

DEAD POETS' PROPERTY-  
THE COPYRIGHT ACT OF 1814 AND THE PRICE OF LITERATURE IN THE  
ROMANTIC PERIOD<sup>\*</sup>

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Although copyright is a subject of intense debate, there is little empirical evidence on the effects of stronger rights on the price of intellectual assets. This paper exploits a differential increase in the length of copyright in favor of books by dead authors under the 1814 U.K. Copyright Act to investigate the causal effects of longer copyright terms on price. Difference-in-differences analyses, which compare the price of new editions of books by dead and living authors before and after 1814, indicate an 8 percent increase in price for each additional year of copyright, and an elasticity of price with respect to longer copyright of 0.9. Results are robust to controlling for book age, author, and time fixed effects, as well as genre fixed effects and controls for literary quality. They are also robust to excluding books by famous authors who died after 1814, and to excluding books by recently deceased authors. Placebo regressions reveal no significant effects for books by dead authors that did not benefit from longer copyrights. Complementary analyses confirm that books become cheaper as they approach the end of copyright.

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Proponents of long-lived copyright terms argue that long-lived terms encourage creativity by raising expected profits (Liebowitz and Margolis 2005), while critics contend that long-lived terms impede access to intellectual assets such as books, music, and software without encouraging creativity (Akerlof et al. 2002). The price of intellectual assets plays a critical role in determining these effects. Copyright allows owners to prevent entry and set monopoly prices for an intellectual asset; extensions in the length of copyright increase the number of years during which its owner can charge monopoly prices and deter the entry of potential competitors.

Identifying the causal effects of long-lived copyright terms, however, has proven difficult because modern changes in copyright laws typically occur in response to lobbying by the owners of particularly long-lived and valuable assets. For example, the 1998 U.S. Copyright Act, which extended the length of copyright from “life of author + 50 years” to “life of author + 70 years,” is also known as the “Mickey Mouse Protection Act” (e.g., Lessig 2001).<sup>1</sup> Copyright for Walt Disney’s character *Mickey Mouse* would have expired in 2003, but the Walt Disney Company “lobbied hard” for extending the length of copyright.<sup>2</sup>

Analyses of piracy, which can be understood as a drastic reduction in the expected length of copyright, yield the most direct evidence to date on the effects of copyright. Such analyses have found limited evidence for effects of piracy on sales (Oberholzer-Gee and Strumpf 2007; Waldfoegel 2011b) or on the number of new songs (Waldfoegel 2011a). Empirical analyses of price effects have established counter-intuitive correlations, without identifying the causal effect

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<sup>1</sup> Life of author plus 50 years had been the U.S. law since 1976, when the U.S. Copyright Act (17 USCS Sect. 302) increased terms from 28 years (with the possibility of extension to 56 years). In Britain terms increased to life of author plus 50 in 1911 (MacGillivray 1912, p. iv), and to life of author plus 70 in 1996.

<sup>2</sup> “Face Value: Free Mickey Mouse,” *The Economist*, Oct 10th 2002. Hui and Png (2002) find that the number of movie releases by U.S. studios per year did not increase in 1999 and 2000 compared with nine years between 1990 and 1998. For 38 countries between 1990 and 2000, Hui and Png (2002) find a positive correlation between the proportion of households that own a video tape player and movie releases per year in that country, but a negative correlation between the share of households that own a TV and movie releases in a given country.

of copyright. For example, journals increased their subscription prices for libraries after 1959, when libraries began to install copy machines (Liebowitz 1985).<sup>3</sup> Similarly, the American publisher Ticknor and Fields charged higher prices for pirated books by European authors compared with copyrighted books by U.S. authors between 1832 and 1858, possibly because U.S. readers preferred European authors independently of copyrights (Khan 2005).

This paper extends the existing literature by investigating the causal effect of longer copyright terms on price; to this end, it exploits a differential increase in the length of copyright – in favor of dead authors - through the U.K. Copyright Act of 1814. Intended to affirm a requirement to provide library copies of all new books as well as relax the requirement to produce copies for deposit libraries on expensive paper, the Act also extended copyright from 28 years to “life of author” if the author was alive at the end of the 28-year term. Given historical life expectancies, however, this extension created no substantive increase in the length of copyright for living authors.<sup>4</sup> The Act also simplified copyright terms for dead authors from 14 years plus an additional 14 if the author was still living at the end of the initial term to a uniform term of 28 years for all dead authors. This differential increase in the length of copyright allowed publishers who owned the copyright to prevent competitors from entering with cheaper editions of the same book by dead authors, and may have enabled copyright owners to charge higher prices to readers who would have waited for cheaper editions.<sup>5</sup>

The empirical analysis measures changes in the price of books after 1814 by dead and living authors. A key benefit of this difference-in-differences strategy is that it controls for

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<sup>3</sup> Varian (2005) provides a theoretical framework to explain the response of price to copying - a new technology that weakens the effectiveness of copyright. Nair (2007) and Mortimer (2007) analyze strategies of price discrimination that rely on copyright protection in the video games and VHS/DVD industries, respectively.

<sup>4</sup> See Appendix B for a detailed description of data on life expectancies of British authors.

<sup>5</sup> For example, Lord Dudley said of Scott’s *Lady of the Lake* in 1810: “two guineas is too much for six cantos, and I shall therefore wait patiently for the [lower-priced edition, the] 8vo” (St. Clair 2004, p. 201).

unobservable factors that may have caused book price to change after 1814, regardless of changes in copyright. Most importantly, the gradual diffusion of the Earl of Stanhope's iron printing press reduced the costs of printing after 1800 (Bautz 2007, p. 12; Moran 1974), and Henry and Sealy Fourdrinier's papermaking machines reduced the price of paper after 1807 (Feather 2005, p. 131). Moreover, "war features such as the blockade of Britain from 1806" which "led to material restrictions, especially paper-shortage" (Bautz 2007, p. 12), had increased the price of paper during the war, and may have led to a decline of input prices after the end of the Napoleonic Wars and the War of 1812. Increases in literacy may also have increased the demand for reading, even though - with average book prices around 17 shillings at a time when working-class men earned "between 9 and, very exceptionally, 40 shillings a week" (Bautz 2007, p. 12) - books remained an unattainable luxury for most (St. Clair 2004, p. 196).<sup>6</sup>

A new data set of 1,072 editions of books published between 1790 and 1840 makes it possible to examine changes in the price of books, controlling for other characteristics. Price data are drawn from St. Clair's (2004) literary history of the Romantic Period and historical catalogues, such as the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Author fixed effects control for variation in the popularity of individual authors. An indicator variable controls for books that entered Bloom's (1994) *Western Canon* of influential works. Genre fixed effects control for variation across novels, poetry, other fiction and non-fiction (including travel reports and Adam Smith's *Wealth of Nations*). Book age fixed effects control for variation in price across the lifecycle of a book.

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<sup>6</sup> St. Clair (2004, p. 198) argues that harsh winters and food shortages in the 1820s helped to sustain the demand for books by increasing the real income of wealthy landowners. Middle-class readers "rented" books through circulating libraries in a system that resembled 20<sup>th</sup>-century video rental stores (Roehl and Varian 2000).

Difference-in-difference analyses of these data indicate that extensions in the length of copyright led to a substantial increase in the price of books. Regressions with author and book age fixed effects indicate that – after the length of copyright for dead authors doubled from 14 to 28 years in 1814 - the price of books by dead authors increased by 20.02 additional shillings compared with books by living authors. Compared with an average price of 17.79 shillings for all editions after 1814, this implies an increase of 8 percent for each additional year of copyright, and an elasticity of price with respect to longer copyright of 0.9. These estimates are robust to controlling for genre, literary quality, and physical characteristics (page numbers and book sizes). Estimates of time-varying effects indicate that these effects became statistically significant six years after the Act, with no significant pre-trends. Estimates are also robust to excluding books by popular authors who died after 1814 and to excluding books by recently deceased authors (which may have sold for a higher price).

The main threat to the identification strategy is that books by dead authors may have become more expensive after 1814 as a result of changes in tastes or other unobservable factors. To address this issue, we examine whether books by dead authors that did not benefit from longer copyright terms also became more expensive after 1814. Specifically, we exploit the fact that the change in the law only increased the length of copyright for books by dead authors that had been in print for 14 years or less but did not increase the length of copyright for books by dead authors that had been in print for more than 14 years. Placebo regressions yield no evidence of a statistically significant increase after 1814.

A complementary test examines whether book titles became cheaper as they approached the end of copyright. If expectations about the length of copyright terms influence price, book title should also become cheaper as they approach the end of copyright. To investigate this, we

calculate the expected length of remaining copyright for 970 editions and estimate coefficients separately for three-year intervals counting backwards from the end of copyright. These estimates indicate a substantial decline in the price of new editions as book titles approach the end of copyright.

## I. THE COPYRIGHT ACT OF 1814

Copyright was first formalized through the 1710 *Statute of (Queen) Anne*, which granted printers exclusive rights to sell books for 14 years, with a 14-year extension if the author was alive at the end of the initial term.<sup>7</sup> The length of copyright was modeled after the length of utility patents under the Statute of Monopolies of 1624 (Deazley 2008b), which in turn was “based on the idea that 2 sets of apprentices should, in 7 years each, be trained in the new techniques” (Machlup 1958, p. 9).<sup>8</sup>

The *Statute* also required publishers to provide copies of all new books to the British Library and ten university libraries. A 1798 decision in *Beckford v. Hood*, which stipulated that books could be on copyright even if publishers had not provided library copies, called this requirement into question, and deposits declined from 620 in 1798 to 370 in 1803. In 1803

Basil Montagu (1770-1851), a barrister and author, was sent to Cambridge University library for the seventh volume of the Term Reports...only to find that the library did not have a copy...Montagu, troubled by the absence...decided to investigate the matter further. Of all the works published in 1803 (which he underestimated at 391) he could only find 22 (Deazley 2008a).

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<sup>7</sup> Writers typically assigned the rights to both 14-year terms to a publisher (Bently and Ginsburg 2010, p. 1508; Van Houweling 2009, p. 584; Deazley 2007, p. 844). “A common type of contract, as it had been for centuries, was for the author to sell the copyright to a publisher outright for a lump sum. Under this type of contract, the publisher met all the costs of manufacture and publication, and the author had no further financial claim” (St. Clair 2004, p. 161).

<sup>8</sup> A system of steep fines ensured enforcement. In 1801, for example, a printer who had violated copyright lost all infringing copies of his book and paid a fine of 3d per sheet, “half to the crown, and half to whoever sued for it” (Seville 1999, p. 239). Printers who imported infringing books were fined £10 (Seville 1999, p. 239), roughly 20 times the average weekly wage of working-class men during the early decades of the 1800s (Bautz 2007, p. 12).

In 1805, Montagu published an essay arguing that “the intention of the legislature, to assist in the regular augmentation of the library, was likely to be defeated.” Montagu’s essay triggered debates about the deposit requirements that reached the House of Commons in 1808 (Deazley 2008a).

