The Random Long Tail and the Golden Age of Television

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Digitization has reduced the costs of production, distribution, and promotion in music, movies, and books, with major consequences for both the number of new products made available as well as the realized quality of the best new products. Cost reductions, along with relaxed gatekeeping constraints, make possible the creation of additional content. Then because of the inherent unpredictability of new product appeal, some of the new products turn out to be surprisingly good. This paper uses new data from a variety of sources to explore the evolution of television quality in the digital era. We document substantial growth in the number of new shows created and distributed, and increase in the quality of the best work, and that new kinds of shows – made possible by digitization – account for substantial and growing shares of most successful shows.

Digitization has reduced the costs of production, distribution, and promotion in music, movies, and books, with major consequences for both the number of new products made available as well as the realized quality of the best new products.[1] Cost reductions, along with relaxed gatekeeping constraints, make possible the creation of additional content. Then because of the inherent unpredictability of new product appeal (Goldman, 1989; Caves, 2000), some of the new products turn out to be surprisingly good. Given unpredictability, growth in the number of new products made available gives rise to growth in the number of products beyond a high quality threshold. The strongest evidence for this mechanism is the growing share of "ex ante losers" – products from independent products, many of which would not have come to market before digitization – among "ex post winners," the products that consumers find most appealing. The evidence for this mechanism is strong in music, books, and movies.

What about television? This question is both of interest as another context for exploring this mechanism, as well as because of the traditional regulatory interest in promoting high-quality and diverse programming. This paper uses new data from a variety of sources to explore the evolution of television quality in the digital era. The idea that we are currently experiencing a "golden age of television" is not new; journalists and critics have made this observation.[2] The goal of this paper is to link the observation that we are experiencing a plethora of high quality new products to an economic mechanism related to digitization and the inherent nature of cultural products.

The paper proceeds in three sections. Section 1 briefly outlines the theoretical mechanism by which cost reduction, along with unpredictability, could give rise to increases in

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[1] See Waldfogel (2012, 2105, forthcoming), as well as Waldfogel and Reimers (2015) and Aguiar and Waldfogel (2016).
[2] http://www.nytimes.com/2014/03/10/business/media/fenced-in-by-televisions-excess-of-excellence.html?_r=0

the number of high quality products. Section 1 also describes relevant features of the television landscape, the reduction in production costs, along with growth in the number of distribution channels as well as the policy context of regulatory interest in variety, quality, and innovation in television programming. Section 2 describes the disparate data sources we use to document the evolution of the number of new shows over time, as well as the appeal of these shows to consumers and critics. Section 3 then presents results. We document 1) growth in the number of new shows, 2) growth in the "quality" of shows, and 3) that a growing share of the shows that consumers and critics find most appealing are the shows of new lineage, many of which would not have been produced without the changes brought about by digitization.

I. Mechanism

a. Theory

It is well understood that an innovation that increases the number of products available to consumers raises their well-being. Digitization has clearly increased the number of products available to consumers in cultural industries. One standard conception of the welfare benefit of the long tail is the "infinite shelf space" benefit of online retailing. While consumers had access to, say, the most popular 50,000 titles in their local bookstores prior to online retailing, they have access to a million books through Amazon. Thus, online retailing gives consumers access to a "long tail" of niche products. Brynjolffson et al (2000) pioneer this approach and estimate that US consumers gained $1 billion in annual consumer surplus from access to the long tail of relatively obscure titles.

While digitization clearly expands the amount of de facto shelf space, it has other effects as well. Chiefly, digitization changes the cost not only of retailing but also of production,

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promotion, and distribution more generally. As a result, we would expect digitization to raise the number of new products brought to market.

The magnitude of the welfare benefit of new products depends on the predictability of product appeal at the time of investment. If appeal were perfectly predictable, then new products made possible by digitization would all have lower appeal than the sorts of products previously made available. Consumers would benefit from additional products, but the benefits would be small almost by definition given, first, that each of the additional products has low appeal and, second, that products are to some extent substitutes for one another.

Yet, the appeal of new products – especially cultural products – is famously unpredictable. William Goldman (1989), author of *Butch Cassidy and the Sundance Kid*, *The Princess Bride*, and many other screenplays, has written that "nobody knows anything" about which potentially Hollywood products will find favor with consumers. This idea – the unpredictability of new product appeal – is borne out in more systematic research on books, movies, and music. It's difficult to know prior to undertaking the investment whether a project will find favor with consumers (Caves, 2000).

While investors have some idea of which projects will do better than others, there is substantial uncertainty. In a world of unpredictability, each product brought to market is like a draw from an urn. If the number of draws taken increases, then while many of the new products will be unappealing (and commercially unsuccessful), some of the new products may be very successful. Digitization is important to this story because digitization reduces the cost of bringing products to market, so that some products which previously would have been scotched by gatekeepers are able in the new, low-cost regime to take their draw.

If this story is correct, then we would expect to see the following. First, there should be an increase in the number of new products. Second, the total crop of new products, including both products of the sort that would have been produced earlier, as well as products made possible only by cost reduction, should be more appealing to consumers than earlier vintages. Third, products that would formerly not have been brought to market, which I have elsewhere termed "ex ante losers" should account for a substantial and growing share of the products that become successful, which one could term "ex post winners."[3]

b. The Television Distribution Landscape

The existence of new television programs would stand to deliver little benefit to consumers without additional distribution channels. Here we briefly review the technological changes that have relaxed distribution constraints. First and foremost is the growth in literal channel capacity, allowing more programs to be made available to viewers. Second is the reduction in the cost of producing programming using digital rather than film technology. We discuss these in turn.

