CHAPTER 13 DEBTORS' HOME LOSS IN THE FORECLOSURE CRISIS

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ABSTRACT

The foreclosure crisis that began in 2007 and continues as of 2012 has heightened interest in whether chapter 13 bankruptcy helps families in financial distress save their homes and prevent foreclosure. This Note studies whether homeowners who filed chapter 13 bankruptcy were able to keep their homes during the foreclosure crisis. Using a sample of homeowners who filed chapter 13 bankruptcy in 2007 in Broward County, Florida, a hard-hit area in the foreclosure crisis, I find that half of chapter 13 debtors lose their homes within three years of seeking bankruptcy relief. An additional 22% of the sample continued to own their homes but were in foreclosure. I estimate linear regression models on home loss and find that being in foreclosure at the time of filing bankruptcy, the months in arrears at filing, and debtors' mortgage-to-income ratios and loan-to-value ratios predict home loss. In the foreclosure crisis, chapter 13 was only modestly effective in saving homes. Drawing on these findings, I offer implications for financial regulatory reform, including Consumer Financial Protection Bureau rulemaking and legislative proposals on mortgage modification. For chapter 13 to become a useful instrument in combating foreclosures, I conclude, policymakers must focus on the need for troubled homeowners to file bankruptcy sooner in the home default process.

TABLE OF CONTENTS

I. INTRODUCTION 186
II. APPLICABLE LAW AND METHODOLOGY 187
A. *Homeowner-Related Features of Chapter 13 Bankruptcy* 187
B. *Sample Selection* 189
C. *Research Design* 191
III. HOMEOWNER CHARACTERISTICS AND OUTCOMES 193
A. *Homeowner Status Three Years After Bankruptcy Filing* . 193
B. *Changes in Homeowner Status Within Three Years of Bankruptcy Filing* 194
1. Trends in Overall Home Loss 196
2. Types of Homeowner Status Change 198
C. *Logistic Regressions* 200
1. Model Construction 200
2. Model Analysis 202
D. *Predicted Probabilities* 206

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IV. IMPLICATIONS 209
CONCLUSION 211
APPENDIX 213

I. INTRODUCTION

A key objective of chapter 13 bankruptcy is to help debtors save their homes from foreclosure.[1] Hundreds of thousands of Americans file chapter 13 each year with precisely that goal in mind.[2] During the foreclosure crisis, however, debtors who sought chapter 13's protection still lost their homes at astonishing rates.

I studied the homeownership outcomes of 150 individuals who filed chapter 13 in 2007 in Broward County, Florida, one of America's hardest hit counties during the real estate bust. I found that only half still owned their homes within three years of filing, and that over eight of ten home losses resulted from foreclosure.[3] Nearly a quarter owned their homes at three years after filing but were in the foreclosure process. In sum, there is little evidence to suggest that chapter 13 was an effective foreclosure-prevention measure for distressed homeowners at the center of the crisis—arguably, the period of time in which the American economy most needed a viable policy response to threatened home loss.[4]

Using statistical analysis, I make additional findings and inferences regarding the main drivers of home loss. I estimated regression models to test which debtor characteristics were most strongly associated with a chapter 13 debtor eventually losing his or her home.[5] Whether a debtor was in foreclosure at the time of filing bankruptcy was the single best predictor of eventual home loss. The strongest model included that variable along with two others: loan-to-value (LTV) ratio and mortgage to income ratio. On the basis of those regression models, I also calculated the predicted probability of home loss based on three separate variables: months in arrears at filing, LTV ratio,

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[1] *See Chapter 13 Bankruptcy*, U.S. COURTS, http://www.uscourts.gov/FederalCourts/Bankruptcy/BankruptcyBasics/Chapter13.aspx (last visited Dec. 12, 2012).

[2] *See* Marianne B. Culhane, *No Forwarding Address: Losing Homes In Bankruptcy, in* BROKE: HOW DEBT BANKRUPTS THE MIDDLE CLASS 122 (Katherine Porter ed., 2011); *Bankruptcy Statistics*, U.S. COURTS, http://www.uscourts.gov/Statistics/BankruptcyStatistics.aspx.

[3] See Appendix for summary statistics of chapter 13 bankruptcy filers from Broward County, Florida in 2007.

[4] This study does not claim to isolate the effect of chapter 13 entirely; because the causal link between financial trouble and bankruptcy is so tenuous, finding a statistically reliable control group of troubled homeowners who don't file bankruptcy is very difficult. *See* Ronald J. Mann & Katherine Porter, *Saving Up for Bankruptcy,* 98 GEO. L. J. 289, 290 (2010).

[5] I used the Akaike Information Criterion, a common measure of statistical fit, to compare the relative strength of models. For some variables, I was not able to collect values for all 150 debtors in the sample due to data limitations. Accordingly, the number of observations ("n-value") in each regression model was limited to that of the component variable with the lowest n-value. Because of different numbers in the sample for different models, I had to divide AIC by n to allow for comparisons of fit. See *infra* Part III for further discussion.

and mortgage to income ratio. For all three variables, as values increased, the predicted probability of home loss increased substantially.

These findings suggest that chapter 13's efficacy, at least in adverse housing market conditions, depends greatly on whether debtors file for bankruptcy before they have fallen too far behind on their payments. The longer debtors wait to file bankruptcy while not keeping up with payments, the higher their arrears and likelihood of default will be. And as time accumulates after default, the LTV ratio will increase (as the loan is accruing more in fees and arrears) and the lender will be more likely to initiate foreclosure.

With those inferences in mind, potential policy reforms ought to encourage troubled homeowners to file chapter 13 as soon as they are consistently falling behind on payments or lack the ability to cure arrears in the foreseeable future. Further, the substantial increases in predicted probabilities for mortgage to income ratio tentatively suggest that legislation to allow mortgage modifications in bankruptcy may be fruitful.

This Note proceeds as follows. Part II summarizes applicable law, detailing the homeowner-related characteristics of chapter 13, as well as the scope and methodology, with attention to why Broward County provides an ideal population for this study. Part III reports descriptive statistics on homeownership outcomes and estimates from logistic regression models on factors associated with home loss. Part IV discusses policy implications, relating the Note's key findings to meaningful reforms that Congress or the new Consumer Financial Protection Bureau could enact to enhance chapter 13's potency as an anti-foreclosure instrument. The Note then concludes.

II. Applicable Law and Methodology

A. Homeowner-Related Features of Chapter 13 Bankruptcy

A filing of chapter 13 bankruptcy triggers an automatic stay, which puts a halt to all foreclosure proceedings against the filer's home.[6] As part of the chapter 13 process, debtors must gain court approval of a plan that stipulates, among other things, how exactly they will pay off their arrears while in bankruptcy.[7] The plan will only be approved if the judge determines that the debtor is able to make "all payments under the plan and to comply with the plan."[8] So long as a debtor makes ongoing mortgage payments and plan payments, the stay remains in place, giving the debtor the opportunity to complete the plan and cure arrears.[9] Chapter 13 cases last up to five years.[10]

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[6] *See* 11 U.S.C. § 362(a) (2006).
[7] *See* 11 U.S.C. § 1322(b)(5).
[8] 11 U.S.C. § 1325(a)(6).
[9] *See* 11 U.S.C. § 1325(b).
[10] 11 U.S.C. § 1325(d). The length of a chapter 13 case depends on a debtor's income, family size, and the extent to which unsecured claims will be paid. 11 U.S.C. §§ 1322(d), 1325(b)(1), (b)(4).

Homeowners are frequently behind on their mortgage payments by the time they file chapter 13, often creating large amounts of arrearage to cure in bankruptcy.[11] To illustrate, Katherine Porter has found that the average chapter 13 homeowner, upon filing bankruptcy, owes roughly $8,000 in arrearages and is six months behind on mortgage payments.[12] In addition to principal and interest from missed payments, the arrearage figure also typically includes late fees, default fees, and foreclosure costs.[13] To keep their homes in bankruptcy, debtors must ultimately be able to cure those defaults while continuing to make their ongoing payments.[14]

Several studies demonstrate how chapter 13 filers are overwhelmingly homeowners, and that chapter 13 is the bankruptcy option of choice for homeowners. These findings highlight the importance of understanding the home-saving effectiveness of chapter 13 during the foreclosure crisis. Specifically, Michelle White and Ning Zhu, in a 2008 working paper, sampled chapter 13 filings in Delaware in 2006 and found that 96% were homeowners.[15] Raisa Bahchieva, Susan Wachter, and Elizabeth Warren found that bankrupt homeowners are roughly 50% more likely to file chapter 13 than chapter 7.[16]

Bahchieva, Wachter, and Warren's study also suggests that homeowners who file bankruptcy are extremely reluctant to give up their homes. They found that bankrupt homeowners often persist in trying to save their homes even when the home value and outstanding mortgage debt were such that it would be financially optimal for them to walk away from their mortgages.[17] Likewise, Marianne Culhane reports that 90% of homeowners in the CBP sample of bankruptcy filers in 2007 said that keeping their home was "very important" when they filed; only 5% intended to surrender their homes at filing.[18] While these studies do not distinguish between chapters 7 and 13, they nonetheless underscore the fact that when homeowners do decide to file bankruptcy, home preservation is frequently a central goal.

