

### Fannie Mae Own-Rent Analysis

Theme 3: Economics of Owning and Renting
Through the Cycle and Across Geographies





#### **Overview of Fannie Mae Own-Rent Analysis**

#### **Objective**

 Fannie Mae conducted a research project to understand better the factors influencing consumers' decisions to buy or to rent their homes and to compare current actions and financial considerations with historic behaviors and economic factors/conditions

#### Methodology

- As part of the work, Penn Schoen Berland, in partnership with Oliver Wyman, conducted telephone interviews with 2,041 general respondents plus 1,566 additional respondents from geographic areas of interest
  - To inform the survey design, focus groups were held in Washington, DC and Phoenix,
     Arizona during July and August 2010
  - Telephone interviews were carried out during August and September 2010
- In addition to the survey, research was conducted in order to evaluate the survey findings comparatively with historical market experience

#### **Results**

- The research results are being disclosed in a series of summary themed reports
- This is the third themed report: Economics of Owning and Renting Through the Cycle and Across Geographies



The complexity of analyzing the economic and lifestyle aspects of homeownership makes it difficult to fully evaluate the true costs and benefits

- Affordability of homeownership has shifted substantially over time and across geographies, but the survey findings indicate that attitudes toward homeownership remain positive despite the recent experience of the housing crisis
  - Affordability of home prices relative to rents and relative to income have shifted substantially during the
    latest housing cycle. For example, price-rent ratios exceeded 20:1 in 50 Metropolitan Statistical Areas
    (MSA) in 2006 compared with one MSA in 2009, meaning that homeownership is relatively affordable in
    many geographies at present
  - When considering the full economic cost of owning and renting across different cities since 1990, the time
    it takes for owning to surpass renting as the superior economic choice has fluctuated substantially from
    under one year to over 20 years
  - The cities of Cleveland, Ohio; Phoenix, Arizona; and Seattle, Washington have many similarities in attitudes and behaviors toward homeownership despite very different experiences during the housing bubble and crisis
- Homeownership is not particularly responsive to movements in affordability in the short term for a variety of reasons
  - People value the lifestyle aspects of ownership as well as the financial aspects which stabilizes demand despite variations in affordability
  - Weaknesses in financial literacy have the potential to fuel misconceptions regarding the favorability of the economics of homeownership which may buoy demand even when affordability is low
  - Insight into future affordability is extremely difficult, requiring both detailed assumptions and sophisticated analysis
  - Finally, affordable housing may still be out of reach for many people due to tighter credit standards and limited access to housing finance post-housing bubble



Theme 3: Economics of Owning and Renting Through the Cycle and Across Geographies

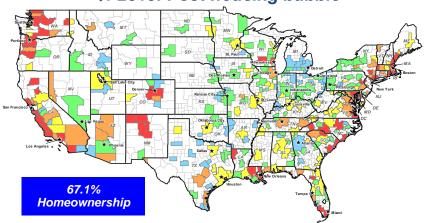
Price-Income Ratio: By Q1 2010, affordability had come down from the peak of 2005 and returned to pre-bubble levels similar to 2000

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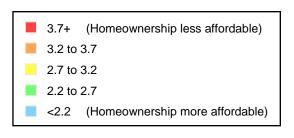
Q4 2005: During housing bubble

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Q1 2010: Post-housing bubble



#### Price-Income Legend

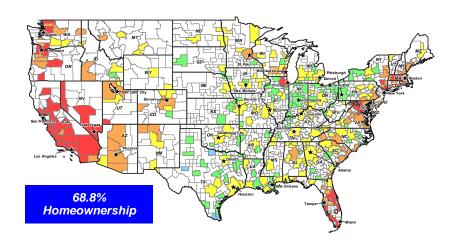


Sources: Median sale prices for existing single-family homes from National Association of REALTORS® and Moody's Analytics estimates, and median household income from U.S. Census and Moody's Analytics estimates. See appendix for additional methodology.

