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Mr. Chairman, and distinguished members of the Committee, my name is Dr. Anthony B. Sanders and I am the Distinguished Professor of Finance at George Mason. It is an honor to testify before this committee today.

The FRM occupies a central role in the U.S. housing-finance system. The dominant instrument since the Great Depression, the FRM currently accounts for more than 90 percent of mortgage originations. One reason why it enjoys enduring popularity is that the FRM is a consumer-friendly instrument. Not only does the FRM offer payment stability – the instrument provides a one-sided bet in the borrower's favor. If rates rise, the borrower benefits from a below market interest rate. If rates fall, the borrower can benefit from exercising the prepayment option in the FRM to lower their mortgage interest rate.

But these consumer benefits have costs. It is costly to provide a fixed nominal interest rate for as long as 30 years. And the prepayment option creates significant costs. If rates rise, the lender has a below market rate asset on its books. If rates fall, the lender again loses as the mortgage is replaced by another with a lower interest rate. To compensate for this risk, lenders incorporate a premium in mortgage rates that all borrowers pay regardless of whether they benefit from refinance. Exercise of the prepayment option in the contract also has significant transactions costs for the borrower and imposes additional operating costs on the mortgage industry.

Another major reason for the FRM's dominance is government support and regulatory favoritism. The FRM is subsidized through the securitization activities of Fannie Mae, Freddie Mac and Ginnie Mae. Their securities benefit from a government guarantee that lowers the relative cost of the instrument, which is their core product. These guarantees have a significant cost as the government backing of Fannie Mae and Freddie Mac has exposed taxpayers to large losses.

Are the FRM's benefits worth its costs? Would the FRM disappear if Fannie and Freddie stopped financing it? Are there mortgage alternatives that balance the needs of consumers and investors without exposing the taxpayer to inordinate risk? This paper seeks to answer these questions, starting with a brief history of the FRM and emphasizing the government's ongoing role in enhancing its presence. The paper then discusses the FRM's benefits and costs to consumers, investors, taxpayers, and the economy and ends with a depiction of a world in which Fannie Mae and Freddie Mac no longer support the FRM.

Benefits of FRMs

A long history of government support is not the only reason for the FRM's dominance.[1] The instrument offers consumers several advantages. First and foremost, it provides nominal payment stability, which helps consumers budget and reduces the likelihood of default. The monthly payment on an FRM is the same throughout the life of the loan, whereas borrowers with ARMs can experience payment shock in a volatile interest-rate environment, making them more likely to default.[2] The FRM is also a simple

[1] See Michael Lea and Anthony B. Sanders, 2011, "Government Policy and the Fixed Rate Mortgage," *Annual Review of Financial Economics*

[2] ARMs have had a much worse default experience during the recession. In part, this reflects the predominance of ARMs in the subprime market. It also reflects a selection bias whereby riskier and more speculative borrowers went into ARMs.

instrument for borrowers to understand, which has lead to proposals that lenders be required to offer the instrument to consumers applying for a mortgage.

The option to prepay an FRM without penalty is another consumer advantage.[3] This feature effectively converts the FRM into a downwardly adjustable-rate mortgage. When market interest rates fall, the borrower can refinance into a new loan at a lower rate. When rates rise, the fixed-rate feature protects the borrower against rising mortgage payments. Thus, the FRM (as opposed to a short-term ARM, for example) shields borrowers from most interest-rate risk. But the risk does not disappear—the lower the risk for the borrower, the greater it is for the lender/investor.

Costs of FRMs

The instrument's supporters point out that it is easier for investors than consumers to manage interest-rate risk. It is true that lenders and investors have more tools at their disposal to manage interest-rate risk. But managing prepayment risk is costly and difficult and many institutions have suffered significant losses as a result (e.g., savings and loans in the 1980s; hedge funds and mortgage companies in the 1990s and 2000s).[4] Furthermore, borrowers rarely stay in the same home or keep the same mortgage for 15 to 30 years,[5] so one can reasonably ask why rates should be fixed for such long periods (increasing the loan's cost and risk). Also, the taxpayer ultimately bears a significant portion of the risk through support of Fannie Mae and Freddie Mac.

One of the lingering questions about government loan modification programs is why borrowers are refinanced into longer-term FRMs rather than less expensive ARMs, such as a 5/1 ARM.

Does the FRM Promote Financial and Housing Market Stability?