By comparison, there is scant research on whether chapter 13 bankruptcy actually helps debtors save their homes. Sarah Carroll and Wenli Li examined whether homeowners who filed chapter 13 bankruptcy in New Castle County, Delaware in 2001 and 2002 still owned their homes in Octo-

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[11] *See* Katherine Porter, *Misbehavior and Mistake in Bankruptcy Mortgage Claims,* 87 TEX. L. REV. 121, 129 (2008).

[12] Katherine Porter, *Arrears and Default Costs of Homeowners,* 22 NACTT QUARTERLY 15 (2010).

[13] *See id.*

[14] *See* John Eggum, Katherine Porter & Tara Twomey, *Saving Homes in Bankruptcy: Housing Affordability and Loan Modification,* 2008 UTAH L. REV. 1123, 1126 (2008).

[15] Michelle J. White & Ning Zhu, *Saving Your Home in Chapter 13 Bankruptcy*, 15 (Nat'l Bureau of Econ. Research, Working Paper No. 14179, 2008).

[16] Raisa Bahchieva, Susan Wachter & Elizabeth Warren, *Mortgage Debt, Bankruptcy, and the Sustainability of Homeownership*, *in* CREDIT MARKETS FOR THE POOR 73, 104 (Patrick Bolton & Howard Rosenthal eds., 2005).

[17] *See id.*

[18] Culhane, *supra* note 2, at 122.

ber 2007.[19] Their key finding was that 27.9% of debtors lost their homes to foreclosure within five years.[20] Culhane reports a Consumer Bankruptcy Project ("CBP")[21] survey conducted in late 2007 and early 2008, in which CBP homeowners were called nine to twelve months after filing bankruptcy and asked if they "still lived in" the home they occupied at filing: 10% of chapter 13 filers said that they did not.[22]

There are currently no studies, however, that offer a comprehensive, empirical assessment of chapter 13's effectiveness during a housing crisis—a critical gap that this Note aims to fill.

B. Sample Selection

My study focuses on Broward County, Florida, for several reasons. First, I wanted to isolate the effect of the foreclosure crisis—as much as possible—to examine the efficacy of chapter 13's home-saving features in circumstances where they were needed most. This required a geographical area where key demographic figures were relatively close to the U.S. median, but where the foreclosure crisis was especially pronounced.

Broward County fit this profile well. Its homeownership rate (69.5%) and median household income ($51,594) are very near the national median levels (66.2% and $52,029, respectively), yet from a foreclosure standpoint, it has consistently been one of the hardest hit counties in the country.[23] As of August 2007, greater Fort Lauderdale, which encompasses Broward County, had the sixth-highest foreclosure rate among U.S. metropolitan areas, according to RealtyTrac.[24] It retained this ranking at the end of 2008, when its

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[19] Sarah Carroll & Wenli Li, *The Homeownership Experience of Households in Bankruptcy,* 13 CITYSCAPE 113, 124 (2011).

[20] *Id.* at 123–24. This figure does not capture all debtors who were no longer homeowners by October 2007, as those who sold their houses voluntarily are not counted within the foreclosure category. However, Carroll & Li point out that the number of private sales in their study was negligible, thus rendering the foreclosure loss rate substantially similar to the total loss rate. *See id.*

[21] For a description of the CBP methodology, see App. I in Robert Lawless et al., *Did Bankruptcy Reform Fail? An Empirical Study of Consumer Debtors,* 82 AM. BANKR. L.J. 349, 387–398 (2008).

[22] Culhane, *supra* note 2, at 123–24.

[23] Median monthly income reported on bankruptcy schedules was $4,600, which equates to an annualized income of $55,200. The median household income for Broward County and the U.S. in 2008 were $51,594 and $52,029, respectively. *QuickFacts,* U.S. CENSUS BUREAU, http://quickfacts.census.gov/qfd/states/00000.html (U.S.) and http://quickfacts.census.gov/qfd/states/12/12011.html (Broward County) (As of January 2011, the most recent U.S. Census statistics reported for homeownership rate were from 2000, while the most recent statistics for median household income were from 2008). While the actual median household income of the debtor sample is probably higher than $55,200, given that some married couples can file chapter 13 separately, it is still likely a reasonable approximation. This is because property-related debt is such a high percentage of liabilities among the sample—as reflected in the Appendix—and couples are likely to be jointly liable for mortgages, giving them a very strong incentive to file chapter 13 together. Making this approximation was necessary because jointly-filed bankruptcy schedules do not break down reported income by individual.

[24] *U.S. Foreclosure Market Reports,* REALTYTRAC, www.realtytrac.com.

5.95% foreclosure rate was well above the nationwide figure of 1.84%. According to Zillow.com, median home values in Broward County plummeted 54% from December 2006 to December 2010 ($283,000 to $129,000), far surpassing the U.S. median drop of 26% ($237,000 to $175,000) over the same time period.[25]

Furthermore, Chapter 13 filing rates in the Fort Lauderdale area have skyrocketed in recent years. Taken in light of chapter 13's purported home-saving function, as mentioned in the Introduction, this trend evinces chapter 13's popularity as a potential cushion for distressed homeowners in that area during the foreclosure crisis. Although filing rates in both the Southern District of Florida and the U.S. fell sharply after the Bankruptcy Abuse Protection and Consumer Protection Act of 2005 was enacted, the subsequent rebound has been far greater in the former than the latter.[26] Chapter 13 filings in the Southern District of Florida increased by 410% from 2006 to 2010, as compared to an increase of only 75% in the U.S. over the same time period.[27] By 2010, the number of nationwide chapter 13 filings (434,739) had not yet climbed back to the 2001–04 average (445,673), whereas the number of Southern District of Florida filings in 2010 (10,640) well surpassed the 2001–04 average in that district (8,223).[28]

I also chose Broward Country for data accessibility reasons. To execute a study on homeownership outcomes, it is imperative to have access to detailed county property records. Unlike many counties in the United States, Broward County has a public website for property records that provides links to copies of all documents related to each transfer of property back to 1978.[29] Broward County also has a separate, official records website that inventories a comprehensive range of judicial and property information for each county resident (again, dating back to 1978).[30] These two web sites provide the breadth of data to conduct a reliable examination of homeownership outcomes.

Finally, because I selected a sample of debtors, rather than evaluating the entire population, it was important to choose a county that mapped

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[25] The median home value in the sample was $285,500, as compared to a median home value in Broward County of $281,000 as of Jan. 1, 2007 and $231,000 as of Jan. 1, 2008. County home values declined nearly 20% during 2007. U.S. median home values decreased from $236,000 to $222,000 (a 6% drop) over the same timeframe. *Broward County Home Prices and Home Values*, ZILLOW.COM, http://www.zillow.com/local-info/FL-Broward-County-home-value/r_1561/ (last updated Sept. 30, 2012); *U.S. Real Estate Market Reports*, ZILLOW.COM, http://www.zillow.com/local-info/ (last updated Sept. 30, 2012).

[26] BAPCPA substantially increased the costs of filing personal bankruptcy, imposing new fees and filing requirements. *See* Michelle White, *Abuse or Protection? Economics of Bankruptcy Reform under BAPCPA,* 2007 U. ILL. L. REV. 275, 278 (2007).

[27] *Bankruptcy Statistics*, *supra* note 2 (findings based on author's calculations).

[28] *Id.*

[29] BROWARD COUNTY PROPERTY APPRAISER, http://www.bcpa.net/ (last visited Oct. 13, 2012).

[30] BROWARD COUNTY OFFICIAL RECORDS SEARCH, http://205.166.161.12/oncoreV2/ (last visited Oct. 13, 2012).

closely onto a bankruptcy division. This is because property records are organized by county, while the U.S. Courts' Public Access to Court Electronic Records ("PACER") system, the source for bankruptcy documents, does not allow for searching by county. Moreover, bankruptcy divisions of jurisdictions in the U.S. court system (the most detailed level of searching available on PACER) are rarely coextensive with counties, making it difficult to draw a debtor population drawn from PACER that will yield a sample for a single county. The boundaries of Broward County are precisely the same as the Fort Lauderdale Division of the U.S. Bankruptcy Court for the Southern District of Florida, creating complete overlap in the data sources.

