



The Inequity of Subprime Mortgage Relief Programs

by

Todd Sinai
Associate Professor of Real Estate
The Wharton School
University of Pennsylvania

ISSUE ANALYSIS

www.freedomworks.org

NUMBER 0801
February 19, 2008

FREEDOMWORKS FOUNDATION
601 Pennsylvania Avenue NW, North Building, Suite 700
Washington, DC 20004

Phone: (202) 783-3870 Fax: (202) 942-7649

EXECUTIVE SUMMARY

Various programs have been proposed or enacted to address the so-called “subprime crisis.” These programs may help some borrowers, but they do not bestow these benefits equitably. Some reward those who made riskier decisions over those who made prudent decisions, exclude those who live in states that experienced an early economic downturn, benefit those with high incomes at the expense of others, and spread the costs of the program among all taxpayers or future borrowers – regardless of whether they benefit from the proposals.

- Programs that would freeze or reduce interest rates, such as the American Securitization Forum’s Framework for Loan Modification announced in December 2007, often leave risk-taking subprime borrowers in a better position than if those borrowers had made a less risky decision in the first place. For example, freezing the teaser rate on subprime ARMs or refinancing other subprime borrowers into lower interest fixed rate loans will leave such borrowers in better positions than they would have been under the loans they originally obtained. In fact, they will be better off than those who made more prudent decisions such as taking out fixed rate loans initially or borrowing smaller amounts.
- Differences in foreclosure rates among states are due to exogenous economic forces and not borrower or loan characteristics; for example, prime loans are defaulting at the highest rate in the same states where subprime defaults are highest. Policies that deny benefits to households in delinquency or foreclosure disproportionately exclude those who were unlucky enough to live in the states that experienced the worst of the current economic downturn.
- The benefits of borrower relief programs will be highly concentrated geographically, but the costs will not. Federally mandated programs will be funded by taxpayers in all 50 states or through increased costs of future borrowing, but the benefits of the programs will accrue primarily to just some homeowners in some states, particularly California, Florida, New York and Texas.
- Programs to increase the conforming loan limit, including the Economic Stimulus Act of 2008, raise questions of equity and increase the risk borne by Freddie Mac and Fannie Mae. High-value loans are concentrated geographically, with approximately half of all loans higher than the current limit originating in California. The benefits of increasing the loan limit will affect few areas outside California, New York, and Washington DC. In addition, given the size of the monthly payment required on a loan large enough to exceed the existing limit, raising the conforming loan limit will, according to calculations performed by the OFHEO, help only households with annual incomes of \$129,000 to \$180,000, rather than low income or working class families.

The Inequity of Subprime Mortgage Relief Programs

Todd Sinai*
Associate Professor of Real Estate
The Wharton School
University of Pennsylvania

Draft date: February 15, 2008

Introduction

As 2008 begins, weakness in the housing and credit markets continues to dominate the economic news. Home prices continue to decline, delinquency and foreclosure rates (particularly for subprime mortgages of recent vintage) continue to climb, investors in mortgage-backed securities continue to experience losses, and credit remains in short supply.

Leaders in the banking, real estate, and securities industries all have weighed in on the source of the troubles. So too have politicians, consumer advocates, and pundits of all stripes. Debate rages over who is most blameworthy, and numerous voices have weighed in on the solutions. Most politicians and consumer advocates have called for swift and extensive government intervention, but both the Chairman of the Federal Reserve and many economists have called for caution and restraint.

Two important issues have been overshadowed in this debate. First, subprime mortgages are concentrated geographically in just a handful of states. California, Florida, Texas, and New York represent nearly half the dollar value of subprime debt outstanding; California itself holds more than 25%. These four states have more subprime mortgage debt outstanding than 40 other states put together. Because population and non-subprime mortgage borrowing are more evenly dispersed across the country, the cost of any public policy to mitigate the subprime problem will likely be

* FreedomWorks is pleased to publish this study by Professor Todd Sinai. Professor Sinai is a Real Estate professor at the Wharton School at the University of Pennsylvania and has no professional affiliation with FreedomWorks. The distribution by FreedomWorks of this report does not imply that Professor Sinai either approves or disapproves of any other viewpoints promoted by FreedomWorks.

borne by the entire country, while the benefits will accrue to those few states with a high concentration of subprime debt. Even the benefits of some public policies intended to enhance access to credit, such as increasing the conforming loan limits, are concentrated in a small number of states.

The second issue that needs to be brought to the forefront of any discussion of the subprime “crisis” is the inequity of current policy proposals and programs. Many of these programs benefit borrowers who elected to take the riskiest types of subprime mortgages but do not benefit otherwise similar borrowers who made more prudent financial choices. Indeed, recently adopted programs may reward those who took out certain types of subprime mortgages (such as adjustable rate mortgages (“ARMs”) with low introductory interest rates) by reducing the total cost of borrowing below what it would have been had less risky financing been chosen in the first place. These programs also exclude borrowers who are in foreclosure, even though differences in foreclosure rates across states appear to be determined mostly by weak economic conditions.

