

The Economics of the Proposed Mortgage Servicer Settlement

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INTRODUCTION

On March 4, 2011, the *New York Times* described a settlement (“settlement”) proposed by a consortium of state attorneys general (AGs) to large mortgage servicers.² The claims to be settled reportedly relate to failures to follow existing procedural rules relating to the foreclosure process.³ The settlement would make dramatic changes in those rules, and reportedly require a mortgage loan principal reduction program of \$20 to 25 billion. The purpose of this study is to review how such a settlement would affect the housing market and the larger economy.

Although the settlement is a long and complex document, two key components stand out.⁴ *First*, it appears lenders would be required to write down principal whenever

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2. Nelson Schwartz & David Streitfeld, *Mortgage Modification Overhaul Sought By States*, NEW YORK TIMES, Mar. 4, 2011, at B1.

3. John Walsh, the acting Comptroller of the Currency, testified in February 2011 that only a few of the delinquent home owners would have kept their homes even in the absence of the banks’ conduct, and that in most cases servicers had proper documentation, and the foreclosed loans were seriously delinquent. See Testimony of John Walsh, Acting Comptroller of the Currency, Before the Committee on Banking, Housing, and Urban Affairs, United States Senate, February 17, 2011, *available at* <http://www.occ.treas.gov/news-issuances/congressional-testimony/2011/pub-test-2011-19-written.pdf>.

4. The settlement term sheet was published by *American Banker* on March 8, 2011, and is titled “Settlement Terms (03/03/11)” [hereinafter *Settlement*]. See Cheyenne Hopkins, *Cheat Sheet: How the State AGs Want to Revamp Mortgage Servicing*, AMERICAN BANKER, Mar. 8, 2011 (containing a link to the Settlement).

doing so meets certain criteria, regardless of the level of borrower distress.⁵ Although the settlement is silent on the issue, press reports indicate that the AGs would require the servicers to use \$20 to \$25 billion of their own funds to finance these write-downs.⁶ *Second*, the settlement would add a host of additional procedural requirements that must be met before foreclosure may proceed. For example, each servicer would be given “an affirmative duty to thoroughly evaluate borrowers for all available loss mitigation options prior to foreclosure,” including short sales.⁷ In addition, borrowers would be given the “opportunity to provide evidence that the [net present value] or eligibility calculation was in error,” in which case said borrower “can request that a full appraisal be conducted of the property by an independent licensed appraiser. . . .”⁸

We find that a settlement along these lines would generate significant unintended negative consequences for housing and financial markets. In particular, we find that (1) the settlement is unlikely to provide broad or lasting benefits. Several studies—and experience with the Home Affordable Modification Program (HAMP) program to date—demonstrate that government mandated modifications have not been effective in preventing foreclosure; (2) the settlement would be counterproductive in its overall effect because it would drive up the number of defaults and servicing costs. We estimate that even a small increase in strategic defaults in response to the settlement could increase the foreclosure

5. A presentation prepared by the CFPB regarding the proposed settlement states, “A principal reduction mandate could be meaningfully additive to HAMP.” A subsequent graphic shows how borrowers who are currently not delinquent but underwater could be “addressed.” This implies that the settlement seeks to mandate principal reductions regardless of borrower distress. *See* Consumer Financial Protection Bureau, Perspectives on Settlement Alternatives in Mortgage Servicing, at 6 and 7, Feb. 14, 2011, *available at* http://financialservices.house.gov/media/pdf/cfpb_presentation.pdf.

6. *A Foreclosure Settlement Plan Might Make Things Worse*, NEW YORK TIMES, Mar. 14, 2011 [hereinafter *Foreclosure Settlement Plan*].

7. Settlement II.A.1

8. *Id.* at II.H.2.

inventory by \$297 billion; (3) the proposal would slow new home construction and consumer spending, and reduce access to credit; and (4) the increased costs imposed by the settlement, under some assumptions, could increase mortgage interest rates by 22 to 31 basis points per year.⁹ In light of all of these considerations, we conclude that the settlement would serve to extend, rather than end, the foreclosure crisis.

Recently, the Federal Reserve Board issued a joint report on the foreclosure practices of the servicers that the proposed settlement addresses.¹⁰ The report noted certain deficiencies in servicer performance relating to foreclosures. Banking regulators clearly are taking steps to address servicers' implementation of foreclosure protocols, and they have the regulatory powers they need to do so. The report also correctly emphasized that delaying foreclosures will have a negative impact on the economy. The report does not recommend preventing foreclosures, but rather that foreclosure procedures should be efficient and implemented in a manner consistent with regulatory standards. We concur with that conclusion, and we believe it is reasonable to expect that the Fed's new regulatory intervention will remedy existing deficiencies in servicing practices at a reasonable cost, although we have not estimated those additional costs. In contrast to the Fed's approach to reforming servicing practices, the new costs and procedures envisioned under the proposed settlement would make things worse for borrowers, investors, and servicers, and would ultimately lead to a worsening of the foreclosure crisis.

9. This is based on assuming, among other things, an estimated \$3.7 billion in annualized one-time costs plus \$7 to \$10 billion in annualized recurring costs attributable to the settlement. See Part III.A.4 for details.

10. Federal Reserve System, Office of the Comptroller of Currency, Office of Thrift Supervision, *Interagency Review of Foreclosure Policies and Practices*, April 2011.

II. THE SETTLEMENT WOULD LIKELY GENERATE COSTS IN EXCESS OF BENEFITS

There is substantial evidence that mandated modifications would have few positive benefits. Moreover, such limited benefits should properly be measured against the very real risk that a new program would backfire by creating considerably more strategic defaults¹¹ than the more “organic” defaults it seeks to cure. In addition, the settlement would substantially delay foreclosures, thereby increasing their cost and dampening economic growth.

A. Mandated Modifications Are Ineffective

The ostensible goal of the settlement is to help borrowers stay in their homes. Indeed, a central premise of the settlement is that more modifications (both government-sponsored modifications and bank-initiated modifications) are necessary, and that these modifications will improve the housing and mortgage markets.

