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Price Deflators for Final Product Estimates

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Nature of the Price Data

The price indexes presented in Tables 1a, 1b, 2a, and 2b, at the end of the text, were a contribution to Robert Gallman's estimates of the value of output in constant dollars. More than 200 classes of goods and services were employed in his basic compilations, and the price deflators were constructed for that level of disaggregation. The indexes shown in the tables are limited to classes for which the prices of a reasonably representative number of commodities could be compiled.

The publication of *Prices Current* as newspapers or in newspapers has given price historians a regular, continuing source of data for wholesale price histories since newspapers have generally been preserved in libraries. There is some evidence that printed price lists of consumer goods were common but, if so, they were treated like handbills and destroyed. Price lists of individual manufacturers which appeared in their catalogs may be found where trade catalogs have been collected for various historical purposes.

In the absence of a regular file of published price lists for consumer goods, information on prices can be compiled from advertisements in newspapers and magazines, but advertisements are in no way a source of continuous information nor do they cover all classes of goods and services. Secondary sources in the contemporary literature offer fairly extensive information on prices but, except for the instructional books on building homes, such sources are extremely irregular. Thus, in the main, information on the prices of consumer goods and producer durables has been sought in manuscript sources, mainly account books and records.

Prices from 116 account books and stores for the years 1752-1860 were collected by the Massachusetts Bureau of Statistics of Labor [A-2][1] and published in 1885. Prices from the account books of stores, including a

[1] Numbers in square brackets refer to the bibliography at the end of the paper.

disproportionate representation of company stores, were collected for a special report of the *Tenth Census* [A-5] for the period 1851–80. Similarly, food prices in the 1890's were obtained from store records consulted in 1902 and published by the Commissioner of Labor in 1903. There are some transcriptions from records for the years 1800–40 available at the University of Pennsylvania [F-4, 8], but apart from "Prices Paid by Vermont Farmers," there have been no recent compilations of retail prices from manuscript sources.

Data taken from a few accounts are naturally incomplete so that a large number of such sources must be used in order to construct a continuous price series. In addition, the records are likely to provide only a limited amount of information on the qualities of foods and other perishable goods. As Ethel D. Hoover's tables [A-1] demonstrate, foods could not be differentiated by quality in the source, the report by Weeks of the *Tenth Census* [A-5], except through the distinction of several cuts of meat, two types of flour, two grades of yellow sugar, and two brands of molasses. It was, apparently, only at the end of the nineteenth century that the records consulted provided some indications of the quality of such foods as butter, cheese, and cornmeal.

While the qualities associated with prices compiled from account books cannot be ascertained, the catalogs of manufacturers contain a wide range of information on quality. The matching of prices from the sources based on records for two dates to construct price relatives must be based on some assumption about their comparability. The matching of prices taken from catalogs depends on the scheme for averaging the prices from different manufacturers for the same year. Whatever the source, the price relatives over the span of years have to be chains in which new qualities are "linked in" and old ones are "linked out."

Prices of the particular commodities listed in Tables 1 and 2 and for classes shown in the outline at the end of this paper were assembled from the sundry sources not only for the years shown in the tables but also for various intermediate years. Quite generally, information for some year in the 1820's was needed to connect the series of price relatives from 1809 to 1834, and price data for 1865 were used to link the series between 1860 and 1869. A plan to accumulate a minimum of three sets of price relatives for each commodity and pair of years was carried out with a few exceptions.

Price Relatives from Price Distributions

The collection of prices from catalogs and advertisements was mainly limited to durable goods. Most of the series for 1809–59 were based

primarily on prices in the Massachusetts report on wages and prices, 1752–1860 [A-2], the industrial censuses in Massachusetts [A-4], and transcriptions from manuscript sources in Pennsylvania [F-4, 8]. The series for 1869–99 were constructed from prices in the Weeks reports on wages and prices [A-5], the Aldrich report on retail prices [A-7], and the *Eighteenth Annual Report* of the Commissioner of Labor [A-8]. The industrial censuses in Massachusetts provide the quantity and value of output in each town for a large number of commodities. Frequency distributions of the unit values derived from these data were compared with the prices in the report on wages and prices which were recorded as "high, medium high, medium, medium low, low." All too frequently, that source gave only a high and low price so it was necessary to locate these apparent extremes in a complete distribution of prices. The distributions of unit values for shoes, skirts, straw hats, and bonnets were bimodal with modes that did not differ greatly from the high and low prices given by the report on wages and prices for the same year, 1854. This comparison suggested that the high and low prices found in account books represent two levels of quality.

The Pennsylvania records suggest why the real extremes of a distribution of prices might not appear in account books. Any one commodity was recorded only a few times a year in a given account. Hence many more account books than the compilers were able to consult would be required to extend the distributions of prices to their extremes.

The Weeks reports and the Massachusetts report on wages and prices both provide prices for the 1850's. A comparison of flour prices from the two sources supports the attribution of distinct qualities to the high and low prices reported. The low and high prices from the Massachusetts report corresponded fairly well with the prices for "extra-family" and "superfine" flour in three cities of Massachusetts from the Weeks report. This correspondence means that the differences from year to year in the seasons represented by the recorded prices did not completely obscure the price differences between qualities. The prices of the specifications given in the Weeks report are for particular towns and cities and, except in St. Louis and Pilot Knob, Missouri, the "superfine" was always associated with the higher price. On the basis of these comparisons of sources, price relatives were calculated for the high and low prices taken from the Massachusetts report on wages and prices and from the Pennsylvania transcription for the years before 1860.

