Review of the Economic Evidence Relating to an Extension of the Term of Copyright in Sound Recordings

Centre for Intellectual Property and Information Law
University of Cambridge

Table of Contents

1. Introduction

The aim of this study is to provide the Gowers Review with an independent assessment of the economic evidence bearing on proposals to extend the term of copyright in sound recordings. The issue raised before the Review is whether the term of copyright in sound recordings in the UK (and implicitly this would require an alteration at EU level) should be increased.

Non-Economic Arguments For and Against Extension

This paper is concerned with the economic arguments in favour of and against the extension of copyright term. However, failure to mention the non-economic justifications for and against copyright extension would leave an unacceptable lacuna. A brief overview of these is therefore provided here.

The first set of arguments to consider are those under the heading of 'natural rights'. These depend upon the claim that the labour involved in creating a work generates a property right over the products of that labour. The relevance of such arguments in the context of sound recordings is that creators of other kinds of work (literary, musical, dramatic, films etc) receive protection for the life of the creator plus 70 years. It is therefore argued that performers whose performances are embodied in sound recordings should likewise be recognized as creators worthy of a similar level of protection. A related argument is that copyright rewards creators for their effort, and that they have a natural right to the fruits of their labours.

Another argument advanced is based on the alleged importance of harmonization at the international level. This was one of the considerations influencing the adoption of the Sonny Bono Copyright Extension Act in the US and was highlighted in the 2003 Allen Consulting Group's Report in Australia. A number of the papers submitted to the Gowers Review also mention harmonization with the US as a worthy aim. In our view, claims as to the importance of harmonization should be treated with some caution. Firstly, as discussed below, there is some uncertainty as to the length of protection given to sound recordings in the US. Secondly, even those countries identified in the BPI Report as having longer periods of protection than the UK have not adopted identical terms of protection (see below). Notably, none of these terms is as long as the claimed US term of 95 years. Furthermore, we are wary of the hidden "ratcheting" effect of harmonization which results from the fact that harmonization is almost invariably upwards. Finally, it is important to note that term is only one aspect of copyright protection. For example, the UK has introduced a right of communication to the public in respect of sound recordings, or 'public performing rights',

whereas the US only recognizes public performing rights in relation to digital audio transmissions. The US also has a broad "fair use" defence to infringement, while in the UK the defences are confined to specific categories of use. Thus, UK copyright may be shorter in length than US copyright, but it is arguably larger in 'breadth'.

A third argument can be characterized as the 'cultural skew' argument – the idea that UK record companies and artists will increasingly target the US market, leading to a diminution of works that reflect and respond to the local culture. This is not an economic argument, as the value of having a domestic recording industry which reflects the background, beliefs and aspirations of the local population is hard to assess within any existing economic framework. Claims of cultural skew are based on the assumption that markets are targeted by reference not merely to market size but also to intellectual property right returns (both now and in the distant future).

The US market is the world's largest: in 2004 worth $12,153.4 million, compared to the UK market of $3508.7 million. This might produce a skew by itself, with British producers orienting the work and style to the US market. However, as we demonstrate in the section below on 'Balance of Trade', the relative insignificance of foreign repertoire in the US, as compared to the value of the UK market, suggests that the domestic market still has more to offer UK artists in terms of revenue[1]. With respect to the claim as to the incentive effect of IPRs, there are two points to note. First, as we shall discuss at greater length below, UK recordings in the US will receive the same protection as US works so there would be no obvious incentive for relocation. Second, as we have already noted, term is only one factor among several affecting the revenue derived from recording copyright. Comparing again to the US, it would appear that UK recording copyright is 'broader' than that in the US (the 'public performing rights' being especially noteworthy). Thus, it is not clear in which direction the 'skew' operates – that is, whether broader but shorter protection in the UK yields more than narrower, longer protection in the US[2].

Finally, an argument commonly raised *against* copyright extension points to the role that copyright can play in 'locking up' content. Such claims point to the evidence of authors' descendants who act to suppress uses of works of which they disapprove, such as the heirs of James Joyce and Samuel Beckett. Such arguments tie into issues of freedom of expression, although the latter are generally less relevant in the context of sound recordings. A similar complaint regarding long copyright terms points to the derivative nature of human creativity and development and argues that copyright can retard such development by restricting free access to works.

2. Legal Background

This project is concerned with the term of copyright in sound recordings. 'Copyright' is a set of exclusive rights arising automatically in favour of the author of certain types of intangible creations. In the United Kingdom, copyright is governed by the Copyright, Designs and Patents Act 1988. Although much of the detail of any country's copyright law is a matter of national sovereignty, UK copyright law is to a large degree constrained by European Union law and (to a lesser extent) by international arrangements which it is a party to. The most important of these are the Berne Convention on the Protection of Literary and Artistic Property, the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organisations 1961, the Geneva Convention for the Protection of Producers of Phonograms Against Unauthorised Duplication of their Phonograms 1971, the Agreement on Trade Relate Aspects of Intellectual Property Rights (TRIPs) and the WIPO Performances and Phonograms Treaty 1996.

Copyright and Performers' Rights

British copyright law confers rights on the authors (and their assignees) of a number of different types of intellectual creation which are listed exhaustively in section 1 of the 1988 Act. A number of different copyrights may exist simultaneously in a single sound recording. These may include musical copyright in the sounds produced, literary copyright in the lyrics or words spoken and a sound recording right in the recording itself. These rights may have the same or different owners. For example, the musical copyright will initially be owned by the composer, and the lyrics by the lyricist, but these will frequently be assigned to a publishing company. Copyright in a sound recording will initially vest in the 'producer', that is the legal person who made the arrangements necessary for its production: usually the record company.

Performers' rights, which are set out at Part II of the 1988 Act, will also arise and confer on performers the right to consent to exploitations of their performances (ss180–184). Performers therefore have rights in relation to recording and broadcasting, reproduction, distribution, rental and lending and making available. They also have a right to equitable remuneration for exploitation of sound recordings. Some of these rights can be owned by a person other than the performer. The recording right may be held by another person, under an "exclusive recording contract" (s185). The reproduction, distribution, rental, lending and making available rights may be assigned and licensed to third parties. The right to equitable remuneration may not be assigned, except to a collecting society (s182D).

Term of Copyright in Different Intellectual Productions Explained

The term of copyright protection in Member States of the European Union was harmonized by Council Directive 93/98/EEC of 29 October 1993 (as amended by Council directive 2001/29/ EC of 22 May 2001). This required Member States to adopt provisions so as to comply with the Directive by 1 July 1995. Copyright in literary and musical works last for a period of 70 years from the death of the author (or in the case of the co-authored works, 70 years from the last of the co authors to die) (Term Directive, article 1). Copyright in a sound recording last for 50 years from the end of the year in which it is made, unless the work has been released during that period, in which case it is 50 years from the end of the calendar year in which the recording was released (Term Directive, article 3(2); as amended by Information Society Directive 2001). Rights in performances last for 50 years from the end of the calendar year in which the performance took place, or if during that period a recording of the performance is released, for 50 years from the end of the calendar year in which the recording was released (Term Directive, article 3(1)). These terms are implemented in the UK in Copyright, Designs and Patents Act 1988, sections 12, 13A and 191 (as amended by the Duration of Copyright and Rights in Performances Regulation 1995 (SI 1995/3297) and the Copyright and Related Rights Regulations 2003 (SI 2003/2498)[3].

While most foreign works will frequently be protected under UK law without discrimination[4], importantly, the Council Directive requires Member states to apply a criteria of reciprocity to matters of duration. More specifically, article 7(2) states that the terms of protection specified in article 3 "shall also apply in the case of rightsholders who are not Community nationals, provided Member States grant them protection. However...the term of protection granted by Member States shall expire no later than the date of expiry of the protection granted in the country of which the rightholder is a national and may not exceed the term laid down in Article 3." Thus the UK and other EC Member States are required to conduct a comparison between the term of copyright under national/European law and the term operating in the country of origin of the work/recording. If the term is shorter in the UK than in the country of origin (as is the case with sound recordings originating in the US, for example), the UK term applies. If the term is shorter in the country of origin than in the UK, the UK will confer copyright only as long as the work continues to be protected in the country of origin.

Term of Copyright in Other Jurisdictions

The US Position

The structure of US copyright law is somewhat different to that in the UK. The Copyright Act 1976, 17 USC, confers copyright on the authors of any "original works of authorship fixed in any tangible medium of expression". Works of authorship are specified as including "musical works, including any accompanying words" and "sound recordings" (section 102). Performers are protected under section 1101 as regards certain limited acts[5].

The standard term for copyright in the US is life plus 70 years, a term introduced by the so-called Sony Bono Act in 1998[6]. Under it, copyright in a song (which is, under US law, a single "musical work" rather than two copyright works) will last for the author's life plus 70 years. However, in certain situations a term based on the author's life is replaced with a fixed term. For example, section 302(c) indicates that in the case of a "work made for hire", the copyright endures for a term of 95 years from the year of its first publication, or a term of 120 years from the year of its creation, whichever expires first.

Although it is commonly stated that the term for copyright in sound recordings is 95 years from release or 120 years from creation (whichever expires first), it is worth noting that the actual position is considerably more complex. In the first instance we need to distinguish between works already in copyright on January 1, 1978 and those protected by copyright thereafter.

The US did not grant federal copyright protection to sound recordings until 1972. A sound recording published between 1972 and 1 January 1978 would have been protected initially for the 1909 statutory term of 28 years, with a possible further renewal for 28 years. Works created after 1 January 1978 were protected for life plus 50 or 75 years (in the case of published works for hire). Existing works in copyright were granted the extra 19 years, so that the renewal term was 47 years (s.304 of 1976 Act, as enacted). The Sonny Bono Act of 1998 created the extended term of life plus 70 or ninety five years (for works for hire). For existing pre 1978 works, the 'renewal term' was rendered 67 years. Sound recordings published or created before 1972 may be protected under state law[7].

The position of sound recordings published after 1 January 1978 is also complex and the subject of some debate[8]. Under section 302(c), the 95-year term is the term applicable to 'works made for hire'. The doctrine applies to all works created by 'employees' and also to commissioned

works which fall within a statutory list and which the parties expressly agree in writing are to be treated as works made for hire: s. 101. This list includes collective works, compilations, audio visual works but not sound recordings[9]. Given that sound recordings created by bands in accordance with recording agreements with record companies are unlikely to be regarded as works created by 'employees', the work for hire doctrine will only apply if sound recordings can be shoe-horned into one of the statutory designations[10]. While it is possible that a record album might be regarded as a 'collective work', the stretching of the specified categories of works for hire seems to undermine the statutory protection for authors that the 1976 Act seemed intended to create.

If sound recordings are not regarded as "works made for hire", then the copyright term applicable in the US is the author's life plus 70 years (s. 302(a)). It is thus necessary to determine who is the author of the sound recording. Moreover, such copyright, though assigned, may be the subject of "termination" by the authors. Importantly, then, it may well be that in due course US courts will clarify that the effective beneficiaries of the copyright extensions effected by the Sony Bono Act are authors rather than transferees of copyright.

Copyright Term Outside the US

As already mentioned, various international treaties set minimum terms of protection for protected phonograms. The Rome Convention of 1961 has 83 contracting parties, including the UK, and Australia, but not the US or India. Article 14 of the Rome Convention sets a minimum term of 20 years from the end of the year in which the fixation was made. The Geneva Convention for the Protection of Producers of Phonograms (1971) has 75 contracting parties (including the UK, the US, Australia and India). This treaty leaves the setting of duration to national law, but requires that if this is a specific duration it be not less than 20 years from the end of the year in which the sounds embodied in the phonogram were first fixed or of the year in which the phonogram was first published. The WTO Agreement has 149 parties (again including the UK, US, Australia and India). Under the TRIPs agreement (which requires only that phonograms are protected against direct or indirect reproduction, and, to a certain extent commercial rental) the term provided is 50 years from the end of the year in which fixation took place. The WIPO Performances and Phonograms Treaty (1996) has 58 parties, including the US but not, as yet, the UK, Australia, Canada, Brazil or India. Article 17 of the WIPO Performances and Phonograms Treaty establishes a 50 year term to be computed from the end of the year in which the phonogram was published, or failing such publication 50 years from fixation of the phonogram. As regards term of protection of sound recordings, the 50 year term is thus established as the most widely

prevailing.

The BPI reports to the Gowers Committee on copyright terms which are longer than those offered in the European Union (where 25 states utilise the 50 year standard). Many of these longer terms are relatively new in the countries where they have been adopted. In several cases (Australia, Chile, Singapore), the 70 year term adopted follows from amending legislation to implement Free Trade Agreements with the Unites States. In this respect, the US-Chile Agreement of 2002 set the precedent by requiring that the term of copyright/related rights in phonograms be not less than 70 years from publication if such publication was within 50 years of fixation, or 70 years from fixation. Columbia, Guatemala, Honduras and Peru are also parties to US FTAs in the same terms. However, as has already been noted, there is little consistency even amongst those countries that use the 70 year term as to whether it applies from fixation (Brazil, Guatemala, Honduras) or publication (Australia, Chile, Ecuador, India, Peru, Singapore) or both (as in the FTAs).

Reciprocity

The question of the level of protection granted to UK works in foreign countries (the reciprocity issue) is discussed in section 6 of this survey.

Some Assumptions

Most of the economic analysis which forms the body of this report proceeds on the basis of a number of assumptions about how any such change would be effected.

Performers' Rights or Sound Recording Copyright

One assumption underpinning most of the analysis is that any change in copyright term will be applied to sound recording copyright rather than performers' rights in performances. This assumption seems to follow from the basic reason for revisiting the question of term: namely, that US and UK copyrights are out of line with one another. However, when considering the arguments for a change in the duration of protection for sound recordings, the Gowers Committee should think carefully about the relative merits of extending the term granted to performers and extending the protection granted to the creators of sound recordings. If the normative justification lies in the protection of performers/artists (rather than record companies), there may be something to be said in terms of transparency for increasing the term of performers' rights (rather than copyright in sound recordings).

The performers' rights to control reproduction and distribution of fixation would, in most circumstances, have been (or subsequently) be assigned to

record companies (see section 5 of this survey), who as assignees would be placed in a similar position to that which they would occupy had there been an increase in the term of copyright in sound recordings. If the Gowers Committee is interested in responding to the claims of performers that reform is needed so that they might continue to receive revenues (at least while they are alive), it might be worth considering providing performers with inalienable rights to remuneration rather than assignable property rights.

Property Rules and Liability Rules

A second assumption concerns the nature of the rights that would be conferred during any extended term: the operating assumption of this report (and most commentaries and submissions) is that the rights would be of the same nature as the rights conferred on copyright owners during the existing term. One should note that other approaches may be possible (and indeed Gowers consults specifically on some possibilities.) Amongst the various approaches, the most obvious would be to render any extended term subject to compulsory licensing: transforming the property right that copyright usually gives into a 'liability rule' – a right merely to remuneration for use of the recording.

There are two precedents for the use of compulsory licensing that are worth noting. The first (and most recent) is the compulsory licence provided for in Reg. 24 of the Duration of Copyright and rights in Performances Regulations 1995, SI 1995/3297. Under those Regulations, previously expired copyright was 'revived' in relation to certain works. Regulation 24 provides that in relation to any revived copyright 'any acts restricted by the copyright shall be treated as licensed by the copyright owner, subject only to the payment of such reasonable royalty or other remuneration as may be agreed or determined in default of agreement by the Copyright Tribunal.' The second precedent is to be found in the 1911 Act, which introduced the 'life plus 50' term into British law for the first time. Section 3 provided that after a period of 25 years following the authors death, reproductions of any published work of the author could be made if, after giving notice, the user paid a royalty of 10 per cent on the published price of the work. Moreover, section 4 of the 1911 provided that, if after an author's death the copyright owner refused to republish or perform in public a published work or to allow others to do so, the Privy Council might order the copyright holder to grant a licence permitting such acts 'on such terms and subject to such conditions as the Judicial Committee may think fit'.