Empirical evidence does not support the assumption that government-mandated modifications like those contemplated in the settlement are effective in preventing foreclosure. Adelino, Gerardi and Willen (2009) find that prior mortgage modification programs did little to prevent foreclosure. They find that average re-default rates for modified loans over the period 2005-2008 were 50 percent for mortgages as a whole and 70 percent for subprime mortgages. They also find that very few loans are actually being modified, and trace that fact to reasons unrelated to the quality of the servicers or the requirements of investors.

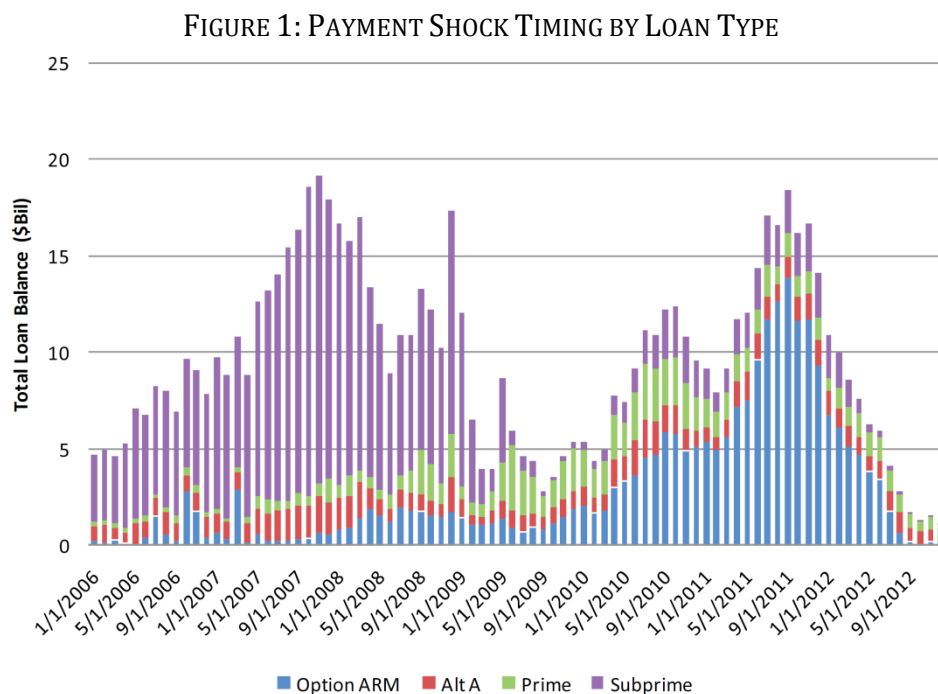
11. *See, e.g.*, Christopher Mayer, Edward Morrison, Tomasz Piskorski, & Arpit Gupta, Mortgage Modification and Strategic Default: Evidence from a Legal Settlement with Countrywide, July 2010 (finding that Countrywide’s delinquency rate relative to comparable servicers substantially increased immediately after announcement of Countrywide’s legal settlement with 11 states’ AGs, in which Countrywide committed to offer expedited, unsolicited loan modifications to borrowers who were at least 60 days delinquent).

The more recent HAMP plan has also had its share of difficulties. While default rates reported by the Department of Treasury for permanent HAMP modifications have arguably been better than what was found in earlier modification programs, the level of failures remains high.¹² According to the February housing “scorecard” released by Housing and Urban Development (HUD), only 40 percent of all HAMP trial modifications have resulted in permanent modifications. Interestingly, the most common reasons for failure of a HAMP trial were (1) insufficient documentation, (2) default during the trial period, and (3) borrower ineligibility due to higher than required debt-to-income ratios. The settlement plan apparently seeks to erode the first and last of those stumbling blocks by allowing borrowers to submit their own documentation without establishing a credible means of verification and placing the burden on the servicer to object, within ten days, to deficient documentation. While this approach could increase trial modifications, it would also increase default rates on trial modifications, and so have little lasting effect.

One problem with mandated loan modification is that even significant principal reductions cannot cure the mortgage loan origination issues that are at the heart of the foreclosure crisis. The example of pay option adjustable rate mortgages (ARMs) from the 2006 production cycle illustrates this point. It is widely expected that “defaults in this Option ARM sector will be quite high, because (1) borrowers had self-selected this mortgage to achieve the lowest possible payment, allowing them to stretch to be in a house they could not afford; (2) negative equity is an especially large issue for this sector; and (3)

12. The latest report from the Department of Treasury in December of 2010 indicated that the 60+ day delinquency rate on modifications that have seasoned for 12 months was 20.4 percent and the 90+ day default rate was 15.8 percent. See Making Home Affordable Program Servicer Performance Report Through December 2010, available at <http://www.treasury.gov/initiatives/financial-stability/results/MHA-Reports/Documents/Dec%202010%20MHA%20Report%20Final.pdf>.

payment shock still looms.”¹³ The problem with pay option ARMs is that while “most of subprime pay shocks have already occurred . . . most of the options ARM pay shocks are yet to come.”¹⁴ Figure 1 illustrates this point: Most pay option ARM pay shocks are due to begin in Spring 2011, extending through the beginning of 2012, reflecting the aggressive pay option ARM production in 2006 through the beginning of 2007.



Source: Laurie Goodman, Roger Ashworth, Brian Landy, & Ke Yin, *Option ARMs - Performance and Pricing*, AMHERST MORTGAGE INSIGHT, January 11, 2010, at 9.

Consider the modification potential for a 40-year loan for \$465,000 that was originated in March 2007 with an original interest rate of 1.375 percent and a minimum payment of \$1,260. The loan hit its negative amortization cap of 110 percent of initial loan balance during 2009, and the payment recast to \$2,806, which was more than twice as much as the original payment.

13. See Laurie Goodman, Roger Ashworth, Brian Landy, & Ke Yin, *Option ARMs - Performance and Pricing*, AMHERST MORTGAGE INSIGHT, January 11, 2010.

14. *Id.* at 9.