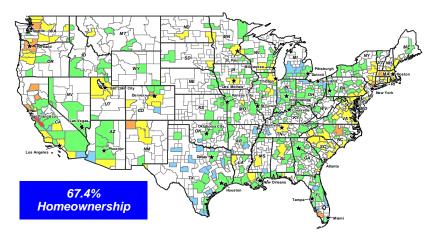


Price-Rent Ratio: Affordability of owning relative to renting improved dramatically across the country from the height of the bubble to 2009

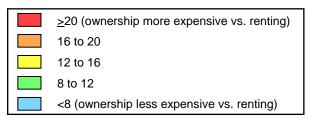
#### 2006: During housing bubble



#### 2009: Post-housing bubble



#### Price-Rent Legend

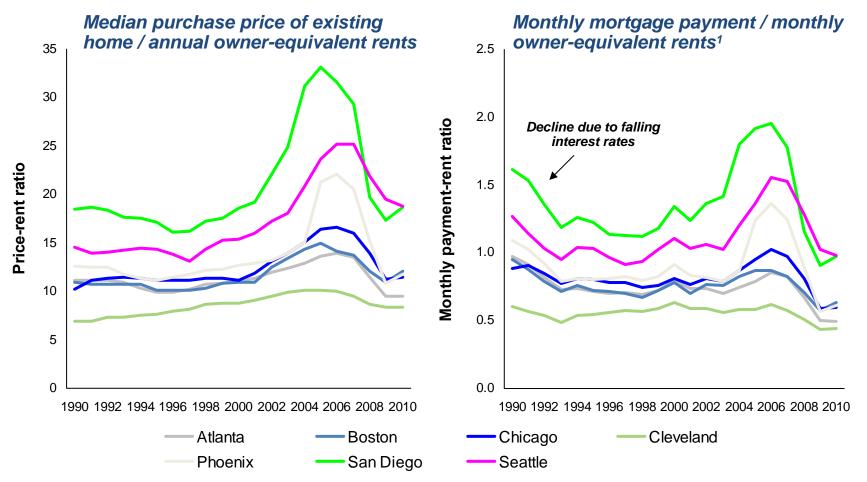


Sources: Median sale prices for existing single-family homes from National Association of REALTORS® and Moody's Analytics estimates. Rents are 3-bedroom 50th percentile rents from U.S. Department of Housing and Urban Development. See appendix for additional methodology.



Theme 3: Economics of Owning and Renting Through the Cycle and Across Geographies

The ratio of the median home price to the calculated owner-equivalent rents clearly reflect post-bubble improvements in affordability of homeownership



Source: Median sale prices for existing single-family homes from National Association of REALTORS® and Moody's Analytics estimates. Owner-equivalent rents estimated by Oliver Wyman from Reis and U.S. Census data.

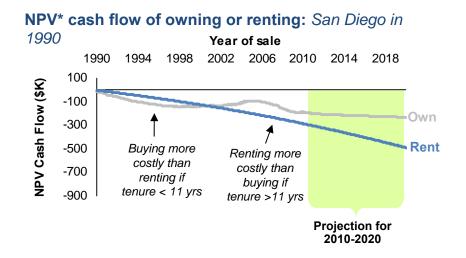
<sup>1.</sup> Monthly mortgage payment calculated with FHFA Effective Mortgage Rates on 30-year fixed-rate mortgage, assuming 20% down payment.



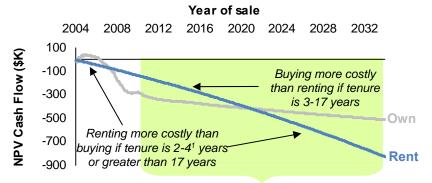
The relative economic benefits of owning versus renting can depend in large part on the time of purchase and the number of years in the house

#### Introduction to the Own-Rent calculator

- An own-rent calculator was built to evaluate renting and owning costs over time across different geographies
  - Rental inputs include rent prices and appreciation, security deposits, and the rate of return on the investment of savings that could have been used for a down payment
  - Ownership inputs include home prices, home price appreciation, mortgage terms, transaction costs, tax expenses, and tax breaks, etc
  - Input assumptions are listed in the appendix
- MSA-level owner-equivalent rents had to be calculated to remove influence of differences between rental and owneroccupied housing stock
  - Median rent for an MSA cannot be compared directly to median home prices
  - Average number of bedrooms was used to adjust rent prices to home prices with methodology detailed in the appendix
- Output shows "breakeven" time, the amount of time after purchase for buying to be economically superior to renting



