Research Spotlight
Artistic Originals as Capital Assets

By Rachel H. Soloveichik

IN KEEPING with international guidelines on national economic accounting, the Bureau of Economic Analysis (BEA) has announced that it is planning to adopt a new treatment of long-lived artwork in the national income and product accounts (NIPAs). The new treatment will be part of the 2013 comprehensive revision. Under the new treatment, long-lived artwork produced by artists, studios, and publishers will be capitalized; that is, production of long-lived artwork will be treated as an investment, thus adding to the capital stock. Currently, the NIPAs treat all production of artwork as a current expense.

As a first step toward treating artistic originals as investment and determining how such investment might affect gross domestic product (GDP) over time, BEA has initiated a research effort to estimate the value of theatrical movies, original songs and recordings, original books, long-lived television programming, and miscellaneous artwork. The value of investment in such artistic originals totaled $51.6 billion in 2007 (the featured year for this research). Copies of these artistic originals will be sold on DVD, replayed on the radio, reprinted in paperback, and broadcast on television for decades to come. The estimates of investment in artistic originals presented in this paper are preliminary and may differ from the values that will ultimately be recorded in the NIPAs.

The research discussed in this article is part of a long-term bureauwide effort aimed at capitalizing a complete set of intangible assets. In the 1990s, BEA reclassified computer software from a current expense to a capital investment and revised the NIPAs accordingly (Parker and Grimm 2000). Other researchers at the BEA have developed satellite accounts measuring investment and capital stock of research and development (R&D) (Robbins and Moylan 2007).

In this paper, estimates are derived for the annual current-dollar value of investment in artistic originals, prices for artistic originals, and the capital stock of artistic originals. GDP is then calculated as if artistic originals were classified as capital assets.

Conclusions drawn from this work include the following:

- The $51.6 billion in current-dollar investment in artistic originals in 2007 breaks down by category as follows: $14.0 billion in theatrical movies, $7.5 billion in original songs and recordings, $5.5 billion in original books, $21.9 billion in long-lived television programs, and $2.6 billion in miscellaneous artwork.
- The aggregate capital stock of artwork in 2007 was worth approximately $440 billion, nine times annual production. The large capital stock reflects the long lifespan of artistic originals.
- Investment in artistic originals accounted for approximately 0.35 percent of current-dollar GDP in 2007. Between 1980 and 2009, investment in artistic originals grew from 0.21 percent of current-dollar GDP to 0.35 percent of current-dollar GDP.

The remainder of this article provides the following: an overview of the national economic accounting concepts related to capitalizing artistic originals; estimates of current-dollar investment for theatrical movies, music, books, television programs, and miscellaneous artwork from 1929 to 2009; estimates of price indexes and real production for each category from 1929 to 2009; and estimates of depreciation schedules for each art category and the capital stock of each art category.[1]

Overview

The NIPAs currently treat the cost of producing artistic originals as a current expense. Thus, artistic originals play a limited role in the calculation of GDP. In general, artistic production costs are treated the same as advertising costs, manufacturing costs, shipping costs, and other current expenses. If these costs are paid from one business to another, they are considered intermediate expenses and are not counted as final expenditures in GDP or as part of the capital stock.[2]

1. For details on the estimation procedures and results, please see Soloveichik 2010a, 2010b, 2010c, 2010d, and forthcoming.

2. Even if artistic originals are not counted as investment in GDP final expenditures, they do appear to a limited extent in some of the values affecting GDP. Exports and imports of services include royalties for artistic originals received from, or paid to, the rest of the world. For the sectors where output is generally not sold to markets (government and nonprofit institutions serving households), the value of output is based on expenses and thus includes the cost of producing artistic originals. That output is then counted as part of government or personal consumption expenditures.

A version of this article was published in the May 2010 *American Economic Review: Papers and Proceedings.*

The *System of National Accounts 2008*, the international guidelines for national accounts, has recommended that entertainment and literary artistic originals should be capitalized. Capitalizing artistic originals means that expenditures to produce or acquire them are treated as investment and directly included in the calculation of GDP. The production costs are added to the preexisting capital stock of artwork to get the total capital stock of artwork. The stock of original artwork is used to produce other goods and services, such as copies of the artwork disseminated as DVDs or television broadcasts. The use of capital goods to produce other goods and services is known as capital services. The standard measure of GDP based on final expenditures does not break out the flow of capital services, which are implicitly counted in the national accounts as part of gross operating surplus. Estimates of capital services are available, however, in the integrated production account, which is prepared jointly by BEA and the Bureau of Labor Statistics and is available on BEA's Web site. [3]

In addition, capitalizing artistic originals requires accounting for the depreciation of the assets. In the NIPAs, this depreciation is known as consumption of fixed capital (CFC). The new capital stock of artwork equals the preexisting capital stock plus new investment minus CFC.

Three pieces of data are necessary to measure real investment in artistic originals and the capital stock: current-dollar investment estimates, price indexes, and depreciation schedules. With these data, real investment and real capital stock can be calculated for year *t:*

$$\textit{Real investment}_t = \textit{current-dollar investment}_t / \textit{price index}_t$$

$$\textit{Real capital stock}_t = \textit{real capital stock}_{t-1} - CFC_t + \textit{real investment}_t$$

Current-Dollar Investment

Artistic originals are rarely sold in an open market, so it is difficult for BEA to observe prices for new artwork. This is a common problem for intangible assets. In such cases, BEA often estimates the value of investment based on the costs of production. This approach is used in the NIPAs to value various types of own-account investment, such as own-account construction, software, and R&D.