The initial payment that the borrower could arguably afford at the time was \$1,260. There are roughly 38 years remaining on the loan and the interest rate is 5.875 percent. With such terms, a payment of \$1,260 will support an amortizing loan with a principal of \$229,741—not the \$511,700 remaining principal balance at reset. Hence, the loan principal must be reduced by 55 percent to realign the payment with the original borrower-affordability constraint. Extending the loan term to 40 years brings the necessary principal modification down to just over 54.5 percent. Extending the loan term and lowering the interest rate to two percent brings the necessary principal modification to about 18.7 percent. But assuming the home has declined 40 percent in value since loan origination, the borrower is still under water—that is, the borrower still owes \$110,000, or over one third, more than the home is worth (and so is still likely to default). Unsurprisingly, loan modification “works very poorly for option ARMs, where the borrower is in a house that he cannot afford, and is already making a low payment prior to recast.”¹⁵ Unfortunately, this combination of unaffordable monthly payments on a deeply underwater debt is all too common for mortgage loans, even beyond option ARMs.

B. Net Present Value (NPV) Calculations Are Already in Use

The settlement would require that each servicer offer and facilitate loan modifications whenever loan modifications result in a greater net present value (“NPV”) than foreclosure. NPVs are typically used by servicers in financial cost-benefit calculations to determine which choices are more profitable and are mandated for use in HAMP modifications. That calculation determines whether it is more profitable to modify a loan,

15. *Id.* at 13.

for example, by lowering the monthly payments, or to not modify a loan, which often leads to foreclosure.

That servicers have not modified more loans indicates that, under their NPV analyses, additional modifications would not result in higher payouts for investors, despite the benefits of avoiding a protracted and expensive foreclosure process. In other words, servicers apparently have come to the conclusion that many borrowers would not be able to repay loans even in the presence of generous modifications. This conclusion is supported by the redefault rates and loan analysis provided above.¹⁶

The settlement implicitly suggests, incorrectly in our view, that servicers are not currently using appropriate NPV tests. The settlement offers no basis for that assumption, nor any proposed methodology that might correct any presumed flaws in servicers NPV tests. Servicers already use NPV analyses as a matter of course.¹⁷ If a servicer finds a modification to be NPV-positive, then it will likely modify the loan without any regulatory oversight. Moreover, the settlement assumes, without any apparent evidentiary basis, that there should have been more modifications than have been made thus far. We are not aware of any disclosure or discussion of any criterion by which the advocates of the

16. Furthermore, Adelino, Gerardi, and Willen (2009) refute the notion that servicing that takes place in securitized loan portfolios results in fewer loan modifications than other mortgages. They find no difference between the percentages of loans modified in securitized pools compared to portfolio loans. We are aware of no credible evidence indicating that servicers' management of securitized mortgages' delinquencies systematically fails to reflect the interests of all parties to which they have a financial responsibility. Based on existing empirical studies we conclude that inherent limits on modification relating to asymmetric information, which we discuss below, are likely to be an important constraining influence on mortgage modifications (in addition to borrowers' observable financial distress). We would also stress that requirements in some securitizations that modifications only occur after loans have been repurchased by the securitizing bank would also limit modifications in some circumstances, and could also result in spurious inferences about servicer failure to apply an appropriate NPV calculation.

17. Under the HAMP model, an NPV calculation is already used as a key evaluation as to whether loans will be modified. See Help for America's Homeowners, Home Affordable Modification Program, Base Net Present Value (NPV) Model Specifications, June 11, 2009, at 2 (explaining that under the modification, "there is a greater chance that the borrower will eventually be able to repay the loan in full.").

settlement have reached that conclusion, nor a statistical analysis in support of that view. Additionally, it bears noting that NPV calculations include a subjective set of criteria by which to evaluate a borrower, taking into account items such as the lender's risk tolerance. Different approaches to NPV can produce different results. It would be very challenging to craft a single standard that could be applied reasonably to what are inherently difficult applications of judgment.

The settlement also states that the borrower could challenge the NPV appraisals.¹⁸ However, the standards for this challenge are not specified in any detail; for example, there is no requirement for documenting the borrower's income or assets, or even for what discount rate should be used in the calculation. Banks use different models to calculate the NPV standard, and in many cases they evaluate several hundreds of similar loans at the same time. In the absence of any specificity on these points, the settlement would create additional hurdles to conducting NPV analysis. That would further slow the modification process, and would continue to extend the mortgage crisis.

C. Principal Reductions Are Inefficient in Addressing Borrower Distress

The settlement does not restrict modifications to borrowers in distress, which suggests at best a disregard of the important problem of strategic default. A recent article by three Federal Reserve economists explained that the potential desirability of principal reductions is complicated by the fact that not all borrowers with negative equity will default on their mortgages.¹⁹ Indeed, the authors explain that in the face of widespread principal reductions, the borrower "who intends to repay has a strong incentive to make

18. *Settlement* at II.H.2.

19. Kristopher Geraldi, Christopher Foote and Paul Willen, *Real Estate Research: The seductive but flawed logic of principal reduction*, FEDERAL RESERVE BANK OF ATLANTA REAL ESTATE RESEARCH, Mar. 9, 2011.

[himself] look like a borrower who won't."²⁰ Because neither servicers nor the government can know which borrowers would default if not assisted, neither can target principal reductions so that each reduction prevents a foreclosure. Some reductions will simply be a windfall to a borrower who can pay and would have paid his or her debt. This inefficiency sharply increases the cost of preventing foreclosures.²¹

The Federal Reserve paper is supported by considerable scholarly work done on the issue of strategic default. According to Gerardi and Li (2010), the main obstacle to efficient modifications is the fundamental information asymmetry between borrowers and lenders. Borrowers do not know the true cost of foreclosure to the lender. However, if the borrower suspects that the costs are high, then the borrower has an incentive to default to get better mortgage terms even if the borrower could pay off the loan.