#### NPV cash flow of owning or renting: San Diego in 2004



Projection for 2010-2034

- Extremely rapid home price appreciation during 2004-2006 made owning quickly surpass renting before the housing bubble burst.
- 2. \*Note: NPV = Net Present Value

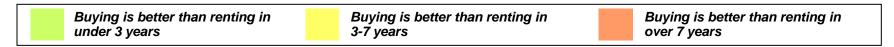
Source: Oliver Wyman Own-Rent calculator. See appendix for additional methodology.



### The own or rent economic comparison can vary significantly across geographies as well as across time

- The own-rent calculator determines the first year when the net present value of owning a home becomes greater than renting an equivalent home, assuming the home is sold
- Currently in most cities, buying surpasses renting as the optimal economic choice in under seven years, similar to pre-bubble results
   Table: Number of years since purchase for buying to be economically superior to renting

Purchase year	Atlanta	Boston	Chicago	Cleveland	Phoenix	San Diego	Seattle
1990	5	7	3	15*	6	11	1*
1992	3	3	3	10*	3	9	6
1994	3	3	3	5*	2	6	4
1996	2	2	3	6*	2	3	2
1998	2	1	2	5*	2	1*	2
2000	2	1	2	5*	2*	1	4
2002	3	1	2	5	2*	1*	3*
2004	2*	2*	2*	3*	1*	1*	2*
2006	9	8	11	9	17	22	2
2008	7	6	9	8	13	14	14
2010	3	4	4	6	5	8	4



Source: Oliver Wyman Own-Rent calculator. See appendix for additional methodology.

<sup>\*</sup> Asterisk indicates that economically preferable housing option switched more than once during the 30 years following purchase (see example from San Diego 2004 on previous page).



### Changes to policy and macroeconomic assumptions substantially alter optimal housing choice economics

- The Own-Rent calculator was used to evaluate the economics of owning and renting under a variety of macroeconomic and policy environments
  - Macroeconomic recovery at pace with baseline forecasts or stronger than expected
  - Policies which continue to encourage homeownership or reduce subsidies
- An example of comparable properties available for purchase and rent were identified in Seattle
  - No calculations were necessary to derive ownerequivalent rents since real examples were used
  - Here, the prices were from specific properties listed for sale and for rent in the same building
- Breakeven month was highly responsive to the economic and macroeconomic scenarios, more than doubling between a strong economy and pro-ownership policy environment (16 months) to a weak economy and low homeownership subsidies (37 months)

### Inputs: Rental and sale property in same building in Seattle

Rental Condo – Fall 2010 Example		Sale Condo – Fall 2010 Example		
Rent	\$2,400/month	Price	\$302,800	
Bedrooms	1	Bedrooms	1	
Bathrooms	1	Bathrooms	1	
Square feet	750 sq ft	Square feet	800 sq ft	
Year built	2007	Year built	2007	
		Property tax	1.08%	



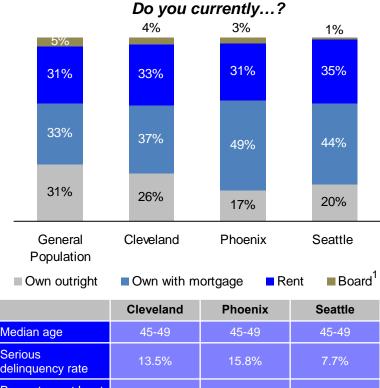
### Outputs: Number of months to breakeven, depending on economy and policy scenario

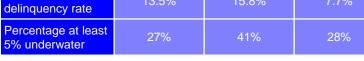
#### **Policy options**

Macroeconomic environment	Continue encouraging homeownership	Reduce homeownership subsidies	
Stronger than expected	16 months for own to surpass rent	25 months	
As expected	23 months	37 months	

