2019

I Promise to Pay

Joshua Mitts
Columbia Law School, jmitts@law.columbia.edu

I Promise to Pay

Joshua Mitts *Columbia University*

Abstract

Consumers are more likely to keep a repayment promise they make themselves. When a scheduling conflict prevents a borrower from attending a mortgage closing, a power of attorney (POA) empowers a third party to promise that the borrower will repay the loan. On a matched sample of POA and non-POA loans, and comparing within borrower and within property, I link POAs to greater delinquency and foreclosure. Although POAs are uncorrelated with cash flow shocks, they reflect reduced promise keeping when borrowers undergo financial distress. This association vanishes for originator-servicers' loans, which suggests that financial intermediation plays a role in consumer lending.

1. Introduction

This paper shows that consumers are more likely to keep repayment promises they make themselves. A large literature in economics considers why individuals keep promises. Early work points to sensitivity to a promisee's expectations, that is, guilt aversion (Charness and Dufwenberg 2006; Ellingsen and Johannesson 2004). Vanberg (2008, p. 1467) suggests a "preference for promise keeping per se." More recently, Ederer and Stremitzer (2017, p. 162) propose a conditional form of guilt aversion, suggesting that "a promise establishes a personal connection that increases the salience of the promisee's expectations." Di Bartolomeo et al. (2017, p. 9) argue that prosocial choice is higher if "[a] person has made a promise to the recipient he interacts with." Arlen and Tontrup (2015) and Arlen, Spitzer, and Talley (2002) find that transacting through a third-party agent leads an experiment's participants to feel less responsibility for and regret over negative outcomes.

Using data on more than 1.4 million real estate transactions, I examine whether there is a link between promise keeping and personal promise making. I focus

I am grateful to the editors, an anonymous referee, Jennifer Arlen, Ian Ayres, Patrick Bolton, Anu Bradford, Ryan Bubb, Jessica Bulman-Pozen, Emiliano Catan, Xiao Cen, Albert Choi, Arpit Gupta, Dave Hoffman, Colleen Honigsberg, Gur Huberman, Robert J. Jackson, Jr., Wei Jiang, Sonia Katharani-Khan, Tamar Mitts, John Morley, Ed Morrison, Suresh Naidu, Sarath Sanga, Robert Scott, Alan Schwartz, Eric Talley, Dane Thorley, and Jonathon Zytnick for very helpful comments. The CoreLogic foreclosure data used in this study are licensed material obtained with the assistance of the University of Michigan Libraries.

[*Journal of Law and Economics,* vol. 62 (February 2019)]

on mortgage lending, in which breaking the promise to repay a loan constitutes default. Prior work identifies negative equity and illiquidity as triggering a consumer's decision to default on a loan (Elul et al. 2010; Mian and Sufi 2009, 2010, 2014). I identify a third trigger: a willingness to break the repayment promise, conditional on a liquidity shock. Consistent with Arlen and Tontrup (2015) and Ederer and Stremitzer (2017), I find that consumers are more likely to keep repayment promises they make themselves.

The empirical design of this study is based on the practice in residential real estate transactions requiring a mortgage borrower to attend a closing when purchasing a home. In the United States, a buyer first submits an offer to purchase a home, choosing a closing date when she will physically attend a meeting in a lawyer's or title company's office to sign the loan documents. Once the offer is accepted, the closing date becomes a binding term on which the seller relies to purchase his or her next home and defer paying taxes on capital gains. Proceeds from the sale of a home are tax free only if the seller engages in a like-kind exchange, which generally requires a simultaneous swap of one property for another (26 U.S.C. sec. 1031).[1] In addition, the seller is often unable to fund a subsequent purchase without the proceeds from the first sale, which makes it quite important to close on the scheduled day. And while a buyer could theoretically retain the proceeds from her own sale until a new closing, this raises a host of practical difficulties arising from delayed moving and a need for storage and temporary lodging.

But scheduling conflicts might prevent a borrower from attending the closing. To ensure the transaction will close on that day, lenders can allow an absent borrower to execute a power of attorney (POA), which empowers a third party to legally bind the borrower by signing the note, mortgage, and other closing documents in the borrower's name.[2] As a rule, lenders accept a POA only when the borrower shows that an extraordinary event made it impossible to sign in person. Consider the underwriting guidelines for Loan Depot, a national mortgage wholesaler:[3]

> In certain circumstances a borrower may not be available or may be unable to attend the signing/closing of their loan documents. In cases where the principal is unavailable to conduct their business a POA may be used. POAs should generally be used when the principal is unavailable to conduct their business in person and not as a matter of convenience. . . . The Attorney-in-Fact will be required to provide a written explanation for the cause of the absence of the borrower. Acceptable reasons to use a specific Power of Attorney could be military assignment, short-term personal or business trips, or physically incapacitating hospitalization.

[1] While deferred exchanges are possible, they are subject to a host of complex requirements including identifying potential replacement properties, delivering notice, and, most crucially, refraining from taking control of the cash or other proceeds of the transaction. This latter condition is in tension with the standard escrow procedure of wiring the proceeds of the sale to the seller, which is why simultaneous swaps are a much more straightforward way to ensure the capital gains on the sale are not taxed. See, for example, Internal Revenue Service (2008).

[2] The documents must be signed in person with a licensed notary.

[3] See the Loan Depot's definition of power of attorney (POA): Loan Depot, Power of Attorney (https://portal.ldwholesale.com/portaldocs/yoda/wholesale/PoA_Ovrvw.htm).

Figure 1 shows the first page of a publicly filed POA, which empowers Mr. Mavashev to promise on behalf of Mr. Rashid that Mr. Rashid will repay his mortgage loan. Figure 2 shows the signature block of Mr. Rashid's mortgage contract. While Mr. Rashid is the sole borrower, Mr. Mavashev signs the loan documents and writes, underneath the signature block, "Roman Mavashev, as his atty in fact."[4] The signature pages of these documents show the timeline: Mr. Rashid signed the POA on October 28, 2005, just over 2 weeks before the mortgage closing on November 14, 2005. It is likely that the contract of sale was signed several weeks prior, which suggests that the scheduling conflict arose sometime in October 2005.

For legal reasons, lenders cannot price discriminate against POA borrowers.[5] But while lenders cannot charge more for POA loans, it is not costless for borrowers to use a POA. Borrowers must convince the lender that the scheduling conflict is truly unanticipated and makes it impossible to attend the closing. In addition, the POA must be notarized, which involves some time and expense. Thus, POAs are unlikely to be employed purely as a matter of convenience.

This study examines the link between POAs and mortgage default. Are borrowers more likely to fulfill repayment promises they make themselves? My data show that POA loans display an interesting pattern: borrowers with scheduling conflicts at the closing are no more likely to show initial signs of financial distress[6] but are far more likely to break the repayment promise after experiencing financial distress. This evidence suggests that there is something about personally promising to repay the loan that is linked to enhanced promise keeping.

I identify POA filings for all of the more than 1.4 million mortgages originated in the urban and suburban neighborhoods of New York City from 2002 to 2017. In a matched sample of POA and non-POA loans, I find that POAs are tied to greater delinquency rates. In addition, I compare multiple transactions by the same borrower with and without a POA. This within-borrower design employs more than 570,000 borrower fixed effects to account for an individual's propensity to default that is correlated with scheduling conflicts. I include fixed effects for more than 460,000 tax lots and more than 5,000 origination dates to adjust for local socioeconomic heterogeneity and time trends.

In addition, I statistically match my public records data with a loan performance panel of more than 4 million loan-months provided by Fannie Mae and

[4] The term "attorney-in-fact" is the legal status of the holder of a POA.

[5] As a borrower chooses the closing date when making the offer, scheduling conflicts will lead to a POA if they arise after the offer has been accepted. A borrower generally obtains a conditional loan approval from a lender immediately on acceptance of the offer. Under the Truth in Lending Act, this effectively locks in the loan's terms, prohibiting the lender from raising the cost of the loan in response to a subsequent request for a POA. The act lists the categories for which lenders may charge additional fees beyond the initial closing cost estimate (12 C.F.R. sec. 1026.19[e][3]), and use of a POA is not one of them (except for the recording fee).

[6] This might seem surprising, as chronic medical conditions can impose financial stress (Gupta et al. 2017). However, these often involve scheduled treatments, not the kind of unexpected hospitalization that precludes attendance at the closing. Nearly 80 percent of emergency room visits involve nonchronic conditions (Centers for Disease Control and Prevention 2013).

DURABLE GENERAL POWER OF ATTORNEY
NEW YORK STATUTORY SHORT FORM

-22067

THE POWERS YOU GRANT BELOW CONTINUE TO BE EFFECTIVE SHOULD YOU BECOME DISABLED OR INCOMPETENT

(CAUTION: THIS IS AN IMPORTANT DOCUMENT. IT GIVES THE PERSON WHOM YOU DESIGNATE (YOUR "AGENT") BROAD POWERS TO HANDLE YOUR PROPERTY DURING YOUR LIFETIME, WHICH MAY INCLUDE POWERS TO MORTGAGE, SELL OR OTHERWISE DISPOSE OF ANY REAL OR PERSONAL PROPERTY WITHOUT ADVANCE NOTICE TO YOU OR APPROVAL BY YOU. THESE POWERS WILL CONTINUE TO EXIST EVEN AFTER YOU BECOME DISABLED OR INCOMPETENT. THESE POWERS ARE EXPLAINED MORE FULLY IN NEW YORK GENERAL OBLIGATIONS LAW, ARTICLE 5, TITLE 15, SECTIONS 5-1502A THROUGH 5-1503, WHICH EXPRESSLY PERMIT THE USE OF ANY OTHER OR DIFFERENT FORM OF POWER OF ATTORNEY.

THIS DOCUMENT DOES NOT AUTHORIZE ANYONE TO MAKE MEDICAL OR OTHER HEALTH CARE DECISIONS. YOU MAY EXECUTE A HEALTH CARE PROXY TO DO THIS.