The Massachusetts industrial censuses provided for a considerable expansion of the list of items offered by the other two sources. Where specifications seemed clear cut, as with maple sugar, the price relatives

were based on simple averages. Where the price distributions were bimodal, the relatives were based on the two modes. This was the case for boats, scythes, spades, and hoes, but not for plows and axes. The price distributions for plows were peaked with around 40 per cent at a middle-price line, while those for axes were rectangular with a wide range. A comparison with advertised prices in the 1840's indicated that the greatest number of plows manufactured and sold before 1860 must have been fairly well-constructed one-horse wooden plows with iron points, so the modal price was used for the construction of the price relatives. Axes, though important, were not included in the list of price relatives principally because no way was found to break the wide range into separate distributions.

The unit values derived from the industrial censuses provide a useful insight into the enumeration process. For many articles such as hardware and tools the unit values were neat round numbers, transparently taken from some kind of price lists. Thus for plows, the unit values in 1854 were even dollars from $3 to $10 accounting for 5,572 plows and $6.50 for 894 plows. Since the averages were for towns, it appears that the same price was used for all the manufacturers of a given type within a town. That practice was probably universal, although it cannot be so easily detected in the unit values for broad classes such as all shoes, all boats, or all carriages. If physical output was as simply valued for the Census of Manufactures and other sources used for the estimates of output, the selection of one or two modal price lines for the deflators is entirely appropriate as long as there is evidence that these prices did not reflect substantial changes in quality over time.

The linking of the relatives can be explained best through an illustration. The price series for men's hats was based on the relatives of the high prices and the relatives of the low prices for the types of hats shown below for the different comparison dates:

1809–34	*1834–49*	*1849–60*
Beaver	Beaver	Wool
Youths' beaver	Wool	Straw
Straw	Straw	

The relative for 1809 was based on 1834; the relatives for 1834, 1836, 1839, and 1844 were based on 1849; and the relatives for 1854 and 1859 were based on 1860. The relative for 1809 on the 1860 base was thus determined by the chain from 1809 to 1834 to 1849 to 1860.

Relatives Based on Prices from Lists and Reports

The Weeks report on wages provides many series of prices for individual manufacturers of a wide range of commodities. When three or more manufacturers reported on prices for a specified commodity, such as the top buggy, the price relatives were based on the median price. When only one manufacturer reported prices—as for pianos and sewing machines—their reports were included with the price information compiled from advertisements, catalogs, and other sources. Advertisements proved most useful in the case of consumer durable goods—pianos, sewing machines, and stoves—all products for which the variation in prices could not be simply attributed to quality differences. The price relatives for these commodities were determined as the median of the price relatives calculated for the product of each manufacturer, and here again it was necessary to follow a chain of comparisons over time as the list of manufacturers was changed.

The library collections of catalogs used principally for prices of producer durable goods did not often include the catalogs of the same manufacturer for a number of years except for data late in the century. Hence it was necessary to average the prices for commodities defined as similar in terms of some technical characteristic. The measure of size commonly used was selected, for reasons given elsewhere [A-9], and the prices for a given size were averaged without regard to any other qualitative characteristic. Since the size range expanded over time, the price relatives based on these averages represented a different set of specifications for different spans of years. The chaining procedure was thus the same as for other commodities.

Derivation of the Indexes for Classes of Commodities

There were only five classes of commodities for which the prices collected were representative of subclasses—flours and meals, sugars and syrups, clocks, carriages and wagons, and reed organs. The price indexes for these classes were weighted averages of the price relatives determined for the subclasses, and the weights were changed to represent the historical trend in their relative importance. The weight of flours was increased from 20 per cent in 1809 to 80 per cent in 1899; the weight of sugars was increased over the same period from 30 to 90 per cent; the weight of brass shelf clocks was increased from 10 per cent in 1839 to 30 per cent in 1879; buggies, an innovation, were given a weight of 10 per cent in

1854 and their relative importance was increased to 50 per cent in 1879; reed organs, likewise an innovation, were given a weight of 5 per cent in 1854, which was raised to 20 per cent in 1879. The weights for the foods were based on the Pennsylvania records for 1809 and the cost-of-living surveys at the end of the century. The weights for the durable goods were based on estimates of the physical volume of output at one or two dates found in the commodity histories. Although the weights are very rough, better information on the output of the specific commodities would probably change their magnitude but not their direction.

The price indexes for the subclasses of these five classes and for all other classes were the medians of the price relatives when the class or subclass included three or more items, and the geometric mean when there were only two. The median was selected instead of the unweighted average not only because the products for which prices were located could not be considered equally important, but also because there were frequent gaps in the information that could not be filled by an imputation procedure. Wherever possible, a missing price for a given year, say, 1844, was estimated from the relation of its price to the price of a similar item in the year before or the year after. When there were several gaps over a span of years, the item was dropped instead of using two or more estimated prices. In the example of men's hats given above, the beaver (castor) hats were not included in the series for 1849–60 because the data were missing and not because the fine fur hat had disappeared.