When direct data on production costs are not available, however, the net present value approach provides an alternative method to calculate the value of an investment.[4] In order to implement the net present value approach, this research estimated the net present value of future revenue and the net present value of future nonartwork costs like advertising and printing. The value of an artistic original is the net present value of future revenue minus the net present value of nonartwork costs.[5] Based on the net present value estimates, I then calculated the ratio of investment to revenue. That ratio will be used to estimate current-dollar investment on an annual basis.

The primary source data for this project were from the 2007 Economic Census. In 2007, total revenue from long-lived artwork was $134 billion. By category, revenue was $37.2 billion from theatrical movies, $14.2 billion from music, $26.1 billion from books, $40.7 billion from long-lived television, and $15.9 billion in miscellaneous artwork. New investment accounted for an estimated 38 percent of industry revenue for theatrical movies, 49 percent of industry revenue for music, 21 percent of industry revenue for books, 54 percent of industry revenue for television, and 17 percent of industry revenue for miscellaneous artwork.[6] The remaining revenue is spent on nonartwork costs—such as advertising, stamping DVDs, or printing books. In the NIPAs, these nonartwork costs are not considered investment.[7]

According to these calculations, investment expenditures in artistic originals in 2007 were $14.0 billion for theatrical movies, $7.5 billion for original songs, $5.5 billion for original books, $21.9 billion for long-lived television programs, and $2.6 billion for miscellaneous artwork—$51.6 billion in total (chart 1). Investment expenditures for each category from 1929 to 2009 were also estimated. The data sets and methodology used to produce each time series are briefly described below.

Theatrical movies

Between 2005 and 2009, data from the 2007 Economic Census and Service Annual Survey were used to measure annual revenue for the movie industry. Based on the advertising costs and DVD production costs reported in *The*

3. For government and nonprofit institutions, capital services from artwork will be explicitly included in the estimates of GDP when artistic originals are capitalized. These sectors do not sell products on the market, so BEA uses expenses as the measure of output. Depreciation (or consumption of fixed capital) is included as one of those expenses and can be thought of as a partial measure of the services of capital.

4. The investment estimates in this paper are sensitive to the precise discount rate used. A real interest rate of 10 percent was used to calculate real net present values.

5. The estimated net present values use historical data to project future revenues and costs. It is possible that actual revenues will be different than expected.

6. Details on the research behind my production shares are given in my working papers (Soloveichik 2010a, 2010b, 2010c, 2010d, and forthcoming).

7. Artistic originals are long lived, so old artwork can earn revenue for decades after production. In 2007, the artistic industry spent less on production than it earned from preexisting artwork.

Big Picture (Epstein 2005), investment expenditures were estimated to account for 38 percent of revenue.[8]

Before 2005, IMDB.com data—which gives filming dates and production budgets for individual movies from 1900 to 2011[9]—were used to estimate annual investment expenditures. See "Theatrical Movies as Capital Assets" (Soloveichik 2010d) for details on the estimation procedures used.

Recorded music

The net present value approach was used to estimate investment in recorded music. Government reports, trade association data, and academic research were used to estimate revenue and nonmusic costs. In addition, trade association data provided information on the lifespan of individual songs. Based on that data, I estimated the net present value of new songs in 2007 and the ratio of new investment to revenue. I then used the date of first release to impute the dates a song was composed or recorded.

For 2007, Economic Census data were used to measure annual revenue from purchased music, royalties, live music concerts, and printed music. For other years, trade association data were used to estimate music revenue. The Recording Industry Association of America (RIAA) tracks revenue from CDs, (legal) downloads, ringtones, tape cassettes, and other purchased products. The American Society of Composers, Authors and Publishers (ASCAP) and Broadcast Music, Inc. (BMI) track royalties for radio broadcast, television broadcast, and live performances.[10] Pollstar tracks ticket sales for live music concerts.[11] The National Music Publishers Association (NMPA) tracks printed music sales.[12] Taken together, these sources allow for an estimate of annual music revenue from 1929 to 2009.[13] I then applied the ratio of new investment to revenue estimated earlier to calculate current-dollar investment from 1929 to 2009.

Books

The net present value approach was used to estimate investment. I used survey data from the American Association of Publishers to estimate revenues and nonwriting costs. In addition, Nielsen Bookscan provided information on the lifespan of individual book manuscripts. Based on that data, I estimated the net present value of new books in 2007 and the ratio of new investment to revenue. I then used the date of first release to impute the dates a book was written.

For 2007, Economic Census data were used to measure annual revenue. For other years, a variety of data

8. The exact share depends on the product mix. Movie theaters and DVDs have higher nonartwork costs than television licensing.

9. IMDB reports data for most major movies, with better coverage of recent movies and more expensive productions. The missing data were imputed.