From the dawn of television until the spread of analog cable, television viewers had access to 4 or usually three national networks producing new programming. Each channel produced roughly 4 hours of programming on each of 7 evenings. This is roughly 80 hours of programming per week. Most shows were 30 or 60 minutes in length, in a given week viewers had access to about 120 different programs. Not all programs ran all year, so over the course of the year, viewers might have gotten access to a few more shows.[4] Most shows on the schedule

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[3] See Aguiar and Waldfogel (in press).
[4] See, for example, the 1960 broadcast schedule:
https://en.wikipedia.org/wiki/1960%E2%80%9361_United_States_network_television_schedule

were continuations of series premiered in earlier seasons. As we'll demonstrate below, viewers got access to about 25 new shows per year in the years prior to 1980.

Various technological changes increased channel capacity and the slots that could conceivably carry new programming. While cable television had originally been developed to bring broadcast signals to consumers in remote locations, the development of analog cable systems substantially increased the number of channels piped into each home. In 1990, 51 million US households subscribed to basic cable.[5] By the late 1990s, "more than 57 percent of all subscribers receiving at least 54 channels, up from 47 in 1996." [6]

Between 1996 and 2002, the cable industry invested $65 billion "to build higher capacity hybrid networks of fiber optic and coaxial cable" that could provide "multichannel video, two-way voice, high-speed Internet access, and high definition and advanced digital video services." By 2005, 27.6 million households had digital cable. A 2014 Nielsen study documented that the average US home received 189 channels in 2013, up from 129 in 2008.[7]

Both cable companies and other ISPs brought broadband into the home. The number of fixed broadband subscriptions grew from 7 million in 2000 to 100 million in 2014.[8] Broadband allowed the distribution of asynchronous video on various platforms, including YouTube, Netflix, Hulu, and Amazon Instant. In about three decades, getting distribution for one's program changed from, at one historical extreme, requiring permission from one of three gatekeeping broadcast networks to, at the other contemporary extreme, needing to upload one's video to Amazon's Instant service.

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[5] http://transition.fcc.gov/Bureaus/Cable/Reports/fcc97423.pdf
[6] http://www.calcable.org/learn/history-of-cable/
[7] http://www.nielsen.com/us/en/insights/news/2014/changing-channels-americans-view-just-17-channels-despite-record-number-to-choose-from.html
[8] http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2015/Fixed_broadband_2000-2014.xls

Digital technology in the form of low-cost cameras has itself transformed video production. As Waldfogel (in press) details, the appearance of low cost digital video cameras, such as the Canon 5R, Mark III, using interchangeable lenses has substantially reduced barriers of entry into video production. The substantial growth in new production documented below has placed upward pressure on other input prices, however.

c. The Policy Context of Television Programming

Public policy has long taken a direct interest in the quality and variety of television programming. In 1961 the chairman of the FCC Newton Minow criticized the quality of television programming. "Keep your eyes glued to that set until the station signs off," he wrote.

> "I can assure you that what you will observe is a vast wasteland. You will see a procession of game shows, formula comedies about totally unbelievable families, blood and thunder, mayhem, violence, sadism, murder, western bad men, western good men, private eyes, gangsters, more violence, and cartoons. And endlessly, commercials -- many screaming, cajoling, and offending. And most of all, boredom. True, you'll see a few things you will enjoy. But they will be very, very few. And if you think I exaggerate, I only ask you to try it."[9]

Nine years later, in 1970, the Federal Communications Commission instituted Financial Interest and Syndication ("fin-syn") rules, which limited the amount of programming the networks could produce themselves and, importantly, limited the networks' right participate in revenue from syndication. At the time, the networks had about 90 percent of the television audience.

The rules were motivated by both a concern that the networks would favor their own content as well as a hope that stimulating independent production would increase variety and innovation. The rules were contentious, pitting production companies, chiefly Hollywood studios, against the networks. By the early 1990s, the television networks' share of the television audience had fallen two about two thirds amid completion from both cable and the FOX network. The rules were relaxed by the FCC in 1991 and eliminated by an appeals court decision

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[9] See http://www.americanrhetoric.com/speeches/newtonminow.htm for the text of the speech.

in 1995.[10] The growth in distribution channels made possible by technological change since the 1990s has further – and substantially – relaxed the sorts of constraints that gave the networks the possibility of power over their upstream program suppliers.

Viewed from the context of the ostensible rationale for fin-syn, a technological change enabling the production and distribution of a vast amount of new programming holds the possibility of adding to variety, innovation, and quality, as well as the possibility of enlarging vast wasteland.

II.   Data

The basic dataset for this study is a list of television shows released in the US between 1960 and 2015. For each show we have its releasing network (e.g. ABC, Netflix), its premiere year, and its IMDb rating (an average between 0 and 10, based on IMDb site voters). We classify each show into a network type (such as traditional broadcast). We also have a separate dataset listing the shows nominated for Emmy Awards.

The data are drawn from four sources. First, the list of television shows is drawn from epguides.com's full text file.[11] When we restrict attention to US-origin series, the epguides data include 5,534 separate series which premiered between 1946 and 2015.

The second dataset is from IMDb. The IMDb data contain 34,475 shows released between 1960 and 2015. This is far more shows that those contained in epguides. Epguides contains shows that have been broadcast on television, or have otherwise been widely released.

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[10] See Elizabeth Kolbert. "The Media Business: Television." New York Times, April 12, 1993 (http://www.nytimes.com/1993/04/12/business/the-media-business-television.html) and Matthew McAllister. "The Financial Interest and Syndication Rules: U.S. Broadcasting Regulations." Museum of Broadcast Communications, Encyclopedia of Television, undated (http://www.museum.tv/eotv/financialint.htm).
[11] See http://www.epguides.com/common/allshows.txt .

IMDb contains shows that have been produced, including shows produced by independent entities. IMDb reports a rating for a show if five users vote. Of the 34,475 shows listed, only 15,563 even have a rating, suggesting that the full list of shows at IMDb includes obscure titles with limited commercial success.