Geographic Price Differences and Population Changes

The indexes for the years before 1860, based as they are mainly on data for Massachusetts and Pennsylvania, may not reflect national price changes if there were significant differences in prices and price changes among areas. Certainly the price trends in the new towns of the West declined over a long period relative to the price trends in the established settlements of the East. Comparisons of the price levels and price trends in the communities covered by the Weeks report suggest that differences were not so much a matter of state or region as of location in relation to transportation networks. The ranges of prices within states tended to be similar, and only on "imported" foods—flour, sugar, salt fish, coffee, and tea—did the absolute levels of prices vary systematically during the period between 1857 and 1880. Other food prices and textile prices varied as much among the communities in the central states as among those in the East.

The differences between the prices in Massachusetts and Pennsylvania

for the years before 1860 also suggest that transportation was the chief factor in community variation—apart, of course, from essential quality differentials that could always be present. The range in the price of flour, for example, was about $1 in both places, except at peaks when it reached or exceeded $2. The level in Pennsylvania was, however, consistently below the level in Massachusetts, by a factor varying between 12 and 20 per cent. Flour in Massachusetts came from the Carolinas, Maryland, and Pennsylvania and by the 1850's from New York.

Whatever the reasons for community differences, indexes constructed for deflating output estimates should reflect movements of the population as well as changing community differentials. It is possible that the failure to use changing population weights for communities of different types introduces larger biases than any other kind of procedural or measurement error. If so, the historical estimates are more seriously affected than contemporary series are, simply because the locality differences have been reduced over time. Thus, by the 1890's, there was no significant difference in the level of flour prices among the cities and towns of Massachusetts and Pennsylvania. The effect of reductions in the magnitude of community differences on the general level of prices is one of a number of studies that could be based on the excellent histories of wholesale prices.

The biases in the price indexes presented in this paper arise from the lack of information for localities outside Massachusetts and Pennsylvania and also from giving all observations equal weight, whatever their geographic distribution. In general practice, the bias, as in the current procedures for determining the gross national product in constant dollars, arises from the substitution of a Laspeyres for a Paasche index for the community or the class of commodities. If the three indexes are called P, L, and U, the biases are $(L - P)/P$ in the procedure used currently, and $(U - P)/P$ in the procedure used in this study, assuming that the medians are estimates of unweighted means. The size of the errors can be illustrated by a simple example based on the figures below.

	Regions of Settlement 1860		*Other Regions*	
	1860	*1890*	*1860*	*1890*
Population (millions)	8	23	25	40
Price of flour (cents)	9.0	2.2	2.5	2.3
Price of cornmeal (cents)	0.5	1.5	1.0	2.2

The social histories of new settlements suggest that the per capita consumption of cornmeal in 1860 was three times as great in the regions newly settled that year and the per capita consumption of flour no more than one-fourth that in the rest of the country. In 1890, the differences were small enough to be ignored for present purposes. With these assumptions,

the biases in the Laspeyres and unweighted indexes compared with those in the Paasche are small, 2 and 1 per cent for cornmeal. The bias in the Laspeyres index for flour is very large, 100 per cent, but the unweighted index was in error by only 2 per cent. The use of the Laspeyres index as a deflator would result in a 50 per cent downward bias in the estimates of output in 1860 dollars.

This example may seem to exaggerate the problem since the results turn on the high price of flour attributed to regions newly settled in 1860 but it actually is an average for Salt Lake City, Denver, and Lawrence, Kansas. The long-period comparison is unrealistic, inasmuch as the Laspeyres indexes as compiled at the present time are chains with population and consumption weights changed about every ten years. Since the price of flour could and did change relatively as much as indicated in the example within a period of ten years, as communities were connected with transportation systems, the illustration serves to underscore the need to explore this problem for historical studies in particular. The variation in changes in population, in consumption, and in prices among localities must, nevertheless, be recognized as much for current estimates as for historical studies. While the population distributions are not changing as dramatically as in the nineteenth century, consumption levels, which are a function of income, have changed enough to reinforce the effect of population changes on the differences between the price indexes.

The unweighted indexes fared better than the Laspeyres indexes because of the assumptions made about the relative consumption in the two sets of regions. There is no doubt that the per capita consumption of goods produced locally was higher in small and isolated communities, while the per capita consumption of imported commodities was lower than elsewhere. The price information for different localities could be used to estimate the relation between price and consumption between communities if the aggregate physical output, as well as the aggregate value of output, is known. By distributing the population among the communities for which the price information is available, the parameters of a linear demand function between communities could be ascertained. Such studies for various types of specific commodities might lead to a systematic procedure for estimating the bias in price indexes that do not reflect the changes in the population distribution among communities.

Chain Indexes, Quality Changes, and New Goods

New qualities of goods and new types of goods must be linked into a chain of comparisons, regardless of the formula for the index. In the

Laspeyres index and others of that type in general use, new qualities are linked in as substitutions at any date, but new types of goods are introduced only when the indexes are revised. The chaining is at the level of the specific commodity and, as a result, the indexes are averages of chains. In the present study, the indexes for classes of goods can be described as chains of average prices or price relatives. The procedures used avoid a very real possibility of bias through the correlation in the price movements of the new qualities over a given period with the price movements of the "old" commodities over the preceding period of comparison. When technical progress was affecting the prices of all the products within a class in the same way, these correlations were certainly positive and, perhaps, of significant magnitude.

