

# DOES COPYRIGHT LIMIT ACCESS TO CLASSICAL MUSIC?

## EVIDENCE FROM U.S. ORCHESTRAS, 1842–2012

JERRY LAO, STANFORD UNIVERSITY AND  
PETRA MOSER, STANFORD UNIVERSITY AND NBER

FIRST VERSION DECEMBER 31, 2013

THIS VERSION JANUARY 3, 2014

PRELIMINARY AND INCOMPLETE  
PLEASE DO NOT CITE OR CIRCULATE

Policy changes in 1996 and 2012 retroactively placed thousands of foreign compositions, such as Sergei Prokofiev's *Peter and the Wolf*, under copyright in the United States. Critics argue that long-lived copyright terms limit access to important compositions for all but the most affluent US orchestras, but there is little systematic evidence. This paper investigates repertoire data for US symphonies between 1842 and 2012 to investigate whether copyright terms may in fact limit access to classical music. We find that copyright is a key determinant of the types of music that US orchestras play, and that the impact of copyright disproportionately falls on orchestras that are more budget-constrained. Repertoire data also indicate that a lack of protection helped popularize Russian music in the United States.

JEL codes: O34, L11, K00, N33

Keywords: Intellectual property, copyright, media, art, music.

In 1996, the US accession to the Uruguay Rounds Agreements Act retroactively placed thousands of compositions by foreign composers, such as Sergei Prokofiev's *Peter and the Wolf*, which had been in the public domain under copyright in the United States; in 2012, a Supreme Court decision in *Golan v. Holder* affirmed this change. Since the Copyright Term Extension Act of 1998, US copyrights provide exclusive rights to print and play music for the length of the composer's life plus 70 years after the composer's death; for music that is owned by corporations, copyright provides exclusivity for 95 years. Anecdotal evidence suggests that copyrights create substantial differences in the costs of performing pieces of music that are on and off copyright. In 2011, for example, US orchestras paid an estimated \$150 to buy the score and performance rights for a symphony that is in the public domain, compared with \$600 per performance for a piece on copyright (Chronicle of Higher Education 2011, p. 3). Opponents of the 1996 copyright restoration law, such as Lawrence Golan, have argued that these differences limit access to important compositions, especially for the large number of orchestras with tight budgets, like Golan's University of Denver orchestra.

More generally, economists have cautioned that copyrights may limit access to copyrighted content (Akerlof et al. 2002; Varian 2005) but empirical evidence is scarce. Empirical analyses of digital file sharing have found no significant effect of copyright piracy on record sales (Oberholzer-Gee and Strumpf 2007), and on the production of popular music (Waldfoegel 2011). An empirical analysis of changes in the price of Romantic Period books, however, indicates that copyrights may increase the price of content (Li, MacGarvie, and Moser 2013), so that copyrights may in fact limit access by increasing costs.

This paper examines data on the repertoires of US orchestras between 1842 and 2012 to investigate whether copyrights may limit access to classical music.<sup>1</sup> First, we analyze a new data set on the copyright status of all performances between 1900 and 2012 at the New York Philharmonic, one of the country's best-funded orchestras with an operating budget of 68 million in 2011. The data cover 86,758 performances of 13,759 compositions by 2,185 domestic and

---

<sup>1</sup> The Oxford English Dictionary defines "classical music" as "serious or conventional music following long-established principles rather than a folk, jazz, or popular tradition, (more specifically) music written in the European tradition during a period lasting approximately from 1750 to 1830, when forms such as the symphony, concerto, and sonata were standardized." ([www.oxforddictionaries.com](http://www.oxforddictionaries.com), accessed January 1, 2014). We use the term to denote "serious or conventional music," rather than a specific period.

foreign composers; they indicate no significant response in performances to changes in copyright policy. Instead, the Philharmonic's schedule responds to more general changes in tastes and world events; for example, performances permanently shift from German to US compositions during World War I and World War II.

A second test investigates the role of variation in operating budgets in determining the type of compositions that an orchestra performs. In the United States, operating budgets in the magnitude of the New York Philharmonic's are exceptional, and most orchestras have to finance their performances with a much smaller budget. For example, annual budgets for orchestras that Lawrence Golan has conducted range from \$10,000 for the Lamont Symphony Orchestra at the University of Denver to \$800,000 for the Yakima Symphony in Washington State.<sup>2</sup> These orchestras are likely to be affected by an increase in costs from \$150 for performing a piece in the public domain to \$600 for performing a piece on copyright (Parry 2011, p.3).

To examine whether the repertoires of lower-budget orchestras may be more constrained by copyright, we analyze a new data set on the copyright status by 27 major US orchestras between 1842 and 1970. These data cover 88,184 performances by 8,423 US and foreign compositions by 1,937 composers. With an average operating budget of \$35 million in 2011, the 27 orchestras in the sample are substantially better funded than the large majority of US orchestras; nevertheless there is significant variation in levels of funding, with operating budgets ranging from \$4.9 million for the Louisiana Philharmonic to \$117.6 million for the Atlanta Symphony. To proxy historical variation in operating budgets, we exploit the fact that operating budgets determine the number of concerts that an orchestra can afford to play per year (Flanagan 2012). A comparison between orchestras according to their number of performances per year reveals a nearly linear negative relationship between performances per year and the share of performances that are compositions off copyright.

A third test exploits the fact that premieres by compositions from practically all source countries have been on copyright since the Copyright Term Extension Act of 1998:<sup>3</sup> in this test, we check whether orchestras that are more budget constrained also tend to premiere fewer pieces. It uses new data on premieres for 326 orchestras that are members of the League of

---

<sup>2</sup> E-mail interview December 31, 2013.

<sup>3</sup> The provisions of the Copyright Term Extension Act provide national (equal) treatment to composers and authors from any of the 167 signatory countries to the Berne Convention. These countries cover practically all the source countries of compositions in our data. 28 excluded countries include Afghanistan, Iran, Iraq, Somalia, and Uganda.

American Orchestras. Budgets for these orchestras range from \$491 in 2011 for the Chamber Orchestra of New York to \$117.6 million for the Atlanta Symphony Orchestra, with an average of \$9.26 million and a median of \$1.65 million. We find that orchestras with smaller budgets are also significantly less likely to premiere new music.

A final test explores the role of copyright in determining the tastes for particular types of music. In particular we examine whether the absence of copyright protection for Russian music may have helped to encourage a broad range of orchestras to play this music. We find that orchestras with lower budgets are more likely to perform Russian compositions. The data also indicate that US orchestras are more likely to play music by contemporary composers, if the composer is Russian, and play music by composers that have been dead for 50 years or more (the length of copyright for the majority of our sample) if the composer is from Austria or Germany. Although this analysis is preliminary, it suggests that copyright helped to determine music by contemporary Russian composers, along with music by earlier generations of composers from Austria and Germany.

The remainder of this paper is structured as follows. Section I presents a brief timeline of changes in copyright protection for domestic and foreign composition in the United States; section II describes the data. Section III presents preliminary results on variation in the use of copyrighted music across orchestras that face different budget constraints. Section IV investigates the role of copyright in popularizing Russian music.

## I. COPYRIGHT LENGTH FOR U.S. AND FOREIGN MUSIC IN THE UNITED STATES

This section summarizes key changes in the strength of copyrights that the United States has provided to compositions between 1842 and today. Table 2 systematically provides copyright length for works by US, German, Austrian, French and Russian authors.

