	0%	4%
VoD/PayPerView/official download	8%	0%
TV	8%	8%
Unit retail price		
Theatre (€/ticket)		6.11 ⁸³
DVD sell through (€/DVD)		12.21 ⁸⁴
DVD rental (€/DVD)		2.93 ⁸⁵
VoD/PayPerView/official download (€/download)		7.50 ⁸⁶
TV (€/film)		0.110 ⁸⁷

Source — TERA Consultants calculation

⁸⁰ Source : [www.fapav.it](#) ⁸¹ Source: [www.fapav.it](#) ⁸² See section 2.1.

⁸³ Source: PWC [2009]

⁸⁴ Source : International Video Federation – European Video Yearbook 2009. Average consumer price for DVD in 2008.

⁸⁵ Source : International Video Federation – European Video Yearbook 2009. Average rental fee for DVD in 2008

⁸⁶ Source : NPA Conseil, Video on Demand in Europe, 2008. 50% of official download price (€7.50) and 50% of VoD price (between €1.50 and €6: used €3.75)

⁸⁷ Based on 239 min/day as average viewing time in 2008 (source: ACTE – Television 2008, International Key Facts) and M€4.800 TV ad spend in 2008 (source: PWC).

App. 1.9 – Assumptions for revenue losses due to pirated TV series in Italy

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit) ⁸⁸	79.76	13.07
Substitution rate (%) ⁸⁹		
TV	25%	29%
DVD sell through	4%	4%
DVD rental	2%	2%
VoD/PayPerView	2%	2%
Unit retail price		
TV (€/TV series)		0.055 ⁹⁰
DVD sell through (€/DVD)		24.42 ⁹¹
DVD rental (€/DVD)		2.93 ⁹²
VoD/PayPerView/official download (€/download)		2.00 ⁹³

Source — TERA Consultants calculation

SPAIN**App. 1.10 – Assumptions for revenue losses due to pirated music in Spain**

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	1,977 ⁹⁴	5.00 ⁹⁵
Substitution rate (%) ⁹⁶	9%	41%
Unit retail price (€)	2.32 ⁹⁷	11.34 ⁹⁸

Source — TERA Consultants calculation

⁸⁸ See Appendix 4. ⁸⁹ See section 2.1.⁹⁰ Based on 239 min/day as average viewing time in 2008 (source: ACTE – Television 2008, International Key Facts) and M€4.800 TV ad spend in 2008 (source: PWC).⁹¹ Source: International Video Federation – European Video Yearbook 2009. Based on the average consumer price for DVD in 2008 (TV series DVDs are generally twice as expensive as film DVDs).⁹² Source: International Video Federation – European Video Yearbook 2009. Average rental fee for a DVD in 2008. Source: NPA Conseil, Video on Demand in Europe, 2008.⁹³ Source: NPA Conseil, Video on Demand in Europe, 2008.⁹⁴ Source: NPA Conseil, Video on Demand in Europe, 2008.⁹⁵ Source: IFPI, based on Jupiter Research figures on numbers of p2p users in Spain [2009] and average number of files downloaded per person [Ministry of Culture report].⁹⁶ Source: Promusicae. This corresponds to 20% of total physical units sold in Spain in 2008.⁹⁷ See Appendix 2.⁹⁸ 90% * online single price (€1.30) [source: Forrester Research, 2009] + 10% * physical CD price (€11.34) [source: Promusicae].⁹⁹ Source: Promusicae.

App. 1.11 – Assumptions for revenue losses due to pirated films in Spain

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	350 ⁹⁹	25 ¹⁰⁰
Substitution rate (%) ¹⁰¹		
Theatre	4%	8%
DVD sell through	8%	4%
DVD rental	0%	4%
VoD/PayPerView/official download	8%	0%
TV	8%	8%
Unit retail price		
Theatre (€/ticket)		5.71 ¹⁰²
DVD sell through (€/DVD)		12.48 ¹⁰³
DVD rental (€/DVD)		2.34 ¹⁰⁴
VoD/PayPerView/official download (€/download)		7.50 ¹⁰⁵
TV (€/film)		0.083 ¹⁰⁶

Source — TERA Consultants calculation

⁹⁹ Source : International Video Federation – European Video Yearbook 2009.
¹⁰⁰ Source : International Video Federation – European Video Yearbook 2009.
¹⁰¹ See section 2.1.
¹⁰² Source : PWC [2009]
¹⁰³ Source : International Video Federation – European Video Yearbook 2009. Average consumer price for DVDs in 2008.