The IMDb database was launched in 1990 and has grown in popularity over time, giving rise to the possibility that ratings or measures of popularity derived from the number of users rating a show may be biased toward more recent years. We have a few different ways to address these concerns. First, we can compare results derived from IMDb data with results from other datasets that we describe below. Second, some of the calculations we undertake below are based on the, say, the number of ratings a show receives in relation to other shows of the same vintage, a measure that is less vulnerable to a concern that IMDb ratings favor, say, more recent vintages.

The third dataset is from Metacritic, which provides two-digit ratings of television shows based on critics' assessments. They rate shows' seasons as opposed to the overall series. Metacritic provides these ratings for 1,724 show seasons through 2015. The number of shows reviewed rises substantially topping 20 per year only in 2000. By 2006 the annual number tops 100.

The fourth dataset is the list of Emmy Award nominees, 1960-2015. We have 18,297 nominations over this time period. We are able to attribute a network for 13,849 of these nominations.

III.   Results

   a.   The number of new shows

Determining the number of new shows per year is not entirely straightforward. There is conceptual distinction between the number of series created and the number premiered on television. Especially recently, the distinction is quantitatively substantial.

Between 1960 and 1980 – based on the epiguides data - the number of new shows premiering on television networks per year averaged about 25, rising to roughly 50 in 1980, with each of the three major broadcast networks premiering roughly 8 programs each. See Figure 1a. Table 1 shows the 1970 premieres. That season saw 15 premieres on ABC (including *Lancelot Link, Secret Chimp* and *The Odd Couple*), 6 on CBS (including *Josie and the Pussycats* and *The Mary Tyler Moore Show*), 5 on NBC (including *The Flip Wilson Show* and *McCloud*), and 2 on local Chicago stations.

Between 1980 and 2000, the number of annual premieres rose from 50 to 100. Growth in the 1980s came from syndicated shows (such as *C.O.P.S.* and *Punky Brewster*), while growth in premieres in the 1990s came from basic and premium cable networks. Table 2 provides a list of major basic cable networks as well as examples of their original programming, and Table 3 shows the number of shows originating by network over the decades.

Since 2000 the annual number of premieres has risen sharply, exceeding 200 per year since 2010. This growth has come from a variety of network sources. The premium cable networks (HBO and Showtime) have developed more new shows, as have many basic cable networks (such as AMC and FX). Finally, online networks such as Netflix and Amazon have started to develop significant amounts of programming.

After 1990 there is a large difference between the number of shows created – and in the IMDb database – and the number of shows premiering on television (in the epguides data). While Figure 1a shows the television premieres, Figure 1b shows two measures of the number

shows created by year. The higher time series is the total number of US-origin television shows (where a series counts as a single show) in the IMDb database. IMDb reports a rating when at least five IMDb users have rated a show. Many of the shows in the IMDb database are quite obscure. The lower time series in Figure 1b is the number of shows that have at least five votes. While the total peaks over 3,000 in about 2013, the number of shows with at least five votes peaks at just over 1,000 around 2012. This is still quite large compared with the number of series premiering around this time, as shown in the epguides data (about 250).

Three things are clear from the information in Figures 1a and 1b and Table 3. First, there has been substantial growth in the development of new shows, both created and aired on networks. Second, the growth in programming is concentrated in the newer sources, such as cable networks and online, rather than traditional broadcast networks. Third, especially since about 2005, there has been large growth in the number of television shows created in relation to the number distributed through either new or old distribution channels.[12]

The growth in production has not escaped the attention of the industry. In September 2014, Variety's cover story was entitled, "Out of Control: An Infinite Number of Series Threatens to Overwhelm the TV Business." [13] The article argued that many cable channels - "from CMT and E! to WGN America and We TV — are looking for that same bounce by fielding what they hope will become signature series." This trend is prompted in large part by "Netflix's bold entry" and "big upfront commitments, … starting with its two-season order for "House of Cards" in 2012, and HBO-sized budgets." These moves "have upped the ante for all

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[12] The substantial distinction between the number of television shows created and those being actively distributed recalls a very similar pattern for motion pictures, documented in Waldfogel (in press).
[13] http://variety.com/2014/tv/news/new-television-fall-season-glut-of-content-1201306075/

top-tier networks. Hulu and Amazon Prime to date haven't been as free-spending on originals, but they are still factors in the marketplace, as is Yahoo."

Before moving on, it is of interest to note how the distribution of genres has changed over time. Using data on shows produced (from IMDb), Table 4 shows the share of shows in each broad genre during each decade since the 1960s. Two genres – reality television and talk - have increased sharply. Reality did not exist as a format in the 1960s; during the 2010s it has accounted for nearly a fifth of new programs. Talk has risen from 3 to 8 percent over the half century. With new and growing formats accounting for a quarter of programming created, other formats are perforce shrinking, some more than proportionally so. The Western format, which accounted for 4 percent of shows produced in the 1960s, accounted for 0.1 percent in the 2010s.

b. The appeal of shows

Figure 2 shows the IMDb ratings for 13,439 shows premiering between 1970 and 2015 (with enough votes to have ratings), It's hard to discern much from this picture except that the quality of the least appealing shows has fallen over time, from an average of about 5 for shows premiering before 1990 and below 4 for shows premiering since 2000.

While the average show quality has not risen, the quality of the best shows has risen. Figure 3 shows a scatter plot of IMDb rating for the top 10, top 25, and top 50 shows of each year according to IMDb rating. I include only shows receiving at least 25 votes in Figure 3 and shows receiving at least 250 votes in Figure 4. Both Figures shows that the quality of the best shows has increased over time. Regressions in Table 5a confirm this impression. The first colum reports a regression of IMDb rating on premiere year using only the top 10 programs (by IMDb rating in each year). The coefficient on premiere year is positive and significant,

confirming that the best programs increase in quality by year. The subsequent columns include the top 25, top 50, top 100, top 250, and all. Coefficients remain positive through the top 100, indicating that the IMDb ratings of top 100 programs is rising over time.