IF THERE IS ANYTHING ABOUT THIS FORM THAT YOU DO NOT UNDERSTAND, YOU SHOULD ASK A LAWYER TO EXPLAIN IT TO YOU.)

THIS is intended to constitute a **DURABLE GENERAL POWER OF ATTORNEY** pursuant to Article 5, Title 15 of the New York General Obligations Law:

I, Mamun Ur Rashid, residing at 32-32 79th St, East Elmhurst, NY 11370 do hereby appoint:

Roman Navashev, attorney at Law

(If 1 person is to be appointed agent, insert the name and address of your agent above)

(If 2 or more persons are to be appointed agents by you insert their names and addresses above)

my attorney(s)-in-fact TO ACT

(If more than one agent is designated, choose one of the following two choices by putting your initials in one of the blank spaces to the left of your choice:)

( ) Each agent may SEPARATELY act.

( ) All agents must act TOGETHER.

(If neither blank space is initialed, the agents will be required to act TOGETHER)

IN MY NAME, PLACE AND STEAD in any way which I myself could do, if I were personally present, with respect to the following matters as each of them is defined in Title 15 of Article 5 of the New York General Obligations Law and to the extent that I am permitted by law to act through an agent:

Figure 1. First page of a power of attorney

BY SIGNING BELOW, I accept and agree to the promises and agreements contained in pages 1 through 17 of this Security Instrument and in any Rider signed by me and recorded with it.

Witnesses:

Mamun Ur Rashid (Seal)
Mamun Ur Rashid -Borrower
Roman Navashev, as Atty, mfat

(Seal)
-Borrower

Figure 2. Signature block on a mortgage contract

Freddie Mac. I find that POAs are uncorrelated with 30-day delinquency, a proxy for financial distress. However, conditional on 30-day delinquency, POAs are linked to a higher likelihood of 60-day and 90-day delinquency, foreclosure, and loss given default. As further evidence that POAs do not predict financial distress, I show that POA loans do not undergo 30-day default before non-POA loans, and delinquent POA borrowers neither took on more secondary mortgage debt nor had more civil judgments filed against them.

Why might borrowers be more likely to keep promises they make themselves? One possibility is selection: POAs may be used for loans that are more likely, ex ante, to be abandoned in distressed times. I employ propensity-score matching to ensure that POA and non-POA loans are balanced on observables. Borrower fixed effects absorb a time-invariant propensity for promise keeping. To rule out time-varying selection, I show that POAs are no more likely to trigger default for non-owner-occupied homes, second homes, or nonlocal borrowers. Moreover, I match those transactions to public records and show that the results are not driven by borrowers who are elderly, ill, or incapacitated.

Another possibility is that personal promising enhances understanding. The closing is an hours-long meeting involving a review of each document the borrower is signing. A large literature studies the link between financial education and consumers' behavior (Hilgert, Hogarth, and Beverly 2003), which may decay with time (Fernandes, Lynch, and Netemeyer 2014). Agarwal et al. (2010) find that graduates of a financial literacy program targeting distressed low- and middle-income borrowers were less likely to default on their mortgage loans. I analyze 33,557 mortgage contracts and extract complex terms like an adjustable interest rate, interest rate resets, and prepayment penalties. I find that the link between POAs and default is only weakly tied to a transaction's complexity.

A more compelling story is that POAs undercut personal responsibility, which reduces the salience of the repayment promise. Guiso, Sapienza, and Zingales (2013) find that borrowers who believed it was wrong to walk away from a mortgage were less likely to default strategically. Overt acts receive greater cognitive attention (Roese and Olson 1995), especially those at the end of a causal chain like attending the closing (Miller and Gunasegaram 1990; Spellman 1997). A taste for commitment may turn on who is viewed as the protagonist of the promise (Byrne and Girotto 2009; Wilkinson-Ryan 2014). Indeed, formalities like a signature are linked to greater deliberation when contracting (Leszczyńska 2016). Wilkinson-Ryan (2012) finds that contract assignment reduces moral commitment to promise keeping. Formalities affect how consumers perceive the contract (Hoffman 2016) and facilitate relational investments (Hoffman 2018).

Empirically, I find that the POA effect is absent for loans serviced by the originating lender. Frequent contact between lender and borrower may heighten the "salience of the promisee's expectations" (Ederer and Stremitzer 2017, p. 162) and enhance a feeling of personal responsibility (Arlen and Tontrup 2015). While the literature on relationship banking has focused on the role of soft information in small-business lending (Berger and Udell 2002; Bolton et al. 2016), the

ongoing contact inherent in local intermediation may enhance guilt aversion as well as give the lender an opportunity to intervene and encourage the borrower to remain committed in distressed times.

A personal-responsibility hypothesis is consistent with qualitative evidence from conversations with banking industry professionals. In January 2018, I spoke with the chief executive officer and chief lending officer of two community banks in New York City,[7] who noted that POAs are typically used when unanticipated work conflicts prevent borrowers from attending the closing. Both expressed concern that borrowers may be less engaged with their loans when they do not personally attend the closing. One pointed to the solemnity of the closing as heightening the seriousness of the commitment to the borrower. Both emphasized the proactive approach taken by originator-servicers who intervene early when borrowers begin to fall behind on their monthly payments.

2. Data

This study requires data on POA filings, but most US counties and city governments do not maintain these legal records in a format amenable to empirical study. An exception is New York City, which publishes land records for every property throughout the suburban and urban neighborhoods within its borders. New York City is also an attractive setting to study because it has substantial socioeconomic diversity, ranging from detached, single-family homes in suburban Queens to townhomes in Manhattan.

2.1. Mortgage Records

To obtain mortgage transactions for individual properties, I use New York City land records for the boroughs of Brooklyn, the Bronx, Manhattan, and Queens from the Automated City Register Information System (ACRIS)[8] maintained by the New York City Offices of the City Register.[9] Although ACRIS has been in use since 1966, comprehensive public access to land records was not available until 2002. Some of the key data fields provided by ACRIS are given in Table OA1 in the Online Appendix.

The borough-block-lot (BBL) identification system is used by the New York City government to identify properties for tax assessment purposes. For each of the four boroughs, the block number refers to a contiguous city block or group of houses. The lot number identifies the specific property for tax purposes, that is, the residential house. There are a total of 22,772 borough-blocks and 463,534 BBLs in the data set I use for estimation.

The BBL identifiers provide a remarkable level of detail that facilitates controlling for fine-grained demographic and property-level characteristics. To

[7] All interviews were conducted in confidentiality, and the names of interviewees are withheld by mutual agreement.

[8] See NYC Department of Finance, ACRIS (http://www1.nyc.gov/site/finance/taxes/acris.page).

[9] The system does not include the borough of Staten Island, which has its own land records system that is far less accessible to the general public.

Figure 3. Assessed value in Flushing, Queens

demonstrate the granular nature of these data, Figure OA1 in the Online Appendix shows a row of properties in the ACRIS data set in the Flushing neighborhood of Queens. Each of the homes, located on 164th Street, constitutes a distinct BBL, and the street is a borough-block. The data set includes many suburban neighborhoods with stand-alone houses, and as shown in Section OA4 of the Online Appendix, the POA correlation is concentrated in Brooklyn, Queens, and the Bronx, which are boroughs with these sorts of single-family homes. Figure 3, which was generated from ACRIS data, plots the assessed value per square foot for the BBLs reflecting homes in Flushing. In Figure 3, city blocks are shown as the demarcated shapes, and the individual lots are delineated by borders in each block. The property indicated with a star is shown in Figure OA1. These rich data facilitate adjusting for socioeconomic heterogeneity at the level of street intersections with borough-block fixed effects.

Using these BBL identifiers, I merge the land records with overtime releases of New York City's Primary Land Use Tax Lot Output (PLUTO) database, which contains a number of property-specific characteristics from over 70 different city agencies.[10] The characteristics include the name of the property owner, the assessed value of the property, the area of the lot, the area of the building, the number of floors of the building, the year it was built, and a variety of city government details: the school district, city council district, police precinct, property zoning, and many more. The BBL classification system provides a granular level of detail that facilitates employing high-dimensional fixed effects at the borough-block

[10] See NYC Planning, PLUTO and MapPLUTO (https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-pluto-mappluto.page).

level. As these characteristics correspond to individual properties, they allow me to control for time-varying property characteristics, like assessed tax value, that may drive mortgage default.

While ACRIS contains a field for the name of the buyer(s) receiving a deed, it is inconsistently populated in a nonstandard manner. The PLUTO database consistently provides the name of the owner for tax purposes. Thus, by using the PLUTO database, it is possible to systematically link properties to their owners, so long as one uses PLUTO data following the property transfer. Unfortunately, the reporting frequency of the PLUTO system is inconsistent: New York City published the PLUTO database every year from 2002 to 2007. There was no release in 2008 because of a systems migration. Beginning in 2009, the PLUTO database was published twice per year, with the exception of 2015, when it was published once.

The infrequency of the PLUTO releases is not a problem in and of itself, as buyers move infrequently. The updates capture the vast majority of owners. But it is necessary that the PLUTO release dates follow the mortgage transaction dates so that they reflect the accurate owner. Table OA2 in the Online Appendix shows the mapping that I employ from the date of the mortgage transaction to a PLUTO release.

