

Prices of Goods and Services Used in Residential Construction

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Special Study for Housing Economics

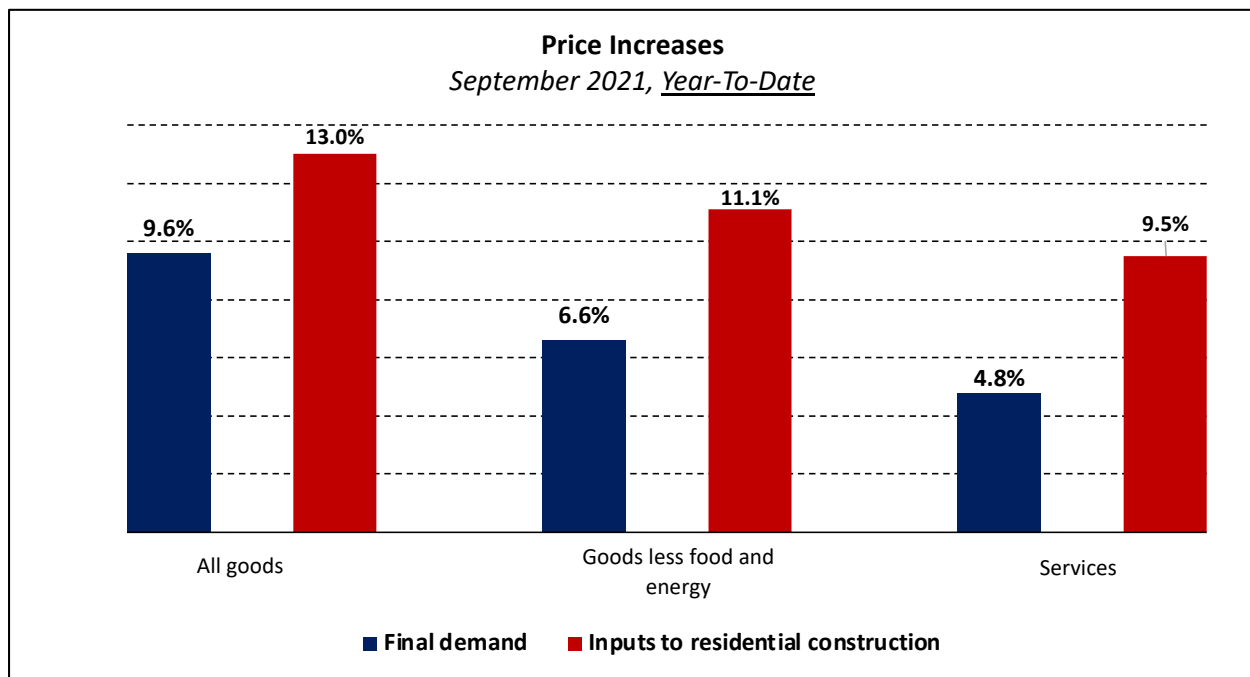
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According to analysis of the most recent [release](#) of the Bureau of Labor Statistics Producer Price Index (PPI), the prices of goods used as inputs to residential construction including energy and excluding energy have risen 13.0 percent year-to-date (YTD), 11.1 percent, if the price of energy is excluded. In contrast, the overall index for all goods climbed 9.6 percent over the same period, or 6.6 percent excluding food and energy (Figure 1). An even larger disparity exists between YTD price changes of all services and those used in residential construction (excluding labor) which have increased 4.8 percent and 9.5 percent, respectively.