C. Research Design

I used PACER to access all chapter 13 bankruptcy filings filed in 2007 in the Fort Lauderdale Division of the Southern District of Florida, which numbered 1228 in total. I assigned each debtor a sequential number from 1 to 1228, inclusive, and generated a random sequence of those numbers. I then reordered the debtor population spreadsheet according to that random sequence.

To be included in the study sample, debtors in the population had to own a personal residence at the time they filed chapter 13 bankruptcy in 2007, and those homes had to be secured by at least one mortgage loan. I had to examine the first 205 randomly-ordered debtors to obtain a sample of 150 homeowners with at least one mortgage loan. The final sample of 150 represents 12.2% of the population of 1228 chapter 13 cases.

Using PACER, I downloaded the bankruptcy case docket to obtain basic information about each case, such as filing dates and ultimate outcome. I also downloaded the debtors' petitions and schedules. I collected a broad range of self-reported information from these forms, including bankruptcy history, homeowner and financial data, and details of outstanding debt.[31] To collect data on mortgage arrears, I consulted the claims register on PACER for each case. I also used the mortgage payment and total debt figures from the claims register to double-check corresponding figures from the bankruptcy schedules.[32]

Next, I entered debtors' primary residence address, as reported on the bankruptcy petition, into the Broward County Property Appraiser's website.[33] From those records, I coded how long debtors owned the principal residence

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[31] See Appendix for selected debtor statistics. Although self-reported, bankruptcy schedules are filed under penalty of perjury, thus creating a strong presumption of reliability for statistical purposes.

[32] When those sources differed, I used the claims register figures because they reflect the actual amount to be paid, as compared to the debtors' best estimate from the bankruptcy schedules.

[33] Broward County Property Appraiser's Network, http://www.bcpa.net (last visited Oct. 13, 2012).

listed on the bankruptcy petition; I also noted whether they still owned that residence, and if not, the date on which ownership was lost. The county records website links to scanned copies of property documents. I examined these to verify dates and parties to title transfers.[34]

In recording homeownership outcomes, I used two levels of coding. The first level was a simple, binary measurement of whether debtors owned their homes three years after filing bankruptcy. The primary purpose of this coding level was to provide a dummy dependent variable for logistic regression analysis, as presented in Part III of this Note.

The second level was more detailed. Among debtors who owned their homes three years after filing, I first coded whether debtors were or were not in the foreclosure process. On the county records website, I searched for whether the lender had filed a lis pendens with the county court, which begins the foreclosure process in judicial foreclosure states such as Florida, or obtained a judgment of foreclosure on a debtor's home in the three years after the bankruptcy filing. I then compiled a day-by-day record of debtors' homeowner status during the three years after filing bankruptcy. For stretches of time in which debtors continued to own their homes, I recorded whether or not they were in foreclosure. When debtors lost homes within three years of filing, I recorded the date of loss and type of loss: foreclosure, sale, short sale, or divorce.

In losses to foreclosure, the county records displayed a sheriff sale document indicating parties to the foreclosure case (as well as the case number), reflecting that the Broward County Circuit court and the debtor were joint grantors, and that a third party, often a bank, was the grantee. Determining that a sale had occurred was also straightforward—a warranty deed indicated the debtor as grantor, a third party as grantee, while listing the sale amount.

However, there was no formal classification in either the bankruptcy or county records indicating which, if any, of the sales were short sales. I therefore made a proxy criterion for classifying short sales: when a debtor's outstanding mortgage debt exceeded the home sale price.[35] This is likely a workable assumption, because a deed of title transferred to a third person for non-negligible consideration indicates that these transactions were not transfers of deed in lieu of foreclosure (DIL).[36]

In coding losses to divorce, I looked for debtors whose bankruptcy schedules indicated that they were married at filing but had filed for divorce (i.e., a pending dissolution of marriage lawsuit, according to county records)

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[34] RECORDS SEARCH, 205.166.161.12/oncoreV2/ (last visited Oct. 13, 2012).

[35] "Short sales" generally indicate a situation where a lender agrees to let an underwater borrower—one whose property is worth less than the outstanding loan—sell his or her property privately, and to waive the right to sue for the deficiency (assuming the private sale was in fact less than the loan value). *See* Anthony Pennington-Cross, *The Value of Foreclosed Property,* 28 J. REAL EST. RES. 193, 199 (2006).

[36] In DIL transactions, the homeowner gives up the home to the mortgage holder. *See* Jean Braucher, *Humpty Dumpty and the Foreclosure Crisis: Lessons from the Lackluster First Year of the Home Affordable Modification Program (HAMP)*, 52 ARIZ. L. REV. 727, 743 (2010).

and whose deed of transfer, upon losing their homes, reflected the debtor and their non-debtor spouse as grantors but only the non-debtor spouse as grantee.[37]

Finally, the bankruptcy dockets indicated that several debtors negotiated loan modifications with their secured creditors, which the bankruptcy court approved. I could find no evidence in the county records that such modifications actually occurred, however. Absent such confirmation, I opted not to create a separate coding classification for homeowners who modified loans.

III. Homeowner Characteristics and Outcomes

A. Homeowner Status Three Years After Bankruptcy Filing

Exactly 50% of the sample (75 debtors) maintained ownership of their homes three years after filing bankruptcy, as shown in Table 1. Within the group of debtors who still owned their homes at three years after filing, I distinguished between those who were in foreclosure and those who were not. The distribution between these statuses was relatively even: 22% of the sample fell in the former category, and 28% of the sample in the latter. Put in different terms, of the 75 debtors who owned their homes three years after filing bankruptcy, 44% of them were in the foreclosure process. These foreclosures were at various stages in the legal process at the time that I coded the data; without longitudinal follow-up, it is not known how many of this group will lose their houses to foreclosure. The "in foreclosure" percentage shows that many debtors who are still homeowners are actually at high risk of home loss.

[37] While the county records indicate if and when family court records have been posted for a given county resident, it blocks access to the actual documentation in accordance with privacy laws.

TABLE 1: HOMEOWNERSHIP OUTCOMES FOR DEBTORS WHO FILED CHAPTER 13 IN BROWARD COUNTY, FL IN 2007[38]

Homeownership status three years after filing	Homeownership subcategories	Number of debtors	Percent of total
Own	Own, not in foreclosure	42	28%
	Own, in foreclosure[1]	33	22%
	Total own	75	50%
Loss	Loss to foreclosure	65	43%
	Loss to sale or short sale	8	6%
	Loss to divorce	2	1%
	Total loss	75	50%

[1]Defined as whether home is subject to lis pendens or under foreclosure judgment.
n=150

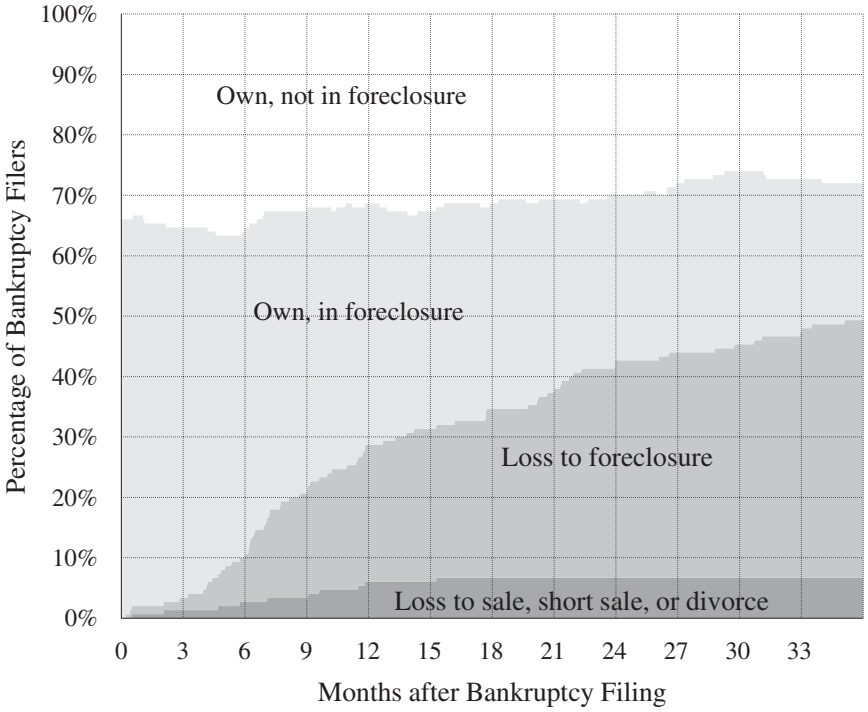
Table 1 also disaggregates the group of debtors who lost their homes into three subcategories: a) loss to foreclosure; b) loss to sale or short sale; and c) loss to divorce. The table makes clear that 43% of all debtors (or 86% of losses) lost their homes to foreclosure. Accordingly, the other types of loss were relatively less prevalent, collectively accounting for 7% of the total sample (or 14% of losses). Most home losses are foreclosures—involuntary actions by creditors because the debtor has failed to pay. Other causes such as moving or family break-up appear to be less common.