The significance of rendering the extended rights subject to compulsory licensing is to ensure that copyright cannot be used to suppress works or make them available only at excessive prices. With compulsory licences, uses cannot be guaranteed to be exclusive and manufacturers and

distributors of copyrighted works would have to take into account the possibility of competition. It should be acknowledged that intellectual property rights holders (and their representatives) are usually scathing about the value of compulsory licensing mechanisms, which are typically represented as replacing market valuations with expensive and unsatisfactory bureaucratic substitutes[11]. Unfortunately, there is little empirical work examining how compulsory licences actually operate in practice.

Allocation of Extended Term

The third assumption which we wish to highlight is the assumption that any extended term of copyright will pass to the existing owner of copyright in the sound recording. When copyright was extended in the 1995 Regulations, Regulation 18 provided that the person who was copyright owner immediately before commencement was thereafter copyright owner of any extended copyright. Equally, the Information Society Regulation of 2003 which also dealt with the copyright term for sound recordings provided that "the person who is the owner of the copyright in a sound recording immediately before commencement is as from commencement the owner of any extended copyright in that sound recording." (Reg 36) Moreover, both Regulation 18 of the 1995 Regulations and Regulation 37 of the 2003 Regulations, expressly gave effect to any purported agreement to assign the extended copyright made before commencement. Not surprisingly, given these precedents, most people seem to assume that any extended term would go to the record companies rather than performers: either because the record company already owns the copyright, or because the performer will as a standard term of a recording agreement have purported to assign any extended term that might be created to the copyright holder.

While these assumptions are not without basis in recent precedent, the Gowers Committee may want to consider ways in which the initial allocation of any extended term can be made to provide benefit to performers and artists rather than record companies. Again, whether Gowers wishes to recommend this will depend on its appreciation of the various kinds of arguments put to it. If the Gowers Committee considers, as a matter of fairness (rather than economics), that performers should continue to benefit from a revenue stream (paid for by consumers) after 50 years, but is sceptical about the economic arguments for benefiting record companies at the expense of consumers, it may wish to consider carefully legislative precedents for protecting authors. One such precedent was the 1911 Act which substituted, for subsisting terms in pre-1912 works, longer terms of copyright and declared that prior transfers conveyed neither the "windfall" of copyrights for the additional duration of the new terms: nor that of newly instituted "mechanical" rights: Copyright Act 1911; see also C.D.P.A.,

Sched. 1, para. 28. Moreover, the Act created the so called 'reversionary copyright', according to which 25 years after the death of an author, the copyright would revert to his or her estate "notwithstanding any agreement to the contrary" by the author (Copyright Act 1911, section 5(2)). Drawing on this precedent (as well as termination rights under US copyright law)[12] a policy maker such as Gowers may wish to give further consideration to any empirical evidence as to the extent to which these kinds of legal devices actually operate to benefit creators (or their estates).

3. Theoretical Background

Introduction

This section provides an overview of the economic theory relating to copyright in general and term extension in particular. After introducing some basic conceptual apparatus (discount rates, the demand curve, producer and consumer surplus and deadweight loss) we discuss optimal copyright in the case of a single work before moving on to the aggregate level, which is the appropriate context in which to determine optimal copyright policy. After explaining the additional complexity that aggregation introduces we present Landes and Posner's (1989) formula for social welfare as a function of the level of copyright protection and use it to explain the basic copyright 'trade-off' between encouraging the production or new works and reducing the welfare derived from existing work.

We follow this with a 'results' section which forms the heart of this part of the report. Here the theory introduced in the previous three sections is used to derive results related to several specific issues including the implications of technological change, the relationship of maximal production to optimal production and analyses of various forms of term extension. The section ends with what we term a 'full equilibrium' analysis best suited to the case of an extension applied equally to existing and future work. Using a simple model of revenue from copyright-protected work, we establish a formula that expresses the welfare consequences of a term extension in terms of a set of key variables. Combined with empirical estimates for these variables obtained in later parts of this report, the formula will allow us to generate an estimate for the welfare consequences of the term extension under consideration by the Gowers Committee.

Having completed the main body of the theory, we then have several sections dealing with related, but more general, issues. There is a short item on transaction and administration costs, a discussion of opportunity costs which goes into to some detail to explain why a 'leave-it-to-the-market' approach cannot be used in the regulation of copyright (and intellectual property more generally), a pointer to the large literature on competition and efficiency and its relevance to the matter at hand and, finally, a dedicated section on 'stewardship' arguments such as those related to congestion externalities, maintenance incentives etc.

While every effort has been made to make the contents of this section comprehensible to the non-specialist, we note that in some parts a basic knowledge of economic theory and an acquaintance with simple algebra will undoubtedly be useful.

Present Value and the Discount Rate

All monetary amounts presented in this survey will be in the form of real present values. That is, all future income will be 'discounted' back to the present taking account of both inflation and the appropriate real interest rate. We need to discount income because a pound invested today yields more than a pound in a year's time. For example, if the interest rate is 7%, a pound invested today yields 1.07 pounds in a year's time. Thus one would only pay just over 93p today in order to receive a pound in a year's time (0.934 = 1/1.07). By discounting payments it is possible for us to simply and transparently compare different income streams stretching into the future.

Associated with any given discount *rate* is a discount *factor* which is the number that a future cash flow must be multiplied by to obtain the current present value (so in the previous example the discount rate was 7% and the discount factor was 0.934). The discount factor (d), is related to the discount rate (r), via d = 1/1+r.

The next question is to determine what discount rate should be chosen. This is important issue as the discount rate will have a large impact on the net present value of an income stream when it extends over a long period of time. To illustrate the following table lists the value of of 1 pound in 50 years time different discount rates:

Rate	**3%**	**5%**	**7%**	**10%**
Value Today	23p	9p	3p	0.9p

The following table summarizes the possible discount rates used in the literature.

Rate	Source
5% real	Liebowitz (2006) citing European Commission
12% nominal	PwC report from CAPM
5-10% real	Akerlof et al (2002)
10-20% nominal	Personal discount rates (wide variation) as summarized in Frederick et al 2002

One factor that accounts for some of the variation is whether the rate is risk-adjusted or not. When investing in projects which are uncertain one would expect to receive a higher rate or return to compensate for this risk.

This in turn means a higher discount rate. For the purposes of this survey we believe that a risk-adjusted real discount rate in the range of five to nine percent is reasonable.

Demand and the Basic Theory of Copyright

In economics the welfare (value) derived from a good, be it a car or a work of art, is the benefit derived by a user from its employment or enjoyment net of the costs of producing the good (the user benefit is often approximated in monetary terms by willingness-to-pay). For goods with an associated price, welfare may in turn be divided into consumer surplus (defined as the value to the user of the good net the price paid for it) and producer surplus (defined as the price minus the cost of producing the good – the seller's profit).

Turning to the case of a creative work we can represent willingness-to-pay in the form of a demand curve. Copyright is then naturally modelled as the standard monopoly found in all introductory economic textbooks[13]:

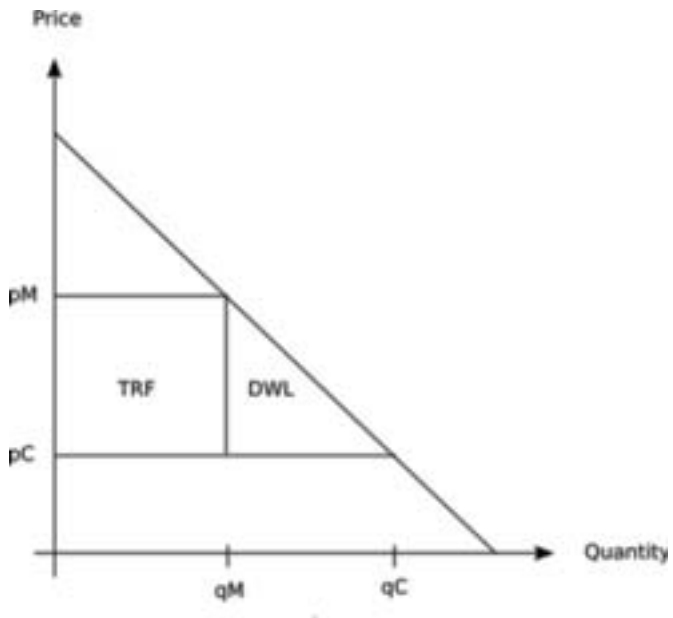

Figure 1: Simple linear demand model with monopoly pricing

In the absence of monopoly the 'competitive' price pC would prevail (this corresponds to the situation in which copyright is absent and anyone may reproduce the work freely). With a monopoly the monopolist can raise the price to the profit maximizing level pM. This results in a transfer from consumers to the monopolist (region TRF) and a deadweight loss (DWL). The deadweight loss arises from those consumers who would have purchased the good at the competitive price but do not do so at the monopoly price resulting in the loss to society of the welfare derived from

their use of the good.

Understanding the demand curve is particularly important for several reasons. Firstly, it is only from the demand curve for a good that we can infer social welfare (that is the benefit, or utility, derived from the use of a good net of of the cost of producing it). Secondly, the demand curve is the locus at which revenue, price, and quantity are tied together and it makes clear the way in which they are inter-related. In particular it demonstrates the basic identity that:

Welfare Under Competition = Welfare Under Monopoly + Deadweight Loss

This in turn shows that welfare under competition is greater than welfare under monopoly (by the size of the deadweight loss). Breaking it down further we have, denoting welfare by W, profits by Π, consumer surplus (i.e. the value accruing to consumers after paying for the good) by CS, deadweight loss by DWL and using superscript C and M to denote the situation under competition and monopoly respectively:

$$\begin{aligned} W^C &= \Pi^C + CS^C = (\Pi^C + TRF) + (CS^C - TRF) + DWL \\ &= \Pi^M + CS^M + DWL = W^M + DWL \end{aligned}$$

In particular this means that when a monopoly is granted (or extended):

1. All increases in profits come from consumer surplus
2. There is a net loss (the deadweight loss).

Imperfect Competition: Earning Rents without Exclusive Rights

As yet the possibility of earning rents in the **absence** of the grant of intellectual property rights has not been considered. The early *theory* of intellectual property tended to view the underlying good as perfectly non-rival with the immediate result that in the absence of special protection a creator would always lose money (price would be driven to marginal costs plus leaving no surplus to pay for the cost of producing the non-rival good). This approach has long had its critics starting with Plant (1934), Hurt and Schuchman (1966), Breyer (1972) and maturing in the recent work of Boldrin and Levine (2002), and Quah (2002).

These authors have all drawn attention to the variety of other ways innovators and creators can extract rents from their work, focusing particularly on the first mover advantage enjoyed by a creator. Some of these authors (such as Breyer) go so far as to suggest that the rents garnered by these other methods alone provide sufficient incentive for the adequate production of artistic works. While this is an interesting possibility, most researchers would agree that a complete absence of copyright is

probably a step too far (for example Boldrin and Levine estimate a non-zero optimal copyright term of seven years). Nevertheless it is important to remember that copyright may not be the only, or even the most important, factor stimulating creative production.

Optimal Copyright: The Case of a Single Work

Consider first a single work and let T be the level of protection (this could take many forms with the term of protection being the one with which we will be concerned). Then the expected revenue of a work is a function of the level of protection, $R = R(T)$, with revenue an increasing function of the level of protection.

Let W be the overall welfare derived from the work (this includes producer surplus i.e. revenue net of costs). Now:

Welfare = Revenue - Costs + Consumer Surplus

Recall that all increases in revenue come from consumer surplus and also entail deadweight loss. Hence we know that if we increase revenue by increasing protection, T, overall welfare is reduced.

Now suppose the work costs F to produce then we have the two possibilities:

1. $R(T) \geq F$ in which case the work is produced and society enjoys benefits of W(T) (welfare as a function of protection)
2. $R(T) < F$ in which case the work is not produced and society gains nothing

Optimal Copyright at the Aggregate Level

The previous section dealt with the case of a single work. Here we extend our analysis to the set of all possible works that could be produced: that is we perform an *aggregate* analysis[14]. This introduces several new factors:

1. Increasing the level of protection as well as increasing revenue for some works may also increase costs. This is because much creative work, directly or indirectly, reuses previous work.
2. Competition between works. In the static case with a single work this is implicitly captured by the demand curve. However, once we start considering multiple works the interaction between them must be taken into account. In particular it would seem reasonable to assume that as the number of works increases the increased competition reduces the revenue obtained from a given work.
3. Variation in production costs across works.
4. Variation in demand, and therefore welfare, across works.

A full analysis would build a model that took account of each of these in an explicit way[15]. However, this is a complex exercise which, to our knowledge, no-one has yet undertaken. Therefore rather than pursue that approach here we will proceed directly to the aggregate supply function – that is, the number of works produced (N). Allowing the supply function to depend on the level of protection, $N = N(T)$, and taking account of the above factors we would expect the supply function to have the following properties:

1. $N(0) > 0$. Some production occurs without any provision of protection.
2. $N'(0) > 0$. Supply is increasing in protection initially.
3. $N'' < 0$. There are diminishing returns to protection.
4. $lim_{T \to \infty} N'(T) < 0$. Eventually, increasing the level of protection reduces the supply of creative work. (cf. Landes and Posner 1989 p. 335 "So N will increase as z [the level of protection] increases, at least up to some level ... Beyond [that level] we assume that increases in the cost of expression to marginal authors will dominate, so that the number of works will begin to fall."

We note that it is possible to construct models in which any one of these properties fails to hold[16]. Nevertheless, these seem a reasonable set of conditions and, for example, assuming the following would be sufficient to obtain properties 3 and 4:

- Diminishing returns to increasing revenue
- Diminishing returns of revenue to increasing in the level of protection (this holds trivially when protection is equated with term)
- Production costs that are non-decreasing in the level of protection

Turning to aggregate welfare we will take a simple approach and assume that it can be expressed as[17]:

$$W = f(N)w - E(N, T)$$

Where w is 'gross' welfare per work ('gross' because costs are excluded), $f' > 0$, $f'' < 0$ (so f allows for the fact that welfare will differ across works with diminishing marginal utility as the number of works increases) and E is the total cost of producing works including administrative and enforcement costs. Note that gross welfare per work declines with the level of protection: $w'(T) < 0$ because of the deadweight loss (as discussed above) while expenditure is increasing in both the number of works and in the level of protection.

Maximizing welfare with respect to the level of protection, T, requires (partial

differentials are indicated by subscripts):

$$W_T = f_N N_T w + f(N) w_T - (E_N N_T + E_T) = 0$$

The first term here, $f_N N_T w$ is the 'gross' welfare gain from the creation of new works, the second term is the deadweight loss, while the third, bracketed term is the increase in costs divided into those associated with the production of new works (the first term) and those associated with the overall increase in protection (the second). On this basis the first term will be positive (at least when $N_T > 0$ i.e. the number of works produced is less than the maximum possible) and the second and third will negative and we have the classic welfare trade-off between more work and less value per work. Thus in words this can be rewritten as:

Gain in Welfare = Welfare from New Works - Decline in welfare from existing works (Deadweight Loss) - Extra Production and Administration Costs

Results

A Basic Property of Welfare Maximizing Level of Protection

One basic property of the welfare maximizing level of protection is that it is **below** the level that would maximize the output of creative works.

This is easily demonstrated using the formula just derived. Note first that the output of works will be maximized when the marginal increase in supply as a function of protection is zero ($N_T = 0$). Substituting this into the above equation for marginal welfare yields:

$$W_T = 0 + f(N) w_T - (E_N N_T + E_T)$$

As discussed above both the remaining terms are negative so at this point marginal welfare is declining as protection increases. Thus at the point when production of work is maximized increasing protection is reducing welfare. This implies that the optimal level of protection must be lower.

