Impact of Home Building and Remodeling on the U.S. Economy

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This article updates NAHB's estimates of the economic impact that residential construction has on the U.S. economy. These national estimates are designed for use when the impacts on all U.S. suppliers of goods and services to the construction industry—for example, manufacturers of building products—are of particular interest. The national estimates should not be used to try to analyze economic impacts confined to the state or local area where the housing is built. NAHB has a separate Local Economic Impact section on its web site for that.

The national estimates for 2014 include the following:

- Building an average single-family home: 2.97 jobs, $110,957 in taxes
- Building an average rental apartment: 1.13 jobs, $42,383 in taxes
- $100,000 spent on remodeling: 0.89 jobs, $29,779 in taxes

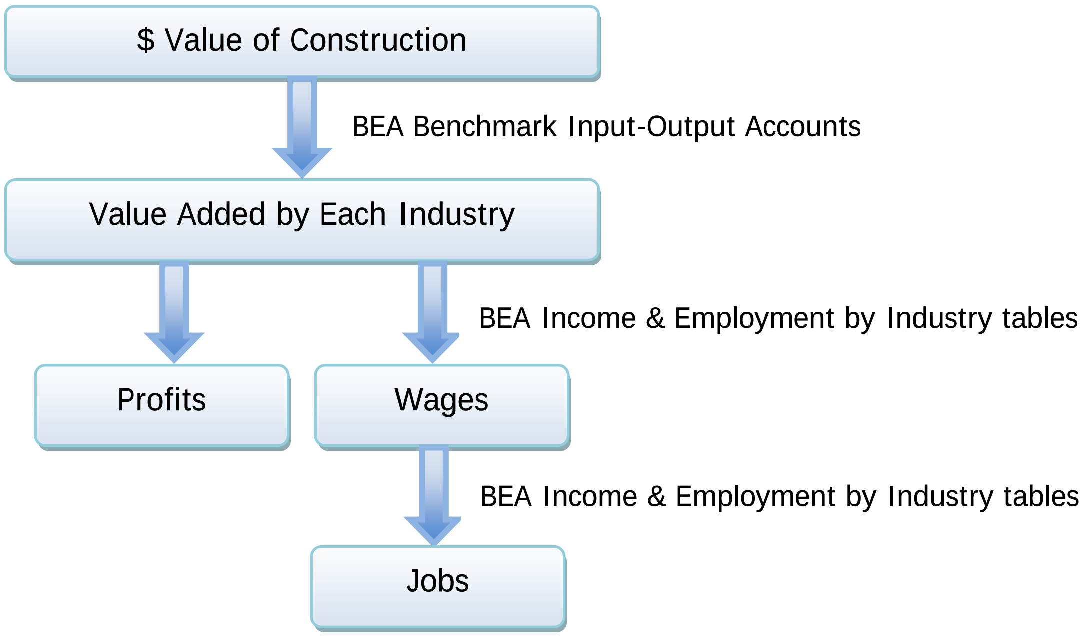
The jobs are given in full-time equivalents (full-time equivalent is enough work to keep one worker employed for a full year based on average hours worked per week in the relevant industry). The term taxes is used for revenue paid to all levels of government—federal, state, county, municipal, school district, etc. The tax estimates include various fees and charges, such as residential permit and impact fees.

The impact of a new housing unit depends on, among other things, the value of construction per unit. The first two sets of estimates are based on projections of the value of construction of average single-family homes and rental apartments that will be built in 2014. Details are provided in the following sections, which also describe the methodology used to generate the estimates, including data sources, and break down jobs by industry and government revenue by category of tax or fee.

Wages, Jobs and Profits by Industry

Probably the most obvious impacts of new construction are the jobs generated for construction workers. But, at the national level, the impact is broad-based, as jobs are generated in the industries that produce lumber, concrete, lighting fixtures, heating equipment, and other products that go into a home or remodeling project. Other jobs are generated in the process of transporting, storing and selling these projects. Still others are generated for professionals such as architects, engineers, real estate agents, lawyers, and accountants who provide services to home builders, home buyers, and remodelers.

Conceptually, estimating the effects in each industry is a fairly straightforward exercise in manipulating national accounts maintained by the U.S. Bureau of Economic Analysis, as the flow diagram below indicates:



In practice, the process is slightly more complicated than the diagram suggests, primarily because the industry categories BEA uses in the input-output accounts and income and employment by industry tables do not match up perfectly.