It has been argued that the FRM promotes financial- and housing-market stability. A system dominated by ARMs or short-term fixed-rate mortgages is more sensitive to interest-rate fluctuations than one dominated by the FRM and can contribute to boom–bust cycles in housing. Housing demand is more rapidly influenced by monetary policy with ARMs relative to FRMs. But FRMs hardly eliminate housing cycles. The United States has experienced pronounced housing cycles in most decades since World War II, including a massive housing boom and bust in the last decade. Min attributes the most recent cycle to the rapid growth in short-duration mortgages. In large part, the shortening average life of mortgages reflects the widespread exercise of the FRM prepayment option.

The FRM has a uniquely one-sided design that protects the borrower at the expense of the lender/investor. But such protection comes at a cost. Longer-term fixed-rate loans have higher rates than shorter-term fixed-rate loans in most interest-rate environments (Table 1). Having a range of fixed-rate terms allows the borrower to trade off monthly payment stability with overall mortgage affordability. For example, a mortgage whose interest rate is fixed for 30 years will usually have the highest interest rate, while a 3:1 ARM, whose interest rate is only fixed for the first three years, will usually have the lowest interest rate.

Also, prepayable mortgages have higher rates than non-prepayable mortgages. In effect, all U.S. mortgage borrowers pay for the option to refinance, regardless of whether they exercise it. This system differs from the Canadian and European systems. In those systems, the borrower receives a short- to medium-term fixed-rate loan without a free prepayment option. If the borrower wants to prepay for financial reasons (as

[3] Prepayment is not costless, however. There are significant transaction costs associated with refinancing..
[4] The uncertainty about prepayment leads to considerable speculation on the future direction of mortgage rates that has little social benefit. Hedging also increases systemic risk through counterparty exposure. The huge hedge positions of Fannie and Freddie were one reason why the government placed them in conservatorship in 2008.
[5] Over the past 50 years the average life of a 30-year mortgage has never been higher than 12 years (during periods of high interest rates) and often no more than five years (during period of lower interest rates).

opposed to moving), they must pay a penalty equivalent to the investor's or lender's cost to reinvest the proceeds at the new, lower market rate. The option's cost is thus individualized—borne by the individual exercising the option. In the United States, the option's cost is socialized, with all borrowers paying a premium in their mortgage rates (on average, around 50 basis points, or 0.5 percent). In effect, the prepayment option is a tax on all borrowers.

Because all borrowers pay for the prepayment option, borrowers who do not exercise the option effectively subsidize those who do. Most often, unsophisticated borrowers who are intimidated by the refinance process or who are credit impaired pay the subsidy. The latter group is most likely to benefit at the margin (e.g., by lowering the risk of default) but least able to refinance.

The 30 Year FRM, Slow Principal Amortization and Negative Equity

The potential for negative equity with a slowly amortizing mortgage product is daunting. When the principal is very slow to pay down and house price drop suddenly (as they did during the housing bubble burst), The FRM can create negative equity for borrowers in a rising interest-rate environment as well. When interest rates rise, a house's value may fall. And the economic value of the mortgage falls. However, the borrower is still responsible for repaying the loan at par value (the nominal outstanding balance). The combination of falling house price and constant mortgage value can lead to or exacerbate negative equity. Homeowner negative equity can also produce significant economic costs in that they are less likely to move in order to change their housing consumption or to take advantage of job opportunities. Negative equity has made loan modifications under private and public programs quite difficult and would have been far less of a problem if short-term mortgages (and faster principal amortization) had been the pre-dominant mortgage design.

Rising interest rates cause other problems for FRM borrowers and investors. If rates rise because of expected inflation, FRMs create affordability problems for new borrowers.[6] Unhedged investors experience an economic loss on their holdings of FRM-backed securities when interest rates rise (they also do not benefit from a rate decline, as noted earlier).[7] Rising interest rates also create an extension risk (the risk that the average life of securities rises) for investors. As rates rise, prepayments slow and the effective maturity of the securities increases beyond that expected by investors.