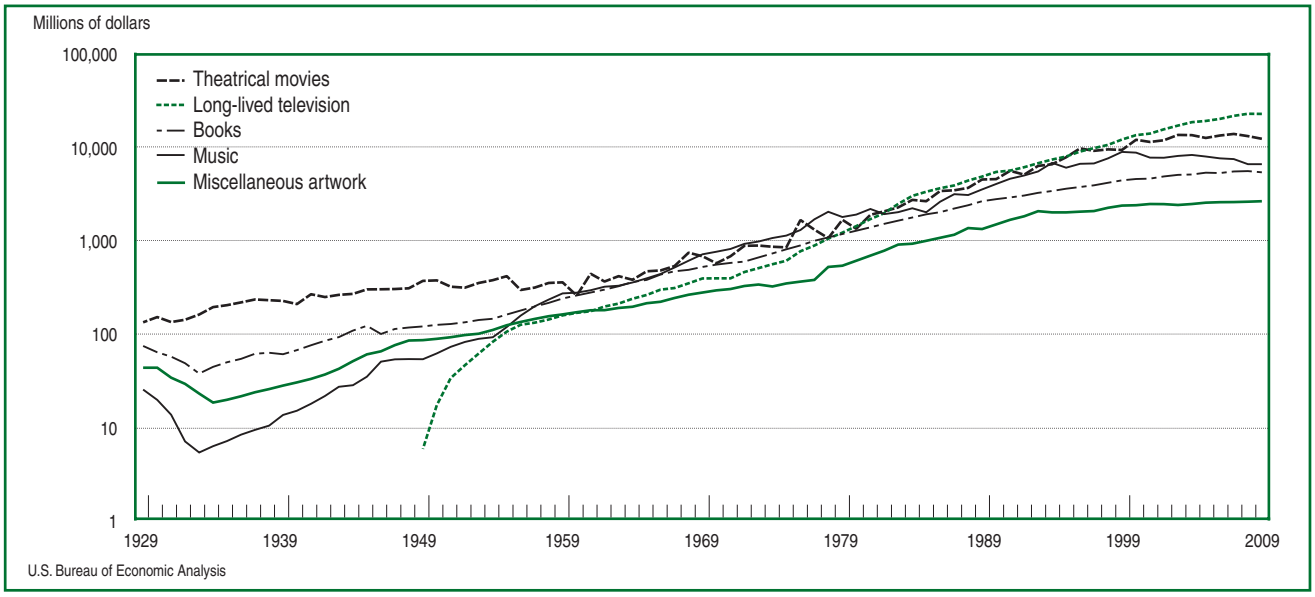
10. The ASCAP and BMI both publish this data in their annual reports. The most recent annual reports are available on their Web sites. Before then, I used *American Popular Music and its Business* (Sanjek 1984) and *Music, Money and Success* (Brabec and Brabec 2008) to get summary data.

11. Alan B. Krueger, Professor of Economics at Princeton University, has done research on the concert industry. He generously shared his aggregate tabulations for 1981–2003 from Pollstar with me. For 2004 forward, I used Pollstar's reports to get aggregate concert revenue.

12. Recent data can be downloaded from www.nmpa.org/media/survey.asp

13. These industry data were supplemented with academic research on music revenue before 1980.

Chart 1. Current-Dollar Investment in Artistic Originals, 1929–2009



sets were used. For 1929–82, Census of Manufactures data were used to estimate book sales. (Interpolation was used for years with missing data).[14] For 1982–2003, industry data produced by the American Association of Publishers was used to estimate sales. And for 2005–2009, the Service Annual Survey was used to estimate sales. I then applied the ratio of new investment to revenue estimated earlier to calculate current-dollar investment from 1929 to 2009.

Television programs

SNA 2008 recommends that only artwork with a service life of more than one year should be treated as a capital asset. Dramas and sitcoms are frequently rerun for more than one year after initial release, so they qualify as capital assets by this definition. In contrast, news programs, sporting events, game shows, and soap operas are rarely rerun. Accordingly, those programs are too short lived to be counted as capital assets.

For 2007, the Economic Census data were used to measure television industry revenue. For other years, a variety of data sets were used. For 1998–2009, Service Annual Survey (2009, 2005, and 2004) data were used. For years before 1998, revenue data for cable distributors from Kagan Associate's 2006 report were used as a proxy for cable network revenue. Advertising expenditures from the CS Ad expenditure data set (Galbi 2008) were used as a proxy for television broadcast revenue. And aggregate sales of licensed merchandise data from the *The Licensing Business Databook* (EPM Communications 2006) were used to proxy for merchandise licensing revenue.[15] For television studio revenue before 1998, I assumed that television studio revenue tracked network revenue (broadcast and cable).

Based on the industry literature, nonartwork costs, such as broadcasting towers, were estimated to account for 25 percent of total revenue, and studios were estimated to spend about 79 cents on new production for every dollar they earn from their preexisting television programs. Based on a custom data set from Nielsen Media Research, I estimated that long-lived television programs account for 40 percent of total television viewership. That data set is described in more detail in "Television Programs as Capital Assets" (Soloveichik forthcoming).

Taking total revenue, costs, and the market share of long-lived television programs into account, television investment expenditures were estimated to be 24 percent of total television revenue. These numbers are preliminary and may change significantly with future research.

14. Books licensed to magazines as serials are included. This revenue was substantial before 1945.

15. These data sets go back to 1977. Before then, I assumed that merchandise licensing tracked the overall television industry.

