











What Determines the Price of

Shelter?

- Amenities of the house size, etc.
- Location premium



- Nice neighborhoodsLow crime rate
- Proximity to work
- Housing price is ultimately determined by demand and supply.
 - The higher the demand, and the lower the supply, the higher the price. New York Manhattan prices are so high because a lot of people want to live there.
 - Demand and supply are partly determined by amenities and location.



One-Time Costs of Home Ownership

- Closing costs: include such expenditures as loan origination fees, survey fees, lawyer fees, and advance tax and insurance payments. They are generally in the neighborhood of 3-4% of the loan amount. It can be much less if you choose a no-cost loan, but then the interest rate will be higher.
- Down payment: 20% of the housing price is usually a good idea as that will allow you to not have to pay private mortgage insurance, which often can cost \$100 a month. Zero down may be available, but one pays a much higher interest rate.
- Selling costs: Fees you will have to pay to a real estate agent. Usually it is 6% of the selling price, although you might be able to negotiate a lower fee.













Month 1	Inter-	Princi-	Balance	Month 1	Inter-	Princi-	Balancy
of year	est	pal		of year	est	pal	
T	1,200.00	87.40	159,912.60	17	920.50	366.90	122,366.46
2	1,191.80	95.59	158,811.29	18	886.08	401.31	117,743.06
3	1,182.83	104.56	157,606.67	19	848.44	438.96	112,685.95
4	1,173.03	114.37	156,289.04	20	807.26	480.14	107,154.45
5	1,162.30	125.10	154,847.81	21	762.22	525.18	101,104.06
6	1,150.56	136.83	153,271.38	22	712.95	574.44	94,486.10
7	1,137.73	149.67	151,547.08	23	659.07	628.33	87,247.32
8	1,124.90	162.49	149,824.73	24	600.13	687.27	79,329.51
9	1,108.33	179.07	147,598.04	25	535.66	751.74	70,668.94
10	1,091.53	195.87	145,341.53	26	465.14	822.26	61,195.96
11	1,073.16	214.24	142,873.35	27	388.00	899.39	50,834.34
12	1,053.06	234.34	140,173.64	28	303.63	983.76	39,500.73
13	1,031.08	256.32	137,220.67	29	211.35	1,076.05	27,103.96
14	1,007.03	280.36	133,990.70	30	110.41	1,176.99	13,544.28
15	980.73	306.66	130,457.73	Month			
16	951.97	335.43	126,593.35	360	9.58	1,277.81	0.00





- Property taxes: Property taxes are paid to the local government. Usually monthly payments are paid to the mortgage company so the mortgage company can hold the money in an escrow account to pay property tax.
- Hazard insurance: Homeowners insurance often is also paid as monthly payment to the mortgage company in an escrow account.
- Operating and maintenance costs: heating, cooling, electricity, repairs, etc.

Factors Reducing Homeownership Costs - Tax Deductions

• What expenses are tax-deductible?

- The interest paid on a mortgage loan
- Property taxes
- To claim tax benefits one must use itemized deduction instead of standard deduction.
 - Two tax concepts we need to know
 - Standard deduction vs. itemized deduction
 - Marginal tax rate

Standard Deduction vs. Itemized Deduction • Every American taxpayer must choose to either itemize or take a standard deduction when filing tax return.

- Itemizing will allow the homeowner to deduct several expenses from his adjusted gross income before calculating the income tax owed. The most significant itemized deductions are mortgage interest, property tax, state income taxes, and charitable contributions.
- If a taxpayer chooses not to itemize, s/he receives a standard deduction. In 2012, the standard deduction for a single person was \$5,950. The standard deduction for a married couple filing jointly was \$11,900.

