MORTGAGE MARKET NOTE 12-01

A Primer on Price Discount of Real Estate Owned (REO) Properties

In the news media and the housing finance literature, houses repossessed by mortgage servicers, lenders or guarantors—known as Real Estate Owned (REO) properties—are reported to sell at a discount from their inherent property values. This price discount is known as the REO discount. The purpose of this mortgage market note is to provide the most common explanations for the estimates of REO discount reported in the literature and the news.

Understanding why REO properties are discounted and how the REO discount is measured in different contexts is important for policy discussions in the current environment of record high foreclosures and REO inventories. It is particularly important for policy discussions of disposition strategies of REO properties. REO properties tend to have lower quality or characteristics associated with lower prices such as smaller size or older age. They also tend to be in markets—time as well as location—that have suffered higher price declines. In addition, buyers perceive risks in purchasing REO properties and sellers are motivated to minimize their holding costs while simultaneously maximizing REO sales prices. Holding costs generally include costs of maintenance, repairs and at times renovations prior to sale. Finally there may also be pure stigma associated with REO properties.

REO discounts reported in the news are typically calculated by comparing sales prices of REO properties to prior valuations of the same houses or sales prices of non-foreclosed houses and are generally larger than the discount caused solely by REO status. In sophisticated models of REO discounts, comparisons are made across properties of similar quality, characteristics, time and location. This Mortgage Market Note: 1) summarizes how REO properties are acquired, 2) presents existing estimates of REO discount, and 3) discusses the most relevant explanations for those discount estimates.

What are REO properties?

Real Estate Owned (REO) is an outcome of a mortgage delinquency when the servicer[1] acquires a borrower's house, whether through voluntary conveyance of a house by the borrower or after an unsuccessful foreclosure auction. This section presents a short outline of the foreclosure process and how REO properties are acquired.[2] When a borrower misses a mortgage payment, the mortgage becomes delinquent. But the mortgage can become current if the borrower makes the outstanding payments within a time period defined by state law. If the borrower cannot make the outstanding payments, she can pursue pre-foreclosure workout options with the servicer. These workouts, also called loss mitigation from the servicer's point of view, range from property retention options such as loan modification and forbearance to property forfeiture options such as short sale to a third party or voluntary conveyance of the house to the servicer.

If a pre-foreclosure workout option is not in place and the borrower has not become current within a period defined by state law, normally 90 to 120 days from the first missed payment, the mortgage will then be in serious default status and the servicer will begin the foreclosure process. The actual foreclosure process varies from state to state and also differs between judicial and non-judicial foreclosures. Judicial foreclosure requires court action on the foreclosed house and can take considerable time to complete. In contrast, non-judicial foreclosure is based on the power of sale clause in the mortgage or the deed of trust and is more streamlined.[3] As a result, a non-judicial foreclosure typically takes a shorter time to complete than a judicial foreclosure and is pursued more frequently in states that allow both types of foreclosure. While most states allow both types of foreclosures, some states only allow one type and states that only allow judicial foreclosures have the longest foreclosure periods. Regardless of whether

[1] Typically, the entity that repossesses properties is a lender, servicer or a guarantor, *i.e.*, a bank, a Government Sponsored Enterprise (GSE), Federal Housing Administration (FHA) or U.S. Department of Veterans Affairs (VA). However, in this Mortgage Market Note, entities that take possession of foreclosed properties are termed "servicers" for simplicity of exposition.

[2] See Rhodes (2008) for a detailed description of the foreclosure process as well as the state by state specifics.

[3] In 2011, judicial foreclosures typically took 300 days or more while non-judicial foreclosures typically took 150 days or more based on state level data from Fannie Mae and Freddie Mac. The median for the maximum allowable days from last payment to foreclosure sale was 450 in judicial foreclosure states and 300 in non-judicial foreclosure states. In 2012, the median for the maximum allowable days from last payment to foreclosure sale increased to 480 days. For example, the maximum allowable days from last payment to foreclosure sale has increased to 990 in New York City, 820 in the rest of New York, 750 in New Jersey, 690 in Connecticut and 660 in Florida. See http://www.freddiemac.com/singlefamily/news/pdf/New_State_Foreclosure_Time_Lines.pdf and https://www.efanniemae.com/sf/guides/ssg/relatedservicinginfo/pdf/foreclosuretimeframes.pdf. According to Blomquist (2012), properties foreclosed in the third quarter of 2011 spent an average of 336 days in the foreclosure process, up from the 140-day average in the third quarter of 2007, using RealtyTrac data.

