Does United Kingdom's Stock Market Respond to Copyright Term Extension?

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Abstract

Copyright law is enacted to protect the intellectual property rights of copyright owners for a specific term. In 1993, the European Commission through the Directive 93/98/EEC on Harmonizing the Term of Protection of Copyright and Certain Related Rights (Copyright Term Directive), extended the copyright term by twenty years to the life of the author(s) plus another 70 years.

The objective of this paper is to examine the stock market response to copyright term extension by way of a legislative amendment. This follows from Baker and Cunnigham's (2006) study on the impact of court decisions and legislative changes on excess returns to equity of a panel of firms in the copyright industry, which found that statutory changes broadening copyright protection, including copyright term extensions, appear to increase firms' excess returns, particularly so in recent years. In their study, one shortcoming pointed out was that they were unable to determine whether changes on the excess returns were attributed to future copyright works or existing copyright works, or both.

We find in our study of 15 United Kingdom firms in the core copyright industry, the generalised least square panel regression results indicate little or no evidence of market response to five events related to the broadening of copyright terms in the period of 1988 to 1996. This is further supported by time series examinations on individual company's stock returns.

Introduction

Economists opposing copyright term extension argue that both prospective and retrospective term extensions introduce insignificant incentive to authors to create new copyright works (Akerlof et al, 2002). Since the present value of the marginal benefit of twenty years after a copyright term of life of the author plus fifty years is small, the additional incentive would not be noticeable. On the copyright term extension to existing works, the economists try to show that since the work would have already been created, no more incentive is given to the authors. At most, authors or the copyright holders would have obtained a windfall gain through retrospective copyright term extension.

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An event study examining the market response to the extension of copyright term in Europe (Copyright Term Directive, 1993) represents an excellent opportunity to further examine Baker and Cunningham's findings in the European context.

History of the Copyright Term Directive

On 7 June 1988, the European Commission published a Green Paper titled "Green Paper on Copyright and Challenge of Technology: Copyright Issues Requiring Immediate Action," outlining various issues in copyright law that need to be addressed by the European Community in order to achieve integration in the internal market. Among the issues raised was the need to harmonise the term of copyright protection. The Economic and Social Committee in its opinion of 25 January 1989 gave its support to the call for an urgent study on the term of copyright and "for bringing about harmonization of the protection periods for the various categories of works and other products" (Economic and Social Committee, 1989). Again in a follow-up report dated 17 January 1991, the European Commission stressed the need to harmonise the term of copyright, by extending upwards, in the Community, and laid down a proposal to pass a directive by the end of 1991.

The official process extending the copyright term in the European Community began on 5 February 1992, when the European Commission adopted a proposal to harmonise the copyright term in the European Community. This proposal was submitted by the Commission on 23 March 1992 and published in the Official Journal of the European Communities on 11 April 19992.

The proposal by the European Commission was to increase the copyright terms by 20 years for countries in the European Community except Germany. At that time, Germany had a longer copyright term than other countries, to compensate authors for the "lost years" during the world wars (Preamble 6, Copyright Term Directive). They way the directive was framed allowed required retrospective extension to existing copyrighted works.

After some amendments by the various bodies of the European Communities, the a Council Directive to harmonise the term of protection of copyright and certain related rights was adopted on 29 October 19993. Members States have to implement the Copyright Term Directive by 1 July 1995 (Article 13(1), Copyright Term Directive). United Kingdom's implementation came into force on 1 January 1996 via the Duration of Copyright and Rights in Performances

Methodology

Model Specification and Estimation

The event study method has been applied to study market response to changes in the law, both as a result of court decisions and legislative reforms in the area of intellectual property (see e.g., La Croix and Kawaura, 1996; Shapiro and Switzer, 1993). In the finance literature, the stock-pricing model is commonly expressed as a stream of discounted future cash flow received by the shareholders. Mathematically, it can be represented by

$$P_t = \sum_{t=0}^{\infty} \frac{E(C_t)}{(1+k_t)^t} \qquad (1)$$

where P_t is the share price at day t, $E(C_t)$ is the expected future cash flow and k is the required rate of return. Any systematic shocks to the underlined company would affect the share price (P_t) through the expected future cash flow and/or required rate of return. Since share price is endogenous, identifying the shocks, including any amendments to legislations, would review the fair value of the share.

In this respect, if the extension of the copyright protection would enhance the value of the company, one would expect the sum of the discounted future cash flow earned would increase, thus share price of that company will also be bullish. In contrast, if the extension of copyright protection is value neutral, the extension of copyright protection should have little or no effect on the share price.