)12F	edera	I Marg	inal Tax	<pre> Rate</pre>
		Ŭ		
	Single	Married -	Head of	Married
	Single	Joint	Household	Separate
10%	0 - 8,700	0 - 17,400	0 - 12,400	0 - 8,700
· =04	8,700 -	8,700 - 35,350 17,400 - 70,700	12,400 - 47,350	8,700 -
1570	35,350			35,350
2=0%	35,350 -	70,700 -	47,350- 122,300	35,350 -
2570	85,650	142,700		71,350
28 0%	85,650 -	142,700 -	122,300 -	71,350 -
2070	178,650	217,450	198,050	108,725
220%	178,650 -	217,450 -	198,050 -	108,725 -
3370	388,350	388,350	388,350	194,175
a=0/	388,350 and	388,350 and	388,350 and	194,175 and
35%	Up	Up	Up	Op

Annual Value of Homeownership Tax Deduction • Homeowner tax benefit = marginal tax rate * (annual interest paid on mortgage loan + annual property taxes -standard deduction) • However, in many cases the tax benefit is larger than the above formula shows. The above formula provides

the above formula shows. The above formula provides a conservative estimate of homeownership tax benefit.





Annual Rate of Appreciation

- Below is an example of how to compute the rate of appreciation
 - An example
 - Initial house price = \$200,000
 - Selling price after 5 years = \$230,000
 - 200,000*(1+appreciation rate)^5=230,000
 - Annual appreciation rate = (230000/200000)^(1/5) -1 = 2.8347\%
- General formula for home appreciation=
- (selling price/purchasing price)^(1/n) -1
- where n=number of years one has the house.

How Good of an Investment Is a Home?

 One needs to be very careful about what statistics are used. The news media often quotes statistics on home appreciation rates that are mostly comparisons of prices of houses that were sold this year compared to last year. These statistics are like comparing apples to oranges because the houses sold are quite different from one year to another. For an example of such statistics see http://extras.sltrib.com/homeprices/

The Better Way – Housing Price Index (HPI)

- The HPI is published by the Office of Federal Housing Enterprise Oversight (OFHEO). The HPI is a broad measure of the movement of single-family house prices. It serves as a timely, accurate indicator of house price trends at various geographic levels.
- The HPI includes house price figures for the nine Census Bureau divisions, 50 states and the District of Columbia, and many Metropolitan Statistical Areas (MSAs) and Divisions.
- A weighted average index figure for the United States as a whole is also included.

Historical HPI for the U.S.

Year	HPI	Year	HP
1991	100	2002	156.44
1992	102.20	2003	168.5
1993	103.92	2004	182.6
1994	107.76	2005	201.6
1995	110.61	2006	220.3
1996	113.92	2007	225.2
1997	116.84	2008	213.7
1998	121.47	2009	197.03
1999	128.70	2010	191.5
2000	137.05	2011	181.0
2001	146.78	2012	182.20

The base is set to be 1991 at 100. For 2012 Q1, the index was 182.20. This means, housing prices in the U.S. in 2012 Q1 is about 1.822 times the prices in 1991. The interpretation of HPI is the same as the interpretation of Consumer Price Index (CPI)

For more information see http://www.fhfa.gov/Defa ult.aspx?Page=87

What is the Annual Housing Appreciation Rate in the U.S. from 1991 to 2012? • From the Table on the previous page we know • 1991 HPI = 100, 2012 HPI=182.20 • Denote • a=annual appreciation rate • n=number of years, in this case 21 years

- Answer:
 - a=(182.20/100)^(1/n)-1=(182.20/100)^(1/21)-1=2.898%

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What is the Annual Housing Appreciation Rate in Utah from 1991 to

2012?

- From the Table on the previous page we know • 1991 HPI = 100, 2012 HPI= 248
- Denote
 - a=annual appreciation rate
 - n=number of years, in this case 21 years
- Answer:
 - $a=(248/100)^{(1/n)}-1=(248/100)^{(1/21)}-1=4.42\%$

© Original Artist Reproduction rights obtainable from GENT www.CartoonStock.com 13 = 1=1 = 意 --ORRIS G "I dld have a house at that price but I sold it back in 1978."