1. Background on the subprime lending “crisis”

Much of the current concern about the subprime mortgage and credit markets revolves around the relatively large number of ARMs that originated in the 2003–2005 period. One popular form of ARM, sometimes called a “hybrid ARM,” featured a low, fixed “teaser” rate for the first two or three years of the loan. After the two-year period, the loan would reset to a higher rate—typically, an index rate (such as the six-month LIBOR) to which a margin was added. The margin compensated the lender for both the initial below-market teaser rate and the risk of the loan. The loan would then continue to reset periodically, typically every six or twelve months. At each reset date, the monthly payment would be recalculated based on the prevailing index rate and margin.

A typical “2/28” hybrid ARM, such as the one used in the loan scenarios presented in Section 3 of this paper, might have the following terms:

- 7.08% interest rate for first 24 months
- After 24 months, resets to six-month LIBOR plus 5.43% margin
- First reset is subject to “cap” of 3% above initial rate
- Subsequent resets occur every 6 months, each subject to 1% cap above previous interest rate
- Maximum rate over life of loan: 13.06%
- Minimum rate over life of loan: 7.08%

As home prices escalated in many parts of the country in the early 2000s, the low introductory rates of hybrid ARMs appealed to many subprime borrowers. Because many lenders approved loans based on the borrower's ability to afford the low introductory payments, and these lenders frequently did not require proof of the borrower's income, hybrid ARMS enabled borrowers to take out much larger loans and purchase more expensive homes than they otherwise could have. High investor demand for securities backed by mortgages, including subprime mortgages, provided a steady infusion of capital to meet the demand for these loans.

As the demand for subprime mortgages grew, the demand for traditional mortgages insured by the Federal Housing Administration ("FHA") fell. In addition, the size and/or riskiness of individual subprime loans made them unlikely or ineligible to be purchased by Fannie Mae and Freddie Mac.

In 2006, the housing market started to cool, and many subprime loans that had been originated two to three years earlier faced their first rate resets to higher monthly payments. Many borrowers could not deal with the "payment shock" of those resets. A relatively high proportion of subprime mortgages became delinquent and ultimately went into foreclosure.^{2,3} The high rate of foreclosure persisted into 2007,⁴ and this high rate may well continue through 2008. In 2007, as the rate of mortgage default (both subprime and otherwise) grew beyond investor expectations, the market for mortgage-backed securities collapsed. With investors losing their willingness to finance mortgages by purchasing securities, the housing market entered a "credit crunch." As of the end of September 2007, of the 45.4 million mortgages outstanding nationwide, some 6 million were subprime, and of those, over 400,000 were in foreclosure.⁵ An even larger number of loans were delinquent at that time by at least 30 days but had not entered foreclosure.⁶

2. The geographic distribution of subprime mortgages

The exposure to subprime mortgage debt is not evenly distributed across the United States. Rather, it is concentrated in a handful of states. Just four—California, Florida, Texas, and New York—have

² The subprime mortgage delinquency rate for the nation as a whole rose from 10.27% at Q1 2004 to 14.27% at Q4 2006. Mortgage Bankers Association ("MBA"), National Delinquency Survey.

³ Some 4.53% of subprime mortgages were in foreclosure at the end of 2006. MBA National Delinquency Survey for Q3 2007.

⁴ As of Q3 2007, 6.89% of subprime mortgages nationwide were in foreclosure. Of these, nearly half (3.18%) entered foreclosure that quarter, compared with 1.89% of loans entering foreclosure in Q3 2006. MBA National Delinquency Survey for Q3 2007.

⁵ MBA National Delinquency Survey for Q3 2007.

⁶ Id.

almost 50% of the outstanding stock of subprime mortgages. California alone has more than 25%. Because of this, much of the benefit of any subprime mortgage borrower assistance proposals would likely accrue to residents in these states.

The concentration of subprime mortgage debt in a small number of states is explained by a combination of three factors. First, just a few states account for a large share of the nation's housing units and thus have a larger number of subprime mortgages than other states. Second, in the states with the most subprime debt, any given household is relatively more likely to have a subprime mortgage than a household in a state with less overall subprime debt. Third, the mortgages in high subprime debt states tend to be for higher dollar amounts than in low debt states.

The geographic concentration of subprime mortgage debt

Table 1 shows the distribution of the dollars of subprime mortgage debt across U.S. states. The first column shows how subprime mortgage debt is distributed across the 10 states with the highest amount of total subprime mortgage debt and the five states with the lowest amount of subprime debt. The second column shows each state's share of the national total amount of subprime mortgage debt. California accounts for approximately 25.7% of the nation's outstanding subprime mortgage debt (\$308 billion). Florida has 10.2% (\$122 billion), and New York has 7.0% (\$84 billion).