There are 1,729,508 mortgage filings in ACRIS from January 1, 2002, to May 31, 2017. I aggregate the mortgage amount by BBL and filing date to account for multiple mortgages filed on the same date, for example, a first and second mortgage. This yields 1,462,142 mortgage transactions. I identify 1,068,953 with property-level covariates in the PLUTO release following the mortgage transaction. The difference is due to condominiums, which are excluded from PLUTO because of inconsistencies in the numbering system.[11] Because of these reporting errors with condo lots, I focus on the 1,068,953 mortgages with PLUTO covariates.[12]

Among the 1,462,142 mortgages in the data set, 186,139 (12.73 percent) contain a POA filing on the same day as the mortgage and at the same BBL. Among the 1,068,953 noncondominium mortgages with covariates, 53,544 (5.01 percent) contain a POA filing. The difference is due to data errors with condominium filings; because condo BBLs reflect the entire building, there are more spurious POA filings by other units in the building. I exclude POAs used for legal purposes other than signing the mortgage note,[13] which yields 15,736 POAs in the data set with condominiums included and 7,793 POAs in the data set with condominiums excluded.

[11] In the ACRIS data set, condo transactions are recorded by the borough-block-lot (BBL) corresponding to the building as whole, whereas other New York City departments utilize a billing BBL for those properties that is not linkable to ACRIS. For a more detailed description of the data limitations for condo lots, see Reilly (2014).

[12] My results are consistent when condos are included. In the Online Appendix, I show that the results are driven by Brooklyn, Queens, and the Bronx, boroughs with detached, single-family homes.

[13] For example, some borrowers give unit-owner POAs for legal purposes when the ownership structure of a stand-alone house or townhome is formally a condominium.

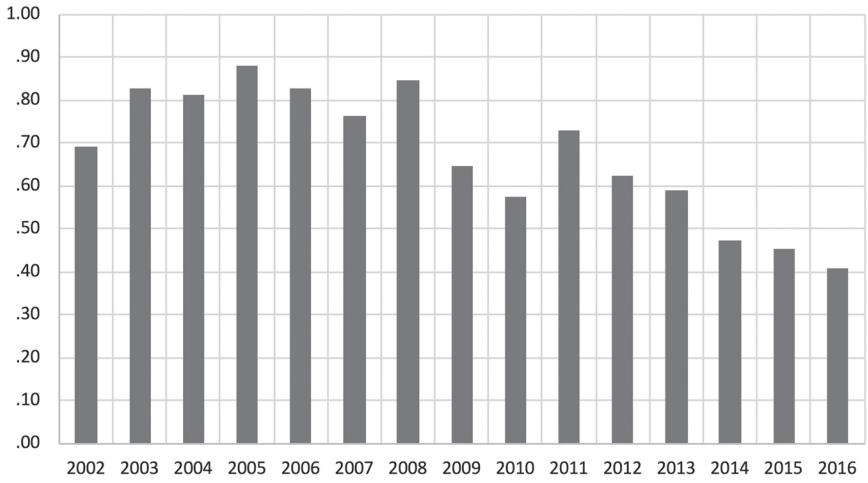

Figure 4. Fraction of powers of attorney

2.2. Delinquency and Preforeclosure Filings

I obtain mortgage delinquency records from CoreLogic. The CoreLogic foreclosure data consist almost entirely of preforeclosure lis pendens filings. In the state of New York, a lis pendens is a judicial proceeding initiated by a lender after a borrower is 90 or more days delinquent on a mortgage loan and is required to bring a foreclosure action. Formal foreclosure sales are rare in the CoreLogic data, which contain only 819 from 2006 to 2017. I examine foreclosure using Fannie Mae and Freddie Mac's Loan Performance Data.

CoreLogic provides preforeclosure filings beginning in 2006. Figure 4 presents the fraction of POAs in the main sample (defined below), which shows that POAs are not bunched around the financial crisis. There is a noticeable downtrend in very recent years (2014–16). In my estimations, I include origination-date fixed effects to adjust for time trends driving delinquency.

The CoreLogic data provide sufficient detail to link lis pendens filings to mortgage transactions with a high degree of accuracy. I merge the ACRIS data with the CoreLogic data on the BBL identifier and mortgage origination date, generating an indicator equal to one if a consumer was 90 or more days delinquent on a mortgage loan, which would lead to the initiation of a preforeclosure proceeding.

2.3. Data on Loan Performance

To examine loan performance in greater detail, I develop another sample from two additional sources. The first is the public-use Home Mortgage Disclosure Act (HMDA) data provided by US banking regulators.[14] These are loan-level reports

[14] See Federal Financial Institutions Examination Council, HMDA and PMIC Data Products (https://www.ffiec.gov/hmda/hmdaproducts.htm).

provided by certain depository and nondepository institutions[15] and include the applicant's gross annual income, occupancy status (owner occupied versus investment), loan type (conventional, Federal Housing Administration, and so on), loan purpose (purchase or refinance), type of purchaser (Fannie Mae, Freddie Mac, private securitizer, and so on), and the borrower's demographics, including sex, race, and ethnicity. To protect borrowers' privacy, the HMDA data provide minimal identifying information. The public-use data contain only the census tract, loan amount (rounded to the nearest $1,000), and year. I employ statistical matching to link these in probability to my data; that is, I identify all mortgages in my data set that satisfy these criteria, which yields 943,492 ACRIS-HMDA potential matches.

Next I utilize the publicly available Loan Performance Data provided by Fannie Mae and Freddie Mac. These data consist of a sample of single-family, fixed-rate loans purchased by Fannie Mae and Freddie Mac, but unlike the ACRIS or HMDA data, they provide detailed information about the creditworthiness of the borrower at origination, including her credit score, the interest rate, loan-to-value ratio, and debt-to-income ratio. In addition, Fannie Mae and Freddie Mac provide a monthly panel of performance for each loan in this data set, including the loan's delinquency status (30–59 days, 60–89 days, 90 or more days, and so on), the unpaid principal balance, and current equity without adjusting for appreciation as of that month.[16] Using these monthly payment data, I derive loan-level covariates reflecting any 30-, 60-, and 90-day delinquency or foreclosure and whether the loan was always serviced by the originating lender.

Like the HMDA data, Fannie Mae and Freddie Mac provide little identifying information. The public-use data contain only the three-digit zip code, loan amount (rounded to the nearest $1,000) and month-year of origination. I statistically link these to my ACRIS-HMDA potential matches by identifying Fannie Mae–Freddie Mac loans that match the year-month of origination (ACRIS), three-digit zip code (ACRIS), loan amount at origination (ACRIS), purpose of the loan (HMDA), and occupancy status (HMDA). I also require that any loan with a preforeclosure filing in the ACRIS data be 90 days delinquent in the Fannie Mae–Freddie Mac data. This yields 1,868,411 three-way potential matches reflecting 73,948 ACRIS transactions and 87,941 Fannie Mae–Freddie Mac loans.

This matching procedure uses all available information to link the data sets. As the multiple observations that remain for each ACRIS transaction reflect irreducible uncertainty, I weight my coefficient estimates and standard errors by the inverse of the number of observations for each mortgage transaction.[17] In the Online Appendix, I present a Monte Carlo simulation showing that this sort of weighting produces unbiased coefficient estimates.

[15] For a description of the reporting criteria, see Federal Financial Institutions Examination Council, Who Reports HMDA Data? (https://www.ffiec.gov/hmda/reporter.htm).

[16] The appraised value at origination is the original balance divided by loan-to-value ratio.

[17] The Online Appendix details the weighting methodology.

2.4. Mortgage Contract Documents

To shed light on adjustable-rate and other loans not contained in the Fannie Mae–Freddie Mac data, I downloaded each mortgage contract in the sample of data with within-borrower variation in default and POAs. This subsample consists of 26,609 transactions with 33,557 contracts that are filed in portable document format (pdf) and are publicly available on the ACRIS website. I applied optical character recognition and pattern matching to extract terms, including those indicating whether the loan has an adjustable interest rate and any interest rate resets or prepayment penalties[18] and the number of pages in the contract. I manually verified the accuracy of the extracted data and corrected errors.

2.5. Samples and Summary Statistics

To summarize, the samples used in this study are as follows: The full sample consists of 1,462,142 mortgage transactions filed on ACRIS. The main sample consists of 1,068,953 noncondominium transactions with property-level covariates such as the owner's name. The loan performance sample consists of 1,868,411 three-way potential matches to HMDA and Fannie Mae–Freddie Mac data, reflecting 87,941 loans. Finally, the contract pdf sample consists of the 26,609 transactions in the main sample with within-borrower variation in default and POAs.

Table 1 gives summary statistics for the full sample, main sample, and contract pdf sample. The number of observations indicates the relevant sample. Table 2 gives summary statistics for the loan performance sample.

3. Empirical Analysis

3.1. Correlates of Powers of Attorney and Matching

3.1.1. Predictors of Powers of Attorney

To shed light on whether POAs reflect a unique channel of promise keeping, I examine the extent to which they correlate with characteristics of the property, borrower, and loan. I begin with the main sample and estimate the following regression using an ordinary least squares (OLS) model:

$$\text{POA}_{i,k} = \gamma' \boldsymbol{X}_{i,k} + \phi_k + \varepsilon_i, \tag{1}$$

where $\text{POA}_{i,k}$ is equal to one if the filing had a POA, $\boldsymbol{X}_{i,k}$ is a vector of covariates, ϕ_k is a fixed effect for borrower k, and ε_i is an independently and identically distributed error term. These covariates include predictors of mortgage fraud or strategic behavior and property and transaction characteristics such as the log mortgage amount, origination year of the mortgage, log assessed property value,

[18] Unfortunately, the interest rate is available only for adjustable-rate mortgages, as fixed-rate mortgages contain the rate in the note, which is not filed publicly. However, the Fannie Mae and Freddie Mac data contain the interest rate for fixed-rate mortgages.