Figure 1

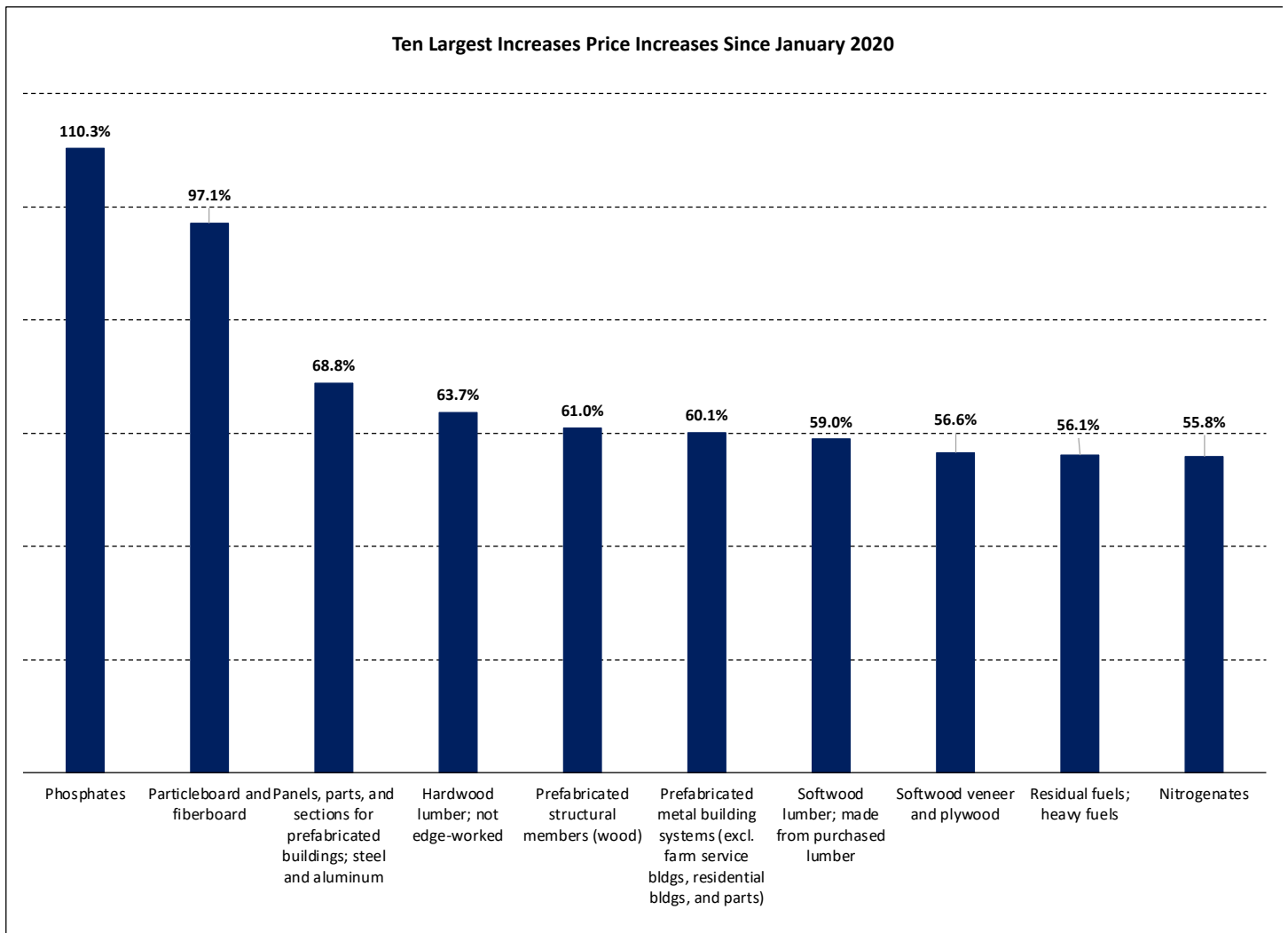


Materials Inputs

Although the decline in lumber prices since May 2021 has helped bring costs down (after having [driven them up drastically](#) earlier in the year), the decline has been offset by large increases in the prices of a multitude of other products.

Of the 103 goods included in the PPI for inputs to residential construction, the prices of the following 10 have increased the most since January 2020 (see Figure 2):

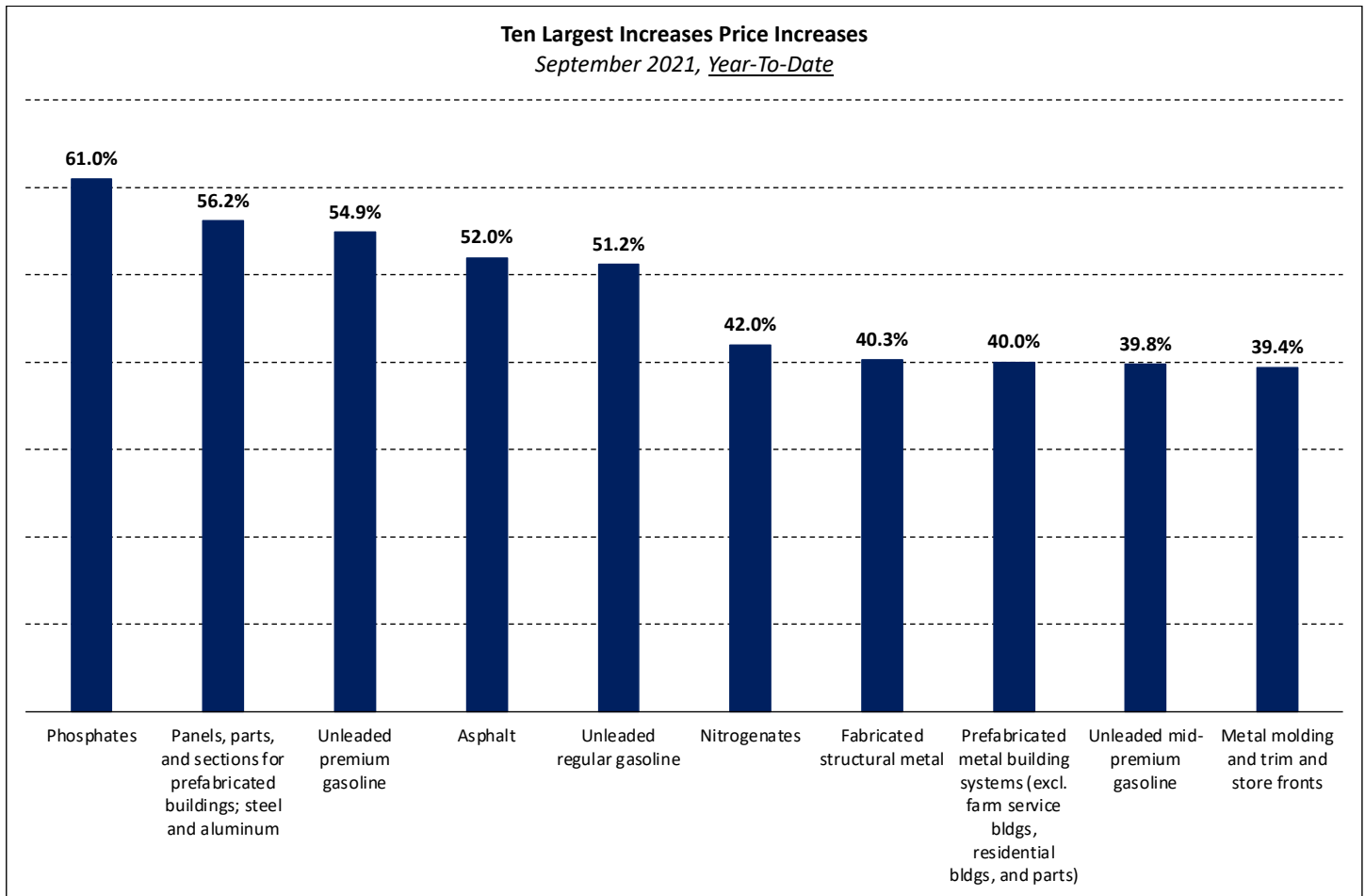
Figure 2



Four of these products are also among the 10 that have exhibited the largest price increases over the first nine months of 2021 (Figure 3).

Four of the goods on the top 10 year-to-date price increase list are metal goods, three are energy products (unleaded premium, unleaded mid-premium, and unleaded regular gasoline) and two categories of chemicals—phosphates and nitrogenates—round out the list. Asphalt (a petroleum derivative) is the final material on the year-to-date list but is absent from the 10 largest increases relative to pre-pandemic prices.