Lin and White (2001) similarly suggest that lenders facing higher costs of foreclosure will capitulate with more modifications. The problem is that lenders cannot distinguish between the borrowers needing help and those that are strategically defaulting. Thus, lenders will ration modifications to avoid making concessions to borrowers that strategically default.

Lenders do so rationally, given that Adelino, Gerardi, and Willen (2009) find that roughly 30 percent of mortgages in default from 2005-2008 self cured without modification. Thus, even in the absence of strategic default, lenders know that some borrowers will be able to continue to make payments.

Recent developments in credit models are striving to sort out the differences between self-curing borrowers, borrowers that both need and may respond favorably to a

20. *Id.*

21. *Id.*

modification, and those who have defaulted but do not financially need a modification and/or are defaulting for purely strategic reasons. As yet, the dynamics of such decision making are not well enough understood for either business operations or policymaking.

An interesting experimental study by Karlan and Zinman (2009) finds that strategic default plays a significant role in borrowers' decisions. Using a sample of consumer credit customers from a South African finance company, the authors create an experiment where they control the borrower's initial contracted rate, the actual rate offered when the loan is made, and extension of favorable credit after repayment of the first loan. By controlling these three dimensions of the loan offer, the authors are able to separate the adverse selection component of the information asymmetry between borrowers and lenders from the moral hazard component. The authors find that between 13 and 21 percent of default behavior can be attributed to moral hazard on the part of the borrower, which supports the notion that strategic decisions by borrowers do play a significant role in default.

Karlan's and Zinman's (2009) findings imply that changes in foreclosure policies that increase the incentive to default would produce more mortgage defaults. Any predictable increase in strategic defaults would certainly be recognized by lenders. As such, a predictable increase in strategic default would also lead to an increased reluctance to offer principal-reducing modifications to borrowers who would have previously received such modifications from lenders voluntarily. Thus, because the settlement's approach to loan modifications would encourage strategic default and discourage efficient voluntary modifications, it would be highly inefficient.

The proposed settlement would mandate modification, which makes that problem worse. Under such a settlement, borrowers have complete information: they know that

lenders *must* provide them with an opportunity for modification if they request modification, and lenders *must* modify whenever the NPV favors modification, and that they can affect the NPV calculations by submitting unverified documentation and protesting unfavorable property appraisals.

According to the research cited above, such conditions create a strong incentive for the borrower to default and seek modification, regardless of the borrowers' financial conditions. The settlement would therefore allow borrowers who can actually repay their modified mortgage to extract principal concessions from the bank. Borrowers that cannot repay their mortgages can delay foreclosure for an extended—and as we suggest below, significant—period of time, extracting substantial rent-free accommodations from the bank.²²

In fact, mortgage default models are already becoming bifurcated, with subprime loans (that is, very low FICO) defaulting according to an organic process related to job losses and economic growth, and borrowers with Alt-A loans (that is, somewhat higher FICO, but high LTV) more willing to strategically default. Those Alt-A borrowers are more likely to have misclassified second homes and investment properties as primary residences, confounding the economics of modification and the efficacy of principal reductions. Moreover, because most of the underwater balances in the industry stem from high-balance loans initiated by individuals with generally higher incomes than those in subprime loans, any big principal reduction program is going to provide economic benefits disproportionately to higher income individuals.

22. *See, e.g.*, R. Kelley Pace and Shuang Zhu, The Influence of Foreclosure Delays on Future Default, Loan Losses, and Contract Rates, Louisiana State University Working Paper, October 2010.

D. The Settlement Would Delay Foreclosure, Increasing Costs

The settlement would add further delays to the foreclosure process, which correspondingly would increase the cost of foreclosure. Below is a list of some of the provisions that specifically would impose delays in the process:

- If any documents are in a foreclosure proceeding are found to be in error, the servicer must wait 30 days after notifying borrower before proceeding.²³
- When borrowers submit a *substantially* completed application for loss mitigation relief after foreclosure has been initiated, servicers must wait to proceed with the foreclosure process until they come to a decision on the application.²⁴
- 45 days prior to the filing of a foreclosure pleading, servicers must provide borrowers with an itemized payment review for the borrower over the last 36 month.²⁵
- Borrowers will get a trial period with a loan modification, and the modification will be granted if they make three consecutive payments.²⁶
- Servicers cannot initiate a foreclosure, file a motion for relief from stay in a bankruptcy proceeding, object to confirmation of the borrower's chapter 13 bankruptcy plan, or move to dismiss the borrower's bankruptcy case while a loss mitigation program is pending.²⁷
- Servicer shall provide written notice of any required documents that are missing from the borrower's written submission within 10 business days of receiving the submission.²⁸
- In non-judicial foreclosure states, servicers have to send a sworn statement to the borrower prior to the notice of foreclosure at least 30 days prior to holding a foreclosure sale.²⁹
- If borrowers are denied a modification request, they have 30 days to provide evidence that the NPV or eligibility calculation was in error.³⁰
- If a HAMP modification is denied and the review process has been completed, servicers must evaluate the borrower's eligibility for a proprietary loan modification within 15 days of the HAMP denial.³¹

23. *Settlement* at I.A.

24. *Id.* at II.B

25. *Id.* at I.B

26. *Id.* at II.A

27. *Id.* at II.B

28. *Id.*

29. *Id.*

30. *Id.* at II.D.

31. *Id.* at II.G.

- Initiation or advancement of foreclosure must wait for the outcome of the internal review process.³²

Adding up the delays, not including those with indeterminate or undefined time periods, the foreclosure process could be delayed up to *280 days, which would increase the existing 17 month foreclosure timeline by over 50 percent*. Such additional delay would substantially increase the cost of foreclosure to banks and investors. The increased costs and delays from the settlement would, by raising the expected cost of foreclosure, push servicers applying the NPV criterion towards modifications that do not make economic sense today.

