



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

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Introduction

Residential construction - including the building of new structures as well as the remodeling of existing ones - has direct, positive impacts on the U.S. economy. The most obvious impacts are the work opportunities created in the housing industry, as well as in other industries that provide products or services to home builders and buyers. Workers are employed to directly engage in the construction activity. Jobs are generated in the industries where lumber, concrete, lighting fixtures, heating equipment, and other products that go into a home are produced. More jobs are created when real estate agents, lawyers, and brokers provide services to home builders and home buyers.

Other economic impacts include the revenues generated for federal and local governments. The incomes of workers are subject to federal, state and Social Security taxes. Profits made by the business owners are similarly taxed. Beyond this, states often impose sales taxes on material sold to home builders, and many local jurisdictions levy fees for approving building permits and extending utility services.

This article estimates the direct economic impacts of new residential construction and remodeling at the national level, which includes the number of jobs and income created, as well as the amount of government revenue generated. These estimates are based on national averages and are designed to capture the impacts of home building on the aggregate economy.

In 2008, NAHB estimates that the impacts include the following:

- 3.05 jobs and \$89,216 in taxes (from building an average new single family home).
- 1.16 jobs and \$33,494 in taxes (from building an average new multifamily rental unit).
- 1.11 jobs and \$30,217 in taxes (from \$100,000 spent on residential remodeling).

As used here, taxes are a shorthand for government revenue from all sources, including construction-related fees imposed by local governments.

Two previous articles have reported national impact estimates for average home building and representative remodeling jobs undertaken in 2005.[1] This article updates the

statistics and makes several improvements in the methodology. In particular, it uses average 2008 home values as inputs, employs government estimates of residential construction technology that are five years more current, distinguishes between condominiums and rental apartments, takes average differences between custom and built-for-sale single family homes into account, and takes additional steps to account for items like landscaping, that are directly attributable to construction, but are sometimes not treated as part of a new home in federal government statistics.

Value of Residential Construction in 2008

The employment and income impacts reported here are based on the dollar value of construction. For new construction, we look at average housing units built in 2008. The value of construction for these new units is not the same as their final sale price (or for multifamily rental units, the market value of the entire project prorated to individual units), as the market price of a building incorporates the value of raw land. The creation of raw land does not require labor, and so should not be counted as a construction activity that generates jobs. However, all of the work involved in developing and preparing a lot to build on does require conventional construction labor and therefore is properly counted as part of construction.

New homes can be separated into homes built for sale, and “custom” homes built on a customer's lot (where the owner of the new home may either function as a general contractor or hire a general contractor), which do not technically go through the process of a sale. The single family impact estimates reported in this study are based on an average of for-sale and custom homes. The accounting of the two types of single family construction are somewhat different.

The Census Bureau provides estimates of the prices of new for-sale homes. Adjusting the most recent Census estimate for inflation using NAHB's forecast of the OFHEO repeat home sales index,[2] we estimate that the average price of a new home sold in 2008 is roughly \$302,000. Based on a ratio derived from the American Housing Survey, the average market value of new custom homes built in 2008 would be about \$380,000.[3] Using evidence from surveys it has conducted, the Census Bureau subtracts 10.6 percent of the price of new built-for-sale home to account for the value of raw land. Because this is the only available estimate of embedded raw land value that is supported by data, the 10.6 percent factor is applied consistently to derive construction value from the final price or market value of new housing units, irrespective of the type of construction.

The estimate of 3.05 full-time jobs for an average new single family home built in 2008 is based on a weighted average of construction value for an average for-sale home and an average custom home. The weights are three-quarters for the for-sale home and one-quarter for the custom home, reflecting the market shares that have prevailed recently.[4]

Multifamily construction can generally be separated into three main components—market rate rental, subsidized rental (most often financed with Low-Income Housing Tax Credits, sometimes in combination with another program, such as tax-exempt multifamily bonds), and condominiums. There is no reason to think that the average construction values for market-rate and subsidized rental units differ drastically. Indeed, a goal of rental housing programs is to provide market-rate quality units to qualified tenants at

below market-rate rents.

The estimate of 1.16 full-time jobs is based on an average new rental apartment with a market value of about \$116,000. This is based on asking rents reported in the Survey of Market Absorption and the relationship between rents and value for relatively new units in the Residential Finance Survey.[5] Because the rent data are available with a lag, they are brought forward to 2008 using NAHB's forecast of core inflation (which excludes the traditionally volatile and seasonal energy and food price components).