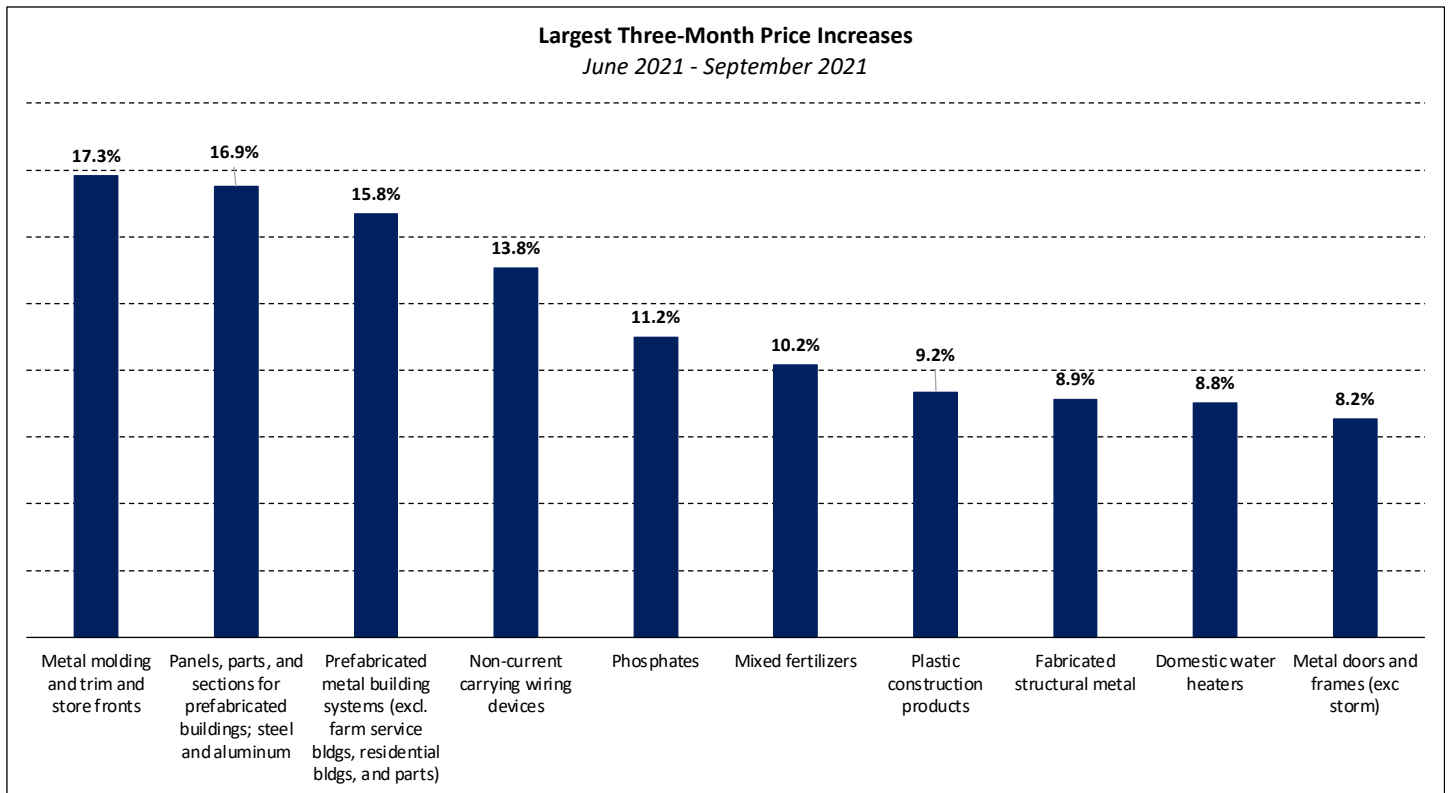
Figure 3



Due to the volatile nature of their prices, energy goods are frequently subtracted from overall price indices. If the goods above were limited to non-energy products, domestic water heaters (+33.8 percent), wood pallets and pallet containers (+33.3 percent), and non-current carrying wiring devices (+32.2 percent) would round out the largest price increases since the start of 2021.

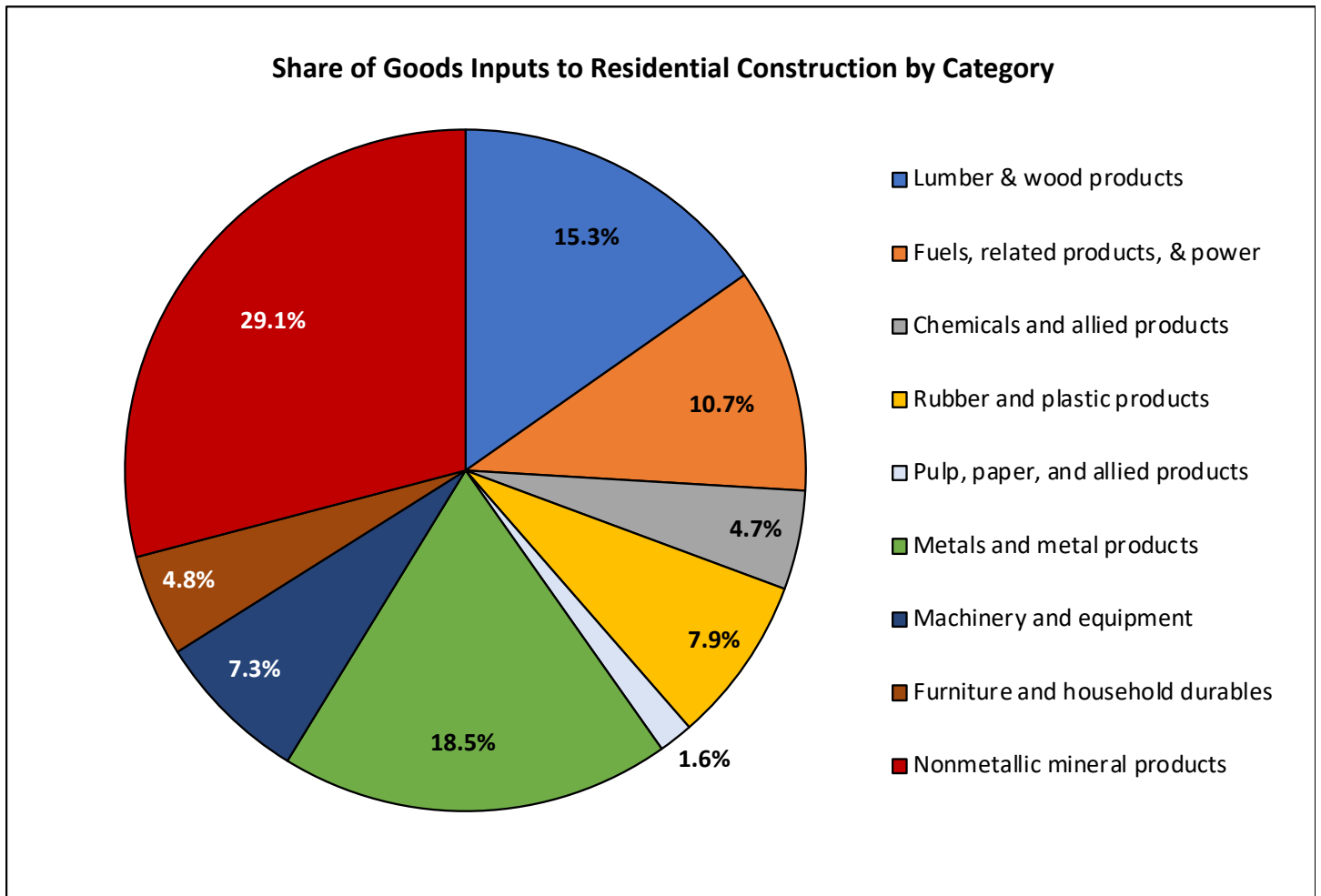
Some building materials and inputs to building materials have seen especially acute increases over the past three months. Of the goods analyzed here, 14 experienced price increases exceeding 10 percent between May and August (Figure 4).