Booksellers opposed the requirement because it “will subject the petitioners to great expence (sic), and operate very seriously to discourage literature” (*London Booksellers’ Petition Respecting Copy-rights, &c.* 1812, p. 310). For example, the printer Richard Taylor argued that for some books “the eleven copies would...prevent their being printed at all.”<sup>9</sup> Booksellers were particularly concerned about the requirement to provide copies on the highest-quality paper, at a time when disruptions and demands from wars had led to shortages.

“best paper copies, at the passing of the said act, were not similar to the expensive fine paper copies now printed” (*London Booksellers’ Petition Respecting Copy-rights, &c.*, London 1812, p. 310).

Proponents of the deposit requirement countered that:

“...continuing the delivery of all new works, and in certain cases of subsequent editions, to the libraries now entitled to receive them, will tend to the advancement of learning, and to the diffusion of knowledge. But it will be expedient to modify some of the existing provisions, -- As to the quality of the paper, which may fairly be reduced from the finest sort and largest size, to that used in the greater part of an edition...” (*Report of the Acts Respecting Copyright* 1813, p. 709)

Passed on July 29, 1814, the Copyright Act affirmed the requirement to deposit copies with the British Museum and 10 university libraries within 12 months of publication (§ 2).<sup>10</sup> To address the concerns of booksellers, however, the Act relaxed the requirement to deposit copies

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<sup>9</sup> *Select Committee on Acts for the Encouragement of Learning: Minutes of Evidence* (1812-13, p. 29-30).

<sup>10</sup> The deposit requirement covered all first editions, but extended to later editions only if their content was substantively different: “That no such printed Copy or Copies shall be demanded or delivered or for the Use of any of the Libraries hereinbefore mentioned, of the Second Edition, or any subsequent Edition of any Book or Books so demanded and delivered as aforesaid, unless the same shall contain Additions or Alterations...” (1814 Copyright Act, § 3). In the spirit of the law, editors only needed to deposit books that libraries requested but “as it soon became clear, the libraries rarely exercised any discretion in the demands that they made, often simply requesting all the works on the lists sent to them from the Stationers’ Company” (Deazley 2007, p. 837).

for all libraries on “best paper” and required printers to provide only one such copy for the British Museum (§ 3).

### *I. B. A Differential Increase in Copyright for Dead Authors*

Although its main intent was to affirm the deposit requirement, the Act also included provisions to extend the length of copyright, possibly to compensate publishers for the costs of providing library copies. For books that had been in print for 14 years or less, the Act extended the length of copyright to 28 years “and also, if the Author shall be living at the End of that Period, for the Residue of his natural Life” (§ 4).

Booksellers “had made clear before the committee that the extended term was of little interest or value to them...[and that the Bill] did little other than service the needs and interests of the university libraries” (Deazley 2007, p. 837).<sup>11</sup> In fact, the extension was added after an “opportunistic and timely intervention” by Member of Parliament (and author) Samuel Egerton Brydges on July 18, 1814, rather than a “principled or considered position adopted on the part of the legislature” (Deazley 2007, p. 839).<sup>12</sup>

A potential cause of booksellers’ lack of enthusiasm was that the change implied no substantive increase in copyright for the average author, who was 42 years old at the time of the

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<sup>11</sup> See for example, the response of Thomas Longman of Longman and Rees to questioning by Member of Parliament Davies Giddy., Davies Giddy: As a principal bookseller, and a great purchaser of copy right, did you not consider an extension in the term of copy right, quite equivalent for the loss which they would sustain by the delivery of the eleven copies? –Thomas Longman: I did not consider that. Thomas Longman: I do not think it was; there were some persons of that opinion” (Parliamentary Select Committee on Acts for the Encouragement of Learning in 1813, *Minutes of Evidence*, 1812-13, pp. 11-12).

<sup>12</sup> Brydges’ suggestion was incorporated in the final draft on July 19: “if the author be living” at the end of the 28-year term then the title would be under copyright “for the residue of his natural life.” Draft bills on May 18, June 7, July 12 and July 15 had specified a term of “twenty-eight years...and no longer” (Deazley 2007 p. 839).

first edition.<sup>13</sup> Data on historical life expectancies, however, indicate that the average 42-year old writer in 1815-1819 could expect to live for another 28 years.<sup>14</sup>

For dead authors, the Act simplified the law to create a uniform 28-year term for books, regardless of whether the author had survived the first 14-year (§ 8, Appendix A).<sup>15</sup> Compared with the change for living authors, this provision, which was added on July 26 “without any significant discussion” (Deazley 2007, p. 840), implied a differential increase of 14 years for the average author.<sup>16</sup>

## II. THE DATA

To examine whether the differential increase in the length of copyright created economically significant effects for the English book trade, we have constructed a new data set, which covers the price, age, genre, literary quality, and physical characteristics of 1,072 editions of 609 book titles by 137 authors between 1790 and 1840.

### *II.A. Book prices for new editions, 1790-1840*

Price data are drawn from William St. Clair’s *The Reading Nation in the Romantic Period* (2004) and from historical catalogues of books.<sup>17</sup> St. Clair includes information on the price of 534 newly printed editions between 1790 and 1840, collected from historical catalogues,

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<sup>13</sup> With a standard deviation of 13 and a median of 40 for 105 authors of 436 first editions between 1790 and 1840.

<sup>14</sup> Based on data for birth years and length of life for 947 writers who were born between 1700 and 1850. Data collected from the *Dictionary of Literary Biography*; see Appendix B for a detailed description.

<sup>15</sup> The only prior mention of uniform rights for dead authors (regardless of whether they had survived for the first 14 year terms or not) was in the 1812 petition of the London Booksellers (p. 310) which emphasizes the burden that the deposit requirement creates for the families of dead authors.

<sup>16</sup> In 1818, a unanimous decision in *Brooke v. Clarke* (1818) confirmed that copyrights that had already expired should not be revived by the Act (Deazley 2006, p. 35-36).

<sup>17</sup> Anecdotal evidence indicates that most consumers paid list prices for books. When some retailers attempted to sell book prices below list prices in 1829, the London Booksellers’ Committee decreed that they would no longer be supplied with books (Barnes 1964, p. 1).

such as the *London Catalogue*, the *English Catalogue* and the *Modern Catalogue of Books*, the archives or publishers, printers and booksellers (e.g., Richard Bentley, William Blackwood, Cadell and Davies, and Longman), as well as bibliographical studies of individual authors (including Sir Walter Scott and Lord Byron). To complement St. Clair's data we collect price data for an additional 429 editions between 1801 and 1840 from the *English Catalogue of Books* (Peddie and Waddington 1914) and for 109 editions printed between 1790 and 1840 from the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851).<sup>18</sup>

Across all years, the average price of a new edition for a book that had been in print for 14 years or less was 17.72 shillings (compared with a weekly wage for working-class men “between 9 and, very exceptionally, 40 shillings a week,” Bautz 2007, p. 12).<sup>19</sup> Consistent with the idea that technical improvements, such as the iron printing press and Fourdrinier's paper-making machine, reduced the price of books, data for the overall sample indicate that books became slightly cheaper after 1814, with an average price of 18.05s for 365 editions between 1790 and 1814 and 17.54s for 707 editions between 1815 and 1840. The median price for books fell from 12s in 1810-1814 to 10.5s in 1815-1819, at which level it remained until 1834, before falling to 8.5s for 1834-1839. The data, however, also indicate that prices became more dispersed over time: For example, the interquartile range of prices (measured as the difference between the upper and lower quartiles of the price distribution) increased from 14.0s in 1810-1814 to 25.5 in 1834-1839 (Figure 1). Books that had been in print for 14 years or less became

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<sup>18</sup> To determine the length of the copyright terms, we matched author names in the catalogues with demographic data from the *Dictionary of Literary Biography*. Data on book editions in the *English Catalogue* were collected using character recognition (OCR), so that OCR errors may prevent correct matches from being recognized in a fully automated matching algorithm. To address this issue, we created a fuzzy matching algorithm that identifies probable author names in the *Dictionary* and the *English Catalogue*, and checked probably matches one by one to eliminate false positives.

<sup>19</sup> For books that were published in multiple volumes, prices are for the set of volumes if the volumes were sold together. If volumes were sold separately, such as Sir Walter Scott's *Tales of a Grandfather* (1828, 1830 and 1831), each volume is treated as a separate observation on price.

slightly more expensive after 1814, with an average price 17.59s until 1814 and 17.79s afterwards.

## *II.B. “Literary quality” and genre*

To control for literary quality, we match editions with 138 book titles in Harold Bloom’s (1994) *Western Canon of English Literature*.<sup>20</sup> Twenty-six of 609 titles (4.3 percent) entered the *Canon*, accounting for 102 editions in the data (9.5 percent, Table A1). Eleven titles (48 editions) are novels, such as Jane Austen’s (1813) *Pride and Prejudice*. Seven titles (18 editions) are volumes of poetry, such as Lord Byron’s 1807 *Poems on Various Occasions*. Four titles (36 editions) are non-fiction, such as Edward Gibbon’s (1776), *The Decline and Fall of the Roman Empire, Volume I*. By comparison, Bloom’s (1994) *Western Canon* includes 106 works of fiction, 77 of which are novels and 15 volumes of poetry, as well as 32 works of non-fiction, such as Edmund Burke’s (1790) *Reflections on the Revolution in France*.<sup>21</sup>

To control for variation in the content of books, we consult literary reference works, such as *The Dictionary of Literary Biography* to distinguish novels, poetry, other fiction, and non-fiction.<sup>22</sup> Two thirds (703 of 1,072) of all editions printed between 1790 and 1840 are fiction, including 392 volumes of poetry (such as Lord Byron’s *Childe Harold’s Pilgrimage*), and 260 novels (such as Jane Austen’s *Pride and Prejudice*, and Mary Wollstonecraft Shelley’s *Frankenstein*). Fiction also includes 51 editions of children’s literature, plays, hymns and songs. One third of all editions (369 of 1072) are non-fiction, including Adam Smith’s (1776) *Inquiry*

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<sup>20</sup> The first entry in the *Canon* is William Wycherley’s *Country Wife* (1675); the most recent entry is Christopher Smart’s *Jubilate Agno* (1939).

<sup>21</sup> Sadly, Adam Smith’s *Wealth of Nation* is not included in Bloom’s *Canon*.

<sup>22</sup> The classification of literary genres follows Suarez (2010).

*into the Nature and Causes of the Wealth of Nations*, and travel reports, such as William Hazlitt's (1826) *Notes of a Journey through France and Italy*.

### *II.C. Expected length of copyright (or "life of author")*

To evaluate the *de facto* extension that "life of author" provided for books, we construct estimates of authors' remaining years of life in the publication year of the first edition. Since the term of copyright begins in the year of the first edition, and ends after 28 years or the death of the author (whichever came first), this estimate is the expected length of copyright.

Price data cover 436 first editions by 105 authors between 1790 and 1840. The average author was 42 years old when the first edition of his book was published, with a standard deviation of 13 years. To calculate an author's remaining years of life at 42, we collect demographic data for 947 British writers with birth years between 1700 and 1850 from the *Dictionary of Literary Biography*. These data imply a writer at age 42 could expect to live another 28.42 years in 1815-1819 (Appendix B), which implies that the extension of copyright terms to the maximum of "28 years or 'life of author'" created no *de facto* extension in the term of copyright for the average author.