To conduct an event study, we first need to identify the relevant dates the events occurred. Five important events leading to the extension of copyright protection were identified and described in Table 1.

Table 1: Main Events Leading to Harmonization of the Term of Protection of Copyright and Certain Related Rights Intellectual Property Law Extension of Copyright Protection in European Union

Event	Date	Description
Event1	June 7, 1988	Publication of Green Paper by the European Commission.
Event2	January 17, 1991	European Commission acknowledged the need to harmonize the term of trade.
Event3	February 5, 1992	Directive on Harmonizing the Term of Protection of Copyright and Certain Related Rights Intellectual Property Law adopted by European Commission.
Event4	October 29, 1993	Directive on Harmonizing the Term of Protection of Copyright and Certain Related Rights Intellectual Property Law formally adopted by Council.
Event5	January 1, 1996	Directive on Harmonizing the Term of Protection of Copyright and Certain Related Rights Intellectual Property Law formally adopted by the United Kingdom.

In an efficient stock market, any new information pertaining to a listed company will be quickly, if not instantaneously, absorbed by market participants and immediately reflected in the share price. Thus, any slight indication of copyright extension by the European Union will be well-absorbed by investors. In this case, the date of which the Green Paper was published by the European Commission in June 1988 is the first indication that the copyright term will be harmonised and will be adopted as first event. On the other hand, the formal adoption of the new legislation by the U.K. government in 1996 is taken as the final event.

To test this hypothesis, the following extension of market model is used

$$\begin{aligned} R_{it} &= \alpha_0 + \alpha_1 RM_{it} + \alpha_2 Event1_{it} + \alpha_3 Event2_{it} + \alpha_4 Event3_{it} + \alpha_5 Event4_{it} \\ &+ \alpha_6 Event5_{it} + \varepsilon_{it} \end{aligned} \tag{2}$$

where R_{it} is defined as the holding period return of company i during day t, RM_{it} is the market holding return based on FTSE 100 shares, ε is the error term and assumed to follow the usual assumptions, and Eventj equals one during the event j and zero otherwise, where $j \in \{1,2,3,4,5\}$.

Since the number of companies in the sample is relatively small, panel estimation technique is more preferable. Panel estimation methods have numerous advantages over time series techniques and cross sectional analysis (see Baltagi, 2001). More specifically, the generalised least squares (GLS) method is chosen over dynamic panel estimation and panel cointegration for two reasons: (1) the number of cross sectional units is less than the time series observations and so is not suitable for dynamic panel analysis; and (2) the holding returns are integrated of order zero as shown in Table 2, and as such, is not suitable for panel cointegration. To obtain robust standard errors, the panel corrected standard error (PCSE) technique pioneered by Beck and Katz (1995) is used.

Table 2: Results of Panel Unit Root Test on Stock Returns

	R_{it}	RM_{it}
Levin, Lin and Chu (2002) T Statistics	-128.831^{***}	-306.123^{***}
Im, Pesaran and Shin (2003) W Statistics	-80.480^{***}	-202.242^{***}

Notes: *** denotes as significant at 1% level. The null hypotheses for both tests are series contain unit root.

Sample Selection and Data Description

The selection of companies in the copyright industries is crucial in investigating the response of investors towards extension of copyrights protection. According to Siwek (2002), copyright industries in U.S. can be divided into four main groups, namely, the core industries, the partial copyright industries, distribution industries and the copyright-related industries. Out of the four groups, the core industries mainly involved in production and distribution of new copyrighted materials.

In line with this, companies from three sub-sectors, namely, broadcasting and entertainment, media agencies and publishing, were short-listed. In addition, the selection criteria include: (1) continuously listing between the 1988 and 1996 period; and (2) are U.K. companies listed on the London Stock Exchange. The final sample consists of 15 companies and is shown in the Appendix.

All the daily share prices including FTSE 100 index were downloaded from the DATASTREAM database for the period ranging from March 8, 1988 to March 25, 1996. This period coincides with the period covering from 61-trading days prior to the first event to 60-trading days after the last event. The final number of observations for each company recorded is 2036 daily share prices.

Results and Discussions

In the event study literature, it is documented that empirical findings might be sensitive to the event window. Thus, three different event windows namely 1-day, 3-days and 5-days event windows centering on the event date are used. The estimated results of Equation (2) are presented in Table 3.