Avoiding the effect of the correlations removes only part of the biases arising from the introduction of the prices of new qualities of goods into the index calculations. The timing of the introduction of new qualities determines the behavior of the indexes, and the accumulation of price data for many more years than selected for this study would, without doubt, lead to different patterns of substitution and hence to different estimates for the price indexes. The nature of the problem can be described by the example of an index based on two qualities which are changed over time in the way shown below.

Quality	*1834*	*1836*	*1849*	*1854*	*1860*
1	P_{41}	P_{31}	P_{21}		
2		P_{32}	P_{22}	P_{12}	
3			P_{23}	P_{13}	P_{03}
4				P_{14}	P_{04}

The price index for 1834 on the 1860 base is determined by the chain

$$\frac{P_{41}}{P_{31}} \frac{Av(P_{31}, P_{32})}{Av(P_{21}, P_{22})} \cdot \frac{Av(P_{22}, P_{23})}{Av(P_{12}, P_{13})} \cdot \frac{Av(P_{13}, P_{14})}{Av(P_{03}, P_{04})}.$$

Rearranging the chain reveals the assumption made about the quality difference between the 1834 quality and the 1860 qualities. The second, third, and fourth links in the chain,

$$\frac{P_{41}}{Av(P_{03}, P_{04})} \frac{Av(P_{31}, P_{32})}{P_{31}} \frac{Av(P_{22}, P_{23})}{Av(P_{21}, P_{22})} \frac{Av(P_{13}, P_{14})}{Av(P_{12}, P_{13})},$$

are comparisons of the prices of different qualities at the same dates. The price indexes thus reflect an accumulation of such estimates of quality differences. Examination of many price schedules indicates that the price for different qualities is by no means simply proportionate to the physical

measure of the quality. Thus, the accumulated estimates of the quality differences are very sensitive to the selection of qualities for the price index. Since each link compares two parts of a price-quality schedule, the results of the selection will vary according to the nature of the schedule.

The schedules changed significantly over time, and fixing the links at different dates would yield quite different estimates of the quality component of the price index calculation. The whole problem needs thorough investigation, and the abundance of price information of the kind used in this study for the early part of this century suggests that methodological studies with data for 1900–20 could contribute to the improvement both of methods used with historical data and of the current practices in the determination of index numbers.

New products and old products do not present the same kind of problem for the determination of a set of price deflators for the construction of a general price index. The output estimates include the new products as they appear and leave out the old products when they disappear. The price deflators can be constructed accordingly with some assumption about nonexistent base-period prices. It is hard to devise a procedure for estimating a hypothetical price, and thus the attribution of the price, at the date of introduction or disappearance, to the base date seems to be the only operationally feasible procedure. Such a conclusion simply invites an examination of the problem that will prove the contrary.

Sources and Notes

The censuses, surveys, and compilations listed in the bibliography were a main source of information on prices, particularly for perishable and semidurable goods. Between the Weeks report on wages and prices, which covered prices of a wide variety of durable goods, and the industrial censuses in Massachusetts, it was possible to construct series for a number of durable goods after identifying the price lines with specifications through the descriptive literature. Thus, without much additional information, it would have been possible to construct price indexes for such products as agricultural machinery, furniture, pianos, locomotives, and carriages from the data in these publications. They do not, however, provide the necessary price information on heating equipment and industrial machinery, clocks, watches, optical goods, and the like. Heating equipment was reported mainly as hollow ware, per ton, machinery as castings, per pound, while the smaller articles were reported in mixtures such as "all philosophical apparatus."

The histories, the books of instruction, advertisements, and trade catalogs were used to fill in the series of prices and extend them to 1809, 1889, and 1899. Among the histories, Bishop [B-3], Bolles [B-4], and Clark [B-6] quote many prices for early years in the century generally without citing the original source. It was possible to trace some of the quotations to Fearon [B-14] and Cobbett [B-7], but the detail in some cases suggests that the authors had access to price lists or tabulated cost estimates that were widely used. With few exceptions, the histories of particular products are time-consuming references for the collection of price statistics.

The instructional literature is much more rewarding. In such books as Sloan [C-17], the cost estimates for the construction of houses and churches are itemized in detail and thus provide prices for equipment such as stoves, furnaces, and pumps. These books evidently developed, to begin with, as the result of popular articles in such magazines as the *American Farmer*, the *Cultivator*, and *Godey's* [D-2, 8, and 10].

Advertisements, particularly in the directories, registers, and illustrated magazines like Frank Leslie's [D-9], are the best source of information on such things as sewing machines, refrigerators, patent medicines, cosmetics, watches, paper products, magazines, books, and surgical appliances. There are other articles widely advertised, like playing cards, sheet music, and daguerreotypes, for which price indexes could not be calculated for want of specifications of size or other aspects of quality.