### *II.D. Variation in the size of books – page numbers and page size*

To control for variation in the physical size of books, we construct data on page numbers by searching the online catalogues of the British library and Google Books for each of the 1,072 editions in the data. This search yields information on page numbers for 795 of all 1,072 editions that were printed between 1790 and 1840, and for 692 editions of 902 editions of books

that were printed between 1790 and 1840 and had been in print for 14 years or less (and were affected by the differential change in the length of copyright).<sup>23</sup>

Across all 795 editions, the average book was 404 pages long (with a median of 331 and a standard deviation of 365); for 692 editions that had been in print for 14 years or less, the average book was 397 pages long (with a median of 325 and a standard deviation of 360). Not surprisingly, novels were more than twice as thick as volumes of poetry. Novels were 613 pages on average, with a standard deviation of 433, and a median of 455. Poetry editions were 281 pages on average, with a standard deviation of 259 and a median of 237. Other works of fiction, such as children's books and hymns were even shorter (with 169 pages, a standard deviation of 135, and a median of 114). Works of non-fiction, which included many travel reports, were slightly shorter than novels, with an average of 459 pages, a standard deviation of 378 and a median of 331. A 1791 edition of Adam Smith's *Wealth of Nations*, for example, was 987 pages long. In the baseline empirical analysis, genre fixed effects control for such variation, but we also include results which show that results are robust to the inclusion of controls for page length.

Information on dimensions is available for 777 of 1,072 editions. The size of a book was recorded as a measure of the number of times printers folded a standard sheet of paper to produce a page of the book. For example, folding twice produced a quarto (4to), a book with

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<sup>23</sup> The online catalogues of the British library include page numbers for 17 editions (available at <http://explore.bl.uk>, accessed September 4-20, 2012). A search for book titles in Google books yields page numbers for 675 additional editions. Google books is a searchable depository of the full text of the holdings of 21 libraries (including, in September 2012 the holdings of 21 libraries, such as University of Michigan, Harvard, Stanford University, and the Committee on Institutional Cooperation; <http://books.google.com/>, accessed September 4-20, 2012. If page numbers are available for at least one edition within ten years before or after the year of publication for editions in our sample of a same title, we use data for the edition that is closest in time to fill in missing data; data for 249 editions was constructed this way. Variation in the count of pages within titles (for example as a result of differences in layout or font size, is relatively low, with a standard deviation of 16.88 pages for the 143 titles.

pages one-quarter of the size of a sheet, which accounts for 45 of 777 editions (5.8 percent).<sup>24</sup> Folding once more produced an octavo (8vo), which accounts for 529 editions (68.1 percent). The duodecimo was one-twelfth the size of a sheet (12mo), and accounts for 197 editions (25.4 percent). Smaller sizes included the sextodecimo (16mo, one-sixteenth of a sheet, 3 editions or 0.4 percent), the decimo-octavo (18mo), vingesimo-quarto (24mo), and trigesimo-secundo (32mo) respectively, each accounting for 1 edition in the data.

Price data indicate no clear linear relationship between physical dimensions and price. With an average price of 38.90 (and a standard deviation of 46.61, the largest (quarto) books were twice as expensive as the second most expensive (duodecimo) books (with an average price of 18.33 and a standard deviation of 19.11). With an average price of 15.0s (and a standard deviation of 17.64), octavo books, which accounted for the majority of editions, were nearly as expensive as the smaller duodecimo books. Over time, the median price for an octavo edition increased from an average of 5s in 1790-1794 to 10.5s in 1810-1814, and 21s in 1835-1839, while the median price of a quarto decreased from 36s in 1790-1794 to 15s in 1830-1834.

### III. EMPIRICAL RESULTS

Summary statistics indicate a substantial increase in the average price of books by dead authors compared with books by living authors after 1814. For books that had been in print for 14 years or less (which were affected by a differential increase in the length of copyright for books by dead authors), the price of new editions of books by dead authors nearly doubled from 17.69s between 1790 and 1814 to 33.39s between 1815 and 1840 (Figure 2 and Table 2).<sup>25</sup> By

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<sup>24</sup> From *OED Online*, <http://www.oed.com/view/Entry/156080?redirectedFrom=quarto>, accessed October 14, 2012.

<sup>25</sup> 902 editions of books that had been in print for 14 years or less include 18 editions by 11 dead authors prior to 1814 and 24 editions by 16 dead authors after 1814.

comparison, the price of books by living authors declined from 17.64s until 1814 to 17.13s after 1814.

### III.A. A significant increase in the price of books by dead authors after 1814

Baseline difference-in-differences OLS regressions estimate

$$Price_{it} = \alpha_0 + \alpha_1 Dead_{it} + \alpha_2 Dead_{it} * post1814_t + X_{it}\gamma + \varepsilon_{it}$$

where the outcome variable  $Price_{it}$  measures the price of a new edition of book title  $i$  in year  $t$ .

The variable  $Dead_{it}$  equals one for books by dead authors;  $post1814_t$  equals 1 for years between 1815 and 1840; years between 1809 and 1814 form the excluded period in the set of five-year fixed effects. Under the assumption that changes in price after 1814 would have been comparable for editions by living and dead authors if there had been no change in copyright, the coefficient for  $Dead_{it} * post1814_{it}$  estimates the causal effect of an increase in the length of copyright. The control variable  $X_{it}$  is a vector that includes controls for books that became part of Bloom's (1994) *Western Canon*, book age fixed effects to control for variation in the price of new editions over the life cycle of a book, as well as author and time fixed effects. Standard errors are clustered at the level of authors; this allows us to address the potential of serial correlation in the error terms at the level of titles and use repeated observations on titles by the same author to estimate a robust variance-covariance matrix.<sup>26</sup>

Baseline regressions confirm the differential price increase for books by dead authors.

Estimates for *dead* indicate that, until 1814, books by dead authors sold for 6s less than books by living authors, although the effect is not statistically significant (with a p-value of 0.43, Table 3,

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<sup>26</sup> This approach is equivalent to clustering standard errors by state in a regression with observations at the individual level to address the potential problem of serial correlation in the residuals across individuals within a state (e.g., Bertrand, Duflo, and Mullainathan 2004). Serial correlation across individual observations is the most direct threat to the difference-in-differences estimator to falsely reject the null; in addition, clustering at the level of authors addresses the problem of correlation across individuals in the cross section.

column 1). Difference-in-differences estimate for *dead \* post-1814*, indicate that after 1814, books by dead authors became 20.02s more expensive compared with books by living authors (with a p-value of 0.01, Table 3, column 1). Relative to an average price of 17.79s for editions printed after 1814, this baseline estimate implies a 112 percent increase, and a 0.90 elasticity of price with respect to longer copyright.<sup>27</sup>

Estimates are robust to including controls for books in Bloom's (1994) *Canon* (Table 3, column 2), implying an elasticity of 0.91. These specifications indicate that canonical works of literature were on average 2.48s cheaper (with a p-value of 0.34 Table 3, column 2), implying a 14 percent discount compared with other books.<sup>28</sup> Including genre fixed effects and dropping author fixed effects reduces the size of the estimated elasticity to 0.80. Regressions with genre fixed effects indicate a price increase of 17.76s (with a p-value of 0.07, Table 3, column 3) implying an elasticity of 0.80. Excluding author fixed effects to increase statistical power indicates a price increase of 17.15s (with a p-value of 0.08, Table 3, column 4), implying an elasticity of 0.77, which is the lowest estimate across specifications.<sup>29</sup>

### *III.B. Time-varying estimates before and after 1814*

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<sup>27</sup> This elasticity is calculated as the percent increase in price (20.02 relative to the pre-1814 price of 17.69s for books by dead authors) relative to the percent increase in the length of copyright for dead authors (an extension of 14 years relative to the average length of copyright for books by dead authors until 1814, which equals 14 years minus the average age of 2.89 years for books by dead authors until 1814).

<sup>28</sup> A potential explanation for this result is that the long-run perceptions of quality are endogenous to price, if lower priced books are more widely read and books that were more widely read were – all else equal – more likely to become canonical. An alternative explanation, which is supported by the data, is that higher-quality books stayed in print longer and, as the book titles matured and approached the end of its remaining copyright term, were more likely to sell for a cheaper price with octavo and other lower-priced editions compared with other books of the same age. In fact, 26 books in the data that entered the *Canon* were printed for an average of 3.12 editions - nearly double the average count of 1.59 editions for other books.

<sup>29</sup> Results are also robust to excluding observations above the 99<sup>th</sup> or 95<sup>th</sup> percentile of price. Estimates for *Dead<sub>it</sub> \* post1814<sub>it</sub>* are 26.30 (with a p-value of 0.01) excluding observations above the 99<sup>th</sup> percentile and 11.6 (with a p-value of 0.01) excluding observations above the 95<sup>th</sup> percentile.

To examine the timing of changes in the price of books, and in particular to investigate whether books by dead authors may have begun to sell for higher prices *before* the Copyright Act, we estimate time-varying coefficients, allowing the “effect” of the Copyright Act to be different from zero until 1814.

$$Price_{it} = \beta_0 + \beta_s Dead_{it} * Period_t + X_{it}\gamma + \varepsilon_{it},$$

where the variable  $Period_t$  indicates 5-year intervals  $s$  for 1805-09, 1815-19, 1820-24, 1825-29, 1830-34, and 1835-39, where 1810-14 is the excluded interval.

Time-varying coefficients yield no evidence of a differential increase in the price of books by dead authors before the change in copyright. Time-varying coefficients are close to zero and precisely estimated for 1810 to 1820 (Figure 3). Estimates become statistically significant after the 1825-29 interval and remain large and significant until 1840, with a coefficient of 49.00 and a p-value of 0.008 for 1830-1834 and a coefficient of 26.83 and p-value of 0.004 for 1835-1839.

### *III.C. Excluding books by popular (expensive) authors who died after 1814*

Another potential threat to the analysis is that the price of books by dead authors who died after 1814 may have increased for idiosyncratic reasons that were independent of the increase in the length of copyright. Author fixed effects, which control for variation across authors in the average price of books across the entire sample period, mitigate this problem, but they may not be sufficient to control for the influence of exceptionally popular authors who died after 1814. Most importantly, Sir Walter Scott (1771 – 1832) “sold more novels than all the other novelists of the time put together” (St. Clair 2004, p. 221), and readers complained about

exorbitant prices for his books. For example, Lord Dudley said of Scott's *Lady of the Lake* in 1810, the year of the first edition: "two guineas is too much for six cantos, and I shall therefore wait patiently for the [lower-priced edition, the] 8vo."<sup>30</sup> Scott's *Tales and Romances by the Author of Waverley* fetched a record 108s in 1833, 1 year after the authors' death. The data include 36 editions of 8 titles by Sir Walter Scott until 1814 (with an average price of 30.92s), 92 editions of 36 titles between 1815 to Scott's year of death in 1832 (36.94s), and 4 editions of 2 titles after his death (78.38s).