Table 1: Distribution of subprime mortgage debt outstanding

		A	B
	State	Subprime mortgage debt (\$million)	State's proportion of nationwide subprime debt outstanding
Most subprime mortgage dollars	CA	307,863	25.7%
	FL	121,687	10.2%
	NY	83,821	7.0%
	TX	49,663	4.1%
	IL	44,178	3.7%
	AZ	44,016	3.7%
	NJ	39,593	3.3%
	MD	32,997	2.8%
	VA	31,633	2.6%
	GA	29,912	2.5%
Fewest subprime mortgage dollars	DC	2,690	0.2%
	MT	1,323	0.1%
	VT	802	0.1%
	SD	454	0.0%
	ND	267	0.0%
Nationwide		\$1,198,331	100.0%

Source: Size of average subprime loan is estimated by indexing the MBA national subprime average (\$206,636, as reported in the Subprime Originations Survey Yearend 2006) to the 2006 Home Mortgage Disclosure Act ("HMDA") high cost loan averages by state. Average loan is multiplied by number of subprime loans per state, as estimated by MBA as of the third quarter of 2007, to estimate total dollars of subprime mortgage debt outstanding.⁷ Wyoming is excluded from the bottom five states due to data limitations in the 2006 HMDA survey.

⁷ This method does not capture the degree to which loans were paid down after origination or the possible size differences between recently originated and older loans. However, this method implies total debt outstanding for the U.S. as a whole of \$1.2 trillion, which is well within the range of recent estimates for total subprime debt outstanding. See, e.g., Inside Mortgage Finance, *Inside B&C Lending* 12, no. 23 (November 16, 2007, estimating total subprime debt outstanding at Q3 2007 to be \$1.01 trillion) and Chris Collins and Harry Liem, "Until debt do us part," <http://uk.mercer.com/summary.jhtml?idContent=1285535> (October 27, 2007, estimating \$1–1.5 trillion subprime debt outstanding).

Beyond California, Florida, and New York, which collectively hold almost 43 % of the nation's subprime mortgage debt, the distribution flattens out. Texas, ranked fourth, has almost \$50 billion, or 4.1%, and a host of states hold shares between 2% and 4%. In fact, the bottom 40 states collectively have just 36% of the subprime mortgage dollars, about the same as California and Florida alone. Many states have little to no subprime exposure: the five states with the smallest number of subprime loans collectively represent approximately 0.5% of all subprime debt outstanding.

The geographic concentration in housing units

One reason the states at the top of the list have the most subprime mortgages is that they are the largest states and, therefore, have the greatest number of households. However, some of the largest states have an even greater share of subprime debt than they do of housing units. This imbalance in the distribution of subprime debt per housing unit can be seen by comparing Column A of Table 2 to Column B of Table 1. California, Florida, and New York have more subprime exposure even relative to their number of housing units. California, which is at the top of the list, has 10.4% of the country's housing units but 25.7% of the nation's subprime mortgage debt. Florida has 6.8% and New York has 6.3% of the nation's housing units, but they have 10.2% and 7.0% of the nation's subprime debt, respectively.

Table 2: States with most and fewest subprime mortgages

		A	B	C	D	E
	State	State's proportion of housing units nationwide	Number of subprime mortgages	State's proportion of subprime mortgages nationwide	Subprime mortgages as a percentage of all housing units in state	Average subprime loan (\$)
Most subprime mortgage dollars	CA	10.4%	798,823	14.0%	6.1%	385,395
	FL	6.8%	553,983	9.7%	6.5%	219,658
	NY	6.3%	286,534	5.0%	3.6%	292,533
	TX	7.3	415,782	7.3%	4.5%	119,445
	IL	4.1%	220,078	3.9%	4.2%	200,740
	AZ	2.1%	195,268	3.4%	7.5%	225,414
	NJ	2.7%	139,976	2.4%	4.0%	282,853
	MD	1.8%	129,939	2.3%	5.6%	253,940
	VA	2.6%	142,976	2.5%	4.4%	221,245
	GA	3.1%	198,135	3.5%	5.1%	150,966
Fewest subprime mortgage dollars	DC	0.2%	8,832	0.2%	3.1%	304,618
	MT	0.3%	8,469	0.1%	2.0%	156,178
	VT	0.2%	4,928	0.1%	1.6%	162,696
	SD	0.3%	4,780	0.1%	1.4%	95,036
	ND	0.2%	2,979	0.1%	1.0%	89,555
Nationwide		100%	5,716,004	100.0%	4.5%	\$206,636

Source: Numbers of subprime mortgages by state estimated by the MBA as of Q3 2007 (data provided by MBA at request of the author). Numbers of housing units from 2006 American Community Survey, US Census Bureau. Average subprime loan is estimated by indexing the MBA national subprime average (\$206,636, as reported in the Subprime Originations Survey Yearend 2006) to the 2006 HMDA high cost loan averages by state. Wyoming is excluded from the bottom five states due to data limitations in the 2006 HMDA survey.

By contrast, most states have a lower share of the stock of subprime debt than they do of housing units. The bottom 40 states (by amount of subprime mortgage debt) collectively have 48% of the housing units in the United States. But those same states have just 36% of the subprime mortgage dollars. This low share of subprime mortgage debt relative to the number of housing units is most

stark among the bottom five states. These states collectively represent 1.3% of the country's housing units but just 0.5% of the subprime mortgage dollars. However, even among the states that rank in the top 10 by subprime mortgage debt, Texas, Illinois, and Georgia have a larger share of housing units than they do of subprime dollars.