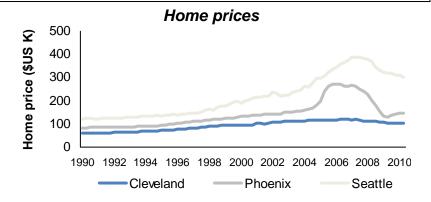


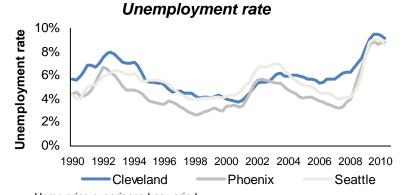
Residents from Cleveland, Phoenix, and Seattle were surveyed to measure attitudes and behavior differences in cities with distinct real estate markets





- Overall ownership rates are fairly similar across the three cities
  - Highest ownership in Phoenix but more mortgages
  - Largest percentage of renters in Seattle





- Home price experience has varied
  - Phoenix experienced the biggest house price bust
  - Prices are fairly constant at a low level in Cleveland
  - Seattle has the highest prices and experienced a moderate drop during the crisis
- The unemployment rate has generally been highest in Cleveland and lowest in Phoenix

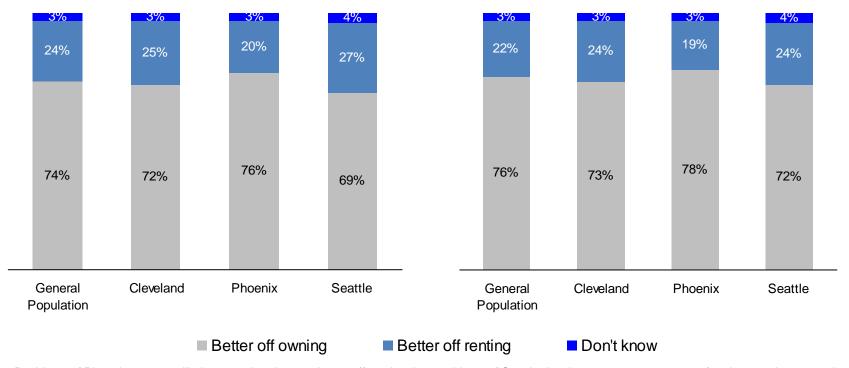
Sources: Median sale prices for existing single-family homes from National Association of REALTORS® and Moody's Analytics estimates. Unemployment rates from the Bureau of Labor Statistics. Median ages and mortgages underwater from Fannie Mae 2010 Own-Rent Survey. Serious delinquency = 90 days past due or in foreclosure, from LPS data analyzed by the Urban Institute, March 2010.

<sup>1.</sup> Boarders live with someone else and do not pay rent.



Despite different housing market histories, all three cities have similar views about the benefits of owning for both financial and lifestyle reasons

Given your current <u>household finances</u>, do you think you would be better off renting your home or would you be better off owning your home? Given your current <u>lifestyle and family situation</u>, do you think you would be better off renting your home or would you be better off owning your home?



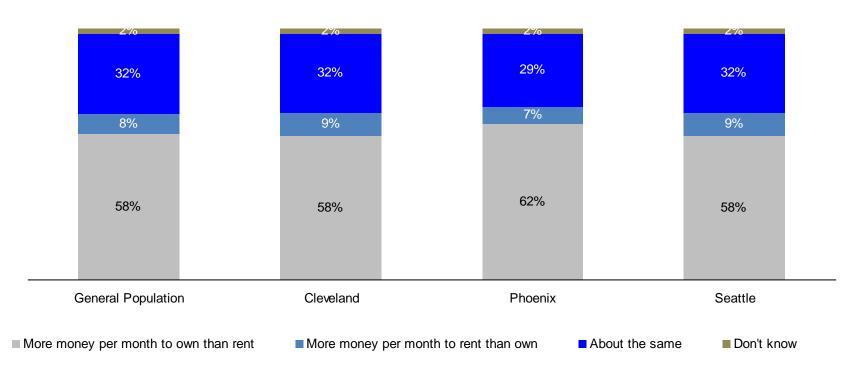
- Residents of Phoenix are more likely to say that they are better off owning than residents of Seattle despite a greater percentage of underwater borrowers in Phoenix
- Phoenix may have a stronger ownership culture, as their results for questions regarding ownership preferences are generally higher than those of the other locations and, in some instances, higher than those of the general population
- Another factor may be greater affordability in Phoenix

Source: Fannie Mae 2010 Own-Rent Survey



In all three cities, people are willing to spend more money to own their homes rather than rent

When thinking about owning versus renting, are you willing to spend more money per month to own than rent, more money per month to rent than own, or about the same?