In 1790, 80 years after the British Statute of Anne, the US Copyright Act of 1790 introduced copyrights in the United States. For US authors only, the 1790 US Act created exclusive rights to reproduce maps, charts, and books for 14 years, with the possibility of renewal for another 14 years (Patterson, 1968). The Copyright Act of 1831 extended the first term from 14 years to 28 years, and added musical compositions to the list of protected works (Copyright Act 1831, 4 Stat. 436, 436-39). In 1886, eight signatories to the Berne Convention agreed to grant the same rights to foreign authors and their own nationals and created minimal

standards of copyright protection. The United States, however, refused to sign the Act; according to Nimmer (1992, p. 212) the US did not expect much revenue to flow back to US authors from stronger copyright protection in foreign countries; it did, however, expect to pay a lot more to foreign authors.

The International Copyright Act of 1891 was the first US Act to extend copyright protection to foreign authors and composers (Varian 2005). The Copyright Act of 1909 increased the initial term to 28 years, with the option to renew for another 28 years.<sup>4</sup> The Copyright Act of 1976 extended the length of protection to the life of the author plus an additional 50 years after the author's death, and it increased the optional renewal term for works already published to 47 years.

In 1989, the U.S. accession to the Berne Convention created copyright protection for new compositions from other member countries. The United States, however, refused to accept a clause that requires works to remain under copyright in all member countries as long as they are under copyright in the source country because it would have retroactively moved foreign works that had been in the public domain under copyright. In 1992, the Copyright Amendments Act made renewal automatic for any works published January 1, 1964, and December 31, 1977.<sup>5</sup> In 1998, the Copyright Term Extension Act of 1998 increased overall protection by an additional 20 years.<sup>6</sup> The additional automatic renewal term increased to 67 years from 47 years, and life of author plus 50 years increased to life of author plus 70 years.

In 1994, the United States accepted retroactive protection for foreign works as part of the Uruguay Round Agreements Act, and agreed to restore copyrights for foreign works effective January 1, 1996. Most notably, the Uruguay Rounds Agreements Act retroactively provided copyright protection for music by Russian composers, which had been in the public domain throughout the 20<sup>th</sup> century. By 1917, Russia had entered bilateral treaties to provide copyright protection with Germany, France, Austria-Hungary, Belgium, and Denmark (though not the United States). The USSR government nullified all international treaties after the October Revolution, leaving Russian composition, including the work of Prokofiev, Shostakovich, Khachaturian, Schnittke, Stravinsky, and Rachmaninoff, in the public domain (Elst 2005). New

---

<sup>4</sup> Before the US accession to the Berne Convention on March 1, 1989, works that had been published without a copyright notice fell into the public domain; today such notices are no longer required.

<sup>5</sup> Public Law 102-307, 106 Stat. 266, amending section 304 of title 17 of the United States Code

<sup>6</sup> Public Law 105-298, 112 Stat. 2827, amending chapter 3 of title 17 of the United States Code.

Russian compositions became subject to copyright on May 27, 1973 when the USSR acceded to the Universal Copyright Convention (Elst 2005). In 2012, the U.S. Supreme Court affirmed that the provisions of the Uruguay Rounds Agreements Act were constitutional in *Golan vs. Holder* 10-545, US Supreme Court, Term OY-2011, January 18, 2012.

## II. THE DATA

The three main data sets include information on author nationalities and copyright status for the repertoire of the New York Philharmonic from 1900 to 2012, 27 major US orchestras between 1842 and 1970, and 326 orchestras in the League of American Orchestras between 2009 and 2012.

### *II.A. The Repertoire of the New York Philharmonic, 1900-2012*

Data for the New York Philharmonic include all 86,758 performances of 13,759 compositions by 2,185 composers of this orchestra between November 16, 1900 and July 27, 2012. Data on the title of each piece, along with the last name of the composer and performance dates are available from the digital archives of the New York Philharmonic.<sup>7</sup> In the first step of the data collection, we digitize and clean these data to correct misspelling.

To determine the remaining length of copyright for each composition at the time its performance at the New York Philharmonic, we create an algorithm that combines information on the source country, the year of the composition, and the death year of the composer. Table 2 summarizes the copyright laws that determine this algorithm.

### *Unique Identifiers and Death Years for 2,185 Composers*

In the first step of the data collection, we collect information on the full names of all composers, as well as their birth and death years from the records of the *International Music Score Library Project* (IMSLP) and other online sources, and create a unique identifier for every composer.<sup>8</sup> For compositions that cannot be assigned to a unique composer based on the last name that is listed in the Philharmonic's records, we search for the title of the composition, and use the title and (and sometimes the year of the performance) to identify the composer. For

---

<sup>7</sup> Available at <http://archives.nyphil.org/>, accessed January 12, 2013.

<sup>8</sup> Available at <http://www.imslp.org>, accessed June 20, 2013.

example, a composer by the last name Bach could be Carl Philipp Emanuel Bach, Johann Christian Bach, P.D.Q. Bach, Wilhelm Friedemann Bach or Johann Sebastian Bach. In such cases, we use the title of the composition to help identify its composer. We also collect data on the birth and death year of all 2,185 composers from the IMSLP and other online sources.

Our data include 2,186 unique composers, ranging from Martin Luther (1483-1546) to Avner Dornman (b. 1975) and Lady Gaga (b.1986). Lady Gaga is included because the Philharmonic performed her work in a special concert on February 5, 2011. In addition to authors of original compositions, the data also cover authors of arrangements, such as Andre (Abram) Kostelanetz, who primarily arranged classical music, such as Johann Strauss' *Waltzes*, for "easy listening."

#### *Source Countries and Years of First Editions for 13,759 compositions*

We also use the records of the IMSLP to identify the source country for each of the 13,759 compositions. This process assigns compositions based on the country, where the composition was first published, rather than the composers' country of origin. For example, the *Duetto Concertante for Flute and Percussion* (published 1966, performed by the Philharmonic in 1987) and *Brass Quintet* (published 1944, performed in 1995) by German-born composer Ingolf Dahl (1912-1970) are classified as US composition because they were first published in the United States, after Dahl moved to the United States in 1939.<sup>9</sup> 86,758 performances cover 13,759 compositions from 61 countries; 24,887 of the performances at the New York Philharmonic, or 28.7 percent of all performances between 1900 and 2012 were of compositions from Germany (Figure 1). Another 11,005 (12.7 percent) originate from Austria, 9,637 (11.1 percent) from France, 11,868 (13.7 percent) from Russia, and 11,999 (13.8 percent) from the United States (Table 1).

The three most frequently performed compositions at the New York Philharmonic are Richard Wagner's *Die Meistersinger von Nürnberg* (1867) performed 522 times, John Stafford Smith's *The Star-Spangled Banner* (1780) performed 465 times, and Ludwig van Beethoven's *Symphony No. 5 in C minor* (1808) performed 451 times.

---

<sup>9</sup> Born in Hamburg as Walter Ingolf Marcus to a Swedish mother and a German-Jewish father, Dahl moved to Zurich in 1933 and to Los Angeles in 1939. He became a naturalized US citizen in 1943 and changed his name to Ingolf Dahl, adopting his mother's maiden name (Linnick 2008).

We also collect data on the year of the first edition for each of 13,759 compositions from the catalogues of music publishers, including Novello & Co, G. Schirmer, and Boosey & Hawkes. We have completed the data collection for all 11,999 performances of 2,778 US compositions, all 11,005 performances of 885 Austrian compositions, 9,637 performances of 821 French compositions, and are currently working on completing the data for other nationalities.

### *Remaining Length of Copyright in the Year of the Performance*

In the final step, we use the algorithm that implements copyright rules (described in Table 2) to calculate the remaining years of copyright for a composition in the year when the Philharmonic played the composition, based on the source country of the composition, the year of its first publication, and the death year of its composer. For example, Ingolf Dahl's *Brass Quintet* (1944) received a term of 28 years under the terms of the Copyright Act of 1909 (Table 2); copyright expired in 1972, and the Brass Quintet was in the public domain when the Philharmonic performed it in 1995.