The material from various account books supplemented the compilations for all types of goods except clothing, furniture, housefurnishings, and toys. The Irving and Leiper accounts [F-2] provide information not found elsewhere on installation costs for various types of machinery, and construction costs for such structures as stables and bathhouses. Account books could be particularly useful in assigning weights to different qualities of a product and to various products within groups. They could also eventually lead to an expansion of the coverage of commodities classified as consumer goods for the years before the Civil War and even for later years. Households bought sand for floors, earth for the earth closets, and crushed stone for walks, until rugs and carpets, water and sewage systems, and brick sidewalks supplied such needs. Housewives used saltpeter and potash for preserving meats, and beeswax and tallow for making candles, as late as the 1890's. Such products might represent an aggregate at least comparable with the textiles that represent the volume of clothing, mattresses, and pillows manufactured in households throughout most of the century.

Price statisticians have to deal with a level of disaggregation which is discomfiting to those engaged in the study of large aggregates. As long as our concept of price change relies on the identification of the same product in different places or at different dates, the collections of price data will necessarily be detailed and voluminous and not susceptible of the kind of annotation now customary in estimating various aggregates.

Price indexes have to be some kind of a sample of items within classes and of qualities within items. For historical studies, the sample of items is determined by the information found in records, and the recorded prices, by and large, represent the kind of products that could be transported some distance and sold in a market, and do not necessarily represent the range of products within a class in any meaningful way. Peaches, melons, strawberries, raspberries, cherries, and grapes were all important in the localities very near where they were produced, but no one ever kept records in farmers' markets. Thus, a price index for fruits has to be based on the hard-skinned fruits that could be transported to and stored in the general store for a reasonable period of time. In some classes of products, such as furniture, it is quite possible that the output estimates were similarly limited but, in general, the items included in the price indexes must be a poor representation of the complete range. It would take many more items than are shown in the outline below to assure that the sample even approached a cross section of all the diversity in output.

A glance at Tables 1 and 2 should lead the reader to ask why there is so much methodological discussion here of series characterized mainly by blanks. This question has concerned the author because there seems to be no good reason for presenting these poor estimates of price developments without a simultaneous publication of the output estimates in equivalent detail.

Outline of Items Included in Price Indexes

Class of Product	*Items in Price Index*
Foods, manufactured	
Bakery products	Bread, biscuits, crackers
Canned, smoked fish	Cod, mackerel
Canned, dried fruits, vegetables	Dried peas, beans, canned corn, tomatoes
Cheese	Cheese
Chocolate, cocoa	Chocolate
Coffee and spices	Coffee, pepper
Hominy, flour, meals	Wheat flour, corn and rye meal
Other cereal products	Macaroni

Class of Product	*Items in Price Index*
Distilled spirits	Rum, whisky
Malt liquors	Beer
Vinous liquors	Grape wine
Rice	Rice
Meat products	Salt pork, beef, ham, sausage
Syrups, sugars	Molasses, yellow, brown, loaf sugar
Vinegar, cider	Vinegar
Baking powders, yeast	Cream of tartar, saleratus, soda
Butter	Butter
Canned milk	Condensed milk
Lard	Lard
Salt	Salt
Foods, nonmanufactured	
Orchard fruits	Apples, quinces
Citrus fruits	Lemons
Small fruits	Cranberries
Potatoes	Potatoes
Sweet potatoes	Sweet potatoes
Peas and beans	Peas, beans
Vegetables	Cabbages, onions, turnips
Cereals	Corn, rye meal
Fish, fresh	Cod, halibut, haddock, mackerel
Poultry, eggs	Chickens, eggs
Meat, fresh	Beef, pork, mutton
Tea	Suchong
Tobacco products	
Tobacco	Tobacco, snuff
Drugs, household preparations	
Bluing	Bluing
Patent medicines	Herb remedy
Perfumes	Rosewater, oil of bergamot
Soap	Soap
Blacking, stains	Blacking
Cleaning preparations	Sapolio
Castor oil	Castor oil
Mazagines, paper products	
Envelopes	Envelopes
Writing paper	Writing paper
Newspapers, magazines	Newspapers, magazines
Ink	Ink
Mucilage, paste	Mucilage

Class of Product	*Items in Price Index*
Fuel, lighting products	
Candles	Tallow candles
Matches	Matches
Oil, sperm whale	Whale oil
Oil, coal	Kerosene
Firewood	Firewood
Coal	Coal
Dry goods and notions	
Needles, pins, etc.	Needles, pins, hooks, and eyes
Pocketbooks, purses	Pocketbooks
Buttons	Metal buttons
Cotton thread	Cotton thread
Cotton woven goods	Calico, muslin sheeting, shirting, gingham, cambric
Silk ribbons, cloth	Ribbons, handkerchiefs
Woolen worsted goods	Broadcloth, cashmere, flannel
Mixed textiles	Plaid linsey
Clothing and personal furnishings	
Clothing, men's, factory	Pantaloons, overalls, vests, coats
Clothing, women's, factory	Balmoral skirts, shawls, hoopskirts
Gloves, mittens	Gloves
Hats, men's	Beaver, wool hats
Bonnets, trimmed	Straw bonnets, trimmed
Underwear	Hose, stockings
Umbrellas	Umbrellas
Shoes, etc.	Boots, shoes, slippers
Rubber footwear	Rubbers
Housefurnishings	
Brooms	Brooms
Bedding	Bedspreads, sheets
Linen woven goods	"Linen"
Towels	"Linen"
Furniture	Tables, chairs, bedsteads
Refrigerators	Refrigerators
Sewing machines	Sewing machines
Stoves	Stoves
Washing machines	Washing machines
Floor coverings	Rugs
Feather beds, pillows	Feather pillows
Mattresses, springs	Mattresses
Blankets	Blankets