The Effect of Technological Changes

Technological changes can be classified into three types, those that affect the:

1. Production cost of the first copy
2. Production of 'originals' (i.e. authorised reproductions)
3. Production of 'copies' (i.e. non-authorised reproductions)

In the model presented here the first two cannot be distinguished so they

will be analysed together. It should also be kept in mind that in reality changes in all three types of cost are likely to be correlated. For example the move to a digital environment simultaneously reduces the cost of making a record (type 1), the cost of reproducing and distributing it (type 2) and the cost of copying by end-users (type 3).

Change in the production cost of 'originals'

The implications of a reduction, or increase, in the production costs for the level of protection are ambiguous. In the case of a reduction, creators are making more net profit per work (so protection on average needs to be lower), each work delivers more welfare (so protection should be higher) and deadweight loss is larger (so protection should be lower). At the same time the number of works increases which reduces the marginal benefits of protection. The overall result will depend on the relative magnitudes and as such will depend on the specification of the model and its parameters. Nevertheless there are some grounds for thinking that, in general, lower production costs necessitate lower protection and therefore a reduction in costs implies a decrease in the level of protection (and conversely – an increase in costs would imply an increase in protection).

Change in the production cost of 'copies'

Several authors have extended the single copy model (see above) to incorporate 'personal' copying by users (e.g. Novos and Waldman 1984, Johnson 1985). Doing so has two main effects. On the one hand, dead-weight loss is reduced because consumers who would not purchase from the monopolist make copies from 'originals'. On the other hand, because copying cannot be restricted just to those who would not purchase copying reduces the copyright owner's revenue and therefore the incentives to produce. The relative magnitude of these effects and the degree to which they are influenced by the level of protection (T) then determines the optimal policy ranging from allowing unrestricted copying by users to complete prohibition – as illustrated by Johnson who finds unrestricted copying optimal under some parameter values but not others.

A third factor in these analyses which has not yet been mentioned is the possibility that the reproduction technologies of users and monopolists differ. This is central, for example, to the two papers mentioned above, in particular Novos and Waldman's results derive entirely from assumptions about technology as they assume away the deadweight loss issue by postulating completely inelastic demand – all consumers value the good equally and differ only in their cost of copying.

Finally, if the level of copying is correlated with some observable characteristic (e.g. being an institution rather than an individual), then it is

possible for the monopolist to price discriminate and mitigate the impact on revenue. This possibility is studied most prominently by Liebowitz (1985) who provides empirical evidence that such price discrimination does, in fact, occur. On a different but analogous track Boldrin and Levine (2003) present a model in which an increase in the rate at which users can copy increases the returns to the original creator.

The implications of this literature with regard to a reduction in cost of making 'copies' are, once again, ambiguous. That said it would seem reasonable to suppose that, conversely to the case with the production cost of 'originals', a reduction in the cost of making 'copies' necessitates an *increase* in the level of protection.

We note that, in this case, 'protection' is best interpreted as referring to the level of enforcement or the extent of limitations and exceptions as these have a direct relation to the making of 'copies' – altering 'term', which is more distantly related, would not seem to be the best way to address the problem.

Retrospective Term Extensions

A retrospective extension only affects the revenue received from works *already in existence*. Thus, as Landes and Posner (1989) observe, retroactive extensions "can't affect the incentive to create new works, since a retroactive extension affects only the return on works already in existence ..." Later they add "Retroactive extensions do not enhance incentives to create expressive works, so if those incentives are the only benefits from copyright, such extensions will increase transaction and access costs without generating any offsetting value." (p. 220)

As a consequence formulating the welfare affects of a retrospective extension in the framework developed above is simple. The extension does not change the number of works that will be produced so $N'(T) = N_T = 0$. At the same time the affect on welfare is as above, $w'(T) = w_T < 0$, similarly for the costs of producing work which increase because of the reduction in the size of the public domain $E_T > 0$. Thus overall we have:

$$W_T = f_N \cdot 0 + f(N)w_T - (E_N \cdot 0 + E_T) = f(N)w_T - E_T < 0$$

That is, retrospective term extensions **reduce** social welfare. Thus, in this case, it would seem that basic theory alone is sufficient to provide strong, and unambiguous, guidance for policy-makers.

Nevertheless, certain arguments have been made to the effect that continued investment in creation requires the extension of the term for existing copyrights. For example, section 3.2 of the PwC study focuses on

the impact of the "loss" of revenues on investment by record companies in "A&R". "A&R" refers to "artists and repertoire", traditionally, the section of the music business concerned with discovering new talent and suitable material to be transformed into sound recordings[18]. According to the PwC study, A&R spending is currently 17% of revenue. On the assumption that this would remain constant, the term extension would produce extra revenue for investment in A&R: PwC suggests an additional 1–13.8 million pounds (p. 34).

Aware of the general view of economists on this issue, the PwC study recognises that this is speculative. It notes "(e)conomic theory suggests that, under conditions of perfect capital markets, record companies might not alter their level of investment in response to a rise in expected revenues" [p.34] and the report offers no reason to think that record companies do not in fact act in accordance with economic theory. In principle, investment decisions in new talent should be made without regard to profits available from existing investments. Even if the record industry does in fact invest in A&R in accordance with existing profit levels, this may simply reflect use of rule-of-thumb investment decisions developed in an environment in which investment is long term and profit signals are noisy. Furthermore, if one were to accept arguments based on imperfect capital markets for the credit constrained nature of the recording industry, these arguments would apply equally to all other sectors of the economy including those from whom income is displaced by the grant of a retrospective extension (for more on displacement and the related issue of the opportunity cost of capital see below).

We therefore see no reason to quarrel with the consensus of the profession on this issue which as summed up by Akerlof et al (2002)[19] who state categorically that (p. 8) "[retrospective] extension provides essentially no incentive to create new works. Once a work is created, additional compensation to the producer is simply a windfall."[20]

Prospective Term Extensions

Equating 'protection' with term, prospective copyright extensions fit neatly into the framework developed above. Unlike the case of retrospective extensions, theory alone provides no immediate guidance as to the effect of a change in the level of protection on welfare.

Nevertheless, by integrating the explicit model of term as it applies to an individual work into this aggregate framework we can obtain a richer picture that will prove valuable both in itself and for guiding the questions we ask of the empirical data.

When T is term, total present value of revenue, $R(T)$, is the aggregate of the

revenues in each period, $r(t)$, discounted back to the present:

$$R(T) = \sum_{t=0}^{t=T} d(t)r(t)$$

Where $r(t)$ is the revenue in period t and $d(t)$ is the discount factor to period t.

Suppose term is extended by k years to T+k (e.g. from 50 to 95 years). Let us suppose this increases the net present value of revenues by a fraction x. That is:

$$\frac{R(T+k)}{R(T)} - 1 = x$$

Next suppose that deadweight loss per work and net welfare under copyright per work bear a constant proportional relationship to revenue over time. Define $p(N)$ to be the average value of the ratio of welfare to revenue, $y(N)$ the marginal value of the ratio of welfare to revenue (i.e. the proportion for new works) and $q(N)$ the ratio of deadweight loss to revenue – all when the number of works is N.

Note that diminishing returns imply that the welfare for new works will be lower than for existing work so $y(N)$ will be less than $p(N)$.

Let the supply elasticity with respect to revenue be $s(N)$ (N is the number of works) so that the fractional increase in the number of new works created as a consequence of the term extension is $s(N(T))$ times x (the proportional increase in revenue).

Given our assumptions, we can express everything in terms of revenues. With a term of T welfare generated is $pR(\infty) + q(R(\infty) - R(T))$ for each of the $N(T)$ works created under that term.

With a term of T+k welfare generated for the N(T) works created under the shorter term is now: $pR(\infty) + q(R(\infty) - R(T+k))$ while there are $xs(N)$ new works each generating a fraction $y(N)$ of this welfare.

So the benefits from an extension come from the welfare generated by new works which can be broken down as number of new works times average welfare from new work. In terms of the previously defined variables this can be expressed as:

$$(xs(N) \cdot (y(N)R(T) + \text{small})) \cdot N(T) = xs(N)y(N)R(T) \cdot N(T)$$

While the costs come from the increased deadweight loss on the works which would be produced anyway:

$$\text{Costs} = xqR(T) \cdot N(T)$$

Comparing benefits to costs, a term extension improves welfare if and only if $s(N) \cdot y(N) > q$. One very important point to notice is that x, which measures the increase in the net present value of revenues has dropped out of the equation because it affects revenues and deadweight loss equally. This makes a contrast to that part of the literature on term extension which seeks to determine the size of any revenue increase. Here, the question is not the magnitude of revenue increases but instead focuses on the size of the deadweight loss in relation to the *proportional* increase in welfare from the creation of new works.

Full Equilibrium

While the previous calculation is valuable it is, to some extent incomplete for it implicitly assumes no past (and to some extent no future). All production takes place *now*, in the present – there are no existing works and no new works will be created in the future. It would be more illuminating to do a comparative analysis of equilibrium under the two different terms where production is ongoing. Furthermore this model is more appropriate for the case where extensions will be applied equally to existing and future work (as historically has always been the case)[21]. The difference between a 'full equilibrium' and 'one-shot' analysis (as used in the previous section) can be illustrated in a diagram.

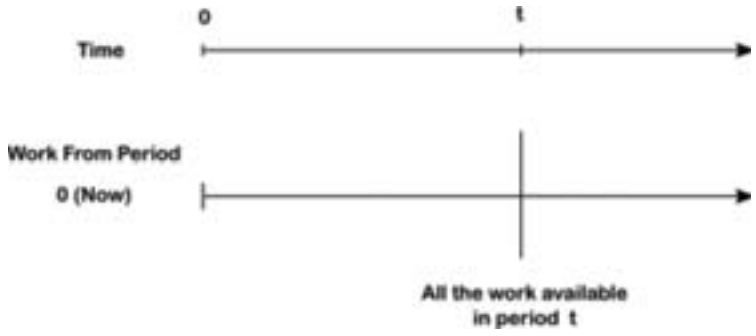

Figure 2: The 'One-shot' model as described above

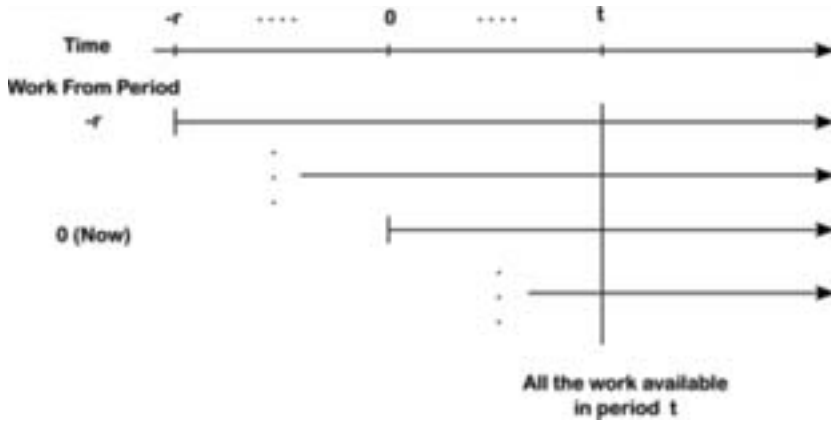

Figure 3: The 'Full Equilibrium' model as described above

To use the equilibrium approach to compare terms:

1. Determine future revenue and the discount rate
2. Estimate net present value of revenue for a producer
3. Estimate welfare and deadweight loss (in relation to revenue if possible)
4. Determine equilibrium supply in year t
5. Pick a basepoint year and calculate the net present value of welfare from all present and future work

Let us do an illustrative calculation. We shall reuse the notation developed above: p(N) and q(N) are the ratio of welfare and deadweight loss to revenue under copyright when the number of works is N. Let y(N) be the marginal ratio for welfare, i.e. welfare as a ratio of revenue for the most recent work created (so y(N) is declining in N). Let us also assume a specific form for the discount and income functions: for discounting the standard exponential (geometric) and for income a constant rate of a cultural depreciation whereby demand in the next period is a constant fraction of demand in the previous. Thus the net present value of revenue for a given work is:

$$R(T) = \Sigma_{i=0}^{i=T} d^i b^i r(0)$$

Where d is the (constant) discount factor, b is the 'cultural depreciation rate' and $r(0)$ is initial revenue. We shall assume for the time being that initial revenue is constant across time which means in turn that expected net present value of revenue for new works is constant over time and that the number of works created each year is also constant. For simplicity we will set initial revenue to 1 and so can leave $r(0)$ out of the following calculations (since we will be using proportions this will make no difference).

Overall revenue for all works in a given year (undiscounted) is constant and

is equal to the sum of revenue from all the vintages of work produced up until that moment:

$$\sum_{i=0}^{i=\infty} b^i N = \frac{N}{1-b}$$

Then total welfare per year with a term of T is:

$$p\frac{N(T)}{1-b} + qb^T\frac{N(T)}{1-b}$$

The second term here measures the gain when the deadweight loss disappears following the expiration of copyright , while the first measures the welfare if the copyright were maintained forever. Since welfare is constant over time, the total net present value of welfare is the above multiplied by a constant (1/1-d).

To work out the net benefit (or cost) of a term extension we take welfare under a term of T+k (where k is the length of the extension) and subtract from it welfare with a term of T to get:

$$\frac{1}{(1-b)(1-d)}((pN(T+k) - pN(T)) - q(N)(b^T N(T) - b^{T+k}N(T+k)))$$

Defining, as before, x as the percentage increase in revenue and $s(N)$ as the elasticity of supply with respect to revenue when the number of works is N. Then $xs(N)$ is the percentage increase in the number of works (and these new works produce revenue of $y(N)$). Thus pulling out a factor of N(T) we can re-express the net welfare change as:

$$\frac{N(T)}{(1-b)(1-d)}(y(N)s(N)x - q(N)b^T(1 - b^k))$$

The first term in the brackets is the increase in welfare from the production of new works ($y(N)s(N)x$). The second term gives the deadweight losses ($qb^T(1 - b^k)$). Now the proportional increase in revenue is easily calculated and can be shown to be approximately equal to $b^T d^T$. Making this approximation as well as that $(1 - b^k) \approx 1$ gives net welfare as:

$$\frac{N(T)b^T}{(1-b)(1-d)}(y(N)s(N)d^T - q(N))$$

Thus, a term extension increases welfare if and only if $y(N)s(N)d^T - q(N)$ is positive (to put it crudely: welfare from new works is greater than increase in average deadweight loss on all existing works). Combined with empirical values for these variables obtained in later parts of this report, the formula will allow us to generate an estimate for the welfare consequences of the term extension under consideration by the Gowers Committee (see Section 8).

It is interesting to note that incentives (and therefore production of new

work) are reduced over time by **both** cultural depreciation and discounting but deadweight losses only decline with cultural depreciation. As a consequence the rate of cultural depreciation is **not** relevant to determining the sign of the welfare change.

Administrative and Other Transaction Costs

For economists, all administrative and other transaction costs including those associated with enforcement (e.g. DRM), search (e.g. orphan works), and litigation are deadweight losses (it would have been preferable for the resources expended upon these activities to have been directed elsewhere). Empirical or theoretical studies of these particular issues are sparse but the limited evidence we have suggests they may be large. For example, in 2004 Microsoft paid out $440 million to settle an infringement suit related to DRM technology owned by Intertrust (which had itself been purchased by Sony and Philips for $453 million in 2003)[22]. Troll Covey (2005) provides detailed evidence on the cost of clearing copyright in an extensive portfolio of older work.

Opportunity Cost of Capital and the Possibility of Over-Production

It is important to remember that when resources (be they money or time) are spent on one activity it prevents their use elsewhere. The value of the activity forgeone is termed the 'opportunity cost'. As a society we would wish resources to be allocated in such as way as to maximize our welfare. This is clearly an extremely complex task and one of the great advantages of a market-based economy is that it decentralises the decision-making task while ensuring, in theory, that the resulting allocation is in some sense optimal – though it must be said under fairly stringent conditions which are unlikely to be met in reality. Nevertheless this result explains some of the attractiveness of a market-based system[23] for no 'central planner' is required to determine and validate each investment decision.