Changes in copyright laws create discontinuous jumps in the remaining length of copyright protection. For example, Ingolf Dahl's *Duettino Concertante* received 28 years of protection under the US Copyright Act of 1909 (Table 2), when it was first published in 1966. The piece was on copyright when the Philharmonic performed it in 1987, and would have moved into the public domain in 1994. Effective January 1, 1978, however, the U.S. Copyright Act of 1976 granted the option to extend copyright terms for pieces that had not yet entered the public domain to 75 years. As a result, *Duettino Concertante* had a remaining length of copyright of 54 years when the Philharmonic played in 1987.<sup>10</sup>

Even more dramatically, the US accession to the Uruguay Acts Agreements Rounds on December 8, 1994 (effective January 1, 1996), increased the length of copyright protection for Sergei Prokofiev's "Peter and the Wolf" from zero years when the New York Philharmonic performed it 19 times between 1940 and 1983, to 21 years in 2002, when it was performed once, and 16 years in 2007, when it was performed three times. Russia's 1993 Law No. 5351-I on Copyright and Related Rights, which the US recognized in the Uruguay Acts Agreements Round (Table 2) grants retroactive copyright protection for life of author plus 50 years. The US

---

<sup>10</sup> The extension to 75 years is for corporate owners, and would be in effect if a composer sells the right to a composition to a corporation. For compositions that are owned by individuals, the 1976 granted exclusive rights for "life of author + 50 years."



Copyright Term Extension Act, effective October 27, 1998, further extended copyright to “life of author plus 70 years” for individual owners and 95 years after publication for corporate owners. Sergei Prokofiev had died in 1953, implying that Prokofiev’s 1936 composition “Peter and the Wolf” will remain on copyright in the United States until 2023.

### *II.B. Repertoire data for 27 US orchestras, 1842-1970*

Our second data set includes 88,184 separate performances of 8,423 compositions by 1,937 composers by 27 orchestras between 1842 and 1970. It extends an existing data set by Kate Hevner Mueller (1973), which covers the repertoires of 27 US orchestras that had more than \$500,000 in expenditures in 1972: Mueller and a group of volunteers had identified these orchestras based on information from the League of American Orchestras, and compiled repertoire data from available volumes of historical program notes. Their data include information on the name of each composition, the name of the composer and the year of the performance. In terms of their 2011 budgets, these orchestras rank among the top in the United States (Figure 2). Most of the 27 orchestras are well-established orchestras in the East Coast and in the Midwest (Figure 3).

To collect information on the copyright status of each of the 8,423 compositions by the 27 orchestras, we follow the same process and apply the same algorithm that we have used to collect information for the New York Philharmonic (described above). The average orchestra appears in the data for 75 years (with a standard deviation of 22 years), with an average of 4,925 performances, or 80 pieces per year (with a standard deviation of 2,739 and 32 respectively).

Compositions performed by 27 major US orchestras originate from 47 countries; with 2,145 compositions from the United States, 1,366 from Germany, 710 from Austria, 918 from France, and 681 from Russia (Table 1). The three most frequently performed pieces are by German composer Richard Wagner (1813 – 1883): *Die Meistersinger von Nürnberg* (1867, 1,095 performances), *Tristan and Isolde* (1859, 819 performances), and *Ring des Nibelungen* (1874, 773 performances). By comparison, the average composition is performed 10.3 times (with a standard deviation of 43.2).

### *II.C. 326 Orchestras in the League of American Orchestras, 2000-2012*

To examine variation in a broader set of orchestras, we collect additional data on premieres that have been performed at 326 orchestras that are members in the League of American Orchestras (formerly American Symphony Orchestra League, ASOL). Founded in 1942, the LAO collects data on the activities of US orchestras with the goal of encouraging and supporting them. We digitize and clean data on titles, composers, and dates of performance for 1,116 premieres between 2009 and 2012, which the LAO shared with us electronically. Since the Copyright Term Extension Act, practically all premieres are protected by copyright. Budget data for the 326 orchestras in the data are available from GuideStar for most years after 2008 (accessed on October 4<sup>th</sup>, 2013).<sup>11</sup>

#### *II. D. Proxies for operating budgets*

Operating budgets vary significantly across orchestras. For example, Lawrence Golan explained in an interview that we conducted over e-mail:

“As for the orchestras that I conduct, I can tell you this: Yakima Symphony Orchestra: Annual Budget is \$800,000. While flexible, our library budget is \$10,000. Lamont Symphony Orchestra (university orchestra): Annual Budget is \$10,000. Again flexible, library budget is \$5,000. Denver Philharmonic: Annual Budget is \$80,000. Library budget is flexible, about \$2000.”<sup>12</sup>

Systematic data on historical orchestra budgets are not available, but we can use variation in the number of performances that an orchestra plays during its regular season as a measure for the budget of the orchestra. Orchestras that are more budget constraint play fewer pieces per season. For example, when the Columbus Symphony Orchestra was near bankruptcy in 2008, the board of directors proposed “to save \$2.5 million in the following year’s budget by reducing the number of full-time orchestra musicians from 53 to 31 and reducing the concert season from 46 to 34 weeks” (Flanagan 2005, p. 1). Orchestras below the median budget played an average of 49.5 pieces per year between 1842 and 1970, while orchestras above the median played an average of 78.7 pieces per year. The correlation between the number of performances per season and the operating budgets in 2011 is 0.4023.

For 2009 to 2012, operating budgets for all 27 orchestras are available from the Internal Revenue Service (IRS). To collect additional information, we contacted all 27 orchestras by e-

---

<sup>11</sup> Full repertoires are available for 2000 to 2012; we are in the process of digitizing and cleaning these data.

<sup>12</sup> E-mail interview conducted on December 31, 2013.

mail and phone; only 7 orchestras replied and 6 send information on the IRS budget data. We collect data on operating budgets for 2009 to 2012 from IRS forms.<sup>13</sup> We added population data for each city of the orchestra by decade from the U.S. census bureau. We also added the population of Germans on the county level by decade from the U.S. census bureau.

### III. MUSIC ON AND OFF COPYRIGHT, 1842-2010

#### *III.A. New York Philharmonic, 1900-2012*

Established in 1842, the New York Philharmonic is the oldest symphonic orchestra in the United States. With an operating budget of 69.36 million in 2011, the Philharmonic is also one of the country's best-funded orchestras, ranking fourth in terms of operating budget (Figure 2). For big city orchestras like the New York Philharmonic, additional costs of performing pieces on copyright may be "like a mosquito bite" (conductor Lawrence Golan, cited in Parry, 2011, p. 3).

Performance data indicate no significant change after 1996 in the type of music that was performed at the New York Philharmonic. The 1996 change restored copyright for 198 compositions that the Philharmonic played between 1900 and 1996. Among them Igor Stravinsky's *Firebird* (1910), Dmitri Shostakovich's *Symphony No. 5 in D minor, Op. 47* (1937), and Sergei Prokofiev's *Romeo and Juliet* (1935) were the most frequently performed compositions, with 234, 134 and 119 performances between 1900 and 2012. For these three pieces, the length of copyright increased from zero (because they were in the public domain) to 45, 49, and 27, respectively.

Instead of changes in copyright, the Philharmonic's repertoire appears to have been much more sensitive to changes in tastes as a result of world events. At the onset of World War I and II, the Philharmonic shifts away from playing German compositions and increases its performances of US compositions; in both cases the shift persists long after the war. These changes are consistent with repertoire data for of the Metropolitan opera in New York, where the share of German-language operas declined from 50 to less than 10 percent at the beginning of World War I (Moser 2012).