the foreclosure is judicial or non-judicial, the borrower can redeem the property prior to foreclosure auction by paying the loan balance in full and all incurred costs. Otherwise, the foreclosure auction will proceed and if there are no bids at or above the opening bid set by the servicer, the servicer repossesses the house. However, when judicial foreclosure process is used, depending on the state, the borrower may be entitled to a final redemption period to reclaim the house.

Thus, servicers can acquire REO properties either at the foreclosure auction or prior to foreclosure as a voluntary conveyance by the borrower. Servicers then own these REO properties until they can sell them to new owners. REO properties, as discussed in the next sections, generally sell at discounts from their inherent values.

What is REO discount[4]?

REO discount for a repossessed property can be defined as one minus the ratio of its REO sales price to its inherent market value. For example, if a $100,000 house sold for $70,000 as an REO, the REO discount for that house would be 30 percent. While the sales price of an REO property is observed in the marketplace, its inherent market value is not apparent. Using the most accurate definition, the inherent market value of an REO property is the price that it would have sold for during a traditional sale by the owner occupants. Because the sales price in a traditional sale is not observable, studies and news reports have used various types of comparison property values as the inherent market value of REO properties. Sometimes, last known assessment values or sales prices of the last known sale are used as the comparison property values. Most often, average property values of non-foreclosed houses in the corresponding geographic area—sometimes restricted to houses with comparable characteristics—are used as comparison values. In rigorous analyses, researchers have attempted to account for the inherent market value of an REO property by using hedonic or repeat-sales econometric models that control for property characteristics, property condition, and neighborhood and time characteristics.

The magnitude of the estimates of REO discount depends on the comparison method, effectively the type of comparison property values used. Thus the estimates of REO discount vary considerably. The average REO discount calculated by RealtyTrac from 2010 to 2012 by comparing sales prices of

[4] REO discount is also called foreclosure discount in the literature and media. However, foreclosure discount could also be construed as the discount on foreclosed properties sold during the foreclosure auction (also known as third party sales). In contrast, REO discount is an unambiguous term for the discount on properties sold after repossession by servicers. Therefore, we only use the term “REO discount” in this Mortgage Market Note.

REO properties to sales prices of non-foreclosed properties ranged from 33 percent to as high as 41 percent.[5] Similar discounts were also reported in the news by comparing prior sales prices and assessment values. The Detroit Free Press[6] reported in August 2011 that Fannie Mae and Freddie Mac sold REO properties in Detroit with average discounts between 34 percent and 55 percent in some locations and a few days later, the CBS Evening News reported similar discounts for REO properties sold by Fannie Mae in Cleveland.[7] These estimates of REO discount in the popular and news media are in agreement with consumer expectation. According to a survey conducted by Harris Interactive in April 2011 for an ongoing RealtyTrac and Trulia study, American adults expected to pay 38 percent less for a foreclosed house than a similar house that was not in foreclosure.[8]

Academic researchers have computed more rigorous estimates of REO discount. While the academic estimates range from zero to 50 percent depending on location, time and controls used in the econometric models, the majority of estimates of REO discount in the academic literature are in the 10 to 25 percent range, particularly for nationwide averages. In particular, estimates confined to one MSA show wider variability. Most of these studies make some attempt to adjust for characteristics and condition of the property, and generally find an REO discount over and above that which can be explained by condition and characteristics. A summary of the estimates of REO discount from the housing finance and economics literature is presented in Exhibit 1.

[5] See http://www.realtytrac.com/content/press-releases for the REO discount estimates over time. The average REO discounts were: 34 percent in 2010 quarter 1; 35 percent in 2010 quarter 2, 41 percent in 2010 quarter 3; 37 percent in 2010 quarter 4; and 35 percent in 2011 quarter 1.
[6] See http://www.freep.com/article/20110814/NEWS06/108140503/ for the article.
[7] See http://www.cbsnews.com/video/watch/?id=7378271n for the video.
[8] See http://www.realtytrac.com/content/press-releases and http://info.trulia.com for the survey results.