Crucial to the demonstration of the optimality of decentralised, market-based, decision-making is the requirement that the conditions which govern investment decisions (and utility) are all **marginal.** Consider then the grant of intellectual property rights in the form of a copyright or patent. As we have explained above, these have the effect of monopolies; their very purpose being to drive price and quantity away from their **marginal** values. Thus in the case of these rights the onus for determining their optimal level must fall squarely on the policy-maker who is obliged to take account of the opportunity cost issue and the potential for *over*-investment in the creation of copyrighted works[24]. To illustrate the problem consider the following example.

Suppose 200 pounds of funds are available and there are two projects each of which have the same fixed cost of 200 pounds (so only one project can be funded). The projects could be anything, a road, new housing, a new restaurant, a film, a recording, etc. In order to take a situation close to hand, let us suppose one project is a film and the other is a restaurant. Let us suppose, with the initial level of protection, that the revenue from the restaurant is exactly 200 pounds and the revenue for the film is less than 200 pounds, say 150 pounds. Let us also assume that the consumer welfare generated by the restaurant is 200 pounds and that by the film is also 200 pounds. Then:

Profits from restaurant = 0 Profits from film = -50 pounds

Welfare from restaurant = Profits + Consumer Welfare = 0 + 200 = 200 pounds
Welfare from film = Profits + Consumer Welfare = -50 + 200 = 150 pounds

Thus, both projects yield net positive welfare. However the restaurant yields more and since we have only 200 pounds the best thing for society is that should invest it in the restaurant. And this is what will occur: an investor will choose to invest in the restaurant since profits are higher than from the film.

Now suppose we increase the level of copyright protection. This does not affect the restaurant at all but now the film yields revenue of 250 pounds and consumer welfare of 25 pounds (there has been a transfer of 150 pounds and deadweight loss of 25 pounds). So:

Profits from restaurant = zero
Profits from film = 50 pounds

Welfare from restaurant = Profits + Consumer Welfare = 0 + 200 = 200 pounds
Welfare from film = Profits + Consumer Welfare = 50 + 25 = 75 pounds

Profits are now higher for the film than the restaurant so the investor will invest in the film and not in the restaurant. This means that instead of society receiving welfare of 200 pounds, society receives only 75 pounds. Thus, while increasing protection has increased investment in creative work (films) it has, as a result, halved welfare.

This has important implications for determining the optimal level of intellectual property rights since it means that 'raw' welfare (based on a simple partial equilibrium analysis) is not an accurate measure of cost/benefits but must be adjusted by subtracting the welfare which would have been generated in the next best employment of the resources which were used in the creation of the creative work.

Competition and Efficiency

In the traditional neoclassical models of production, information is perfect and the technology commonly known. This means that it does not matter for technological efficiency whether production is organized by a single monopolist, a competitive market or even a central planner – all firms will use the best (i.e. cheapest) technology available and have access to the same set of capabilities.

This assumption has important implications for it excludes from consideration many forms of potential inefficiency – forms of inefficiency that competitive markets are designed to address[25]. For example, multiple competing firms allow shareholders to use 'yardstick competition' to address the principal agent problems which otherwise hinder effective monitoring. Even more importantly if capabilities, be they in general management or the effective use of a particular technology, are not portable across firms then economic development becomes evolutionary in nature with competition playing the role in natural selection (Nelson and Winter 1982, Jovanovic 1982). In this case the prime cost of monopoly need not arise from allocative inefficiency (i.e. high prices/low quantities and the incorrect allocation of resources) but in poor technology choices and 'lazy' behaviour by firms (or rather management).

A good example of the relevance of these questions to the matter is the data provided by Brooks (2005). In this research, conducted for the Library of Congress, Brooks shows that the prime reissuers of historical recordings are non-copyright owners. According to standard neoclassical theory this should be impossible as copyright owners clearly have larger incentives to reissue work than non-copyright owners. However, if we allow that 'specialists' may have access to market knowledge and expertise not available to copyright owners as well as the role of transaction costs in hindering 'Coasian' bargaining then the paradox disappears.

'Stewardship' Arguments

There are a variety of other arguments put forward to support extension which could be collectively classified under the title of 'stewardship'. These include arguments regarding 'congestion' externalities (Landes and Posner 2003, Liebowitz and Margolis 2005, Liebowitz 2006) and 'maintenance' and 'dissemination' incentives (Liebowitz 2006). All of these have in common the feature that having a single steward (the owner of the copyright) will help prevent deleterious activities such as over-use (congestion externalities), lack of maintenance or inadequate distribution.

As various authors (Lemley 2004, Lemley 2005, Karjala 2006, Heald 2006)

point out, these arguments sit very uneasily with existing economic theory. All of the stewardship arguments are, in essence, "ex post justifications" for intellectual property and as such apply equally to normal, rival, goods as to non-rival ones. Thus, stripped to their fundamentals, the stewardship arguments all share the implicit assumption that it is better for economic activity (not just that related to IP) to be organized by a single central planner (the monopolist) rather than by the market. This is not a view that would find much support in modern economic thought[26].

As Lemley (2004) points out regarding created works, there is no justification for treating those who invest in the marketing and exploitation of creative works any differently from a person who invests in the marketing and exploitation of any other type of good (his example is paper clips). Moreover, Lemley argues that empirical evidence reveals that there is greater exploitation of public domain works than those still protected by copyright. He could not be more clear: "[n]ot only is the argument that monopoly increases distribution counterintuitive, it is empirically incorrect."[27] [p.137] Lemley also examines a variant of this argument, that copyright is required as an incentive to invest in improvements (such as digitisation and preservation). While accepting that some incentive may be necessary to make improvements, Lemley queries whether this should be done by giving increased rights to the creator (or his/her assignee): the existing structures of intellectual property law suggest any such additional protection should be given to the improver (p. 140)[28].

Arguments relating to over-use or 'congestion externalities', seem equally problematic (see particularly Lemley 2005 and Karjala 2006). In standard theory goods protected by copyright (and other forms of IP) are non-rival and thus, in contrast to the traditional tragedy of the commons, once created, can only be under-used not over-used. With 'congestion externalities' this is no longer the case: my use of a good affects your enjoyment of it (the externality) and so central coordination is needed to prevent over-use. This has certain troubling implications for if this is true of copyright-protected goods why not of all others? On this basis since person A's consumption of oranges might reduce person's B enjoyment of them we need to grant a monopoly to a firm so that it can ensure A does not 'over-use' oranges. Thus, even if we were to accept the reality of these 'externalities' – for which there is, as yet, no evidence and which would have a profound effects on analysis of almost every area of the economy – the implications would be by no means straightforward: should we grant monopolies or simply engage in wholesale nationalisation? In which industries should monopolies be granted? Should users who produce large 'externalities' be taxed or otherwise prohibited from engaging in consumption?

4. Benefits to the Record Companies

In this section we consider the revenues that would accrue to record companies under a term extension. The general implications of these revenue increases in terms of incentives to produce new work, the possible costs to other parties, and the overall impact on welfare are left to be considered fully in other sections. Here we focus solely on the basic question of what extra revenues record companies would receive.

The analysis of extension will be divided into two parts: the consideration of a retrospective extension and the consideration of a prospective one. This is done primarily to facilitate our later analysis.

Extension Scenarios

In line with the various submissions we shall consider two possible extensions: one of 20 years and one of 45 years.

Retrospective

The only work to explicitly consider revenue income from retrospective extensions was the work of PwC on behalf of the BPI. Their work (pp. 17–33) using data provided by a variety of record companies (3 majors and 4 independents accounting for 71% of the UK market) and the PPL, estimate the extra income received under various scenarios.

The calculation itself is simple and proceeds as follows. Consider a recording produced in year X (say, 1960), then the copyright in the recording currently expires in year X+50 (2010). Under a change in copyright to a term of 70 years this would expire in year X+70 (2030). If expected revenue in year X+51, ..., X+70 both with and without copyright were known, we could discount the difference back to the present to get the net present value of a retrospective term extension for this work.

Thus the crucial question is to estimate expected revenue from a given existing work, or group of works (for example all works produced in a given year), at various times in the future *with and without copyright*.

PwC consider three possible three types of income source:

1. Income from music sales
2. Income from licence fees
3. PPL income

For each of these they use historical and current data to fit a standard depreciation model for revenue under copyright of the form:

$$r(t) = b^t$$

Where (reusing notation from the section on theory) $r(t)$ is (undiscounted) revenue in year t and b is the depreciation rate (which we will frequently refer to as the 'cultural' depreciation rate).

Based on the data they have they estimate values for b of:

1. Music sales: 0.97 (-3%) for majors and (0.8) (-20%) for independents
2. Licence fees: 0.92 (-8%) to 0.87 (-13%)
3. PPL income: 0.902 (-9.8%) on average

Finally they make the following assumptions about income without copyright (p. 24):

1. Income from music sales either a) complete loss of market share b) market share halves on a year to year basis[29]
2. Income from licence fees: complete loss
3. PPL income: complete loss

Given a revenue function for a particular regime (50/70/95 year copyright) it is then a trivial matter to calculate total revenue. Following notation adopted in the overview of economic theory we will use R(T) to denote total revenue when copyright term is T. Letting d be the discount factor total revenue is then:

$$R(T) = \Sigma_{i=1}^{T} d^t r(t) = \Sigma_{i=1}^{T} d^t b^t r(0)$$

Using this equation and their maximal assumptions of loss (100% for all types) PwC estimate (p.31) a net present value of a 20 year extension for revenue over the next 50 years at approximately 156 million pounds. Without some context this means little but helpfully PwC quote this as a percentage of the net present value of revenue from existing recordings *without* extension: 1.8%. For a 45 year extension the figures are (p.27) 163 million pounds and 1.9%. **Thus, according to the PwC report, retrospective term extensions will deliver a maximum 1.9% increase in the present value of revenue from existing recordings.** To put this in monetary terms: under the current regime of 50 years the recording industry will earn revenue of approximately 8.5 billion pounds from existing recordings while with the extension they will earn 8.65 billion pounds (current total annual sales are approximately 2 billion pounds).

One final point must be addressed, namely whether these gains from an extension, at least where they relate to sales, are simply at the expense of other record companies. PwC's report appears to consider this the prime means by which current copyright-holders sales will be eroded once a

recording goes into the public domain: "...record companies and performers will therefore experience a loss of income ... resulting from: [A] loss in music sales from record companies to public domain specialists" (p.3). If this is the case the overall gain to the recording industry in this department is zero since all a term extension will be doing is shifting revenue and profits from one set of producers to another. As no evidence is provided by PwC or by any other author on this point we will proceed using the estimate of gains just derived.

Prospective

Prospective extensions are evaluated in a very similar manner, the only difference being that we consider the impact of an extension on future revenues in relation to new recordings rather than existing ones. Again the central issue is estimating what revenue generated by a recording will be ten, 20, 50 and even 95 years after its release. The obvious approach is to use historical data and then project that into the future (analogously to PwC's work with respect to existing recordings). Of course one must be wary of a simplistic extrapolation of historical trends especially when the time scales are so large but it is nevertheless a worthwhile starting point.

In addition to doing our own calculations based on PwC's data, we shall also consider those presented in the report prepared on behalf of the IFPI by Liebowitz (Liebowitz 2006). Liebowitz first points out that, due to overall market growth, a small *current* share of sales does not necessarily mean that current sales of a work are small relative to their original levels. To see this in the simplest terms, imagine that sales of a given record (or given year) are constant over time but the market doubles in size. Then the share of those records in total sales will have halved. Various calculations are then performed in an attempt to work out for *historical* recordings current sales as a percentage of original sales (Table 6, p.15). Finally, using this data Liebowitz (p.16) makes his core assumption on path of future revenue, namely, that after staying at their initial level for five years "sales drop to approximately 25% of their initial level and continue at that rate [indefinitely]." Using this estimate for r(t) Liebowitz then presents in Table 7 (p.16) estimates for percentage revenue gains under a 45 year extension under various discount rates (rather unusually for an economist Liebowitz includes a no-discount case alongside the discounted values). Selecting the column using his preferred discount rate of 5% (p.12) according to Liebowitz a 45 year term extension would increase revenues by 5.64% (the results are, as is to be expected, sensitive to the discount rate used. Adopting the rate of 7% used by Akerlof et al. but using Liebowitiz's revenue projections yields a percentage increase of 2.2%, a little under half that with a 5% discount rate).

The immediate difficulty with regard to the calculations presented by

Liebowitz is that they do not accord with the figures presented in the PwC report. Specifically PwC adopt an exponential depreciation model for revenue and use a discount rate of 12% (nominal). To illustrate the difference running the same calculations as Liebowitz but using the PwC figures of a 9% depreciation rate and an 9% real discount rate (assuming 3% inflation) yields a percentage increase in the present value of revenues of 0.03% which is vanishingly small (while a 5% depreciation rate and a 7% real discount rate in the same calculation yields a percentage increase of 0.47%). The following table covers a full range of scenarios suggested by the PwC model:

Scenario \ Discount Rate	3%	5%	7%	9%
Depreciation of 3%	6.84	2.85	1.21	0.53
Depreciation of 5%	2.65	1.11	0.47	0.21
Depreciation of 7%	1.01	0.43	0.18	0.08
Depreciation of 9%	0.38	0.16	0.07	0.03

Estimated Percentage Increase in Net Present Value of Revenue

Taken together these results suggest that even with fairly generous estimates of future income levels and discount rates the percentage increase in total present value of revenue to record companies are likely to be quite small ranging from a low of a few fractions of a percent to a high of 6% (Liebowitz above). **Given the likely range of discount rates (5–9%) we believe that values at the lower end of this spectrum (1% or lower) would be reasonable estimate**[30].

5. Benefits to Performers

One question of importance to Gowers is who will benefit from a copyright extension, and to what extent. More particularly, to what extent will performers rather than record companies (and those who invest in record companies) benefit? Many commentaries mention that performers stand to benefit, but unfortunately little empirical work has been done on this issue. The PwC Report, for example, indicates that while performers obtain 50% of public performance income (which includes income from broadcasting), little can be said as to the extent to which performers would benefit from revenue gained by sales of records and CDs. The PwC Report explains that this is because individual contracts between artists and record companies vary, so it is not possible to generalise. The BPI's submission (p. 10–11) also indicates the "greater variety of contractual arrangements between artists and record companies...than ever before." While this is true, it may well be possible to provide some general indication of the extent to which performers are likely to benefit.

In a typical recording agreement the record company will demand absolute ownership of copyright. Such agreements also usually provide that copyright is assigned for the full period including renewals, revivals, reversions and extensions[31]. The effect is that any extension of copyright will prima facie benefit the record company, who is the copyright owner. It cannot be assumed that there would be additional benefits (over and above those provided for in the contract), because the standard recording agreement has anticipated the possibility of an extension, and covered the issue as to who would benefit from such an extension expressly. (There will be some exceptions, where the artist has a lot of bargaining power and thus may manage to retain a share of the copyright.)

This means that a mere extension of the copyright term could only benefit most performers indirectly, according to the terms of the recording agreement. In this regard, it is well known that the terms of any agreement as to royalties will vary from one agreement to the next, both as to the level of royalty and its basis (retail price, published dealer price, percentage of sales, level of deduction etc). Empirical work in this area is difficult, because most agreements remain confidential as between the parties.

Nevertheless, the CRS Report for Congress, Copyright Term Extension: Estimating the Economic Values (May 11, 1998) (p.13) prepared by Edward Rappaport puts performers' share at 9% of retail sales and the producers share at 3%. Other commentators suggest similar figures[32]. Although we agree that existing contractual arrangements are increasingly varied, we note that the terms according to which performers' royalties on extended copyrights are likely to be computed in the short term are probably based

on recording agreements that are now of some antiquity. While some such agreements may have been subsequently renegotiated, it is worth noting that typical royalty rates given to artists in previous eras were lower than those offered today[33]. That said, we note that EMI systematically reviews old contracts and provides a "copyright royalty uplift" unilaterally so that rates correspond with rates that are common today (EMI submission, p. 26).