#### *III.B. 27 major US orchestras, 1842-1970*

---

<sup>13</sup> Operating budget is the total expenses of the organization on the IRS form 990, which include salaries, professional fundraising fees, as well as library budgets (the cost of purchasing or renting music).

In 1994, Lawrence Golan argued that, with an annual budget of \$4,000 per year, his orchestra at the University of Denver’s Lamont School of Music “used to be able to buy Prokofiev, Shostakovich, and Stravinsky. All of a sudden, on one day, you couldn’t anymore” (Parry 2011, p. 3). In this section we examine data for 27 wealthy orchestras to see whether for this group, variation in copyright may also play a role. As a first test, we combine the data across all years, and compare differences in the share of music on copyright for orchestras that are more or less budget-constrained. These data indicate that, for orchestras that were more budget constrained in 2011, a larger share of performances between 1842 and 1970 were pieces off copyright (Figure 4).

Historical performance data confirm that orchestras that are more budget-constrained played fewer pieces on copyright (Figure 5). In fact, the data suggest an almost linear negative relationship between the number of pieces that an orchestra can perform per year (as a measure for variation in budgets) and the share of these pieces that are on copyright. In the simple linear regression

$$\text{share of pieces on copyright}_i = \alpha + \beta \text{ number of pieces per season}_i + \varepsilon$$

where the  $i$  is an indicator for the 27 orchestras, the estimate for  $\beta$  is 0.0016 (with a standard deviation of 0.0000094), and an R-squared of 0.2719. Orchestras that play 1 standard deviation fewer pieces per year have a 4.4 percent lower share of pieces on copyright. An outlier in the data, the New York Symphony, merged with the New York Philharmonic in 1928. While it was active between 1878 and 1928, the New York Symphony gave 2,797 performances of 1,033 pieces – nearly half of them on copyright.

### *III.C. 326 orchestras in the League of American Orchestras, 2000-2012*

A complementary test compares counts of premieres (which are by default on copyright since 2002) across orchestras depending on variation in their budgets. Premieres may be especially affected by copyright costs because an orchestra has to buy a new set of scores for the music, rather than using one that is already part of their library. Performance rights, however, may be cheaper for premieres because all but the most prominent composers benefit from advertising their new compositions.<sup>14</sup>

---

<sup>14</sup> Varian (2005) includes a concise definition of the distinction between performance rights – the right to play a piece – and print rights – the right to reproduce the score.

This analysis indicates that orchestras with higher budgets premiere more pieces (Figure 6). In 2009, for example, orchestras in the lowest quartile of the budget distribution in played 2 premieres per year, compared with 13 in the second quartile, 41 in the third, and 243 in the fourth. In 2010, orchestras in the lowest quartile of the budget distribution in played 39 premieres per year, compared with 37 in the second quartile, 34 in the third, and 108 in the fourth. In 2011, orchestras in the lowest quartile of the budget distribution in played 17 premieres per year, compared with 22 in the second quartile, 25 in the third, and 93 in the fourth.

#### IV. MUSIC BY RUSSIAN COMPOSERS BEFORE AND AFTER 1996

A final test exploits the fact that Russian was not on copyright until 1973 when the Soviet Union joined the Universal Copyright Convention. Russia had entered a small number of bilateral treaties with Germany (1904), France (1905) and Austria-Hungary (1906). These treaties, however, became void as a result of the October Revolution in 1919, so that Russian music was in the public domain in the United States and other countries. After 1973, music that was newly published in the USSR was protected for at least 28 years in the United States. With the US accession to the Uruguay Rounds Agreement, the United States re-instituted copyright protection for Russian music, such as *Peter and the Wolf*, which had been in the public domain since it was first published in the USSR in 1936.

For the New York Philharmonic, repertoire data indicate a slight increase in performances of Russian music after 1995 (Figure 2). Between 1900 and 1995, the Philharmonic's repertoire included 55 performances of Russian music in an average year; after 1995, its repertoire included 65 performances of Russian music. Until 1995, 13.22 percent of performances were of Russian music; 9,456 of the Philharmonic's total 71,479 performances during this time were 629 compositions by 62 Russian composers. After 1995 the share of Russian compositions increased to 15.79 percent; 2,412 of the Philharmonic's 15,279 performances after the 1996 law were 250 pieces by 28 Russian composers; 53.4 percent of these pieces were on copyright when the Philharmonic performed them.

Performance data for 27 orchestras indicate that orchestras that were more budget constrained were also more likely to play Russian music (Figure 8). For orchestras below the median budget, 12.80 percent of performances were of Russian music; 4,107 of the total 32,096 performances during this time were 397 compositions by 74 Russian composers. For orchestras

above the median budget, 12.37 percent of performances were of Russian music; 6,937 of the total 56,088 performances during this time were 578 compositions by 94 Russian composers.

In the simple linear regression

$$\text{share of Russian pieces in all performances}_i = \alpha + \beta' \text{ number of pieces per season}_i + \varepsilon$$

the estimate for  $\beta'$  is -0.0002396 (with a standard deviation of 0.00000534), and an R-squared of 0.1558. Orchestras that play 1 standard deviation fewer pieces per year have a 0.6 percent higher share of Russian pieces.

Moreover, data on the age of individual pieces indicate that the average piece that US orchestras played between 1842 and 1970 was substantially more recent if it was a piece by a Russian composer compared with pieces by Austrian and German composers. On average, the composer of a German or Austrian piece had been dead for 81 years; by comparison, a composer of a composition first published in Russia had been dead only 23 years (Figure 9).

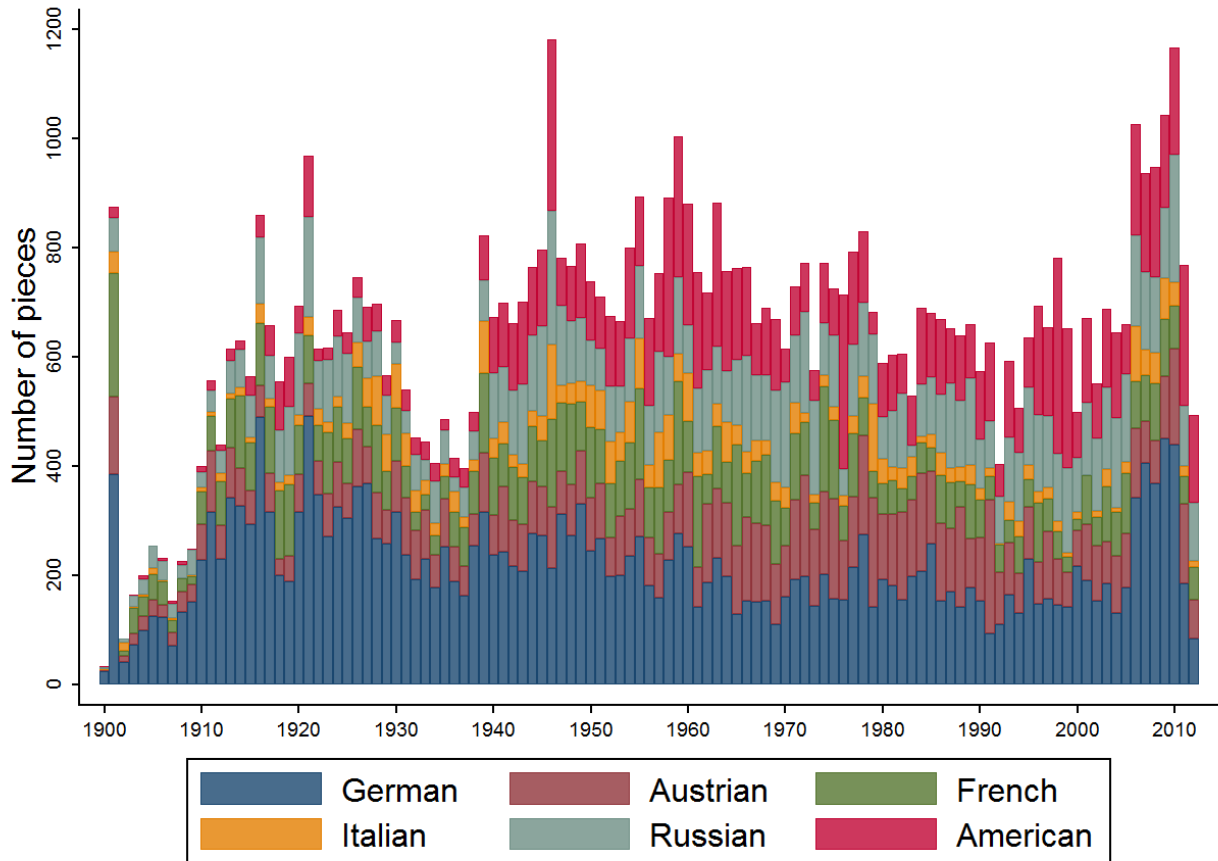
These results indicate that orchestras that are more budget constrained (such as small-city, university, and school orchestras) were more likely to play Russian music, suggesting that the lack of copyright may have played an important role in popularizing Russian music.

