

Changes in Construction Materials Prices, 2001-2009

From early 2004 until mid-2008, the construction industry was jolted by a succession of steep price increases affecting a variety of materials. Many prices have now reversed direction. The attached tables document these changes, using producer price indexes (PPIs) from the Bureau of Labor Statistics (BLS) for specific construction segments, inputs and building types. Changes are compared to changes in the consumer price index for all urban consumers (CPI-U) and the PPI for finished goods.

Background on PPIs

Each row shows the BLS series identifier and name for a PPI (or CPI), and two groups of percentage changes. The first group shows the 12-month percentage change for the years ending December 2002-08. The second group shows preliminary price changes in the latest month from 1, 3 and 12 months before, and from December 2003, when construction costs first spiked. Percentages are downloaded for PPIs from BLS' PPI website, www.bls.gov/ppi, at the page for "PPI Databases--One-Screen Data Search." Most of the PPIs are commodity indexes. There are also two types of industry PPIs. One type measures the finished cost of new buildings or subcontractors' work, including labor, overhead and profit, as well as materials. The other measures the cost of inputs for six construction segments. (Email simonsonk@agc.org for BLS tables showing the weights for each input.)

To provide consistency, "not seasonally adjusted" indexes have been selected for all items. For many items, BLS does not post a seasonally adjusted index, either because the price does not vary consistently by season or there is not enough data available to calculate a seasonal adjustment. However, prices of items such as natural gas do show wide seasonal swings; for these PPIs, a large one- or three-month change may not be unusual. PPIs are available only at a national level.

As the name implies, the PPI for a commodity measures the price charged by a producer of that item or category. The index excludes any costs the buyer incurs beyond the producer's loading dock or other point of sale, such as insurance, freight, storage, fabrication, or installation. Such costs are considerable for many construction inputs and may change at rates different from the PPI, but these rates cannot be estimated from PPI data. There is no PPI for construction labor, and the PPIs for trucking and insurance are not specific enough to indicate the specialized services and products used in construction.

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. An industry PPI measures the costs of all items used by an industry, including items such as diesel fuel that are consumed during construction. Readers are encouraged to scroll through the indexes on the PPI website. BLS has invited users to submit ideas for additional PPIs; send them to simonsonk@agc.org.

Organization of PPI Tables

Table 1 compares the CPI-U with PPIs for finished goods and for construction inputs (materials that go into every type of residential and nonresidential project, plus items such as diesel fuel that are used up by contractors). The construction input PPIs are separately weighted for inputs used in highway and street, other heavy, nonresidential building, multi- and single-unit new residential construction. Weights are available on request; they differ markedly for different types of construction.

Table 2 shows PPIs for completed new buildings (industrial, warehouse, school and office) and for the prices charged by concrete, roofing, electrical and plumbing contractors for work on new nonresidential buildings. Unlike other PPIs, these indexes include changes in general or specialty contractors' overhead, profit and labor costs, as well as material inputs.

Table 3 shows changes in PPIs for specific construction inputs. Items are grouped into petroleum-based products; concrete and brick products; miscellaneous materials; and metal products. 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. For instance, "WPU1331 Concrete block and brick," is indented to show it is included in the index for "WPU133 Concrete products."

Table 4 has indexes covering changes in PPIs for "crude" materials--items used to produce construction inputs--divided into nonmetals, and metal ores and scrap. Recent changes in these indexes can show up later in price changes for materials made from these items.

Changes in Construction Costs

In general, through 2003 most construction materials showed very modest increases and many decreases in price, similar to the CPI, which rose 2.4% in 2002 and 1.9% in 2003. Beginning in 2004, however, many construction materials had years with double-digit increases, whereas the CPI has continued to rise at a 0.1-4.1% annual rate. After peaking in July-August 2008, prices for diesel fuel, asphalt, steel, copper and other materials dropped sharply through early 2009. But many prices have increased again recently.