Taken together we believe this establishes a range of 10–20% for 'gross' royalties. The next step is to obtain the corresponding 'net' levels, that is royalties net of the standard deductions. There is less evidence in this on the literature but we feel a figure of 5% for deductions is reasonable. For example, Krasilovsky and Shemel estimate that an initial 12% gross royalty after deductions is reduced to 6% (including the producer's royalty)[34].

Using these figures we arrive at the figure of 5–15% for a net royalty rate for performers. Combining this with the maximum revenues predicted in the PwC report, we estimate that a rough upper bound on the net present value to performers of a retrospective extension is: 10–26 million pounds[35] corresponding to a percentage increase of around 1.9%. To put this in perspective: assuming a middle-range estimate of a 10% royalty, under the current term performers would be receiving around 857 million pounds in present value terms while with a 45 year extension they will receive 873 million pounds. We note that in reality the distribution of this income will be highly skewed with a relatively small number of performers of successful older works being the major gainers from any term extension.

Turning to the prospective extensions the situation is much the same. The expected increase in performers' revenue is exactly equal to that for the recording industry as a whole. In the previous section we put this at around 1% or lower. However there are several factors which mean this level should be reduced in the case for performers. First is the fact that individual discount rates are usually higher than those of firms or society as a whole. Second, as already mentioned, the distribution of income is highly skewed with most income going to a relatively small number of successful artists which means that the risk-adjusted discount rate will be higher (because risk is greater).

6. Balance of Trade Arguments

The question of extending copyright term for sound recordings can also be examined from a macro-economic perspective by asking whether such an extension would benefit the UK in terms of revenue flows. This was a factor that underpinned the US increase of the copyright term in the Sonny Bono Act[36]. None of the literature deals directly with this issue in relation to the UK. Nevertheless, a few observations may be helpful.

The 'balance of trade' argument is that if the UK increases its copyright term, this will increase net income from overseas. This argument depends of two assumptions. The first is that increasing the domestic term is a condition which must be met in order for the UK to be able to benefit from extended copyright in foreign territories (the 'reciprocity assumption'). The second is that Britain is a 'net exporter' of copyright-related works, so that extended copyrights increase (or at least) maintain that advantage (the 'net exporter' assumption).

The Reciprocity Assumption

The 'reciprocity assumption' is the assumption that access to extended copyright terms in foreign countries is only available if the UK extends its term to the same level. According to the Berne Convention on Literary and Artistic works (which applies to literary and musical works, but not sound recordings), members of the Berne Union must grant authors a minimum copyright term of life plus 50 years. Where countries go beyond that minimum, the Treaty allows members to grant the extended term on the basis of reciprocity or comparison of terms: that is, such countries need only give their extended term of protection to works where the country of origin of the work gives a comparable extended term: article 7(8)[37].

According to the BPI's submission to the Gowers Committee, the following countries give terms which are potentially longer than the UK (and European) term of 50 years: Australia (70 years), Singapore (70 years), Mexico (75 years), Chile (70 years), Peru (70 years), Brazil (70 years), Ecuador (70 years), Columbia (80 years), Honduras (75 years), Guatemala (75 years), Turkey (70 years) and India (60 years).

In order to assess whether it is in the UK's interest to increase its copyright term so as to access these increased grants of exclusivity, it is necessary to determine whether these grants are in fact conditional on UK action. This is a question of local law, which in the time available we have not been able to investigate for all the countries. However, we have done so for some of the major export markets, including Australia and the US.

UK copyright owners already benefit from the extended terms offered by the US. According to US law a foreign work gains the same term as a comparable work originating in the US[38]. Changes in British law would not now affect the term granted to British phonograms[39]. Similarly, in Australia UK copyright owners receive the same length of protection as Australian owners of sound recordings (70 years from publication). Equivalent protection is also given to a sound recording incorporating a performance given in the UK, if the person seeking protection is both a maker of the recording and a performer in the performance[40].

India applies comparison of terms in relation to sound recordings of foreign origin[41]. It appears that Peru, Colombia, Ecuador, Brazil, Mexico and Chile give national treatment. Honduras and Guatemala may require reciprocity, but it is not clear whether this is for related rights as well as authors' rights.

The 'Net Exporter' Assumption

The second assumption that needs to be scrutinised when assessing whether it is in the United Kingdom's trade interests to increase copyright term domestically in order to benefit from extended copyrights elsewhere is the assumption that Britain is a net exporter of sound recordings (by value). It is certainly a widely-held assumption that Britain has a thriving record industry. Indeed the DCMS website claims a global market share for the UK of between 10 and 15%. The BPI submission states that "In 2004, the UK sector showed a trade surplus of 83.4 million pounds, earning 238.9 million pounds in export income."

The IFPI's statistical survey, 'The Record Industry in Numbers' (2005), however, should provide some pause for thought. In 2004, the US comprised the biggest market, then some US $12,153 million. Of that, international repertoire comprised a mere 5%[42]. In contrast, while the UK market was $3,508.7 million, international repertoire made up 43%. While the UK buys marginally more domestic than foreign material, the UK is a substantial importer of sound recordings: combining these figures suggests that the UK bought $1508.7 million of foreign recordings, whereas the US only imported $607.67 million. The calculations involved in deciding whether to extend copyright term in sound recordings in order to benefit from revenues in foreign countries need therefore to take account of this substantial level of import[43].

Conclusion

From the above it is clear that at least 13 countries provide a longer term of copyright for sound recordings than the UK. Even though the sales in the UK include 43% of foreign origin, it would be in the national interest to

increase the copyright term in the UK if, as a result of that increase, British copyright owners were thereby enabled to benefit from longer foreign terms in countries which account for equivalent markets (by value).

As noted, in 2004 international repertoire accounted for: 5% of US sales; 69% of the Australian sales; 55% of Mexican sales; 70% of Chile's sales; 98% of Ecuador's sales; 24% of Brazil's sales; 67% of Columbia's sales; 98% of Central American (which includes Guatemala and Honduras) sales; 6% of Turkey's sales, 72% of Singapore's sales and 10% of sales in India. By far the most significant markets for international repertoire in terms of value were the US ($607 m) and Australia ($494 m). In neither case would increasing the term of copyright in the UK affect the ability of UK copyright owners to access the longer term in those markets, as neither country applies 'comparison of terms.' If 'international repertoire' (which is not defined in the IFPI document) is treated as a rough proxy for sales of recorded music of foreign origin, the cumulative value of sales of non-domestic repertoire (in 2004) in Singapore, Mexico, Chile, Peru[44], Brazil, Ecuador, Columbia, Central America, Turkey and India was approximately $431 million. Only India, Honduras and Guatemala apply 'comparison of terms' and if we (generously) assume that British recordings account for half the international repertoire, the trade benefit from an increase in the copyright term is unlikely to be substantial (some portion of $17 million). Given that in 2004 the UK bought $1508.74 million of foreign recordings, increasing copyright term at home from 50 to 70 or 95 years is likely to have a disproportionate, negative effect, on balance of trade[45].

7. Costs to consumers and other users

As discussed previously in the section entitled 'Theoretical Background', the literature sees two main effects of extensions on consumers and other users. The first effect is that extensions increase prices leading to both a deadweight loss and a transfer from consumers to producers. The second effect is that new work may be produced as a result of extension from which consumers derive benefit. The impact of extensions on the production of recordings will be analysed in the next section of this paper so here we will focus here purely on the first item related to costs. Implicitly, this means we consider consumer costs only in relation to works that would exist without a term extension.

Before proceeding to any empirical analysis recall that we have the following, fundamental identity, relating the producer revenue, consumer surplus and deadweight loss associated with a copyrighted work (remember that we are dealing with to work which would be created with or without the term extension):

Producer Revenue + Consumer Surplus + Deadweight Loss = A Constant

In particular this means that when term is increased:

1. All increases in revenues come from consumer surplus
2. There is a net loss (the deadweight loss)

It should be emphasised that unlike much of the other theoretical work this result is not dependent on a model but derives from a basic accounting identity. When a music company or artist earns more because of a term extension that money must come from somewhere. Crudely, there are only two possibilities. On the one hand, the money came from some other firm, perhaps the "public domain specialist", who, in the absence of a term extension, would have been able to enter the market for as a seller of the recording. On the other hand, the money came from end-users who without a term extension would have been the recipients of lower prices.

Theory inclines us towards the second possibility: greater competition to supply a recording once it enters the public domain should operate to drive down prices, transferring value from producers to consumers. However, it is possible that some rents may accrue to other producers especially those operating in 'thin' markets with low demand. We will return to this question of the impact of copyright (or, conversely, the expiry of copyright) on price in an appendix to this section. However, for the time being, note that if the benefits of copyright expiry do not accrue to consumers, they must have gone to another party within the music industry. Thus, by relating consumer

losses from term extension to music industry gains, we can sidestep the 'price' question entirely by reformulating the above identify in the following form:

Consumer losses = Music Industry Gain + Deadweight Loss

Hence to gauge the level of consumer losses, we need only to determine music industry gains and deadweight losses[46]. This formulation therefore allows us to reuse the previous work on music industry gains as well as making clear the relationship between losses and gains (thus if one were to decide that figures for losses from an extension were too high this would imply that figures for gains from an extension were also too high). Given our existing estimates for gains, we shall focus on the question of deadweight losses.

The first point to note is the dearth of available evidence. There are, however, a few estimates. First, and most relevant to the case at hand, is Rob and Waldfogel (2004). In order to investigate the effect of file-sharing on music purchases, they conducted a survey of students at the University of Pennsylvania which allowed them to investigate willingness to pay. Based on their sample, they find a consumer welfare gain of $70 consisting of $25 transfer and $45 from a reduction in deadweight loss, all on original sales of $126 per person. This estimates a lower bound for deadweight loss, as a proportion of sales at approximately one third (note that this is a lower bound: deadweight loss could be higher). As the authors emphasize, their sample is not representative but given its basis in individual-level data and direct relation to the music industry, it is an invaluable starting point.

A second piece of evidence is provided by the work of Ghose et al (2005). They estimate social welfare gains from the development of the online second-hand book market focusing on the case of Amazon. They find that "... only 16% of used book sales at Amazon cannibalize new book purchases. The remaining 84% of used book sales apparently would not have occurred at Amazon new book prices. Further, our estimates suggest that this increase in book readership from Amazon used book marketplace increases consumer surplus by approximately $67.6 million annually. This increase in consumer surplus, together with an estimated $45.3 million loss in publisher welfare and a $63.2 million increase in Amazon profits, leads to an increase in total welfare to society by approximately $85.5 million annually from the introduction of used book markets at Amazon." This final figure is exactly a measure of deadweight loss, since it derives from the purchases of consumers who would not have purchased at "new book prices". Overall, this implies a deadweight loss equal to approximately twice existing producer gains[47].

Finally, we come to Chaudhuri et al (2006). This paper deals with the effect

of the introduction of patents on the quinolone class of pharmaceuticals in India. The authors estimate overall consumer losses of $255 million, losses to domestic producers of $50 million and gains to foreign producers (the owners of the patents) of $19.6 million. Thus deadweight loss is approximately **twenty** times producer gains (305-19.6/19.6).

Taken together this suggests that using a ratio of deadweight loss to revenue of between a quarter and two would be reasonable though given the paucity of existing evidence these figure must be considered highly tentative. Using these values, costs to consumers can be put at around one and a quarter to three times producer gains[48]. Taking the upper bounds for producer gains determined in previous sections, this implies **consumer costs of between 240 and 480 million pounds from retrospective term extensions**[49].

Appendix: Copyright and Price

Section 4.1 of the PwC report prepared on behalf of the BPI details the results of a pricing survey conducted in order to investigate whether there is an observable difference between the price of copyrighted and public domain recordings. They "obtained a sample of 129 albums recorded in the period 1950–1958 from the Muze database and from www.fiftiesweb.com ... [chosen so that] the share of in-copyright [was] approximately equal." [p. 44] Obtaining prices from a variety of sources, they do not find any statistically significant differences in price (p.49)[50].

Meanwhile, Heald (2006) studies bestselling books from the US. He compares 334 books from the period 1913–1932 examining their availability (in print or not), how many editions of a given work are available and the average cost. By picking bestsellers chronologically close in time and tracking them over the period in which they enter the public domain, Heald finds that on average public domain books have on average 5.2 (6.2 including ebooks) editions while copyrighted books have an average of 3.2. Turning to a subset of especially durable (popular) works, Heald provides a price comparison, finding that 'durable' public domain books have an average lowest cost of $3.85 while copyrighted books have an average lowest cost of $8.05 (restricting to well-known major publishers gives $5.80 and $8.90 respectively). Thus, at least in relation to books, Heald provides some, limited, evidence that copyright affects price and variety.

Both of the above surveys have serious shortcomings. Any study seeking to determine price differences arising from copyright faces some major difficulties. First, and perhaps foremost, the price of a recording – or a book – is determined by many other factors than its copyright status. In particular, recordings, at least when provided in physical form such as a CD, have large manufacturing and distribution costs (all displaying

economies of scale) quite separate from the creation of the underlying copyright-protected (and non-rival) recording. Second, it is very difficult to compare like with like. One is never presented with a situation in which there are two recordings, available at the same time and exactly alike in all respects except their copyright status. Together these factors mean that any study is likely to need a reasonably large sample or a very precise way for generating comparable data points (perhaps tracking individual works as they enter the public domain) if it is to have sufficient power[51].

It is also difficult to know how reliably one can extrapolate historical experience, even recent historical experience, to the future in an era of increasing digitization, where the costs of storage and distribution are dropping exponentially. As the PwC report points out "it is important to note however, that there is not a large number of recordings currently in the public domain, relative to the amounts to be introduced in the future (dependent on availability, which we examine in the following pages). Hence, there is no certainty that the current observed effect (i.e. lack of price differential of in-copyright and out-of-copyright recordings) will be repeated in the future." Furthermore, current experience, for example in relation to books, suggests that large-scale digitization of public domain work will take place both on a commercial and pro-bono basis.

It should be noted, however, that there are a number of important differences between the operation of the market for public domain books and sound recordings. The first derives from the fact that (as we have described in Section 2) a public domain sound recording will often remain regulated by copyright in the music and lyrics of songs which are recorded. For, while copyright in sound recordings lasts for 50 years, that in the music and lyrics is protected for the life of the author plus 70 years. The effect of this is that a person wishing to reproduce and sell copies of public domain recordings will nevertheless need permission from (and pay royalties to) the holders of copyright in the music and lyrics. The same is true of a person wishing to broadcast or communicate a public domain sound recording to the public. While the licensing of such underlying musical and literary copyrights is made relatively easy by the existence of collecting societies (MCPS regulating copying, PRS public performance and communication to the public), the need to obtain such licences may deter many operators from entering the field. This is particularly true of operators who are considering gratuitous, or publicly funded digitisation, where one-off costs may be untroublesome, but continuing liabilities are unattractive.

Another factor which may result in the reluctance of operators/actors to establish electronic distribution of public domain recordings is the fact that there has been a lack of clarity over on-line licensing of the underlying works. For some time, it was unclear whether such operators required public performance licences, reproduction licences, or both. In the UK, this

eventually resulted in the formation of the MCPS-PRS Alliance. However, other uncertainties exist over the territorial extent of the repertoire that can be licensed by particular national collecting societies. The European Commission has sought to stimulate clarification of these issues in its recommendation of 18 May 2005 on collective cross-border management of copyright and related rights for legitimate online music services[52].

A third reason why on-line distribution/communication of public domain sound recordings may be slow to develop, as regards works in the public domain under British law, derives from the fact that on-line distribution is multi-territorial. As such, recordings may remain protected in other countries and anyone planning to establish a web-accessible business will need to consider employing technical mechanisms to ensure that electronic versions cannot be accessed in countries where copyright continues to subsist in the recording.