## REFERENCES

- Akerlof, George A., et al. "The Copyright Term Extension Act of 1998: An Economic Analysis." *AEI-Brookings Joint Center for Regulatory Studies*, 2002.
- Burke, Andrews E. "How effective are international copyright conventions in the music industry?" *Journal of Cultural Economics* 20, no. 1 (1996): 51-66.
- Elst, Michael. *Copyright, freedom of speech, and cultural policy in the Russian Federation*. Boston: Martinus Nijhoff, 2005.
- Flanagan, Robert J. *The perilous life of symphony orchestras: artistic triumphs and economic challenges*. New Haven: Yale University Press, 2012.
- Li, Xing, Megan MacGarvie, and Petra Moser. "Dead Poet's Property – The Copyright Act of 1814 and the Price of Intellectual Assets." 2013.

- Liebowitz, Stan J., and Stephen Margolis. "Seventeen Famous Economists Weigh in on Copyright: the Role of Theory, Empirics, and Network Effects." *Harvard Journal of Law & Technology* 18, no. 2 (2005): 435-457.
- Linick, Anthony. *The Lives of Ingolf Dahl*. Bloomington, Indiana: AuthorHouse, 2008.
- Moser, Petra. "Do Patents Weaken the Localization of Innovations? Evidence from World's Fairs, 1851-1915." *The Journal of Economic History* 71, no. 2 (2011): 363-382.
- Moser, Petra. "Ethnic Discrimination at the NYSE." *Explorations in Economic History* 49 (2012): 167-188.
- Mueller, Kate Hevner. *American Symphony Orchestra Repertoires 1842-1970*. Bloomington: Indiana University Press, 1973.
- Nimmer, David. "Nation, Duration, Violation, Harmonization: An International Copyright Proposal for the United States." *Law and Contemporary Problems*, 1992: 211-239.
- Oberholzer-Gee, Felix, and Koleman Strumpf. "File-Sharing and Copyright." 2009.
- Parry, Mark. "Supreme Court Takes Up Scholars' Rights." *Chronicle of Higher Education*, 2011.
- Patterson, Lyman Ray. *Copyright in historical perspective*. Nashville: Vanderbilt University Press, 1968.
- Varian, Hal R. "Copying and Copyright." *Journal of Economic Perspectives*, 2005: 121-138.
- Waldfoegel, Joel. "Bye, Bye, Miss American Pie? The Supply of New Recorded Music Since Napster." *NBER Working Papers*, 2011.

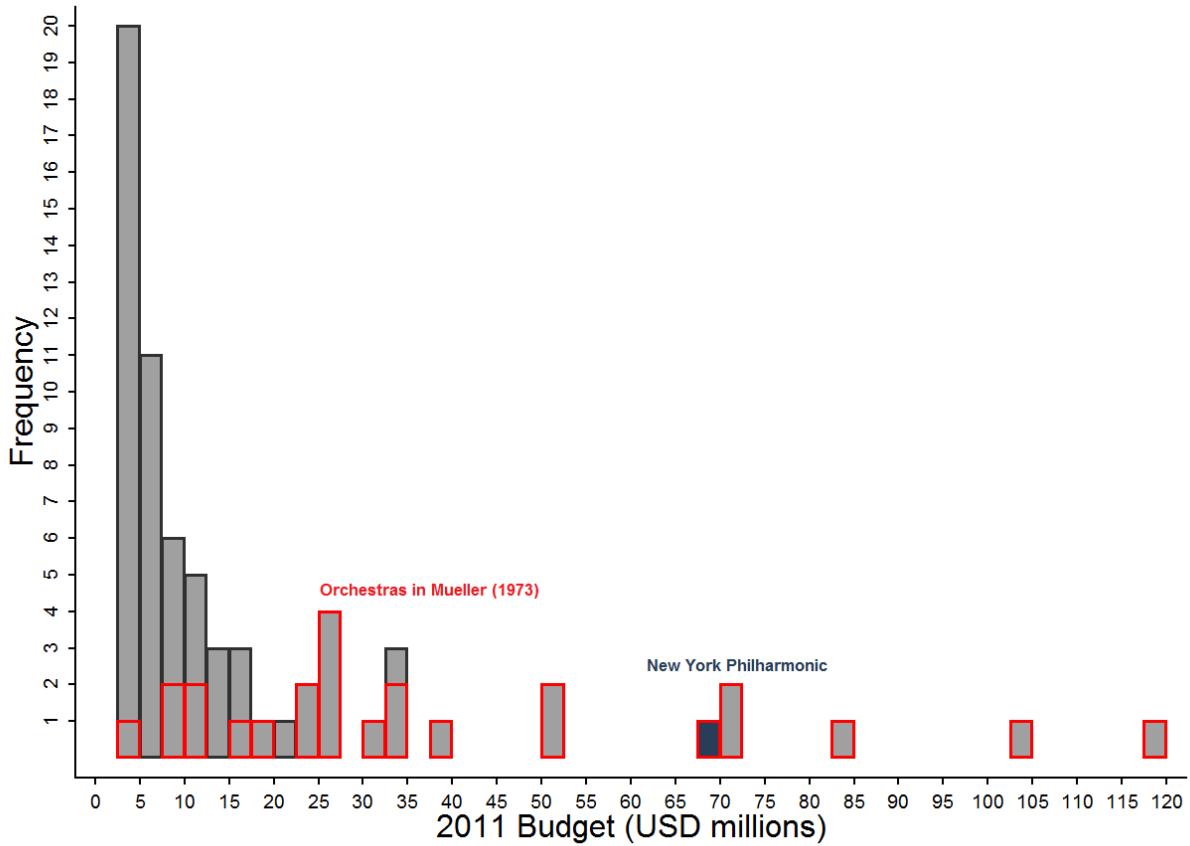
FIGURE 1 – PERFORMANCES BY THE NATIONALITY OF COMPOSERS  
NEW YORK PHILHARMONIC, 1900-201



Notes: Data include 86,758 performances at the New York Philharmonic between 1900 and 2012 of xx unique pieces of music by 2,185 unique composers. We have collected data on performances at the Philharmonic from the orchestra’s online archives (available at <http://archives.nyphil.org/>, accessed on xx). We have constructed data on the nationalities of 2,185 composers from the International Music Score Library Project (available at xx, accessed on xxx).