Table 1

Summary Statistics: Continuous Variables in the Full Sample

	N	Mean	SD	Min	25%	Median	75%	Max
POA	1,462,142	.011	.103	0	0	0	0	1
Mortgage Amount	1,462,142	3,851,377	50,282,374	.000	100,000	275,730	499,999	33,300,000,000
Mortgage Year	1,462,142	2008	4.060	2002	2004	2007	2011	2016
Assessed Value	933,372	301,738	15,644,569	10	16,484	21,896	32,102	6,556,893,736
Lot Area (square feet)	1,068,137	5,732	490,996	1	2,000	2,500	3,819	214,755,710
Value/Square Feet	933,264	29.76	138.914	.0002379	6.00	8.62	12.89	17,312
Year Built	1,044,063	1935.347	26.440	1798	1920	1930	1950	2015
Floors	1,044,854	2.495	2.128	1	2	2	2.5	104
Default (zero/one)	1,462,142	.047	.211	0	0	0	0	1
Default Year	68,399	2010.532	2.976	2003	2008	2010	2013	2017
Days to Default	68,395	1,585	1,068	1	694	1,342	2,310	5,335
Predefault Borrowing	13,329	248,347	6,902,840	0	0	0	0	1,208,610,000
Predefault Judgments	168,399	.007	.099	0	0	0	0	5
ARM	26,609	.159	.365	0	0	0	0	1
ARM Initial Rate	2,432	7.020	1.357	1.000	6.000	7.000	8.000	12.000
Rate Reset Interval	2,307	6.224	1.288	1	6	6	6	36
Maximum Initial Interest	2,867	194.202	4,474.752	.000	9.000	9.990	11.150	18.45
Contract Pages	26,609	31.726	44.199	2	14	23	33	642
Prepayment Penalty	26,609	.019	.136	0	0	0	0	1

Note. Categorical variables such as the property owner's name, borough, block, and lot and the dates of the mortgage and default are included as fixed effects. Some variables have fewer observations because of missing data in the New York City Primary Land Use Tax Lot Output data set. Extreme values are not necessarily errors but were left to avoid introducing bias unless the data are clearly erroneous. For example, the lot with over 214 million square feet is John F. Kennedy International Airport, which covers 4,930 acres. The $33 million mortgage reflects a special transaction in 2009 involving the US Treasury and General Motors Corporation.

Table 2

Summary Statistics: Continuous Variables in the Loan Performance Sample

	N	Mean	SD	Min	25%	Median	75%	Max
POA	1,868,411	.013	.114	0	0	0	0	1
Mortgage Year	1,868,411	2005	2.633	2002	2003	2004	2007	2016
Mortgage Amount ($1,000s)	1,868,411	276.98	127.02	4.33	175	300	417	5,775
Applicant Income ($1,000s)	1,868,411	196.536	350.116	1	71	102	149	4,634
Credit Score	1,854,737	732.148	54.251	300	696	742	776	850
Debt-to-Income Ratio	1,816,190	35.170	12.354	1	26	35	44	65
Loan-to-Value Ratio	1,868,402	59.282	17.495	3	48	63	73	100
Interest Rate	1,868,411	5.667	.665	2.250	5.250	5.750	6.125	9.375
30 Days Delinquent	1,868,411	.219	.414	0	0	0	0	1
60 Days Delinquent	1,868,411	.084	.277	0	0	0	0	1
90 Days Delinquent	1,868,411	.070	.255	0	0	0	0	1
Foreclosure	1,868,411	.012	.108	0	0	0	0	1
Originator-Servicer	1,868,411	.063	.244	0	0	0	0	1

Note. Categorical variables such as the borough, block, and lot; Home Mortgage Disclosure Act characteristics such as sex, race, and ethnicity; and the dates of the mortgage origination and default are included as fixed effects.

log lot area, assessed value per square foot, number of floors in the building, and year it was built.

I examine the possibility that POAs may be correlated with mortgage fraud or strategic behavior in three ways. First, I consider whether POAs are linked to higher rates of same-day property flipping, when a property is bought and sold on the same day. Same-day flipping was identified by the Federal Bureau of Investigation (2009) as a chief predictor of mortgage fraud. I identify transactions in ACRIS in which two or more deeds with a nonzero sale price were recorded for a property on the same day and consider whether they occur more frequently for POA loans.

Second, I examine whether POA lenders were more likely to have been the subject of ex post mortgage fraud enforcement, litigation, or complaints. For every lender with more than five transactions in ACRIS ($n = 5{,}231$), I search the Diffbot Global Index, which contains millions of news articles from tens of thousands of sources,[19] for articles containing the name of the lender and the phrase "mortgage fraud." I derive a simple metric of whether a lender appears in any such article and consider whether POA loans are more likely to occur with those lenders as opposed to lenders that are not discussed in news articles about mortgage fraud.

Finally, I include the total number of transactions by the borrower, an indicator variable equal to one if a transaction was the first by the borrower, and the log of the transaction number for that borrower (for example, first, 10th, and so on). I use these to examine whether POAs are used by savvy, repeat borrowers or whether they reflect over-time strategic adoption, which would imply a lower frequency of first-time transactions.

The results are given in Table 3, which shows that the sample is balanced on most covariates, but a few of the predictors are statistically significant. In particular, POAs are much less likely to be used in refinancing transactions; it is much more difficult to move the closing date for a purchase because there are tax and logistical advantages to closing on the purchase and sale transactions on the same day.[20] However, POAs are uncorrelated with same-day property flipping and are less likely to be used with lenders who appeared in mortgage fraud news. They are also used less in later transactions by the same borrower and by owners with fewer overall transactions, which is inconsistent with fraud or strategic behavior.

3.1.2. Matching Design

Nonetheless, to ensure that the comparison of POA and non-POA loans is as balanced as possible, I employ propensity-score matching on the main sample on a single nearest neighbor utilizing the covariates given in Table 3. This yields a matched main sample of 11,862 observations. To mitigate the concern that the

[19] Diffbot, Diffbot Global Index (https://www.diffbot.com/products/globalindex/).

[20] Table OA8 shows that the link between POAs and default is no different between purchase and refinancing transactions in four of five specifications.

Table 3

Power of Attorney Correlates: Full Unmatched Main Sample

	(1)	(2)	(3)	(4)	(5)
Same-Day Property Flipping	.0016	.0037	.0050	.0050	−.0034
	(.21)	(.45)	(.49)	(.49)	(−.34)
Mortgage Fraud in News	−.0008*	−.0006	−.0005	−.0005	−.0000
	(−2.23)	(−1.37)	(−1.19)	(−1.20)	(−.09)
Mortgage Amount (log)	.0028**	.0032**	.0033**	.0033**	.0002
	(11.18)	(12.17)	(12.50)	(12.50)	(.70)
Origination Year	−.0016**	−.0014**	−.0013**	−.0013**	−.0018**
	(−7.99)	(−6.26)	(−5.49)	(−5.47)	(−8.23)
Assessed Value (log)		−.0005	−.0010	−.0010	−.0006
		(−1.41)	(−1.20)	(−1.19)	(−.49)
Lot Area (log)			.0004	.0004	−.0015
			(.70)	(.69)	(−.75)
Value/Square Feet			.0002	.0002	−.0012
			(.87)	(.87)	(−1.04)
Floors			−.0001	−.0001	.0023
			(−.13)	(−.13)	(1.61)
Year Built			−.0006	−.0006	−.0018
			(−1.20)	(−1.20)	(−1.61)
First Purchase (one/zero)				−.0007	−.001
				(−1.26)	(−.22)
Transaction for Owner				−.0029	−.0009
				(−1.10)	(−.40)
Total Owners					−.0007+
					(−3.28)
Refinancing Transaction					−.0145**
					(−25.93)
Intercept	.0077**	.0076*	.0077*	.0074*	.0177**
	(54.33)	(51.42)	(50.75)	(5.26)	(14.01)
Borrower fixed effects	Yes	Yes	Yes	Yes	No
Borough-block-lot fixed effects	No	No	No	No	Yes
N	1,056,863	925,626	904,522	904,522	904,522

Note. Results are from regressing an indicator variable equal to one if a mortgage loan was signed using a power of attorney on property- and transaction-level covariates. Continuous predictors are centered and standardized; *t*-statistics, in parentheses, are clustered by borrower in models 1–4 and by borough-block in model 5.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

Table 4
Power of Attorney Correlates: Matched Main Sample

	Power of Attorney	No Power of Attorney	Difference in Means		
			Bias	t-Statistic	$p > \|t\|$
Same-Day Property Flipping	.00369	.00386	−.3	−.15	.881
Mortgage Fraud in News	.33501	.33853	−.7	−.41	.684
Origination Year	2007.4	2007.4	.9	.49	.622
Mortgage Amount (log)	12.586	12.579	.5	.32	.749
Assessed Value (log)	10.059	10.062	−.4	−.23	.818
Lot Area (log)	−.16565	−.16006	−.7	−.4	.687
Value/Square Feet	−.09039	−.09284	.4	.21	.83
Floors	−.08528	−.09158	.8	.43	.665
Year Built	−.07902	−.06669	−1.3	−.69	.493
First Purchase (one/zero)	.58568	.57797	1.6	.85	.393
Transaction for Owner	−.62381	−.62065	−2.6	−1.43	.152
Total Owners	−.05078	−.04196	−1.4	−.73	.467
Refinancing Transaction	.3558	.35547	.1	.04	.969
Year of Birth	1961.6	1963.2	−11.2	−1.62	.105
Guardianship Case	.00117	.00218	−2.3	−1.34	.179

Note. Results are means that indicate whether matching yields a balanced sample between loans with and without powers of attorney (POAs). None of the p-values are below the 5 percent significance level, which indicates that the differences in means are not statistically significant. Except for years, indicators, or where log is indicated, continuous variables are centered and standardized.

results might be driven by borrowers who are elderly, I collect additional data from public records on these matched observations. As the ACRIS database contains personally identifying information like first name, last name, and address, I can look these up in standard public records databases that contain the year of birth.[21] Among transactions with borrowers who can be linked, the median years of birth for POA and non-POA borrowers are only 1 year apart, and the difference in means is insignificant in both the matched and unmatched main sample. This shows that POA borrowers are not older than non-POA borrowers.