Table 3: Results of Estimated Market Model

	Estimated Coefficients		
	1-Day Window	3-Days Window	5-Days Window
Intercept	0.0004***	0.0004***	0.0004***
	(0.0001)	(0.0001)	(0.0001)
RM	0.5326***	0.5317***	0.5310***
	(0.0159)	(0.0159)	(0.0025)
Event1	0.0072	-0.0023	-0.0001
	(0.0057)	(0.0033)	(0.0025)
Event2	-0.0053	-0.0059*	-0.0037
	(0.0058)	(0.0033)	(0.0025)
Event3	-0.0009	-0.0011	-0.0006
	(0.0057)	(0.0033)	(0.0025)
Event4	0.0012	-0.0007	0.0028
	(0.0057)	(0.0033)	(0.0025)
Event5	0.0044	0.0023	0.0031
	(0.0057)	(0.0033)	(0.0025)
R^2	0.0353	0.0353	0.0354

Notes: ***, ** and * denote as significant at 1%, 5% and 10% levels respectively. The panel corrected standard errors are shown in parentheses.

At a glance, the return on market index is positive and statistically significant at 1% level. In addition, the Beta values ranging between 0.5310 and 0.5326 imply that shares of broadcasting and entertainment, media agencies and publishing companies are less volatile and defensive in nature.

Turning to the main issue, only event 2 from the result of 3-days event window is marginally and negatively significant at 10% level. One might suggests that the acknowledgement of the need to harmonise the term of copyright by the European Commission in January 1991 is of marginal effect on stock returns. However, the estimated results from 1-day and 5-days windows indicate otherwise. Moreover, the other four events individually are not statistically associated to the stock returns. These suggest that all the four events have no impact on the share returns.

Taken together, the lack of stock market response due to events leading to broadening copyright protection in U.K. to life plus 70 years does not come as surprise. One might think that the extension of copyright protection companies by 20 years would increase the present value of expected future cash revenues of these U.K. companies. However, the empirical results suggest otherwise.

A plausible explanation for this result can be obtained from Equation (3), which is the change in share price due to the copyright term extension.

$$P_t^* = \sum_{t=life+50}^{life+70} \frac{E(C_t)}{(1+k_t)^t} \tag{3}$$

In the case of future copyright works, whether the sum of additional expected future cash flows is large or small, the discount terms $(1+k_t)^t$ would still be large as the extension of copyright term is at later years, thus the sum of present values for these additional cash flow P^* would be very small. For existing copyright works, insignificant price change in P^* may be due to small additional future cash flows $E(C_t)$ from out-dated or obsolete copyright materials; or large discount terms $(1+k_t)^t$ for existing copyright works which still have long term of protection; or a combination of both.

Robustness Check

Since the estimated results based on 3-days event window are marginally different from the others, further examination was conducted. In addition, the random effect model is based on the assumption of unobserved heterogeneity uncorrelated with the included exploratory variables. If the cross sectional effects are present and correlated with the independent variables, then the estimated coefficients based on OLS are biased (Hsiao, 1985). Alternatively, the impact of this copyright directive can be investigated using time series regression and the regression results are presented in Table 4.

From Table 4, only the stock returns of two individual companies responded to event 1, event 4 and event 5; while event 2 has significant impact on three companies' stock returns. Since only a few companies' stock returns show statistical significant responses, these significant adjustments might be attributed to firm specific events. Hence, market participants in U.K. show little or no reaction on share returns due to events leading to the harmonisation of copyright terms and this is consistent with the results obtained from the panel data regression.

Table 4: Results of Estimated Market Model Based on Time Series Data

	Estimated Coefficients						
Company	Intercept	RM	Event1	Event2	Event3	Event4	Event5
Broadcasting & Entertainment							
Chrysalis Group	0.0008	0.2403***	-0.0012	-0.0246*	-0.0000	0.0018	0.0010
Emi Group	0.0002	0.8206***	-0.0018	-0.0163***	0.0032	0.0079	0.0007
Gcap Media	0.0012**	0.3819***	-0.0244***	-0.0009	0.0015	0.0012	0.0042
Smg	0.0009***	0.1907***	-0.0012	-0.0018	-0.0042	-0.0003	-0.0029
Ulster Television	0.0014***	0.1768***	-0.0098	-0.0051	-0.0082	-0.0016	-0.0001
Media Agencies							
Aegis Group	-0.0004	0.4952***	0.0009	-0.0074	-0.0195	-0.0290*	-0.0034
Huntsworth	-0.0009	0.5423***	0.0000	-0.0019	0.0027	0.0188	-0.0010
Publishing							
Daily Mail & General Trust	0.0007**	0.3338***	-0.0119	-0.0064	0.0110	0.0042	-0.0019
Emap	0.0004*	0.6572***	0.0050	-0.0122*	-0.0008	-0.0021	0.0054
Euromoney Institutional Investor	0.0010***	0.0765	0.0187*	-0.0014	-0.0062	-0.0011	-0.0013
Pearson	0.0000	0.9335***	-0.0030	-0.0008	0.0000	-0.0040	0.0077
Reed Elsevier	0.0001	0.9936***	-0.0037	-0.0051	0.0057	0.0006	0.0112*
Reuters Group	0.0005*	1.0860***	0.0051	0.0053	-0.0092	0.0022	0.0053
Trinity Mirror	0.0005**	0.2459***	-0.0054	-0.0018	0.0002	-0.0121**	0.0101*
United Business Media	-0.0000	0.8013***	-0.0029	-0.0087	0.0064	-0.0039	-0.0003