Subprime propensity and subprime mortgage amounts

There are two reasons that the distribution of subprime mortgage debt is more concentrated than the distribution of housing units across states: In those states with the most subprime debt, borrowers are more likely to take out subprime mortgages and/or to have subprime mortgages for larger dollar amounts.

The uneven distribution of the propensity to take out subprime mortgages can be seen in Column C of Table 2. Some 36% of subprime mortgages are in just five states. California tops the list with 14.0% of the total number of subprime mortgages in the United States—almost 800,000 mortgages. Florida is a distant second, with 9.7%, or 554,000. After that, Texas has 7.3% of the nation's total, and New York, 5.0%. By contrast, the bottom five states collectively hold about 0.5% of all subprime mortgages.

The distribution of subprime mortgages (in Column C) is more concentrated than the distribution of housing units (in Column A) because the states with the greatest number of subprime loans often are those where the highest proportion of home purchases are financed with subprime debt. On average, 4.5% of housing units in the United States have subprime mortgages. California and Florida are well above that—with 6.1% and 6.5%, respectively. And so are Arizona (7.5%), Maryland (5.6%), and Georgia (5.1%). The bottom four states, however, are well below the national average, with 2.0% or fewer of their housing units having subprime mortgages.

Even some states with below-average rates of subprime mortgage use, for example, New York with 3.6%, have a large share of the subprime dollars. This is because the size of the average subprime loan in those states exceeds the national average. In New York, the average subprime mortgage is estimated to be almost \$293,000, which is about 42% above the national average of \$207,000. This higher borrowing amount offsets New York's low rate of subprime mortgage usage. Some states, like California, have not only high rates of subprime usage but also very high subprime borrowing amounts. In California, the average subprime mortgage amount is estimated to be \$385,000, nearly

twice the national average. This compounds California's 6.1% rate of subprime usage to make its share of the nation's subprime exposure much higher than its share of the nation's households.

In other states, this compounding effect works in opposite fashion. The likelihood of a Texas borrower choosing to finance a home with subprime debt is similar to the national average, but the size of each loan is below the national average. This results in Texas having a lower share of the country's subprime debt than it does of the nation's housing units. The bottom four states on the list have both low subprime usage and low borrowing amounts, therefore, their exposure on a per housing unit basis is also quite low.

3. Estimating the value to borrowers of proposed solutions

Various responses to the rising tide of subprime delinquencies and foreclosures are being pursued or have been proposed by state and federal legislatures, regulatory agencies, advocacy groups, and others. One category of programs aims to provide relief for existing borrowers by restructuring their existing subprime mortgages. These programs typically provide relief to one set of subprime borrowers (those who took out hybrid ARMS, which are among the riskiest kinds of mortgage loans), but ignore other types of borrowers. Borrowers who initially chose the lowest-cost financing option by taking out subprime ARMs may be rewarded with a substantially lower overall cost of borrowing by current borrower assistance programs. Ironically, current programs and proposals make such borrowers better off than they would have been had they chosen more prudent forms of financing in the first place.

The major federal program, a framework for loan modification approved by the American Securitization Forum ("ASF") in December 2007, would accomplish the following:

- Allow some borrowers to continue paying the introductory rates on their hybrid ARMs for up to five more years.⁸
- Allow other borrowers, including some who are already in delinquency, to qualify for refinancing into fixed-rate mortgages, including Federal Housing Administration ("FHA") insured loans.⁹

⁸ American Securitization Forum ("ASF"), "Streamlined Foreclosure and Loss Avoidance Framework for Securitized Subprime Adjustable Rate Mortgage Loans" (December 6, 2007).

Under the ASF Framework brokered by the Bush administration and the mortgage industry, borrowers who opted for subprime ARMs might be offered the chance to freeze the low introductory “teaser” rates of their mortgages or to refinance into fixed-rate loans with lower monthly payments than they would have paid under their original mortgage after the reset.

To understand the equity of these two forms of borrower assistance, we compute the borrowing costs that a hypothetical borrower who took out a mortgage in January 2006 would have anticipated, depending on the choice of financing. We then compute the borrowing costs that would be faced through 2013 had the borrower chosen a hybrid ARM and had the borrower been eligible for one of the assistance programs. Some key characteristics of these scenarios are detailed in Table 3.

Scenario A reflects a borrower who took out a “2/28” hybrid ARM for \$100,000 with an introductory rate of 7.08%. The monthly payment on that mortgage was initially \$671 per month. Based on the LIBOR curve as of January 2006 (that is, using only information that could have been known at the time the loan originated), the expected reset amount at January 2008 would be over \$875 (an increase of about 30%),¹⁰ and the payments would change—most likely increase—every six months thereafter. After seven years, those payments would have risen to \$922 if interest rates followed the expectations embedded in the January 2006 LIBOR curve.