Moreover, I search for guardianship proceedings brought pursuant to article 81 of the New York Mental Hygiene Law and derive an indicator if the borrower was subject to one of the proceedings. In my analysis below, I perform additional tests to rule out the possibility that borrowers are ill or incapacitated. Results from a univariate balance test on the matched sample with these additional covariates are given in Table 4. As Table 4 shows, the propensity-score matching yields a balanced sample on all of these observable covariates. Moreover, Year of Birth and Guardianship Case are not included in the matching, but POA and non-POA loans are already balanced on those two characteristics. The POA borrowers are no older than the non-POA borrowers, and they are no more likely to have been the subject of article 81 guardianship proceedings.

Tables OA3 and OA4 in the Online Appendix consider the predictors of POAs

[21] I utilized the Datafinder Consumer Data Append service for this purpose; see Datafinder, Automated Predictive Marketing and Data Append (http://datafinder.com).

in the loan performance and contract pdf samples. In the loan performance sample, there are various differences between POA and non-POA loans, but no clear pattern emerges. In my estimations on the loan performance sample, I include decile indicators for the borrower's credit score, debt-to-income ratio, loan-to-value ratio, interest rate at origination, and the applicant's income. In the contract pdf sample, POAs are not consistently correlated with contract terms such as adjustable-rate mortgages (ARMs), the initial interest rate for ARMs, the interval between interest rate resets, the maximum initial variable interest rate, the total number of contract pages for the POA and non-POA filings, or the presence of a prepayment penalty.

3.2. Powers of Attorney and Preforeclosure Filings

I begin by estimating the link between POAs and 90-day delinquency measured by preforeclosure filings in the ACRIS data as observed on June 19, 2017.[22] Employing the matched main sample, I estimate the following regression using an OLS model:

$$d_{i,k,t} = \alpha + \beta \times \text{POA}_i + \gamma' \boldsymbol{X}_{i,j} + \phi_k + \psi_t + \varepsilon_{i,k,t}, \tag{2}$$

where $d_{i,k,t}$ is an indicator (zero/one) for whether mortgage loan i by borrower k originated on date t was subject to a preforeclosure filing prior to June 19, 2017; POA_i is an indicator for whether mortgage loan i was signed with a POA; $\boldsymbol{X}_{i,j}$ is a vector of covariates; ϕ_k is a fixed effect for borough-block k; ψ_t is a fixed effect for origination date t; and $\varepsilon_{i,k,t}$ is a random error term.[23] The results are given in Table 5, where the POA coefficient is positive and significantly linked to mortgage default across a variety of specifications including origination date and borough-block fixed effects and controls. In particular, POAs are associated with an (.0186/.1009=) 18.43 percent increase in the probability of default relative to non-POA loans in column 1, the specification without fixed effects.

One might wonder if a POA is used when an elderly, ill, or incapacitated individual is purchasing a home, for whom it may be difficult to attend the closing.[24] A great deal of scholarship in elder law explores the possibility of financial abuse of the elderly, which often arises when a durable POA is given to a relative or friend (see, for example, Dessin 1996). If POAs are used by borrowers who are elderly, ill, or incapacitated, then we should observe them using POAs in subsequent transactions that occur shortly thereafter, like a refinancing, second mortgage, or sale. One would not expect the elderly individual to take back authority from the relative or friend shortly after the original transaction. Similarly, a serious illness or incapacitation is unlikely to disappear shortly after the original

[22] While 90-day delinquency does not always lead to a preforeclosure filing, Section 3.3.1 presents similar results using monthly payment data to measure 60- and 90-day delinquency.

[23] Despite the reference to time t, this is a cross-sectional estimation. There is only one observation per mortgage loan; the time-t notation refers to the origination date of the mortgage.

[24] I thank an anonymous referee for this insightful suggestion.

Table 5

Powers of Attorney and Mortgage Default: Matched Main Sample

	(1)	(2)	(3)	(4)	(5)	(6)
POA	.0186**	.0178*	.0179*	.0162*	.0557**	.0495*
	(3.22)	(3.21)	(2.34)	(2.16)	(3.75)	(3.42)
Intercept	.1009**	.1690**	.1013**	.2184**		
	(25.47)	(5.39)	(26.41)	(5.19)		
Controls	No	Yes	No	Yes	No	Yes
Origination date fixed effects	No	No	Yes	Yes	Yes	Yes
Borough-block-lot fixed effects	No	No	No	No	Yes	Yes
N	11,862	11,862	11,862	11,862	4,810	4,810

Note. Results are from an ordinary least squares regression in which each observation is a mortgage loan in the New York City Automated City Register Information System database, and the dependent variable is equal to one if the mortgage loan was the subject of a 90-day delinquency preforeclosure filing as of June 19, 2017. Models 1 and 2 employ robust standard errors; models 3 and 4 cluster robust standard errors by origination date; models 5 and 6 employ two-way clustering of robust standard errors at the same level. Models 2, 4, and 6 include the following controls: Same-Day Property Flipping, Mortgage Amount (deciles), Assessed Value (deciles), Lot Area (log), Value/Square Feet, Floors, Year Built, First Purchase (one/zero) × Refinancing Transaction (one/zero) × Mortgage Fraud in News (one/zero) (all terms of the triple interaction), Transaction for Owner, Total Owner Transactions, and Guardianship Case. The POA coefficient changes very little when these controls are included. The *t*-statistics are in parentheses.

* $p < .05$.

** $p < .01$.

Table 6
Powers of Attorney and Subsequent Transactions: Matched Main Sample

	Within 6 Months		Within 1 Year	
	(1)	(2)	(3)	(4)
POA ⇒ No POA	.0724**	.0513**	.0472**	.0287*
	(4.44)	(3.32)	(3.95)	(2.48)
All others	.0129+	.0142+	.0129*	.0156+
	(2.20)	(2.50)	(2.15)	(2.69)
Intercept	.1009**	.1593**	.1009**	.1644**
	(25.47)	(5.05)	(25.47)	(5.21)
Controls	No	Yes	No	Yes
F-test	.0003	.0176	.0047	.2701

Note. Results are from an ordinary least squares regression in which each observation is a mortgage loan in the matched main sample and the dependent variable is equal to one if the mortgage loan was the subject of a 90-day delinquency preforeclosure filing as of June 19, 2017. All models include robust standard errors. Controls include Same-Day Property Flipping, Mortgage Amount (deciles), Assessed Value (deciles), Lot Area (log), Value/Square Feet, Floors, Year Built, First Purchase (one/zero) × Refinancing Transaction (one/zero) × Mortgage Fraud in News (one/zero) (all terms of the triple interaction), Transaction for Owner, Total Owner Transactions, and Guardianship Case. Values for the *F*-test on POA coefficients are *p*-values, and *t*-statistics are in parentheses. $N = 11{,}862$.

$^{+}\ p < .10$.
$^{*}\ p < .05$.
$^{**}\ p < .01$.

transaction—especially if that illness or incapacitation is sufficiently persistent to give rise to mortgage default.

To test this hypothesis, I divide POAs into two groups: POA transactions executed by a borrower who conducts a non-POA transaction available in ACRIS within the following 6 months (or, alternatively, 1 year) and all other POA transactions. Using the matched main sample, I regress default on these two POA indicators. The results are presented in Table 6, which shows that the coefficient on POA is significant and larger in magnitude for borrowers who subsequently transact without a POA shortly thereafter, and the difference between the two coefficients is statistically significant in some of the specifications. This evidence is inconsistent with the concern that the results are driven by elderly, ill, or incapacitated borrowers because such conditions that are persistent enough to drive mortgage default are unlikely to disappear within 6 months or a year.

The propensity-score matching yields balance on observable covariates but does so at the expense of discarding a large amount of data among non-POA loans. Table OA7 in the Online Appendix shows that the results from Section 3.1 hold for the entire main sample whether using an OLS, logit, or probit model. To address the concern that unobserved differences between borrowers may be driving the result, I also employ a within-individual design on the unmatched sample

with over 570,000 fixed effects for individual borrowers. This design compares multiple mortgage transactions by the same owner with and without a POA. A time-invariant, individual propensity to default will be absorbed by the fixed effects. The results are reported in Table OA5 in the Online Appendix.

3.3. Illiquidity versus Commitment

3.3.1. Powers of Attorney and Cash Flow Shocks

To test whether POAs merely predict illiquidity or are correlated with promise keeping conditional on a cash flow shock, I utilize the loan performance sample (which is unmatched) to examine whether POAs are correlated with 30-day default. Nonpayment for 30–59 days after a payment is due is a clear proxy for financial distress: it is difficult to think of a story in which POAs are linked to greater illiquidity but have the same likelihood of 30–59-day nonpayment. To test this hypothesis, I estimate the following model using an OLS model:

$$d_i = \beta \times \text{POA}_i + \gamma' \boldsymbol{X}_i + \varepsilon_i, \tag{3}$$

where d_i equals one if mortgage i was ever 30 days delinquent; POA_i equals one if mortgage i was signed with a POA; $\boldsymbol{X}_i$ is a vector of loan- and borrower-level covariates provided by Fannie Mae, Freddie Mac, and the HMDA data set; and ε_i is a random error term.

To examine promise keeping conditional on a cash flow shock, I estimate the same model as equation (3), conditioning the sample on loans with at least 1 month with 30-day delinquency and letting d_i equal one for 60-day delinquency, delinquency of 90 or more days, or foreclosure. These models consider whether POA borrowers are more likely to default, conditional on illiquidity. The results are given in Table 7. Results for 30-day delinquency show that the POA coefficient is insignificant and close to 0 in magnitude, despite having 1.8 million observations in the regression.[25] Thus, POAs are uncorrelated with cash flow shocks that lead to 30-day default.[26] However, in columns 3–8, the coefficient on POA is consistently positive and significant. The only exception is foreclosure with all control variables, which is likely a problem of power, as foreclosure occurs for only 906 loans in the loan performance sample. In short, POAs are linked to reduced promise keeping conditional on borrowers' illiquidity.