Class of Product	*Items in Price Index*
Cutlery	Forks, spoons
China, earthenware	Cups, teapots
Woodenware	Bowls
Glassware	Drinking glasses
Lamps	Globe, kerosene lamps
Other consumer goods	
Musical instruments	Pianos, reed organs
Clocks	Grandfather, brass clocks
Carriages	Gigs, carriages, buggies
Artificial limbs	Wood, reed, metal
Eyeglasses	Spectacles
Books	Bible, spelling book
Billiard tables	Billiard tables
Pocketknives	Pocketknives
Firearms	Muskets
Cameras	Magic lanterns, cameras
Children's wagons, sleighs	Children's wagons
Toys	Cast-iron wheel toys
Producer durable goods	
Machine-shop products	Steam engines, waterwheels, lathes, looms
Electrical apparatus	Motors, arc-lighting equipment
Agricultural machines	Corn shellers, threshing machines, mowers
Agricultural implements	Plows, scythes, spades, hoes
Pumps	Pumps
Barbed wire	Barbed wire
Woven wire fence	Wire fence
Cash registers	Cash registers
Scales	Scales
Typewriters	Typewriters
Office furniture	Physicians' chairs
Railroad equipment	Locomotives, cars
Ships and boats	Sailing vessels, river steamers
Farm, freight wagons	Freight wagons
Optical goods, etc.	Chronometers, barometers, microscopes, compasses
Edge tools	Augers, planes
Other tools	Saws, files
Buildings	
Housing, community services	Houses, churches, schools
Nonfarm business	Factories, office buildings

TABLE 1a

PRICE INDEXES FOR CONSUMER GOODS, SELECTED YEARS, 1809-49
(1860=100)

Product	1809	1834	1836	1839	1844	1849
Perishables						
Manufactured foods, etc.						
Bakery products	131	113	127	102	85	84
Canned, smoked fish, etc.	120	90	91	96	70	83
Canned, dried fruits, vegetables	93	54	67	62	57	66
Cheese	93	89	120	124	65	85
Chocolate, cocoa	139	80	87	92	92	90
Coffee, spices	158	90	74	81	67	98
Hominy, flour, meals	136	103	123	120	80	103
Other cereal products	117	103	135	99	87	93
Rum, whisky	154	86	112	149	94	95
Malt liquors	130	104	100	100	73	87
Vinous liquors	--	60	67	113	63	73
Rice	83	75	85	98	68	82
Meat products	130	86	120	93	64	79
Syrups, sugars	161	100	120	102	97	103
Vinegar, cider	137	102	115	102	84	84
Baking powders, yeast, etc.	125	126	116	114	113	84
Butter	117	87	114	116	75	91
Condensed milk	--	--	--	--	--	--
Lard	107	71	104	92	53	61
Salt	202	107	118	113	100	99
Nonmanufactured foods, etc.						
Orchard fruits	90	120	172	138	63	93
Citrus fruits	--	--	--	--	--	--
Small fruits	51	62	70	60	51	110
Potatoes	71	52	89	74	119	130
Sweet potatoes	--	--	--	77	83	98
Peas and beans	97	85	98	109	74	76
Vegetables	122	87	118	98	61	75
Wheat	143	103	114	110	71	96
Fish, fresh	57	50	63	70	60	72
Poultry, eggs	83	70	--	88	81	86
Dairy products	98	86	95	100	72	90
Maple sugar, honey	89	60	84	76	63	63
Meat, fresh	78	63	75	88	64	76
Tea	136	72	58	67	68	61
Tobacco	90	70	82	88	80	100
Drugs, household preparations						
Bluing	--	--	--	--	--	--
Patent medicines	200	--	--	146	100	76
Perfumes	100	--	--	100	90	70
Soap	172	125	115	113	100	86
Blacking, stains	259	174	196	202	150	120
Cleaning preparations	--	--	--	--	--	--
Castor oil	--	--	--	--	59	84
Magazines, paper products, etc.						
Envelopes	--	--	--	--	--	110
Writing paper	449	234	225	216	178	125
Newspapers, magazines	245	146	--	135	122	--
Ink	--	168	164	131	121	103
Mucilage, paste	154	128	112	109	97	120
Fuel, lighting products						
Candles	113	91	94	106	95	81
Matches	--	--	--	307	267	106
Oil, sperm whale	104	100	110	121	110	90
Oil, coal	--	--	--	--	--	--
Firewood	85	67	77	88	92	100
Coal	--	121	158	141	84	100

(continued)

TABLE 1a (concluded)