¹⁰⁴ Source : International Video Federation – European Video Yearbook 2009. Average rental fee for a DVD in 2008.
¹⁰⁵ Source : NPA Conseil, “Video on Demand in Europe”. 50% of official download price (€7.50) and 50% of VoD price (between €1.50 and €6; used €3.75).
¹⁰⁶ Based on 234 min/day as average viewing time in 2008 (source : ACTE – Television 2008, International Key Facts) and M€2.742 TV advertising in 2008 (source : PWC).

App. 1.12 – Assumptions for revenue losses due to pirated TV series in Spain

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit) ¹⁰⁷	188.64	3.81
Substitution rate (%) ¹⁰⁸		
TV	25%	25%
DVD sell through	4%	4%
DVD rental	2%	2%
VoD/PayPerView	2%	2%
Unit retail price		
TV (€/TV series)	0.041 ¹⁰⁹	
DVD sell through (€/DVD)	24.96 ¹¹⁰	
DVD rental (€/DVD)	2.34 ¹¹¹	
VoD/PayPerView/official download (€/download)	2.00 ¹¹²	

Source — TERA Consultants calculation

UK**App. 1.13 – Assumptions for revenue losses due to pirated music in the UK**

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	1,177 ¹¹³	10.08 ¹¹⁴
Substitution rate (%) ¹¹⁵	11%	48%
Unit retail price (€)	1.81 ¹¹⁶	10.01 ¹¹⁷

Source — TERA Consultants calculation

¹⁰⁷ See Appendix 4. ¹⁰⁸ See section 2.1.¹⁰⁹ Based on 234 min/day as average viewing time in 2008 (source: ACTE – Television 2008, International Key Facts) and M€2.742 TV ad spend in 2008 (source: PWC).¹¹⁰ Source: International Video Federation – European Video Yearbook 2009. Based on the average consumer price for DVDs in 2008 (TV series DVDs are generally twice as expensive as film DVDs).¹¹¹ Source: International Video Federation – European Video Yearbook 2009. Average rental fee for a DVD in 2008.¹¹² Source: NPA Conseil, Video on Demand in Europe, 2008.¹¹³ Source: BPI.¹¹⁴ Source: BPI. This corresponds to 8% of total physical units sold in UK in 2008.¹¹⁵ See Appendix 2.¹¹⁶ Source: IFPI. 90%*online single price (€0.90) + 10%* physical CD price (€10.01).¹¹⁷ Source: IFPI. Physical CD price.

App. 1.14 – Assumptions for revenue losses due to pirated films in the UK

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	98.95 ¹¹⁸	61.65 ¹¹⁹
Substitution rate (%) ¹²⁰		
Theatre	5%	10%
DVD sell through	10%	5%
DVD rental	0%	5%
VoD/PayPerView/official download	10%	1%
TV	10%	10%
Unit retail price		
Theatre (/ticket)		6.56 ¹²¹
DVD sell through (/DVD)		11.27 ¹²²
DVD rental (/DVD)		3.47 ¹²³
VoD/PayPerView/official download (/download)		7.50 ¹²⁴
TV (/film)		0.095 ¹²⁵

Source — TERA Consultants calculation

¹¹⁸ Source : Ipsos_Digital & Physical Piracy in GB, November 2007. Including downloads and streaming.

¹¹⁹ Source : Ipsos_Digital & Physical Piracy in GB, November 2007. Including counterfeit and bought home-copied DVD.

¹²⁰ See section 2.1. ¹²¹ Source : PWC [2009].

¹²² Source : International Video Federation – European Video Yearbook 2009. Average consumer price for DVD in 2008.

¹²³ Source : International Video Federation – European Video Yearbook 2009. Average rental fee for DVD in 2008.

¹²⁴ Source : NPA Conseil, “Video on Demand in Europe”. 50% of official download price (€7.50) and 50% of VoD price (between €1.5 and €6: used €3.75).