Figure 5 demonstrates these results by plotting the average proportion of loans delinquent for 30, 60, and 90 or more days, with the latter two conditioned on 30-

[25] One possible explanation for the lack of a difference at 30-day default is that servicers may be less sympathetic to POA borrowers and preemptively offer better payment plans to non-POA borrowers. However, this would require a rapid response to nonpayment at the 30-day horizon, whereas servicers are known to be inefficient and slow to respond to mortgage modifications (Cordell et al. 2008).

[26] The intercept term of 22 percent in column 1 reflects the proportion of mortgage loans that were ever 30 days delinquent, but only 2.93 percent of loans are 30 days delinquent in any given month. This is because 58 percent of 30-day delinquent loans do not deteriorate further, as shown by the intercept term in column 3.

Table 7

Cash Flow Shocks versus Commitment

	30 Days Delinquent		60 Days Delinquent		90 Days Delinquent		Foreclosure	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POA	.0090	.0039	.0836**	.0376*	.1068**	.0508**	.0292*	.0049
	(1.06)	(.49)	(4.04)	(2.02)	(5.18)	(2.74)	(2.46)	(.40)
Intercept	.2188**	.2800**	.4160**	.0698**	.3466**	.0064	.0588**	−.0296**
	(242.48)	(49.91)	(180.18)	(5.16)	(154.30)	(.51)	(52.23)	(−5.86)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
N	1,868,411	1,804,353	409,312	393,609	409,312	393,609	409,312	393,609

Note. Results are from an ordinary least squares regression in which each observation is a loan in the loan performance sample. Models 1 and 2 are estimated on the entire sample, while models 3–8 are estimated on the subsample with at least 1 month of being 30 days delinquent. As this sample has an observation for each potential match, coefficient estimates and standard errors are weighted by the inverse of the number of potential matches per transaction. Robust *t*-statistics are in parentheses. Controls include indicators for deciles of Credit Score, Debt-to-Income Ratio, Loan-to-Value Ratio, Interest Rate, Mortgage Amount, and Applicant Income and indicators for Home Mortgage Disclosure Act occupancy, loan type, and loan purpose.

* $p < .05$.

** $p < .01$.

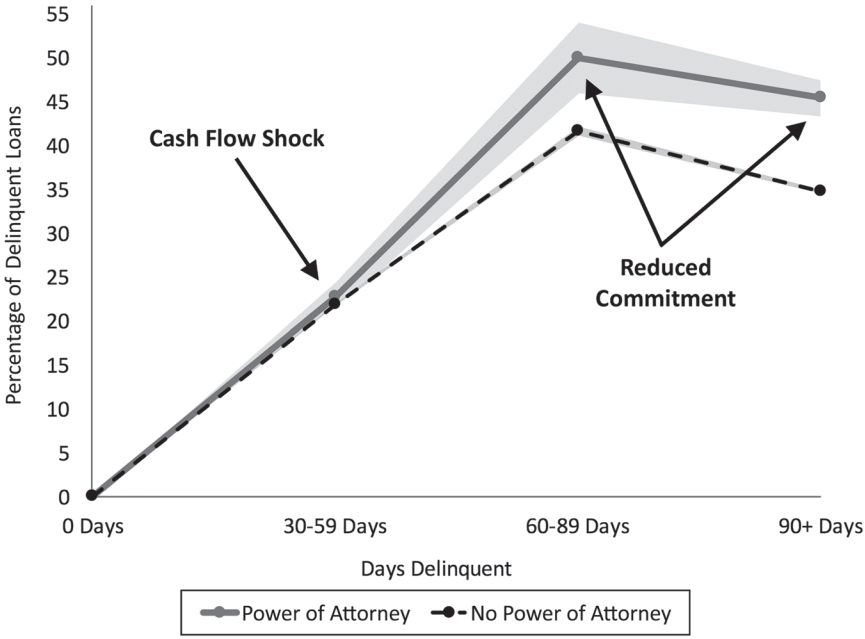

Figure 5. Cash flow shock versus commitment

day default. As Figure 5 shows, both groups experience a shock that leads to an increase in 30-day default, but POA loans display greater default at the 60- and 90-day horizons, conditional on undergoing a cash flow shock.

3.3.2. Servicer's Loss Given Default

Another measure of reduced commitment is a servicer's loss given default, that is, the loss incurred by a servicer to collect a delinquent mortgage debt. Freddie Mac defines actual loss as follows (Fannie Mae uses a similar formula):

$$\begin{aligned}\text{Actual Loss} = &(\text{Default Unpaid Principal Balance} - \text{Net Sale Proceeds})\\ &+ \text{Delinquent Accrued Interest} - \text{Expenses}\\ &- \text{Mortgage Insurance Recoveries}\\ &- \text{Nonmortgage Insurance Recoveries.}\end{aligned}$$

Fannie Mae and Freddie Mac provide this information on a monthly basis for delinquent loans, and I utilize it when forming the loan performance sample by choosing the highest reported value. I estimate the same model as equation (3), replacing the outcome variable with the log of the actual loss, which is defined for loans that are 30 or more days delinquent. The results are given in Table 8, which shows that POAs are strongly linked to a greater loss given default.

Table 8
Powers of Attorney and Servicer's Loss Given Default

	(1)	(2)
POA	.6667**	.6764**
	(5.10)	(4.04)
Intercept	10.0586**	12.2950**
	(180.61)	(20.14)
Controls	No	Yes
N	7,028	7,012

Note. Results are from an ordinary least squares regression in which each observation is a loan in the loan performance sample. The outcome variable is the log of the highest loss reported in any given month for a loan that is at least 30 days delinquent. As this sample has an observation for each potential match, coefficient estimates and standard errors are weighted by the inverse of the number of potential matches per transaction. Robust *t*-statistics are in parentheses. Controls include indicators for deciles of Credit Score, Debt-to-Income Ratio, Loan-to-Value Ratio, Interest Rate, Mortgage Amount, and Applicant Income and indicators for Home Mortgage Disclosure Act occupancy, loan type, and loan purpose.

** $p < .01$.

3.3.3. Additional Tests

In the Online Appendix, I show that the time to 30-day default is no shorter for cases with POAs. If POAs are driven by transitory financial distress at the time of closing, they should be concentrated in cases in which the time to nonpayment occurs relatively quickly after the closing. Moreover, I show that delinquent POA borrowers did not utilize more secondary mortgage credit than non-POA borrowers prior to default, no more civil judgments are recorded by other creditors for delinquent POA borrowers than non-POA borrowers prior to default, and defaulting POA borrowers are less likely to refinance housing debt (either first or second mortgages). This evidence is consistent with a link between POAs and reduced promise keeping rather than financial distress. Sections 3.4–3.6 examine three potential mechanisms driving this link: selection on commitment, consumer education, and salience.

3.4. Selection on Promise Keeping

Are POAs employed only in certain kinds of transactions that borrowers enter into with less willingness to repay on encountering financial distress? The borrower-level fixed effects should absorb a time-invariant individual propensity for default, but POAs may still proxy for certain kinds of loans that are more likely to be abandoned. Even if this is the case, POAs constitute a previously unrecognized risk factor that predicts default, and, as discussed in Section 1, lenders are prohibited by law from raising interest rates on POA borrowers to adjust for their higher default risk. While it is impossible to conclusively reject the possi-

bility that POAs are simply used in certain kinds of transactions characterized by a greater willingness to break the repayment promise, I evaluate three settings in which this possibility might seem likely: second homes, non-owner-occupied homes, and homes of nonlocal borrowers. None of these explain the link between POAs and default.

First, I identify second homes by identifying cases in which a borrower purchased a home but subsequently reported an address elsewhere for property tax purposes. I download the tax history for properties in the main sample from the New York City Department of Finance and extract the name and mailing address of the borrower on each tax bill.[27] I code a transaction as reflecting a second home if two conditions are met: the name on the property tax mailing address matches the name of the borrower (sometimes the registered taxpayer is the lender or escrow agent, so it is impossible to detect second homes in those cases) and the address listed on the property tax bill is not the property's address. Using the main sample, I regress delinquency on the POA indicator, which equals one for second homes, and the interaction of the two and report the results in columns 1 and 2 of Table 9.

Next I evaluate whether the link between POA and delinquency is stronger when nonlocal borrowers use POAs. One might wonder if this link might be confounded by certain borrowers who lack local ties to New York City and thus are more willing to abandon their homes during a time of distress. Because a POA is executed prior to the closing, the address of the absentee borrower given on the POA is the borrower's address prior to the purchase. I derive an indicator equal to one if any of the parties associated with the POA in ACRIS had an address outside the tristate area of New York, New Jersey, and Connecticut and divide POAs into those with a nonlocal address and those without. Using the unmatched main sample, I regress delinquency on the two treatment indicators and report the results in columns 3 and 4 of Table 9.

Finally, I consider non-owner-occupied homes. The HMDA data contain an indicator for the occupancy status of the home at origination. To maximize statistical power, I merge the HMDA data with the ACRIS data (this time, without limiting to the Fannie Mae–Freddie Mac data), weighting by the number of potential matches per transaction as with the loan performance sample. I interact the POA indicator with an indicator equal to one for a loan to an owner-occupied home and report the results in columns 5 and 6 of Table 9. As columns 1 and 2 of Table 9 show, while borrowers for second homes are unconditionally more likely to default, the POA effect is orthogonal to second-home mortgages and not driven by these cases. Columns 3 and 4 show that the link between POAs and delinquency is stronger for tristate borrowers, which suggests that the results are not driven by the lack of local ties to New York City. Finally, columns 5 and 6

[27] I can obtain these data for only a subset of transactions because tax bills are generated annually, and post-2008 tax bills are in a variable pdf format. Neither of these limitations should bias my results.

