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United States Producer Price Indexes for Broadcasting
NAICS 515111, 515112, 515120 and 515210
ISIC 60 Programming and Broadcasting Activities

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Introduction

The U.S. Bureau of Labor Statistics currently publishes Producer Price Indices for four broadcasting industries:

- NAICS 515111 Radio Networks
- NAICS 515112 Radio Stations
- NAICS 515120 Television Broadcasting
- NAICS 515210 Cable and Other Subscription Programming

This paper discusses the development and maintenance of these indices.

1. Definition of the service being priced

In the U.S., broadcasting industries include the following types of establishments:

NAICS 515111
- Radio networks
- Radio syndicators

NAICS 515112
- Local radio stations

NAICS 515120
- Broadcast television networks
- Local television stations

NAICS 515210
- Cable television networks

The primary output of these establishments is the transmission of a broadcast signal. However, this signal is delivered free of charge to the viewers and listeners, and therefore does not qualify as output according to the PPI definition. What is bought and sold in these industries is access to an audience through the broadcast signal. Access is sold to advertisers through the sale of airtime. Output is also measured through the sale of programming.

Programming services

Radio networks and syndicators and broadcast television networks transmit analog and/or digital signals that carry programming to local affiliated radio and television stations, who in turn, broadcast these signals to an audience. In some cases, radio and television networks and radio syndicators receive fees from stations for the right to broadcast their programming. In other cases, radio and television networks and radio syndicators provide the programming and pay fees to radio and television stations in order to gain access to the audience in their local markets.

Cable television networks broadcast programming signals to multichannel video program distributors (MVPDs), which include cable television systems, direct-to-home satellite systems, and larger telephone companies; online video distributors (OVDs); hotels; and other non-residential institutions. Cable television networks typically receive per subscriber fees each month from these buyers in exchange for the programming content. MVPDs (classified in NAICS 517110, Wired Telecommunications Carriers) and OVDs (classified in NAICS 519130, Internet Publishing and Broadcasting) retransmit signals from the television networks to viewers on a subscription basis.

Local television stations also grant consent to local MVPDs to rebroadcast the station's programming in exchange for per subscriber fees each month.

Advertising services

Most television and radio programming in the U.S. includes advertisements. Networks, syndicators, and local stations primarily sell advertising time in the form of advertising spots. Spots are typically sold in increments of 15, 30, or 60 seconds. Agreements between networks, radio syndicators, and their affiliated stations specify the amount of advertising time that is available for each party to sell. For example, an agreement may state that during an hour of programming the network may be allocated ten minutes of advertising time to sell while the station is allocated two minutes.

There are three types of spots in the U.S.: local, regional, and national. Local spots are purchased by advertisers located within, or close to, the broadcast coverage area of the local radio or television station. Regional and national advertisers are establishments that, in addition to conducting business within the coverage area of the station, have operations in other parts of the country as well. Most local spots are sold by radio and television stations, and most regional and national spots are sold by networks and radio syndicators.

Establishments also provide advertising time for program sponsorships, product placement, and infomercials. Program sponsorships are advertisements that are tied to a particular program, such as a sports event or other special programming. Advertisers typically buy spots or units for a program and are listed as sponsors during the broadcast. An advertiser may pay to be mentioned as the exclusive provider of a particular good or service to the broadcasting establishment. Product placements integrate an advertiser's product or service into programming in exchange for a fee. Infomercials are blocks of time that are purchased by advertisers to display their products. These could be 30-minute or 60-minute blocks that are usually shown late at night or early morning when the station does not normally have scheduled programming.

2. Pricing unit of measure

The price of advertising is measured as a monthly average spot rate for a specified type of advertisement (such as those mentioned above) aired during a specific time period, known as a daypart. A daypart may be, for example, weekdays from 6:00 AM to 10:00 AM. The most common unit of measure for advertising transactions collected in the U.S. is per 30 second advertisement.

Agreements between radio and television networks, radio syndicators and affiliated radio and television stations that include compensation for programming typically are transacted on a flat fee basis per year. For cable networks and broadcast television stations that sell programming to MVPDs and other related types of buyers, the price of programming is measured as a monthly fee per subscriber.

3. Market conditions and constraints

a. Size of industry

The following table provides size statistics for the U.S. broadcasting industries based on the 2007 U.S. Economic Census.

Industry	Number of establishments	Number of firms	Revenue ($1,000)
Radio Networks	922	525	$4,124,314
Radio Stations	6,341	3198	$14,871,022
Television Broadcasting	1,958	905	$35,998,381
Cable and Other Subscription Programming	717	444	$44,925,687

Concentration of the top firms, based on 2007 revenue, is shown for each industry in the table below.