It is possible that IMDb voters, who are lay users and not professional critics, have a bias in favor of newer shows. Hence it is interesting to contrast IMDb ratings with critics' assessments. Metacritic provides ratings of shows based on compilations of critics' assessments. It is possible that critics would be less biased in favor of new shows. Figure 5 shows the Metascores for the shows in Metacritic, first aired between 2000 and 2015. Note that Metacritic provides season-specific scores rather than series-specific scores, so a series appears in each of the years in which it is aired. Both the scores of the top 10 series, according to Metascore, and the top 25 appear to be rising over time. Figure 5 also includes a lowess smoother of the ratings of the top 25, and it is clearly rising over time. Table 5b reports regressions of Metascore on premiere years. The estimates confirm the increase in Metascores for the top 100 shows by premiere vintage.

It seems clear that both in the eyes of critics and lay viewers, the quality of best shows on television has been rising over time, during the period when the number of shows produced has risen.

It is of some interest to understand the role of genres in the evolution of product quality. Figure 6 shows the distributions of a) total new programs and b) the annual top 25 shows (according to IMDb ratings), grouped by decade of premiere. The left-hand side of the figure shows all shows, and the right-hand side shows top shows. Since the 1970s comedies have declined as a share of the total series produced, but since the 1980s, comedies have grown as a share of the top shows. Reality shows have grown substantially as a share of production since

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2000 but only slightly as a share of top shows. Dramas have shrunk as a share of production and have shrunk more dramatically as a share of the top shows.

c. The source of the quality increase

The fact that quality has risen over the period of growth in new shows – from nontraditional origins - does not demonstrate that the growth in new shows is responsible for the quality increase. Our proposed mechanism is that, given unpredictability, the new shows of low ex ante promise make up a growing share of the shows that turn out to be appealing to viewers. Here we explore whether this is the case.

The simple test for this mechanism is whether ex ante losers make up a growing share of the ex post winners.   Defining the ex post winners is easy in principle. We would like to have data on viewership of shows so that we could list, say, the top 25 shows of each season. While such viewership data exist for broadcast shows, they tend not to exist for shows distributed through new channels such as Netflix.

A second way to define the ex post winners is according to users and critics' assessments of the shows.   We have three direct ways to do this. The first is IMDb ratings. The second is Metascores. A third approach is to use nominations for Emmy Awards.   For shows identified as successful via any of these three measures, we can ask whether the ex ante losers account for a growing share.

This leaves only the definition of ex ante losers as challenging.   While drawing a line between traditional and non-traditional programming sources is somewhat arbitrary, there are some clear distinctions. At one extreme are the traditional broadcast networks (ABC, CBS, NBC, and Fox). Given that HBO has been producing programming since 1975, it is arguably

also a traditional source.[14] At the other extreme are online-only platforms such as Amazon Instant Video and Netflix.

In between are cable networks such as AMC. HBO famously passed on Matt Weiner's *Mad Men*. Weiner had been a writer for the *Sopranos*, and he shopped his idea to HBO. They declined. The existence of other networks then trying to create original programming made it possible for *Mad Men* to be created, in that case by AMC.[15] Similarly, HBO passed on *Breaking Bad*, which AMC brought to market.[16]

One simple classification of networks is as follows: 1) traditional broadcast (ABC, CBS, NBC, PBS, and Fox); 2) premium cable (HBO and Showtime), 3) pure online (such as Netflix and Amazon), and 4) "other" which is made up of basic cable channels. Of these, the first two are more clearly traditional channels, while the latter two are the "new" modes of distribution, which allow shows not suitable for the traditional channels to find distribution.[17]

Our question, then, is how the nontraditional share of successful programs evolves over time. If shows of nontraditional origin become a large share of the ultimately successful programs, then we take this as evidence for the random long tail mechanism.

Figure 7 shows the evolution of the non-traditional share of the Emmy nominees. Broadcast television shows made up over 90 percent of Emmy nominations through the late 1980s. Since the late 1980s, the traditional broadcast share has fallen from almost 100 percent to roughly a third. Not all of the gains come from non-traditional sources. Premium cable channels have grown from a few percent in the late 1980s to about 20 percent in 2015 (down from about a

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[14] https://en.wikipedia.org/wiki/List_of_programs_broadcast_by_HBO
[15] http://www.vanityfair.com/news/2009/09/mad-men200909?currentPage=1
[16] http://www.businessinsider.com/why-hbo-passed-on-breaking-bad-2014-7
[17] While Netflix is a new distribution channel, it is not clear that all of its original programming could not have existed absent Netflix. Netflix is reported to have spent $100 million on the first 13 episodes of the program, a budget that is large in comparison with what traditional networks spent. See http://www.thewire.com/technology/2013/02/economics-netflixs-100-million-new-show/61692/ .

quarter in 2005). The remainder is the growing shares for "other" (mostly basic cable) and the pure online channels which accounted for almost 10 percent of nominations in 2015. It seems clear based on Emmy nominations that nontraditionally sourced programming accounts for a large and growing share of successful work.

Figure 8 asks a related question of the top shows according to IMDb ratings. The figure presents a smoothed average of the share of top 10 and top 25 shows (by premiere year, based on IMDb ratings) that are from non-traditional sources. The shares stood at about 10 percent between 1970 and 1980. Since 1980 the nontraditional shares of the top shows have risen steadily, reaching 70 percent in 2015.

If television is getting more appealing over time, then all else constant we would expect television to attract more attention. Of course, not all else is equal. Over the past 15 years, many leisure activities may have become more attractive, including video games, other online activities. Still, it is interesting to examine what has happened to time spent watching television. The American Time Use Survey provides annual data on the time the Americans spend watching television, among many other activities.[18] As Figure 9 shows, the average amount of time spent watching television has risen from 2.58 hours daily to 2.82 between 2003 and 2014, or by 9.3 percent. This is consistent with the basic idea of this paper, that television programming has become more appealing over time.

