A Guide to Construction Cost Indexes

Many contractors, owners, architects and others involved with construction want a measure of how much construction costs have risen. There is no single way to answer that question. Instead, the attached tables show numerous measures of price changes produced by the Bureau of Labor Statistics (BLS) that can provide answers to a variety of questions about construction costs.

Each row in the tables shows the BLS series identifier and name for an index, and two groups of percentage changes. The first group shows the 12-month percentage change for the years ending December 2010, 2011, 2012 and 2013. The second group shows price changes in the latest month from 1, 3 and 12 months before. Indented index names show that the item is a subset of the last unindented item above it; this relationship is also shown in BLS's numbering system, which assigns one or more extra digits to subcategories.

The most widely reported measure of inflation is the monthly consumer price index for all urban consumers, CPI-U (series CUUR0000SAR). This index measures prices paid by consumers and is not appropriate for purchases by businesses and government. To track these costs, BLS has created a large number of monthly producer price indexes (PPIs), along with the quarterly employment cost index (ECI) for wages, salaries and benefits paid by employers.

In February 2014, BLS introduced the PPI for final demand (WPUFD4). This index is more comprehensive than the older PPI for finished goods in that the newer index incorporates changes in the costs of services and construction purchased by businesses and government as well as goods.

The new final demand—construction index (WPUFD43) is a weighted average of indexes for construction for private capital investment (WPUFD431) and construction—government (WPUFD432). Those indexes, in turn, comprise different proportions of indexes that measure the cost of construction for five types of new nonresidential buildings: warehouse (WPU801101), school (WPU801102), office (WPU801103), industrial (WPU801104) and health care buildings (WPU801105).

The building construction indexes, which were introduced between 2004 (warehouses) and 2012 (health care buildings), are constructed using a two-step process. Once a quarter, a materials-price tracking firm tells BLS the cost of a set of components for several specific types of buildings. Each month, BLS gets contractors' estimaties of what they would charge to construct buildings with those specifications. Thus, the indexes cover both materials costs and contractors' estimated overhead and profits.

The five building indexes are combined into a PPI for new nonresidential building construction (WPU801). A separate index tracks the cost of maintenance and repair of nonresidential buildings (WPU802). A weighted average of the new construction and the maintenance and repair indexes makes up the overall PPI for construction (WPU80), which BLS labels "partial" because it excludes residential, nonbuilding and some nonresidential building construction.

Table 1 presents the CPI-U and the overall PPI for final demand to facilitate comparison of building costs with broader measures of price changes. Table 1 also includes the PPIs for final demand for construction, overall and by owner and building type, and the maintenance and repair index.

As with new building construction, BLS asks four types of subcontractors each month what they would charge for a specified set of tasks on new, repair and maintenance work on nonresidential buildings. These indexes are shown in **Table 2** for concrete (PCU23811X), roofing (PCU23816X), electrical (PCU23821X) and plumbing (PCU23822X) contractors. BLS also incorporates those indexes in a set of new PPIs for intermediate demand by goods and service producers at various stages of production, ranging from raw materials to goods and services sold to end consumers (individuals, businesses, government and export customers). The tables in this report do not include the intermediate demand indexes for construction, which measure relatively small amounts of maintenance and repair for buildings. (All new construction is treated as final demand.)

Another set of PPIs tracks contractors' costs for materials (PCUBCON), or more precisely, the prices charged by producers of material inputs to construction, including items consumed by contractors, such as diesel fuel and welding gases. (In general, producer prices represent the price at the point of sale by the producer and do not cover the customer's cost of freight, insurance or storage. Materials cost indexes also omit the cost of services purchased by contractors.) The materials index blends the PPIs for inputs to new construction (PCUNEW) and for maintenance and repair construction (PCUBMRP). The new-construction index is a mix of inputs for residential (PCUBRES) and nonresidential (PCUBNON) construction; the latter comprises commercial structures (PCUBNCS), industrial structures (PCUBNIS) and other nonresidential (such as highway and other heavy) construction (PCUBONS). The maintenance and repair construction materials index combines residential (PCUBMRS) and nonresidential (PCUBMNR) categories. All of these indexes are shown in **Table 3**.

In addition to materials, contractors incur substantial costs for labor. Each quarter, BLS calculates changes in employer costs for total compensation—wages and salaries, the employer share of benefits, and legally required payments such as unemployment and workers' compensation. The results are shown in the employer cost index (ECI). **Table 4** presents the ECIs for total compensation (CIU20123) and wages and salaries (CIU20223) for construction, and for comparison, for all private industry (CIU20100 and CIU20200). (BLS also calculates an ECI for benefits for private industry, but not for construction.)

Owners or their contractors use several types of services. **Table 5** shows the changes in four PPIs that are specific or especially important to construction: architectural services (WPU4531); engineering services (WPU4532); truck transportation of freight (WPU3012); and construction, mining and forestry machinery and equipment rental and leasing (WPU443). (Another significant construction service is insurance and surety bonds, but there is no PPI that tracks these costs.)

There are hundreds of PPIs for commodities or "processed goods" (a term BLS introduced in February 2014) that are important to one or more types of construction. **Table 6** tracks about 30 of these. The PPIs chosen for these tables are believed to be the closest approximation to items used or bought for construction. However, some PPIs cover a wider range of materials than items used specifically in construction. For instance, steel mill products include steel used in motor vehicles, appliances, equipment, etc., as well as construction. Other PPIs, like those for concrete products, reflect materials used solely in construction. Readers are encouraged to scroll through the commodities section of the PPI data retrieval tool (at www.bls.gov/ppi) to see what other indexes are available, and to let AGC know which ones they would like to see included in Table 6. AGC will also forward readers' comments or requests for PPIs covering additional items to BLS. (Write to Chief Economist Ken Simonson at simonsonk@agc.org and, if desired, to BLS at ppi-info@bls.gov.)

The selling price of some processed goods often reflects changes that occurred some months earlier in the price of key raw materials or "unprocessed goods" (another term BLS introduced in February 2014). **Table 7** lists changes in five PPIs for unprocessed goods that contribute to construction materials costs.

Percentages are downloaded for PPIs from BLS' PPI website, www.bls.gov/ppi, at the page for "One-Screen Data Search." The CPI-U is downloaded from the same page at www.bls.gov/cpi; the ECI, from www.bls.gov/ect. Readers who are interested in other time periods or other information about the indexes should go to these sites.

Although some series have seasonally adjusted versions, changes shown in the tables are calculated from not seasonally adjusted data to keep all series on a comparable basis. Readers should be aware that some series, such as diesel fuel, do have considerable seasonal variations, or are subject to sharp short-term fluctuations that make 12-month comparisons more indicative of underlying price trends than the 1- and 3-month movements.

Nearly all PPIs are national only, as are ECIs for construction. (BLS has ECIs for private industry for 15 metro areas, as well as the nine Census divisions and four Census regions.) Numerous private sources have indexes covering specific geographic areas and construction materials that are not separately identified by BLS. But the BLS indexes are accessible to all for free and are compiled using the most rigorous statistical methodology.

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