Nevertheless, there are already several active projects engaged in the task of making older sound recordings more widely available[53]. Since, for most purposes, digital copies of recordings can be distributed at zero cost, it seems hard to maintain that the extension of copyright (retrospectively) will not have a significant effect on the price and availability of (older) recordings, particularly those where the 'authorial' rights have expired.

To conclude, it is our view that the pricing question is a secondary issue. This is not to say that it does not have relevance and we believe that it merits further investigation. However, given our a priori knowledge about the relationship of producer profits, consumer welfare and deadweight loss we can derive consumer loss from producer gains (if consumer losses are zero so are the gains to the recording industry). Furthermore, determining effects on price alone tells us little about the fundamental issue: the shape of the demand curve and the relative magnitude of the deadweight loss.

8. Social Welfare: The Overall Picture

We have already developed an extensive analytical framework for evaluating term extensions in the course of our earlier survey of economic theory. Combining this work with empirical data, we can evaluate the case for term extensions from the perspective of overall social welfare, taking account of both gains to producers and costs to consumers. As discussed in Section 3, the best approach is an equilibrium one. This corresponds most naturally to a situation in which the term extension is applied equally to existing and new work[54]. We shall therefore proceed using the model developed in the theory section above[55].

Using that model it was shown that the net gain from term extension is given by the following equation:

$$\frac{Nb^{T}}{(1-b)(1-d)}(y(N)s(N)d^{T}-q)$$

Where N is the number of works produced per year with no extension, T is the existing term, b is the cultural depreciation rate, d is the discount factor, y is the welfare from a new work as a proportion of revenue, s is the elasticity of supply with respect to revenue, q is deadweight loss as a proportion of revenue averaged over all existing works.

As discussed a plausible range for the discount rate is 5%-9%. Elasticity of supply is very unlikely to be larger than 2 and may well be significantly less than 1 (an elasticity of 2 means that a 10% increase in revenue would result in a 20% increase in production)[56].

Being conservative and using discount rate of 5% and an elasticity of 1.5 this implies that an extension increases (reduces) welfare if q (deadweight loss) is less (greater) than 7 times y(N) (welfare under copyright for new works). We note that using what might be a more reasonable figure for the discount of 7% and a discount rate of 1 or lower would increase the ratio to around 30 – that is average deadweight loss would have to be less than a 30th of average welfare for new works.

What about the levels of welfare and deadweight loss in relation to revenue? In the section on consumer welfare we estimated deadweight loss as a ratio of revenue in the range 0.5 to 2. Coming to welfare (producer plus consumer surplus) under copyright we are truly in the dark. The standard linear demand model gives welfare as equal to 3 times deadweight loss but there is no reason to think this has any relationship to 'real' demand curves.

What is reasonable is to assume is that consumer, and perhaps producer, surplus is correlated with deadweight loss: larger deadweight losses imply

larger consumer surplus and vice versa. Unfortunately what matters is the relative sizes not their absolute magnitude.

What we should remember here is that we are interested in welfare for the most marginal works – those that would only be created with a term of 95 (or 70) years as opposed to a term of 50 years. As the BPI report points out the amount of music already being produced is large: "In 2005, 31,291 albums were released in the UK[16]. Just 228 albums sold over 100,000 copies[17]; less than one in 10 releases is a hit, with even fewer returning a profit." Thus the consumer and producer surplus produced by new works will be fairly low compared to the average value (and the average deadweight loss). To put this simply: with over 30,000 albums already being released a 5% increase in the number of albums (already a very high-end estimate of any likely increase) is very unlikely to yield a 5% increase in value (33,000 albums rather than 31,291). Given this high level of existing production allowing a deflator of 0.1–0.3 would seem very reasonable.

Putting all of this together this means that one would need to find a minimum ratio of general (not marginal) welfare to deadweight loss in the range of 21 to 90. These are very high numbers and we find it difficult to imagine that the ratio is this high. As a consequence we believe it **very likely that a term extension of the type under consideration would cause a net welfare loss to society**. As it may be useful to the Gowers Team we attempt to provide an explicit estimate of the likely welfare change. Using a set of conservative parameter values (as detailed in the appendix below) we estimate the present value of welfare loss equal to approximately 7.8% of total current annual revenue, which expressed in monetary terms amounts to 155 million pounds.

Finally we note that this result does not take into account many of the other factors that would effect the benefits and costs of a term extension, such as:

- Displacement effect: what is the *net* welfare gain on new recordings compared to the other activities on which resources could have been spent
- Competition and efficiency
- Administrative and transaction costs
- Maintenance incentives
- Congestion externalities
- Incentive to disseminate

We have already discussed at some length above maintenance incentives, congestion externalities, and the incentive to disseminate under the general title of 'stewardship'. We have already stated our doubts as to the validity of these arguments as they relate to a term extension and we will not repeat

them here. The remaining items are all ones which would come up on the cost side of the ledger in relation to term extension. As with the 'stewardship' items we have already discussed these above in a theoretical context. Unfortunately there is very little empirical evidence relating these to term extension though what does exist is suggestive.

Brooks (2005) surveys reissues of recordings in the US and finds that non-rights-holders have reissued more historical recordings than rights-holders for every period prior to 1945. Covey (2005) reports on experience trying to gain permission to digitize and provide free access to (out-of-print) books. Working on a large scale he reports highly variable transaction costs and success rates depending on on whether the effort is focused on a particular set of books or simply involves a bulk approach in which rights are cleared 'en masse'. In the two 'focused' cases lower bounds for transaction costs were $79 and $200 per book while in the unfocused 'bulk' case this dropped to $0.69 per book (the dramatic drop is because permission was sought 'in bulk' on a per-publisher basis and the number of books involved were large). In all cases the vast majority of the works in question appear to have had little or no commercial value.

Along with the existing literature on competition and efficiency mentioned earlier, this work indicates that there may be extra costs to term extension not included in the calculation above. However, the existing evidence is still so tentative that we do not feel there is any satisfactory way to incorporate a specific figure into an assessment of the overall impact of extensions on welfare. The most we can do is to highlight these as issues which existing theory and empirics indicate may be significant but whose size can not yet be quantified.

Appendix: Welfare Estimates in Monetary Terms

Plausible parameters ranges would be:

- Ratio of welfare to deadweight loss on average, p(N)/q(N): 1.0–15.0
- Ratio of welfare from marginal works to average welfare, y(N)/p(N): 0.2
- Thus, welfare from marginal works to deadweight loss ratio, y(N)/q(N), of 0.2–3
- Ratio of deadweight loss to revenue: 0.25–2.0
- Discount rate: 5%-9%
- Cultural depreciation rate (b) in range of 3–9%
- Supply elasticity: 0.5–1.0

For our calculation we will use:

- y(N)/q(N) = 2.0

- q(N)/revenue = 0.25
- discount rate = 7%
- cultural depreciation: 6%
- supply elasticity: 0.7

We also multiply the deadweight loss term (q) by a half in order to take account of the fact that the amount of work produced each year has been increasing over time (halving the deadweight loss term is equivalent to reducing the number of works on which the loss is calculated by half). Substituting this into the expression for the net welfare change this gives a present value for the *net* costs of an extension at 7.8% of present revenues. Total revenues in 2004 equal approximately 1.98 billion pounds (IFPI 2005) so this amounts to a total of 155 million pounds[57].

9. Conclusion

Having reviewed the existing economic literature, we consider the case for an extension of the copyright term in sound recordings to be weak.

(i) **The Basic Trade-Off.** At its heart, the trade-off involved in a term extension is a fairly simple one. Benefits consist of welfare from new works created because of higher levels of expected revenue under the longer term. Costs consist of the increased deadweight losses stemming from restricted access to existing and future work due to the extension.

(ii) **Retrospective Extensions and the Creation of New Work.** As regards retrospective increases in term, we accept the consensus of the economics profession on this issue as summed up by Akerlof et al (2002) who state categorically that (p. 8) "[retrospective] extension provides essentially no incentive to create new works. Once a work is created, additional compensation to the producer is simply a windfall." Investment in current artists should be based upon the prospects of profits, not the availability of past ones. **We therefore believe that retrospective term increases will have no effect upon the creation of new work.**

(iii) **Prospective Extensions.** As regards prospective increases, after surveying the evidence, **it is our view that term extension will increase the net present value of revenues for new works by 1% or less.** While some authors argue that this small increase might, in some circumstances, result in a disproportionate reaction, we see nothing in the empirical evidence to make us believe that this is the case as regards current levels of production in the record industry.

(iv) **The Net Effect.** Given the small size of this increase, the large number of works already being produced and the likely size of the deadweight loss (particularly in relation to historical works) it is our view that **a term extension will likely result in a net loss to UK society as a whole**. Using a simple depreciation model of revenue (as used by PwC) and conservative parameter values, we have attempted to quantify the overall effect on welfare, arriving at a **net loss in present values terms of 7.8% of current annual revenue (approximately 155 million pounds).** We note that this estimate is likely to display some sensitivity to the revenue model and parameter values used and further empirical research would be valuable, particularly to obtain more precise knowledge of the demand curve and associated variables (such as the size of the deadweight loss).

(v) **Benefits to the Recording Industry.** We accept the arguments that increasing copyright term increases revenues to the record industry. **For**

retrospective extensions the 2% increase in the present value of revenues (being approximately 160 million pounds) suggested by PwC would seem plausible while for prospective extensions the figure would likely be 1% or lower. Existing literature gives little indication as to how revenues would be distributed however our research did indicate that featured recording artists would likely benefit to some extent from such an extension with typical royalties rates around 5–15%.

(vi) **Costs to consumers.** Existing economic theory plausibly suggests that the extension of copyright term increases costs to consumers (consumers should be construed in a wide sense to include all users of recorded music including bars, film-makers, broadcasters etc). While the immediate cost of prospective extension is likely to be small, the immediate cost of an extension applied to existing works would likely be significant. Using PwC's figures for the benefits to the recording industry we estimated that **retrospective extensions would result in costs to consumers of between 240 and 480 million pounds.** We also note that with the growing digitisation of public domain resources, it is likely that many existing public domain works will be made available to the public for free. If this is so it implies an increase in the costs to consumers of a (retrospective) term extension.

(vii) **Balance of Trade.** Some submissions hint at significant benefits to the UK from a term extension in terms of balance of trade. However, there is little empirical evidence to support this view. While the UK record industry may make an important positive contribution to Britain's creative economy, increasing the copyright term would subject British consumers to increased costs to the benefit of record companies outside the UK, while Britain is already able to access many of the longer terms in important foreign markets (the US, Australia) without increasing term domestically. We therefore believe that **increasing copyright term in the UK from 50 to 70 (or 95 years) is likely to have a significant, negative effect, on balance of trade.**

(viii) **Additional Costs.** We accept the theoretical arguments that increased term of copyright may impose additional costs in the form of increased tracing and transactional costs. However, beyond scattered anecdotal evidence and that of a few small scale studies, the literature provides little guidance as to their extent or significance.

(ix) **'Stakeholder' Arguments.** The theoretical arguments that some incentive is required to induce publication, archiving and preservation activities in relation to old works seem to us to be plausible. However, we are yet to be persuaded that sufficient incentives are not provided by lead time, copyright in arrangements and other derivative works, and other intellectual property rights (such as trade marks). We share the doubts of a

number of economic theorists that the need for such incentives would justify giving existing copyright holders an extended term of protection in the original work.

(x) **Employment.** In the time available to us, we have not been able to address the impact of a term extension on employment directly. However, given the small relative size of the revenue increases from a term extension, it is likely that other factors (such as digitization) will have a far more profound affect on employment in the music industry.

(xi) **Cultural Skew**. We are sceptical of claims that extending the copyright term will address the perceived issue of cultural skew. It seems to us that the UK domestic market is larger than the US market for UK music, that UK recordings will receive the same levels of protection as domestic recordings in the US and that the UK recognises broader rights which may be more valuable. Thus, it is unlikely that the size of the US market and the greater length of copyright term will lead to cultural skew. However, we note that our calculations are based on data not specifically adapted for the purpose and further work on this area may prove useful.

(xii) **The 'Irreversibility' of Term Extensions: Implications for Decision Making.** Modern systems of law regard the protection of established rights as fundamental. That is, once granted, modern legal systems rarely reduce existing entitlements and, where they do so, it is only where there is an over-riding public need and compensation is paid. The effect of the principle of respect for established rights is that it is much easier to extend copyright term than to reduce it (so much so that term extensions are likely to be 'irreversible'). Thus any errors in policy-making, due to poor or incomplete data say, will have asymmetric effects: if term were extended now but further research over the next ten years showed the extension to have been a mistake, it would be very hard to correct this error by reducing term back to its original level; on the other hand if term were not extended and research over the next ten years showed this lack of extension to have been a mistake then it would be relatively easy to correct this error by introducing a term extension. This has two implications. Firstly, any decision to extend term should be based on stronger evidence than one to keep term at its current level. Secondly, the prudent policy-maker faced with uncertainty should prefer a course of inaction so as to keep options open and await better and more precise data. **Thus, the case for an extension would have to be especially compelling to make it preferable to keeping term at its current length.** This, combined with our conclusion that the case for term extension is, in fact, weak, means it would be **particularly inadvisable, given our present state of knowledge, for a rational policy-maker to extend the term of copyright in sound recordings.**

Appendix: Variables Defined in the Text

$r(t)$: revenue in year t

$d(t)$: the discount factor to time t. With constant (exponential/geometric) discounting one has $d(t) = d^t$ where d is the constant per period discount factor. With an interest rate of A (expressed as a decimal i.e. 7% = 0.07) we have: $d = \frac{1}{1+A}$

b: the cultural depreciation rate. If revenue is assumed to decay exponentially then $r(t) = b^t r(0)$.

T: a length of time and often used to represent the term of copyright.

$N(T)$: the number of works produced per year when term of copyright is T.

$R(T) = \sum_{t=0}^{t=T} d(t)r(t)$: present value of revenues from now until year T.

When T is the length of the copyright term $R(T)$ will correspond to the total present value of income to the owner of a copyright. Often it will not be necessary to include the T argument and we will just write R for revenue. Note that if one assumes (as we often do) that revenues are constant across works then total revenue is NR

$wc(n)$: welfare (under copyright) arising from the the nth work produced

$p(N) = \frac{1}{NR}\sum_{i=1}^{N} wc(i)$: the ratio of total welfare under copyright to total revenue (each work produces a when the total number of number of works is N.

$y(N) = \frac{wc(N)}{R}$: the ratio of marginal welfare (under copyright) to revenue when the total number of works is N.

$q(N)$: the ratio of total deadweight loss to total revenue when the number of works is N.

$s(N)$: the supply elasticity with respect to revenue when the total number of works is N.