Product	1809	1834	1836	1839	1844	1849
Semidurable goods						
Dry goods and notions						
Needles, pins	800	262	--	163	147	--
Pocketbooks	--	--	--	--	150	--
Buttons	300	240	161	159	134	--
Cotton thread	290	157	136	123	101	85
Cotton woven goods	376	155	150	141	105	106
Silk ribbons and cloth	193	--	140	--	155	133
Woolen worsted goods	202	135	146	167	159	133
Mixed textiles	284	253	--	168	--	--
Clothing and personal furnishings						
Clothing, men's, factory	183	--	--	117	--	--
Clothing, women's, factory	185	90	111	150	94	88
Gloves, mittens	83	93	104	83	95	80
Hats, men's	185	153	132	140	126	97
Bonnets, trimmed	243	--	140	--	133	--
Underwear	487	359	195	151	115	95
Umbrellas	300	--	141	--	--	--
Shoes	185	153	153	163	114	111
Rubber footwear	--	180	--	143	107	--
House furnishings						
Brooms	140	108	--	102	120	104
Bed spreads, sheets	240	161	133	149	101	95
Linen woven goods	201	150	137	137	120	123
Towels	182	167	138	141	114	118
Toys, games, sporting goods						
Billiard tables	--	--	--	--	--	--
Pocketknives	--	--	--	--	--	152
Firearms	192	--	152	--	146	--
Cameras	--	--	--	--	--	145
Children's wagons, sleds	--	--	121	--	--	--
Toys	--	--	--	--	--	--
Durable goods						
Furniture						
Tables, chairs, bedsteads	289	--	--	--	--	111
Heating, cooking, appliances						
Refrigerators	265	--	--	137	--	--
Sewing machines	--	--	--	--	143	132
Stoves	154	115	119	117	113	116
Washing machines	120	--	•120	--	--	--
Floor coverings						
Rugs	301	--	--	241	151	139
Miscellaneous						
Feather beds, pillows	126	73	102	95	65	75
Mattresses, springs	302	--	--	--	--	--
Blankets	197	--	156	145	113	111
Looking glasses	300	135	138	--	150	117
China, utensils						
Cutlery	250	--	156	--	142	--
China, earthenware	172	--	--	140	--	--
Woodenware	194	--	--	--	129	132
Glassware	256	--	--	147	149	--
Lamps	180	--	--	120	120	154
Musical instruments, books						
Pianos, reed organs	143	71	108	--	93	96
Clocks	517	270	--	157	102	--
Carriages, buggies, wagons	234	--	193	--	137	91
Artificial limbs	156	--	140	--	120	--
Eyeglasses	231	117	125	--	117	118
Books	267	181	--	--	167	--

TABLE 1b

PRICE INDEXES FOR CONSUMER GOODS, SELECTED YEARS, 1854-99
(1860=100)

Product	1854	1859	1869	1879	1889	1899
Perishables						
Manufactured foods, etc.						
Bakery products	128	114	156	93	111	110
Canned, smoked fish etc.	106	100	151	122	124	112
Canned, dried fruits, vegetables	84	80	184	117	116	91
Cheese	109	97	143	98	167	181
Chocolate, cocoa	92	112	154	164	145	92
Coffee, spices	97	98	186	123	126	105
Hominy, flour, meals	125	105	151	111	105	83
Other cereal products	103	100	154	112	105	92
Rum, whisky	98	114	326	295	285	314
Malt liquors	100	102	143	114	106	93
Vinous liquors	79	119	210	138	137	136
Rice	100	95	225	167	158	158
Meat products	134	100	158	98	98	104
Syrups, sugars	92	99	159	97	68	65
Vinegar, cider	100	98	250	182	112	108
Baking powder, yeast, etc.	127	99	140	93	80	65
Butter	104	104	150	96	114	125
Condensed milk	--	--	144	62	55	43
Lard	90	102	164	92	77	83
Salt	137	100	176	61	56	45
Nonmanufactured foods, etc.						
Orchard fruits	170	111	233	208	117	136
Citrus fruits	--	100	--	83	73	70
Small fruits	157	80	190	90	130	--
Potatoes	133	107	137	140	111	125
Sweet potatoes	--	100	258	117	141	--
Peas and beans	98	119	187	100	137	--
Vegetables	113	108	118	72	90	--
Wheat	108	104	155	109	107	103
Fish, fresh	104	127	220	119	120	121
Poultry, eggs	101	96	143	102	--	--
Dairy products	104	102	170	107	118	116
Maple sugar, honey	88	107	124	119	130	110
Meat, fresh	125	98	162	114	122	127
Tea	93	101	179	101	104	109
Tobacco	100	104	267	124	92	75
Drugs, household preparations						
Bluing	--	--	223	84	98	100
Patent medicines	90	100	117	72	83	90
Perfumes	77	104	129	111	67	70
Soap	89	101	128	88	72	91
Blacking, stains	128	104	--	--	--	--
Cleaning preparations	--	105	212	53	52	48
Castor oil	59	91	100	45	52	51
Magazines, paper products, etc.						
Envelopes	120	90	--	85	--	--
Writing paper	--	104	121	80	--	--
Newspapers, magazines	--	--	--	107	--	95
Ink	--	100	--	91	--	--
Mucilage, paste	112	101	--	--	--	--
Fuel, lighting products						
Candles	101	106	134	65	51	44
Matches	110	100	--	--	--	--
Oil, sperm whale	86	97	194	120	83	74
Oil, coal	120	100	67	29	16	15
Firewood	112	102	176	147	108	--
Coal	109	93	143	102	88	90

(continued)

TABLE 1b (concluded)