Average market value of multifamily condos tends to be substantially higher, and condos are judged to be too distinct of a market segment to be averaged in with rental units. Separate estimate for the economic impact of condominiums will appear in publications produced by NAHB's multifamily council.

For remodeling, it has proved difficult to define a typical or average remodeling job. We therefore estimate the impacts of \$100,000 worth of construction activity as a convenient round number that falls within the range of some of the larger individual remodeling projects.

What the Government Doesn't Count

To estimate the number of jobs created, wages and salaries, and other incomes generated from the housing industry, we use primarily industry accounts published by the U.S. Bureau of Economic Analysis (BEA). This is also the accounting system that is used to produce official estimates of Gross Domestic Product (GDP).

Some key accounts used to generate the estimates are "input-output" accounts, which divide the value of residential construction into inputs and "value added." These numbers are produced by BEA specifically for the purpose of assessing the impact of a particular industry on the U.S. economy. Value added is itself broken into several components, including compensation of employees, taxes on production and imports, and gross operating surplus. Other BEA accounts can be used to turn these components into wages, jobs, proprietors' income and corporate profits.

The BEA accounts include estimates of the technology (input from other industries) needed to produce a certain dollar value of residential construction. The dollar value of residential construction BEA uses in its estimates comes primarily from the Census Bureau. In addition to subtracting the value of raw land, the Census Bureau makes several other adjustments to the price of a home before it passes the numbers over to BEA. For new homes built for sale, the Census Bureau subtracts estimated value of landscaping (1.1 percent of the final price), appliances (0.5 percent), realtor/brokers fees (2.9 percent), and marketing/finance costs (2.7 percent). This is summarized in Table 1. The table also shows differences between for-sale and custom homes.

It may seem strange that the government does not treat items such as landscaping and appliances as part of single family home construction. Nor are marketing and finance costs subtracted from the price of products in other industries in the government's accounting system. NAHB, in fact, meets with the Census Bureau and BEA to discuss these and other issues on a regular basis.

The subtracted items, such as landscaping and realtor/brokers services, do help gen-

erate jobs and revenues for the U.S. economy, and they also represent activities that would not occur were the homes not built. Therefore, we need to add these percentages back to the inputs (from other industries) needed to produce a certain dollar value of residential construction. Otherwise, the economic impact attributable to residential construction could be underestimated.

We therefore adjust the government's estimates of the inputs needed to generate a for-sale single family home as follows: add 1.1 percent to the residential construction industry to account for landscaping; 0.5 percent to the electrical equipment and appliances industry; 2.9 percent to the real estate industry (for realtor/broker fees); and split the 2.7 percent of marketing/finance costs, adding half of it to the Federal Reserve, banks, and credit intermediation industry, and the other half to the miscellaneous professional, scientific, and technical services industry.[6]

We make similar adjustments, based on the percentages in Table 1, to account for landscaping and appliances in new custom homes.

For multifamily rental, we add 1.12 percent on brokers' fees back to the real estate industry based on NAHB discussions with brokers who sell multifamily properties. For remodeling, we simply use the original BEA estimates (no adjustment).

The inputs needed for building a single family or multifamily home are also the outputs from other industries. The amount of outputs produced in each industry is then translated into the number of jobs created, wages and profit generated in each industry using mostly data from BEA. Details of the model used to estimate national economic impacts of home building have been described in the 2005 article in *Housing Economics*. [1]

Jobs and Income by Industry

Table 2 shows the number of jobs, wages and salaries, and other incomes generated from building an average single family home, a multifamily rental unit and \$100,000 spent on remodeling. The jobs are expressed in "full time equivalents", where one full-time job means that the labor required is sufficient to keep one worker employed full time for one year.

Across all industries, 3.05 jobs are created by building an average single family home. About half of the full-time jobs created are in the construction industry. Other jobs are spread over other industries with manufacturing ranking second.

In construction, there are many small businesses with no payroll that are not technically counted as construction jobs, although many people would probably think of them as such. These small self-employers receive income in the form of proprietors' income, or corporate profits depending on the legal structure of the business.

Note that, in the real estate industry, only 0.02 jobs are generated by building an average single family home, and 0.01 jobs by building a multifamily rental unit—despite being careful to account for broker and realtor fees in this category. Wages and salaries earned in the real estate industry are much smaller than the proprietors' income because the real estate agents and brokers often work under contract and are not therefore technically counted as employees of some business. Therefore, their incomes, which some may consider analogous to wages, appear mainly in the form of proprietors' in-

come.