Miscellaneous artwork

This category includes three types of long-lived artwork: theatrical play scripts, greeting card designs, and commercial stock photography.

Theatrical play scripts. In the 2007 Economic Census, U.S. performing arts groups and independent artists earned $9.8 billion from ticket sales, donations, and performance fees.[16] Based on price data from BroadwayLeague.com, copyrighted plays pay an estimated 18 percent of their revenue in royalties for the script.[17] Playwrights spend an estimated 68 cents to write new plays for every dollar of licensing revenue. Therefore, investment was $1.2 billion in 2007.

A variety of data sets were used to measure play revenue for years other than 2007. For 1998–2009 (excluding 2007), the 2009 Service Annual Survey and 2001 Service Annual Survey were used. For 1972–97, the 1997 Economic Census and Census of Service Industries (1972–92) were used (missing years were filled in using interpolation). For years before 1972, BEA's preexisting time series of consumer spending on live entertainment was used.

Greeting card designs. According to the 2007 Economic Census, U.S. publishing companies sold $4.5 billion worth of greeting cards that year. I estimated that publishers spent 9 percent of that revenue, or $0.4 billion, creating long-lived card designs.

A variety of data sets were used to measure revenue for years other than 2007. For 1998–2009 (excluding 2007), the Service Annual Survey, which gives greeting card sales, was used. For years before 1998, the 1992 Economic Census and the Census of Manufactures were used (missing years were filled in by interpolation). The estimates were benchmarked to the 2007 Economic Census.

Commercial stock photography. According to the 2007 Economic Census, U.S. photography agencies licensed $1.6 billion worth of photos to advertisers and other clients. Based on the industry literature, nonphoto costs. like advertising, accounted for 25 percent of total revenue. I estimated that photographers spent 60 percent of their net revenue shooting new pictures. Therefore, investment was $0.7 billion in 2007.

A variety of data sets were used to measure revenue for years other than 2007. For 1998–2009 (excluding 2007), the Service Annual Survey reports annual sales. For 1972–97, the 1997 Economic Census and Census of Service Industries (1972–92) were used. Before

16. This does not count popular music concerts, which are included in music.

17. Ticket prices include payments to the play company, theater house, and sometimes the promoter. Only a portion of that revenue is counted in the $9.8 billion. Ticket prices for Shakespearean and other plays off copyright are 5–10 percent lower. Assuming that nonscript costs are identical for Shakespearean plays, performing art groups earn an estimated 25 percent less on Shakespearean plays.

1972, the U.S. Population Census was used to estimate aggregate income for photographers (missing years were filled in by interpolation). The estimates were benchmarked to the 2007 Economic Census.

Prices and Real Investment

This section presents estimates for the production costs of artistic originals without adjusting for artistic merit. The consumer experience has not, of course, remained fixed over time. For example, DVDs and plasma TVs offer a much better viewing experience than 1930s-era movie theaters and 1950s-era television sets. However, these quality improvements represent improved technology for reproducing and disseminating copies rather than improvements to the production of originals. Thus, any quality adjustment bias would be more likely to affect the price indexes used for deflating consumer spending on copies rather than the price indexes used for deflating investment in originals. After all, studios can, and do, rerelease old classics on DVD. These rereleases cost a small fraction of the cost of filming new movies (Epstein 2005).

Chart 2 shows price indexes for theatrical movies, long-lived television, books, music, and miscellaneous artwork from 1929 to 2009. Chart 3 used those price indexes and the current-dollar production data from chart 1 to calculate real production over the same time. Each price index is discussed briefly in this section.

