Construction Price Indexes

2005 Series FAQs

1. How was the 2005 based price index series (new series) created?

The new series uses the kind of new houses sold in 2005 as the constant quality house or base year characteristics. Regression coefficients are calculated at each time period to determine the current value of the 2005 base year house characteristics including location. An index is created by calculating the ratio of the current value of the constant quality house to the 2005 base year or average value and then multiplying by 100.

This series answers the question, "How much does the constant quality 2005 house sell for at each time period?"

2. How was the 1996 based price index series (old series) created?

The old series is similar to the new series, but uses the 1996 kind of new house as the constant quality or base year house. In each time period a regression is calculated to determine the current value of the 1996 house. An index is created by calculating the ratio of the current value of the constant quality house to the 1996 base year or average value and then multiplying by 100.

3. Why was 2005 chosen as the base year for the new price index series?

Periodically, the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce produces a comprehensive revision of the Gross Domestic Product (GDP). This revision uses price index deflators to calculate the GDP in constant dollars. The next scheduled revision is to take place in 2008, with 2005 as the base year.

The 1996 based price index series is somewhat outdated since it does not reflect he current characteristics and locations of houses built. By changing our base year constant quality house to 2005, the new price index series is more reflective of current conditions and is consistent with the comprehensive revision plans that BEA has for the GDP.

4. Explain the difference between rebasing and reweighting an index series?

Rebasing is a simple method that shifts the base year from one year to another year without changing the base weights for the constant quality house. For example, to make 2005 the new base year without changing the base weights, you would need to calculate a base year conversion factor:

$$\frac{1996\ based\ index\ in\ 1996}{1996\ based\ index\ in\ 2005} = \frac{100.0}{153.1} = 0.653$$

Then each value on the old series can be converted to the new series by multiplying by 0.653. For example, the 2006 annual value converted from a 1996 to a 2005 base would be:

$$159.2 * 0.653 = 104.0$$

Reweighting, on the other hand, uses the same variables as a previous price index series, with the same regression coefficients, but changes the base weights or quantities to reflect the new base year average house. For example, the new price index series (2005) uses the base weights for the year 2005, replacing the values associated with the 1996 base year house.

5. Why did the Census Bureau use the rebasing method described above to calculate the price index for the earlier years?

In both the old and new series, we did not have a complete set of regression coefficients and base year characteristics to go back to 1963 for each time period to calculate the various indexes directly. We used a series of rebased indexes to enable us to go back to 1963. This method assumes that the period-to-period change (inflation) associated with an older series fairly represents the new series when the new series did not exist.

6. Why does the Census Bureau change the structure of the price index periodically by changing the base weights?

The housing characteristics of a typical new house and the geographic location of new homes sold have been changing over time. Ever since the early 1980s, house sizes have been increasing along with a higher proportion of amenities such as the presence of air-conditioning, garage and fireplaces. Along with a larger house, the numbers of bedrooms and bathrooms have also increased. Geographic changes reflect both the long term shift to the South and Western states, and the fact that housing markets are not uniformly strong or weak at the same time.

7. How does the constant quality house from the new series (2005) differ from the old series (1996) in the most important variables?

The most important variables are size of houses and geographic location. Detached houses make up 86 percent of the houses sold in 2005. The average house size measured in square feet has increased substantially in each region. The increases in average square feet by region from 1996 to 2005 for houses sold are as follows: Northeast (+455), Midwest (+337), South (+362) and West (+511). Also, there has been a 3 percentage point increase in the South proportion of detached houses sold at the expense of the other three regions, and attached houses have increased from 10.5 percent to 13.9 percent of new houses sold.

8. Should the annual period(to(period change for the old and new series be reasonably consistent?

The period-to-period changes for the two series should be consistent over time but not identical. If we were simply rebasing the price index as we described in question 4, we would have identical rates of change. The fact that the housing size, characteristics and geographic location have changed somewhat between 1996 and 2005 has resulted in similar average annual rates of increase for the 1996 to 2005 period, but not identical on an individual annual basis.

Average Annual Increases, 1996(2005:

	Old Series	New Series
United States	4.9%	4.7%
Northeast	4.9%	5.3%

Midwest	3.8%	3.7%
South	3.9%	3.9%
West	7.2%	6.9%

9. If I want to continue using a 1996 base year, instead of switching to a 2005 base year, how would I do that?

To continue using 1996 as a base year after the 2005 based series is introduced, a series conversion factor would need to be created:

$$\frac{old\ index\ series\ in\ 1996}{new\ index\ series\ in\ 1996} = \frac{100.0}{66.0} = 1.515$$

Then you would multiply a new index value by the conversion factor to rebase to 1996.

If 2006 annual index equals 104.7, to rebase to 1996=100.0, the calculation would be:

$$104.7 * 1.515 = 158.6$$

10. How does the Fisher Price Deflator for houses under construction, which is based on the geometric average of Laspeyres and Paasche under construction price indexes, differ between the new and old series?

In this series changeover, base year weights have changed in Laspeyres and base year regression coefficients in Paasche have switched from 1996 to 2005 values.

Similar to the Constant Quality Index for houses sold, different base weights exist between the old and new series. Houses have increased in size, and there has been a shift toward the South and attached houses.

The Paasche Index, which is the other key component to the Fisher Price Deflator, does not use a fixed or base year house. At each time period, the current house under construction is the numerator in the calculation. The base year coefficient value for each variable has been changed from 1996 to 2005 values, thereby changing the denominator.

11. When I take the antilog of the average logarithm of square feet of houses sold, I do not receive the average square feet value shown in the 2005 base weight tables. Why is that?

In the regression model for the price index, each case uses the logarithm of square feet as an independent variable. The value is then averaged from all cases to compute an average logarithm of square feet. Tables A-1 (detached houses) and A-2 (attached houses) show by stratum the values used in the regression models. This is a different process than finding the average square feet of all cases and then taking the logarithm. We use the former method, rather than the latter. Therefore, when computing the average square feet, simply taking the antilog of the average logarithm of square feet will provide you with an approximation of the square footage but not an exact estimate. The antilog must be applied to the microdata to compute the actual square foot estimate.