A key part of the process is inputting the dollar value of construction. Because this article is estimating impacts for calendar year 2014, the inputs are projected average construction values for new single-family homes and rental apartments that will be built during 2014. The projections are average construction value of $323,000 for single-family homes and $128,000 for multifamily rental apartments (equivalent to market value of $378,000 and $143,300, respectively). Details and data sources for these projections are given in the appendix. For remodeling, a construction value of $100,000 was chosen as convenient round number on roughly the same scale as construction value for a new housing unit.

The jobs, wages and salaries, and profits generated by these construction values are summarized in Table 1:

Table 1. Income/Employment Impacts of Residential Construction on the U.S. Economy

	Full Time Equivalent Jobs	Wages and Salaries	Profits Before Taxes		Wages and Profits Combined
			Proprietors	Corporations	
Per New Single-family Home:					
All industries	**2.97**	**$162,080**	**$61,273**	**$57,081**	**$280,433**
Construction	1.76	$95,875	$38,661	$16,965	$151,501
Manufacturing	0.37	$19,063	$1,679	$15,681	$36,422
Wholesale & retail trade, Transportation & warehousing	0.38	$16,721	$2,659	$7,772	$27,151
Finance and insurance	0.06	$5,202	$127	$3,759	$9,088
Real estate and rental and leasing	0.02	$1,289	$7,009	$1,738	$10,036
Professional, Management, Administrative services	0.21	$14,192	$3,964	$2,646	$20,802
Other	0.18	$9,738	$7,175	$8,520	$25,433
Per New Multifamily Rental Unit:					
All industries	**1.13**	**$60,877**	**$24,393**	**$22,445**	**$107,715**
Construction	0.68	$36,874	$17,949	$7,876	$62,699
Manufacturing	0.14	$7,747	$507	$6,153	$14,407
Wholesale & retail trade, Transportation & warehousing	0.17	$7,328	$1,179	$3,336	$11,843
Finance and insurance	0.01	$1,199	$33	$907	$2,139
Real estate and rental and leasing	0.01	$391	$1,333	$678	$2,402
Professional, Management, Administrative services	0.06	$4,204	$1,019	$646	$5,869
Other	0.06	$3,133	$2,373	$2,850	$8,357
Per $100,000 Spent on Remodeling:					
All industries	**0.89**	**$48,212**	**$17,975**	**$17,215**	**$83,402**
Construction	0.55	$29,975	$12,833	$5,631	$48,439
Manufacturing	0.10	$5,550	$434	$4,872	$10,855
Wholesale & retail trade, Transportation & warehousing	0.12	$5,371	$829	$2,432	$8,632
Finance and insurance	0.01	$990	$24	$577	$1,591
Real estate and rental and leasing	0.01	$308	$759	$602	$1,668
Professional, Management, Administrative services	0.05	$3,241	$742	$492	$4,475
Other	0.05	$2,779	$2,354	$2,610	$7,743

Source: NAHB estimates, as described in the text and appendix.

The estimates are based on total requirements from the input-output accounts, so they capture not only products and services of industries directly used in construction, but the indirect effect of products and services used by those industries as well. For convenience, the table shows detail for relatively broad industry categories.

At this level of detail, the largest share of wages and salaries are generated in the construction industry, followed by manufacturing, trade & transportation & warehousing, and professional & management & administrative services.

At a more granular level, within manufacturing, substantial shares of the wages are generated in many categories of wood products (led by wood kitchen cabinet and countertop manufacturing). Outside of wood products, the largest shares of the manufacturing jobs are generated in the production of concrete, and ornamental & architectural metal products.

Within trade & transportation & warehousing, the largest shares of wages are generated in retail trade, wholesale trade, and truck transportation. Within professional & management & administrative services, the largest share by far is in architectural and engineering services.

Note that, in the construction industry, profits of proprietors are 40 percent as large as wages and salaries. Included in this category of proprietors are subcontractors. In a recent NAHB survey, two-thirds of single-family builders said they subcontracted out more than 75 percent of their construction work. Often these subcontractors are quite small, even one-person operations. The Census Bureau's most recent (2011) statistics show 1.7 million specialty trade contractors without a payroll, who have average annual revenue of under $45,000. These subcontractors are not included in the jobs figures in Table 1; because, technically, the government doesn't classify the self-employed as having jobs, although most people would probably think of them that way.