Interest-rate Volatility and the 30 Year FRM

Volatile interest rates cause problems for both borrowers and lenders. Long-term fixed-rate instruments have greater sensitivity to interest-rate changes than shorter-term instruments do. Volatility in pricing also makes mortgage shopping more difficult for borrowers in that mortgage prices can vary significantly on a daily (or even intraday) basis.[8]

Interest-rate volatility also causes refinancing waves, which increase costs for mortgage originators and borrowers. As interest rates rise and fall, mortgage origination volume is subject to massive swings. Mortgage originators and servicers have significant costs associated with managing such volatility. For example, origination volume rose from less than $3 trillion in 2002 to nearly $4 trillion in 2003 and fell to less than $3 trillion in 2004. Thus, the industry had to increase capacity by 33 percent in one year and

[6] This scenario occurred during the 1970s in the United States.

[7] Hedging uncertain prepayment is both costly and risky. It leads to considerable speculation on the future direction of mortgage rates that has little social benefit. Hedging also increases systemic risk through counterparty exposure. The huge hedge positions of Fannie and Freddie were one reason why the government placed them in conservatorship in 2008.

[8] Mortgage shopping in the United States is also complicated by the use of points to adjust pricing. Borrowers are confronted with an array of rate and point combinations that differ across lenders. Points were introduced in the 1970s when market rates rose above FHA rate ceilings—another effect of government regulation.

reduce it by 25 percent the following year. FRM refinancing was the main reason for this volatility. For mortgage borrowers, the cost of refinancing lies in the thousands of dollars they must pay in origination fees simply to lower their mortgage rates.[9] The effect of the 30 year FRM on prepayments can be seen in Table 1 where the Mortgage Bankers Association Refinancing Index has become more volatile with progressively declining interest rates; shorter-term mortgages do not have the volatility of prepayments than longer-term mortgages.

The FRM has also created significant costs for taxpayers. Until 1981, federally insured depositories were prohibited from offering ARMs. Predictably, when inflation and interest rates rose in the 1970s and early 1980s, reliance on this instrument effectively killed off the S&L industry. In 1982, approximately 80 percent of the S&L industry was bankrupt and insolvent due to the mismatch between FRM assets and the short-term deposits that funded them. A similar mismatch rendered Fannie Mae insolvent. When numerous thrifts eventually failed, the taxpayer picked up a significant tab to restructure the industry.[10]

Learning from the experience, banks and thrifts continued to originate 30-year FRMs, but only if the loans could be sold to Fannie Mae, Freddie Mac, or guaranteed by the Ginnie Mae. In other words, banks and thrifts did not retain the interest-rate risk that they created by originating the FRMs. Instead, investors absorbed the risk. As the ultimate risk bearers, private investors attempted to price and manage the risk (with varying degrees of success). The GSEs hold a significant portion of the FRM inventory,[11] so when interest rates rise, they may suffer large losses that will be borne by taxpayers.

The FRM's popularity and its government backing produce another significant risk for the government. In order to finance the FRM and allocate the interest-rate risk to investors, the government—through FHA insurance and Fannie/Freddie guarantees—absorbs the mortgages' credit risk. Ironically, it was credit risk that led to the failures of Fannie and Freddie in the financial crisis. While part of their losses can be attributed to speculative investments in subprime and Alt-A backed securities (mostly non-fixed-rate mortgages), a significant portion of their losses have come from FRM defaults.[12] The Federal Housing Finance Agency now projects GSE losses to be $220 to $360 billion. A portion of these losses can be attributed to the policy goal of ensuring the FRM's availability through the government's absorption of the credit risk.

Alternative Designs in International Mortgage Markets

The FRM is a unique instrument by international standards. Only one other country, Denmark, has a long-term, fixed-rate, prepayable (without penalty) mortgage.[13] Several other countries have long-term fixed rate products (e.g., France, Japan, and Germany), but the typical terms are shorter and prepayment is

[9] Refinancing transactions costs could be eliminated with use of a "ratchet mortgage," in which the rate is automatically lowered without transaction costs.

[10] Although the popular press tended to focus on excessively risky nonresidential mortgage investments as the cause of the S&Ls' failure, the fact was that they were bankrupted by the asset–liability mismatch and tried to grow out of their earnings and capital problems through investment in high-risk assets.

[11] The GSEs hold whole loans in their portfolios. They also repurchase securities they guarantee—in effect investing in the cash-flow risk associated with funding callable mortgages with a blend of callable and non-callable debts of different maturities.