Notes: ***, ** and * denote as significant at 1%, 5% and 10% levels respectively. The event window used is based on 3-days window.

Conclusion

In our study of 15 United Kingdom firms in the core copyright industry, the generalised least square panel regression results indicate little or no evidence of market response to five events related to the broadening of copyright terms in the period of 1988 to 1996. This is further supported by time series examinations on individual company's stock returns.

We suggest that an interpretation of this neural result mean that for future copyright works, the present value of the additional copyright term is insignificant, and the existing copyright works brings little additional value because of either being obsolete by the time of the extension or the discounting factor being too large or both.

Further research can be conducted by including other European firms affected by the same Copyright Term Directive. This research could not conclusively separate the effect of the term extension on existing works and future works. If a unique sub-industry could be identified which will not have any additional value from existing works, perhaps the effect from future works might be measured.

References

Akerlof, George A., et al. (2002). Amici Curiae Brief in Support of Petitioner at 12, *Eldred* v. *Ashcroft*. 537 US 186 (No. 01-618).

Baker, Matthew J., and Brendan M. Cunningham. [2006]. Court Decisions and Equity Markets: Estimating the Value of Copyright Protection. Forthcoming in *Journal of Law and Economics*.

Baltagi, B. H. (2001). *Econometric Analysis of Panel Data Second Edition*. West Sussex: John Wiley and Sons Ltd.

Beck, N. and Katz, J. N. (1995). What to do (and not to do) with Time-Series Cross-Sectional Data. *American Political Science Review*, 89(3), 634-647.

Economic and Social Committee. (1989). Green Paper on Copyright and the Challenge of Technology — Copyright Issues Requiring Immediate Action. OJ 1989 C 71, dated 25 January 1989, published 20 March 1989.

European Commission. (1988). Green Paper on Copyright and Challenge of Technology: Copyright Issues Requiring Immediate Action. COM(88) 172 (7 June).

European Commission. (1991). Follow-Up to the Green Paper — Working Programme of the Commission in the Field of Copyright and Neighbouring Rights. COM(90) 584 final (17 January 1991).

European Council. (1993). Council Directive 93/98/EEC of 29 October 1993 on Harmonizing the Term of Protection of Copyright and Certain Related Rights (‘Copyright Term Directive’). OJ 1993 L 290/9.

Hsiao, C. (1985). Benefits and Limitations of Panel Data. *Econometric Reviews,* 4, 121-174.

Im, K. S., Pesaran, M. H. and Shin, Y. (2003). Testing Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, 115(1), 53-74.

La Croix, Sumner, and Akihiko Kawaura. (1996) Product Patent Reform and Its Impact on Korea's Pharmaceutical Industry. *International Economic Journal*, 10(1), 109-124.

Levin, A., Lin, C. F. and Chu,, C. (2002). Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, 108(1), 1-24.

Shapiro, Daniel M., and Lorne N. Switzer. (1993). The Stock Market Response to Changing Drug Patent Legislation: The Case of Compulsory Licensing in Canada. *Managerial and Decision Economics*, 14(3), 247-259.

Siwek, S. E. (2002). *Copyright Industries in the U.S. Economy: The 2002 Report*. Washington: International Intellectual Property Alliance.

Appendix: List of Companies Included in the Final Sample

Sector	**Name of Companies**
Broadcasting & Entertainment	1. Chrysalis Group
	2. Emi Group
	3. Gcap Media
	4. Smg
	5. Ulster Television
Media Agencies	6. Aegis Group
	7. Huntsworth
Publishing	8. Daily Mail & General Trust
	9. Emap
	10. Euromoney Institutional Investor
	11. Pearson
	12. Reed Elsevier
	13. Reuters Group
	14. Trinity Mirror
	15. United Business Media