The effective cost of borrowing through this hybrid ARM is much higher than the initial teaser rate of 7.08%. In such a mortgage, the lender plans to recoup the low initial interest rate by charging a higher rate after the first two years. Over a seven-year borrowing horizon, the effective interest rate on this mortgage, which incorporates both the low teaser rate and the higher subsequent rate, would be 9.13%.¹¹ Assuming a discount rate of 9.71%,¹² the present value of the total interest payments—that is, the homeowner’s cost of borrowing under scenario A— would be \$44,900.¹²

⁹ ASF Framework; Federal Housing Authority, “Bush administration to help nearly one-quarter of a million homeowners refinance, keep their homes,” news release, August 31, 2007.

¹⁰ This hypothetical borrower is based on a group of actual hybrid ARMs originating in January 2006 and securitized by HIS Asset Securitization Corp. Note that mortgage calculators that can estimate ARM reset amounts based on user-provided assumptions are widely available at many free web sites; many realtors assist their clients in performing these estimates.

¹¹ In this case, the effective interest rate is the single rate that provides the same yield over seven years as the sequence of interest rates in the hybrid ARM. We use seven years as the borrower’s horizon to capture the entire mortgage through the relief period. After two years of borrowing (2006 to 2008), the ASF Framework would provide relief for five more years.

¹² We assumed the borrower’s opportunity cost of capital was the interest rate on a subprime fixed-rate mortgage. Other discount rates would not affect the qualitative conclusions.

Table 3: Monthly payments, interest and cost of borrowing for hypothetical borrowers

	Mortgage type	Monthly payments (\$)				Effective interest rate	Cost of borrowing (\$)
		Years 1–2	Start of Year 3, per original mortgage	End of Year 7, per original mortgage	Years 3–7, per modified mortgage		
A	2/28 ARM	671	875	922	n/a	9.13%	44,900
B	Subprime FRM	856	856	856	n/a	9.71%	48,100
C	Borrow \$78,000	668	668	668	n/a	9.71%	37,500
D	Rate freeze	671	875	922	671	7.08%	34,600
E	Convert to prime FRM	671	875	922	612	6.47%	31,600
F	Convert to subprime FRM	671	875	922	846	8.74%	42,900

The choice represented by scenario A is appealing to a borrower because the low initial payment enables the purchase of a house that otherwise might be initially unaffordable. In addition, the conditions of the subprime mortgage frequently did not require the borrower to document his income, so the borrower could purchase a more expensive house than would be possible under other loans. However, it is riskier to the borrower because the reset rate jump is both high and uncertain.

A less risky financing choice would have been a loan similar to scenario B, i.e., a subprime fixed-rate mortgage. With this mortgage, the rate and payment would never adjust for the life of the loan. Given the estimated prevailing interest rate in January 2006 (9.71%), the borrower would have expected to pay \$856 per month for the \$100,000 loan.¹³ The total interest cost under this option would have been higher (\$48,100) but more predictable.

¹³ We determined the rate by adding the 367 bp risk premium implicit in the subprime and prime ARM rates for 2/28 loans originating in January 2006 to the 30-year prime FRM rates as reported in the Freddie Mac Primary Mortgage Market Survey.

Choice B is predictable, but it is also expensive. A borrower who could afford only the hybrid ARM's teaser payment on a \$100,000 loan but who was unwilling to take the risk of the rate increase could instead scale back and borrow just \$78,000 with a fixed-rate subprime loan. That loan, scenario C in Table 3, would have a monthly payment of just \$668 that would never adjust, and it would yield a total interest cost of \$37,500. However, the borrower will have to spend 22% less on the house that is purchased.

While choices B and C seem the most prudent, only borrowers who chose A qualify for aid under the federal program based on the ASF Framework. As January 2008 approached, a borrower who chose A, pleading inability to pay the reset amount of \$875 per month, may have been eligible for rate freeze assistance under the ASF Framework. The savings from that program, where the low introductory teaser rate would be extended for five more years, is considerable. Rather than the payment rising to \$875 in 2008 as the borrower originally had anticipated, it will remain constant at \$671. This scenario can be seen in Table 3, row D.

In fact, under the rate freeze program, a borrower who chose the risky option A will end up with a lower cost of borrowing than if the more prudent options B or C had been chosen up front. This outcome occurs because the borrower who chose option A will have enjoyed two years of payments \$200 per month lower than they would have been had option B been chosen, plus five more years due to the rate freeze. In addition, the borrower will enjoy a 22% more expensive house than had if option C had been selected. This extension of the low initial interest rate means that the borrower's effective rate over the entire seven years would be just 7.08%, about 2.5% lower than what could have been obtained using fixed-rate options B and C. (By way of comparison, this effective interest rate is just 0.19% higher than the rate that was available to a borrower through a *prime* ARM in January 2006.)

Another way of calibrating the size of the relief provided to the borrower who chose option A initially but who takes advantage of the rate freeze shown as scenario D in the table, is to compare the present value of the monthly interest payments to those that would have been required had the borrower made a different choice. A borrower who chose A and obtained a rate freeze would save about \$10,000 over the previously expected payment (\$34,600 versus \$44,900) and \$13,500 over the payment that would have been expected had fixed-rate option B been chosen (\$34,600 versus \$48,100). Amazingly, despite initially borrowing \$22,000 more through option A than with option C,

after participating in the relief program, the borrower's total cost of borrowing over the seven years will have been almost \$3,000 *less*.