Chart 2. Price Indexes for Artistic Originals, 1929–2009

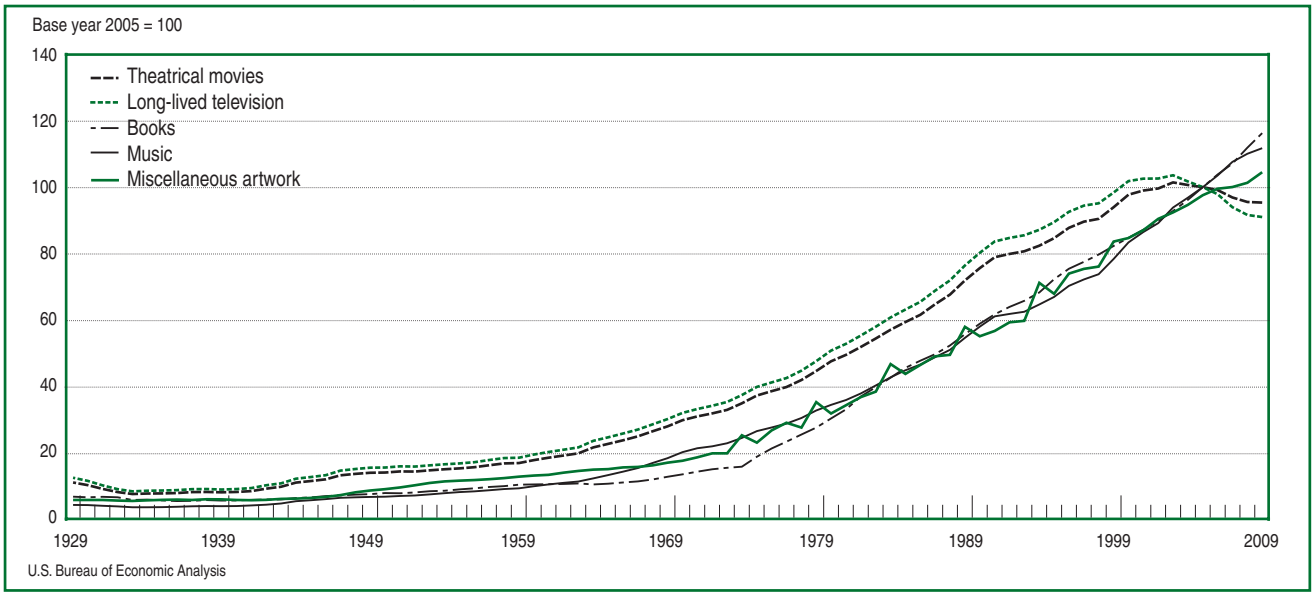
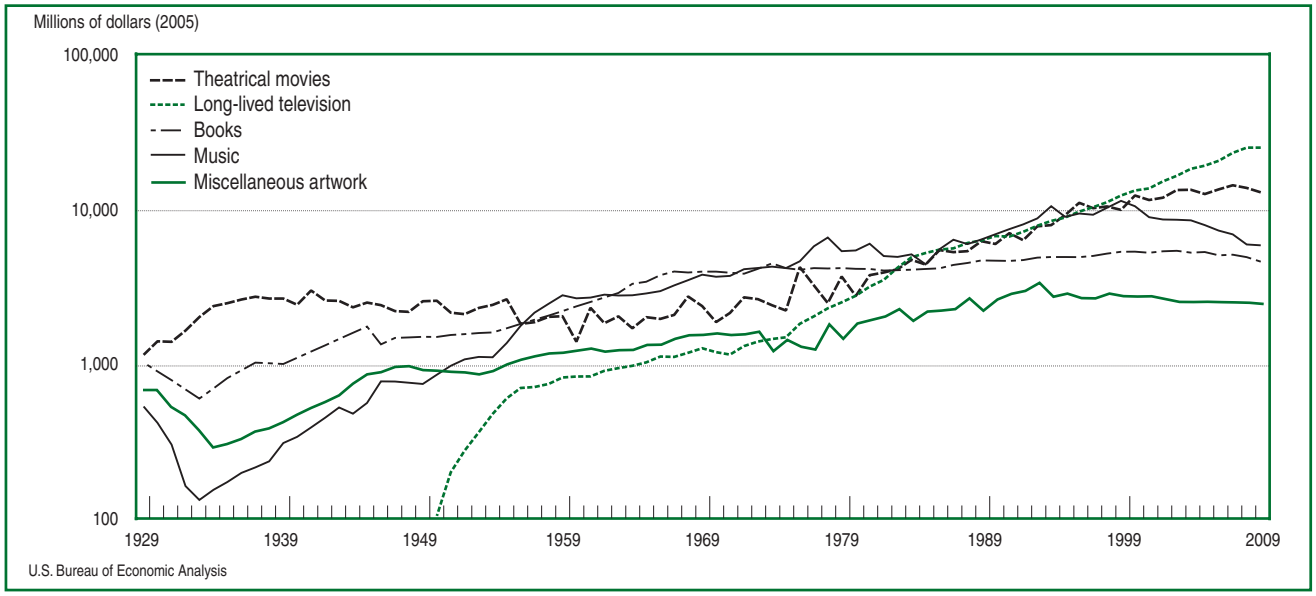


Chart 3. Real Investment in Artistic Originals, 1929–2009



Theatrical movies

The main input for movies is a live performance to record. The inputs to that live performance include scripts, scenery, costumes, actors, and the like. A price index that tracks live performance costs in the movie industry could not be located. However, BEA does track consumer prices for live entertainment such as theatrical plays, dance performances, and music concerts. These industries use similar inputs to live performances in the movie industry, so prices should move similarly. BEA's price index is published in NIPA table 2.4.4U, line 211. For years before 1959, a broader price index that covers live entertainment, museums, and sporting events was used. That price index is published in NIPA table 2.4.4, line 77.

The other important input for movies is photographic equipment to record and process the live performances. A price index that tracks photographic equipment costs in the movie industry could not be located.[18] However, BEA does track consumer prices for photographic equipment. That price index is published in NIPA table 2.4.4U, line 45. For years before 1959, the price index of audio-video, photographic, and information processing equipment was used as a proxy for photo equipment prices. That price index is published in NIPA table 2.4.4, line 14.

The two price indexes were averaged to get a price index for theatrical movies.

$$\textit{Movie prices}_t = (\textit{service sector prices}_t)^{0.75} \times (\textit{photographic equipment prices}_t)^{0.25}$$

Services account for about 75 percent of movie costs, and photographic equipment accounts for about 25 percent of movie costs.

The paper "Theatrical Movies as Capital Assets" (Soloveichik 2010d) uses IMDB data to measure real movie inputs and current-dollar budgets for major movies. Based on the IMDB data, I calculated a price index for the movie industry. Over time, the IMDB price index matches closely with the input-based price index described earlier. However, the IMDB price index is extremely labor intensive to calculate. Moreover, it can be very volatile. For those reasons, the derived input-based price index seemed to be a better choice for estimation purposes.