B. Changes in Homeowner Status Within Three Years of Bankruptcy Filing

While Table 1 focuses solely on homeownership status at three years after bankruptcy filing, Figure 1 shows how the total distribution of homeownership statuses changed over that three-year period. Due to limited scale, I condensed losses to sale, short sale, and divorce into a single subcategory; otherwise, the categories of homeownership outcome in Figure 1 are the same as in Table 1.

[38] *See* BROWARD COUNTY PROPERTY APPRAISER'S NETWORK, *supra* note 29 (author's calculations based on raw data).

FIGURE 1: CHANGES IN HOMEOWNER STATUS AFTER CHAPTER 13 BANKRUPTCY FILING[39]



Notes:
1) Sample of 150 bankruptcy filers in Broward Co., FL from 2007.
2) "Own, in foreclosure" indicates debtors' homes subject to lis pendens or judgment of foreclosure.

Because the sample includes only debtors who owned their homes at bankruptcy filing, the distribution of statuses at that time is restricted to two subcategories: own, not in foreclosure; and own, in foreclosure. As Figure 1 shows, approximately two thirds (65%) of all debtors were in foreclosure when they filed bankruptcy. This is nearly two and a half times the figure from Carroll and Li's study (27%), suggesting that homeowners in this sample were deeply affected by the foreclosure crisis and consequently in a far more desperate position at the time of bankruptcy filing.

The distribution of outcomes—either of the two ownership categories from above, or loss to foreclosure, sale, short sale, or divorce—likewise testifies to the impact of the foreclosure crisis. The graph prominently reveals the steadily mounting "loss to foreclosure" area on Figure 1, enveloping over 40% of the sample by three years after bankruptcy filing. In compara-

[39] *See* BROWARD COUNTY PROPERTY APPRAISER'S NETWORK, *supra* note 29 (author's calculations based on raw data).

tive terms, losses to foreclosure over this study's three-year horizon amount to 50% more than Carroll and Li's accrued over five years. Put differently, debtors in Broward County who filed at the inception of the foreclosure crisis were much more likely to lose their homes than debtors in Carroll and Li's study, which looked at debtors who filed in the booming housing economy of the early 2000s. The worse housing outcomes in Broward County suggest that chapter 13 does not provide as much help to homeowners when the housing economy is in distress.

1. Trends in Overall Home Loss

Losses to foreclosure accounted for approximately three quarters of total losses during the first year after the bankruptcy filing. By contrast, all home losses that occurred in the second or third year after filing were due to foreclosure. The overall loss rate is represented by the line between "loss to foreclosure" and "own, in foreclosure": the two statuses above the line reflect some form of ownership, whereas the two statuses below the line reflect some form of loss. In other words, substantially all losses to sale, short sale, and divorce—the only other means of loss in this sample—occurred within one year of filing. For these families, chapter 13 bankruptcy may have been part of an exit strategy for homeownership—a way to buy time to organize a sale of the property or to finalize a divorce.

Moreover, the overall loss rate is not constant over time. Figure 1 evinces two periods of accelerated loss: a sharp acceleration at roughly 4–8 months after bankruptcy filing, with approximately 6–7 losses per month, and another, less marked acceleration at roughly 20–22 months after bankruptcy filing, with approximately 4–5 losses per month. Aside from these stretches, the loss rate is typically less than 2 losses per month.

I hypothesized that the sharp acceleration had something to do with a wave of debtors failing to gain chapter 13 plan confirmation within a few months of filing. Table 2 appears to support this hypothesis. The majority of losses, 60% of the total, took place in cases in which no bankruptcy plan was confirmed. In these cases, the median time to home loss was 7.7 months after filing, which corresponds closely with the sharp acceleration observed in Figure 1. By contrast, the median time to loss was substantially longer in cases in which a bankruptcy plan was confirmed, taking place 16.8 months after filing.

TABLE 2: TIMING AND FREQUENCY OF HOME LOSS RELATIVE TO BANKRUPTCY PLAN CONFIRMATION[40]

Timing of loss by plan confirmation	Number of debtors	Percent of losses	Timing of loss after filing (mos.)
Plan confirmed	30	40%	17.7 average 16.8 median
Plan not confirmed	45	60%	10.8 average 7.7 median

These data raise the question of whether judges are confirming plans for homeowners that have no realistic chance of curing their arrears within the five-year chapter 13 period. While this is a complex issue that is largely outside the scope of this Note, it is nonetheless possible to make several basic observations. In a single-independent variable logistic regression, plan confirmation is statistically significant (5% level) as a determinant of home retention, suggesting that debtors whose plans are confirmed are indeed more likely to keep their homes. This tentatively indicates that judges are generally doing a good job in weeding out futile cases (in terms of homeowners who have no chance of saving their homes) at the confirmation stage.[41]

A separate logistic regression suggests, however, that judges could still improve their confirmation analysis with respect to troubled homeowners. When plan confirmation is set as a dependent variable, and several key measures of homeowner distress—LTV, MTI, and months in arrears—are set as the independent variables, it appears that judges pay a great deal of attention to arrears (0.01% level of significance) but very little to LTV and MTI (both insignificant). In other words, months in arrears predicts plan confirmation but other factors that ultimately predict home loss, LTV and MTI, do not.

Federal bankruptcy law provides that for a plan to be confirmed, the debtor must "be able to make all payments under the plan."[42] This language naturally requires attention to the amount of arrearage that debtors must cure within the bankruptcy plan period: if the arrearage is too high, the debtor likely would not be able to make all bankruptcy payments. It is thus unsurprising that months in arrears was such a strong predictor of plan confirma-

[40] *See* BROWARD COUNTY PROPERTY APPRAISER'S NETWORK, *supra* note 29 (author's calculations based on raw data).

[41] As discussed *infra* Part III.C, the causal relationship between plan confirmation and home loss is uncertain, creating risk of post-treatment bias. Plan confirmation likely has some degree of causal effect on home loss independent of the factors that a judge considered in deciding whether to confirm the plan (e.g., LTV, MTI), and it is difficult to comment on the magnitude of this independent effect without more advanced statistical analysis. Assuming that this effect is only marginal, though, the tentative observation made here should still hold true.

[42] 11 U.S.C. § 1325(a)(6) (2006).

tion. Yet one would have expected MTI to factor significantly, as well, given that debtors must also meet their ongoing mortgage payment obligations (and not merely pay back arrears) with their given income stream over the course of the plan. And while LTV is more a measure of incentive than ability to continue making mortgage payments, if one interprets "ability" more broadly and purposively to encompass the likelihood that debtors will complete their plans, there is a strong argument that LTV should also be a more significant factor in confirmation decisions. These data suggest that judges may do well to broaden the set of homeowner distress indicia they consider in confirming plans.

2. *Types of Homeowner Status Change*

Figure 1 shows that the collective percentage of homeowners who were not in foreclosure at the time of filing and continue to own their homes without a pending foreclosure does not markedly increase over time. In progressing from 35% at filing to 28% three years later, the number never dips below 25% or rises above 40%. The apparent ability of such homeowners to stay out of foreclosure could suggest that an essential element to success in chapter 13 is not waiting too long. In other words, debtors must not get too far behind in their mortgage payments before availing themselves of chapter 13's protections.

Perhaps most strikingly, as denoted in Table 3, less than 10% of the sample entered bankruptcy while in foreclosure and emerged three years later as homeowners not in foreclosure. Of debtors who lost their homes, 80% were in foreclosure at filing. Table 3, which lists changes in homeownership status within three years of bankruptcy filing, also confirms that 20% of the sample filed bankruptcy while not in foreclosure and managed to stay out of foreclosure during the entire three year period thereafter. An additional 2% of debtors filed while not in foreclosure and progressed directly to sale or divorce. At the other extreme, 40% of the sample filed bankruptcy while in foreclosure and progressed directly to either a foreclosure loss or sale/short sale. Taken together, these figures mean that 38% of the debtors moved in or out of foreclosure at least once, suggesting that debtors' foreclosure status was far from static over the three-year scope of this study.

Although I could not find any comprehensive empirical studies tracking foreclosure cure rates[43] in recent years, LPS Analytics data helps shed further light on the issue. Since January 2008, approximately 200,000 loans in the U.S. progressed from 90+ days delinquent to foreclosure each month.[44] From January 2008 to January 2010, approximately 20,000 U.S. loans in

[43] Although the term "foreclosure transition" is also commonly used to refer to debtors' moves in and out of foreclosure, I use the more specific term "cure" here because I am focused on transitions out of foreclosure in this section.