Although these delays might “keep” borrowers in their homes longer, that effect is likely to be temporary as well as economically costly. Hence, the delays of foreclosure are not likely to result in a socially desirable means of accomplishing homeownership objectives. As demonstrated below, the effects of transferring resources from banks to borrowers could reduce lending and hamper short-term economic growth and employment (as bank equity capital is the basis on which the supply of lending is based). Longer-term, if the *ex post* transfer to debtors were upheld in the courts, that erosion of the rule of law and creditors’ rights would undoubtedly increase the costs of borrowing in mortgage markets and in other credit markets.

III. IMPACT OF THE SETTLEMENT ON THE BROADER ECONOMY

In this section, we analyze the likely impact of the settlement on the broader economy. Our review of existing economic research, as well as our own analysis, leads us to conclude that the settlement, including its delay of foreclosures, would harm the broader economy: stalling construction of new homes; reducing consumer spending and investment; and reducing credit access and economic growth. In particular, we believe the

32. *Id.* at II.H.

settlement cost itself would increase interest rates by 22 to 31 basis points a year, as imposing additional costs on lenders would lead lenders to require higher returns. Furthermore, an increase in strategic defaults as a result of the settlement could increase the foreclosure inventory by \$297 billion, and increase interest rates by another 10 basis points.

A. Macroeconomic Impacts

The United States undoubtedly faces a continuing foreclosure crisis. RealtyTrac reported in January 2011 that nearly three million homes received foreclosure filings in 2010.³³ In addition to the current foreclosures, there exist a substantial number of potential foreclosures that will occur in the next several years. CoreLogic estimated that nearly 23 percent of all mortgages are underwater as of the third quarter of 2010.³⁴ This number spikes in the areas hardest hit by the mortgage crisis, particularly California, Florida, Arizona, and Nevada, where the Case-Shiller index has fallen by around 40 percent since the peak of the real estate bubble.³⁵

As described above, the settlement would delay the resolution of this crisis by keeping homes in foreclosure status. Even as rents rise relative to home prices, the continued overhang of shadow home inventory—that is, homes occupied by borrowers that cannot afford them pending political resolution of various foreclosure moratoria—

33. Nathan Becker, *RealtyTrac: Record 2.9M Properties Received Foreclosure Filings in 2010*, WALL STREET JOURNAL, Jan. 13, 2011.

34. *New CoreLogic Data Shows 23 percent of Borrowers Underwater with \$750 Billion Dollars of Negative Equity*, CORE LOGIC, March 8, 2011, available at [http://www.corelogic.com/About-Us/News/New-CoreLogic-Data-Shows-23-Percent-of-Borrowers-Underwater-with-\\$750-Billion-Dollars-of-Negative-Equity.aspx](http://www.corelogic.com/About-Us/News/New-CoreLogic-Data-Shows-23-Percent-of-Borrowers-Underwater-with-$750-Billion-Dollars-of-Negative-Equity.aspx).

35. *Id.* (“Nevada had the highest negative equity percentage with 65 percent of all of its mortgaged properties underwater, followed by Arizona (51 percent), Florida (47 percent), Michigan (36 percent) and California (32 percent).”); *Money Pits*, THE ECONOMIST, Nov. 24, 2009, (“What we see here is that 8 of the 20 cities tracked by Case-Shiller have experienced a price decline from peak of 38% or more, and all of those cities are in California, Florida, Michigan, Arizona, and Nevada.”).

prevents home prices from rising as much as they otherwise would in the face of increased demand.³⁶ This postponement in recovery can weaken financial systems, stall the construction of new homes, reduce consumer investment, and restrict access to credit. As demonstrated below, the actions contemplated in the settlement would aggravate the postponement of housing market recovery, and thus have broad and adverse implications for the U.S. economy.

1. Stalled Construction of New Homes

Until the bottom of the housing market is reached and a consistent and reliable upward trajectory in housing prices is established, new housing construction will not proceed. DiPasquale and Wheaton (1994) explain that residential construction is a linear function of new housing prices. Using data from Commerce Department, Freddie Mac, the Federal Home Loan Bank Board, and the American Housing Survey, the researchers use a two-stage least squares regression to account for endogeneity in the predictors of housing construction, and conclude that the industry is driven by *changes* in housing prices as opposed to price levels.

Blackley (1999) extends this research using aggregate annual data from 1950 to 1994 on new housing starts in the United States. Using a two-stage least squares model, he corroborates the evidence that residential construction is a linear function of housing prices. He determines that in the long-run, new housing supply is price-elastic; an increase in housing prices will lead to an amplified increase in new housing starts.

These findings are also supported by Mayer and Somerville (2000). Using data on national housing starts, they find that increased prices in the housing market lead to an

36. Dawn Wotpka, *Housing Woes Fuel Apartment Surge*, WALL STREET JOURNAL, Jan. 29, 2011.

attendant increase in housing stock and a large increase in housing starts. They perform a time-series regression with instrumental variables and an autoregressive process to account for serial correlation. Their findings strengthen the claims that (1) changes in housing market prices, as opposed to levels, lead to new construction, and (2) new housing supply is price-elastic.

By injecting uncertainty over when the housing market will reach bottom, foreclosure delays undermine the incentives of construction companies to invest. That postponed investment lowers economic activity in the short run and further weakens the economic recovery that is underway. Indeed, the most recent Federal Housing Report showed new home construction fell about 22.5 percent to the lowest level since April 2009, and one of the lowest levels since the statistic has been tracked.³⁷

2. Reductions in Consumer Spending and Investment

Households value greater certainty in markets when making their spending decisions. In the aggregate, the literature regarding mortgage foreclosure and individual investment decisions points to the need for speedy resolution of the foreclosure crisis. Resolution would reduce uncertainty, which would spur consumption and help fuel economic recovery.

Indeed, one could argue that the uncertainty produced by the foreclosure moratorium has already harmed the housing market. For the past several months (possibly as the result of various foreclosure moratoria) housing has become increasingly disconnected from the recovery in production and jobs that is occurring in other sectors of

37. Dina ElBoghdady, *Level of U.S. Home Construction Drops Sharply*, WASHINGTON POST, Mar. 16, 2011.

the U.S. economy. Housing sales, prices, and starts remain low or declining, despite the signs of recovery elsewhere.