Figure 4



Although the price of wood products such as lumber and structural panels have declined sharply since reaching record highs in May, they make up a minority of the PPI for goods inputs to residential construction. Nonmetallic mineral products and metals and metal products each make up a larger share (Figure 5).

Figure 5



Services Inputs

As noted above, the price of services used as inputs to residential construction has outpaced the price of services economy-wide by a large margin since the beginning of 2020. Year-to-date, the PPI for services used in residential construction has risen at nearly three times the rate of the PPI for all services in the economy (Figure 1)

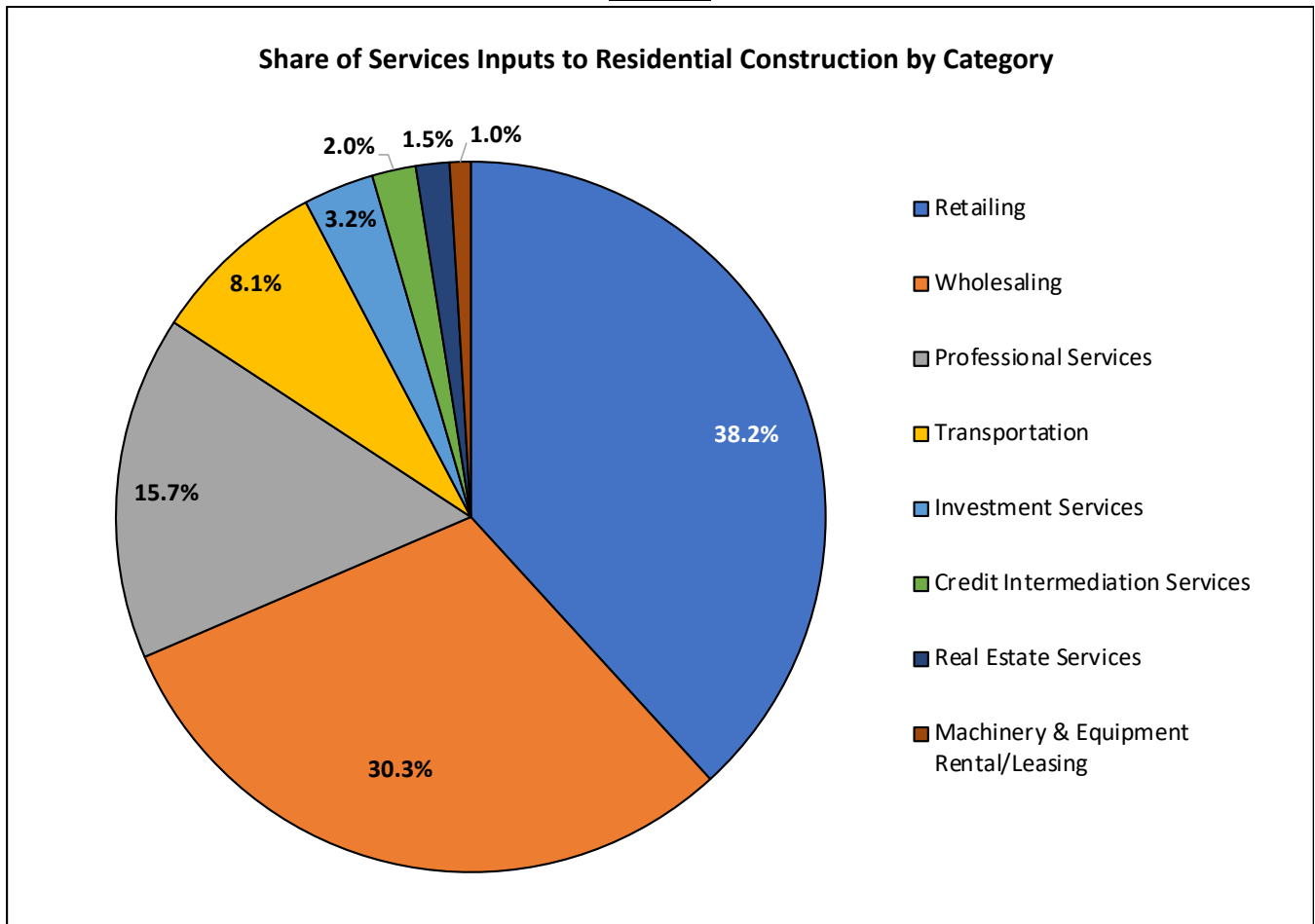
The wholesaling and retailing of building materials and supplies together account for 61.3 percent of the PPI for services used in residential construction. The top five most heavily weighted services are rounded out by engineering, long-distance freight transportation, and wholesaling of parts and supplies for machinery and equipment (Figure 6).

Figure 6

Five Most Heavily Weighted Services	
Service	Share of Services Inputs to Residential Construction
Hardware and building materials and supplies retailing	31.4%
Engineering services	11.9%
Parts and supplies for machinery and equipment wholesaling	11.6%
Building materials, paint, and hardware wholesaling	6.6%
Long-distance motor carrying	5.9%

Services can be grouped by category, allowing for simpler interpretation (Figure 7). Retailing and wholesaling of all products (not just building materials) account for roughly two-thirds of the effect services prices have on the residential construction inputs PPI. Engineering accounts for most of the contribution from professional services, but the category also includes legal and architectural services. Transportation includes local and long-distance motor carrying only, as other modes of transit are folded into the cost of goods in the full index.

