



# Housing Cost Calculator Technical Notes

## Data Sources

The Office of Federal Housing Enterprise Oversight (OFHEO) produces a quarterly time series on home prices. The Housing Price Index (HPI) for all Metropolitan Statistical Areas (MSAs) are available online at <http://www.ofheo.gov/download.asp>. An Excel spreadsheet containing the HPI for 1Q 2005 may be found at [http://www.ofheo.gov/media/pdf/hpimsa\\_05q1.xls](http://www.ofheo.gov/media/pdf/hpimsa_05q1.xls).

The Bureau of Labor Statistics (BLS) produces monthly data on consumer prices. The Consumer Price Index (CPI) less shelter is available online at <http://data.bls.gov/cgi-bin/srgate> by entering series id CUUR0000SA0L2.

The current default market rate on a 30-year fixed mortgage is taken from the Mortgage Bankers Association at <http://www.mortgagebankers.org>.

Projections for consumer prices and Treasury bond rates are available from the Congressional Budget Office (CBO) in the Current Economic Projections. The most recent projections were published in January 2005 and are available at <http://www.cbo.gov/showdoc.cfm?index=1824&sequence=0>.

## Methodology

### Home prices

For each MSA, we computed the real appreciation in home prices since 1Q 1997. We did this by taking the 1Q 2005 HPI over the 1Q 1997 HPI for each MSA, each deflated by the CPI less shelter over the quarter. The calculator assumes that real home prices in each MSA will fall by the amount of real appreciation over the period of ownership.

### Mortgage rates

The current default fixed rate on a 30-year mortgage is assumed to be 5.58%, compared to a 4.8% bond rate according to CBO. This 0.78% premium is applied to each year's CBO bond rate to obtain a ceiling on variable rate mortgages. Starting with the initial rate input, the current variable rate on mortgages will rise every year by at most 1 percentage point, up to the ceiling.

### **Mortgage deduction**

If the user indicates he or she will itemize deductions, then each year's paid interest will be multiplied by the users chosen income tax rate to estimate the value of that year's mortgage deduction.

### **Other homeowner expenses**

The user specifies the down payment on the home. Initial fees on the purchase total 4% of the purchase price of the home. Maintenance and insurance costs total 1/12 of 1% of the purchase price of the home per month. Taxes total 0.5% of the purchase price of the home each year, less any tax deductions. Closing costs at time of sale total 6% of the sale price of the home.

### **Rental expenses**

Rental costs are at first computed per-initial dollar of monthly rent. A one-month security deposit is assumed, to be returned at the end of the period considered. Rent prices rise each year along with inflation.

### **Cost-equivalent rent**

Both the costs of owning a home and renting are computed at a discount rate equal to that of the CBO bond rate. All expenses, including the down payment, closing costs, remaining principal on the mortgage, and (for rent) security deposit are included. The discounted sale price of the home is deducted from the cost of owning. The total discount price of owning is divided by the discounted per-initial-dollar cost of renting to arrive at a cost-equivalent rent. That is, the discounted cost of renting at the cost-equivalent rental rate equals the discounted cost of owning.

### **Timing of payments**

Rent is applied at the start of each month. Maintenance, insurance, and mortgage payments at the end. Taxes are paid at the end of each year.

### **Additional Notes**

#### **Assumed rent**

While the cost-equivalent rent is the monthly rent which results in no net savings to the renter, the cost of owning is based on annual rent equal to 1/14th the purchase price of the home. Because the run-up in housing prices has not been associated with a run-up in rent, the assumed rent is likely higher than the local market rate. Thus, this rent assumption likely underestimates the cost of owning.

### **Implied interest**

Based on the assumed rental rate, the monthly differences in cost between renting and owning are assumed to go toward savings (if the month's rental costs is lower) or drawing down on savings (if the month's rental costs are higher.) Savings accumulate interest at the annual rate assumed by CBO. The total savings at the time of the sale of the home will be counted as an additional cost of homeownership. The interest on savings is reported as the real total savings just before closing, less any real deposits made.

### **Net cost of owning**

The net cost of owning a home is the real savings accumulated by a renter over the specified period, plus the return of a security deposit, closing costs, mortgage remaining, and less the sale price of the home. It therefore reflects the additional cash available at the time of sale to a renter over that of a homeowner.