FIGURE 2 – 2011 BUDGETS FOR 70 ORCHESTRAS  
WITH ANNUAL OPERATING BUDGETS ABOVE \$2.5 MILLION



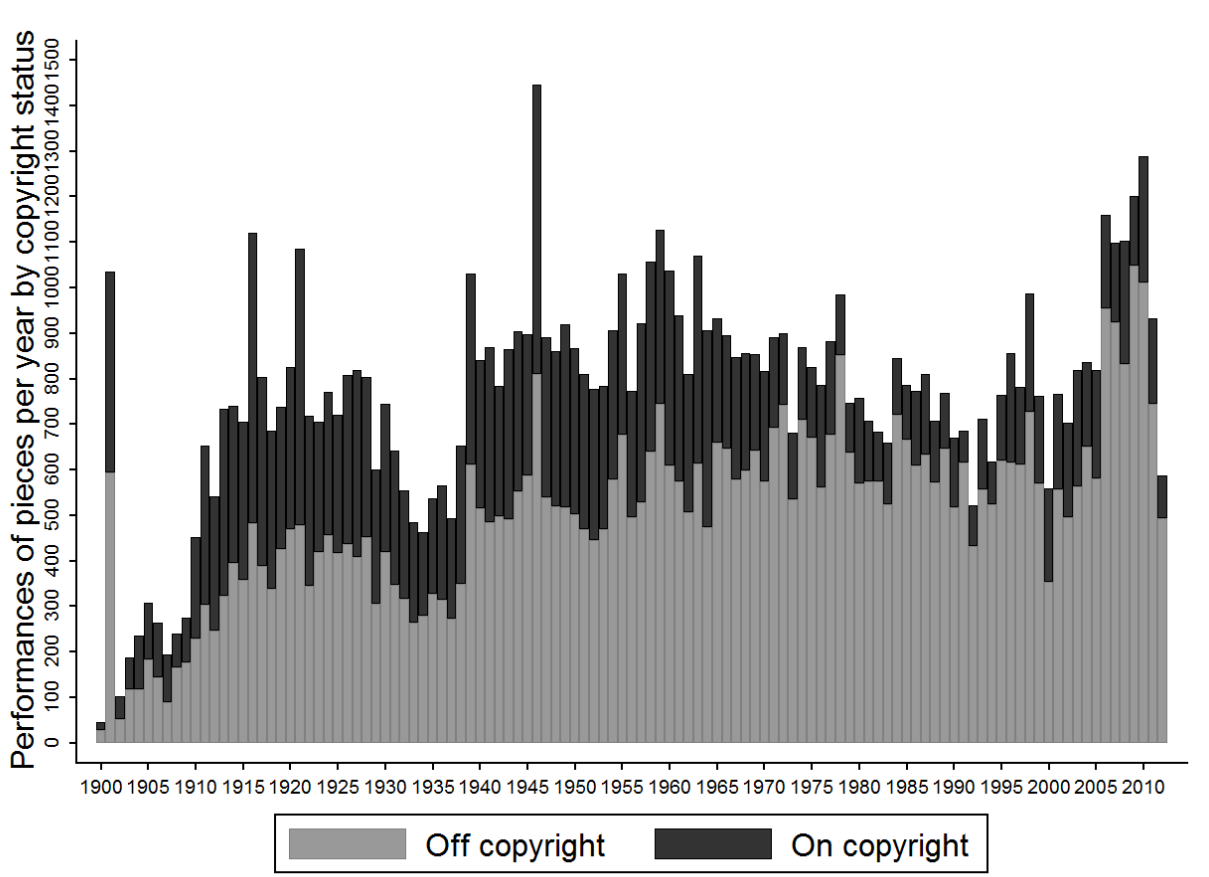
*Notes:* Among the 70 orchestras with a budget of at least 2.5 million, the orchestras in Mueller (1973) are approximately the top 25 wealthiest orchestras in the United States. With a budget of 68.4 million in 2011, the New York Philharmonic ranks as the sixth wealthiest orchestra in the United States. Budget data is collected from the IRS Form 990 of the individual orchestras, which is available for select years at GuideStar.

FIGURE 3 – U.S. ORCHESTRAS WITH 2011 BUDGETS OF \$2.5 MILLION OR MORE



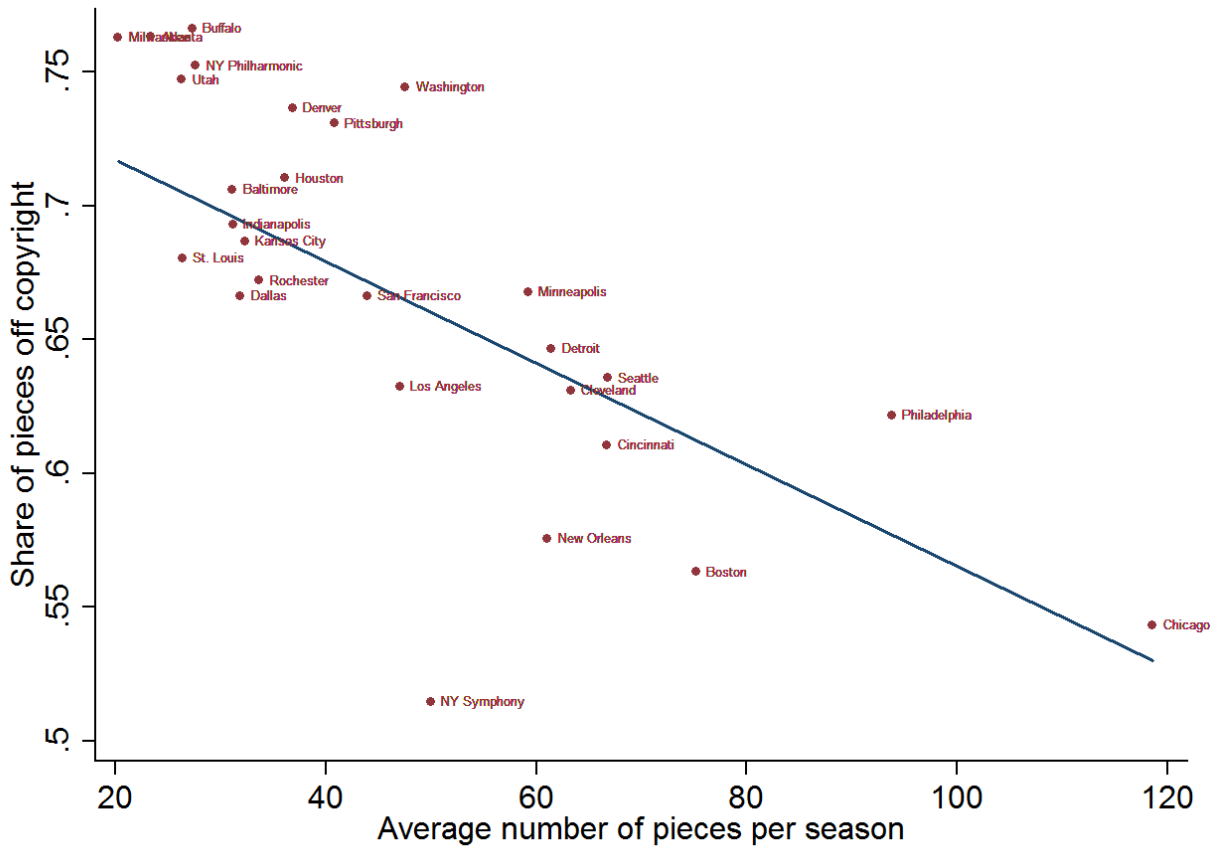
*Notes:* 45 orchestras listed in the American League of Orchestras (but not in Mueller 1973) are represented by blue pins, 25 orchestras in Mueller (1973) are presented by yellow pins.