Estimates with a sample that excludes Scott are large and statistically significant in all specifications. Difference-in-differences estimates controlling for book age and author fixed effects indicate that the price of editions by dead authors increased by 19.94 additional shillings compared with books by living authors after 1814 (with a p-value of 0.001, Table 4, column 1). Compared with an average price of 13.73s after 1814 in the sample of books that excludes Sir Walter Scott, this implies a 145 percent increase in the price of books by dead authors, and an elasticity of 0.89.<sup>31</sup> Estimates are robust to including controls for books in the Western Canon (Table 4, column 2), and including genre fixed effects (Table 4, column 3). Equivalent regressions that exclude books by Sir Walter Scott *and* Lord Byron (1788-1824), the other literary super-star of the period, continue to confirm the differential price increase for books by dead authors (Table 4, columns 4-6).<sup>32</sup> Byron's collected *Works and Life* (first published in 1832, protected by copyright until 1860) is the second most expensive book in our data, at a price of 85s in 1840.

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<sup>30</sup> Cited in St. Clair (2004 p. 201).

<sup>31</sup> As above, the elasticity is calculated as the percent increase in price (19.94s relative to the pre-1814 price of 17.69s for books by dead authors) relative to the percent increase in the length of copyright for dead authors (an extension of 14 years relative to the average length of copyright for books by dead authors until 1814, which equals 14 years minus the average age of 2.89 years for books by dead authors until 1814).

<sup>32</sup> After the publication of *Childe Harold's Pilgrimage* in 1812, Byron wrote, "I awoke one morning and found myself famous" (Moore 1830, p. 255).

Books by two prominent female writers who died after 1814, Mary Shelley (1797-1851) and Jane Austen (1775-1817) were only slightly more expensive than books by the average authors.<sup>33</sup> In fact, Jane Austen's work languished in "relative obscurity" throughout the Romantic Period (Bautz, 2007, p. 2).<sup>34</sup>

### *III.D. Excluding books by recently deceased authors*

Another alternative mechanism for the observed price increase is that books by recently deceased authors may have sold for higher prices – independently of copyright - because news of an author's death increased demand for his work. Consistent with this idea, the price of art has been shown to increase shortly after the artist's death (Ekelund, Ressler, and Watson 2000). If books by recently deceased authors sell for a higher price, and if their influence on average prices is larger after 1814, then the observed increase in the price of books by dead authors after 1814 may be driven by a temporary price increase for books by recently deceased authors.

Price data confirm that books by recently deceased authors do, in fact, sell for a slightly higher price compared with books by living authors and books by authors who had died some time ago. For books that had been in print for 14 years or less, the average price of 14 editions by authors who had died within a year from the date of publication was 36.18s, compared with 17.13s for living authors, and 28.36s for authors that had been deceased for longer than a year. Fourteen (or one third) of 42 editions by dead authors were published within one year of the

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<sup>33</sup> Thirteen editions of 6 titles by Mary Shelley sold for an average of 22.32s, compared with 17.79s for all 595 editions. Shelley's *Frankenstein* sold for an average of 9.16s between 1818 and 1840, compared with a price of 17.79s for all 595 editions between 1818 and 1840.

<sup>34</sup> Austen's books (7 editions of 3 titles, *Sense and Sensibility*, *Pride and Prejudice* and *Mansfield Park*) sold for an average of 15.29s until 1814, and for 17s between 1814 and Austen's death in 1817 (3 editions of 3 titles, *Emma*, *Mansfield Park*, and *Pride and Prejudice*). Austen's books remained on copyright after her death; five of them were reprinted between 1817 and 1842 (*Emma*, *Mansfield Park*, *Northanger Abbey and Persuasion*, *Pride and Prejudice*, and *Sense and Sensibility*); they sold for a low average price of 8.07s between her death year of 1817 and 1833, the year of the last edition of Austen's works in our sample.

author's death; 3 editions (21.4 percent) until 1814 and the remaining 11 (88.6 percent) after 1814, suggesting that books by recently deceased authors form a larger share of the sample after 1814 - possibly because the copyright extension of 1814 made books by dead authors more profitable.

Excluding books by recently deceased authors, however, increases the size of the estimates because the proportional price increase after 1814 is smaller for books by recently deceased authors. Baseline estimates imply that after 1814, the price of new editions of books by dead authors (excluding the recently deceased) increased by an additional 24.47s (with a p-value of 0.003, Table 5, Column 1). Compared with an average price of 17.38s for editions after 1814 in this sample, this implies an increase of 140 percent in the price of books by dead authors, and an elasticity of 1.13.<sup>35</sup> Estimates are robust to controls for canonical books, genre fixed effects and excluding author fixed effects (Table 5, columns 2-4).

### *III.E. Controlling for page numbers and page size*

A final test investigates whether the differential increase in book prices for dead authors is robust to controlling for physical characteristics like page count and page size. Most importantly, books with more pages may be more valuable to readers and cost more to produce. If the number of pages increased more for books by dead authors after 1814, books by dead authors may become more expensive after 1814 independently of changes in copyright.

Regressions with controls for page numbers indicate that the price of books by dead authors increased by 20.27s after 1814 compared with books by living authors (with a p-value of

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<sup>35</sup> The elasticity is calculated as the percent increase in price (24.47s relative to the pre-1814 price of 16.30s for books by dead authors) relative to the percent increase in the length of copyright for dead authors (an extension of 14 years relative to the average length of copyright for books by dead authors until 1814, which equals 14 years minus the average age of 3.47 years for books by dead authors until 1814).

0.03, Table 6, column 1).<sup>36</sup> Results are robust to controlling for canonical books and genre fixed effects, with estimates of 20.34 (with a p-value of 0.03, Table 6 column 2) and 13.19 (with a p-value of 0.14, Table 6, column 3), respectively. Regressions with page size fixed effects imply a larger price increase, albeit for a smaller sample of 665 editions. Baseline estimates indicate that the price of books by dead authors increased by 32.47s more than books by living authors after 1814 (with a p-value of 0.01, Table 7, column 1). Results are robust to controlling for canonical books and genre fixed effects, with estimates of 31.91 (with a p-value of 0.01, Table 7, column 2), and 27.20 (with a p-value of 0.02, Table 7, column 3).<sup>37</sup>

#### IV. INVESTIGATING THE MECHANISM THAT DRIVES HIGHER PRICES

A potential concern with the empirical strategy is that a differential increase in the price of books by dead authors after 1814 may be driven by unobservable factors, such as a differential change in tastes. To investigate this, we estimate Placebo regressions for changes in the price of books by dead authors that did not benefit from an extension in the length of copyright.

##### *IV.A. Placebo for books by dead authors without longer copyrights*

Under the Statute of Anne, books whose authors had survived the first 14-year term, remained under copyright for another 14 years, so that the total length of copyright was 28 years

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<sup>36</sup> Compared with an average price of 15.96s after 1814 in the restricted sample of 888 editions with information on page numbers, this implies a 127 percent increase, exceeding the baseline estimate of 112 percent, and an elasticity of 1.02. The elasticity is calculated as the percent increase in price (20.27s relative to the pre-1814 price of 16.62s for books by dead authors) relative to the percent increase in the length of copyright for dead authors (an extension of 14 years relative to the average length of copyright for books by dead authors until 1814, which equals 14 years minus the average age of 2.24 years for books by dead authors until 1814).

<sup>37</sup> Data on illustrations, as a third measure of physical quality, are too scarce to be used in our regressions. We only know that a total of 117 in 1072 books included at least one illustration – often the image of the author. Until 1814, none of the 58 editions of books by dead authors include illustrations; after 1814, 6 of 98 editions (6.1 percent include illustrations). By comparison, 44 of 307 editions of books by living authors (14.3 percent) include illustrations until 1814, compared with 57 of 609 editions (9.4 percent) by living authors.

even before the Copyright Act. These editions did not benefit from the extension in copyright, but they would have been affected by changes in tastes or other unobservable factors that may have increased the price of books by dead authors after 1814. Placebo regressions test whether editions by dead authors who had survived the first 14 years experienced an increase in price after 1814 compared with editions by living authors.

With the caveat that estimates are based on a small sample of 63 that had been in print for more than 14 years, Placebo regressions yield no evidence of a statistically significant differential price increase for books by dead authors that were not affected by the change in copyright. Estimates for the interaction term  $Dead_{it} * post1814_{it}$  are smaller and not statistically significant with a coefficient of 3.30 and a p-value of 0.84 in the baseline specifications (Table 8, column 1), a coefficient of 9.05 with a p-value of 0.61 with controls for genre (Table 8, column 2), and a coefficient of 3.30 with a p-value of 0.84 excluding author fixed effects (Table 8, columns 3).

#### *IV.B. Books titles become cheaper as they approach the end of copyright*

Price data also confirm that books became cheaper after they went off copyright. The median price of 1,072 editions in the data is 10.5s if the title is on copyright, and 9.0s if the title is off copyright, which implies a 15 percent reduction in price. For example, the price of Reverend William Paley (1743-1805)'s book *A View of Evidences of Christianity* (first edition in 1794, under copyright until 1808) declined from 12s in 1794 to 9s in 1820 and 4.5s in 1824.<sup>38</sup> Lower prices for books off copyright are confirmed by modern data on the price of early 20<sup>th</sup> century bestsellers: 20 popular bestsellers first published between 1923 and 1932 and still on

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<sup>38</sup> The average price of new editions off copyright is 20.15s compared with 17.46s on copyright, because new editions of books off copyright include a larger share of extremely expensive elaborate reprints of older texts. 15 of 87 editions off copyright (14.7 percent) sold for more than 50s, compared with 47 of 970 (4.9 percent).

copyright sold for an average price of \$8.05 in 2006, compared with \$4.45 for 20 popular bestsellers first published between 1919 and 1923 and off copyright (Heald 2007, p. 1043-48).<sup>39</sup>

If expectations about the length of copyright affect the price of books, books should also become cheaper as they approach the end of copyright. To investigate this, we use the author's year of death to calculate the expected (remaining) length of copyright in year  $t$  and estimate:

$$Price_{it} = \beta_0 + \beta_s Expected Length_{it} + X_{it}\gamma + \varepsilon_{it}$$

where  $Price_{it}$  measures the price of book title  $i$  in the year  $t$ .  $Expected Length_{it}$  measures the remaining years of copyright, the effects of which are estimated in a three-year specific  $\beta_s$ ;  $T$  denotes the final year of copyright, and  $T-28$  and above are the excluded period.<sup>40</sup> The variable  $X_{it}$  includes genre, book age, and five-year fixed effects. We exclude author fixed effects to increase statistical power.

Estimates of  $\beta_s$  indicate that the price of new editions declined as book titles approached the end of copyright. In year  $T-1$  new editions of a book title sold for 16.24s less than in  $T-28$  to  $T-26$  and above (Figure 5, with a p-value 0.067), and new editions in  $T-4$  to  $T-2$  sold for 19.23s less (Figure 5, with a p-value of 0.016). Estimates for the final four years of copyright are based on a small sample of ten editions of nine popular books that continued to be in print in the final four years of copyright, and may therefore measure a lower bound for the decline in price. Results are robust to including controls for canonical books, dropping genre fixed effects and including author fixed effects.