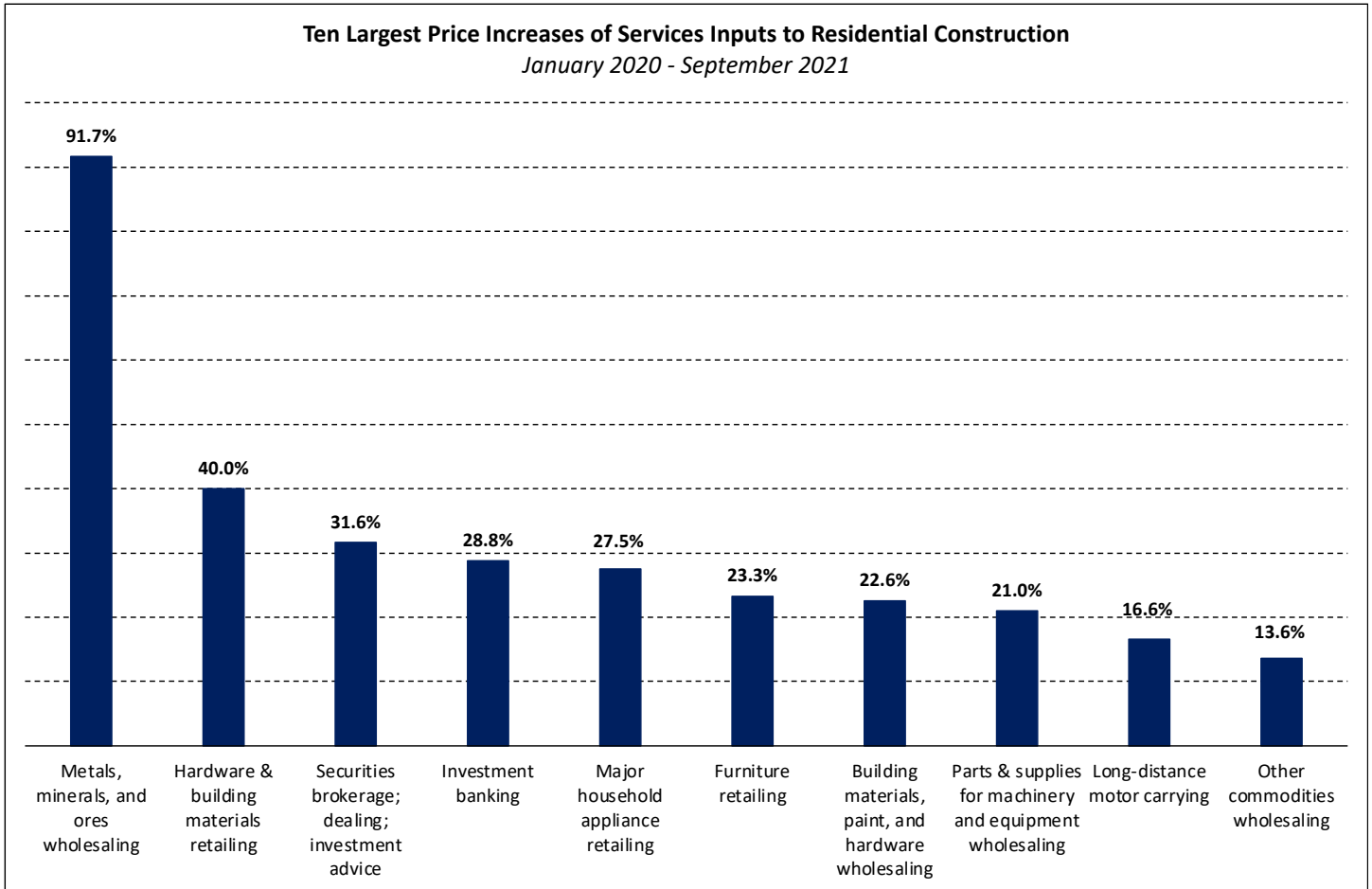
Figure 7



Price Increases

The prices of eight services included in the PPI for inputs to residential construction have risen more than 20 percent since the start of 2020. Figure 8 shows the services with the 10 largest price increases since January 2020.