Residential remodeling often includes activities such as completely replacing siding, roofing, plumbing, windows, doors, electrical systems, and heating and air conditioning systems; as well as adding rooms, finishing basements and attics, and upgrading kitchens and bathrooms. Building outside structures such as garages, decks, patios, and fences is also included.

Table 2 shows that \$100,000 spent on remodeling generates 1.11 (full-time equivalent) jobs across all industries. Most of the jobs are generated in construction and manufacturing, but transportation and other business services account for substantial shares as well. Again, there are many small businesses in the remodeling and home improvement industry with no payroll that technically do not count as jobs.

The round number of \$100,000 was chosen to facilitate scaling the numbers to a larger or smaller dollar amount with relatively little trouble. To estimate expenditures other than \$100,000 worth of home improvement activities, it is legitimate to multiply all the impact estimates by a constant factor. For example, a \$50,000 home improvement job can be estimated by dividing the numbers in half.

Government Revenue Generated

As noted above, government revenues are generated from building or remodeling a home. Many of the revenues are in the form of taxes—federal, state and Social Security taxes from workers who earn income; tax on the profits made by the business owners; sales taxes on material sold to home builders. In addition, many local jurisdictions levy fees for approving building permits and extending utility services.

The amount of tax and other revenue generated for government is shown in Table 3. At the federal, state and local levels combined, the table shows that building an average single family unit generates \$89,216, building an average multifamily rental unit generates \$33,494, and \$100,000 spent on remodeling generates \$30,217 in taxes and other government revenue.

Federal income taxes and Social Security taxes account for the largest share of the government revenues for all three types of construction activities. For state and local government revenues, the construction-related fees are more likely to be the largest share.

The estimates of taxes from the wages, salaries, and business profits are based on effective tax rates calculated using Internal Revenue Service (IRS) data. The average effective rates work out to be 8.1 percent for federal income taxes and 2.1 percent for state and local income taxes. For businesses, whether proprietorships or corporations, effective rates are 35.0 percent at federal level. The state and local tax rate is 9.1 percent for proprietors' income, and 6.4 percent for corporate profits.

Sales taxes and construction-related fees on the average new home are estimated using construction cost breakdowns from Professional Builder's "Giants" (400 large home building firms) published in April of 2004. According to the Professional Builder breakdown, materials account for about 36 percent of the construction value of a new home. An effective average sales tax rate of 5.4 percent is derived from aggregate BEA accounts and applied to this 36 percent. So the state and local sales tax rate is estimated

to be 1.9 percent of construction value.

Final Remarks

All the numbers reported in this article show the national impact of home building and remodeling activity—numbers that are intended to be useful in discussions about national economic conditions. In the recent housing downturn, for example, the numbers reported can be used to show how many jobs in various industries are lost when fewer homes are built, and how many could be created or restored if residential construction were to rebound. Employment and tax impacts of home building can also be useful when arguing in support of housing stimulus measures, such as the recently enacted Housing and Economic Recovery Act, which included a landmark \$7,500 tax credit for first-time home buyers.

NAHB does not recommend attempting to adjust national impact numbers in an attempt to draw conclusions about state or local economies. NAHB has separate models to estimate the impacts of home building at the state or local level, and the information is readily accessible on the “[Local Economic Impact of Home Building](#)” section of NAHB’s web site.

Moreover, the national economic impacts analyzed in this article include only items included in the price of the home. It is also possible that the purchase of a home induces purchases of other goods not included in the price of the home - furniture or certain types of home appliances, for example. This will be the subject of a future article.

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Footnotes:

[1] Emrath, Paul. January 2006. [Economic Impact of Remodeling](#). Housing Economics. Emrath, Paul. August 2005. “[Home Building’s Direct Impact on the U.S. Economy](#)”. Housing Economics.

[2] <http://www.oftheo.gov/HPI.aspx>

[3] The ratio equals to average value of a new custom single family home divided by average value of a new single family for sale home using 2005 American Housing Survey (AHS) data. The AHS is conducted by the Census Bureau and funded by the Department of Housing and Urban Development.

[4] http://www.census.gov/const/www/quarterly_starts_completions.pdf

[5] Both of these surveys were financed by the Department of Housing and Urban Development (HUD) and conducted by the Census Bureau. The Residential Finance Survey has been conducted as part of a decennial Census. It was last done in 2001. There are no current plans to conduct it again; and, given recent budget cutbacks, no possible source of funding has been identified. HUD recently announced plans to discontinue the Survey of Market Absorption, but this decision was overturned by a letter writing campaign organized by NAHB.