Industry concentration as a percent of revenue				
Industry	4 largest firms	8 largest firms	20 largest firms	50 largest firms
Radio Networks	61.40%	73.70%	82.10%	90.40%
Radio Stations	42.20%	53.40%	67.30%	76.10%
Television Broadcasting	62.00%	79.40%	94.30%	98.30%
Cable and Other Subscription Programming	43.30%	55.50%	72.10%	86.40%

b. Special conditions or restrictions

Many broadcasters also offer content through their website, providing advertising services through the sale of video, banner, and other types of advertisements that appear online. In the U.S., Internet broadcasting is classified in NAICS 519130, Internet Publishing and Web Search Portals. Therefore, the sale of all Internet advertisements is considered a secondary activity for the broadcaster. In many cases, U.S broadcasters maintain separate profit maximizing centers for their Internet activities. These distinct units are eligible to be included in the U.S. PPI for NAICS 519130.

c. Record keeping practices

For networks and syndicators, monthly pricing data for both programming and advertising can be obtained at the headquarters level. Although many radio and television stations are owned by large national media companies in the U.S., pricing data for local broadcasting services can be obtained at the individual stations.

The sampling strategy for the broadcast industries reflects these recordkeeping practices. For all networks and syndicators, the national headquarters is the sample unit, whereas radio and television stations are sampled at the local station level. Revenue is used as the size measure when it is available in the chosen sampling frame. If revenue is not available, audience size is used as a proxy.

4. Standard classification structure and detail related to the area

NAICS Definition

According to the 2012 North American Industry Classification System:

- NAICS 515111, Radio Networks is comprised of establishments primarily engaged in assembling and transmitting aural programming to their affiliates or subscribers via over-the-air broadcasts, cable, or satellite. The programming covers a wide variety of material, such as news services, religious programming, weather, sports, or music.

- NAICS 515112, Radio Stations is comprised of establishments primarily engaged in broadcasting aural programs by radio to the public. Programming may originate in their own studio, from an affiliated network, or from external sources.

- NAICS 515120, Television Broadcasting is comprised of establishments primarily engaged in broadcasting images together with sound. These establishments operate television broadcasting studios and facilities for the programming and transmission of programs to the public. These establishments also produce or transmit visual programming to affiliated broadcast television studios, which in turn broadcast the programs to the public on a predetermined schedule. Programming may originate in their own studio, from an affiliated network, or from external sources.

- NAICS 515210, Cable and Other Subscription Programming is comprised of establishments primarily engaged in operating studios and facilities for the broadcasting of programs on a subscription or fee basis. The broadcast programming is typically narrowcast in nature (e.g., limited format, such as news, sports, education or youth-oriented). These establishments produce programming in their own facilities or acquire programming from external sources. The programming material is usually delivered to a third party, such as cable systems or direct-to-home satellite systems, for transmission to viewers.

Comparison to ISIC Rev.4 Definition

NAICS 515111, NAICS 515112, NAICS 515120, and NAICS 515210 directly compare to ISIC Class 60 Programming and broadcasting activities, which includes the following:

- ISIC 6010 Radio broadcasting
  - Assembling and transmitting aural programming to affiliates

        - Radio Broadcasting activities over the Internet
        - Data broadcasting integrated with radio broadcasting

- ISIC 6020 Television programming and broadcasting activities
    - Creation of a complete television channel programme
    - Programming of video on-demand channels
    - Data broadcasting integrated with television broadcasting

The most significant difference between the classifications for broadcasting is that Internet broadcasting is included in these ISIC industries but excluded from the NAICS industries.

North American Product Classification System

The following table provides the broadcasting services as defined by the North American Product Classification System. The services listed are those for which there is trilateral agreement between the United States, Canada, and Mexico.

Industry	NAPCS Code	Title
51211	2	Production services for audiovisual works protected by copyright
51229	1.3	Studio recording services for radio material
515	1.1	Television air time
515	1.2	Radio air time
515	1.3.1	Public and noncommercial programming services, television
515	1.3.2	Public and noncommercial programming services, radio
515	1.4.1	Basic programming package
515	1.4.2	Premium programming package
515	1.4.3	Pay-per-view and video-on-demand
515	1.5.1	Licensing of rights to broadcast specialty television programming protected by copyright
515	1.5.2	Licensing of rights to broadcast specialty audio programming protected by copyright
515	1.6.1	Licensing of rights to broadcast television programming protected by copyright (Television Program Rights)
515	1.6.2	Licensing of rights to broadcast radio programs protected by copyright (Radio Program Rights)

Comparison to CPC Ver.2

The following table maps the NAPCS product codes to the CPC Ver.2 structure for classes 836, 846, and 961.