18. The Bureau of Labor Statistics (BLS) prepares producer price indexes (PPIs) for photographic equipment used in the motion picture industry, but that PPI only goes back to 2008. In addition, the BLS has a PPI for photographic equipment in general. However, imports account for a large portion of photographic equipment costs. Since 1990, consumer prices for photographic equipment have fallen much faster than U.S. production costs. Studios probably benefited from the cheap imports too.

Music

A live entertainment price index was used as a proxy for music production costs. That price index is published in NIPA table 2.4.4U, line 211. For years before 1959, a broader price index that covers live entertainment, museums, and sporting events was used. That price index is published in NIPA table 2.4.4, line 77.

In theory, the broader price index could be adjusted for the prices of audio equipment. However, audio equipment accounts for a much smaller share of music production than video equipment does for movies and television. With modern technology, garage bands can record and distribute albums from a personal computer. Accordingly, the weight for audio equipment would be very small.

The paper "Music as a Capital Asset," (Soloveichik 2010c) calculated consumer price indexes for four music categories: CDs and other purchased music, royalties from radio and television broadcasts, live concert tickets, and printed sheet music. The four price indexes were then averaged to get an overall music price index. The consumer price-based index tracks live entertainment prices reasonably closely, but it is more volatile and harder to calculate. For those reasons, the input-based price index seemed to be a better choice for estimation purposes.

Books

Several indexes were used to create a book price index. The main price index was BLS's producer price index (PPI) for book publishers for 1985–2009. For 1980–84, BLS's PPI for magazine publishers was used as a proxy for book prices. For 1929–79, BEA price indexes for recreational books and for educational books were averaged. These price indexes are given in NIPA table 2.4.4, lines 17 and 22.

Long-lived television programs

Like movies, the two main inputs for television programs are live performance costs and photographic equipment. However, the weight for each input is a little different. The calculations assumed that fiction television programs like sitcoms, dramas, and television movies use the same input mix as theatrical movies (75 percent live performance costs and 25 percent photographic equipment). However, nonfiction television programs spend less on live performance costs and more on photographic equipment. For example, many documentaries have no script or (paid) actors and very limited sets. Nielsen data were used to estimate the market share for nonfiction television over time.

The calculations were as follows:

$$\textit{Photo equipment weight in year } t = 0.25 \times (\textit{fiction share}_t) + 0.5 \times (\textit{nonfiction share}_t)$$

$$\textit{Television price}_t = (\textit{service sector price}_t)^{1-\textit{photo weight}} \times (\textit{photo equipment price}_t)^{\textit{photo weight}}$$

Miscellaneous artwork

Separate price indexes for each category were calculated.

Theatrical play scripts. The main price index is based on BEA's index for live theater. That price index is published in NIPA table 2.4.4U, line 211. The price index was then adjusted to exclude live music concerts, which are tracked in the music industry.

Greeting card designs. This index was based mainly on the BLS PPI for greeting card publishers, which goes back to 1986. For 1929–86, a variety of alternative data sets were used to estimate prices.

Commercial stock photography. BEA's price index for photo studio services was used. This price index is published in NIPA table 2.4.4U, line 217. Before 1959, the price index of audio-video, photographic, and information processing equipment was used. That price index is published in NIPA table 2.4.4, line 14.

Depreciation and Capital Stock

Price data for used artistic originals are scarce simply because artistic originals are rarely sold in the open market. However, net present value (NPV) of used artistic originals can be derived from data on revenues and nonartwork sales costs as shown in the following equations.

$$\textit{NPV in year 0} = \textit{revenue}_0 - \textit{nonartwork costs}_0 + (\textit{NPV in year 1}) / (1+\rho)$$

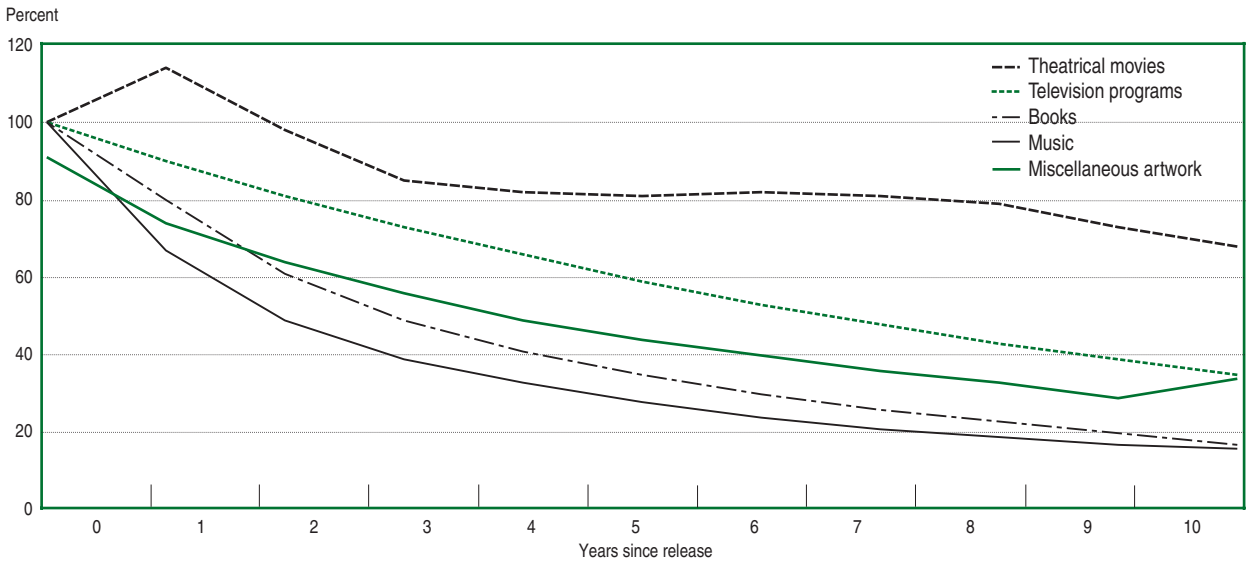
$$\textit{NPV in year 1} = \textit{revenue}_1 - \textit{nonartwork costs}_1 + (\textit{NPV in year 2}) / (1+\rho)$$