¹²⁵ Based on 233 min/day for the average viewing time in 2008 (source : ACTE – Television 2008, International Key Facts) and M€4.116 TV ad spend in 2008 (source : PWC).

App. 1.15 – Assumptions for revenue losses due to pirated TV series in the UK

	Digital piracy	Physical piracy
Number of copyright infringements per year (M unit)	53.33 ¹²⁶	9.4 ¹²⁷
Substitution rate (%) ¹²⁸		
TV	30%	30%
DVD sell through	5%	5%
DVD rental	2%	2%
VoD/PayPerView	2%	2%
Unit retail price		
TV (€/TV series)		0.05 ¹²⁹
DVD sell through (€/DVD)		22.54 ¹³⁰
DVD rental (€/DVD)		3.47 ¹³¹
VoD/PayPerView/official download (€/download)		2.00 ¹³²

Source — TERA Consultants calculation

¹²⁶ Source: IPSOS_Digital & Physical Piracy in GB, November 2007. Including downloads and streaming.

¹²⁷ Source: IPSOS_Digital & Physical Piracy in GB, November 2007. Including counterfeit and bought home-copied DVD.

¹²⁸ See section 2.1.

¹²⁹ Based on 233 min/day as average viewing time in 2008 (source: ACTE – Television 2008, International Key Facts) and M€4.116 TV ad spend in 2008 (source: PWC).

¹³⁰ Source: International Video Federation – European Video Yearbook 2009. Based on the average consumer price for DVD in 2008 (DVDs of TV series are generally twice as expensive as film DVDs).

¹³¹ Source: International Video Federation – European Video Yearbook 2009. Average rental fee for a DVD in 2008.

¹³² Source: NPA Conseil, Video on Demand in Europe, 2008.

¹³³ The results of Oberholzer-Gee and Strumpf (2007) were contradicted by Blackburn (2007) and Leibowitz (2007).

APPENDICES

Appendix 2: Substitution rate for music

The impact of piracy on recorded music sales has been debated in the economic literature since the late 1990s, after the surge of Napster. To determine the level of the digital substitution rate, a key factor to assess the impact of piracy on sales, we have analysed the available academic studies on the subject. We observed that:

- Most studies conclude that the impact is negative and significant (even if, in some cases as Oberholzer-Gee and Strumpf (2007)¹³³, the effect is supposed to be negligible)
- Most studies reveal a substitution rate included in the range of 10%-30%
- The methodologies employed in these studies differ, making direct comparisons between studies difficult.

For all these reasons, we chose to take both a positive and conservative substitution rate:

- Positive since the studies concluding that the effect is negligible represent a minority
- Conservative since we have selected a 10% rate, that level being a floor in most studies that demonstrate a positive impact.

To introduce a national differentiation, the substitution rate has been weighted by the GDP per inhabitant at PPP (purchasing power parity), leading to range the national rate from 9% in Spain to 11% in the UK. This approach represents a “best effort” to include in the analysis differentiated purchasing powers.

App. 2 – Academic studies assessing the impact of illegal downloads on recorded music sales

Study	RELEVANT PERIOD	SUBJECT/COUNTRY	IMPACT OF ILLEGAL DOWNLOADS ON TOTAL SALES
Hui and Png (2003)	1994-1998	28 countries	For every pirated CD, sales fell by 0.42 units.
Peitz and Waelbroeck (2003, 2004)	1998-2002	16 countries	Piracy reduced sales by 20%; effect is significant at 10% level (waelbroeck 2004). In particular, music downloading could have caused a 10% reduction in cd sales worldwide in 2001 (waelbroeck 2003).
Zentner (2006)	2001	7 European countries	Peer-to-peer usage reduces the probability of buying music by 30%
Michel (2006)	1999-2003	US	File sharing has reduced album sales by as much as 13 percent.
Montoro-Pons and Cuadrado-Garcia (2006)	2003	60 COUNTRIES	Lost sales due to piracy are worth 131% of the legal market on average. Weighting each country by its global market share leads the latter outcome to around 30% of the legal global market.
Hong (2004, 2008)	2000	US	The introduction of Napster explains 20% of the decline in music expenditures in 2000.
Liebowitz (2008)	1998-2003	US cities	The 2003 Internet penetration rate of 60% would lower record sales by about 1.27 units per capita, i.e. were it not for file-sharing the sales of albums would have been approximately 3.55 per capita in 2003 instead of the actual value of 2.28
Leung (2009)	2008	Hong Kong college students	When students pirate 10% more music through P2P web sites, they buy 0.7% fewer iTunes songs and 0.4% fewer CDs.