In a paper published before he became chairman of the Federal Reserve, Bernanke (1983a) posits that a temporary increase in uncertainty can cause a sudden drop in investment spending. He discusses the trade-off between the benefit of information (that is, knowing that an investment will bring reliable returns) and the cost of delaying investment. Investors will often postpone projects at a cost in order to wait for a safe time to make a commitment. Using dynamic-inference methodology,³⁸ Bernanke shows that even a single unusual event³⁹ can make investors less certain about the nature of the market, and thus cause them to adjust their behavior toward a higher degree of caution.

Romer (1990) applies this logic to explain how uncertainty disrupted consumer spending on durable goods during the Great Depression. Among other evidence, she presents a regression analysis that quantifies the impact of stock market variability on a measure of durable goods consumption. By controlling for the wealth effect of declining stock prices, Romer finds that the variance in stock prices and not the actual decline was responsible for the huge drop in consumption and investment at the onset of the Great Depression. She estimates that a doubling of the average variability of the stock market depresses consumption of durable goods by about seven percent.

Debt overhang effects from failing to resolve delinquent loans can adversely affect long-run consumption through an additional leverage channel. Barrell, Davis and Pomerantz (2006) analyze the effect of a financial crisis on consumption. They

38. The dynamic inference model was established by Howard (1964).

39. An unusual event in this approach is defined as a sudden change to a probabilistic distribution, affecting the prior beliefs that agents may have about the behavior of the economy.

demonstrate that the macroeconomic effects of a crisis are aggravated by high leverage, especially as an effect of a high debt-income ratio. The researchers empirically test the effects of financial instability on consumption in 19 OECD countries, finding that the loss to consumption due to financial crisis ranges from 4.5 to 9.5 percent annually. They explain that the household balance sheet, especially those that entail high debt-to-income ratios, is a large contributor to this drop in spending. Lax credit constraints will ease falls in consumption in the first year following a crisis, but the effects of high leverage and debt-to-income ratios causes a large decline in consumption in subsequent years. The researchers explain that “rapid resolution is often thought better than forbearance which leaves bad loans outstanding and can heighten moral hazard, worsening the eventual costs to the taxpayer while also slowing economic growth.”

With respect to the effects of foreclosures on consumer wealth, through their short-term effects in depressing home prices, Calomiris and Higgins (2011) point out that transitory changes in housing prices (resulting from temporary selling pressure related to foreclosures) would not affect perceptions of wealth, and thus would not have a significant effect on consumption. Furthermore, Calomiris, Longhofer, and Miles (2011) show that even the short-term effects of foreclosures on house prices, under the current foreclosure regime, are modest.

3. Credit Access and Economic Growth

Economic research also suggests that government intervention into the allocation of loan losses can have negative impacts on both credit access and economic growth. In their examination of Italian credit systems, Jappelli, Pagano, and Bianco (2005) find that judicial inefficiencies in processing financial claims lead to restricted access to credit. Their finding

can be translated to the settlement at issue here, which involves an overlapping of new foreclosure procedures onto existing state foreclosure laws. This will certainly create uncertainties and inefficiencies in the legal system surrounding contract enforcement and foreclosure. Understanding these new risks, lenders will respond by limiting access to credit. The restriction of credit will put upward pressure on interest rates. The increasing cost of credit will put further downward pressure on home prices, thus, exacerbating the current housing crisis. Alan Greenspan (2011) suggests that our current stagnant economic recovery is due precisely to the type of government activism that the proposed settlement exemplifies.

Bernanke (1983b) explains why a disruption in the credit markets has protracted negative macroeconomic effects. He cites bank disintermediation as the cause for decreased output during and after the Great Depression, referring to the simultaneous weakening of borrowers' balance sheets and tightening of bank credit supply. He uses a simple regression analysis to show that during the period of 1921 until the bank holiday of March 1933, credit contraction had a large, negative, and statistically significant effect on output. Calomiris and Mason (2003) provide more disaggregated evidence from the Depression that confirms the importance of bank credit contraction for slowing economic growth. Importantly, in addition to his empirical analysis on the depth of the Great Depression, Bernanke infers that the credit effects from bank failures depend on the time it takes to repair disrupted channels of credit and rehabilitate insolvent debtors. Calomiris and Mason show that the effects of credit contraction persisted for years after the shocks of 1930-1933.

Bernanke's hypothesis is further confirmed by Anari, Kolari, and Mason (2005). They extend his research by showing how the slow liquidation of poor assets during the Great Depression exacerbated financial disintermediation, which triggered both transitory and permanent adverse macroeconomic consequences. They use vector auto-regression models with the amortized stock of failed national bank deposits as a proxy for the time required to resolve a stock of poor assets. They conclude that the endurance of the Great Depression into the late 1930s can be explained largely by the sluggish liquidation of distressed assets.

Given the large number of existing foreclosures and the potential overhang of another seven million foreclosures, it is reasonable to argue that we are facing a situation similar to the one that Bernanke (1983b) and Anari, Kolari, and Mason (2005) analyze. We have already seen that zero interest rates and two rounds of quantitative easing have done little to spur lending by financial institutions. This likely is due in large part to the uncertainty regarding the value of the delinquent mortgage assets held by financial institutions. A settlement that raises critical questions—such as the amount of time new foreclosures will take under the new rules, and whether strategic defaults will cause a net increase in defaults—would continue to slow economic growth.

4. The Impact on Interest Rates and Access to Credit

Furthermore, with respect to its effects on the buy side of the housing market, the proposed settlement could further delay the resolution of housing distress by raising interest rates on mortgages significantly, and thus reducing the demand for homes. The proposed settlement would inevitably raise the costs of lending for new mortgages. The mandated write-downs are not funded by the government, but would be funded by

servicers and/or investors, and so amount to a new tax on mortgages. The costs of that tax would be passed on to borrowers in the form of higher mortgage rates. If mortgage rates go up, demand for homes (and thus home prices) will stagnate or decline. That effect is counter to the desires of policymakers to raise home prices. Below we estimate the costs of the settlement and distribute those over new mortgage originations. Even conservative calculations show that mortgage rates are likely to rise significantly in response to such a policy, harming mortgage markets even further.