Viewership does not, by itself, provide revenue to finance the creation of new programming. Television programming is, instead, financed with a combination of advertising revenue (for ad-supported broadcast and basic cable television) and user-finance for premium cable, some Internet-distributed programming such as (Netflix), and a la carte programs

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[18] http://www.bls.gov/tus/#tables

distributed via platforms such as Apple TV and Amazon. Television advertising revenue has

rose from $64 billion in 2009 to $78 billion in 2013. Over the same time period pay-TV revenue

rose from roughly $75 billion to $102 billion. Pay TV revenue continues to rise quickly and rose

to $112 billion in 2015.[19] It is unclear whether the growth in overall revenue is adequate to

cover the costs of the high current volume of program creation.

IV.   Conclusion

In some media – notably music and newspapers – digitization delivered a negative shock

to revenue. Only with counterbalancing cost reductions could digitization deliver welfare gains

from new products, on balance. In other media, such as books, music and now television, the

digitization narrative is different. In television, digitization has reduced the costs of production

and has, more importantly, relaxed constraints on distribution. In 1970 the nation's video

distribution infrastructure – three national broadcast networks – had the capacity to deliver about

120 series per year, and only about 25 new series per year. In 2015, with video distributed

asynchronously over the Internet, there is effectively no capacity constraint.

As a result of cost reductions, along with the relaxation of capacity constraints, there has

been an explosion in new production. And because of the unpredictability of new product

appeal, while much of the new output has been unappealing to most consumers, some of the new

products have been very successful. And indeed, it is our central finding that a large and

growing share of the successful new products is products that would previously not have been

produced or made available to consumers. Digitization has therefore substantially improved the

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[19] See http://www.statista.com/statistics/195420/total-pay-tv-revenues-in-north-america-since-2006/ and
http://www.statista.com/study/22060/tv-advertising-in-the-us-statista-dossier/ .

well-being of television viewers. As a result, as some observers have noted, consumers are

currently living in a Golden Age of television. As the late David Carr wrote in 2014, "The vast

wasteland of television has been replaced by an excess of excellence that is fundamentally

altering my media diet and threatening to consume my waking life in the process."[20]

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[20] http://www.nytimes.com/2014/03/10/business/media/fenced-in-by-televisions-excess-of-excellence.html?_r=0

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Table 1: 1970 Series Premieres

show	network
All My Children	ABC
Barefoot in the Park	ABC
Dan August	ABC
Lancelot Link, Secret Chimp	ABC
Make Room for Granddaddy	ABC
Matt Lincoln	ABC
Nanny and the Professor	ABC
The Immortal (1970)	ABC
The Most Deadly Game	ABC
The Odd Couple (1970)	ABC
The Partridge Family	ABC
The Silent Force	ABC
The Young Lawyers	ABC
The Young Rebels	ABC
Arnie	CBS
Josie and the Pussycats	CBS
Storefront Lawyers	CBS
The Headmaster	CBS
The Interns	CBS
The Mary Tyler Moore Show	CBS
Bugaloos	NBC
McCloud	NBC
Nancy	NBC
The Bold Ones: The Senator	NBC
The Flip Wilson Show	NBC
Screaming Yellow Theater	WFLD Chicago
Creature Features	WGN Chicago

Notes: from epguides.com.

Table 2: Major Basic Cable Networks

rank	network	Average viewers	founded	notes
1	USA Network	2,680,000	1980	*Monk* debuts 2002
2	Disney Channel	2,438,000	1983	premium until 1990
3	ESPN	2,210,000	1979	sports
4	History	2,114,000	1995	First original series in 2013: *The Vikings*
5	TNT	2,070,000	1988	2001 shift toward drama, e.g. *Rizzoli and Isles*
6	TBS	2,014,000	1976	Comedy, some original talk (e.g. *Conan*)
7	Fox News Channel	1,785,000	1996	News
8	A&E	1,781,000	1984	shift toward reality since 2002
9	FX	1,466,000	1994	original programming since 2002: *Nip/Tuck, The Shield, Rescue Me, Damages*
10	AMC	1,382,000	1984	origin programming since 2003: *Mad Men, Breaking Bad*

Notes: See https://en.wikipedia.org/wiki/Cable_television_in_the_United_States .

Table 3: Shows Premiered by Source and Decade

	1960	1970	1980	1990	2000	2010
A&E	0	0	0	5	34	31
ABC	74	126	139	157	164	110
Adult Swim	0	0	0	1	34	19
Bravo	0	0	0	1	44	38
CBS	67	107	123	169	99	59
CW	0	0	0	3	44	39
Cartoon Network	0	0	1	13	75	26
Comedy Central	0	0	1	9	30	34
Discovery Channel	0	0	0	1	44	35
Disney Channel	0	0	2	9	32	21
Fox	0	0	18	140	143	74
HBO	1	0	7	17	30	28
History	0	0	0	1	33	28
Lifetime	0	0	3	6	21	37
MTV	0	0	1	13	45	39
NBC	78	110	124	126	154	106
Nick	0	0	1	24	43	37
PBS	1	5	14	6	23	3
Showtime	0	1	4	13	33	22
Syfy	0	1	1	13	32	39
TLC	0	0	0	1	34	33
UPN	0	0	0	48	39	0
USA	0	0	5	19	20	18
VH-1	0	0	0	0	35	26
WB	0	0	0	50	78	0
other	4	19	14	57	422	538
syndicated	6	9	57	114	21	6
total	231	378	515	1016	1806	1446