Exhibit 1 – Estimates of REO Discounts in Academic Literature					
Study	**Location**	**Period**	**Property Type**	**Method**	**REO Discount**
Harding, Rosenblatt & Yao (2012)	Atlanta, GA; Columbus, OH; Las Vegas, NV; Los Angeles, CA	1990-2008	Single-family	Hedonic & repeat-sales	1%; 11%; 14%; 21%
Campbell , Giglio & Pathak (2011)	MA	1987-2008	Single-family & condominiums	Hedonic	22% - 47%
Clauretie & Daneshvary (2009)	Las Vegas, NV	2004-2007	Single-family	Hedonic & generalized two-stage	8%
Sumell (2009)	Cuyahoga County, OH	2004-2006	Single-family	Hedonic	50%
Pennington-Cross (2006)	US	1995-1999	Single family	Repeat-sales	22%
Carroll, Clauretie & Neill (1997)	Las Vegas, NV	1990-1993	Single family	Hedonic	0% - 14%
Springer (1996)	Arlington, TX	1989-1993	Single family	Hedonic	4% - 6%
Hardin & Wolverton (1996)	Phoenix, AZ	1993-1994	Apartments	Hedonic	22%
Forgey, Rutherford & VanBurskirk (1994)	Arlington, TX	1991-1993	Single-family	Hedonic	23%
Shilling, Benjamin & Sirmans (1990)	Baton Rouge, LA	1985	Condominiums	Hedonic	24%

What are the explanations for the estimates of REO discount?

As illustrated above, estimates of REO discount vary. While this mortgage market note will not examine existing estimates to provide a definitive estimate of REO discount, it aims to facilitate greater understanding through general explanations for the reported discounts. There are at least six explanations for the variations in REO discount reported in the news and studies. The first three explanations (condition effect, characteristics effect, and market effect) are directly related to the property value of houses and the last three (buyer-related effect such as risk aversion, seller motivation effect such as loss aversion, and finally stigma effect) are indirect mechanisms related to the sales transaction.

Condition Effect

Condition or quality of a house is an important determinant of its sales price. REO properties tend to be in poorer condition than other properties and thus tend to sell at a discount.[9] REO properties may suffer from lower quality for at least three reasons: 1) damages, 2) inadequate maintenance, and 3) abandonment. Many studies and reports do not account for condition of REO properties while estimating the REO discount.[10]

There are three main reasons for damages to REO properties: 1) natural disasters, 2) inclement weather and 3) stripping. Natural disasters like earthquake, flood and hurricane wreak havoc on both physical properties and economic well-being of families. While most homeowners get temporary protection against foreclosure after disasters through moratoriums, some houses may already be in foreclosure at the time of the disaster and hence may not be protected to the same extent.[11] Thus, REO properties affected by natural disasters are likely to be severely damaged. REO properties, like any house, can also be damaged from inclement weather. But unlike non-foreclosed houses, REO properties, vacant ones in particular, are likely to remain unrepaired. The third source of damage among REO properties is intentional stripping of properties by borrowers undergoing foreclosure.[12] Damaged properties, regardless of the source of damage or REO status, tend

[9] For example, Clauretie and Daneshvary (2009) and Sumell (2009) show that REO properties rated to be in poor or fair condition typically sell with larger than average REO discounts.

[10] Clauretie and Daneshvary (2009) provide a summary of the literature to the date on REO discounts identifying many studies that did not account for property condition in their models.

[11] Ross (2008) describes the effects of disaster on the foreclosure process. Moreover, natural disasters may also lead to additional foreclosures because some borrowers will not be able to recover from the subsequent financial hardship.

[12] Borrowers angry at being foreclosed may dismantle the appliances, fixtures and internal systems such as furnaces or damage basements, floors and walls. Clawson (2011) provides description of efforts by servicers to forestall stripping by offering borrowers monetary incentives.

to sell at highly discounted prices because they require substantial repair or renovation.[13] Examples of damaged REO properties are in Appendix A.