CPC Code	Title	NAPCS Code	
83632	Sale of TV and radio advertising time	1.1 1.2	(515) (515)
84611	Radio broadcast originals	1.5.2 1.6.2	(515) (515)
84612	Television broadcast originals	1.5.1 1.6.1	(515) (515)
84621	Radio channel programmes	1.5.2 1.6.2	(515) (515)
84622	Television channel programmes	1.5.1 1.6.1	(515) (515)
84631	Broadcasting services		
84632	Home programme distribution services, basic programming package	1.4.1	(515)
84633	Home programme distribution services, discretionary programming package	1.4.2	(515)
84634	Home programme distribution services, pay-per-view	1.4.3	(515)
96121	Motion picture, videotape, and television programme production services	2	(51211)
96122	Radio programme production services	1.3	(51229)

The U.S. PPI includes basic and discretionary (premium) programming packages in NAICS 517110, Wired Telecommunications Carriers. However, the provision of the programming that is included in those packages is included in NAICS 515210.

Productions services are classified in NAICS 512112 Motion Picture and Video Production and NAICS 512290 Other Sound Recordings. The U.S. does not calculate indices for these production industries. However, if broadcasters provide advertisement production services along with the sale of spot advertising time, the services are considered a bundled service and are included in the price of advertising and reflected in the broadcasting indices.

5. Evaluation of standard vs. definition and market conditions

For broadcasting, there is little detail in the NAPCS product listing at the level of trilateral agreement compared to the level of US detail that is included in the 2007 Economic Census. Most of the detailed service line PPIs published in the U.S. for broadcasting match aggregated detailed service lines from the Economic Census.

The table below provides these publication structures, indicating the level of detail that is included in the Economic Census.

Index code	Index title	US Census detail
515110	Radio broadcasting	
515110P	Primary services	
5151101	Radio station services	
515110101	Radio station advertising sales	
51511010101	Radio station advertising sales, local	Local advertising
51511010102	Radio station advertising sales, national and regional	National & regional advertising
515110102	Other radio station services	Network compensation
		Programs
		Public & non-commercial programming services
		Licensing of rights to broadcast radio programs
		Licensing of rights to distribute specialty content
5151102	Radio network and national syndication services	National & regional advertising
		Local advertising
		Network compensation
		Programs
		Public & non-commercial programming services
		Licensing of rights to broadcast radio programs
		Licensing of rights to distribute specialty content
515110SM	Other receipts	

To be consistent with the television broadcasting industry, which includes both networks and local television stations, NAICS 515111 Radio Networks and NAICS 515112 Radio Stations were combined by BLS to create NAICS 515110.

Index code	Index title	US Census detail
515120	Television broadcasting	
515120P	Primary services	
5151203	Television advertising	National & regional advertising
		Local advertising
5151204	Network compensation and other television broadcasting services	Network compensation

		Programs
		Public & non-commercial programming services
		Licensing of rights to broadcast television programs
		Licensing of rights to distribute specialty content
515120SM	Other receipts	

Index code	Index title	US Census detail
515210	Cable and other subscription programming	
515210P	Primary services	
5152101	Cable network advertising services	National & regional advertising
		Local advertising
5152102	Cable network affiliate services	Network compensation
		Programs
		Public & non-commercial programming services
		Licensing of rights to broadcast television programs
515210SM	Other receipts	

6. National accounts concepts and measurement issues for the area related to GDP measurement

The System of National Accounts does not provide specific guidance on measuring the output of the broadcasting industries. The Bureau of Economic Analysis (BEA) includes both programming and advertising services in the U.S. industry accounts for broadcasting. For GDP-by-Industry, data for broadcasting is aggregated with telecommunications and is published at the 3-digit NAICS level, based on 1997 NAICS classifications. Data for the Benchmark Input-Output Accounts is published at the 6-digit NAICS level, based on 2002 classifications.

BEA uses the detailed broadcasting PPIs as deflators at separate commodity levels for programming and advertising to determine real output in the industry accounts.

7. Pricing method(s) and criteria for choosing various pricing methods

Advertising services

The preferred price for all advertising services is an average spot rate, or unit value price. Advertising rates are highly negotiable, leading to a wide range of prices for the same type of transaction in a given month. A unit value price reflects discounting and competitive pricing more comprehensively than a single transaction price.