Table 4: Genre Distribution of New Shows Produced by Decade

genre	1960	1970	1980	1990	2000	2010
Action	3.0%	3.5%	3.8%	4.8%	3.0%	3.3%
Adventure	5.1%	5.2%	3.1%	2.1%	2.2%	1.7%
Animation	12.5%	11.2%	10.7%	12.2%	5.6%	3.4%
Biography	0.2%	0.5%	0.4%	0.2%	0.7%	0.7%
Comedy	24.0%	26.1%	22.4%	22.7%	20.0%	35.2%
Crime	2.6%	3.1%	2.4%	2.0%	1.8%	1.9%
Documentary	4.9%	5.0%	8.5%	12.6%	14.0%	6.7%
Drama	10.9%	10.2%	8.3%	7.7%	4.8%	6.3%
Family	6.4%	8.3%	6.5%	5.8%	4.2%	2.1%
Fantasy	0.1%	0.2%	0.2%	0.2%	0.2%	0.6%
Game-Show	7.0%	6.3%	4.4%	2.3%	2.6%	1.2%
History	0.1%	0.3%	0.3%	0.5%	0.7%	0.5%
Horror	2.1%	1.7%	0.9%	0.2%	0.5%	1.1%
Music	6.0%	4.3%	5.1%	3.5%	3.9%	1.7%
Musical	0.1%	0.2%	0.3%	0.2%	0.3%	0.2%
Mystery	0.6%	0.2%	0.4%	0.2%	0.2%	0.4%
News	3.9%	4.1%	7.7%	7.3%	5.1%	2.8%
Reality-TV	0.0%	0.3%	0.9%	1.8%	17.2%	17.6%
Romance	0.0%	0.0%	0.1%	0.2%	0.3%	0.1%
Sci-Fi	0.2%	0.3%	0.5%	0.7%	0.5%	1.3%
Sport	3.0%	4.6%	6.2%	5.2%	5.3%	2.4%
Talk-Show	3.0%	3.9%	6.7%	7.3%	6.5%	8.0%
Thriller	0.0%	0.0%	0.0%	0.0%	0.1%	0.6%
War	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%
Western	4.0%	0.8%	0.2%	0.2%	0.1%	0.1%
total	870	1,082	1,698	2,866	9,081	17,138

Table 5a: IMDb Ratings over Time across the Ranks

	rank<=10	25	50	100	all
Premiere year	0.0296	0.0325	0.0280	0.0172	-0.0085
	(0.0012)**	(0.0012)**	(0.0012)**	(0.0013)**	(0.0017)**
Constant	-50.5489	-56.7465	-48.1827	-26.9627	24.1787
	(2.3200)**	(2.2900)**	(2.4774)**	(2.6838)**	(3.3275)**
R^2	0.54	0.40	0.21	0.06	0.01
N	552	1,179	1,875	2,748	3,712

$* p<0.05; ** p<0.01$

Table 5b: IMDb Ratings over Time across the Percentiles (25+ votes)

	top 1%	5	10	25
Premiere year	0.0314	0.0062	0.0055	0.0037
	(0.0098)**	(0.0020)**	(0.0013)**	(0.0010)**
Constant	-53.9491	-3.4012	-2.3284	0.9879
	(19.6049)*	(3.9981)	(2.5169)	(1.9310)
R^2	0.41	0.06	0.05	0.02
N	17	152	341	893

$* p<0.05; ** p<0.01$

Note: regression of IMDb rank on premiere year, including only the top N ranked programs, by premiere year, in the top panel and the top x percent of programs, by year, in the bottom. We restrict attention here to programs receiving at least 250 IMDb votes.

Table 6a: Metascores over Time across the Ranks

	rank<=10	25	50	100	250	all
Year first aired	1.0058	1.0115	0.7968	0.5411	0.0401	0.0401
	(0.0821)**	(0.0764)**	(0.0614)**	(0.0652)**	(0.0671)	(0.0671)
Constant	-1,934.0459	-1,952.2440	-1,525.0113	-1,018.9587	-17.6025	-17.6025
	(164.4394)**	(153.0958)**	(123.1037)**	(130.8550)**	(134.8775)	(134.8775)
R^2	0.36	0.26	0.18	0.05	0.00	0.00
N	270	511	787	1,303	1,723	1,723