[6] In the government industry accounts, there is no single industry that covers both marketing and finance services. Therefore, we simply split the 2.7 percent in half and allocate each half into the closest industries.

Table 1. How the Government Converts House Prices to Value of Construction

	For-Sale Homes	Custom Homes
Sales/contract price	100.0%	100.0%
Subtractions from Price		
Raw land	10.6%	N/A
Landscaping	1.1%	0.7%
Appliances	0.5%	0.7%
Realtor/brokers fees	2.9%	N/A
Marketing/finance costs	2.7%	N/A
Additions to Price		
Revision to price	2.0%	6.1%
Additional lot development	*	5.5%
Factor to determine construction cost	84.2%	110.2%

* Additional lot development is not shown for sales cases since the amount was deducted from the cost of the lot to arrive at the cost of raw land.

Source: U.S. Census Bureau.

Table 2. Income and Employment Impacts of New Residential Construction and Remodeling on the U.S. Economy in 2008

	Number of Full-time Jobs	Wages and Salaries	Proprietors' Income	Corporate Profits	Total Income
<i>Average New Single Family Home</i>					
All industries	3.05	\$145,422	\$40,615	\$45,251	\$231,288
Construction	1.47	\$69,953	\$18,056	\$11,576	\$99,585
Manufacturing	0.48	\$22,304	\$2,240	\$12,526	\$37,070
Wholesale and retail, Transportation and warehousing	0.44	\$17,423	\$2,299	\$6,251	\$25,973
Finance and insurance	0.06	\$4,619	\$229	\$4,837	\$9,685
Real estate and rental and leasing	0.02	\$1,014	\$7,053	\$2,161	\$10,228
Professional, Management, administrative services	0.33	\$19,823	\$6,343	\$2,216	\$28,382
Other services	0.25	\$10,286	\$4,396	\$5,684	\$20,366
<i>Average New Multifamily Rental Unit</i>					
All industries	1.16	\$54,938	\$14,928	\$16,843	\$86,709
Construction	0.56	\$26,638	\$6,876	\$4,408	\$37,922
Manufacturing	0.18	\$8,475	\$858	\$4,718	\$14,051
Wholesale and retail, Transportation and warehousing	0.17	\$6,700	\$884	\$2,403	\$9,987
Finance and insurance	0.02	\$1,548	\$74	\$1,520	\$3,142
Real estate and rental and leasing	0.01	\$362	\$2,264	\$812	\$3,438
Professional, Management, administrative services	0.12	\$7,260	\$2,282	\$796	\$10,338
Other services	0.09	\$3,955	\$1,690	\$2,186	\$7,831
<i>\$100,000 Spent on Remodeling</i>					
All industries	1.11	\$52,709	\$13,810	\$16,147	\$82,667
Construction	0.54	\$25,573	\$6,601	\$4,232	\$36,406
Manufacturing	0.18	\$8,136	\$824	\$4,529	\$13,489
Wholesale and retail, Transportation and warehousing	0.16	\$6,432	\$849	\$2,307	\$9,588
Finance and insurance	0.02	\$1,487	\$71	\$1,459	\$3,017
Real estate and rental and leasing	0.01	\$315	\$1,652	\$758	\$2,725
Professional, Management, administrative services	0.12	\$6,970	\$2,191	\$764	\$9,924
Other services	0.09	\$3,797	\$1,623	\$2,098	\$7,518

Source: NAHB estimates, based primarily on the data from the U.S. Bureau of Economic Analysis.

Table 3. Fiscal Impacts of of New Residential Construction and Remodeling in 2008

	Average New Single Family Home	Average New Multifamily Rental Unit	\$100,000 of Remodeling
Total government revenue generated	\$89,216	\$33,494	\$30,217
Federal	\$66,467	\$24,867	\$23,656
Income taxes paid by employees	\$11,791	\$4,452	\$4,271
Income taxes paid by businesses	\$30,053	\$11,120	\$10,485
Social security taxes	\$22,414	\$8,468	\$8,124
Taxes on production & imports	\$2,209	\$828	\$776
State and local	\$22,749	\$8,628	\$6,561
Sales taxes	\$5,169	\$1,987	\$1,908
Income taxes paid by employees	\$3,080	\$1,163	\$1,116
Income taxes paid by businesses	\$6,586	\$2,434	\$2,288
Permit, hook-up, impact, etc. fees	\$7,915	\$3,043	\$1,250

Source: NAHB estimates, based primarily on the data from the U.S. Bureau of Economic Analysis.