Endnotes

1. Foreign repertoire represented 5% of the US market and 43% of the UK market in 2004. Thus, we can readily see that UK artists will be interested in the UK market ($1789 m) than in the US market (some part of $607 m).↩
2. The tentative answer would appear to be that it does. According to calculations discussed later in this survey, an extension of term would yield an increase in present value of revenue on new works of 1% or less while PPL income in the UK is equal to around 1.7% of revenue (and this figure is more than 10 times great than equivalent figure in the US). Since 1.7% is larger than 1.17% (1 + 1.7/10) this would imply the extra 'breadth' in the UK outweighs the extra 'length' in the US. ↩
3. Section 13A(2): "copyright expires -

   (a) at the end of the period of 50 years from the end of the calendar year in which the recording is made, or

   (b) if during that period the recording is published, 50 years from the end of the calendar year in which it is first published, or

   (c) if during that period the recording is not published but is made available to the public by being played in public or communicated to the public, 50 years from the end of the calendar year in which it is first so made available"

   Article 3(2) of Directive 93/98/EEC (as amended by Directive 2001/29/EC): "2. The rights of producers of phonograms shall expire 50 years after the fixation is made. However, if the phonogram has been lawfully published within this period, the said rights shall expire 50 years from the date of the first lawful publication. If no lawful publication has taken place within the period mentioned in the first sentence, and if the phonogram has been lawfully communicated to the public within this period, the said rights shall expire 50 years from the date of the first lawful communication to the public."↩

4. The Copyright and Performances (Application to Other Countries) Order 2006 S.I. 2006/316 (repealing and replacing S.I. 2005/852), effective April 6, 2006, lists countries, specifies connecting factors to these countries that serve as criteria of eligibility and indicates the type of protection that results. Column 3 applies to sound recordings, distinguishing between three categories of countries: those merely parties to the W.T.O., to which a required connection results in basic protection against piracy, namely against copying and distribution;

those which are "asterisked", comprising Rome countries and E.C. Member States, to which a required connection results in full protection that includes the right to control public playing and communication to the public; and those marked by a "hash" sign, being W.P.P.T. countries which are not also parties to the Rome Convention (most obviously the US), but to which a required connection results in basic protection coupled with the right to control communication to the public other than broadcasting.↩

5. This provision was added in 1994, the Uruguay Round Agreements Act Pub. L. No. 103–465, 108 Stat. 4809, 4974.↩
6. Copyright Term Extension Act Pub. L. No. 105–298, 112 Stat. 2827 and operative from October 27, 1998↩
7. In some US states, a common law copyright will arise to protect sound recordings published prior to 1972 – see *Capitol Records, Inc. v Naxos of America, Inc.*, 274 F. Supp. 2d 472 (SDNY 2003). This case relates to New York law and we have not had time to ascertain how many other states retain common law copyright. Under US federal law, the common law right will subsist in all states until 15 February 2067 (17 USC s301(c)).↩
8. C. Field. 'Recording artists, Bright Lines, and Bowie Bonds: The Debate Over Sound Recordings as Works Made for Hire (2000) 48 Journal of the Copyright Society USA 145, describing the arguments and concluding (at 188) that until a court decides 'no one really knows if agreements specifying sound recordings as works made for hire are valid under the 1976 Copyright Act.'↩
9. Rather bizarrely a 1999 amendment added 'sound recordings' to the list, only to be retroactively removed in 2000: Intellectual Property and Communications Omnibus Reform Act of 1999, Pub. L. No. 106–113, s. 1011(d); Works Made for Hire and Copyright Corrections Act of 2000, Pub. L. No. 106–379, 114 Stat. 1444.↩
10. Lulirama Ltd, Inc v, Axcess Broadcast Services, Inc., 128 F. 3d 872 (5th cir. 1997).↩
11. See, for example, Paul Goldstein, 'Pre-empted State Doctrines, Involuntary Transfers and Compulsory Licenses: Testing the Limits of Copyright' (1977) 24 UCLA Law Rev 1107, esp 1135–1139.↩
12. section 203 of the Copyright Act of 1976 permits an author (or her heir) by giving at least two years written notice to terminate the transfer of the copyright or exclusive or non-exclusive licence of the copyright, after 35 years "notwithstanding any agreement to the contrary". On termination, all rights revert to the author/heir.↩
13. This is the approach used e.g. by Liebowitz (2006) (p. 6), Watt (2003) etc.↩
14. The following is heavily based on Landes and Posner 1989.↩
15. For example we could have a proper model of 'cumulative creativity', i.e. how new works build upon previous ones. There has been a

substantial amount of recent work on this subject. Though focused on patents it is just as applicable to copyright where reuse, either explicit or implicit, of previous works is ubiquitous.↩

16. For example, as Liebowitz and Margolis (2005) point out, one can violate properties 3 and 4 by setting the elasticity of supply with respect to revenue sufficiently high. Conversely one can violate property 2 by having a sufficiently high revenue in the absence of protection along with a sufficiently negative impact of monopoly protection on reuse.↩
17. This is taken almost completely unmodified from Landes and Posner (1989), p. 337.↩
18. See S Frith, 'The A & R Men' in C. Gillett & S Frith, The Beat Goes On (London: Pluto, 1996) Ch 7.↩
19. We note that the vast majority of the evidence we surveyed, including that generally supportive of a term extension, implicitly or explicitly endorsed the view that the recording industry is in the main made up of rational, profit-maximizing firms, who are forward-looking in their investment decisions. For example Liebowitz (2006) in his study for the IFPI states, p. 17, while arguing for the benefits of a prospective term extension states: "The producers of sound recordings, being profit maximizing firms, can be expected to anticipate future revenue increases ..."↩
20. Akerlof et al also addressed the argument that the record companies will invest the windfall in new creative work. They point out that a profit maximising producer "should fund the set of projects that have an expected return equal to or greater than their cost of capital" and that even if such a producer lacks cash at hand, it would secure the necessary funding from investors. Extra profits would not induce such a producer to invest further in "sub-par projects that happen to be available to the firm." A profit maximising producer should fund the same projects in any event – whether last years profits were good or bad: "its incentives will not be improved from the mere fact of a windfall from consumers." (p. 9) ↩
21. In fact this analysis will likely understate the negative effects of a term extension. This is because in the case of a policy change whose effects take very long periods to play out (in this case potentially one hundred years) transition costs and benefits have a large impact on results. For example, in the case of prospective extensions, while the number of works is assumed to jump immediately to the new equilibrium level, the transition to the equilibrium level of deadweight losses will not occur until the end of a period equal to the length of the new term. Conversely with combined extensions deadweight losses increase immediately yet there is no increase in production of historical works.↩
22. http://www.theregister.co.uk/2004/04/12/ms_settles_intertrust/↩

23. The phrase market-based is intentionally used to emphasize that while markets are encouraged a) they are dependent on substantial government intervention to ensure their existence (in the form of provision of law, order, basic property rights etc) b) there will be substantial areas where market perform poorly or not at all and where government intervention will yield substantial benefits (for example the provision of public health insurance in order to address information asymmetries and equity problems). ↩
24. cf. Hurt and Schuchman (1966) p. 425: "Assuming that new goods are produced, are these goods valued higher by consumers than the goods which would have been produced if resources had not been diverted to literary production by the copyright system? In other words, is social welfare enhanced."↩
25. In fact, without these inefficiencies, the only possible system to adopt is one based on central planning. This point lies at the heart of several of the 'coordination efficiency' arguments for intellectual property pioneered in the 'prospect argument' of Kitch (1974) and present in Landes and Posner's (2003) 'congestion externality' and Liebowitz's (2005, 2006) 'taste externality'.↩
26. Even if true it would seem to support abolition of copyright not its extension: if a centrally planned approach is best one should eliminate copyright altogether and have the state organize all investment in creative work – not only would this be more efficient for production but it would eliminate any deadweight loss.↩
27. Empirical evidence that copyright can hinder efficient distribution and management can be found in Heald 2006 and Brooks 2005.↩
28. Akerlof et al (2002) also consider arguments that the term of copyright should be extended for existing works for 'stewardship'-type reasons, for example to encourage their maintenance (p.9). The economists indicate that incentives to improve already exist in the form of copyright (e.g. for translations) or trade mark protection. Their view overall that "a twenty-year extension seems unlikely to have a significant effect on post-creation incentives" [p.10] would apply equally to the case of sound recordings under consideration here.↩
29. It is unfortunate that no pre-1956 data was provided to PwC since it would have allowed them to quantify the impact of an end to copyright term, at least for recordings from that era, fairly precisely.↩
30. Note that the percentage increase in revenue from retrospective extensions for existing work must exceed the percentage increase in revenue from prospective extensions for new work. Thus if we accept PwC's upper level estimate of a 1.9% increase with respect to retrospective extensions the revenue increase for prospective extensions must be even lower.↩
31. See Peter Millet (ed.) the Encyclopaedia of Forms and Precedents,

vol. 15 (1) Entertainment and Media (5th ed., London: Butterworths, 1998). Richard Bagehot and Nicholas Kanaar also give an 'example agreement' in their book Music Business Agreements (2nd ed. London: Sweet & Maxwell, 1998). The example includes the following on copyright ownership: "The entire copyright and all other rights of a like nature and all other rights now or hereafter conferred by law in force in any part of the World in or to all Material made commissioned or approved hereunder during the Term and any recordings embodying Performances by the Artist made during the Term...shall vest in and belong to the Company (free of any claim by Artist or any other person) throughout the World for the full duration of such copyright and other rights, and for any and all extensions and renewals thereof."↩

32. Michael Fink, Inside the Music Business: Music in Contemporary Life (New York: Schirmer Books, 1989) 108: "Royalties are normally based on the retail price of the record. For domestic sales through normal channels these range from about 5 percent for new artists to over 12 percent for superstars..."). David Baskerville, Music Business Handbook and Career Guide (7th ed. Thousand Oaks, California: Sage, 2001) 320: "Depending on how badly the label wants to sign the artist, the royalty offer will be in the range of 10% to 12% of the retail price, with perhaps three points of that amount going to the producer. Major stars have been known to get as high as 18% to 22% of the retail." D. Biederman, E. Pierson, M. Silfen, J. Glasser, R. Berry, L. Sobel, Law and Business of the Entertainment Industries (3d ed. Westport, Conn. : Praeger, 1996) 562: "The artists royalties (typically beginning at the rate of ten percent of the suggested retail price or 20% of the wholesale price) are reduced by subsequent language in the record contract, including reductions for the record packaging...Royalties for superstar artists are in the range of 15 to an extremely rare 25 percent of the retail price." Writing in the British context, Nigel Lipton (Music: The Law and Music Contracts (Welwyn Garden City: CLT Professional Publishing Ltd, 2000) 246–7 explains "Usually royalties are paid on a percentage of the sale proceeds of the recordings...Sales proceeds will usually be either: (a) a wholesale price of the recordings (commonly called dealer price or published dealer price "PDP") excluding VAT; or (b) a fictional retail price....The royalty rate recommended by the Musicians Union for a new performer is between 10–14% of the fictional retail price. The equivalent rate if the record company pays royalties based on PDP is 13–18%." Ann Harrison, solicitor at Harbottle and Lewis, writing in 2000, uses similar terms: "An 18% royalty on the retail price of a CD would be good, but 18% on the dealer price of the CD would just be average...as a very general rule of thumb, in the UK you can work on the basis that the retail price is about 130% of the dealer price of an

album." (Music: The Business. The Essential Guide to the Law and the Deals (London: Virgin, 2000) 66. Later she states "a basic royalty of more than 18% of the dealer price, calculated on 100% of records sold, with no reduction for CDS and a packaging reduction of no more than 20% would be good. It is unusual to see royalty rates of more than 23% of the dealer price for new signings to exclusive record deals." (Harrison, ibid, p. 69) Donald Passman, All You Need to Know About the Music Business (UK Edition) (Penguin: 2002) states that UK royalties "are about the same as those in the US. Since they're on PDP, increase these figure by 130%." The figures he gives are: for a new artist signing to a major or mini-major, 12 to 14% of SRLP (suggested retail list price; mid-level 15%-16%; superstar 18–20% or more of SRLP (royalties over 20% are rare).↩

33. Geoffrey Hull, The Recording Industry (Boston: Allyn & Bacon, 1998) 129 contains a useful review: "In the 1950s typical royalties were 5 percent of retail list, paid on 90 percent of sales. By the 1960s they began to move up, driven by the popularity of rock and roll and the growth of record sales, with Billboard reporting that nearly a dozen artists with royalties exceeding five percent. By the mid 1970s new artist royalties pushed up as high as 8 percent of retail list. If the royalty included the producer's royalty in an "all in" deal, new artists could expect to start in the 10 to 12 percent range. By the mid 1990s the all-in deal was the norm. Typical rates for new artists ranged from 9 to 13 percent, for established artists from 14 to 16 percent, and for major artists from 16 to 20 percent; superstar artists sometimes exceeded 20 percent."↩
34. The deductions are as follows: 3% is deducted since the artist has to pay the producer's royalty out of his own royalty; 25% reduction for packaging (the artist's royalty is based solely on the recording itself, not on the artwork, wrapping or sales appeal added on by the packaging ingenuity of the label); 15% are reduced for free goods (labels do not pay artist royalties on records that are given away to distributors for promotional purposes); 20% reduction for CDs (labels claim they need to get reimbursed for their research and development costs for new technology); and, 35% reduction for reserves (artists are not paid royalties on returned (unsold) records and therefore a portion of royalties is held back as a reserve against these returns).↩
35. a) Music sales: 8.2–24.5 million pounds (45 year extension) b) PPL: 1.3 million pounds (45 or 20 year extension)↩
36. See, for example, Sen. Hatch's statement in 144 Cong. Rec. S12377 (daily ed. Oct. 12, 1998).↩
37. Indeed, in line with this approach, the United Kingdom (following the EC Term Directive, art. 7) applies the rule of the shorter term (CDPA, s. 12(6) (literary, dramatic, musical, artistic works), s.13A (sound

recordings), s. 13B(7) (film), s.14(4) (broadcasts)). There are doubts as to whether the national treatment obligation under Article 4 of the Rome Convention (International Convention for the protection of Performers, Producers of Phonograms and Broadcasting Organisations, signed at Rome on 26 October 1961) permits comparison of terms (there being no equivalent to Berne Art 7(8)), but Article 15(2) states that "any Contracting State may, in its domestic laws and regulations, provide for the same kinds of limitations ... as it provides for, in its domestic laws and regulations, in connexion with the protection of copyright in literary and artistic works'.↩

38. see E.J. Schwartz, 'United States' USA-45 in Nimmer & Geller, International Copyright Law and Practice (New York: Matthew Bender, 2005)↩
39. While the US did not grant federal copyright protection to sound recordings until February 15, 1972, subsequent changes (to implement the TRIPs Agreement) have restored rights in pre-1972 foreign recordings. More specifically, the Uruguay Round Agreements Act, Pub L No 103– 465, 108 Stat 4809 (1994) restored copyright to sound recordings in the public domain in the US because they were created prior to 1972 (s.104A(h)(6)(C)(ii)), if the works were protected in the source country on January 1, 1996 (s.104A(h)(6)(B)), and have at least one author or right holder who was at the time the work was created a national or domiciliary of an 'eligible country' (s.104A(h)(6)(D)) and were first published in an eligible country and not published in the US during the thirty- day period following publication in such eligible country. The United Kingdom, as a party to Berne, is an 'eligible country': s.104A(h)(3). The 'restored' copyright thereafter lasts for the remaining US term that the work would have enjoyed in the US had it not fallen into the public domain: s.104A(a)(1)(B). So, if a sound recording was first released in the UK in 1950 (so that the UK is regarded as the "source country"), was ineligible for copyright protection under US law, but was still protected in the UK on January 1, 1996 (as it would have been), the effect of the 1994 Act was to restore copyright for the remaining US term that the work would have enjoyed in the US had it not fallen into the public domain, i.e. then 75 years (but extended by the Sony Bono Act to 95 years). However, a sound record released in the UK in 1940, and thus in the public domain in the UK on January 1, 1996, would not benefit from the Restoration Act.↩
40. Copyright (International Protection) Regulations 1969, r4(1), r4(1A).↩
41. In the case of a sound recording of a foreign origin its copyright term should not exceed that which subsists in its country of origin: clause 7 of the International Copyright Order, 1991 read with Section 40 of the Copyrights Act, 1957. While the copyright term for Indian sound recordings would be 60 years, if the country of its origin provides for

a term which is less than 60 years (as the United Kingdom currently does), then the copyright term in India would also be 50 years (see also S. Ramaiah, in Nimmer & Geller International Copyright Law and Practice (New York: Matthew Bender, 2005) sec. 3[3] IND-21–22).↩

42. The following estimates are made on the assumption that the IFPI's conception of foreign repertoire corresponds with copyright is owned by non-nationals.↩
43. While imports may thus be significant, there can be little doubt that the British record industry makes considerable income from outside the UK. In its 2006 annual report, the EMI Group (which includes both publishing and recording operations) reported revenue of 2079.9 million pounds: of this 348m came from the UK, 630.2m pounds came from elsewhere in Europe, 649m from North America, 338.8m from Asia/Pacific, 84.4 m from Latin America and 29.4m elsewhere: (EMI Group plc Annual Report 2006 p. 67). From this it seems that under 17% of EMI's revenue comes from its UK operation.↩
44. We use Peru's figures from 2001, as 2004 is not available.↩
45. The term of copyright falls within an EU competency and thus any extension would not just be UK-specific but operate EU-wide. However the terms of the report were to examine the consequences *for the UK* of an extension and so, in general, we have focused on the UK alone (e.g. we do not calculate gains or losses to European industry or citizens etc). Nevertheless, given the special relevance of this issue to the question addressed in this section it is useful to consider what would occur if the EU were included in a hypothetical extension.