## V. CONCLUSIONS

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<sup>39</sup> In Heald (2007, p. 6) popular or “durable” books are defined by persons “with a knowledge of American literature.” Heald (2007, p. 28), however, also finds that less durable books sell for a higher price compared with durable books, with an average price of \$20 in 2006 for 334 books on and off copyright.

This paper has exploited a differential change in the length of copyright through the British Copyright Act of 1814 to identify the causal effects of copyright on the price of intellectual assets, using data on books. For books by dead authors that had been in print for 14 years or less, the Act increased the length of copyright, while creating no *de facto* extension for books by living authors. Difference-in-differences analyses with controls for the age of books, author fixed effects, and time period fixed effects indicate that the prices of books by dead authors increased by 20s after 1814 relative to books by living authors. Compared with an average price of 18s for books after 1814, this implies an 8 percent increase in the price of books for each additional year of copyright protection. Results are robust to controlling for variation across genres and to controlling for important, or canonical books, and there is no evidence that differential pre-trends in the price of books drive the differential price increase after 1814. Results are also robust to excluding books by popular authors who died after 1814, and to excluding the works of recently deceased authors (which may have sold for a higher price regardless of extensions in copyright).

Placebo regressions for books by dead authors that did not benefit from longer copyright yield no evidence of a statistically significant price increase for books by dead authors after 1814, suggesting that changes in tastes, or other unobservable factors that may have favored books by dead authors, cannot explain the observed effect.

Book price data also indicate that new editions for the same book title became cheaper once the title went off copyright. Moreover, analyses that exploit variation in the age of living authors -- which influences the expected remaining length of copyright -- indicate that new editions of book titles become cheaper as they approach the end of their remaining copyright

term. These estimates stand in sharp contrast with existing analyses, which have found no effects or counter-intuitive negative correlations between copyright and price.

Another implication of the current analysis is that the effects of intellectual property rights regimes are shaped by variation in the characteristic of intellectual assets across industries. Most strikingly, empirical analysis of intellectual property rights in the pharmaceutical industry have found that branded drugs may become more, rather than less expensive when their patents expire (Grabowski and Vernon 1992; Frank and Salkever 1997), even though increases in competition with other generics reduce the price of generic drugs (Berndt, Ling and Kyle 2003). Differences in the quality of goods across the two industries are likely to drive differences in the impact of intellectual property rights on price. In pharmaceuticals, purchase decisions may be relatively inelastic if doctors prescribe drugs on which patients depend to preserve their health. In the book market, however, consumers can delay purchases until cheaper editions enter the market. Extensions in the length of copyright, which delay the entry of cheaper editions, may therefore increase price.

Finally, our findings imply that longer copyrights raise the costs of accessing intellectual assets for consumers and other firms, which may discourage the diffusion of knowledge and decelerate the pace of cumulative innovation and learning-by-doing. Proponents of longer copyright terms argue that increases in price, which raise expected profits, encourage the creation of new works and help motivate entry into creative professions.<sup>41</sup> Our results highlight the need for further empirical analyses of stronger copyrights on creative output.

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<sup>41</sup> Another argument for longer copyright terms is that they prevent competitors from entering with lower-quality versions of copyrighted works. Data on audiobook recordings of bestselling novels, however, indicate that audio books made from public domain bestsellers (1913-22) are of similar quality than audiobooks made from copyrighted bestsellers (1923-32), and are much more easily available to consumers (Buccafusco and Heald 2012). Similarly, data on 74 popular songs that were copyrighted between 1909 and 1932 and used in at least 4 movies indicate that 19 songs that had fallen into the public domain and 55 songs still on copyright were equally likely to be used in

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TABLE 1 – THE LENGTH OF COPYRIGHT FOR BOOKS BY DEAD AND LIVING AUTHORS  
FOR BOOKS IN PRINT FOR 14 YEARS OR LESS

	Pre-1814	Post-1814	Difference
Author			
Alive	14 years + 14 years if author survives first 14 year term	Maximum of 28 years or life of author	>0
Mean	28	28	0
Dead	14	28	14
Mean	14	28	14
Difference	<0	<0	>0
Mean	-14	0	14

*Note:* To estimate the factual extension that “life of author” provided for books by living authors, we first construct summary statistics for authors’ age when a book title was first published. A total of 484 first editions between 1790 and 1840 were written by 142 authors, with an average age of 42 years, a median of 40 and a standard deviation of 13. To estimate the value of extending the length of copyright to life of author, we collect demographic data for 947 British writers with birth years between 1700 and 1800 from the *Dictionary of Literary Biography* (available at <http://www.gale.cengage.com/pdf/facts/DBLvolbygenre.pdf>; accessed on September 4-20, 2012). These data indicate that, in the year of first edition, the average author could expect to live another 27 years, which implies that the maximum of “life of author” or 28 years was 28 years for the average author. See Appendix A for a detailed description of data on the life expectancies of British authors.

TABLE 2 – DIFFERENCES IN THE MEAN PRICE OF BOOKS FOR DEAD AND LIVING AUTHORS BEFORE AND AFTER 1814 FOR BOOKS IN PRINT FOR 14 YEARS OR LESS

Price		Pre-1814	Post-1814	Difference
Author	Alive	17.64 (26.16)	17.13 (19.16)	-0.50 (1.59) <sup>a</sup>
	Dead	17.69 (15.74)	33.39 (30.83)	15.69 (6.84) <sup>b</sup>
Difference		0.06 (5.33) <sup>a</sup>	16.25 (4.57) <sup>b</sup>	16.19 (7.02) <sup>a</sup>

*Note:* Price data for 902 newly printed editions of 548 book titles that had been in print for 14 years or less by 116 authors between 1790 and 1840, from St. Clair’s (2004), the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are calculated using data on first editions, which we collected from the online catalogues of the British Library and Google Books (available at <http://explore.bl.uk> and <http://books.google.com/>, accessed September 4-20, 2012). Demographic data on authors from the *Dictionary of Literary Biography* (various volumes).

<sup>a</sup> Standard errors, clustered at the level of authors, are for coefficients  $\alpha_0, \alpha_1, \alpha_2$  in the OLS regression  $Price_{it} = \alpha_0 + \alpha_1 Dead_{it} + \alpha_2 Post1814_{it} + \alpha_3 Dead_{it} * Post1814_{it} + \varepsilon_{it}$

<sup>b</sup> Standard errors, clustered at the level of authors, are for coefficients  $\beta_1, \beta_2$  of  $Price_{it} = \beta_0 + \beta_1 Alive_{it} + \beta_2 Post1814_{it} + \beta_3 Alive_{it} * Post1814_{it} + \varepsilon_{it}$

TABLE 3 – OLS, DEPENDENT VARIABLE IS PRICE OF EDITIONS BETWEEN 1790 AND 1849  
FOR BOOKS IN PRINT FOR 14 YEARS OR LESS

	(1)	(2)	(3)	(4)
Dead	-6.03 (7.69)	-6.16 (7.64)	-4.09 (9.30)	-1.03 (5.87)
Post-1814 * dead	20.02** (7.75)	20.22** (7.73)	17.76* (9.81)	17.15* (9.68)
Western Canon		-2.48 (3.30)		
Constant	9.37*** (2.71)	11.27*** (3.65)	10.03*** (2.87)	7.67** (3.00)
Book age fixed effects	Y	Y	Y	Y
Genre fixed effects	N	N	Y	N
Author fixed effects	Y	Y	Y	N
Five year fixed effects	Y	Y	Y	Y
Observations	902	902	902	902
R-squared	0.36	0.36	0.37	0.08

\*\*\* denotes significance at the 1 percent, \*\* 5 percent, and \* 10 percent, level.

Standard errors clustered at the level of authors.

*Note:* Book age fixed effects control for the number of years that have passed since the first edition of a book was published. Genre fixed effects control for variation in the price of books across novels, works of poetry, other fiction, and non-fiction. Price data for 902 newly printed editions of 548 book titles that had been in print for 14 years or less by 116 authors between 1790 and 1840, from St. Clair's (2004), the *London Catalogue of Books* (Brown et al. 1799, Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are calculated using data on first editions, which we collected from the online catalogues of the British Library and Google Books (available at <http://explore.bl.uk> and <http://books.google.com/>, accessed September 4-20, 2012). Demographic data on authors from the *Dictionary of Literary Biography* (various volumes).

TABLE 4 - OLS EXCLUDING BOOKS BY SIR WALTER SCOTT AND LORD BYRON  
 DEPENDENT VARIABLE IS THE PRICE OF NEW EDITIONS, PRINTED BETWEEN 1790 AND 1840  
 FOR BOOKS IN PRINT FOR 14 YEARS OR LESS

	(1)	(2)	(3)	(4)	(5)	(6)
	Excluding Sir Walter Scott			Excluding Scott and Lord Byron		
Dead	-11.18*** (4.11)	-11.11*** (4.15)	-7.85** (3.42)	-13.40*** (3.51)	-13.41*** (3.51)	-10.02*** (3.08)
Post-1814 * dead	19.94*** (6.05)	19.81*** (6.09)	16.05*** (5.45)	20.42*** (5.40)	20.44*** (5.40)	16.14*** (4.87)
Western Canon		1.12 (3.02)			-0.27 (5.22)	
Constant	8.79*** (2.61)	7.91** (3.34)	9.62*** (2.68)	8.06*** (2.67)	8.29 (5.25)	8.91*** (2.68)
Book age fixed effects	Y	Y	Y	Y	Y	Y
Genre fixed effects	N	N	Y	N	N	Y
Author fixed effects	Y	Y	Y	Y	Y	Y
Five year fixed effects	Y	Y	Y	Y	Y	Y
Observations	775	775	775	732	732	732
R-squared	0.39	0.39	0.41	0.39	0.39	0.41

Standard errors clustered at the level of authors.

\*\*\* denotes significance at the 1 percent, \*\* 5 percent, and \* 10 percent, level.

*Note:* Column (1) – (3) exclude 127 editions of popular (and expensive) books, such as *Waverley*, by Sir Walter Scott. Columns (4) – (6) exclude 127 editions by Sir Walter Scott and 43 editions of book titles by Lord Byron. Book age fixed effects control for the number of years that have passed since the first edition of a book was published. Genre fixed effects control for variation in the price of books across novels, works of poetry, other fiction, and non-fiction. Price data for 902 newly printed editions of 548 book titles that had been in print for 14 years or less by 116 authors between 1790 and 1840, from St. Clair’s (2004), the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are calculated using data on first editions, which we collected from the online catalogues of the British Library and Google Books (available at <http://explore.bl.uk> and <http://books.google.com/>, accessed September 4-20, 2012). Demographic data for authors from the *Dictionary of Literary Biography* (various volumes).