REO properties may also suffer from disrepair over time. Mortgage defaults and foreclosures are often a result of financial distress, which in turn may have been caused by trigger events such as serious illness. Under these circumstances, borrowers may not have kept up their houses and made necessary repairs prior to foreclosure.[14] Specifically, according an empirical study, borrowers who are underwater appear to spend less or not at all on maintenance.[15] Borrowers also do not have an incentive to make repairs or maintain houses when foreclosure is likely. As a result, REO properties may not have been maintained adequately for some time prior to REO sale, particularly when the foreclosure process takes a long time.

REO properties could be in even more dire condition if they are vacant or abandoned, especially in neighborhoods with many REO properties. At the extreme, vacant REO properties could be targets of vandalism and location for crimes.[16] Moreover, the longer a house is in foreclosure, the more the opportunities for its damage, disrepair or abandonment as well as other unforeseen changes to the quality of the property that affects the sales price.[17] In particular, properties in states with long foreclosure timelines may sell for lower prices because the properties could be in worse condition when finally sold, or neighborhood prices may have declined for a longer period of time. Therefore estimates of REO discount that do not account for the condition of the property can overstate the size of the discount by obscuring the discount with the effect of property condition on the sales price.

Characteristic Effect

Property characteristics such as age, lot size and living space also affect sales prices considerably. For example, older and smaller houses typically sell at lower prices than newer and larger houses. REO properties can differ significantly in their characteristics from non-foreclosed houses. For example, REO properties in some locations have been found to be older and have smaller lots than non-foreclosed houses.[18] In other locations, they

[13] See http://www.realestateeconomywatch.com/2011/11/damaged-foreclosures-continue-to-poison-prices/
[14] See Pennington-Cross (2006) and Clauretie and Daneshvary (2009)
[15] Harding, Rosenblatt and Yao (2012)
[16] See Pais and Wolf (2010).
[17] See footnote 3 for estimates of the foreclosure timeline.
[18] Lee (2011) reported that houses in Massachusetts that became REO during a one-year study period in 2007-2008 and subsequently sold were significantly older and had significantly smaller lot size than houses that sold in normal circumstances. Harding, Rosenblatt and Yao (2012) reported that REO properties in Atlanta, Detroit and Los Angles (but not Dallas) included in their study covering 1990-2008 were significantly older than houses that sold normally.

have been found to have smaller living space.[19] REO discounts reported in the news and popular media generally do not account for differences in property characteristics such as age and size when comparing REO properties and non-foreclosed houses. Estimates of REO discount based on comparison of REO properties to non-foreclosed houses without accounting for differences in property characteristics conflate the REO discount with the effects of property characteristics on prices. When REO properties have characteristics associated with lower sales price such as older age or smaller size, the characteristic effect on REO discount helps inflate the discount. Hence, estimates of REO discounts without controls for property characteristics can be larger than the actual discount.

Market Effect

The housing market—both location of property and time of the sale—also has significant effect on sales prices. For example, the value of a house in the suburbs is most likely lower than a similar house in the central city and the value of the same house during a housing market downturn is lower than its value during the housing market boom. REO discounts reported in the news and popular media are usually based on comparison of REO sales prices to 1) prior sales prices or previous assessment values of REO properties, 2) or values of non-foreclosed houses, often from other neighborhoods.

Estimates of REO discount computed using prior sales prices or previous assessment values of REO properties as comparison property values are affected by differences in the housing market between the comparison time periods. A house sold in 2006 for $100,000 may only sell for $80,000 in 2011 even if were not an REO. Correspondingly, a non-foreclosed house valued at $100,000 in 2007 may have only been worth $75,000 in 2010. This market effect on REO discount becomes especially large during substantial market shifts such as the current market when house prices have declined significantly from the recent past. During market downturns, even new appraisals may result in estimates of property values that are too high on average because there may not be any comparable current sales and the valuations may have to rely on older sales during normal or thriving market conditions.[20] This in turn can inflate the REO discount estimates when REO sale prices are compared to the appraisal overestimates.