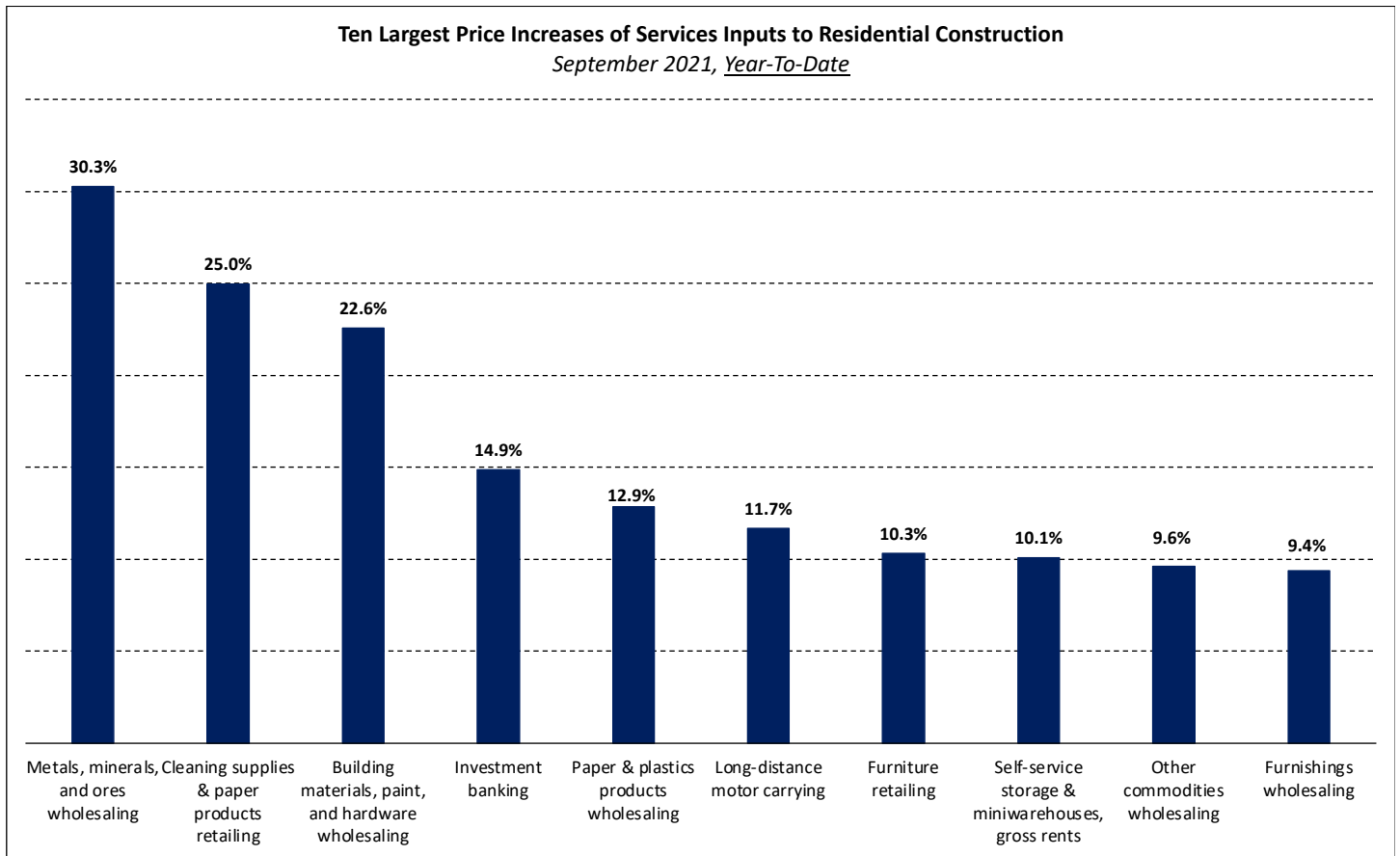
Figure 8



Six of these services inputs to residential construction are also among the 10 biggest year-to-date price increases. While the composition of the two lists is similar, the order is quite different (except that metals, minerals, and ores wholesaling is first on each list).

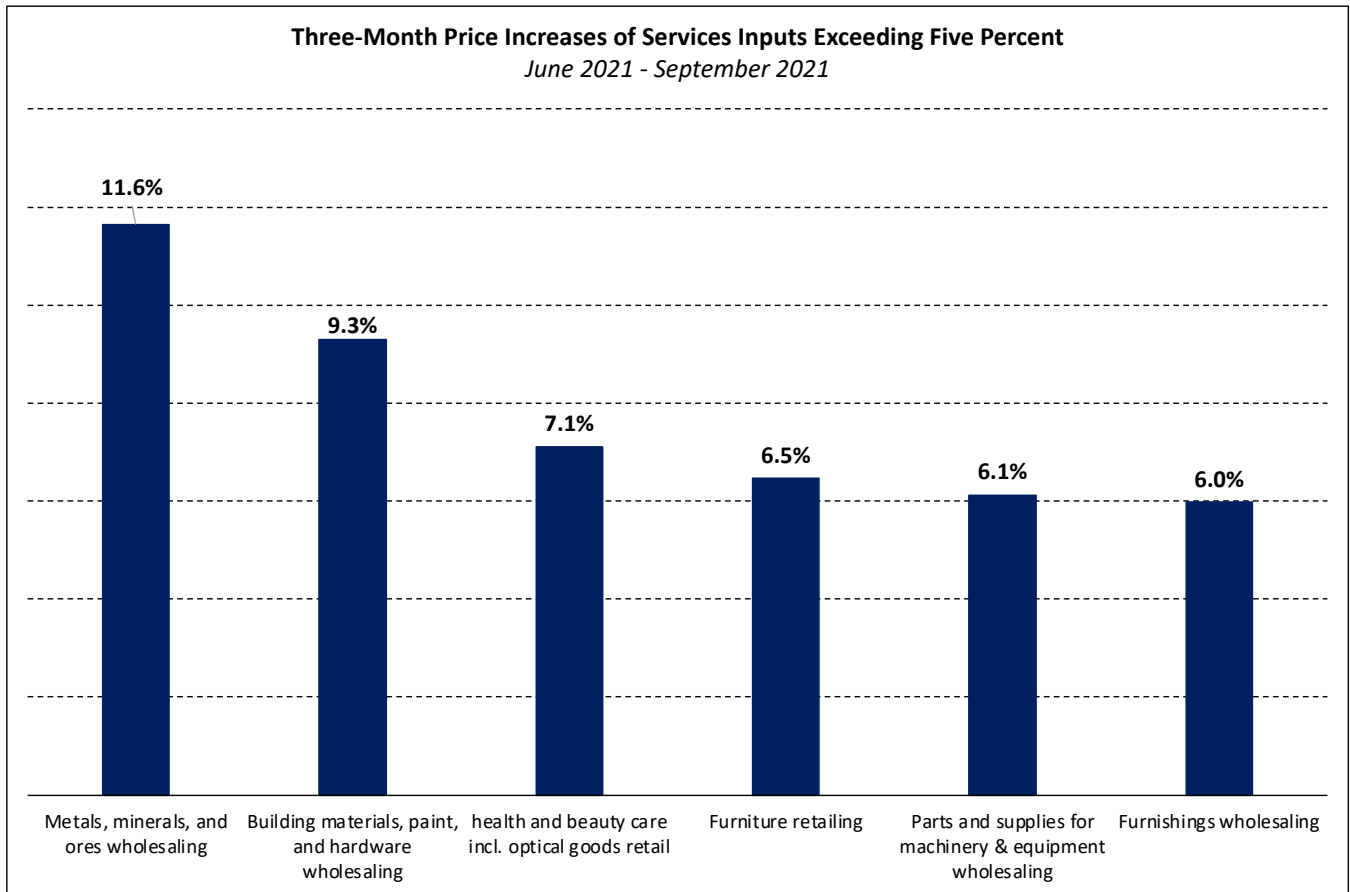
Four services—major household appliance retailing, securities brokerage and investment advice, hardware and building materials retailing, and parts and supplies for machinery and equipment wholesaling,—drop out of the top ten and are replaced by furnishings wholesaling, paper and plastics products wholesaling, cleaning supplies and paper products retailing, and self-service storage and miniwarehouses, gross rents. Cleaning supplies and paper products retailing has the second highest price increase in 2021, while building materials wholesaling and long-distance motor carrying moved up four and three spots, respectively.

Figure 9



Price increases of services inputs to residential construction over the past three months have been modest relative to the recent price movements of goods exhibited in Figure 4. Six of 37 services items (16.2 percent) increased greater than five percent in price compared with 27 of 103 goods, or 26.2 percent of the total (Figure 10).