The economics literature shows how increasing the cost of credit affects housing markets. Arslan (2008) studies the effects of interest rate fluctuations on the equilibrium of the housing market using a two-period overlapping-generations model. The author finds that the increases in real housing prices in the last 20 years can be substantially explained by decrease in interest rates over the same period. Similarly, Himmelberg, Mayer and Sinai (2005) find a powerful effect of interest rates on housing prices.⁴⁰ Glaeser, Gottlieb, and Gyourko (2010) support the claim that the large increase in housing prices from 1996 to 2006 was caused in large part by access to easy credit in the form of low interest rates.⁴¹

As an illustrative example, we estimate the magnitude of the effect the settlement could have on interest rates. Before considering its effects on strategic defaults, we find that the settlement could increase interest rates by around 22 to 31 basis points per year.⁴²

40. The authors develop a formula to account for the changes in the annual cost of owning a home. Interest rates affect the homeowner's opportunity cost of owning the home (that is, interest can be earned on an alternative investment had they invested their money in something other than a house). The authors conclude that an "unexpected rise in interest rates that raises housing costs, or a negative shock to a local economy, would lower housing demand, slowing growth of housing prices, and possibly even leading to a house price decline."

41. They use a standard user cost model for housing prices and find that interest rates account for one-fifth of the rise in housing prices.

42. The estimate differs based on the amortization period used for the one-time costs. We provide a range of estimates for periods ranging from a 3-year amortization to a 10-year amortization.

To arrive at our estimate, we analyze both the one-time and recurring costs the settlement would impose on servicers. The one-time costs would include the \$25 billion in mandated principal write-downs less the write-downs that would have occurred absent the settlement,⁴³ and the adjustment costs of adding new software, training employees, and acquiring legal consulting on compliance.⁴⁴ We estimate these one-time costs, depending on the assumed amortization schedule, range from \$1 to \$4 billion per year.⁴⁵ Recurring costs would include the increased compliance costs⁴⁶ and the increased servicing costs resulting from delays in the foreclosure process⁴⁷ and additional modifications.⁴⁸ We

43. Although the estimated principal write down the settlement reportedly would require of servicers is \$25 billion, the incremental write-down cost is lower, as some write downs would have occurred without the settlement. Wells Fargo recently reported writing down \$4 billion in principal balances. *See* Wells Fargo Enhances Mortgage Assistance for At-Risk Wachovia Pick-a-Payment Customers, Oct. 6, 2010, *available at* https://www.wellsfargo.com/press/2010/20101006_Mortgage (last accessed on Apr. 4, 2011). Bank of America recently reported writing down \$3 billion in principal balances. *See* Bank of America Introduces Earned Principal Forgiveness Among Enhancements to its National Home Ownership Retention Program, 2011, *available at* <http://ahead.bankofamerica.com/uncategorized/bank-of-america-introduces-earned-principal-forgiveness-among-enhancements-to-its-national-homeownership-retention-program-2/> (last accessed on Apr. 4, 2011). Because JP Morgan Chase is not known to give principal forgiveness readily, we conservatively estimate \$1 billion in principal write-downs. For GMAC and Citigroup, we assume \$3 billion in write-downs in the absence of the settlement. The sum of these write-downs is \$14 billion. Thus, the settlement imposes an *additional* \$11 billion in write-downs on servicers above and beyond that which would occur naturally. By conservatively reducing the incremental write-downs by \$14 billion, our estimate of the interest rate effect is reduced by roughly 15 basis points—that is, the relaxation of this assumption would increase our interest rate effect by 15 basis points.

44. For our estimate of one-time compliance costs, we conservatively use the costs estimated for the RESPA reform. The reforms estimated in RESPA, however, took advantage of existing infrastructure. The current settlement mandates entirely new systems and training. Thus, we scale up our estimate to \$1 billion. *See* Bunce, McFarlane, Reid, & Usowski (2009) (“We estimate \$571 million of onetime adjustment costs related to new software, training, and legal consulting.”).

45. The amortization periods used for these costs ranged from three to ten years.

46. For our estimate of recurring compliance costs, we conservatively use the costs estimated for the RESPA reform. The reforms estimated in RESPA, however, took advantage of existing infrastructure. The current settlement mandates entirely new systems and training. Thus, we scale up our estimate to \$1 billion. *See* Bunce, McFarlane, Reid, & Usowski (2009) (“There will also be annual recurring compliance costs. It is imaginable that the recurring compliance costs could be close to zero. However, HUD has assumed significant costs ranging from \$630 million to \$918 million (\$50-\$74 per loan) depending on the number of applications per loan.”).

47. We estimate that the delay in the foreclosure process as a result of the settlement can be as much as 280 days. To be more conservative, we estimate that the average delay will be a 140 days. Goodman (2010) estimates the expected foreclosure inventory of \$1.19 trillion. Multiplying the daily cost of servicing (expected foreclosure inventory of \$1.19 trillion times the 0.71 percent above divided by 365.5) by 140 days equals \$3 billion.

estimate these recurring costs to be \$6 billion per year. Thus, the total costs would range from \$7 to \$10 billion per year.

The CFPB recently reported that, according to its estimates, large mortgage servicers avoided approximately \$24 billion in costs between 2007 and 2010, or about 75 basis points per loan due to allegedly ineffective special servicing of delinquent loans.⁴⁹ If that is the case, it follows that increasing servicing costs by a total of \$7 to \$10 billion per year should yield a 22 to 31 basis point increase in cost. In the competitive mortgage lending market, that incremental cost will be passed on to borrowers in the form of higher interest rates on mortgage loans. That implies that, holding constant other mortgage costs, servicers would have to increase mortgage interest rates by 22 to 31 basis points. We emphasize that this estimate is sensitive to the accuracy of the CFPB's estimate, which effectively provides a denominator for distributing the \$7 to \$10 billion annual incremental cost.