[19] Harding, Rosenblatt and Yao (2012) reported that REO properties in Atlanta, Dallas, Detroit and Los Angles were significantly smaller than non-distressed houses sold. Shilling, Benjamin and Sirmans (1990) also reported that REO properties Baton Rouge in 1985 were smaller than non-foreclosed houses sold.

[20] Using Cuyahoga County data from 2006 to 2011, Fitzpatrick and Whitaker (2012) cite losses of 27 to 42 percent for properties bought at foreclosure auctions and later resold as some evidence that appraisal valuation at foreclosure auctions may be biased upwards.

Similarly, when values of non-foreclosed properties are used to calculate the REO discount, the resulting estimates could also be affected by neighborhood market differences. REO properties are more likely to be next to other REO properties[21] and they are also likely to be in neighborhoods with above-average price declines. Therefore, comparisons of foreclosed to non-foreclosed properties are likely to be comparisons of different neighborhoods with varying rates of foreclosure rates and price changes. These comparisons also result in large market effects on REO discount.[22]

Furthermore, properties that experience the largest price decline are also the most likely to foreclose. This means that REO properties are likely to have more negative growth rate of property value than non-foreclosed houses in the current downturn.[23] Thus, REO properties sell for less than the non-foreclosed houses since they were the ones to lose the most value. As a result, simplistic comparisons of foreclosed to non-foreclosed properties will also falsely attribute the differences in sales prices entirely to the REO discount and not at all to the differing property value changes over time.

The three explanations presented above pertain to observable traits of REO properties. In theory, using proper methodology to account for the market, characteristic and condition effects, estimates of REO discount can be improved. However, in practice, information about the condition, characteristic and market are not always easily available or measurable in datasets used for computation of REO discounts. The most recent studies have shown that accounting for condition, characteristics and market effects on the REO discount using proper methodology can substantially redefine estimates of REO discount.[24]

The next three explanations of REO discount pertain to indirect mechanisms of the sales transaction and are harder to determine or decompose. REO sales, like all transactions, have buyers and sellers, whose motivations and preferences also affect sales prices and hence REO discount.

[21] According to Towe and Lawley (2010) and Gangal, Seiler and Collins (2011), foreclosures influence the likelihood of future foreclosures in the same neighborhood.

[22] For example, Carroll, Clauretie and Neill (1997) show that estimates of REO discount can be decreased by including neighborhood characteristics as control variables.

[23] Harding, Rosenblatt and Yao (2012) use this selection bias framework to estimate REO discount. This framework includes both strategic defaulters and families in financial distress. However, according to Foote, Gerardi and Willen (2008), while most borrowers who lose their houses have negative equity, most borrowers with negative equity do not lose their houses.

[24] See Clauretie and Daneshvary (2009) and Harding, Rosenblatt and Yao (2011)

Buyer-Related Effect

Buyers of REO properties are concerned about hidden costs, unforeseen delays and potential loss of property value due to unexpected issues.[25] For example, there may be hidden costs from necessary repairs that may only become fully apparent after the purchase. In other words, what would seem to be a $100,000 house may only be worth $90,000 after accounting for the likelihood of hidden repair costs. Buyers may also be wary of not getting clear title to the property.[26] In some states, there may also be delays and uncertainties associated with foreclosed owner's right of redemption, described earlier, even after the REO sale. Moreover, buyers may prefer to buy a non-REO property that is valued with certainty instead of an REO property with the same expected value but a degree of uncertainty. For example, a buyer may prefer a $97,500 non-REO property valued with certainty than an REO property that has 95 percent chance of being worth $100,000 and 5 percent chance of being worth $50,000. Buyers consider these general uncertainties about REO properties and consequently apply higher than average risk premium in the maximum price they are willing to pay for REO properties. Therefore a buyer's expectations about problems associated with REO properties as well as risk aversion is reflected in the sales price and hence the discount of an REO property.[27]

While purchase of an REO property can be uncertain or risky from a buyer's perspective, there, however, exist different types of buyers. Institutional investors differ from families in their preference for risk aversion. Even among families, first-time homebuyers differ from other types of households. Moreover, many buyers may prefer houses in move-in condition and may not consider REO properties while making house purchase decisions. As a result, the discount on an REO property requiring repair or renovation with respect to a non-foreclosed house in move-in condition may exceed the actual cost of repair or renovation. Econometric methods that distinguish between different types of buyers as well as their preference for property characteristics and condition can shed better light on the extent to which buyer preference, expectations about problems associated with REO and risk aversion affect the REO discount.[28]

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[25] See http://www.realtytrac.com/content/press-releases and http://info.trulia.com for the results of the Harris survey about Americans attitudes towards and expectations of REO properties.