On a percentage basis, self-employment is even more of an issue in the real estate industry, where proprietor profits are several times larger than the wages and salaries generated. This is because realtor offices are conventionally organized as a group of independent contractors, who again don't meet the government criteria for having jobs and earning wages.

Taxes and Other Forms of Government Revenue

The wages and salaries of workers shown in Table 1 are subject to federal, state, and sometimes local taxes. So are the profits of businesses, whether organized as proprietorships of corporations. Beyond this, many states collect sales taxes on material sold to home builders, and local jurisdictions typically charge fees for approving building permits and extending utility services.

The amount of tax and other revenue generated for governments by new residential construction is shown in Table 2.

Table 2. Impacts on Government Revenue

	Per New Single-family Home:	Per New Multi-family Rental Unit:	Per $100,000 Spent on Remodeling:
Total government revenue generate	**$110,957**	**$42,383**	**$29,779**
Federal	**$74,354**	**$28,375**	**$21,844**
Income taxes	$37,301	$14,215	$10,828
Government social insurance*	$35,333	$13,526	$10,512
Excise taxes and customs duties	$1,720	$634	$503
State and local	**$36,603**	**$14,008**	**$7,935**
Income taxes	$10,299	$3,925	$2,990
Permit, hook-up, impact, etc. fees	$13,672	$5,427	$1,250
Sales taxes	$6,922	$2,552	$2,025
Other business taxes & license fees	$5,710	$2,105	$1,670

Source: NAHB estimates, as described in the text and appendix.

At the federal level, income taxes include those paid by corporations, receivers of dividends from corporations, proprietors, and employees. Corporate income taxes paid and dividends are available by industry from the same series of BEA income and employment by industry tables shown in the above flow chart. Otherwise, federal income tax rates of 15.00% are applied to dividends, and 24.82% to proprietors income (which incorporates a downward adjustment because the self-employed component of social security taxes is deductible). Variable income tax rates are applied to wages and salaries, depending on the industry in which they're earned, that averages to 8.689%.

Government social insurance paid by employers (which includes social security, Medicare, and unemployment insurance) is also available directly from the income and employment by industry tables. Rates of 7.65% and 15.30% are applied to wages and salaries and proprietors' profits, respectively. Derivation of these rates is shown in the appendix.

The benchmark input-output tables also generate a category called taxes on production and imports (or TOPI) by industry. Most of this is sales and other taxes collected by state governments, but BEA's government current receipts and expenditures tables show that 10.5% of TOPI is collected by the federal government—all either some form of excise tax or customs duty. Although, relatively small, this is included in Table 2 for completeness.

State and local income tax revenue is estimated as 27.6% of the federal amount in table 2, based on the same BEA government receipt tables. These tables are also used to separate state and local sales tax receipts from other forms of TOPI, primarily various types of licenses and non-residential property taxes (although TOPI includes all property taxes and estimate for the residential component was subtracted). Residential property taxes are not include in Table 2, because these are one-time revenue impacts realized roughly in the same year construction takes place, and there is uncertainty and local variation in the difference between residential vs. non-residential property tax rates and when the later on the full property value would kick in.

Finally, permit, hook-up and impact fees are estimated as 3.567% of a for-sale single-family house price from NAHB estimates described in a previous article. The same percentage is applied to estimate local construction-related fees for custom-built single-family homes and rental apartments. For remodeling, a straight 1.25% permit fee based on the cost of the remodeling project is used, based on conversations between NAHB Economics and Housing Policy staff and NAHB Remodelers.

Final Remarks

This is the first time NAHB has updated its National Impact of Home Building estimates since 2008. For new construction, single-family or multifamily, the real estimated impacts—i.e., jobs—jobs per housing unit are approximately the same now as they were then. However, given the various assumptions that go into projecting construction value per home to the current year (explained in the appendix) along with the use of completely new federal estimates of what it takes to produce a dollar's worth of construction, little should be read into this. The nominal impacts—wages, profits & taxes—are higher now than they were in 2008, but this is to be expected, given six years of general inflation, changes in house prices (partially attributable to changes in home sizes and amenities), plus a few changes in methodology designed to make the new estimates slightly more comprehensive.