Product	1854	1859	1869	1879	1889	1899
Semidurable goods						
Dry goods and notions						
Needles, pins	122	103	124	95	88	75
Pocketbooks	101	100	117	--	--	--
Buttons	120	--	145	--	--	--
Cotton thread	100	102	181	91	80	76
Cotton woven goods	100	101	173	90	83	67
Silk ribbons and cloth	110	113	225	171	151	--
Woolen worsted goods	104	102	119	87	63	--
Mixed textiles	125	100	80	55	50	--
Clothing and personal furnishings						
Clothing, men's, factory	106	97	153	130	--	--
Clothing, women's, factory	106	104	107	104	98	--
Gloves, mittens	70	90	--	126	--	--
Hats, men's	112	105	122	131	127	--
Bonnets, trimmed	79	--	174	181	--	--
Underwear	100	108	100	57	45	--
Umbrellas	--	--	138	--	--	--
Shoes	107	100	148	108	103	95
Rubber footwear	107	100	--	80	--	--
House furnishings						
Brooms	108	106	--	--	--	--
Bed spreads, sheets	100	98	155	85	100	75
Linen woven goods	100	102	124	113	110	95
Towels	103	100	124	92	82	63
Toys, games, sporting goods						
Billiard tables	--	100	90	50	57	--
Pocketknives	121	100	117	80	66	--
Firearms	117	--	83	--	--	--
Cameras	122	--	104	83	76	54
Children's wagons, sleds	109	100	102	89	73	--
Toys	--	100	83	60	60	46
Durable goods						
Furniture						
Tables, chairs, bedsteads	109	100	108	79	70	--
Heating, cooking, appliances						
Refrigerators	--	100	105	73	65	--
Sewing machines	125	100	83	66	62	53
Stoves	117	100	146	114	71	68
Washing machines	112	100	92	83	73	--
Floor coverings						
Rugs	123	100	189	91	78	71
Miscellaneous						
Feather beds, pillows	96	99	--	--	--	--
Mattresses, springs	--	100	--	65	43	53
Blankets	109	106	95	71	59	62
Looking glasses	106	100	120	133	100	--
China, utensils						
Cutlery	120	100	115	116	71	66
China, earthenware	123	--	112	89	70	--
Woodenware	130	108	129	86	76	72
Glassware	160	--	84	47	37	--
Lamps	105	96	88	50	65	50
Musical instruments, books						
Pianos, reed organs	91	99	112	95	92	82
Clocks	100	--	105	93	--	75
Carriages, buggies, wagons	95	--	148	89	76	77
Artificial limbs	--	--	75	--	50	--
Eyeglasses	87	--	117	96	--	--
Books	115	100	--	86	--	92

TABLE 2a

PRICE INDEXES FOR PRODUCER DURABLE GOODS, SELECTED YEARS, 1834–49
(1860 = 100)

Product	1834	1836	1839	1844	1849
Industrial machinery, equipment					
Machine-shop products	156	162	149	152	138
Sewing machines	—	—	—	—	—
Electrical apparatus	—	—	—	—	—
Farm equipment					
Agricultural machines	157	150	130	118	127
Agricultural implements	—	240	—	142	—
Pumps	—	200	—	110	—
Windmills	—	—	—	—	137
Barbed wire	—	—	—	—	—
Woven wire fence	—	—	—	—	—
Office, store equipment					
Cash registers	—	—	—	—	—
Scales	—	242	—	190	—
Typewriters	—	—	—	—	—
Furniture	—	—	—	137	137
Railroad equipment					
Locomotives, cars	—	163	—	142	—
Ships and boats					
Sailing vessels, river steamers	189	—	—	150	—
Conveyances					
Farm, freight wagons	—	170	—	83	—
Professional, scientific equipment					
Optical goods, etc.	—	337	—	—	244
Carpenters, mechanics tools					
Edge tools	—	230	—	185	—
Other tools	—	270	—	242	—
Construction costs					
Houses, churches, schools	—	—	—	109	95
Factories, office buildings	—	147	—	76	107

TABLE 2b

PRICE INDEXES FOR PRODUCER DURABLE GOODS, SELECTED YEARS 1854-99
(1860=100)

Product	1854	1859	1869	1879	1889	1899
Industrial machinery, equipment						
Machine-shop products	115	107	113	71	32	28
Sewing machines	120	120	135	72	64	50
Electrical apparatus	--	--	100	88	78	69
Farm equipment						
Agricultural machines	104	105	116	77	65	62
Agricultural implements	100	--	143	75	63	47
Pumps	115	--	120	91	65	60
Windmills	--	--	86	49	48	45
Barbed wire	--	--	--	100	80	65
Woven wire fence	--	--	79	50	34	27
Office and store equipment						
Cash registers	--	--	--	75	70	70
Scales	175	--	--	83	67	65
Typewriters	--	--	--	100	95	79
Furniture	--	--	--	92	86	--
Railroad equipment						
Locomotives, cars	123	--	67	57	49	43
Ships and boats						
Sailing vessels, river steamers	118	--	84	72	57	51
Conveyances						
Farm, freight wagons	100	--	138	113	86	72
Professional, scientific equipment						
Optical goods, etc.	--	--	132	87	85	77
Carpenters, mechanics tools						
Edge tools	124	--	128	94	83	64
Other tools	118	--	142	85	85	77
Construction costs						
Houses, churches, schools	87	98	134	122	132	--
Factories, office buildings	107	--	94	107	89	--

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