[26] Borrower title insurance is costly and even when it is purchased, it may not cover all contingencies.

[27] See Harding, Rosenblatt and Yao (2012)

[28] For example, Harding, Rosenblatt and Yao (2012) use Blinder-Oaxaca decomposition in their hedonic model to explore buyer bargaining power of investors and first-time homebuyers.

Seller Motivation Effect

Like buyer risk aversion, seller motivation also affects the REO discount. Servicers have costs associated with holding REO properties. Servicers have to pay taxes, insurance fees, interest and maintenance costs during the time they carry REO properties in their portfolio without deriving benefits of ownership that owner occupants do. As a result, they have incentive to minimize such costs, which are higher than for homeowners, by shortening the holding time.[29] However, the servicers also have incentive to maximize the sales price. Servicers can balance these two incentives by minimizing the net present value of loss. Loss severity on REO properties can be expected to reach over 50 percent of unpaid balance during severe market downturns.[30] The loss minimization motivation of a seller is reflected in the sales price and hence the discount of an REO property. Similar to the buyer risk aversion effect, the seller motivation effect is also likely to result in REO discount somewhat higher than the transaction costs.

Furthermore, some have argued that institutional sellers also have incentive to accept below market prices because of regulatory requirements for keeping them on the balance sheet.[31] If REO properties sell at excessive discounts, there will necessarily be excessive returns on subsequent sales of those properties. A new study has shown that REO properties do not obtain excess returns on subsequent sales.[32] Econometric methods that account for seller types and test hypotheses of seller motivation can help clarify how seller motivation affects REO discount.[33]

Stigma Effect

Lastly, there is likely a small stigma effect on REO discount unexplained by other effects.[34] There is evidence that houses associated with adverse events such as death and crime also experience price discount. Similarly, an REO property can be expected to sell for less than comparable properties for no other reason than just because it is an REO.

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[29] See Hardin and Wolverton (1996)

[30] The loss rate of REO properties with respect to unpaid principal balance for the GSEs were over 40% in 2011 (for example, see Form 10Q filed by Freddie Mac for September 30, 2011). Similarly, the loss rate of Home Owners' Loan Corporation REO properties with respect to unpaid principal balance at the end of its dissolution in 1951 was also over 40% (see Harriss 1951).

[31] See Pennington-Cross (2006).

[32] See Harding, Rosenblatt and Yao (2012) for a fuller description of the methodology and results.

[33] While researchers may have to devise creative methods to hypotheses of seller motivation, simpler methods such as controlling for seller and servicer types can be implemented with reasonable ease.

[34] Harding, Rosenblatt and Yao (2012), Clauretie and Daneshvary (2009) and Pennington-Cross (2006) all argue that the pure stigma effect is likely small.

Summary

It is well established that REO properties sell at a discount from normal houses. Various estimates of REO discount exist in the news and the housing finance literature. The estimates of REO discount can be largely explained by how the discount is computed, i.e. which comparison property values are used. Often, estimates of REO discount are larger than the true discount because the estimates are also capturing difference in quality or condition of property; difference in characteristics, such as age and size; and difference in markets, such as location, time and house price growth rates. After accounting for such effects, the REO discount can then be further explained as effects of buyers' preferences, expectation about problems associated with REO properties or risk aversion; sellers' loss aversion; and general stigma surrounding REO sales. Understanding why REO properties are discounted and how the REO discount is measured in different contexts is important for policy discussions on REO inventories and their disposition.

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Appendix A: Examples of Poor Quality Houses

Damaged REO Property 1

Source: Fannie Mae appraisal

Damaged REO Property 2

Source: Fannie Mae appraisal