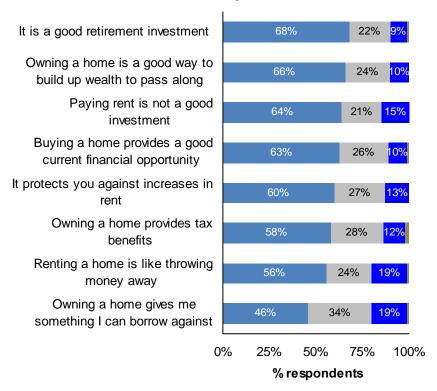


 Non-financial benefits of homeownership and the desire to build equity may explain why people will pay more to own rather than rent their homes



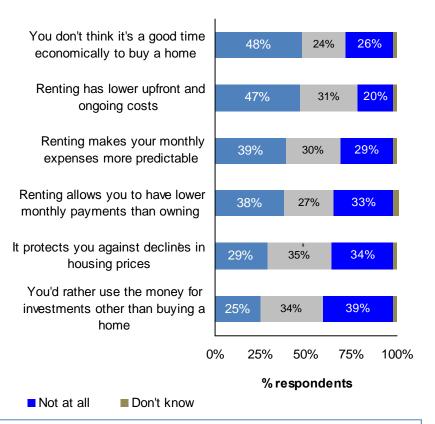
Overall, financial reasons to buy receive greater agreement from respondents than financial reasons to rent

### Is this a major reason, minor reason, or not a reason at all to buy a home?



Major reason

### Is this a major reason, minor reason, or not a reason at all to rent a home?



The financial beliefs that people hold with regard to their housing choices are influenced by their conceptions of the economics of owning and renting

Minor reason

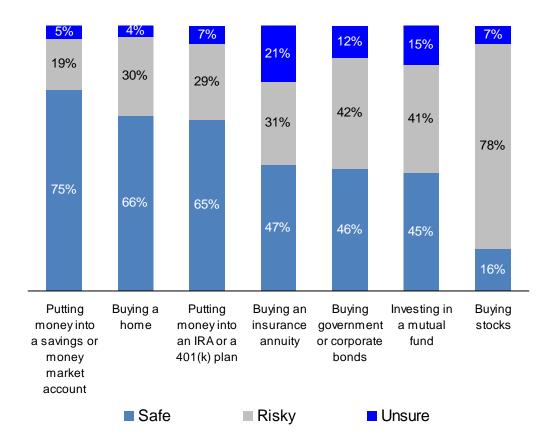
Source: Fannie Mae 2010 Own-Rent Survey



#### Belief: Housing is a safe investment

66% of people believe that buying a home is a safe investment

#### Is this a safe investment?



- Among homeowners, an equal number believe buying a home is a safe investment as believe that putting money in a saving or money market account is a safe investment
- 72% of underwater borrowers believe that buying a home is a safe investment
- Even among delinquent borrowers, 54% believe that buying a home is a safe investment

#### From the focus groups:

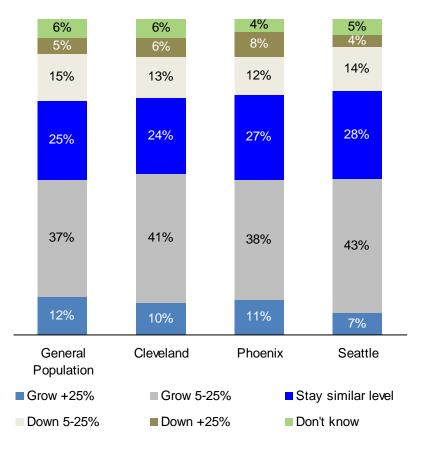
- "You have to look at [ownership] as an investment...like putting your money in a mutual fund or 401k."
  - Male, DC, 30-55, with kids at home
- "A lot of people are afraid [of the] stock market...You saw your parents buy [a home] for twenty thousand dollars and then when they retired sold it for two fifty, and now they're renting as they get older, and traveling, and it just seems like a little savings account."
  - Female, Phoenix, 30-55, with kids at home