The \$7 to \$10 billion estimate is conservative, however, as it examines only part of the costs incurred by servicers, and it does not include the higher servicing and default risk costs associated with an increase in default as a result of the settlement, which would also raise interest rates. It is not difficult to imagine scenarios in which costs and mortgage interest rates could increase significantly more than 31 basis points. With respect to the

48. Recent reports state that the regulators seek an additional 1 to 3 million loans modified in the next 18 months. We use 2 million as the loan modification quota. See Shahien Nassirpour, *Obama Administration Pushing for Banks to Modify Millions of Mortgages to Settle Foreclosure Claims*, HUFFINGTON POST, Mar. 16, 2011, available at http://www.huffingtonpost.com/2011/03/16/obama-administration-modify-mortgages_n_836350.html (last accessed on Mar. 19, 2011). Goodman (2010) estimates the average size of a re-performing loan is \$147,957. Multiplying the two values together gives a loan modification inventory of \$295 billion. Multiplying this \$295 billion by the 0.71 percent for the percentage of delinquent loan servicing costs to principal balances yields \$2 billion in annual servicing costs for newly modified loans.

49. Consumer Financial Protection Bureau, *Perspectives on Settlement Alternatives in Mortgage Servicing*, at 3, Feb. 14, 2011, available at http://financialservices.house.gov/media/pdf/cfpb_presentation.pdf. Because the presentation gives no additional details of the analysis, it is unclear how such conclusions were reached.

effects of strategic default noted above, Andrew Jennings of FICO estimates that 25 to 30 percent of defaults are already premeditated.⁵⁰ He finds evidence of this effect in patterns exhibited by lower-risk borrowers, including behavior such as making numerous credit inquiries and taking out new loans prior to mortgage default.⁵¹ Moreover, these practices are reported to be more widespread in non-recourse states, where lenders cannot make a claim on the borrower for any debt remaining after the property is sold.

If the settlement increases strategic defaults by another 25 percent,⁵² we estimate that the inventory of homes in the delinquency process would increase by \$297 billion, resulting in both higher servicing costs (because of a higher volume of delinquent loans) and a higher credit spread on mortgages (in anticipation of greater risk of default going forward).⁵³ Under this scenario, the effect of higher servicing costs alone would increase mortgage interest rates by an additional 10 basis points (over and above the 22 to 31 basis point effect estimated above).

That feedback effect will not end with the resolution of the crisis. Some credit analysts point out that borrowers who strategically default have more balanced budgets afterwards than those who do not and therefore can (perversely) afford more credit. Anticipating that phenomenon, lenders are already struggling with the question of how to

50. *When the Roof Fell in*, THE ECONOMIST, Mar. 3, 2011.

51. *Id.*

52. We use a 25 percent increase in strategic defaults for illustrative purposes only. It is unclear how much strategic default would increase under the settlement. Four state AGs believe that the current settlement will increase strategic defaults. See Jon Prior, *Four AGs say foreclosure settlement proposal promotes strategic default*, HOUSINGWIRE, Mar. 23, 2011.

53. We assume that a move to special servicing increases servicing costs by 71 basis points per loan.

extend credit to those consumers while avoiding the encouragement of future strategic defaults in what will truly be a new consumer credit marketplace.⁵⁴

Finally, any estimate of the effect of the settlement on mortgage interest rates should also consider the effect that longer foreclosure times, increased defaults, and delinquencies could have on credit spreads. As delinquencies and foreclosures increase, MBS investors would demand a higher yield on their investment (most likely in the form of wider credit spreads) due to the increased risk associated with the investment.⁵⁵ Further, widening credit spreads would represent a long-run structural change in lending markets, and would affect *new* originations, not simply existing ones. These wider credit spreads would be passed on to new borrowers in the form of higher interest rates. Nonprime borrowers would likely bear the brunt of this effect, although even prime borrowers could be affected severely, particularly if GSE reform limits future government-sponsored credit risk subsidies to prime borrowers. Ironically, the settlement would most adversely affect the very group that it was intended to assist. Because our estimates do not consider these credit-risk spread effects, we understate the true impact of the settlement on interest rates.

V. CONCLUSIONS

Press reports on the settlement have indicated that its terms are the product of state AGs and the Consumer Financial Protection Bureau, and not the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC), or the Federal

54. See, e.g., Brad Jolson, Taking on Strategic Defaults, FICO Banking Analytics Blog, Oct. 12, 2010, available at <http://bankinganalyticsblog.fico.com/2010/10/taking-on-strategic-defaults.html>.

55. See Pace and Zhu, *supra*, at 14 (2010) (“The marginal effect of a six months increase in foreclosure delay [alone] is a 15.22% increase in hazard ratio, which is equivalent to the marginal effect of a 6.54% decrease in housing expectation, a 3.65% increase in loan-to-value ratio, a 17.71 lower FICO score and a 0.82% increase in contract rates. The results indicate that various proposals such as the broad foreclosure moratoria may materially increase the default propensity which may lead to an even worse housing market conditions.”).

Reserve. Unfortunately, the terms of the settlement appear to reflect the absence of regulators with broad understanding of the housing market and its relationship to the national economy. Although mandating principal reductions certainly seems “pro-borrower” on the surface, there is substantial economic research that suggests that the benefits to borrowers would likely be illusory, and that the costs to the nascent economic recovery would likely be significant.

Our critique of the settlement should not be construed to mean that *voluntary* modification is an undesirable option for mortgage servicers and borrowers. Nor are we arguing against new regulatory interventions by the Fed that would provide remedies to existing deficiencies in servicing practices. Rather, we believe that *mandated*, across-the-board mortgage modifications are not suitable for resolving most of today’s delinquent mortgages. The quick resolution of the mortgage crisis and the speedy recovery of the economy may be more sensibly based upon policies emphasizing less reliance on mortgage modification and more on the speedy recognition of losses to all of those involved in the marketplace, while also addressing illegal behavior directly (including robo-signing violations and other shortcomings of the industry) where it took place.

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