Figure 10



Price Declines

Not every good and service weighted in the inputs to residential construction PPI has risen in price over the past 20 months. The price indices of three goods and seven services have declined since January 2020:

- Goods
 - Industrial sand (-8.0 percent)
 - Paving mixtures and blocks (-3.5 percent)
 - Nonclay refractories (-0.3 percent)
- Services
 - Securities brokerage, dealing, and related services (-35.7 percent)
 - Deposit services (-9.9 percent)
 - Household fuels retailing (-7.2 percent)
 - Nonresidential property management fees (-5.5 percent)
 - Rental and leasing of construction, mining, and forest machinery and equipment (-3.5 percent)
 - Other loans and loan services (-1.0 percent)
 - Other credit intermediation services, including trust services (-0.8 percent)

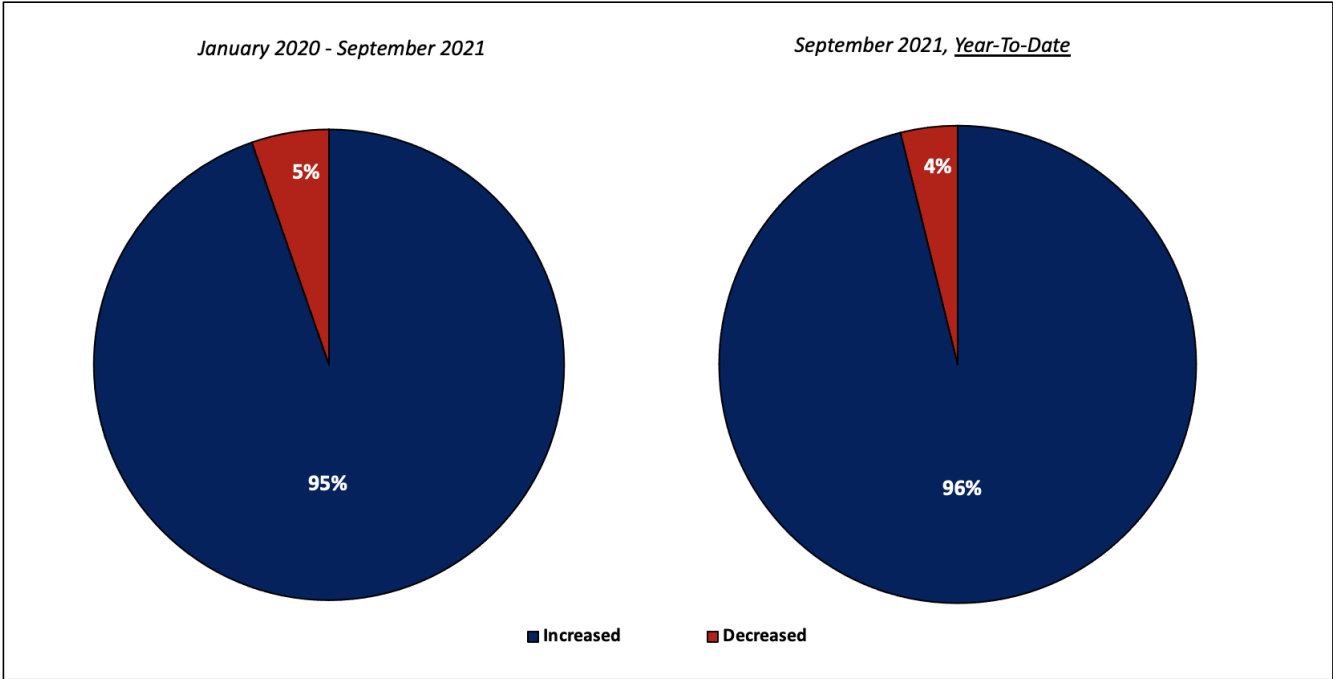
Seven goods and four services inputs to residential construction have experienced price declines over the first nine months of 2021:

- Goods
 - Softwood lumber; not edge-worked (-39.1 percent)
 - Treated wood (-14.6 percent)
 - Softwood veneer and plywood (-10.5 percent)
 - Softwood cut stock and dimension (-9.7 percent)
 - Paving mixtures and blocks (-2.3 percent)
 - Kaolin and ball clay (-0.1 percent)
 - Contract wood preservation (-0.1 percent)
- Services
 - Nonresidential property management fees (-1.2 percent)
 - Other credit intermediation services, including trust services (-1.1 percent)
 - Deposit services (-0.2 percent)
 - Books retailing (-0.1 percent)

Although these price declines alleviate upward price pressures elsewhere, the effect is almost negligible. Not only is the number of weighted goods and services that have fallen in price small relative to the total, but the total weight for which these line items account is diminutive. Figure 11 shows the total index weight by price direction for each of the comparison periods above.

Figure 11

Weight of Inputs to Residential Construction by Price Change



APPENDIX

Weights of Goods and Services Used to Construct the PPI for Inputs to Residential Construction

Category	Index ID	Index Title	Relative Importance
	IP231100	Inputs to new residential construction, excluding capital investment, labor, and imports	100.000
Fuels and related products and power	057104	Unleaded regular gasoline	2.236
	057303	No. 2 diesel fuel	2.081
	057103	Unleaded premium gasoline	0.327
	057407	Residual fuels (heavy fuel oils, incl. #5, #6, & other residual fuels)	0.206
	057302	Home heating oil and distillates	0.173
	058102	Asphalt	0.111
	057604	Lubricating and similar oils	0.089
	057105	Unleaded mid-premium gasoline	0.053
	057603	Lubricating grease	0.004
Chemicals and allied products	062101	Architectural coatings	0.452
	065202	Phosphates	0.344
	062102	OEM finishes excluding marine coatings	0.310
	061302	Inorganic chemicals, other than alkalies and chlorine	0.287
	062103	Special purpose coatings, incl. marine, industrial & construction coatings	0.260
	065201	Nitrogenates	0.217
	065105	Mixed fertilizers	0.198
	061303	Alkalies and chlorine, including natural sodium carbonate and sulfate	0.127
	062301	Allied and miscellaneous paint products	0.068
062204	Kaolin and ball clay	0.067	
Rubber and plastic products	072B01	All other consumer, institutional, and commercial products	1.071
	072601	Parts for transportation equipment	0.831
	072106	Plastic construction products	0.744
	072A01	Plastic packaging products	0.709
	072901	Other plastic products	0.326
	072602	Other parts and components for manufacturing	0.246
Lumber and wood products	082101	General millwork	2.954
	082201	Prefabricated structural members	0.713
	081106	Softwood lumber, not edge worked	0.708
	083103	Softwood veneer and plywood	0.511
	083501	Hardwood veneer and plywood	0.338
	084909	All other miscellaneous wood products	0.290
	081107	Softwood lumber, made from purchased lumber	0.260
	081205	Hardwood lumber, not edge worked	0.248
	081204	Hardwood flooring	0.233
	087101	Treated wood	0.227
	084101	Wood pallets and pallet containers	0.212
	081203	Hardwood cut stock and dimension	0.197
	085105	Logs, bolts, timber, pulpwood and wood chips	0.153
	086101	Prefabricated wood buildings and components	0.126
	081206	Hardwood lumber, made from purchased lumber	0.125
	084201	Wood boxes	0.088
	081105	Softwood cut stock and dimension	0.085
	084904	Sawn wood fence stock, wood lath, and contract resawing and planing	0.053
	087102	Contract wood preservation	0.026
	084903	Wood ties, siding, shingles, and shakes, and contract sawing of logs owned by others	0.019