[44] *See December 2010 Mortgage Performance Obligations,* LPS Mortgage Monitor, Dec. 2010, at 10.

foreclosure cured each month; since then, approximately 30,000 loans in foreclosure cured each month.[45] These statistics do not track individual loans as they progress between various stages of delinquency and recovery; they only measure nationwide totals of loans that made such transitions each month.

Nonetheless, they still allow for a good approximation of recent cure rates: for every 8 or 9 delinquent loans going into foreclosure each month, only one loan in foreclosure transitions out of that status, yielding an estimated cure rate of around 10–15%. The proportion of debtors in this study who filed bankruptcy while in foreclosure and owned their homes not in foreclosure three years later, 13.2% (13 of 98) is roughly consistent with that figure. This suggests that filing chapter 13 may not substantially alter debtors' chances of emerging from foreclosure still owning their homes. That is, debtors who seek chapter 13 relief may not fare any better at saving their homes than debtors who struggle against home loss outside of bankruptcy.

TABLE 3: CHANGES IN HOMEOWNER STATUS WITHIN THREE YEARS OF FILING[46]

Status at filing	Status three years after filing	Percent of sample[1]	Number of debtors
Own, not in foreclosure	Own, not in foreclosure[2]	20%	29
	Own, in foreclosure	5%	8
	Loss to foreclosure	7%	11
	Loss to divorce	1%	2
	Loss to sale/short sale[3]	1%	2
Own, in foreclosure	Own, not in foreclosure[4]	9%	13
	Own, in foreclosure[5]	17%	25
	Loss to foreclosure	36%	54
	Loss to sale/short sale	4%	6

[1] Percentages rounded.
[2] One debtor entered foreclosure after filing but was later released.
[3] One debtor entered foreclosure before selling his home.
[4] One debtor was released from foreclosure after filing, later re-entered, and was re-released.
[5] Three debtors were released from foreclosure after filing, but later re-entered.

Further, it is remarkable that 25 debtors, nearly a fifth of the sample, were in foreclosure at filing and remained in foreclosure for the entire three

[45] *Id.* at 12.
[46] *See* BROWARD COUNTY PROPERTY APPRAISER'S NETWORK, *supra* note 29 (author's calculations based on raw data).

year period thereafter. This phenomenon likely relates as much to the massive judicial backlog in processing foreclosures in Florida as it does to the effectiveness (or ineffectiveness) of chapter 13's home-saving provisions. Although the Fannie Mae Servicing Guide indicates that the foreclosure process in Florida should take a maximum of 185 days,[47] LPS Analytics has calculated that the average foreclosed property in Florida spends 518 days in foreclosure.[48]

C. Logistic Regressions

1. Model Construction

I constructed logistic regression models to predict the probability of home loss based on certain financial and demographic characteristics of the debtor sample.[49] The likelihood of home loss was the dependent variable in these regressions: debtors who had lost their homes within three years of filing bankruptcy were assigned a value of "1." Otherwise, debtors were assigned a value of "0." The debtor characteristics comprised the independent variables. The logistic regression models are presented in Table 4.

Some independent variables, like whether a debtor had filed bankruptcy previously or was in foreclosure at the time of filing, derived from binary observations that I recorded from debtor files and could be inserted directly into the model. Other recorded data, however, needed to be combined into ratios in order to form useful independent variables. This was often the case with financial data. For instance, the ratio of a debtor's monthly mortgage payment to income ("MTI"), in measuring the debtor's ability to pay his or mortgage each month, has a far stronger theoretical connection to home loss than mortgage payment or income would alone.

In collecting data, I frequently recorded categories of information that measured similar phenomena and were thus closely correlated with each other. For instance, I recorded a number of different measures of mortgage liabilities, including total mortgage debt, total home mortgage debt, debt on first home mortgages, and debt on additional home mortgages. As with mortgage payment and income, a ratio of mortgage liabilities to home value provides more comprehensive information than either variable would in isolation. But I could only include one particular measure of loan-to-value ratio in the regression model because the others were so highly correlated. I chose the most conventional measure of LTV, which defines "loan" as including all home mortgage debt.

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[47] *Foreclosure Time Frames*, FANNIE MAE (updated Aug. 8, 2010), http://web.archive.org/web/20101230171941/https://www.efanniemae.com/sf/guides/ssg/relatedservicinginfo/pdf/foreclosuretimeframes.pdf.

[48] David Streitfield, *Owners Stop Paying Mortgages, and Stop Fretting,* N.Y. TIMES, June 1, 2010, at A1.

[49] See *infra* App. for a list of these characteristics.

Similarly, I found that LTV was moderately correlated (-0.64) with another common measure of debtors' financial distress: total asset to total liability ratio (ATL). Homeowners in real-estate bubble locations like Florida were devoting a substantial part of their resources toward home expenses at the height of the boom; by one measure, over 40% of Florida homeowners were spending more than 30% of their incomes on housing costs (including mortgages, taxes, insurance, and utilities) by 2006.[50] With so much income being devoted to housing, it is unsurprising that LTV would correlate with ATL. Considered alone, a correlation of -0.64 would not necessarily mean that LTV and ATL could not be in the same model. But when taken in conjunction with the fact that LTV is a more direct measure of homeowner distress, it was enough to justify excluding ATL from these regression models.

I also excluded bankruptcy plan confirmation from the regression models because of post-treatment bias (arising from causal ambiguity). While it is likely that plan confirmation has some independent effect on home loss, the precise magnitude of that effect is hard to untangle from other variables that impact both plan confirmation and home loss. As discussed above, judges certainly take some account of homeowner distress indicia in deciding whether to confirm chapter 13 plans, as demonstrated by the high statistical significance of months in arrears in determining whether plans are confirmed.[51] Due to this risk of causal ambiguity, plan confirmation could not be included in the home loss regression models.

After eliminating potential independent variables for the above reasons, I tested each remaining variable as a sole independent variable in a separate model to examine its stand-alone predictive value. If these variables had less than 10% statistical significance, I did one of two things, depending on each variable's theoretical link. When the link was strong, such as with home tenure, prior bankruptcy, and ownership of additional houses, I decided to include these variables in a model with the remaining significant variables.[52] This model will be discussed in Part III.C.2, *infra* (as Model 5). When the

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[50] *Americans Becoming Increasingly House Poor*, MSNBC (Oct. 3, 2006), http://www.msnbc.msn.com/id/15107993/ns/business-real_estate/.

[51] *See* Part III.B.1, *supra.*

[52] Each of these variables had a clear hypothetical relationship to home loss that could have been potentially robust. Longer home tenure, for instance, evinces a better track record of managing mortgage payments for a given home, as well as higher home equity that might increase a debtor's motivation to follow through with a bankruptcy plan. Prior bankruptcies, by comparison, could indicate recidivism that bears negatively on a debtor's chances of completing his or her plan. And ownership of second properties could represent, in context of the speculative craze in South Florida in the mid-2000s, financial over-extension that could impede a debtor's ability to save his or her primary home (assuming that, even if additional properties are surrendered in bankruptcy, that a certain amount of deficiency would have to be made up).

link was plausible but weak, such as whether debtors included their homes in proposed chapter 13 plans, I excluded them from the regression models.[53]

I then tested the statistically significant variables in all possible permutations to determine which had the best fit and highest statistical significance for one, two, and three independent variable models. To measure fit, I used the Akaike Information Criterion (AIC). When the number of observations (n) varies across models, the AIC must be divided by n to allow for accurate comparison of fitness between those models. The lower the AIC/n, the better the model. While AIC/n and statistical significance do not necessarily correlate, the optimal models by AIC/n in my study also featured independent variables with the most statistical significance. There was no need to gauge the tradeoff between AIC/n and statistical significance in optimization.[54]

2. Model Analysis

Whether a debtor was in foreclosure at filing was, by far, the most robust independent variable alone, with statistical significance at the 0.1% level. Model 1 has this as its sole independent variable. Combining foreclosure at filing with MTI produced the strongest two-variable model: Model 2. And adding LTV to those two variables produced not only the strongest three-variable model, but also the overall optimal model, as reflected in Model 3. That is, there was no additional variable that when combined with those three was both statistically significant and produced a model with a lower AIC/n level than Model 3.[55]

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[53] Other such variables include whether debtors had auto debt, a tax lien, or a homeowners' association lien, and whether creditors objected to the debtors' chapter 13 plan or filed a motion to lift stay. As compared to the stronger variables described previously, these variables generally indicate additional, but not particularly or necessarily substantial, financial burdens on a debtor-homeowner. My approach to data collection was to gather all information that could have any possible relevance to home loss, on the off-chance that I (or scholars in previous literature) had simply overlooked or not fully evaluated a theoretical connection. Had any of those variables turned out to be statistically significant, it would have been surprising, requiring deeper analysis of what the empirical link might be. But since they were not, there was no compelling reason to include them in the regression models.