Percentage Change in Producer Price Indexes (PPIs) for Construction Materials, Structure Types & Subcontractors, 2001-2009

BLS Series ID

		12 months through December--						to November 2009 since--				
		2002	2003	2004	2005	2006	2007	2008	10/09	8/09	11/08	12/03
Table 1: Changes in Consumer, Producer & Construction Prices												
CUUR0000SA0	Consumer price index (CPI-U)	2.4	1.9	3.3	3.4	2.5	4.1	0.1	0.1	0.2	1.8	17.4
WPUSOP3000	Producer price index (PPI) for finished goods	1.2	4.0	4.2	5.4	1.1	6.2	-0.9	1.2	1.1	2.4	21.9
PCUBCON	PPI for inputs to construction industries	0.7	3.0	9.1	8.2	4.6	4.8	2.8	0.6	0.0	-2.3	33.2
PCUBHWY	PPI for inputs to highway and street construction	1.0	2.6	10.8	14.1	6.2	10.1	-0.6	0.8	0.0	-1.4	52.3
PCUBHVV	PPI for inputs to other heavy construction	1.0	2.6	13.4	8.8	5.5	6.9	1.3	0.8	0.1	-3.7	40.6
PCUBBLD	PPI for inputs to nonresidential buildings	0.7	2.4	9.3	7.4	4.0	4.8	2.2	0.7	0.1	-2.2	31.1
PCUBRSM	PPI for inputs to multi-unit residential	0.4	2.7	8.9	7.8	4.9	3.8	3.0	0.4	-0.2	-2.5	30.4
PCUBRS1	PPI for inputs to single-unit residential	0.6	3.5	7.0	6.9	4.2	2.5	5.0	0.5	-0.1	-2.3	27.0

Table 2: Changes in PPIs for New Buildings & Subcontractors

PCU236211	New industrial building construction	n.a. before 2008; series began 6/07						7.8	0.1	-0.2	-4.3	n/a
PCU236221	New warehouse construction	n.a. before 2005			7.5	8.1	4.5	6.3	0.2	-2.3	-4.4	n/a
PCU236222	New school construction	n.a.; series began 12/05				17.3	2.0	11.8	0.3	0.2	2.2	n/a
PCU236223	New office construction	not available; series began 6/06					4.8	6.1	0.6	-1.6	-2.8	n/a
PCU23811X	Concrete contractors, nonresidential building work	n.a. before 2008; series began 12/07						4.9	0.7	-0.7	-1.0	n/a
PCU23816X	Roofing contractors, nonresidential building work	n.a. before 2008; series began 12/07						12.6	-0.2	-0.4	2.7	n/a
PCU23821X	Electrical contractors, nonresidential building work	n.a. before 2008; series began 12/07						4.8	0.1	0.6	-2.3	n/a
PCU23822X	Plumbing contractors, nonresidential building work	n.a. before 2008; series began 12/07						9.0	0.1	1.1	1.7	n/a