TABLE 5- OLS EXCLUDING BOOKS BY RECENTLY DECEASED AUTHORS  
 DEPENDENT VARIABLE IS THE PRICE OF NEW EDITIONS, PRINTED BETWEEN 1790 AND 1840  
 FOR BOOKS IN PRINT FOR 14 YEARS OR LESS

	(1)	(2)	(3)	(4)
Dead	-14.78** (5.94)	-14.87** (5.96)	-15.99** (6.37)	-3.85 (6.03)
Post-1814 * dead	24.47*** (8.14)	24.65*** (8.19)	25.29*** (8.63)	14.47* (8.49)
Western Canon		-1.90 (2.95)		
Constant	7.81*** (2.74)	9.23*** (3.16)	7.81*** (2.68)	7.83*** (2.90)
Book age fixed effects	Y	Y	Y	Y
Genre fixed effects	N	N	Y	N
Author fixed effects	Y	Y	Y	N
Five year fixed effects	Y	Y	Y	Y
Observations	888	888	888	888
R-squared	0.34	0.34	0.35	0.07

\*\*\* denotes significance at the 1 percent, \*\* 5 percent, and \* 10 percent, level.  
 Standard errors clustered at the level of authors.

*Note:* Data exclude 14 editions of books by authors that had died within one year of the publication year of the edition. Book age fixed effects control for the number of years that have passed since the first edition of a book was published. Genre fixed effects control for variation in the price of books across novels, works of poetry, other fiction, and non-fiction. Price data for 902 newly printed editions of 548 book titles that had been in print for 14 years or less by 116 authors between 1790 and 1840, from St. Clair's (2004), the *London Catalogue of Books* (Brown et al. 1799, Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are calculated using data on first editions, which we collected from the online catalogues of the British Library and Google Books (available at <http://explore.bl.uk> and <http://books.google.com/>, accessed September 4-20, 2012). Demographic data on authors from the *Dictionary of Literary Biography* (various volumes).

TABLE 6 – OLS CONTROLLING FOR VARIATION IN THE NUMBER OF PAGES ACROSS BOOKS  
 DEPENDENT VARIABLE IS THE PRICE OF NEW EDITIONS, PRINTED BETWEEN 1790 AND 1840  
 FOR BOOKS IN PRINT FOR 14 YEARS OR LESS

	(1)	(2)	(3)	(4)
Dead	-6.61*** (2.51)	-6.58** (2.53)	-1.58 (3.95)	-3.27 (4.85)
Post-1814 * dead	20.27** (9.08)	20.34** (9.25)	13.19 (8.89)	15.60* (9.34)
Number of pages	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
Western Canon		2.12 (3.62)		
Constant	-13.56** (5.69)	-15.79* (8.33)	-5.66 (5.10)	-3.05*** (1.05)
Book age fixed effects	Y	Y	Y	Y
Genre fixed effects	N	N	Y	N
Author fixed effects	Y	Y	Y	N
Five year fixed effects	Y	Y	Y	Y
Observations	692	692	692	692
R-squared	0.55	0.55	0.56	0.30

\*\*\* denotes significance at the 1 percent, \*\* 5 percent, and \* 10 percent, level.  
 Standard errors clustered at the level of authors.

*Note:* Price data for 692 newly printed editions of 430 book titles by 107 authors between 1790 and 1840, collected from St. Clair's (2004) literary history of the Romantic Period, as well as various editions of book catalogues, including *the London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Demographic data for 124 authors from the *Dictionary of Literary Biography* (various volumes).

TABLE 7 - OLS CONTROLLING FOR THE PHYSICAL SIZE OF BOOKS  
 DEPENDENT VARIABLE IS THE PRICE OF NEW EDITIONS, PRINTED BETWEEN 1790 AND 1840 FOR  
 BOOKS THAT ARE WITHIN 14 YEARS OF THE FIRST PUBLICATION

	(1)	(2)	(3)	(4)
Dead	-15.65 (9.93)	-15.24 (10.06)	-10.80 (7.03)	3.52 (5.65)
Post-1814 * dead	32.47** (12.40)	31.91** (12.64)	27.20** (11.66)	12.97 (8.86)
Western Canon		2.95 (3.47)		
Constant	21.56*** (4.91)	19.88*** (4.84)	27.32*** (3.98)	28.01*** (6.93)
Page size fixed effects	Y	Y	Y	Y
Book age fixed effects	Y	Y	Y	Y
Genre fixed effects	N	N	Y	N
Author fixed effects	Y	Y	Y	N
Five year fixed effects	Y	Y	Y	Y
Observations	665	665	665	665
R-squared	0.54	0.54	0.57	0.18

\*\*\* denotes significance at the 1 percent, \*\* 5 percent, and \* 10 percent, level.  
 Standard errors clustered at the level of authors.

*Note:* Page size fixed effects control for variation in the physical size of books. Price data for 665 newly printed editions of 420 book titles by 106 authors between 1790 and 1840, collected from St. Clair's (2004) literary history of the Romantic Period, as well as various editions of book catalogues, including *the London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Demographic data for 124 authors from the *Dictionary of Literary Biography* (various volumes).

TABLE 8– OLS – DEPENDENT VARIABLE IS PRICE OF EDITIONS BETWEEN 1790 AND 1849  
FOR BOOKS IN PRINT FOR *MORE* THAN 14 YEARS (PLACEBO)

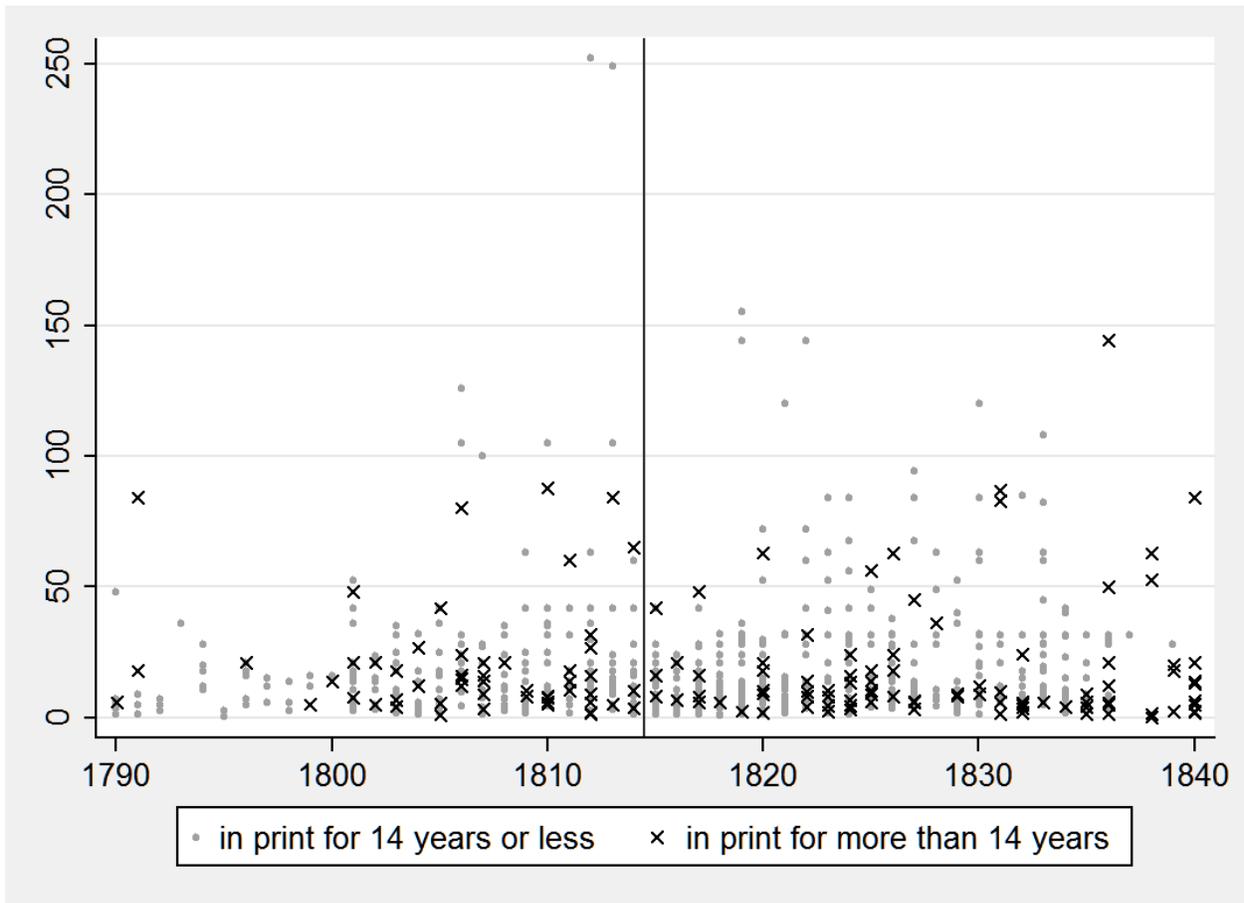
	(1)	(2)	(3)
Dead	-20.47 (28.47)	-5.55 (39.26)	-20.47 (28.47)
Post-1814 * dead	3.30 (16.28)	9.05 (17.39)	3.30 (16.28)
Constant	22.26 (41.33)	0.28 (50.16)	22.26 (41.33)
Book age fixed effects	Y	Y	Y
Genre fixed effects	N	Y	N
Author fixed effects	Y	Y	N
Five year fixed effects	Y	Y	Y
Observations	63	63	63
R-squared	0.97	0.97	0.97

Standard errors clustered at the level of authors.

\*\*\* denotes significance at the 1 percent, \*\* 5 percent, and \* 10 percent, level.