Source — Based on Oberholzer-Gee & Strumpf (2009)

APPENDICES

Appendix 3 : Specific assumptions for DVDs

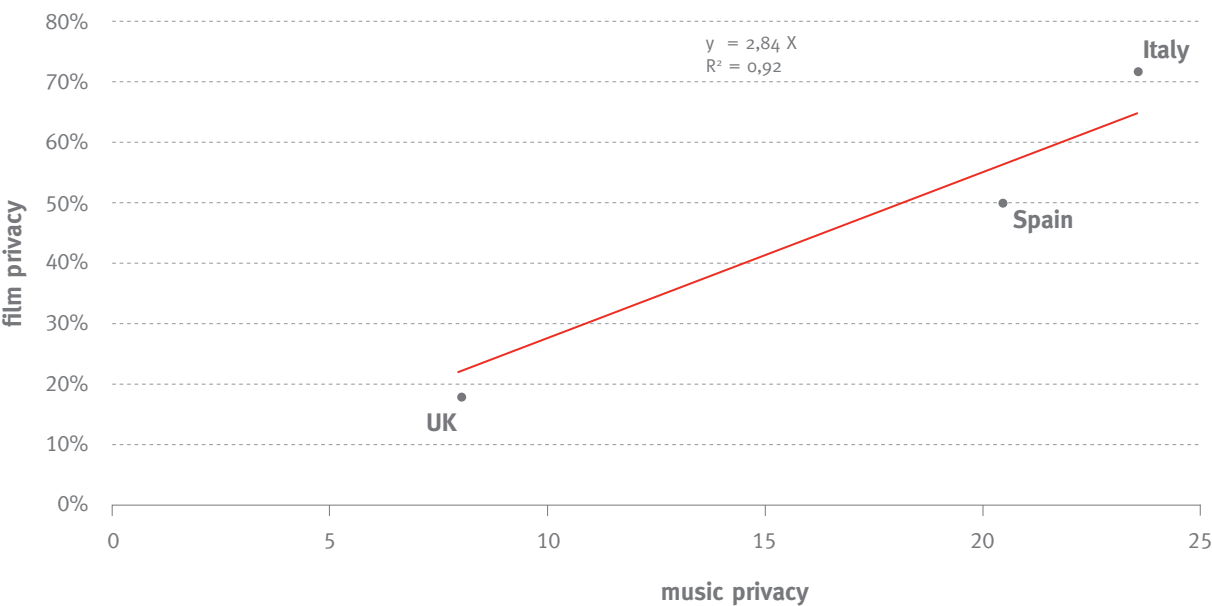
Physical piracy involves the illegal duplication and distribution of works in physical form. The low cost of DVD burners has resulted in an explosion of the illegal copying of copyrighted products.

Despite numerous cases of counterfeit incidents and seizures reported,¹³⁴ the number of counterfeit DVDs sold is not always available. In order to assess the

number of copyright infringements due to physical film piracy in France, and Germany, we have used a ratio based on data from the British, Spanish and Italian cases.

Indeed, in these countries we see a strong correlation between the physical piracy rate of recorded music and that of film.

App. 3.1 – Correlation between recorded music and film physical piracy rates¹³⁵



Source — TERA Consultant analysis based on IFPI & IVF data

Therefore it appears that the piracy rate for film is 2.84 points higher than the piracy rate for music. Taking this ratio as an assumption, it is possible to estimate the number of pirate DVD hard copies that are sold.