Table 9

Powers of Attorney and Selection on Promise Keeping

	(1)	(2)	(3)	(4)	(5)	(6)
POA	.0217**	.0195**			.0108**	.0132**
	(10.53)	(2.72)			(6.07)	(2.72)
Second Home	.0525**	.0567**				
	(22.63)	(24.74)				
POA × Second Home	.0357	.0214				
	(1.09)	(.68)				
Tristate POAs			.0224**	.0223**		
			(9.95)	(5.38)		
Nontristate POAs			.0174**	.0070		
			(3.59)	(.84)		
Owner Occupied					.0382**	.0097**
					(41.17)	13.96)
POA × Owner Occupied					.0281**	.0108
					(5.67)	(1.51)
Controls	No	Yes	No	Yes	No	Yes
N	1,461,707	907,033	1,461,707	907,033	1,832,119	1,193,639

Note. Results indicate whether the link between powers of attorney and delinquency is driven by second homes, nonlocal borrowers, or non-owner-occupied homes. In each model, the outcome equals one if a loan was subject to a preforeclosure filing. Columns 1–4 are estimated on the main sample. Columns 5 and 6 are estimated on the main sample matched to the Home Mortgage Disclosure Act data, with an observation for each potential match. As this sample has an observation for each potential match, coefficient estimates and standard errors are weighted by the inverse of the number of potential matches per transaction. All models include borough-block and date fixed effects, and standard errors are clustered by borough-block and date. Controls include indicators for deciles of Credit Score, Debt-to-Income Ratio, Loan-to-Value Ratio, Interest Rate, Mortgage Amount, and Applicant Income and indicators for Home Mortgage Disclosure Act occupancy, loan type, and loan purpose.

** $p < .01$.

show that the link between POAs and default is no lower for owner-occupied homes.

3.5. Education of Consumers

An alternative explanation is that POAs deprive consumers of an opportunity to learn about the terms of the loan at the closing. One way to test this hypothesis is to examine whether POA-induced default is higher when contract terms are more difficult for borrowers to understand. I reestimate equation (2) on the contract pdf sample while interacting the POA indicator with contract terms that reflect the transaction's complexity: ARMs, prepayment penalties, and lengthy contracts. That is, I estimate the following regression using an OLS model:

$$d_{i,k,t} = \alpha z_{i,k,t} + \delta \mathrm{POA}_i + \beta(\mathrm{POA}_i \times z_{i,k,t}) + \gamma' \boldsymbol{X}_{i,j} + \phi_k + \psi_t + \varepsilon_{i,k,t}, \quad (4)$$

where $d_{i,k,t}$ is an indicator (zero/one) for whether mortgage i by borrower k originated on date t was subject to a preforeclosure filing, $z_{i,k,t}$ is either an indicator (zero/one) or a continuous contract term, POA_i is an indicator (zero/one) for whether mortgage i was signed with a POA, $\boldsymbol{X}_{i,j}$ is a vector of BBL covariates, and $\varepsilon_{i,k,t}$ is a random error term. The results are given in Tables 10 and 11, which confirm that more complex terms are associated with increased default, consistent with Bar-Gill (2009). Low teaser rates, ARMs, lengthier (that is, more complex) mortgage contracts, and prepayment penalties are all positively and significantly associated with default. Moreover, while the POA coefficient is positive and significant in all specifications, the interaction terms are rarely significant, and the interaction point estimates are generally negative. The one exception is page count, which indicates that POAs are linked to greater default when loan contracts are longer. These findings provide weak support for an educational hypothesis.

3.6. Responsibility and Originator-Servicers' Heterogeneity

A more compelling explanation for the link between POAs and default is that personal promising leads to a greater sense of personal responsibility, which enhances the salience of the obligation to repay. Arlen and Tontrup (2015) find that transacting through a third-party agent leads participants in an experiment to feel reduced responsibility and regret over negative outcomes. In a survey of consumer-borrowers, Guiso, Sapienza, and Zingales (2013) find that borrowers who believe it is morally wrong to walk away from a mortgage are less likely to default strategically. Personal contact may heighten the "salience of the promisee's expectations" (Ederer and Stremitzer 2017, p. 162). Psychological studies find that overt acts receive greater cognitive attention (Roese and Olson 1995), especially those at the end of a causal chain like physically signing documents (Miller and Gunasegaram 1990; Spellman 1997). A taste for commitment may turn on who is viewed as the protagonist of a promise (Byrne and Girotto 2009; Wilkinson-Ryan 2014). And the literature on guilt aversion suggests that parties

Table 10

Powers of Attorney and Complexity of Contract Terms

	(1)	(2)	(3)	(4)	(5)	(6)
POA	.1941**	.0723**	.0962*	.0652+	.1081*	.0521
	(11.18)	(4.31)	(2.32)	(1.79)	(2.54)	(1.38)
ARM	.2342**	.0539**				
	(28.19)	(6.36)				
POA × ARM	−.0842*	.0010				
	(−2.33)	(.03)				
ARM Initial Rate			.0448**	.0407**		
			(4.21)	(4.07)		
POA × ARM Initial Rate			.0147	−.0117		
			(.35)	(−.36)		
Rate Reset Interval					−.0052	.0069
					(−.55)	(.76)
POA × Rate Reset Interval					−.0607	−.0343
					(−1.50)	(−1.43)
Controls	No	Yes	No	Yes	No	Yes
N	26,609	23,525	2,432	2,341	2,307	2,209

Note. Results are from ordinary least squares regressions for the subsample with more than one home purchase per borrower in which each observation is a mortgage loan in the New York City Automated City Register Information System database. The dependent variable equals one if the loan was the subject of a 90-day delinquency preforeclosure filing as of June 19, 2017. Continuous contract terms are centered and standardized. Robust *t*-statistics are in parentheses. Controls include indicators for deciles of Credit Score, Debt-to-Income Ratio, Loan-to-Value Ratio, Interest Rate, Mortgage Amount, and Applicant Income and indicators for Home Mortgage Disclosure Act occupancy, loan type, and loan purpose.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

Table 11

Powers of Attorney and Complexity of Contract Terms, Continued

	(1)	(2)	(3)	(4)	(5)	(6)
POA	.1083**	.0637+	.1754**	.0656**	.1982**	.0750**
	(2.97)	(1.94)	(11.93)	(12.82)	(12.82)	(5.11)
Maximum Initial Interest	.0693**	.0494*				
	(7.07)	(5.43)				
POA × Maximum Initial Interest	.0225	.0141				
	(.57)	(.039)				
Contract Pages (log)			.0466**	.0204**		
			(20.46)	(5.64)		
POA × Contract Pages (log)			.1477**	.0540**		
			(7.46)	(2.73)		
Prepayment Penalty					.3636**	.1868**
					(16.01)	(8.78)
POA × Prepayment Penalty					−.1922+	−.0624
					(−1.77)	(−.59)
Controls	No	Yes	No	Yes	No	Yes
N	2,867	2,770	26,609	23,525	26,609	23,525

Note. Results are from ordinary least squares regressions for the subsample with more than one home purchase per borrower in which each observation is a mortgage loan in the New York City Automated City Register Information System database. The dependent variable equals one if the loan was the subject of a 90-day delinquency preforeclosure filing as of June 19, 2017. Continuous contract terms are centered and standardized. Robust *t*-statistics are in parentheses. Controls include indicators for deciles of Credit Score, Debt-to-Income Ratio, Loan-to-Value Ratio, Interest Rate, Mortgage Amount, and Applicant Income and indicators for Home Mortgage Disclosure Act occupancy, loan type, and loan purpose.

+ $p < .10$.

* $p < .05$.

** $p < .01$.

are less likely to break a promise when doing so would disappoint a counterparty (Charness and Dufwenberg 2006).

To shed light on the role of heightened responsibility and salience, I reestimate equation (3) on the subsample of loans that were serviced by the originating lender. Servicers interact with borrowers on a monthly basis while accepting payment, and sometimes more frequently, for example, as does a local bank that originates loans to members of the community who also hold depository accounts at the institution. Demiroglu and James (2012) find that originator-servicers' loans have a lower cumulative loss rate, and Conklin et al. (2019) show that originator-servicers are better able to restructure debt for delinquent securitized loans. These studies highlight the importance of the borrower-lender relationship, though Jiang, Nelson, and Vytlacil (2014) show that originators' informational advantages do not extend to secondary market sales, where investors select on unobservables to identify better-performing loans.

Table 12 presents the results of an OLS regression of 60-day and 90-day delinquency and foreclosure on a POA, conditional on a loan having undergone 30-day default, for loans that were serviced by the originator for at least half of the time while in repayment. As Table 12 shows, the POA correlation disappears entirely in this subsample. While originator-servicers' loans are a relatively small subsample, other coefficients like the loan-to-value ratio and interest rate are strongly linked to higher default rates in this sample, which suggests that the lack of a difference for POA loans is not driven by insufficient statistical power. This evidence suggests that repeated contact between lender and borrower enhances promise keeping, which is consistent with the hypothesis that personal promising leads to a greater sense of personal responsibility and a more salient commitment. Is the difference in originator-servicers' loans driven by the ability of these institutions to select higher-quality borrowers on unobservables? Table OA16 in the Online Appendix presents the same analysis as Table 12 but for non-originator-servicer loans. Column 4 shows that the 60-day default coefficient on POA loans is 4.04 percentage points with the full set of controls. That is 74 percent of the magnitude of the coefficient on a decrease from the second to first decile of a borrower's credit score (685 to 656, or 29 points).[28] It is unlikely that soft information obtained by originator-servicers would reflect a propensity to default equivalent to a $29 \times .74 \approx 21.46$-point increase in the Fair Isaac Corporation credit score and not appear in the actual credit score, debt-to-income ratio, loan-to-value ratio, or interest rate charged at origination.

4. Conclusion

This paper shows that consumers are more likely to keep promises to repay loans when they make the promises themselves. The link between POAs and de-

[28] Table OA16 does not include the full set of credit score decile controls because of space limitations, but the coefficient on the second decile (relative to the first) is −.0627. Dividing the POA coefficient of 4.04 by 6.27 yields 74 percent.