Category	Index ID	Index Title	Relative Importance
Pulp, paper, and allied products	092201	Particleboard and fiberboard	0.720
	092202	Hardboard products	0.085
	092301	Cellulosic fiberboard (insulating board)	0.007
Metals and metal products	107301	Sheet metal products	2.254
	107405	Fabricated structural metal	1.524
	107411	Fabricated metal pipe, tube, and fittings	0.853
	107408	Ornamental and architectural metal work	0.768
	107102	Metal doors and frames (except storm)	0.691
	102603	Nonferrous wire and cable	0.683
	106601	Domestic water heaters	0.422
	107601	Fabricated steel plate	0.384
	108303	Commercial, institutional and industrial electric lighting fixtures	0.278
	107901	Prefabricated metal building systems (excl. farm service bldgs, residential bldgs, and parts)	0.268
	107103	Metal windows (except storm sash)	0.239
	108305	Other lighting equipment	0.224
	106201	Furnaces and heaters, including parts	0.159
	107104	Metal molding and trim and store fronts	0.099
	107107	Metal window and door screens (except combination screens) and metal weather strip	0.091
	107902	Farm service buildings and other prefabricated and portable buildings, steel and aluminum	0.075
	107903	Panels, parts, and sections for prefabricated buildings, steel and aluminum	0.057
105201	Vitreous plumbing fixtures, china lavatories, & flush tanks, incl. plumbing accessories	0.048	
108302	Residential electric lighting fixtures, except portable	0.040	
107105	Metal combination screen, storm sash, and storm doors	0.026	
Machinery and equipment	112K01	Parts for construction machinery and equipment, sold separately	0.746
	117101	Current-carrying wiring devices	0.698
	117102	Noncurrent-carrying wiring devices	0.674
	114807	Heat transfer equipment, including heat pumps	0.659
	114802	Unitary air-conditioners, except air source heat pumps	0.432
	114808	Refrigerant compressors, except automotive	0.182
	114809	Parts and accessories for air conditioning and heat transfer equipment	0.103
	114806	All other miscellaneous refrigeration and air-conditioning equipment	0.061
114805	Refrigeration condensing units	0.056	
Furniture and household durables	122101	Wood office furniture and store fixtures	1.873
	124104	Other major household appliances including room air-conditioners	0.365
	123201	Resilient floor coverings	0.086
	126101	Vitreous china, porcelain, and earthenware table and kitchenware and other pottery products	0.042
	124501	Portable residential lighting fixtures, including parts and accessories	0.034
Nonmetallic mineral products	133301	Ready-mix concrete	5.396
	139401	Paving mixtures and blocks	2.562
	132101	Construction sand, gravel and crushed stone	2.346
	139201	Mineral wool for thermal and acoustical envelope insulation	0.964
	137101	Gypsum products	0.571
	133401	Precast concrete products	0.473
	139202	Mineral wool for industrial, equipment, and appliance insulation	0.393
	133201	Concrete pipe	0.277
	133111	Structural concrete block	0.231
	139902	Clay and stone mining and quarrying	0.215
	133501	Prestressed concrete products	0.181
	135301	Nonclay refractories (excluding dead-burned magnesia)	0.138
	133141	Concrete pavers	0.137
	139901	Industrial sand	0.129
	135201	Clay refractories	0.101
	133121	Decorative concrete block	0.100
	134201	Building or common brick	0.077
	134401	Clay floor and wall tile, glazed and unglazed (including quarry tile and ceramic mosaic tile)	0.074
	133131	Concrete brick	0.032
	134501	Structural clay products, n.e.c.	0.011
134202	Glazed brick and other brick (paving, floor, and sewer)	0.004	

Category	Index ID	Index Title	Relative Importance
Transportation services	301202	Long-distance motor carrying	2.995
	301201	Local motor carrying	1.021
Credit intermediation services (partial)	392101	Deposit services (partial)	0.438
	391101	Business loans (partial)	0.404
	393101	Other credit intermediation services, including trust services (partial)	0.082
	391301	Other loans and loan services (partial)	0.068
Investment services	401101	Securities brokerage, dealing, and investment advice	0.748
	401102	Securities brokerage and dealing related services (Partial)	0.431
	403101	Investment banking	0.415
Real estate services (partial)	431101	Office buildings, gross rents	0.620
	431301	Nonresidential property management fees	0.057
	431104	Self-service storage and miniwarehouses, gross rents	0.053
	433101	Real estate appraisal fees	0.028
Rental and leasing of goods (partial)	443101	Construction, mining, and forestry machinery and equipment rental and leasing	0.476
Professional services (partial)	453201	Engineering services	5.985
	451101	Legal services	0.979
	453101	Architectural services	0.817
Wholesale trade services	571102	Parts and supplies for machinery and equipment wholesaling	5.876
	573101	Building materials, paint, and hardware wholesaling	3.309
	579101	Other commodities wholesaling	1.881
	574101	Metals, minerals, and ores wholesaling	1.539
	576101	Paper and plastics products wholesaling	1.418
	572101	Furnishings wholesaling	0.629
	575101	Chemicals and allied products wholesaling	0.305
	578101	Food wholesaling	0.113
Metal treatment services	591102	Metal coating and allied services	0.380
	591101	Metal plating and polishing	0.235
	591103	Metal heat treating	0.190
Retail trade services	58D101	Hardware and building materials and supplies retailing	15.876
	58I101	Other merchandise retailing (partial)	1.988
	58E101	Major household appliance retailing	0.637
	58F102	Household fuels retailing	0.420
	58C101	Flooring and floor coverings retailing	0.037
	58H101	Book retailing	0.012
	582101	Health and beauty care retailing, including optical goods	0.009
	58G101	Cleaning supplies and paper products retailing	0.006
58B101	Furniture retailing	0.003	