*$p<0.05$; ** $p<0.01$

Note: regression of Metascore on premiere year, including only the top N ranked programs. We restrict attention here to programs receiving at least 250 IMDb votes.
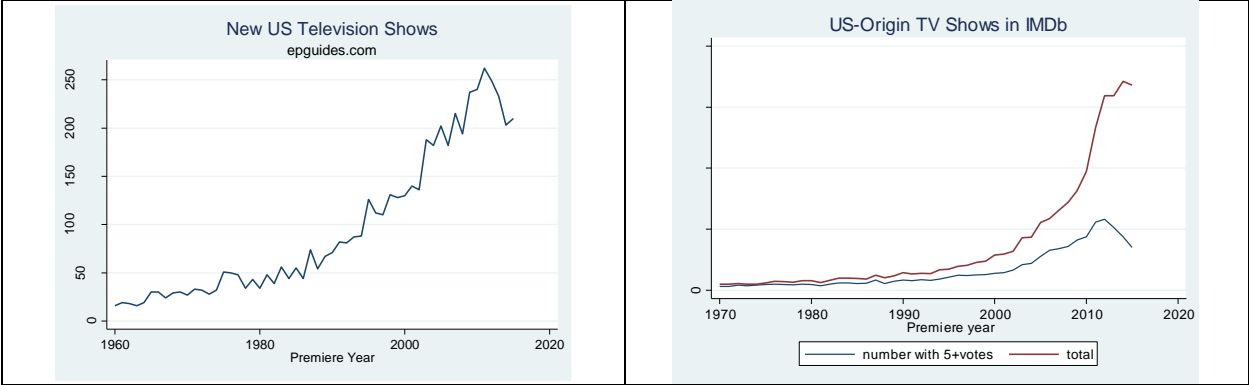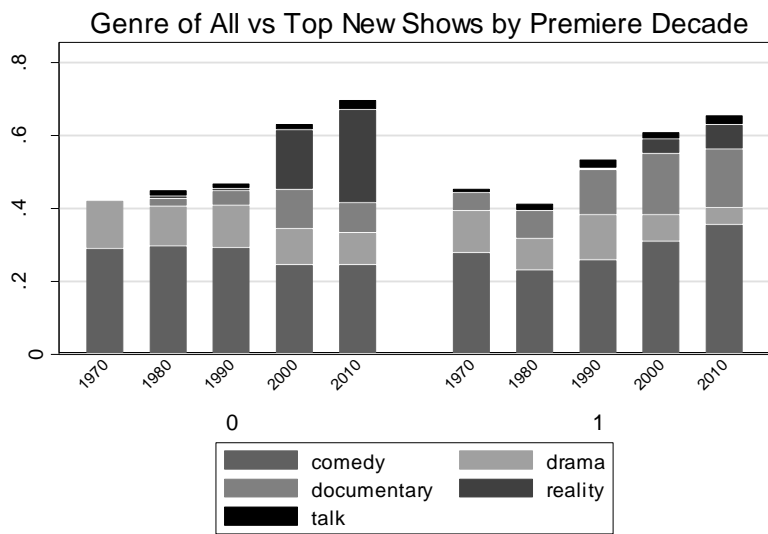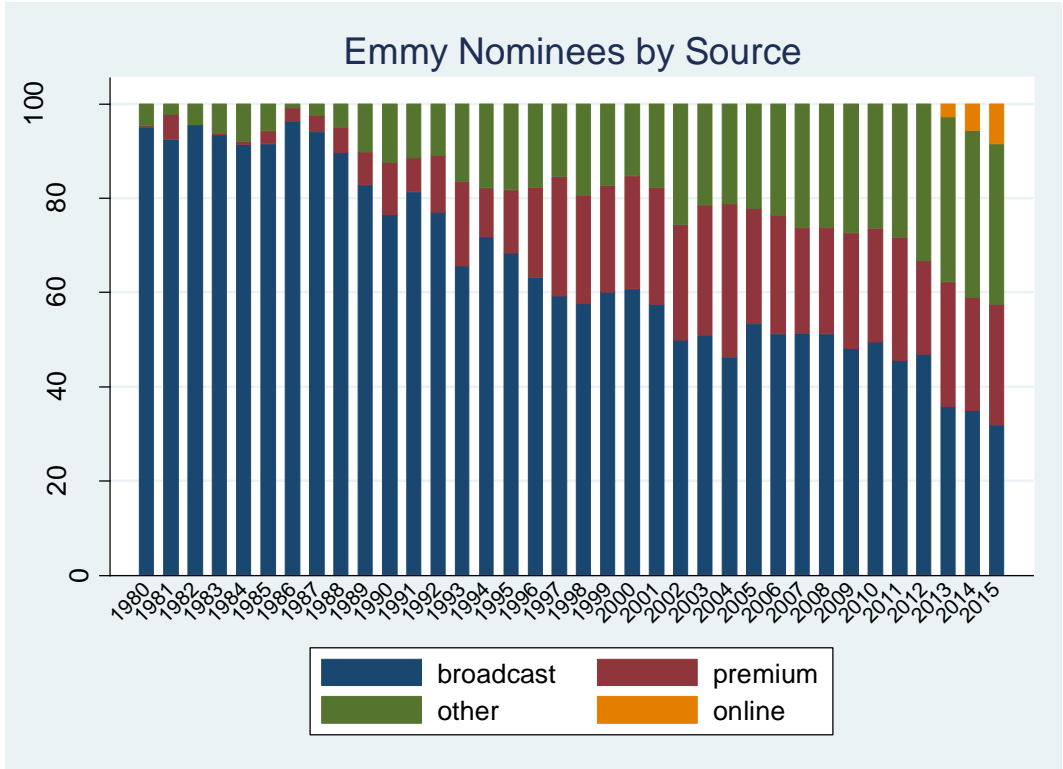
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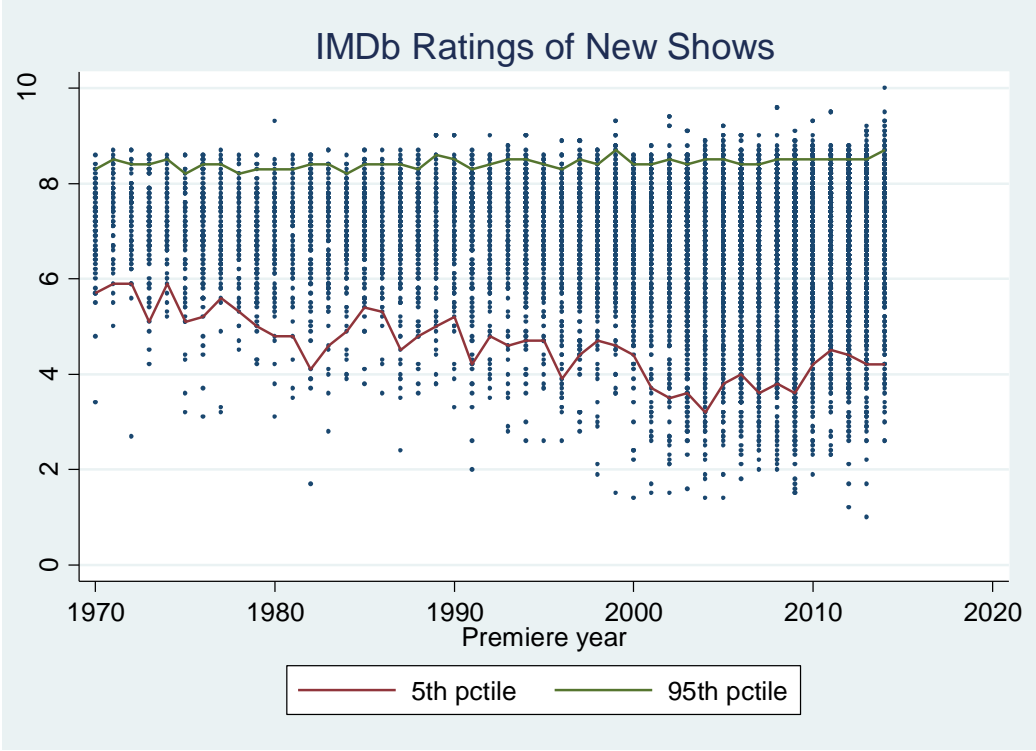