[54] To make rough comparisons of statistical significance between models with multiple dependent variables, I recorded how many variables were at each level of significance (e.g. 0.1%, 1%, 5%, 10%), and assigned those levels relative weight on a linear basis (1 point for 10%, 2 points for 5%, etc.).

[55] By identifying Model 3 as the optimal model, I do not mean to obscure variables that were theoretically important but statistically insignificant. Rather, I intend to facilitate discussion of variables that are *particularly* important from a theoretical standpoint, with attention to the reasons why certain combinations produce models that—based on statistical significance and AIC/n—seem to better predict home loss than others. As mentioned above, I include all theoretically important variables (irrespective of significance) in Model 5 and will discuss that model below.

TABLE 4: LOGISTIC REGRESSION OF CHAPTER 13 FILERS' HOME LOSS[56]

Dependent Variable: Whether chapter 13 debtors lost their homes within three years of filing bankruptcy (home loss = 1; home retention = 0)

	Model 1	Model 2	Model 3	Model 4	Model 5
Whether debtor in foreclosure at filing	1.36*** (0.37)	1.39*** (0.43)	1.38** (0.44)		0.98† (0.58)
Ratio of home mortgage payments to income		2.70** (0.94)	2.09* (0.94)	1.95* (0.93)	1.94* (0.98)
Ratio of home mortgage debt to home value			1.88* (0.85)	1.98* (0.86)	2.24* (1.02)
Estimated months in arrears on home mortgage payments				0.06** (0.02)	0.05† (0.03)
Years lived in home as of filing					-0.02 (0.05)
Whether debtor owned additional houses					-0.62 (0.45)
Whether debtor filed bankruptcy before					-0.71 (0.64)
Constant	-0.90 (0.31)	-2.32 (0.59)	-3.73 (0.92)	-3.43 (0.90)	-3.72 (1.20)
Observations	150	126	126	118	117
AIC/n	1.32	1.25	1.22	1.25	1.26

†p=0.10, *p=0.05, **p=0.01, ***p=0.001

Notes:
1) Standard error data displayed in parentheses.
2) Negative sign indicates an inverse relationship between the given independent variable and home loss (the dependent variable).
3) Estimated months in arrears calculated by dividing arrears by mortgage payments.

From a theoretical standpoint, I had expected that foreclosure at filing and months in arrears would correlate highly, given that they both to some extent are a proxy for measuring how far behind in mortgage payments a debtor has become. I also theorized that because months in arrears would

[56] *See* BROWARD COUNTY PROPERTY APPRAISER'S NETWORK, *supra* note 29 (author's calculations based on raw data).

allow for a more detailed picture of homeowner distress than foreclosure at filing, as it is a time continuum rather than a binary measurement, and would thus likely substitute for foreclosure at filing in the optimal models. This expectation was supported by Carroll and Li's regression, in which months in arrears was significant at the 5% level, whereas foreclosure at filing was not statistically significant.[57]

The data did not bear these expectations out. First, the correlation between the two variables was 0.56, a moderate level that would not preclude them from being part of the same regression model. Further, when months in arrears was substituted for foreclosure at filing in Models 1, 2, and 3, its statistical significance was slightly lower and the AIC/n of the adjusted models were consistently higher.[58] Finally, a four variable model (Model 4) comprising all the variables in Model 3 with the additional variable of months in arrears was not an improvement on Model 3. In fact, months in arrears was not statistically significant in that model and the composite AIC/n was lower than Model 3.

The low correlation between months in arrears and foreclosure at filing, combined with the consistently higher predictive value of the latter, suggest that the two variables actually do measure distinct phenomena of some sort. It may well be, for instance, that because the foreclosure process is so chaotic, overburdened, and dilated in Florida at present, as discussed above, that lenders have become less consistent in foreclosing within a certain time frame of mortgage arrears buildup. If this is true, then time in arrears would become a less reliable predictor of when a lender begins to put pressure on a delinquent homeowner. By contrast, foreclosure at filing reflects several possible, related phenomena. Once a lender has begun to commit time and resources to taking legal action against a homeowner, the lender may well be more determined to follow through with foreclosure. And the timing of foreclosure, rather than any particular number of months in arrears, may be a key motivating factor in homeowners' decision to file bankruptcy.[59]

The other two components of the optimal model (Model 3), MTI and LTV, had the expected signs and the expected statistical significance. Both variables were significant at the 5% level in Carroll and Li's regression.[60]

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[57] Carroll & Li, *supra* note 19, at 24. It should be noted that Carroll and Li did not attempt to construct an optimal model; their regression comprised 27 different independent variables, many of which were not statistically significant and could have washed out the effect of other variables. *See id.*

[58] When substituted for foreclosure at filing in Models 1 and 2, the statistical significance for months in arrears was 5% and 1%, respectively. AIC/n for the adjusted models were 1.35 and 1.28, respectively. As Table 4 shows, the models including foreclosure at filing are more robust.

[59] Although this study did not track debtors' application for loan modifications before bankruptcy filing, it may also be true that an adverse decision on such applications spurred lenders to pursue foreclosure and debtors to seek chapter 13 bankruptcy protection.

[60] Besides LTV, MTI, and months in arrears, Carroll & Li found five other variables significant at 5%: lender attorney experience, filer attorney experience, length of unemployment (as applicable), and ratio of local median housing cost to local median home value. Carroll &

LTV's significance in predicting homeownership status in bankruptcy was forecast by other scholars, as well. In their 2005 study, Bahchieva, Wachter, and Warren stressed that LTV was "the major determinant of whether financially distressed homeowners are at risk of ultimately losing their homes to foreclosure."[61] Indeed, both MTI and LTV have a strong theoretical link to home loss. MTI measures whether a homeowner can, on a month-to-month basis, actually afford his or her mortgage. LTV reveals a homeowner's equity position, thus shedding light on his or her incentive to keep paying the mortgage.[62]

Model 5 was designed to show that several variables with relatively strong theoretical links to home loss in bankruptcy are not statistically significant predictors of such loss in my sample. I included three variables: home tenure at filing, whether a debtor owned additional properties, and whether a debtor had filed bankruptcy before. The insignificance of home tenure corroborates both Carroll and Li's regression and the survey results of Bahchieva, Wachter, and Warren. To restate, one might suspect that long home tenured debtors would have lower rates of home loss in chapter 13, as they would presumably have a greater equity cushion after having paid so many monthly payments. But as Bahchieva, Wachter, and Warren reasoned, a high prevalence of refinancing among such debtors is the most likely explanation for why long home tenure does not lead to a greater likelihood of home retention in bankruptcy.[63]

I included the additional home variable because 61 debtors in the sample, over 40%, had a mortgage on a second (or third) property at the time they filed bankruptcy. I hypothesized that this additional burden might have had some effect on their ability to keep their first home, but that did not turn out to be the case. There are several related explanations for this outcome. It may indicate that even when such debtors drew on the equity of their first home to finance the purchase of additional properties, they were able to

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Li, *supra* note 19. Given time and resource constraints, I was not able to collect debtor data in these areas.

[61] Bahchieva et al., *supra* note 16, at 92.

[62] It should be noted that MTI at filing in this study substantially exceeded Carroll & Li's (0.42 versus 0.31). Carroll & Li, *supra* note 19. Judged against the U.S. Department of Housing and Urban Development's affordable housing threshold, which sets the maximum MTI at 0.3, a far greater proportion of debtors in this sample had "unaffordable" housing at the time of filing. *See* Eggum et al., *supra* note 14, at 1135 ("[W]idespread adoption of the HUD affordability standard makes it the best available metric for assessing the challenges that bankrupt households may face in retaining their homes in chapter 13 bankruptcy."). 50% of debtors in Carroll & Li's study surpassed the HUD affordability threshold, whereas 75% of debtors in this study did. *See* Carroll & Li, *supra* note 19, at 127. . To put these figures in nationwide context, John Eggum, Katherine Porter, and Tara Twomey recently found that 70% of chapter 13 debtors in the U.S. had unaffordable housing by the HUD standard. Eggum et al., *supra* note 14, at 1141. Interestingly, though, median LTV at bankruptcy filing in Carroll & Li's study was greater than in this study (0.99 versus 0.91). *See* Carroll & Li, *supra* note 19. Considering that all other statistical comparisons with Carroll and Li have indicated that homeowners in this study were substantially more distressed at the time of bankruptcy filing, the LTV comparison defies easy explanation.