Some ARM borrowers will be offered the chance to refinance into traditional FRMs rather than being offered the rate freeze, but their story is quite similar. We first consider what would happen had the borrower actually been a prime risk, but nonetheless had chosen a subprime mortgage in 2006. (Some borrowers might have taken this approach to avoid having to document their incomes, thus enabling them to appear qualified to purchase more expensive homes.) This borrower could refinance into a prime FRM at 6.15%, given prevailing 30-year FRM rates as of January 2008 (row E of Table 3). The borrower's monthly payment would be only \$612 for the remaining life of the loan; this is a *reduction* of \$59 over the subprime teaser rate. The borrower's effective interest rate over the loan's first seven years (6.47%) would be even lower than could have been anticipated before the relief program. The cost of borrowing is only \$31,600; this is a savings of more than \$13,000 compared with the subprime ARM.

If this borrower were truly a subprime risk, the option to refinance into a subprime FRM at an interest rate of 9.66 % might be offered, as can be seen in row F of Table 3. The monthly payment in this case would rise to \$846; this is still considerably less than the \$922 that would have been required had the borrower remained with option A. The effective interest rate would be just 8.74%, and the total cost of borrowing would be \$42,900. This is still lower than what it would have been had the borrower chosen option B, and this scenario represents a savings of \$2000 over the original option A.¹⁴

4. Proposed solutions to the “credit crunch”

Another set of proposals and programs intends to respond to difficulties in the housing market (specifically, the recent tightening of mortgage credit) by increasing the “conforming loan limit” for

¹⁴ Alternatively, one could conclude that the risk premium for a subprime mortgage was just 200 bp, as suggested by the interest rate spreads reported in Chomsisengphet, Souphala and Anthony Pennington-Cross, “The Evolution of the Subprime Mortgage Market,” Federal Reserve Bank of St. Louis *Review* 88(1): 31-56, rather than the 351 bp we computed. In that case, the relative cost of option B would be lower (\$42,300). However, the size of the relief from enabling a borrower who chose option A to refinance into a subprime FRM would keep pace, as the effective interest rate in row F would drop to 7.77%, and the total cost of borrowing would fall to \$38,000.

loans eligible to be purchased and securitized by Fannie Mae and Freddie Mac.¹⁵ Two facets of these proposals raise questions of equity: (1) the geographic distribution of the loans that would become eligible for purchase and (2) the income distribution of those who can afford to borrow.

The recently enacted Economic Stimulus Act of 2008 includes a provision to increase the conforming loan limit in any given area to 125% of the median house price in that area, subject to an absolute cap of \$729,750 through the end of 2008.

Loans greater than the conforming loan limit (which has been \$417,000 nationwide since 2006) are generally known as “jumbo” loans, and the distribution and characteristics of jumbo loans reveal much about who stands to benefit from raising the loan limit. In January 2008, the Office of Federal Housing Enterprise Oversight (“OFHEO”) issued a report on the implications of increasing the conforming loan limit in certain high cost areas.^{16, 17} Although issued prior to the passage of the stimulus package, OFHEO’s analysis is based on bills whose features are very similar to the adopted legislation. Among OFHEO’s observations are the following:

- High-value loans are highly concentrated geographically. California accounts for nearly half (49.2%) of all jumbo loans originating in the first half of 2007. According to National Association of Realtors data, four out of the seven metropolitan areas that would benefit most from raising the conforming loan limit (those with median house prices above the new, higher cap) are in California. According to DataQuick data, 11 out of 13 such areas are in California.
- Raising the loan limit would tend to benefit households rarely regarded as financially strapped. OFHEO assumed that a typical household spends 25% of its income on mortgage payments. This implies that if a borrower took out the largest possible loan under the existing limit in the form of a 30-year, 6.25% FRM, the borrower’s income would have to be over \$123,000. Raising the loan limit to \$625,500 (well below the maximum actually in the Economic Stimulus Act) would benefit borrowers with incomes of \$185,000 or more.

¹⁵ A related set of proposals would increase the size of loans eligible to be insured by the FHA. These proposals tend to raise issues very similar to those raised by increasing the conforming loan limit, and we do not discuss them separately in this paper.

¹⁶ OFHEO is the federal agency charged with supervision of Fannie Mae and Freddie Mac (collectively, the government sponsored entities, or “GSEs”).

¹⁷ OFHEO Mortgage Market Note 08-1, “Potential Implications of Increasing the Conforming Loan Limit in Certain High Cost Areas,” January 11, 2008.

- Jumbo loans are, on the whole, considerably riskier than conforming loans. Nearly two thirds of the dollar volume of first lien jumbo loans originating in the first half of 2007 and later securitized were interest-only loans and negative-amortizing ARMS (that is, ARMS whose teaser rates were below the actual interest rate on the loan, so that the principal amount of the loan grew larger during the teaser period). Traditional fixed-rate mortgages accounted for only 26% of these jumbo loans. By contrast, ARMS accounted for only 11.5% of conforming loans during this period; the remainder were fixed-rate loans. The jumbo market includes many subprime mortgages, and the conforming loan market includes few.¹⁸
- Borrowers selecting jumbo loans that would be eligible for GSE purchase tend to have lower FICO scores than borrowers selecting conforming loans, and these loans tend to have higher loan-to-value ratios—the borrowers put less money down when buying their homes.