¹³⁴ For instance, CDs and DVDs were the top category of articles detained by EU customs in 2008 with a total of 79 million, which accounted for 44% of the entire amount (source : Report on EU Customs Enforcement of Intellectual Property Rights)

¹³⁵ The physical piracy rate is defined as the number of counterfeit products sold divided by the total number of products sold (both legitimate and pirate)

App. 3.2 – Calculation of film counterfeit DVDs sold to consumers

	Music piracy rate	Film piracy rate	Legitimate Video Discs sold to consumers (M)	Pirate Video Discs sold to consumers (M)
UK	8%	19%	257.40	61.65
Spain	20%	50%	25.00	25.00
Italy	23%	72%	32,70	85.75
France	2%	6%	87.21%	5.25%
Germany	6%	17%	103.50%	21.25%

Source — IVF, TERA Consultant analysis

APPENDICES

Appendix 4: Specific assumptions for TV series

Though the illegal downloading of TV series seems to be decreasing in the US due to the pressure from legal streaming sites, it appears that in Europe, piracy is intensifying. According to the observations of the specialised site called TorrentFreak, the first episode of the fourth season of Prison Break quickly exceeded 1 million downloads, most of which were from Europe. In addition, in September 2008 for the first time in its history, Mininova (BitTorrent link site) recorded more than 10 million downloads in one day, i.e. an average of 117.6 torrent downloads per second.

According to TorrentFreak, this record is due to the release of the first episodes of the new seasons of many TV series that premiered in the United States, and that were very quickly broadcasted on the BitTorrent link sites. The site specifies that 50% of the downloads involve television series.

In the UK, it appears that films are downloaded twice as often as TV series, and that there are seven times more counterfeit film DVDs sold than TV series¹³⁶.

In the absence of information concerning the number of copyright infringements related to TV series piracy in other countries, we will use these two ratios to assess the number of TV series downloaded or bought as counterfeit products.

¹³⁶ Source : IPSOS, *Digital & Physical Piracy in GB*, November 2007

APPENDICES

Appendix 5 : Revenues in sales per person employed in audiovisual industries

Based on the revenue losses assessed at European level, the loss of jobs is obtained by dividing the revenue losses by the average revenue in sales per person employed in each sector, from production up to the retail distribution level.

We therefore determined the average revenue in sales per person employed in music, film/TV and book industries based on the following data :

- Revenues in sales:
 - Music: digital and physical (source: PWC 2009)
 - Film/TV: revenues from box office, DVD (sell through & rental), TV advertising, VoD, PPV (source: PWC 2009).
- People employed in sector from production up to retail distribution level:
 - Music: jobs in record companies, wholesale and retail distribution (source: IFPI)
 - Film/TV: jobs in TV, film production, distribution & projection (source: national statistics offices)
 - Book: jobs in book publishing companies and press and literature retail (source: Eurostat)

App. 5 – Revenues and employed in audiovisual industries

Revenues in sales (M€)	UK	France	Germany	Italy	Spain	
Music	1 653	1 061	1 602	315	279	
Film + TV	8 752	5 771	6 492	6 204	4 102	
Employment	UK	France	Germany	Italy	Spain	
Music	25 320	15 625	25 400	4 500	4 000	
Film + TV	113 516	62 903	75 983	58 360	80 600	
Revenues/person	UK	France	Germany	Italy	Spain	EU average
Music	65 269	67 269	63 058	69 934	69 683	70 000
Film + TV	77 102	91 747	85 440	106 300	50 890	85 000

Source — TERA Consultant analysis based on IFPI, PWC, national statistics offices and Eurostat data

Thus, we assume that:

- The music industry employs one person for every €70,000 in sales.
- The film/TV industry employs one person for every €85,000 in sales.

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Appendix 6 : Revenues in sales per person employed in software industry

A study conducted by IDC for BSA in 2007 estimated the economic benefits to domestic economies that could be gained from a ten-percentage-point reduction in PC software piracy. The study notably found that a reduction in software piracy translates into new high paying jobs in the IT industry. ¹³⁷

For instance, in the UK case study, ¹³⁸ IDC has estimated that a ten-percentage-point reduction in PC software piracy in UK from 2008 to 2011, would lead to an increase of M\$794 (i.e. M€540) in IT spending by the end of 2008, which would translate into the creation of 3 161 jobs in the IT industry.

In other words, IDC estimated that the British IT industry employed around one person for every €170,000 in sales. ¹³⁹

Based on each case study, we estimate therefore the average revenue in sales per person employed in each domestic IT industry.

Based on the revenue losses assessed at both national and European level, the loss of jobs in IT industry is obtained by dividing the revenue losses by the average revenue in sales per person employed in IT industry.