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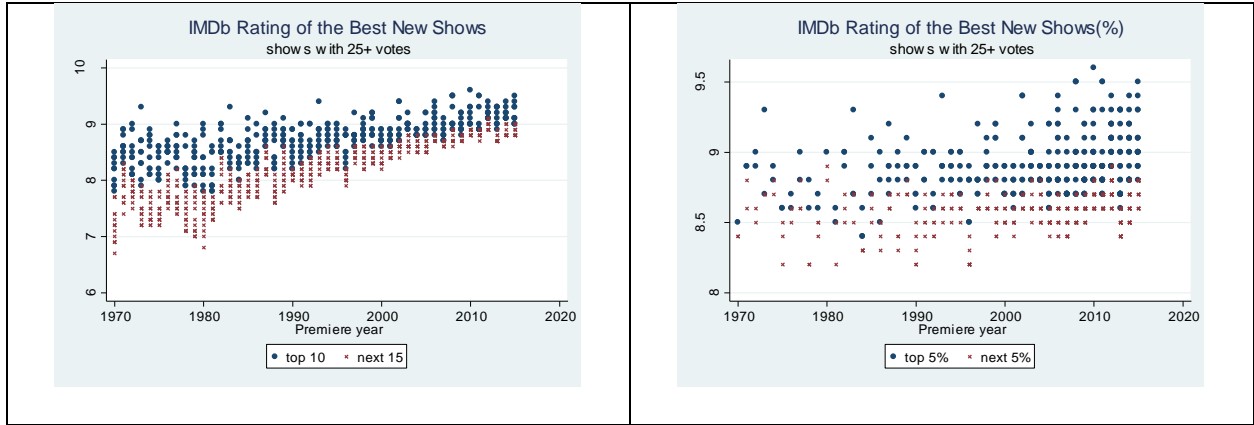
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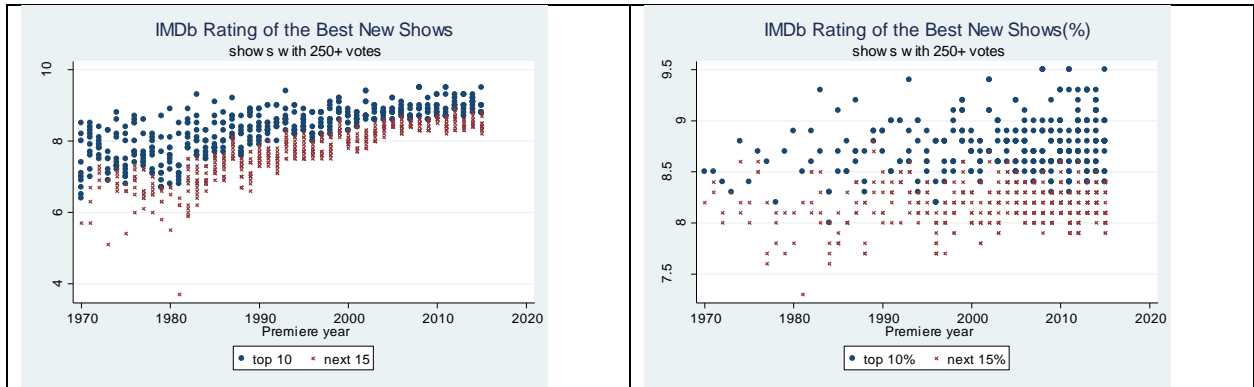
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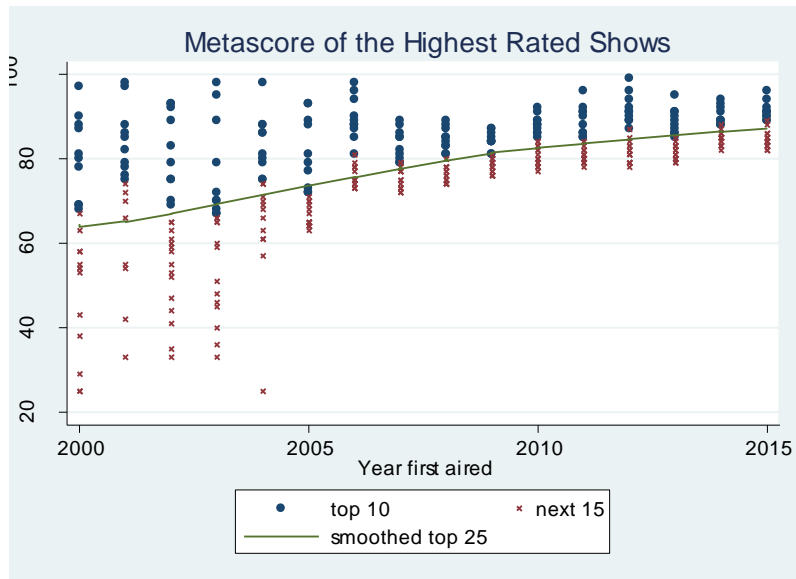
Figure 5

Figure 6

Figure 7

Figure 8

Figure 9