5. Equity and redistribution

As is evident from sections 2 through 4, programs and proposals to aid subprime borrowers benefit certain parts of the country (especially California, Florida, and New York) and certain kinds of borrowers (those who took out the riskiest subprime mortgages). These patterns raise questions of equity.

Borrower relief programs reward those who took out the riskiest subprime mortgages, but these programs do not benefit those who made more prudent decisions.

Borrower assistance programs such as the one based on the ASF Framework benefit borrowers who differed from their peers only by selecting the riskiest form of financing. But as these programs are presently conceived, many other borrowers in similar financial straits, but who acted more prudently (reducing their borrowing, taking out fixed-rate mortgages, or not borrowing at all) receive no benefit.

This differentiation is inequitable for several reasons. First, as seen in section 3, borrowers who took out hybrid ARMs are better off *after* the assistance programs than borrowers who acted more prudently in the first place. It is important to recognize that the rate increases embedded in hybrid ARMs are not themselves unfair. Rather, hybrid ARM loans of the 2/28 and 3/27 variety (such as those eligible for the ASF Framework rate freeze or refinancing into traditional mortgages) are

¹⁸ Id. at 3–4.

designed to offer particularly low payments in the first two to three years of the loan. Borrower relief programs that extend the duration of a benefit—a low initial interest rate—that was intended to be recouped with higher rates later confer on the subprime borrower a total cost of borrowing that is well below the cost the borrower would have incurred if a more traditional type of loan had been taken out or a smaller amount had initially been borrowed.

Where lenders qualified borrowers based on their ability to pay the low teaser rates, the effect of hybrid ARMs was to allow borrowers to take out larger loans and purchase more expensive houses. In fact, many high-income borrowers appear to have taken out subprime loans, presumably because by not documenting their income they could claim to qualify for a larger loan and thus purchase a more expensive house. One can see evidence of this in the 2006 Home Mortgage Disclosure Act (“HMDA”) data, which distinguishes high-cost loans (defined as loans whose interest rate is at least 300 basis points above the prime lending rate) from regular loans. These high-cost loans are typically assumed to be largely non-prime (that is, subprime or Alt-A). For the United States as a whole, lower-income borrowers were somewhat more likely to take out high-cost loans. About one-third of loans taken out in 2006 by borrowers who earned less than the median income in their metropolitan area were high cost. Even so, high-cost loans comprised one-quarter of all loans to those earning between the median income and 1.5 times the median income, and one-fifth of loans to those making more than 150% of their metropolitan area’s median.

When one focuses on areas with high housing prices, the pattern is quite different. In those metropolitan areas, the rate of high-cost loan origination often *increases* with income and declines only for borrowers making at least 150% of their area’s median income. For example, 19% of the lowest-income borrowers in the New York metropolitan area in 2006 had high-cost loans. But 28% of those making between 50% and 100% of the area’s median income, and 32% of those making between 100% and 150%, had high cost loans. The highest income group had 20% high-cost loans. This pattern can be seen in other high housing cost areas, such as Boston, Los Angeles, San Diego, and San Francisco.

This pattern suggests that most borrowers, even those who chose hybrid ARMs, had discretion over their financing. Indeed, the majority of borrowers financed their homes prudently. Even in the states where subprime mortgages are most prevalent, these account for fewer than 8% of all housing units.

However, those borrowers who selected only loans that they could afford at the outset or loans with rates that would not increase over time are excluded from the relief programs. The ARM borrower remains in his home, with various accommodations to reduce his payment burden, but his more prudent neighbors—some of whom purchased far less costly homes precisely because they had the *same* ability to pay as the ARM borrower—receive no aid and will pay far more under their mortgages in the years to come.

Ironically, the benefits being bestowed on the risk-taking hybrid ARM borrowers come at the prudent borrowers' expense. The cost of potential loan restructurings will necessarily be factored into the interest rates on loans offered to borrowers in the future. The cost of borrowing will go up for all, and credit will be harder to come by for many. To the extent that any borrower assistance is funded by tax revenues or risk is insured by the government (as in FHA-guaranteed loans), the expected cost will be spread among all taxpayers.

Excluding households in foreclosure from benefits arbitrarily excludes those who were unlucky enough to live in a state that experienced the worst of the current economic downturn.

The rate freeze and loan refinancing programs under the ASF Framework, as well as the FHASecure program, are targeted exclusively at borrowers who are not in foreclosure. However, an examination of the data indicates that, even among subprime borrowers, differences in rates of foreclosure across states may have been driven largely by exogenous economic forces. Thus the decision to exclude borrowers in foreclosure explicitly denies benefits to those who were least able to avoid defaulting.