FIGURE 4 – PERFORMANCES OF COMPOSITIONS ON AND OFF COPYRIGHT FOR THE NEW YORK PHILHARMONIC, 190-2012



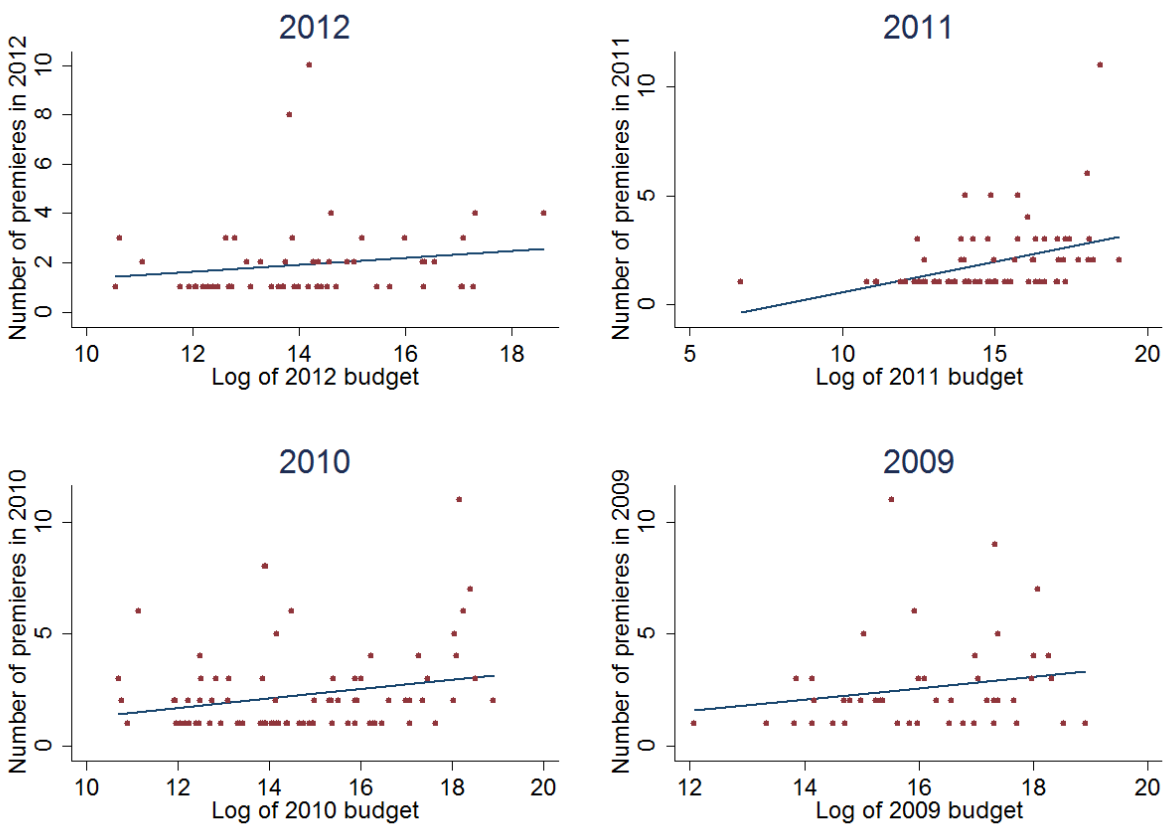
*Notes:* Data include 86,758 performances of 13,759 pieces played between 1900 and 2012, including 29,149 performances, when a piece was on copyright and 57,609 when a piece was off copyright.

FIGURE 5— SHARE OF PIECES OFF COPYRIGHT AND AVERAGE NUMBER OF PIECES PER SEASON



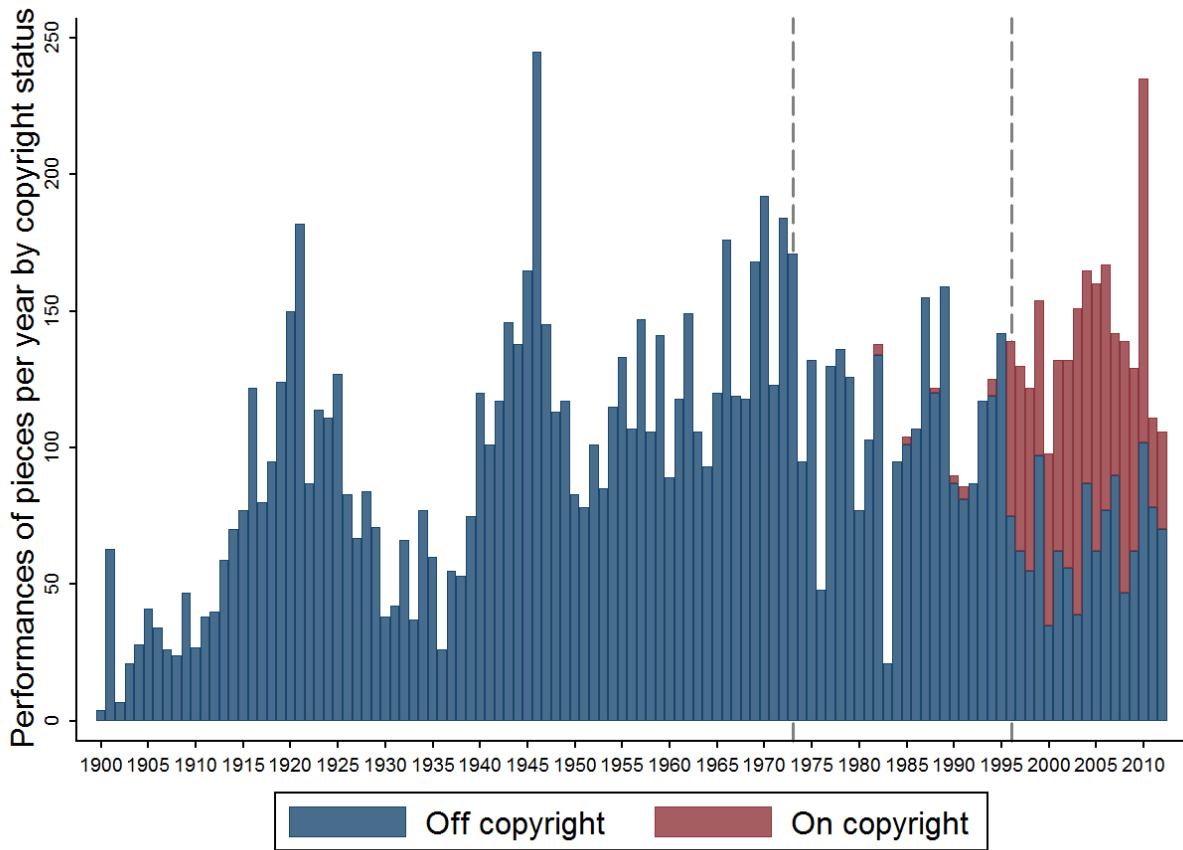
Notes: Orchestras in the dataset were active from a minimum of 20 seasons to a maximum of 128. Average number of pieces per season ranged from a minimum of 20.25 to a maximum of 118.55.