Table 12

Powers of Attorney and Promise Keeping for Originator-Servicers' Loans

	30 Days Delinquent		60 Days Delinquent		90 Days Delinquent		Foreclosure	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
POA	.0095	.0191	.0062	.0457	.0523	.0798	.0240	.0545
	(.32)	(.68)	(.07)	(.66)	(.62)	(1.23)	(.29)	(.77)
Intercept	.1863**	.1742**	.5236**	−.0537	.4695**	−.0832	.1742**	−.1829**
	(59.53)	(7.89)	(57.04)	(−.79)	(51.65)	(−1.27)	(25.61)	(−4.42)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
N	120,665	118,690	25,165	24,624	25,165	24,624	25,165	24,624

Note. Results are from an ordinary least squares regression in which each observation is a loan in the loan performance sample that has been serviced by the originating bank for at least half of the time while in repayment. Models 1 and 2 are estimated on the entire sample, while models 3–8 are estimated on the subsample with at least 1 month of being 30 days delinquent. As this sample has an observation for each potential match, coefficient estimates and standard errors are weighted by the inverse of the number of potential matches per transaction. Robust *t*-statistics are in parentheses. Controls include indicators for deciles of Credit Score, Debt-to-Income Ratio, Loan-to-Value Ratio, Interest Rate, Mortgage Amount, and Applicant Income and indicators for Home Mortgage Disclosure Act occupancy, loan type, and loan purpose.

** $p < .01$.

linquency is uncorrelated with characteristics of the borrower, loan, and property and persists in a within-borrower, within-property design. Although POAs are uncorrelated with cash flow shocks, they are linked to greater 60-day and 90-day default and foreclosure, conditional on 30-day default. The absence of an association for originator-servicers' loans is consistent with the literature on guilt aversion and suggests that the link between POAs and default is driven by a reduced sense of responsibility and lower salience, which are mitigated by repeated contact between lender and borrower. In interviews, banking professionals emphasized the importance of the closing in enhancing borrowers' commitment.

In addition to identifying a new risk factor for mortgage default—not personally making the repayment promise—these findings shed light on financial intermediation. The literature on relationship banking has traditionally emphasized the soft information that financial institutions accumulate about local businesses, which allows them to identify high-quality borrowers (Berger and Udell 2002; Bolton et al. 2016). This project suggests that intermediaries may play an additional role: enhancing commitment to the repayment promises made by residential borrowers. In addition to countering the low salience of POA loans with repeated contact between borrower and lender, qualitative conversations with lenders suggest that originator-servicers may also proactively identify low-commitment borrowers and encourage them not to default on their loans.

Future work could experimentally manipulate the degree of third-party agency and measure the effect on promise keeping. Scholars studying community banks could examine how personal interactions between lenders and borrowers are linked to local socioeconomic outcomes, which may have public policy implications for the increasing consolidation in banking and residential lending. The broader implication of this study is that seemingly clerical aspects of transactions—like whether a borrower personally commits to repay debts—might matter more than previously realized.

References

Agarwal, Sumit, Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet, and Douglas D. Evanoff. 2010. Learning to Cope: Voluntary Financial Education and Loan Performance during a Housing Crisis. *American Economic Review* 100:495–500.

Arlen, Jennifer, Matthew Spitzer, and Eric Talley. 2002. Endowment Effects within Corporate Agency Relationships. *Journal of Legal Studies* 31:1–37.

Arlen, Jennifer, and Stephan Tontrup. 2015. Does the Endowment Effect Justify Legal Intervention? The Debiasing Effect of Institutions. *Journal of Legal Studies* 44:143–82.

Bar-Gill, Oren. 2009. The Law, Economics, and Psychology of Subprime Mortgage Contracts. *Cornell Law Review* 94:1073–1151.

Berger, Allen N., and Gregory F. Udell. 2002. Small Business Credit Availability and Relationship Lending: The Importance of Bank Organisational Structure. *Economic Journal* 112:F32–F53.

Bolton, Patrick, Xavier Freixas, Leonardo Gambacorta, and Paolo Emilio Mistrulli. 2016. Relationship and Transaction Lending in a Crisis. *Review of Financial Studies* 29:2643–

76.
Byrne, Ruth M. J., and Vittorio Girotto. 2009. Cognitive Processes in Counterfactual Thinking. Pp. 151–60 in *Handbook of Imagination and Mental Simulation,* edited by Keith D. Markman, William M. P. Klein, and Julie A. Suhr. New York: Psychology Press.
Centers for Disease Control and Prevention. 2013. National Center for Health Statistics. *National Hospital Ambulatory Medical Care Survey: 2013 Emergency Department Summary Tables.* https://www.cdc.gov/nchs/data/ahcd/nhamcs_emergency/2013_ed_web_tables.pdf.
Charness, Gary, and Martin Dufwenberg. 2006. Promises and Partnership. *Econometrica* 74:1579–1601.
Conklin, James N., Moussa Diop, Thao Le, and Walter D'Lima. 2019. The Importance of Originator-Servicer Affiliation in Loan Renegotiation. *Journal of Real Estate Finance and Economics* 59:56–89.
Cordell, Larry, Karen Dynan, Andreas Lehnert, Nellie Liang, and Eileen Mauskopf. 2008. The Incentives of Mortgage Servicers: Myths and Realities. Finance and Economics Discussion Series Working Paper No. 2008-46. Federal Reserve Board, Washington, DC.
Demiroglu, Cem, and Christopher James. 2012. How Important Is Having Skin in the Game? Originator-Sponsor Affiliation and Losses on Mortgage-Backed Securities. *Review of Financial Studies* 25:3217–58.
Dessin, Carolyn L. 1996. Acting as Agent under a Financial Durable Power of Attorney: An Unscripted Role. *Nebraska Law Review* 75:574–620.
Di Bartolomeo, Giovanni, Martin Dufwenberg, Stefano Papa, and Francesco Passarelli. 2017. Promises, Expectations, and Causation. Working paper. Sapienza University of Rome, Faculty of Economics, Rome.
Ederer, Florian, and Alexander Stremitzer. 2017. Promises and Expectations. *Games and Economic Behavior* 106:161–78.
Ellingsen, Tore, and Magnus Johannesson. 2004. Promises, Threats, and Fairness. *Economic Journal* 114:397–420.
Elul, Ronel, Nicholas S. Souleles, Souphala Chomsisengphet, Dennis Glennon, and Robert Hunt. 2010. What "Triggers" Mortgage Default? *American Economic Review* 100:490–94.
Federal Bureau of Investigation. 2009. *2009* Mortgage Fraud Report. Washington, DC: Federal Bureau of Investigation. https://www.fbi.gov/stats-services/publications/mortgage-fraud-2009.
Fernandes, Daniel, John G. Lynch, Jr., and Richard G. Netemeyer. 2014. Financial Literacy, Financial Education, and Downstream Financial Behaviors. *Management Science* 60:1861–83.
Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2013. The Determinants of Attitudes toward Strategic Default on Mortgages. *Journal of Finance* 68:1473–1515.
Gupta, Arpit, Edward R. Morrison, Catherine Fedorenko, and Scott Ramsey. 2017. Cancer Diagnoses and Household Debt Overhang. Law and Economics Working Paper No. 514. Columbia Law School, New York.
Hilgert, Marianne A., Jeanne M. Hogarth, and Sondra G. Beverly. 2003. Household Financial Management: The Connection between Knowledge and Behavior. *Federal Reserve Bulletin,* pp. 309–22.
Hoffman, David A. 2016. From Promise to Form: How Contracting Online Changes Consumers. *New York University Law Review* 91:1595–1650.

———. 2018. Relational Contracts of Adhesion. *University of Chicago Law Review* 85: 1395–1461.

Internal Revenue Service. 2008. Like-Kind Exchanges under IRC Code Section 1031. Fact Sheet No. 2008-18. February. https://www.irs.gov/newsroom/like-kind-exchanges-under-irc-code-section-1031.

Jiang, Wei, Ashlyn Aiko Nelson, and Edward Vytlacil. 2014. Liar's Loan? Effects of Origination Channel and Information Falsification on Mortgage Delinquency. *Review of Economics and Statistics* 96:1–18.

Leszczyńska, Monika. 2016. Think Twice before You Sign! An Experiment on a Cautionary Function of Contractual Formalities. Unpublished manuscript. New York University School of Law, New York.

Mian, Atif, and Amir Sufi. 2009. The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis. *Quarterly Journal of Economics* 124:1449–96.

———. 2010. The Great Recession: Lessons from Microeconomic Data. *American Economic Review: Papers and Proceedings* 100:51–56.

———. 2014. What Explains the 2007–2009 Drop in Employment? *Econometrica* 82: 2197–2223.

Miller, Dale T., and Saku Gunasegaram. 1990. Temporal Order and the Perceived Mutability of Events: Implications for Blame Assignment. *Journal of Personality and Social Psychology* 59:1111–18.

Reilly, Colin. 2014. NYC Building Footprints Part II. *NYCityMap and Beyond,* December 23. https://nycitymap.wordpress.com/2014/12/23/nyc-building-footprints-part-ii/.

Roese, Neal J., and James M. Olson. 1995. Outcome Controllability and Counterfactual Thinking. *Personality and Social Psychology Bulletin* 21:620–28.

Spellman, Barbara A. 1997. Crediting Causality. *Journal of Experimental Psychology: General* 126:323–48.

Vanberg, Christoph. 2008. Why Do People Keep Their Promises? An Experimental Test of Two Explanations. *Econometrica* 76:1467–80.

Wilkinson-Ryan, Tess. 2012. Transferring Trust: Reciprocity Norms and Assignment of Contract. *Journal of Empirical Legal Studies* 9:511–35.

———. 2014. A Psychological Account of Consent to Fine Print. *Iowa Law Review* 99: 1745–84.