App. 6 – Revenues in sales per people employed in software industry

Revenues/person	UK	France	Germany	Italy	Spain	EU average
Music	171 000	161 000	172 000	170 000	268 000	169 000

Source — TERA Consultant analysis based on BSA study “The Economic Benefits of Lowering PC Software Piracy”

¹³⁷ The Economic Benefits of Reducing PC Software Piracy, IDC, January 2008

¹³⁸ The Economic Benefits of Reducing PC Software Piracy – UK study, IDC, January 2008

¹³⁹ M€ 540 / 3,161 people employed

Appendix 7: Highlight on cross border issues

In the report, jobs directly lost due to piracy are obtained by dividing revenue losses (assessed at the European level) by the average sales revenue per person employed in each sector, from production to retail distribution level (based on figures provided by the industries).

On that basis, a global assessment of jobs lost at the European level is obtained. To determine the losses in the five main European countries, we have made the assumption that the local impact was proportionate to the size of the national retail market. This method has the merit of taking into account the weight of each

national industry and, thus, of not allocating job losses based solely on the national tendency to pirate goods or services (with obviously inconsistent results, then, as the most pirating countries would have presented high local losses, notwithstanding the “strength” of the local creative industries).

To be fully consistent, we should have considered the proportion of local/foreign pirated products (for all the covered creative products), but such data were not available. As highlighted in the next table, local job losses might be different, depending on the equilibrium between imports and local production.

App. 7 – Allocating global job losses based on national retail revenue

TWO MARKETS: X AND Y

X Industry Revenue Totals 200 million Euros
75% (150 M€) come from X Productions
25% (50 M€) come from imported Y Productions.

Piracy Rate in X = 10%

Total Piracy Loss = 200 * 10% = 20 M€.

Piracy Loss by Product Origin:

X Production = $20 \cdot .75 = 15$ M€.
Y Productions = $20 \cdot .25 = 5$ M€.

Y Industry Revenue Totals 200 million Euros
25% (50 M€) come from imported X Productions
75% (150 M€) come from Y Productions.

Piracy Rate in Y = 20%

Total Piracy Loss = $200 * 20\% = 40 \text{ M€}$.

Piracy Loss by Product Origin:

X Production = $40 \cdot .25 = 10$ M€.
Y Productions = $40 \cdot .75 = 30$ M€.

TOTAL LOST SALES IN BOTH MARKETS: X Productions Lose 25 M€ (15 plus 10)
Y Productions Lose 35 M€ (5 plus 30).

Job Loss Calculations:

TERA Unadjusted:	Job Losses in X = 20 M€ divided by 100,000 E per worker	200
	Job Losses in Y = 40 M€ divided by 100,000 E per worker	400
	Total Job Losses	600
Actual Losses:	Job Losses in X = 25 M€ divided by 100,000 E per worker	250
	Job Losses in Y = 35 M€ divided by 100,000 E per worker	350
	Total Job Losses	600

Nevertheless our method, so as to catch such a phenomenon, is based on an “implicit” assumption:

- that national markets with important retail revenues, will also be the ones with powerful local industries,
- and thus, logically, will be more impacted by piracy in terms of job losses (as they diffuse more products subject to piracy).

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About TERA CONSULTANTS

The “Building a Digital Economy: The Importance of Saving Jobs in the EU's Creative Industries” study was conducted by TERA CONSULTANTS. TERA CONSULTANTS is an independent consultancy firm providing services in the field of ICT and combining the expertise of economists and engineers. Patrice Geoffron, Professor of Economics at Paris-Dauphine University, has been the director of the study.

32 rue des Jeûneurs – 75002 Paris – Tél +33 (0) 1 55 04 87 10 - Fax: +33 (0) 1 53 40 85 15



About International Chamber of Commerce/BASCAP

Recognising that the protection of intellectual property rights is vital to sound economies, the International Chamber of Commerce (ICC) established BASCAP - Business Action to Stop Counterfeiting and Piracy - to increase awareness of counterfeiting and piracy activities and the associated economic and social harm and call for greater commitments by governments in the enforcement and protection of IPR. The study was commissioned by BASCAP initiative with the aim to advance the development of methodologies to better understand the vitality of Europe's creative industries – and what is at risk.

www.iccwbo.org/bascap

An ICC initiative
BASCAP
Business Action to Stop
Counterfeiting and Piracy