In Table 4, the states with the highest subprime delinquency and foreclosure rates are also those with the highest *prime* delinquency and foreclosure rates. This can be seen by comparing columns A and B of Table 4, which report the fractions of prime loans and subprime loans in states that are in foreclosure, respectively, and columns C and D, which repeat the exercise for delinquencies. The correlations between prime and subprime foreclosure rates and between prime and subprime delinquency rates are very high.¹⁹

¹⁹ The correlation across states between prime and subprime foreclosures is 0.86, and between prime and subprime delinquencies is 0.80.

Table 4: Concentration of subprime delinquencies and foreclosures at Q3 2007

		A	B	C	D
	State	Subprime loans in foreclosure (%)	Prime loans in foreclosure (%)	Subprime loans in delinquency (%)	Prime loans in delinquency (%)
Highest subprime foreclosure rates	OH	12.8	1.8	17.4	4.1
	MI	11.4	1.5	22.6	4.8
	MN	10.5	0.9	15.9	2.8
	IN	10.3	1.7	17.7	4.4
	RI	9.7	0.7	19.2	3.4
	WI	9.4	1.0	16.4	2.8
	IA	9.4	1.1	15.9	3.1
	IL	9.2	1.0	17.5	3.1
	ME	9.2	0.9	16.2	3.0
	MA	9.1	0.6	19.3	3.3
Lowest subprime foreclosure rates	WA	3.1	0.3	11.0	1.7
	WY	3.1	0.3	10.3	1.7
	OR	2.9	0.3	10.3	1.7
	UT	2.7	0.3	10.4	2.2
	AK	2.3	0.4	7.7	2.3
Nationwide		6.9%	0.8%	16.7%	3.3%

Source: MBA National Delinquency Survey, Q3 2007

In other words, for all of the effort underway to reach out to subprime borrowers, differences in delinquency and foreclosure rates across states seem to have less to do with the type of loan taken out (and thus the credit risk of the borrower) than with exogenous economic factors. The states with the highest loan default rates are those that were earliest and hardest hit by the economic downturn. That downturn has hurt both prime and subprime borrowers.

Given this, the states with the greatest number of subprime mortgages or the most dollars in debt outstanding are not necessarily those in greatest need of assistance. The top four states account for about 36% of the nation's subprime mortgages but only 32.5% of those mortgages in foreclosure.

As Table 4, Column A shows, none of the four states with the greatest number of subprime mortgages was among those with the highest foreclosure rates. Ohio ranks fifth and Michigan ranks eighth in terms of absolute number of subprime mortgages, but with 12.8% and 11.4 % in foreclosure as of Q3 2007, respectively, these states ranked first and second in foreclosure rate. Under current proposals, borrowers in California and Florida will therefore receive benefits largely denied to borrowers in Ohio, Michigan, and Minnesota—states where the economic downturn and foreclosures occurred earliest.

The benefits of borrower relief programs will be highly concentrated geographically, but the costs will not.

As discussed in Section 2, the geographic concentration of subprime loans indicates that the benefits of relief proposals targeted at subprime borrowers will be geographically concentrated among the residents of a handful of states. Indeed, the top four states have more dollars of subprime mortgages than the bottom 40 combined.

But those who will pay the cost of mortgage assistance programs are far more broadly distributed. Allowing existing subprime borrowers to refinance their loans or freeze their payments will alter the risk profile for mortgage lending in a way that will increase the cost of borrowing for all future borrowers. It will also affect the profitability and risk of loan securitization, and this will likely make credit more expensive and harder to come by. Insuring these mortgages means that taxpayers across all 50 states will have to pay the cost of any distress.

Even those programs that are not targeted at subprime borrowers will have the effect of benefiting a few states but distributing the costs more broadly. As seen in Section 4, increasing the conforming loan limits for mortgages purchased or guaranteed by Fannie Mae and Freddie Mac will make credit easier to come by for those purchasing more costly homes that exceed current conforming limits; this occurs primarily in California. The cost of raising the conforming loan limits will, however, be more widespread. The OFHEO report concluded that raising the conforming loan limit would cause the GSEs to acquire loans where the credit risk was on average greater than the credit risk of existing portfolios. The GSEs will then have to charge higher average guarantee fees to offset the greater risk.²⁰ Those fees would be paid by all borrowers, regardless of state of residence.

²⁰ OFHEO Mortgage Market Note 08-1 at 12-13.

Conclusion

The various programs now underway or under consideration to address the so-called “subprime crisis” may help some borrowers stay in their homes and make taxpayer-insured credit more available. But these programs will not bestow these benefits equitably. Current programs and proposals reward borrowers who took out risky subprime mortgages and who live in states where the economy has held up. They do nothing for borrowers who chose more prudent financing and/or those who have entered default. The programs focus their benefits on residents of states where subprime borrowing is more prevalent and subprime loans are for greater amounts, but the cost of these programs will be spread among all U.S. taxpayers and borrowers.

A truly equitable policy of homeowner assistance would not distinguish among borrowers based on a borrower’s choice of financing, and it would not interfere with preexisting mortgage contracts. Rather, it would enhance access to new credit for everyone. In that way, borrowers in similar economic situations would receive access to comparable benefits, and those who acted prudently in their choice of housing finance would not be neglected by borrower assistance programs.