$$\textit{NPV in year } t = \textit{revenue}_t - \textit{nonartwork costs}_t + (\textit{NPV in year } t+1) / (1+\rho)$$

In this paper, a real discount interest rate of $\rho = 10$ percent per year is used to calculate real values. The relatively high discount rate reflects the risky nature of the industry.

Using this formula, depreciation schedules for each artistic category were derived. The starting point was industry data that provide sales by individual product and date. For details on the industry data used for each artistic category see, "Books as Capital Assets," "Miscellaneous Artwork as a Capital Asset," "Music as a Capital Asset," "Theatrical Movies as Capital Assets," and "Television Programs as Capital Assets," (Soloveichik 2010a, 2010b, 2010c, 2011b, and forthcoming). These industry data were used to estimate revenue by quarter, starting with the first release of the artistic asset and continuing until the revenues became negligible. The sales costs for each quarter were also estimated. Based on the estimated revenue and sales costs, I calculated quarterly profits and net present value for a typical art product over time.

Chart 4. Depreciation Schedule for Artistic Originals



NOTE. This depreciation schedule was calculated as net present value now divided by net present value at release.

U.S. Bureau of Economic Analysis

Depreciation

Chart 4 shows estimates of the depreciation schedule for theatrical movies, television programs, books, music, and miscellaneous artwork. Theatrical movies and television programs have the longest lifespans.[19] Ten years after the first release, theatrical movies retain 48 percent of their initial value, and television programs retain 35 percent of their initial value. In contrast, books and music earn most of their money in the first 5 years; after 10 years, music retains 19 percent of its initial value, and books retain 14 percent of their initial value.

The main reason for the different lifespans among the categories is consumer storage.[20] Theatrical movies and television shows get most of their money from television licensing. Accordingly, the studios get paid each time a classic movie or television episode is replayed. In contrast, books and music get most of their money from the initial sale. Once consumers have bought a book, they can reread it without paying more money to the publisher. In this paper, only the capital stock of original artwork was measured. Therefore, the reprint rights owned by publishing houses are counted but not the physical books owned by libraries and consumers.

The depreciation schedules in chart 4 are based on revenue *net* of sales costs. Studios, musicians, and authors typically spend a great deal of money advertising their new releases. BEA's general practice is to treat advertising as a current expense. Because advertising is a current expense, all advertising costs are deducted from revenue for a particular year. As a result, first year profits are much lower than first year revenue. In fact, theatrical movies actually have losses in the first quarter and therefore appear to gain value early in their lifespan. Some might consider advertising a long-lived investment in brand awareness. That treatment of advertising suggests higher depreciation rates for artwork in the first year after release.[21]

Capital stock

The value of the capital stock of artistic originals was $440 billion in 2007. It has been growing at an average annual rate of 7.7 percent since 1929 (chart 5). The data in chart 5 are based on the real production estimates in chart 3, the depreciation schedules in chart 4, and the price indexes in chart 2. On average, the capital stock of long-lived artwork accounts for 2.5 percent of GDP.