    The key value to estimate is the value of UK exports of music to the EU. Unfortunately we are not currently in possession of exact figures but we can make an estimate in the same way as we did above for other countries. Relying on the IFPI 'Recording Industry in Numbers' and taking their international repertoire categories to indicate imports we have (2004 figures): Total Europe/EU (excl UK) Imports ~ $4400M. The next step is to estimate what proportion of these imports come from the UK. Given that most of the EU member states are not primarily English-speaking and that there is competition from the US it would seem reasonable to take a figure quite a bit lower than the (generous) 50% assumed in the case of US and Australia, perhaps somewhere in the region of 15–25%. Using this we arrive at UK exports to the EU of $660M – $1125M. Comparing this to UK imports of approximately $1500M it would still appear that the net effect of a term extension on the balance of trade would be negative. ↩
46. We do not consider here, though we do below, the possibility that there may be other gains to consumers from copyright expiry. For

example, it might permit greater producer efficiency and lower transaction costs.↩

47. We are using a broad sense of deadweight loss which includes all new surplus not all of which may accrue to consumers. Restricting purely to the consumer gains and assuming producer compensation out of producer gains reduces the estimated ratio to 1.5.↩
48. Use of revenue figures is incorrect because it includes productions costs. The correct approach both here and in the previous sections on gains to producers is to use surplus (i.e. profits). Assuming a (generous) profit rate means we should multiply all revenue figures by 0.3. Using this formulation we have total producer gains of thirty per cent of revenue and consumer costs consisting of transfers of that thirty per cent plus deadweight loss of a quarter to two times revenue giving a consumer loss ratio of between 2 and 7 times producer gains (50 million pounds for producer gains versus consumer costs of 100–350 million pounds).↩
49. Evaluating the costs and benefits to consumers of a prospective term extension requires assessing the impact on production so we leave this issue to be considered in the next section on overall welfare.↩
50. Note that these issues regarding the impact of copyright on price only relate to sales and not to other sources of income such as that from the PPL and licensing. PwC make clear the expiration of copyright means a complete loss of revenue in these areas – and therefore a corresponding gain to users in the form of lower fees.↩
51. As exemplified by the PwC study. Their sample of 129 recordings yields very large standard deviations (between a quarter and one half of the mean) along with significant intra-firm price differences (differences in average price of more than 10%). These level of variation among recordings dwarfs any likely effect of copyright (copyright 'costs' as a percentage of gross CD cost are likely to be in the range of 5–20%). ↩
52. 2005/737/EC OJ L 276/54↩
53. CHARM at King's College London http://www.charm.kcl.ac.uk/, work at the Canadian National Archives http://www.collectionscanada.ca/gramophone/index-e.html, and the collaboration between the European wing of archive.org and the Dutch National Archives http://www.europarchive.org/.↩
54. Given that every previous term extension has been applied both retrospectively and prospectively we feel this is the correct approach to take empirically as well as theoretically. We note, as we did previously, that in doing so we are likely to understate the negative effects of a term extension as transition effects will be ignored.↩
55. Note that in the results derived depended on the assumption of a simple model for the path of revenue in which it depreciated at a constant rate. Given that this is the model adopted by PwC in their

report for the BPI we feel it is reasonable to use it for these calculations. However the adoption of a different structure for the revenue path would likely alter the results to some degree. Nevertheless we believe that the general conclusions reached here are robust to reasonable alternative specifications. ↩

56. Liebowitz (2006) suggests that an elasticity of four might be possible (p. 8): "Sometimes a 5% change in price, for example, might lead to a 20% change in quantity, leading to an elasticity of 4." Liebowitz does not provide any evidence for this specific figure but does provide two references for the claim that the elasticity might be greater than one. One reference is to the general discussion in Liebowitz and Margolis (2005) about the possibility "that a seemingly small increase in present value could make an important difference in creative output, perhaps because the additional revenue allows certain potential recording artists reach a point where they switch to full-time creation." We find this argument unpersuasive. In general one would expect that the supply curve, while upward sloping, would show diminishing returns. Thus, the idea of a threshold, and the associated 'kink' upwards in the supply curve, would need proper justification. It is particularly difficult to see how the threshold would apply to the record industry in general when many of those firms are highly diversified (if we do not assume this diversification discount rates should be much higher to reflect higher risk and the higher discount rates of individuals compared to firms). It is also not clear why many creators would be just on the threshold with term at its current length. In the 2005 paper Liebowitz and Margolis seem concerned with the US term extension of life plus 50 to life plus 70 while here term is a simple 50 years. It would seem odd that in both cases 'creators' needed just a few percentage points (or tenths of a percentage point) increase in revenue in order to make a jump in production.

    The second reference of Liebowitz is one that does bear directly on the elasticity question. It is a reference to the working paper of Png and Wang (2006). This paper does not yet appear to be in final form and is, we believe, being actively revised so our comments relate to the current working draft (and future versions may address some or all of our reservations).

    The paper uses a cross-country panel dataset in order to attempt to gauge the impact of term extensions on film production. Depending on the formulation of the regression they estimate an impact of between 1.8% (+/-1.77%) and 12.8% (+/-5.82%) (with the former figure being the more robust). Unfortunately, though this is a commendable attempt to address these issues using proper econometric tools, we believe that there are a variety of problems which render the results unreliable. We do not have space here to go into full detail but we can

highlight two issues of particular concern.

First, there is the structure of this regression. The authors use data from 1991 to 2004 and the majority of the copyright extensions occur between 1994 and 1998 (with fifteen of them – all from the EU – in 1995). This means the inclusion of copyright extension 'dummy' behaves much like a straight test for a structural break in the mid-1990s. This in turn means that the coefficient on the copyright variable will pick up any other changes that would lead to a 'break' (for example a drop in production costs as a result of developments in ICT) as well as any non-linear time trend. (The authors use IMDB to obtain film production statistics from 1991–2004. Given IMDB's origins as an online collaborative volunteer effort based on a newsgroup it is possible that the coverage of the database is not constant over time – it might track Internet usage for example. If coverage did change over time this might introduce a non-linear trend even if it were absent in reality).

Second, it appears the results are not, in fact, very robust. In particular, they seem highly sensitive to the inclusion of a product of piracy and copyright extension term. For example, in the first set of OLS regressions (Table 3) without the inclusion of this extra 'piracy' term the copyright variable is either not significant or only significant at the 10% level. Similarly in Table 4 which uses the 2SLS to obtain a more robust estimate the copyright term is **only significant** with the inclusion of the piracy term. Repeating these same results with the EU sub-sample it is only with the inclusion of 'government funding' that copyright extension becomes significant and when they move to the 2SLS approach copyright ceases to be significant in any formulation.↩

57. This figure will likely differ from one calculated based on PwC figures because PwC use a higher discount and depreciation rate than that used here.↩

Bibliography

Akerlof et al 2002. *The Copyright Term Extension Act of 1998: An Economic Analysis*, George A. Akerlof, Kenneth J. Arrow, Timothy Bresnahan, James M. Buchanan, Ronald Coase, Linda R. Cohen, Milton Friedman, Jerry R. Green, Robert W. Hahn, Thomas W. Hazlett, C. Scott Hemphill, Robert E. Litan, Roger G. Noll, Richard L. Schmalensee, Steven Shavell, Hal R. Varian, Richard J. Zeckhauser. Brief 02-1. May 2002. http://www.aei-brookings.org/admin/authorpdfs/page.php?id=16

Allen Consulting Group 2003. *Copyright Term Extension: Australian Benefits and Costs*. http://www.allenconsult.com.au/resources/MPA_Draft_final.pdf

Breyer, S. 1970. *The Uneasy Case for Copyright*, (1970-1) 84:2 Harvard Law Review pp. 281–351.

Boldrin, M. and Levine, D. 2003. *Perfectly Competitive Innovation*, unpublished working paper (most recent update 2005). http://levine.sscnet.ucla.edu/papers/pcibasic14.pdf

Boldrin, M. and Levine, D. 2005. *IP and Market Size*, unpublished working paper. http://levine.sscnet.ucla.edu/papers/scale22.pdf

Brooks, T. 2005. *Survey of Reissues of US Recordings*, copublished by the Council on Library and Information Resources and the Library of Congress. http://www.clir.org/pubs/abstract/pub133abst.html

Cohen, L. and Noll, R. 2001. *Intellectual Property, Antitrust and the New Economy*, University of Pittsburgh Law Review, Vol 62 (3): 453, Spring 2001.

Chaudhuri, S., Goldberg P. and Jia P. 2006. *Estimating the Effects of Global Patent Protection in Pharmaceuticals: A Case Study of Quinolones in India*. Forthcoming in the American Economic Review. http://www.econ.yale.edu/~pg87/TRIPS.pdf

Covey, D. 2005. *Acquiring Copyright Permission To Digitize and Provide Open Access to Books.* Digital Library Federation and Council on Library and Information Resources.

Frederick, S., Loewenstein, G and O'Donoghue, T. 2002. *Time Discounting and Time Preference: A Critical Review*, Journal of Economic Literature, XL(2), pp. 351–401.

Ghose, A., Smith, M. and Telang R. 2005. *Internet Exchanges for Used Books: An Empirical Analysis of Product Cannibalization and Welfare*

Impact. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=584401

Heald 2006. Heald, Paul. *Copyright Ownership and Efficient Exploitation: An Empirical Study of American Works Before and After They Enter the Public Domain*, mimeo.

Hurt, R. and Schuchman, R. 1966. *The Economic Rationale for Copyright.* American Economic Review, 56(1), pp. 421–432.

IFPI. 2005. *The Recording Industry in Numbers*, IFPI.

Johnson, W. 1985. *The Economics of Copying*. Journal of Political Economy, 93(1), pp. 158–174.

Jovanovic, B. 1982. *Selection and the Evolution of Industry*, Econometrica, vol. 50(3), pages 649–70.

Kai-Lung, H. and Png, I. 2002. *On the Supply of Creative Work: Evidence from the Movies*, American Economic Review, 92(2) pp. 217-220.

Karjala, D. 2006. *Congestion Externalities and Extended Copyright Protection* (2006) 94 Geo. L.J. 1065. http://web.si.umich.edu/tprc/papers/2004/389/TPRC2004Article10-15-04.pdf

Kilbey, I. 2003. *Copyright Duration? Too Long!* EIPR, Vol. 25 No. 3, March 2003.

Klein, B., Lerner, A. and Murphy, K. 2002. *The Economics of Copyright "Fair Use" in a Networked World*. American Economic Review Papers and Proceedings, pp. 205–208.

Krasilovsky, M. and Shemel, S. 2000. *This Business of Music*, New York, Billboard Books.

Landes, W. and Posner, R. 1989. *An Economic Analysis of Copyright Law*, Journal of Legal Studies, 18 (2), pp. 325–363, June 1989.

Landes, W. and Posner, R. 2003. *Indefinitely Renewable Copyright*, 70 University of Chicago Law Review 471 (2003); The Economic structure of intellectual property Ch 8 'the Optimal duration of Copyright and Trademarks'; R. Posner, 'How Long should Copyright Last?' (Brace memorial Lecture) (2003) 50 J. Copyright Soc'y U.S.A. 1.

Lemley, M. 2004. Ex Ante Versus Ex Post Justifications for Intellectual Property, 71 University of Chicago Law Review 129 (2004).

Lemley, M. 2005. *Property, Intellectual Property, and Free Riding.* 83 (4) Texas Law Review 1031 (2005). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=582602

Liebowitz, S. and Margolis, J. 2005. *Seventeen Famous Economists Weigh In on Copyright: The Role of Theory, Empirics, and Network Effects* Harvard Journal of Law and Technology, Vol 18, Number 2, Spring 2005. http://jolt.law.harvard.edu/articles/pdf/v18/18HarvJLTech435.pdf

Liebowitz, S. 2006. *What Are The Consequences Of The European Union Extending Copyright Length For Sound Recordings?*, (report commissioned by the IFPI).

Lutzker et al. 2002. *Brief Amici Curiae of 15 library associations. in the case of Eldred vs. Ashcroft*. http://cyber.law.harvard.edu/openlaw/eldredvashcroft/supct/amici/libraries.pdf

Miller, A. 1997. *Copyright Term Extension: Boon for American Creators and the American Economy*, 45 J Copyright Socy 319 (1997).

Mulligan et al. 2002. *Brief Amici Curiae of Internet Archive, Prelinger Archives, and Project Gutenberg Literary Archive Foundation*. http://cyber.law.harvard.edu/openlaw/eldredvashcroft/supct/amici/internet-archive.html

Nelson, R. and Winter, S. 1982. *An Evolutionary Theory of Economic Change*, Harvard University Press.

Novos, I. and Waldman, M. 1984. *The Effects of Increased Copyright Protection: An Analytic Approach*. Journal of Political Economy pp. 236–246 1984.

Plant, A. 1934. *The Economic Aspects of Copyright in Books*, Economica 1 pp. 167–195.

Png, I. and Wang, Q. 2006. *Copyright Duration and the Supply of Creative Work*, unpublished working paper.

Price Waterhouse Coopers (PwC). 2006. *The Impact of Copyright Extension for Sound Recordings in the UK*, (report commissioned by the BPI).

Quah, D. 2002. *Almost Efficient Innovation by Pricing Ideas*, CEP Working Paper #1219. http://econ.lse.ac.uk/staff/dquah/p/0205aei.pdf

Rappaport, E. 1998. *Copyright Term Extension: Estimating the Economic Values*, Congressional Research Service, 11 May 1998. http://digital.library.unt.edu/govdocs/crs/data/1998/meta-crs-727.tkl

Rob, R. and Waldfogel, J. 2004. *Piracy on the High C's: Music Downloading, Sales Displacement, and Social Welfare in a Sample of College Students*, NBER working paper 10874. http://www.nber.org/papers/w10874

Takeyama, L. 1994. *The Welfare Implications of Unauthorized Reproduction of Intellectual Property in the Presence of Demand Network Externalities*. Journal of Industrial Economics pp. 155–166 1994.

Tor, A. and Oliar, D. 2002. *Incentives to Create Under a "Lifetime-Plus-Years" Copyright Duration: Lessons from a Behavioral Economic Analysis for Eldred v. Ashcroft*. Published in 36 Loy. L.A. L. Rev. 437 (2002). http://cyber.law.harvard.edu/home/uploads/45/2002-02.pdf

Towse, R. 2001. *Creativity, Incentive and Reward: An Economic Analysis of Copyright and Culture in the Information Age*, (Cheltenham, UK: Edward Elgar, 2001).

Towse, R. 2003. *Assessing the economic effects of copyright and its reform*, OIPRC/Erasmus University Rotterdam. http://www.oiprc.ox.ac.uk/EJWP0703.pdf

Watt, R. 2000. *Copyright and Economic Theory: Friends or Foes?*, (Cheltenham, UK: Edward Elgar, 2000).

Watt, R. 2004. *The Past and the Future of the Economics of Copyright*, Review of Economic Research on Copyright Issues, 2004, vol. 1 (1) pp. 151–171.