The average spot rate is calculated by dividing the total revenue received from the sale of spots of the same type and length (e.g. local 30-second spots, national 15-second spots) aired during a specific daypart by the number of spots of same type and length aired during that daypart. A monthly average is preferred, but the price can be calculated for any period, within the current month, that the establishment can provide data (week, day, etc.). The collected average reflects ads that were aired during the most recent period, and not those that were sold during the most recent period. In the U.S., most advertising time is sold several months in advance of when the ads are aired. The collected average also reflects the impact of any advertisements granted at a zero price.

Example of price calculation:

$$\text{Average spot rate} = \frac{\text{Revenue for local 30 second spots aired weekdays 6 - 10 AM}}{\text{Number of local 30 second spots aired weekdays 6 - 10 AM}}$$

Separate prices are calculated for infomercials, product placements, and program sponsorships.

If a local radio or TV station simulcasts programming via both analog and digital signals, different spots could be aired on the different broadcasts even when the programming is the same. In these cases, the average price would also be restricted to the type of broadcast.

Since the average spot rate is calculated on a monthly basis, prices may not be available from establishments in the current month. In these cases, establishments report the previous month's price during the current month and it is not used in the current month calculation.

If the average spot rate is not available, an individual spot rate is provided. This is the actual rate received by the establishment for selling advertising services to a specific advertiser.

Programming services

For programming, establishments report contract prices that reflect actual transactions. Programming compensation agreements between networks or syndicators and stations are typically priced as flat fees per year. Similarly, cable networks and television stations receive a monthly per subscriber fee from their affiliated distributors, such as MVPDs.

8. Quality adjustment methodology

A primary concern for pricing advertising sales is the inconsistency in the size of viewing audiences over time. As stated above, most advertisers in the U.S. purchase spots from broadcasters weeks or months before the advertisements are actually aired. At the time of the sale, the seller projects the audience size they expect the advertisement to reach when it airs, based on their prediction about the popularity of the associated programming. These projections are difficult to make as audience sizes frequently vary due to changes in viewers' preferences and the periodic airing of specialty programming. It is particularly difficult to project audience sizes for episodes of new programs that have not yet aired. If the programming fails to meet the audience size projected at the time of the sale, the advertiser may be entitled to receive additional advertising time at no additional cost to make up for the shortfall. These additional provided advertisements are included in the average price calculation at a zero price. Since the provision of free advertising time regularly occurs in all periods, these zero price transactions do not typically cause significant volatility in collected average prices.

The U.S. currently does not quality adjust for changes in audience size. This is because there is no consistent relationship between audience size and the cost of providing the programming in which the advertisements are aired. Programs that are expensive for broadcasters to purchase or produce may draw a lot of viewers or listeners, while programs that cost little may prove to be very popular. In other words, changes in audience size are often not tied to any changes in the inputs or technology used by the broadcaster to produce the programming, and as a result changes in audience size typically do not violate the fixed-input output price index (FIOPI) assumptions.

In recent years, the average audience size for many individual television stations, television networks, and cable networks has been falling as the number of competing cable networks and Internet content providers has increased. If quality adjustment methods were to be applied to reflect broadcaster's decreasing audience share, the rate of real price increases for the broadcasting PPIs would be significantly higher.

9. Evaluation of comparability with turnover/output measures

Every five years, the U.S. Census Bureau publishes turnover (revenue) data for the broadcasting industries in the Economic Census. Revenue data that corresponds to the lowest level service line detail PPI for the broadcasting industries is currently available.

The Census Bureau also publishes quarterly and annual revenue data at the four-digit NAICS 5151 and NAICS 5152 levels only.

10. Summary

The chosen methodology for the U.S. PPI for broadcasting aligns with industry pricing and record keeping practices, which enables respondents to report prices with minimal burden. Most importantly, broadcasters in the U.S. regularly calculate unit value data to monitor their advertising business. The methodology also aligns with national accounting methods in the U.S., providing detailed data to BEA for producing estimates of real output.

The most significant question statistical agencies must consider when creating price indices for broadcasting is whether changes in audience size reflect changes in the quality of the advertising services provided by broadcasters. If a statistical agency determines that audience size is quality determining, they may consider collecting unit value prices on a per audience size basis. In the U.S., broadcasters frequently calculate advertising rates on a per rating point basis, with a rating point representing a percentage of a viewing population that views the programming associated with the advertisement. The U.S. does not adjust for audience size, so unit values for advertising services are instead calculated on a per advertisement basis.