Conclusion

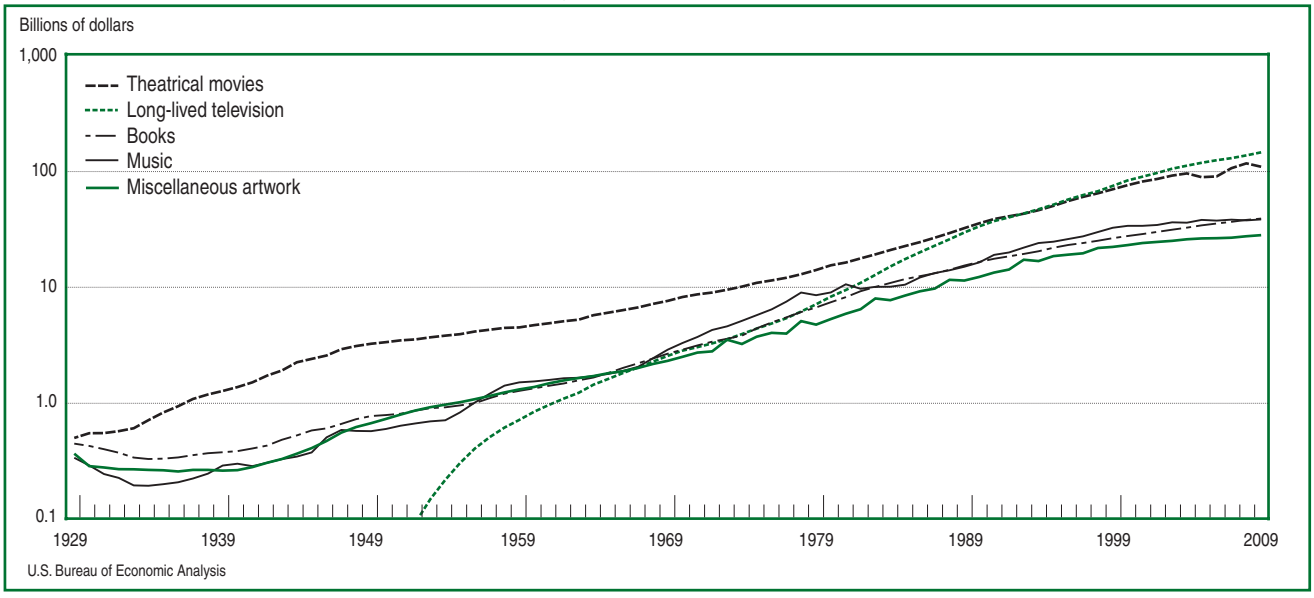
Treating artistic production as capital investment would change BEA's measures of GDP and capital stock. Artistic production was $51.6 billion in 2007, 0.35 percent of GDP. Chart 6 shows artistic production

19. The depreciation rate for television programs is still preliminary and may change significantly in the final version.

20. Consumers can tape a movie or television program when it is first aired and then watch it whenever they chose. In practice, very few people use their DVR for long-term storage. Instead, they watch whatever is on.

21. However, the capital value of artwork plus capitalized advertising would be identical to my capital values for artwork alone.

Chart 5. Current-Dollar Capital Stock of Artistic Originals, 1929–2009



as a share of GDP from 1929 to 2009. For 1980–2009, artistic production grew from 0.21 percent of current-dollar GDP to 0.35 percent of current-dollar GDP. Accordingly, GDP growth for that period increases slightly when artistic production is treated as a capital investment. Between 1929 and 1980, artistic production hovered around 0.25 percent of GDP. Accordingly, GDP growth for 1929–80 does not change consistently when artistic production is treated as an investment.

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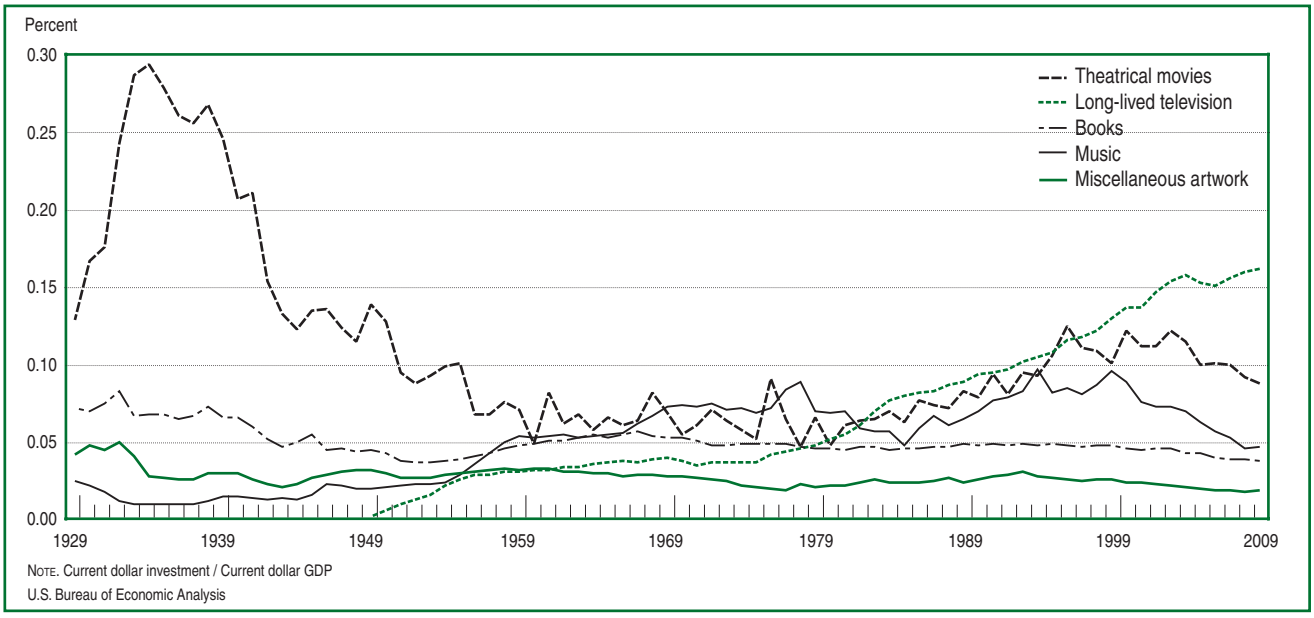
Chart 6. Current-Dollar Investment in Artistic Originals as a Percent of Gross Domestic Product, 1929–2009



NOTE. Current dollar investment / Current dollar GDP
U.S. Bureau of Economic Analysis