For remodeling, the nominal effects per $100,000 are roughly the same in both years, but the number of jobs reported in the table is lower in 2014. Again, this is simply the result of inflation—$100,000 doesn't buy quite as much of anything, including labor, in 2014 as it did in 2008.

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Appendix: Assumptions Used in the Calculations

A. Value of New Construction

- Average price of a single-family home built for sale in 2013: $318,308 (average of 12 months of mean new home prices from the Census series on New Residential Sales).
- Difference between price and construction value of a home built for sale: 15.8% (for raw land, landscaping, appliances, brokers fees, and marketing & finance costs. These are taken from the Census Bureau's Construction Methodology, where they are called non-construction cost factors).
- Average market value of a new custom home built in 2013: $476,260 (1.4 times the average price of a single-family home, with the ratio of 1.4 computed using microdata from the 2011 HUD/Census Bureau American Housing Survey) Custom built homes are defined to include both contractor-built and owner-built homes.
- Difference between market value and construction value of a custom built home: 12.0% (using Census non-construction cost factors for contractor built homes, plus assuming that the 10.6% for value of raw land for homes built for sale also applies).
- Share of new single-family homes built for sale: 75% (the rounded ratio from the Census Bureau's Housing Units Started by Purpose and Design for 2012).
- Average market value of a newly built rental apartment in 2012: $119,600 (median average asking rent for apartments completed in 2012 from the HUD/Census Bureau Survey of Market Absorption, divided by 11%, the median rent to value ratio from the HUD/Census Bureau Rental Housing Finance Survey).
- Inflation rates applied to market and construction value: 10.6% for 2013, 8.4% for 2014 (based on the National Case-Shiller and NAHB's forecast of it as of 1/30/2014).
- Treatment of non-construction cost factors. Except for raw land, NAHB adds the items that the Census Bureau subtracts from the price of single-family homes to arrive at construction back into the input-output accounts. Landscaping is added to the construction industry input; appliances to household cooking appliance manufacturing; brokers fees to a subset of the real estate sector that NAHB separated from the rest of real estate using data from the Census Bureau's 2007 Economic Census; half of finance & marketing to monetary authorities and depository credit intermediation, the other half to marketing research and other miscellaneous services.

- Other additions for single-family homes built for sale. Based on an analysis undertaken many years ago by HUD in conjunction with the Real Estate Settlement Procedures Act, NAHB adds approximately 0.5% of construction value to monetary authorities and depository credit intermediation; 0.1% to insurance agencies, brokerages, and related activities; and 0.3% to legal services, of insurance agencies, brokerages, and related activities to account for closing costs paid by the buyer (and therefore not directly embodied in the price of the home).
- Brokers fee for rental apartments 0.56% of construction value. NAHB discussions with brokers who sell multifamily properties indicate that the fee for a typical property is about 1.0% of the sale price. This is converted to a fraction of construction value and divided in two under the assumption that half of rental apartments are sold through brokers.

B. Federal Tax Rates

- Income tax rate on dividends: 15.00% (the statutory rate for qualified dividends that applies to most income brackets as of 2013).
- Base income tax rate on proprietors' profit: 26.46% (the effective rate paid by individual taxpayers with businesses income calculated from the IRS 2008 Statistics of Income), reduced by 1.64% to account for the fact that the extra 6.20% the self-employed pay in Social Security taxes is deductible).
- The SOI is also used to calculate a series of effective federal income tax rates based on annual income. These rates are applied to the average wage in each industry in the input-output accounts. The effective income tax rates range from 5.30% for employees of restaurants to restaurant workers to 19.70% for employees of certain financial investment businesses, and average 8.69% when aggregate tax payments are divided by aggregate wages and salaries across all industries.
- Employee contribution to social security is 6.20% of wages and salaries, the current statutory rate that applies up to wage income up to about $110,000. Employee Medicare payment is the statutory rate of 1.45%. Due to a provision in the Affordable Health Care Act, those with incomes above $200,000 now pay an additional 0.9%, but we assume this and the social security cut-off roughly offset, so the total employee contribution for government social insurance is 7.65% of wages. Proprietors contribution is double this rate, or 15.30%, of their profits.