[63] Bahchieva et al., *supra* note 16, at 97.

surrender those additional homes upon filing bankruptcy without being so financially weakened that they would eventually lose their resident home as well.[64] Further, distressed owners of multiple homes have clear incentives to quickly surrender a second property when on the verge of filing bankruptcy. Emotional attachment to the second home, which is more likely to be a rental or investment property, is presumably far less than to the first home. The burden of mortgage payments on additional properties, moreover, would be a serious millstone on debtors' effort to keep their primary residence in bankruptcy.

I also included whether debtors had filed bankruptcy in the past, given that Congress in its 2005 bankruptcy reform law expressly designed certain provisions to curb a perceived problem of serial filings—specifically, debtors who would repeatedly file bankruptcy to take advantage of the automatic stay, but not finish their plans.[65] However, the infrequent occurrence and statistical insignificance of repeat filing in this study indicates that that dynamic was not relevant here.

D. Predicted Probabilities

Model 4, which reflects Model 3 with months in arrears substituted for foreclosure at filing, was designed to facilitate predicted probability calculations. Even though months in arrears is not as strong of a predictive variable as foreclosure at filing, it is still statistically significant (at 1% level in Model 4). And because it is a continuous independent variable, unlike foreclosure at filing, one can calculate predicted probabilities for home loss at any given value for months in arrears. Predicted probabilities give the expected probability of the dependent variable (here, home loss), for a given value of an independent variable (here, months in arrears), with the other variables held at a specified value. A graph of a predicted probability shows the change in the dependent variable as the independent variable changes.

Figure 2 is a graph of the predicted probability of home loss by months in arrears, based on Model 4 and with LTV and MTI kept at their mean values.

The probability of home loss increases at a constant rate from 0 months in arrears to 30 months in arrears, with every month in arrears yielding about 1.2% higher probability of losing one's home within three years of filing

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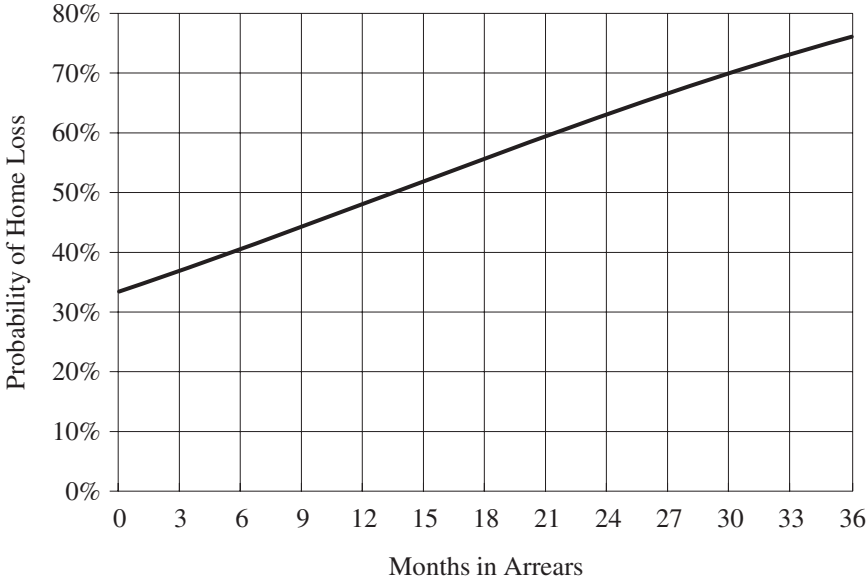
[64] Although I noticed a number of debtors with second homes surrendering those homes at bankruptcy filing (or shortly thereafter), I was not able to collect a complete data set of this pattern. A key reason was that many second homes were not located in Broward County, so I had no consistent data source for confirming that the second home was indeed surrendered.

[65] *See* H.R. REP. No. 109-31(1), at 69 (2005) ("Sec. 302 of the [Bankruptcy Abuse Protection and Consumer Protection Act of 2005] amends section 362(c) of the Bankruptcy Code to terminate the automatic stay within 30 days . . . if such individual was a debtor in a previously dismissed case within the preceding one-year period.").

FIGURE 2: PROBABILITY OF HOME LOSS BY MONTHS IN ARREARS



Notes:
1) Predicted probabilities based on Model 4 in Table 4, *supra*.
2) Months in arrears calculated by dividing total arrears by mortgage

bankruptcy.[66] From a theoretical perspective, the constant rate of increase is arguably surprising. In general, the problems associated with progressively greater arrearage do not seem to accumulate in linear fashion: unpaid interest and fees compound over time, making the balance of arrears grow exponentially rather than in a linear fashion. More specifically, one would expect the likelihood of entering the foreclosure process to accelerate at around three months of arrearage, which is when many lenders start the process.[67]

[66] Carroll and Li calculate marginal effects for independent variables in their regression model, including months in arrears, LTV, and MTI. Carroll & Li, *supra* note 19. Carroll and Li found that mortgage arrears had a statistically significant and substantial effect on homeownership outcomes: filers who were over a year behind in mortgage payments at the time of bankruptcy filing lost their homes at a 41% rate. *Id.* at 123. Each additional month of delinquency, according to their model, increased the likelihood of foreclosure by 1.2%. *Id.* For each additional percentage point in LTV and MTI, debtors were 0.28% and 0.26% more likely to lose their homes to foreclosure, respectively. *Id.* However, I do not use their findings as comparative benchmarks in this section due to a number of methodological differences. Whereas I calculate predicted probabilities based on a logistic regression model with three independent variables, Carroll & Li calculate marginal effects based on a probit regression model with 27 independent variables. *Id.* at 127. In particular, it is difficult to make reliable comparisons between my predicted probability findings, which are non-linear at times, and Carroll & Li's reporting of linear marginal effect calculations. *Id.*

[67] *Frequently Asked Questions*, DETROIT OFF. FORECLOSURE PREVENTION AND RESPONSE, http://www.foreclosuredetroit.org/pages/Frequently_Asked_Questions.

Figure 2 also indicates that homeowners who are completely up to date with their mortgages at bankruptcy filing still have a predicted rate of home loss of 35%, whereas homeowners who have built up an entire year of arrearage at filing are only 14 percentage points more likely to lose their homes. Intuitively, one might have expected that differential to be larger, given that a year's worth of arrearage can amount to an additional five-figure debt that a homeowner must pay back while also making regular mortgage payments.

Homeowners who were not yet in distress during 2007 (i.e., those with zero arrears, denoted by the y-intercept on Figure 2) still had a substantial chance of encountering difficulties within the subsequent three years, likely as a result of the broader South Florida housing crash during that period of time. However, the linear increase in predicted loss does not appear to have a clear explanation. To restate a theory advanced earlier, it may well be that the crushing demand on lenders and courts to handle so many delinquencies in South Florida recently has stretched mortgage servicer and court resources and made the foreclosure process timing more idiosyncratic. This pattern constrasts with what one would expect in more normal circumstances: an acceleration in predicted loss probability within a certain stretch of time in arrears.

Figure 3 presents predicted probabilities using Model 4 of a) home loss by LTV keeping MTI and months in arrears at their mean values, as well as b) home loss by MTI, keeping LTV and months and arrears at their mean values.

When compared to months in arrears, the range of predicted probabilities for MTI and LTV is considerably broader. That said, it is worth recalling that the range of the underlying ratios can also differ substantially, which makes certain segments of the predicted probability graph more relevant than others. The median MTI in this sample was 0.42, with the 5th percentile at 0.14 and the 95th percentile at 0.89. The median LTV at filing in this sample, meanwhile, was 0.91, with the 5th percentile at 0.30 and the 95th percentile at 1.28.

Focusing instead on the middle 90% of the distribution of LTV and MTI, respectively, helps to minimize the distortive effect of those extrema. Using that analytical frame, predicted probabilities across the 5th–95th percentile range of distribution for both MTI (between 0.14 and 0.89) and LTV (between 0.30 and 1.28) appear to increase at an effectively linear rate. There is approximately a 0.4% increased probability of loss for each 1% rise in ratio. Accordingly, a debtor at the 95th percentile of MTI is roughly twice as likely to lose his or home than a debtor at the 5th percentile.[68] Because of the wider distribution of LTV values, for debtors at those same

[68] Author's calculation (predicted probability of loss at 0.89 MTI, 64%, divided by predicted probability of loss at 0.14 MTI, 33%).