Belief: Owning is a good financial opportunity

Half the population believes that home prices will grow over the next five years

### In general, over the next 5 years, what do you think will happen to home prices?



- The expected level of home price appreciation is fairly consistent across geographies
- 20 percent or less believe that home prices will decline over the next five years in each geography

#### From the focus groups:

- "I do feel that real estate goes up over time...Right now we've had a big correction – now is when you want to get in. Get real estate, own it, and have it for the long haul."
  - Male, Phoenix, age 30-55, with kids at home
- "I want to buy as soon as I feasibly can because you kind of want to strike while the iron is hot and while the prices are low, but if the market goes back up then that means I'm probably going to have to wait maybe another year, maybe another two years before I can save that money to make that down payment on the more expensive house."
  - Male, DC, age 18-29

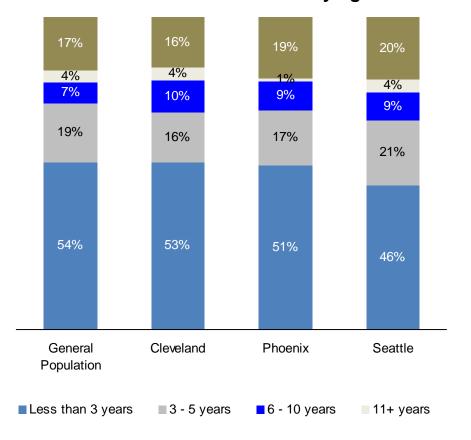
Source: Fannie Mae 2010 Own-Rent Survey. Focus groups in Washington, DC and Phoenix, AZ in July and August 2010.



Belief: Owning is a good idea for short tenures

People are willing to buy even if they will stay in the home very briefly

## Thinking about the moving process, how long would you have to plan to stay in your new residence in order to consider buying it?\*



- More than 50% of respondents will consider buying even if they plan to stay in the home less than 3 years
  - In many cases, transaction costs associated with moving, buying, and selling cannot be recouped in this time frame
  - However, rapid home price appreciation during the housing bubble may have a lingering impact on decision-making
  - In addition, people may be placing substantial value on non-financial aspects of homeownership when considering it for short-term tenures

#### From the focus groups:

- "Now people are married two or three years, buy a house, get a thirty year mortgage, and never have any intention of living there more than five years. You know? It's just a step."
  - Male, Phoenix, age 30-55, with kids at home
- "We've become a very materialistic society too, so if you live in a house and you're making X dollars and a few years down the road you get a raise, you can afford a bigger house. Well, most people will buy that bigger home."
  - Female, Phoenix, age 30-55, with kids at home
- "When we bought our first house and our second house we saw it as an investment. Something on which we expected some kind of return and we got that on the first house. We sold it for 30% more than we paid for it after 2 or 3 years."
  - Male, DC, age 55+



### Belief: Owning a home confers tax benefits

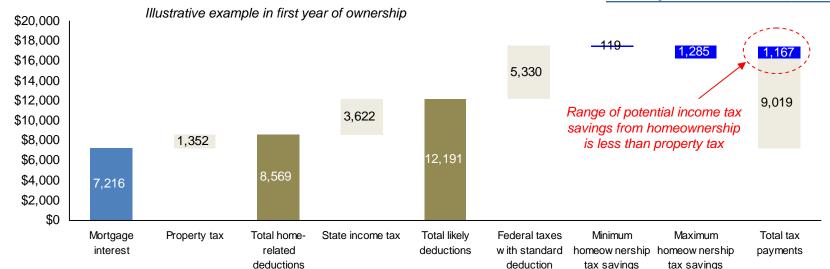
Income tax benefits can be small or non-existent for many homeowners