Table 3: Changes in PPIs for Specific Construction Inputs

WPU057303	#2 diesel fuel	54.4	13.0	37.9	46.7	2.3	33.9	-38.2	6.3	6.4	-3.7	120.1
WPU139401	Asphalt paving mixtures and blocks	2.0	3.7	4.3	14.3	27.6	1.6	34.3	-0.3	-1.0	-15.8	87.5
WPU136	Asphalt felts and coatings	-0.6	6.3	4.1	15.3	5.0	1.4	57.8	-3.3	-0.5	-7.4	82.0
WPU1361	Prepared asphalt & tar roofing & siding products	-1.7	5.3	4.6	16.2	5.2	2.3	57.5	-3.9	-0.5	-4.1	89.3
WPU133	Concrete products	-0.3	1.5	7.6	10.1	8.1	3.8	4.1	-0.1	-0.6	-1.2	36.4
WPU1331	Concrete block and brick	1.6	3.2	4.7	8.1	6.8	3.3	4.2	-0.1	-0.2	0.4	30.4
WPU1332	Concrete pipe	1.7	1.4	5.5	7.5	2.5	10.0	4.2	0.2	0.6	-2.0	30.8
WPU1333	Ready-mixed concrete	-1.1	1.1	8.7	11.3	10.1	3.1	4.2	-0.3	-0.8	-1.2	40.9
WPU1334	Precast concrete products	0.3	2.5	6.0	6.0	4.7	4.7	4.3	0.1	0.0	1.7	30.2
WPU1335	Prestressed concrete products	1.8	-0.2	8.2	14.3	4.9	2.2	2.8	0.1	-0.9	-12.7	18.8
WPU1342	Brick and structural clay tile	1.9	0.7	3.0	9.4	6.0	0.0	0.3	-0.3	-0.4	-1.1	18.5
WPU072106	Plastic construction products	3.1	3.2	7.2	21.6	-0.7	0.4	4.1	-1.1	0.4	-2.2	33.9
WPU137	Gypsum products	3.4	2.8	20.0	18.8	5.5	-22.1	7.2	-0.5	-3.6	-8.2	15.3
WPU1392	Insulation materials	-1.5	2.0	8.6	2.6	2.1	-3.5	0.8	0.3	0.6	-1.4	9.2
WPUSI004011	Lumber and plywood	1.4	13.1	5.0	-1.1	-10.8	-0.7	-6.8	1.1	-0.1	-2.9	-14.9
WPU062101	Architectural coatings	0.6	3.9	5.3	9.2	6.3	4.2	16.6	0.0	-0.7	-0.4	47.6
WPU1017	Steel mill products	11.1	1.7	48.8	-3.8	11.6	0.9	4.8	-1.6	4.1	-19.9	52.8
WPU101704	Hot-rolled bars, plates, & structural shapes	2.1	11.3	53.8	-1.0	7.5	8.1	3.3	-3.2	-1.8	-19.0	59.5
WPU101706	Steel pipe and tube	9.1	3.3	66.0	1.2	5.5	-1.3	28.6	-2.1	0.8	-22.0	81.5
WPU102502	Copper and brass mill shapes	-1.6	11.6	29.6	31.0	44.4	-3.0	-23.3	4.6	11.3	26.2	144.5
WPU102501	Aluminum mill shapes	-0.9	-0.5	9.9	5.0	12.7	-1.7	-4.0	0.0	1.3	-12.4	11.0
WPU1073	Sheet metal products	2.0	0.6	15.2	0.4	6.5	0.2	7.4	0.1	1.1	-5.8	26.7
WPU107405	Fabricated structural metal	-2.4	0.1	24.7	2.8	3.6	5.3	11.8	-1.0	-2.8	-14.5	35.0
WPU10740501	Fabricated structural metal for buildings	-3.3	-0.1	20.0	3.1	3.3	4.7	9.4	-0.1	-2.2	-11.0	31.5
WPU107408	Architectural and ornamental metalwork	3.7	0.7	23.5	3.1	4.9	2.0	21.8	0.2	-0.6	-7.9	54.3
WPU107409	Fabricated iron & steel pipe, tube, & fittings	0.1	1.2	32.6	5.5	-2.8	-1.5	13.7	2.3	2.2	4.0	58.9
WPU1076	Fabricated steel plate	-1.0	0.6	7.6	0.6	8.6	5.7	21.8	-2.0	-1.1	-11.6	33.9
WPU1079	Prefabricated metal buildings	4.0	-0.7	35.5	2.0	5.5	2.0	25.5	0.1	-0.8	-15.9	58.7
WPU112	Construction machinery and equipment	1.9	1.3	6.0	4.9	3.6	2.3	4.9	0.7	0.1	0.5	24.3

Table 4: Changes in PPIs for Basic Inputs Important to Construction

WPU056	Crude petroleum (domestic production)	60.6	14.3	30.5	49.6	0.1	51.7	-57.7	7.0	12.6	41.8	156.9
WPU05810112	Asphalt (at refinery)	n.a.	10.0	18.3	17.8	34.9	-0.2	48.3	11.2	4.8	-16.9	188.7
WPU066	Plastic resins and materials	9.2	6.4	28.6	10.8	-7.8	9.7	-8.3	-0.5	-0.1	-2.3	35.8
WPU1321	Construction sand/gravel/crushed stone	2.5	2.4	4.3	7.7	9.3	8.4	6.7	-0.7	-0.4	2.1	44.7
WPU1322	Cement	1.3	-1.1	7.9	12.2	10.5	4.4	-0.9	-1.1	-2.6	-2.6	35.0
WPU1011	Iron ore	-1.3	1.6	6.7	15.5	7.5	1.3	12.1	0.0	0.0	-3.3	45.5
WPU1012	Iron and steel scrap	27.8	64.9	50.8	-10.8	2.9	29.4	-35.2	-8.9	-7.0	56.8	56.2
WPU101212	Stainless and alloy steel scrap	not available					-7.8	-39.8	-5.7	-10.0	114.4	n/a
WPU102102	Copper ores	3.6	37.4	65.1	39.3	53.1	-1.7	-46.6	2.4	23.6	65.6	247.4
WPU102301	Copper base scrap	11.2	30.7	34.5	51.9	50.0	3.1	-48.2	-0.9	1.2	78.2	208.4

Updated 12/16/09 Source: Bureau of Labor Statistics (BLS): www.bls.gov/cpi for CPI, www.bls.gov/ppi for PPIs

Compiled by Ken Simonson (simonsonk@agc.org), Chief Economist, Associated General Contractors of America, www.agc.org