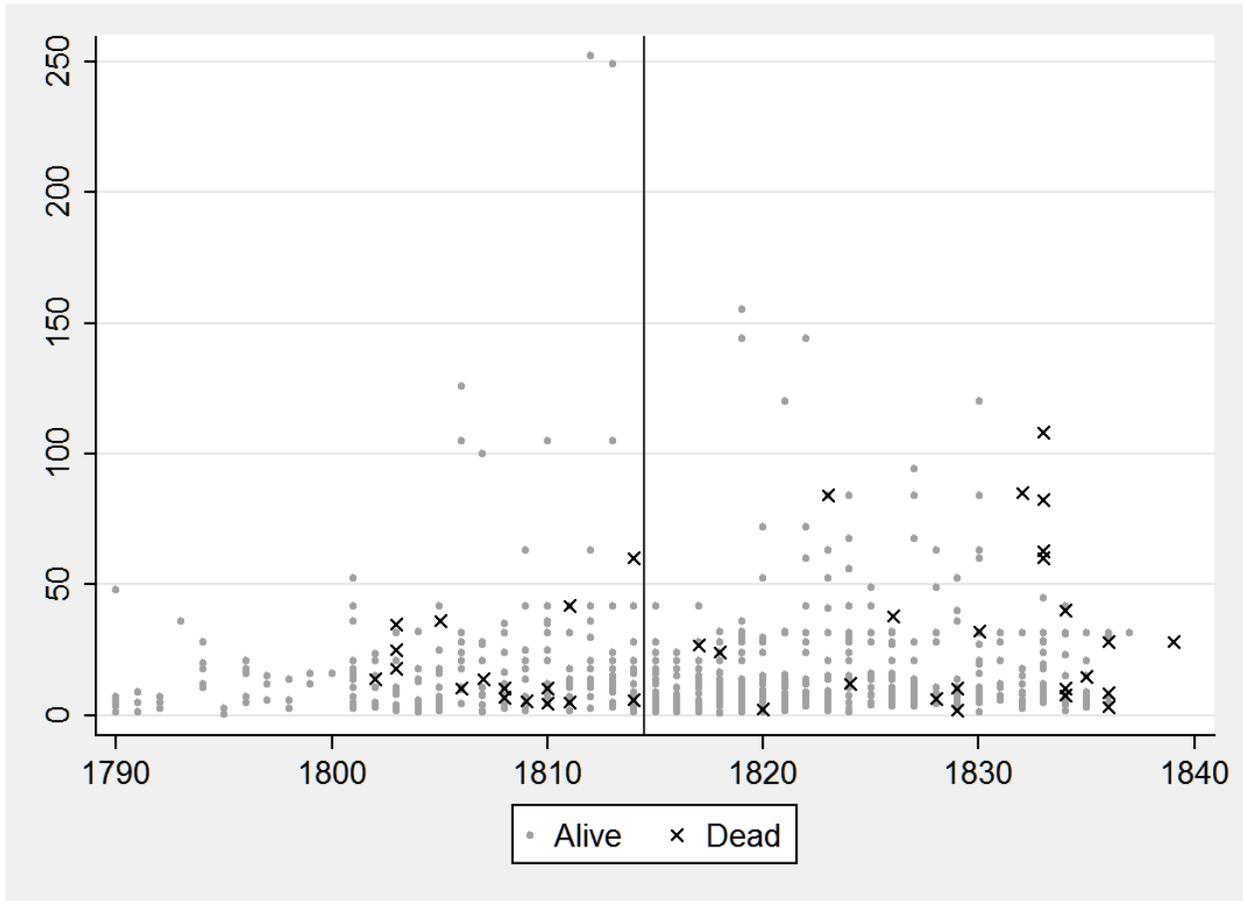
*Note:* Price data for 63 newly printed editions of 44 book titles by 31 authors between 1790 and 1840, collected from St. Clair's (2004) literary history of the Romantic Period, as well as various editions of book catalogues, including *the London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Demographic data for 124 authors from the *Dictionary of Literary Biography* (various volumes).

FIGURE 1 - BOOK PRICES FOR NEW EDITIONS PRINTED 1790-1840, ALL BOOKS



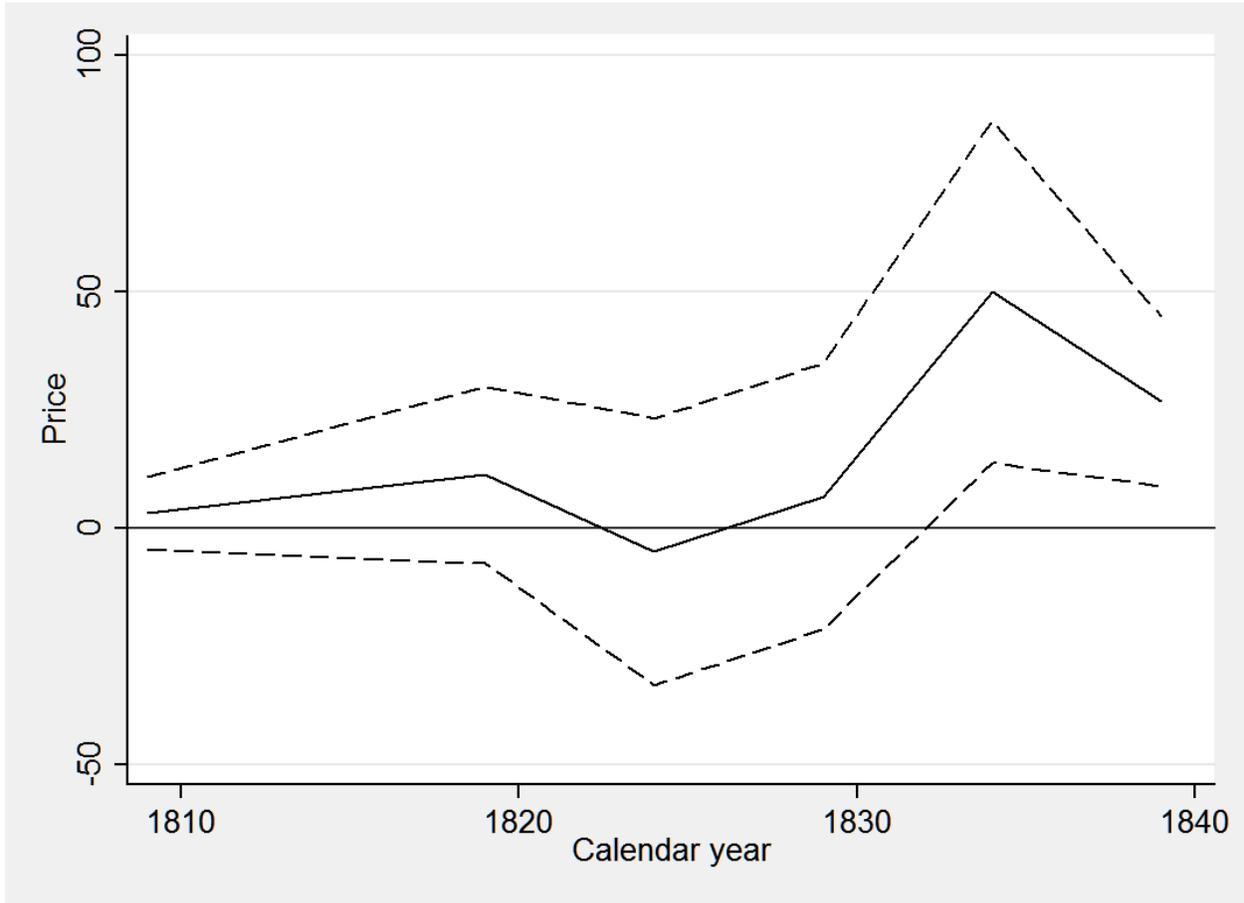
Note: Price data for 1,072 newly printed editions of 609 book titles by 137 authors between 1790 and 1840. From St. Clair's (2004), the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are calculated using data on first editions, which we collected from British Library and Google Books (available at <http://explore.bl.uk> and <http://books.google.com/>, accessed September 4-20, 2012).

FIGURE 2 - BOOK PRICES FOR NEW EDITIONS,  
BOOKS IN PRINT FOR 14 YEARS OR LESS, DEAD VERSUS LIVING AUTHORS



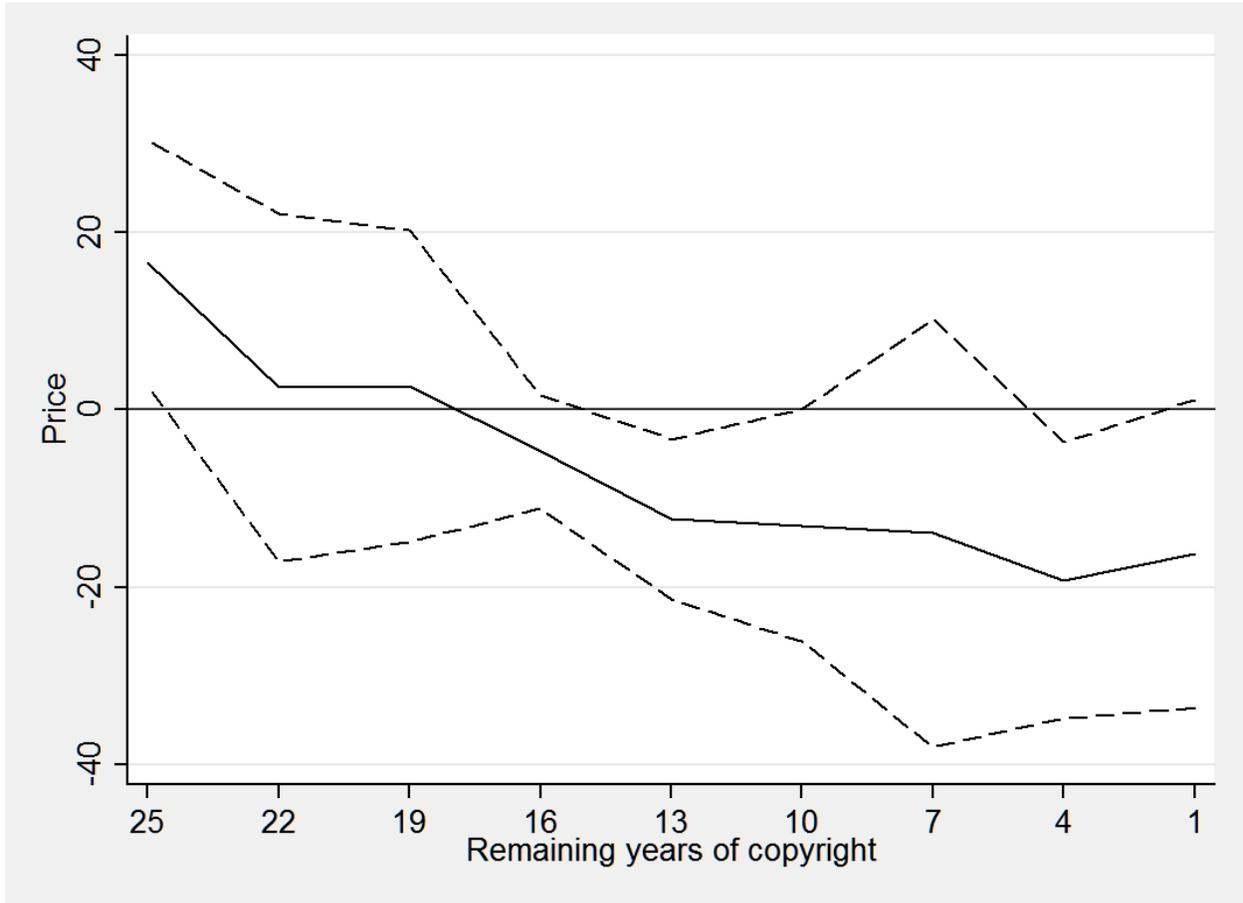
*Note:* Price data for 902 newly printed editions of 548 book titles that had been in print for 14 years or less by 116 authors between 1790 and 1840. From St. Clair's (2004), the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851) and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are calculated using data on first editions, which we collected from British Library and Google Books (available at <http://explore.bl.uk> and <http://books.google.com/>, accessed September 4-20, 2012). Demographic data on survival status of authors from the *Dictionary of Literary Biography* (various volumes).

FIGURE 3 - TIME-VARYING ESTIMATES OF THE EFFECT OF PRICE ON COPYRIGHT



Note: 95% confidence interval for  $\beta_t$  in the OLS regression  $Price_{it} = \beta_0 + \beta_s Dead_{it} * Years_t + X_{it}\gamma + \varepsilon_{it}$ , where the variable  $Years_t$  indicates 5-year intervals  $s$  for 1805-09, 1815-19, 1820-24, 1825-29, 1830-1834, and 1835-1839 and 1810-1814 is the excluded interval. Price data for 902 editions of 548 book titles that had been in print for 14 years or less by 116 authors between 1790 and 1840. From St. Clair's (2004), the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851), and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are measured as the number of years since the first editions; we collected years of first editions from the online records of the British Library and Google Books (available at <http://explore.bl.uk> and <http://books.google.com/>, accessed September 4-20, 2012). Demographic data on survival status of authors from the *Dictionary of Literary Biography* (various volumes).