FIGURE 3: PROBABILITY OF HOME LOSS BY LOAN-TO-VALUE AND MORTGAGE-TO-INCOME RATIO

Notes:
1) Sample is of Broward County, FL bankruptcy filers from 2007. Sample size is 150
2) Predicted probabilities based on Model 4 in Table 4, *supra*.

percentiles of LTV, a debtor at the 95th percentile is three times more likely to lose his or her home than the 5th percentile debtor.[69]

IV. IMPLICATIONS

This study indicates that from a policymaking standpoint, chapter 13 should not be seen as a "last ditch" option for troubled homeowners, particularly in challenging housing market conditions. Homeowners' ability to save their homes with chapter 13 becomes progressively weaker as they fall deeper into arrears before filing, and diminishes sharply if they wait until the lender forecloses. Credit counselors, academics, courts, and news outlets

[69] Author's calculation (predicted probability of loss at 1.28 LTV, 63%, divided by predicted probability of loss at 0.30 MTI, 24%).

continue to tout chapter 13 for homeowners facing foreclosure.[70] In doing so, they should stress the importance of the timing of the bankruptcy filing. The data show that filing bankruptcy before foreclosure increases the probability of saving one's house from foreclosure.

One particularly effective means of outreach may be via delinquency notices from servicers. Troubled homeowners would be far more likely to read these, and at precisely the time chapter 13 could help them the most, as compared to other media like advertising, flyers, or websites. The new Consumer Financial Protection Bureau could consider making a rule that would require servicers to include an insert (or similar medium) apprising troubled homeowners of the potential availability of chapter 13 in mailing such notices.[71] The notice would not encourage bankruptcy filing over other options, but it would inform homeowners that chapter 13 is an option that may be appropriate for them.

A separate implication pertains to the plan confirmation process. As Table 2 showed, among the set of debtors who lost their homes, the time from bankruptcy filing to loss was much shorter when a plan was not confirmed. To justify the extra time and resources that are expended when a plan is confirmed, but the house is later lost anyway, one would expect that the debtor-homeowners with confirmed plans were relatively less distressed and thus had a better chance *ex ante* of keeping their homes. It does not appear that judges in this study were confirming swaths of hopeless cases; plan confirmation has a statistically significant relationship with home loss. Yet the data show that months in arrears is a significant predictor of plan confirmation. This suggests that judges pay attention to months in arrears but neglect other important measures of homeowner distress, particularly LTV and MTI. An easy way to facilitate consideration of such measures would be to require a calculation of them on a specific bankruptcy schedule. Currently, judges would have to manually calculate those ratios from data listed on

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[70] *See, e.g.*, Chapter 13 Bankruptcy, *supra* note 1; Katie Leslie, *Going Bankrupt to Save a Home: To Hold Off Foreclosure, Some File Chapter 13*, ATLANTA J. CONST., JAN. 17, 2011, at 1A (discussing home-saving benefits of chapter 13); Stephen Elias, *How Bankruptcy Can Help With Foreclosure*, NOLO, http://www.nolo.com/legal-encyclopedia/bankruptcy-help-with-foreclosure-29631.html (last visited Oct. 30, 2012).

[71] In the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Congress created the Consumer Financial Protection Bureau ("CFPB") and granted it regulatory authority over a number of consumer laws, including the Real Estate Settlement Procedures Act of 1974 ("RESPA"), which would provide the legal basis for the rule proposed here. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203 Stat. 1376, 1002(12)(M), 1011(a). The CFPB has authority to "prescribe rules and issue orders and guidance, as may be necessary or appropriate to enable the Bureau to administer and carry out the purposes and objectives" of those laws. Dodd-Frank Act § 1022(b)(1). RESPA makes clear that Congress intended to cover information-sharing during the mortgage servicing process, as well. *See* 12 U.S.C. § 2605(e) (2006) (requiring any servicer of a federally related mortgage loan to respond to borrowers' requests for certain information). Arguably, then, the informational rule proposed here would have sufficient relation to RESPA's purposes and objectives for the CFPB to enact it.

different schedules.[72] And even if they did make such calculations, it would be very difficult to discern what the right benchmarks are.

This study's results may also be pertinent to the debate on mortgage modifications (or "cramdown") in chapter 13, which arose in the wake of the foreclosure crisis. Mortgage cramdown would have allowed bankruptcy judges to modify the terms of debtors' primary mortgages; however, the U.S. Senate rejected a proposal to institute this practice in 2009.[73] Although a discussion of the merits and drawbacks of cramdown is beyond the scope of this Note, one particular critique of cramdown is relevant here: that the completion rate of chapter 13 is too low to make cramdown worthwhile.[74] To the extent that cramdown allows debtors to lower mortgage payments and free up more resources to cure arrears, however, debtors' ability to use chapter 13 to keep their homes may well be enhanced.[75] Three quarters of debtors in this study exceeded the HUD affordable housing threshold for MTI, and MTI was a highly significant predictor of home loss in chapter 13. If debtors at the average MTI (0.47) in this sample had a mortgage cramdown to the HUD threshold of 0.3, the chance of them losing their homes would have decreased from 46% to 39%, as indicated by the data from Figure 3. More strikingly, modifying mortgage payments to the HUD threshold for debtors at the 95th percentile of MTI in this study would have lowered their chances of home loss from 64% to 39%.

Conclusion

This Note examined the degree to which chapter 13 bankruptcy, with its home-saving tools (such as giving debtors' the ability to pay off mortgage arrearages over time and cure a default on a home mortgage), would be an effective strategy for distressed homeowners who want to withstand the foreclosure crisis and retain their homes. This is a question of great practical and policy importance. Hundreds of thousands of debtor-homeowners filed chapter 13 over the last five years, and as existing literature suggests, the vast majority of them likely chose chapter 13 because of its purported home saving features.[76]

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[72] To calculate LTV, one would need to look at Schedule D for loan data and Schedule A for home value data. To calculate MTI, one could theoretically look at Schedule J to find both mortgage payment and income data, but often (at least in this study) mortgage payments were omitted from that schedule, requiring reference to creditor claim forms or the bankruptcy plan to gather that information. In both cases, a further calculation would also be necessary to obtain the ratio.

[73] *See Legislative Update: U.S. Senate Rejects Mortgage Modification in Chapter 13 Cases*, Am. Bankr. Inst. J., Jun. 2009, at 10, 10, 69.

[74] *See* Katherine Porter, *Cramdown Controversy #2—Will I Succeed?*, Credit Slips (Jan. 12, 2009, 11:33 AM), http://www.creditslips.org/creditslips/2009/01/cramdown-controversy-2will-i-succeed.html.

[75] *See* Eggum et al., *supra* note 14, at 1164.

[76] *See Chapter 13 Bankruptcy*, *supra* note 1.

Many debtors in this sample may simply have waited too long to save their homes in chapter 13, especially under such extraordinarily difficult economic conditions. The fact that 65% of debtors were in the foreclosure process upon filing bankruptcy, and that foreclosure at filing was the strongest predictive variable of home loss, suggest that timing really does matter in the effectiveness of chapter 13 for troubled homeowners. This implies a significant circumstantial limit on chapter 13's effectiveness, which may be difficult to work around in practice. Specifically, it may indicate homeowners' reluctance to confront the possibility of loss until it has become too serious and obvious to be denied, perhaps due to emotional attachment to their home.[77]

Ultimately, chapter 13 has not met the challenge of helping distressed homeowners cope with the severest effects of the foreclosure crisis: half the debtors in this sample still lost their homes within three years, and over eight of ten home losses resulted from foreclosure. Given the lack of a control sample of troubled homeowners that did not file bankruptcy, it is impossible to say with certainty that chapter 13 provided no help against the problems of the foreclosure crisis. But the experience of Broward County debtors clearly demonstrates that chapter 13 was not a cure-all for troubled homeowners in the foreclosure crisis, and that serious reform, both in public policy and debtor practice, are necessary for it to reliably safeguard against home loss in similarly adverse conditions.

[77] *See* Bahchieva et al., *supra* note 16.

Appendix
Characteristics of Chapter 13 Bankruptcy Filers from Broward County, Florida in 2007

Variable	Mean	Median	Std. Dev.
Personal Financial Statistics ($)			
Total assets	412,675	345,010	247,844
Total liabilities	391,031	331,229	236,043
Average monthly income	5,254	4,600	4,517
Average monthly expenditures	3,254	2,685	2,049
Housing Financial Statistics ($)			
Home value	326,831	285,500	158,255
Home primary mortgage debt	258,095	234,742	148,217
Home secondary mortgage debt	33,115	0	56,904
Other real property debt	40,655	0	110,891
Home monthly mortgage payment	2,270	1,907	1,326
Home mortgage arrears at filing	25,351	16,649	30,823
Ratio of mortgage debt-to-value	0.87	0.91	0.30
Ratio of mortgage payment to income	0.47	0.42	0.24
Time Statistics			
Years of homeowner tenure at filing	5.2	3.4	4.6
Months in arrears at filing	10.8	9.1	10.3
Months in bankruptcy*	15.3	7.9	14.5

*Measured as of three years after filing. Accordingly, cases still pending at that point are assigned a pseudo case length of 36.0 months for this calculation.