- 86% of people identify tax benefits as a reason to buy (58% say they are a major reason, 28% say they are a minor reason), but many
  households with mortgages are not able to benefit from the mortgage interest deduction
- In 2008, only 32.9 million taxable returns included mortgage interest deductions (23% of total returns) relative to 51.6 million owner-occupied homes with mortgages

#### Example homeownership tax benefit

- The tax benefit example is calculated for a married couple, incorporating state, federal, and property taxes (from Montana which has approximately median taxes and home prices relative to all other states)
- Minimum savings are based on the excess of total likely deductions over the standard deduction (\$11,400 for married filing jointly); maximum savings are based on total home-related deductions
- In the example, the maximum potential income tax savings are less than the property taxes, resulting in net tax growth from homeownership

Inputs	
Home Price	\$176,300
Mortgage Rate	5.15%
Down Payment	20%
Income	\$52,498
Property Tax Rate	0.83%
State Tax Rate	6.9%
Fed Marginal Inc Tax Rate	15%



Sources: Fannie Mae 2010 Own-Rent Survey. Tax statistics from IRS Statistics of Income 2008. Owner occupied homes with mortgages from American Community Survey, 2008. Home price and property tax from U.S. Census Bureau and Tax Foundation. Accessed October 2010. <a href="http://www.taxfoundation.org/publications/show/1913.html">http://www.taxfoundation.org/publications/show/1913.html</a>.



**Appendix: Methodology** 



In order to compare the renting versus owning tradeoff, rental price must be equivalent to price of purchasing a comparable house

#### Need for owner-equivalent rents

- Cost comparisons between owning and renting require price data on equivalent housing stock
- However, in aggregate, the purchase and rental housing stock are very different
  - Stock characteristics vary by geography but on average, owner-occupied housing has 50% more bedrooms than rental housing
  - Therefore, median rents for an MSA are not directly comparable to median home prices
- Rental data must be manipulated to create an owner-equivalent rent to evaluate relative affordability of owning and renting

#### Methodology

- The median number of bedrooms in owneroccupied housing for each MSA under consideration was calculated
- 2. The price for comparable rental properties was interpolated from Reis data on the average rents by number of bedrooms in each geography
- Potential issues: Reis data is reflective of investment-grade rental properties, so rents may be skewed somewhat higher than the true median prices





Affordability maps are used to compare price-income and price-rent ratios before, during, and after the real estate bubble

#### Price-income ratio map explanation

- Ratio = Median sale price for existing single-family homes / median household income
  - Sale prices come from the National Association of REALTORS® and Moody's Analytics Estimates
  - Income is from the U.S. Census

	Number of MSAs		
Price-income ratio	Q3 2000	Q4 2005	Q1 2010
>3.7 (ownership unaffordable)	30	132	53
13.2-3.7	43	57	44
2.7-3.2	88	88	77
2.2-2.7	137	81	120
<2.2 (ownership affordable)	72	12	76
Total	370	370	370

#### Price-rent ratio map explanation

- Ratio = Median existing home sale price / annualized median 3-bedroom rent
- Rents come from the HUD 50<sup>th</sup> Percentile rent series
  - 3-bedroom rents are not necessarily owner-equivalent in all geographies, but the average owner occupied home has 3.1 bedrooms according to the American Housing Survey
  - Some mapping was required to assign HUD rents to MSAs
  - Due to limited rent data availably, no pre-bubble ratio was calculated

	Number of MSAs	
Price-rent ratio	2006	2009
>20 (ownership expensive)	50	1
16-20	67	14
12-16	123	86
8-12	89	188
<8 (ownership inexpensive)	5	45
Total	334	334

- Affordability was poor during the housing bubble compared to before and after
- Substantial variation across MSAs remains



The Own-Rent calculator compares economics of renting versus owning over time at the metropolitan level

Calculator used to evaluate optimal economic course of action (rent vs. buy) for various geographies, times, and scenarios