FIGURE 4- ESTIMATED EFFECTS OF REMAINING YEARS OF COPYRIGHT ON PRICE



Note: 95% confidence interval for  $\beta_s$  in the OLS regression  $Price_{it} = \beta_0 + \sum_s \beta_s Expected Length_{ist} + X_{it}\gamma + \varepsilon_{it}$  where  $Price_{it}$  measures the price of book title  $i$  in the four-year time interval  $t$ .  $Expected Length_{ist}$  measures the remaining years of copyright  $s$ ;  $T$  denotes the final year of copyright, and  $T-28$  and above are the excluded period. The variable  $X_{it}$  includes genre, book age, and five-year fixed effects, as well as controls for books by dead authors. The  $Expected Length_{ist}$  of copyright in calendar year  $t$  equals year in which copyright is expected to expire  $T$  minus calendar year  $t$ . For book titles with first editions before 1814,  $T$  equals the year of the first edition + 14 if the author died within 14 years of the first edition, and + 28 if the author died within 14 and 28 years after the first edition. For book titles with first editions after 1814,  $T$  equals the maximum of year of first edition + 28 and or the authors remaining life. Price data for 970 editions of 563 book titles on copyright from St. Clair's (2004), the *London Catalogue of Books* (Brown et al. 1799; Hodgson 1851), and the *English Catalogue of Books* (Peddie and Waddington 1914). Book ages are calculated using data on first editions, which we collected from the records of the British Library and Google Books. Demographic data on survival status of authors from the *Dictionary of Literary Biography* (various volumes).

APPENDIX - NOT FOR PUBLICATION

Appendix A- Excerpts from Britain's Copyright Act of July 29, 1814

§ 3: “Provided always, and be it further enacted, That no such printed Copy or Copies shall be demanded or delivered or for the Use of any of the Libraries hereinbefore mentioned, of the Second Edition, or any subsequent Edition of any Book or Books so demanded and delivered as aforesaid, unless the same shall contain Additions or Alterations: And in case any Edition after the First, of any book so demanded and delivered as aforesaid, shall contain any Additions or Alterations, no printed copy or copies thereof shall be demanded as aforesaid, for whose Use a Copy of the former Edition Shall have been demanded and delivered as aforesaid: Provided also, that the Copy of every Book that shall be demanded by the *British Museum*, shall be delivered on the best Paper on which such Work shall be printed...”

§ 4 “...Be it further enacted, That, from and after the passing of this Act, the Author of any Book or Books composed and not printed and published, or which shall hereafter be composed and be printed and published, and his Assignee or Assigns, shall have the sole Liberty of printing and reprinting such Book or Books for the full Term of Twenty-eight Years, to commence from the Day of first publishing the same, and also, if the Author shall be living at the End of that Period, for the Residue of his natural Life;”

§ 9:“And be it also further enacted, That if the Author of any Book or Books which have been already published shall be living at the End of Twenty eight Years after the First Publication of the said Book or Books, he or she shall for the Remainder of his or her Life have the sole Right of printing and publishing the same: Provided that this shall not affect the Right of the Assignee or Assigns of such Author to sell any Copies of the said Book or Books which shall have been printed by such Assignee or Assigns within the said Twenty eight Years, or the Terms of any Contract between such Author and such Assignee or Assigns.”

Source: “An Act to amend the several Acts for the Encouragement of Learning, by securing the Copies and Copyright of Printed Books, to the Authors of such Books or their Assigns, 1814, 54 Geo.III, c.156” in *Primary Sources on Copyright (1450-1900)*, L. Bently, and M. Kretschmer, eds.

## APPENDIX B – AUTHORS’ REMAINING YEARS OF LIFE

Estimates of remaining years of life are constructed based on demographic data for 947 British writers with birth years between 1700 and 1850 from the *Dictionary of Literary Biography*. This section provides a detailed description of life tables that we construct to predict the expected remaining years of life of individual  $R$  at age  $A$  in calendar year  $T$ .

First, we list all writers that have survived to age  $A$  for each calendar year  $T$  starting from calendar year 1700 (which is the birth year of the first author in our sample, James Thomson). To increase the size of observations per cell, we combine calendar years and ages into five-year intervals (1810-1814, 1815-1819,...) and calculate the average years of remaining life for writers in each cell  $R(\text{CalendarYearCell}_i, \text{AgeCell}_j)$ .

To estimate expected remaining years of life at age  $A$ , we assign the remaining years in each cell to the median age in that cell (e.g., 27 for cell 25-29 and 32 for cell 30-34) and construct expected remaining years of life for ages other than the median age by linear interpolation from the median age: Let  $j(T)$  be the age cell with highest center that is smaller than  $T$ , and  $j(T)+1$  be the age cell with lowest center that is larger than  $T$ ,  $l(T)$  is the distance between  $T$  and the center of cell  $j(T)$  divided by 5, and  $1-l(T)$  be the distance between  $T$  and the center of cell  $j(T)+1$  divided by 5. By linear interpolation

$$R(\text{CalendarYearCell}_i, T) = l(T) * R(\text{CalendarYearCell}_i, \text{AgeCell}_{j(T)}) + (1-l(T)) * R(\text{CalendarYearCell}_i, \text{AgeCell}_{j(T)+1})$$

For example, for authors alive in between 1815 and 1819, the expected remaining years are 30.42 for the age cohort 35-39 and 28.42 for the age cohort 40-44 such that

$$R(37) = 30.42 \text{ and } R(42) = 28.42, \text{ and} \\ R(40) = 0.6 * R(42) + 0.4 * R(37) = 29.22$$

TABLE A1: CANONICAL BOOKS BASED ON BLOOM'S (1994) *WESTERN CANON*

Author	Title	Editions	
		Until 1814	After 1814
Jane Austen (1775 - 1817)	<i>Pride and Prejudice. Second edition (1813)</i>	3	3
	<i>Mansfield Park: A Novel, 3 volumes (1814)</i>	3	4
	<i>Emma (1815)</i>		3
	<i>Northanger Abbey and Persuasion (1817)</i>		4
Edmund Burke (1729 - 1797)	<i>A Philosophical Enquiry into the Sublime and Beautiful (1757)</i>	3	
	<i>Reflections on the Revolution in France (1790)</i>	15	
Fanny Burney (1752 - 1840)	<i>Evelina (1778)</i>		2
Robert Burns (1759 - 1796)	<i>Poems, Chiefly in the Scottish Dialect (1786)</i>	1	
Lord Byron (1788 - 1824)	<i>Poems on Various Occasions (1807)</i>	1	1
	<i>Childe Harold's Pilgrimage, A Romaunt (1812)</i>	6	
	<i>Childe Harold's Pilgrimage, Canto the Third (1816)</i>		1
	<i>Childe Harold's Pilgrimage, Canto the Fourth (1818)</i>		2
Thomas De Quincey (1785 - 1859)	<i>Confessions of an English Opium (1822)</i>		4
Edward Gibbon (1737 - 1794)	<i>The Decline and Fall of the Roman Empire (1776)</i>	5	9
	<i>Private Memoirs and Confessions of a Justified Sinner (1824)</i>		1
James Hogg (1788 - 1835)	<i>Nightmare Abbey (1818)</i>		1
Sir Walter Scott (1771 - 1832)	<i>Waverley (1814)</i>	3	3
Mary Wollstonecraft Shelley (1797 - 1851)	<i>Tales of My Landlord, 5st Series. Black Dwarf and Old Mortality (1816)</i>		6
	<i>Tales of My Landlord, Second Series, Heart of Midlothian (1818)</i>		1
	<i>Frankenstein, or, The Modern Prometheus (1818)</i>		5
William Wordsworth (1770 - 1850)	<i>Poems, in Two Volumes (1807)</i>	1	3
Henry Fielding (1707 - 1754)	<i>The History of Tom Jones, a Foundling (1749)</i>		1
Laurence Sterne (1713 - 1768)	<i>The Life and Opinions of Tristram Shandy, Gentleman (1760)</i>		1
	<i>A Sentimental Journey through France and Italy (1768)</i>	3	
Maria Edgeworth (1768 - 1849)	<i>Castle Rackrent: An Hibernian Tale (1800)</i>	1	
Alfred Tennyson (1809-92)	<i>Poems, Chiefly Lyrical (1830)</i>		2

FIGURE A1— EXPECTED LENGTH OF COPYRIGHT CALENDAR YEAR AND YEAR OF AUTHOR’S DEATH FOR AN EDITION AT AGE 5, WHOSE AUTHOR IS ALIVE.

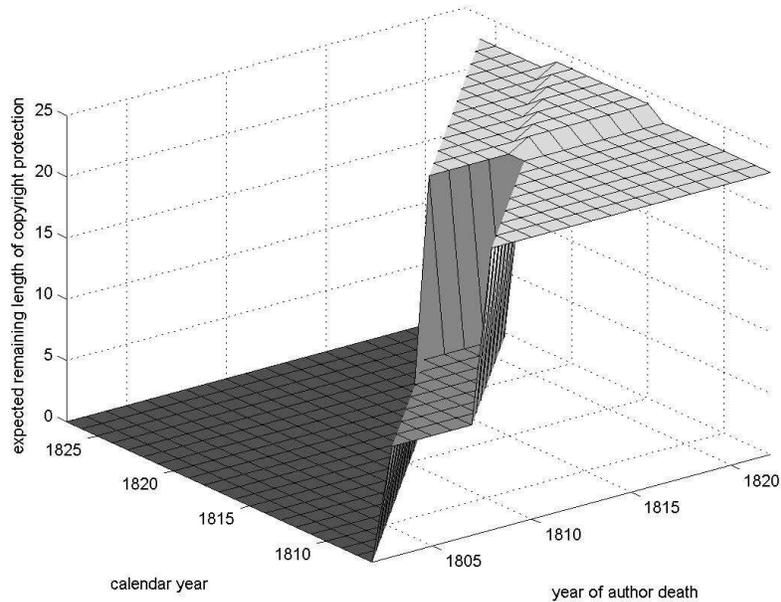


Figure A1 illustrates the effects of the legal changes in the 1814 Copyright act, using as an example a new edition of a book title that has been in print for five years. For all books, the expected length of copyright for a book that is printed in year  $t$  depends on the age of the book (or the number of years that have passed between the first edition in year  $k$  and the current edition in year  $t$ , displayed on the x1-axis), and the demographic status (i.e., alive or dead, on the x2 axis) of the author. Until 1814, the remaining length of copyright for a new edition of a five-year-old book title by a dead author was 9 years. The 1814 Act extended the remaining length of copyright for such a book to 23 years – the total length of copyright (or 28 years) minus 5. By comparison, the remaining length of copyright for a new edition of a book title by a *living* author was 23 years until 1814, and 22 years after the Act. This 22 years is the average author’s remaining life expectancy 5 years after the first edition.