FIGURE 6 – 2012 ORCHESTRA PREMIERES VS. LOG OF ORCHESTRA BUDGET



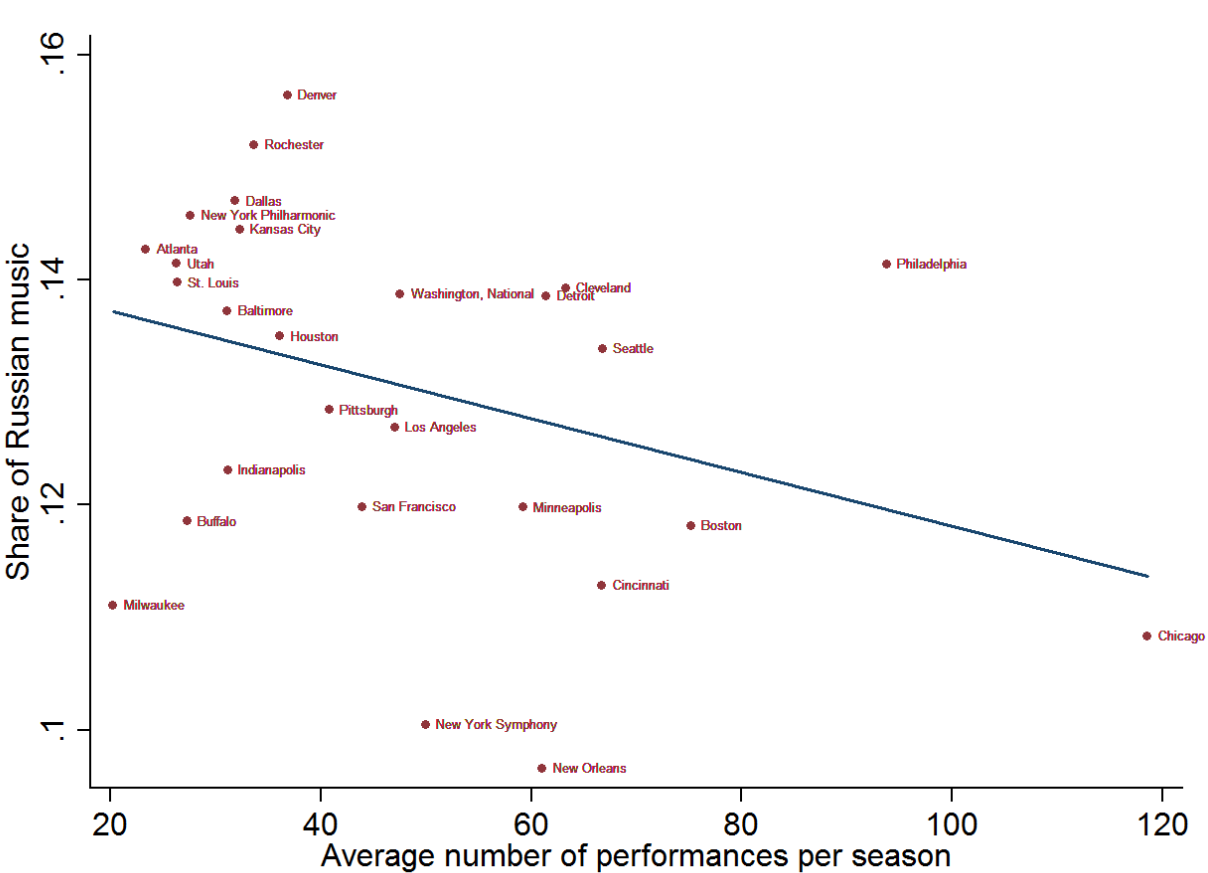
*Notes:* New music published in the U.S. after 2002 automatically enjoy copyright protection for 70 years after the death of the author (<http://copyright.cornell.edu/resources/publicdomain.cfm>). The graphs display the relation between the number of copyrighted premieres and the budget of the orchestra.

FIGURE 7 – PERFORMANCES OF RUSSIAN MUSIC AT THE NEW YORK PHILHARMONIC PER YEAR



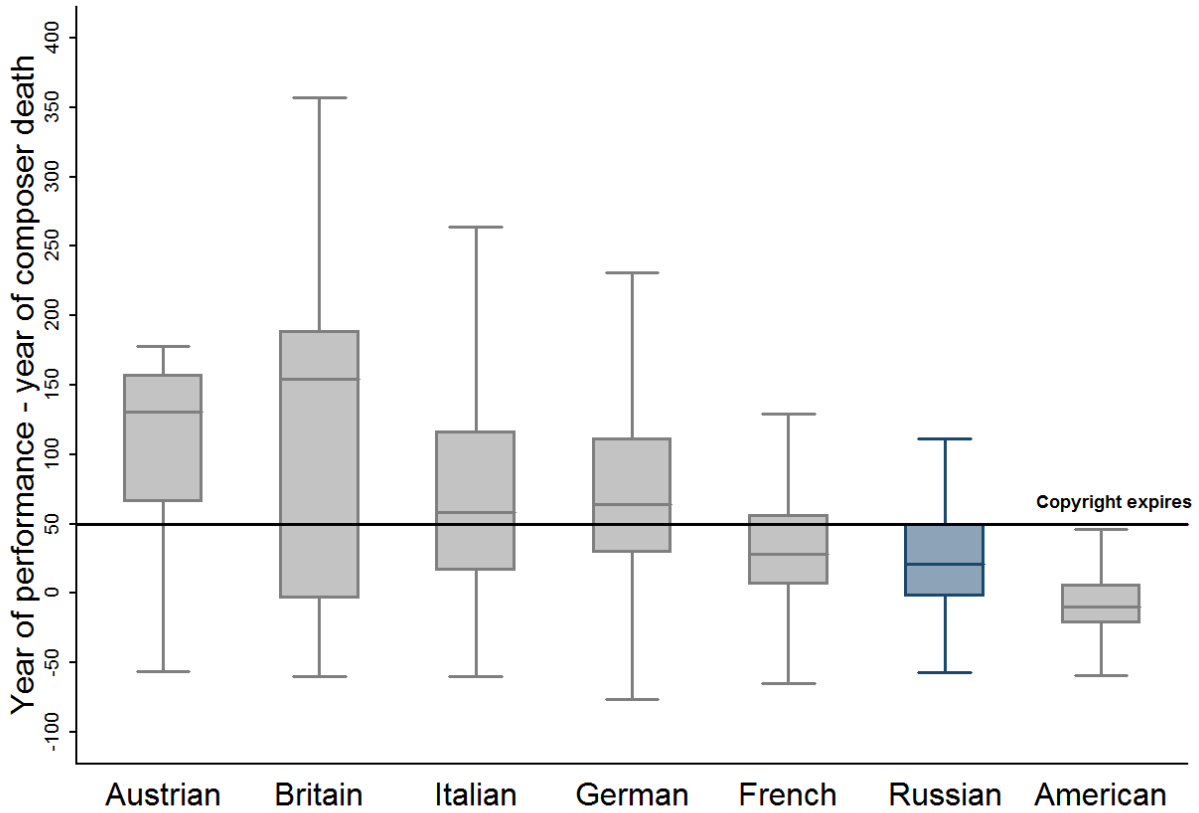
*Notes:* Data include 11,868 performances of pieces by Russian composers that the New York Philharmonic played between 1900 and 2012, including 1,319 performances, when a piece was on copyright and 10,549 when a piece was off copyright. In 1973, the Soviet Union joined the Universal Copyright Convention, which created copyright in the United States for Russian pieces that were first published after 1973. In 1996 the United States implemented a 1994 decision of the World Trade Organizations’ Uruguay Round, which created copyright for pieces by Russian composers for 50 years after the death of the composer.

FIGURE 8 – SHARE OF RUSSIAN MUSIC BY THE AVERAGE NUMBER OF PERFORMANCES PER SEASON



Notes: Russian music was off copyright prior 1973 in the United States. Orchestras with a smaller number of performances per season tend to play more Russian music.

FIGURE 10 – YEARS SINCE DEATH BY COMPOSER NATIONALITY



*Notes:* The average time between the year of performance and the death of the composer is 58.35 years. For the Russian pieces, the average time is 22.8 years. The Copyright Act of 1976 grants copyright protection for a term consisting of life of author plus 50 years after the author’s death.