#### Homeownership inputs

- Start date and end date
- Purchase parameters
  - Purchase price
  - Closing costs
  - Down payment
  - Mortgage type and rate
  - Frequency of refinancing
- Ownership parameters
  - Annual maintenance fee
  - Annual renovation fee
  - Additional annual utilities
  - Insurance premium/year
  - Additional common fees
  - Inflation
  - Home price appreciation
  - Tax filing status
  - Income tax rate
  - Property tax rate
- Sale parameters
  - Closing costs
  - Capital gains tax rate
  - Capital gains exclusion
- Discount rate

#### **Rental inputs**

- Start date and end date
- Security deposit
- Broker fee
- Months between moves
- Monthly rent
- Rental price appreciation
- Rental insurance
- Initial investment (down payment equivalent that is invested instead of used as down payment)
- Rate of return (on down payment equivalent)
- Discount rate

Inputs can be manually entered, or automatically calculated within the model based on user-selected data sets

#### **Outputs**

- Net present value of decision to buy by month
- Net present value of decision to rent by month
- Accrued equity
- Break even month (point in time when buying becomes the economically preferable option, if applicable)
- Number of months when buying is preferable to renting



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#### Select assumptions used in the Own-Rent calculator

Purchase inputs and assumptions			
Discount rate	7.7% (10-year treasury yield + equity-like premium)		
Purchase price	Median sale price of existing single- family home from National Association of REALTORS® and Moody's Analytics estimates		
Mortgage rate	FHFA effective mortgage rate historic data and Global Insights forecast		
Purchase closing cost	3%		
Refi trigger	Rate differential of 1% and 24 months since previous refinance		
Refi cost	2%		
Monthly costs	1% each inflated purchase price for maintenance and renovation		
Home price appreciation	Case-Shiller baseline forecast		
Inflation	Historic inflation from Consumer Price Index plus forecast from Global Insights		
Filing status	Married Filing Jointly		
Federal tax rate	25%		
Sale closing cost	6%		

Rental inputs and assumptions			
Discount rate	7.7% (1-year treasury yield + equity- like premium)		
Rent price	Owner-equivalent rent (Oliver Wyman calculation using data from Reis and U.S. Census)		
Months between moves	48		
Security deposit	1 month rent		
Historic rent growth	Owner-equivalent rent Consumer Price Index		
Future rent growth	Reis rent appreciation, extended with Global Insight inflation forecast		
Return on investment of down payment equivalent savings	5% per year		



#### Economics of renting and owning are compared under four scenarios

- Economic analysis of renting or owning depends on the values used for a variety of input factors
- The effect of macroeconomic environment and the U.S. Government housing policy is calculated based on the assumed impact of changes
   Policy options

		Continue enco	ouraging homeownership	Reduce homeownership subsidies		
		Hm price appreciation	Case-Shiller, Strgr Nr Trm Rcvry	Hm price appreciation	Case-Shiller baseline	
		Mtg rate	110% GI <sup>1</sup> contract mtg rate forecast	Mtg rate	110% GI forecast + 50 bps	
חנ	ger	Mtg interest deduction	Yes	Mtg interest deduction	No	
ae H	Strong	Property tax rate	Current (1.08%)	Property tax rate	110% current	
3	Str	Capital gains exception	Yes	Capital gains exception	No	
Š		Rent appreciation	110% Reis forecast	Rent appreciation	110% Reis forecast	
: environment		ROI	8% per year	Return on investment	8% per year	
שנכ						
ž		Hm price appreciation	Case Shiller baseline	Hm price appreciation	Case-Shiller Deeper 2 <sup>nd</sup> Recsn	
wacroeconomic	7	Mtg rate	GI contract mtg rate forecast	Mtg rate	GI forecast +50 bps	
	cte	Mtg interest deduction	Yes	Mtg interest deduction	No	
2	expected	Property tax rate	Current (1.08%)	Property tax rate	110% current	
		Capital gains exception	Yes	Capital gains exception	No	
	As	Rent appreciation	Reis forecast & GI CPI forecast	Rent appreciation	Reis forecast	
		Return on investment	4% per year	Return on investment	4% per year	