[12] Federal Housing Finance Agency (FHFA) projections of GSE losses found that most of the losses are due to their purchased loans rather than securities. See FHFA, "Projections Showing Range of Potential Draws for Fannie Mae and Freddie Mac," October 21, 2010 (Attachment to the Press Release FHFA Releases Projections Showing Range of Potential Draws for Fannie Mae and Freddie Mac).

[13] The Danes add a unique twist to the instrument in that the loan is backed by an individual mortgage bond. If rates rise, the borrower can buy the bond at a discount and cancel the loan with the lender. This feature facilitates automatic deleverage and reduces the likelihood of negative equity.

subject to penalty. Shorter amortization periods benefit both borrowers and lenders because borrowers accumulate equity faster.

A more common fixed-rate instrument is the rollover mortgage, which is the dominant instrument in Canada and several European countries.[14] Its interest rate is typically fixed for up to five years and "rolls" into a new fixed rate at the end of the term. The new rate is negotiated with the lender and is set at market. These loans also have prepayment penalties during the fixed-rate term but allow total repayment without penalty at the end of the term.

Adjustable-rate loans are the dominant instrument in a number of countries, including Australia, Spain, and the United Kingdom. Table 2 shows the types of mortgages available in different countries and how common each product is.

Many countries have had housing booms and busts during the last decade (e.g., Australia, Denmark, Ireland, Spain). Yet only Ireland has had as severe of a downturn as the United States (Table 3). Some have attributed the U.S. housing cycle to a shortening of the duration of mortgages over the past two decades, which caused house prices to become more sensitive to interest rates. Low interest rates, ample credit and borrower demand clearly contributed to the boom – however, throughout the boom period a majority of loans were in fact fixed rates. Most of the reduction in average mortgage maturity was due to borrowers exercising the prepayment option in their FRM contracts. And much of the shortening was for cash-out refinances to facilitate consumption at the expense of wealth accumulation. The inability of households to refinance FRMs to reduce negative equity has exacerbated the current crisis as noted above.

The prepayment option on the 30 year FRM is far from free. While only some borrowers will actually utilize the prepayment option, everyone has to pay for it (even if consumers don't want it). Fannie Mae and Freddie Mac will only purchase prepayable mortgages, even though non-prepayable mortgages may be in many borrowers' best interests.

Are The Benefits of the FRM Worth the Costs?

The fundamental question remains: are the benefits of the FRM worth the costs? All borrowers pay a substantial tax —50 basis points or more—for this instrument. Furthermore, taxpayers have absorbed substantial losses in order to support this instrument, first through the S&Ls and now through Fannie Mae and Freddie Mac. Should the government subject taxpayers to the risk of another catastrophic meltdown to preserve the FRM? Are there alternatives that maintain some of the FRM's benefits while greatly reducing the costs?

If the government abolished Fannie Mae and Freddie Mac, the FRM would **not** cease to exist. Private-label securitization in the United States and covered bonds in Denmark have funded this instrument in the past and are fully capable of funding it in the future. Investors are sophisticated enough to price both credit risk and interest-rate risk. Conventional wisdom suggests that US investors won't accept both credit risk and interest rate risk for large volumes of mortgages and the reason is clear: private investors can get the government to absorb the credit risk at a lower cost than would be charged by the private market. The loss experiences of Fannie and Freddie suggest that they were funding mortgages at below-market (risk-adjusted) rates. Without Fannie and Freddie, the FRM would still be offered by lenders, but not at a subsidized rate. The FRM would have a smaller market share, but it would not disappear, as some have asserted. Nor would the only alternative be a short-term ARM as international experience suggests.

[14] Canada subsidizes mortgages through CMHC. The degree of support is far less that US support for housing (around 50% insured and 30% securitized) and the Canada bond program was designed to eliminate the prepayment volatility because investors don't like it (through cash flow swaps with private investors).

What would emerge as the "standard" U.S. mortgage instrument without government support of the FRM? A rollover mortgage similar to that offered in Canada and several European countries is the likely candidate.[15] This instrument offers borrowers short- to medium-term payment stability, and borrowers can manage interest-rate risk by adjusting the fixed-rate term upon renewal. Modern international experience does not bear out the assertion by some that borrowers would be unable to refinance. Borrowers could hedge the interest-rate risk by locking in a forward rate in advance of renewal. German lenders offer forward rates up to five years—certainly U.S. lenders could do the same, given the deep derivative market. Alternatively, borrowers can adjust the degree of risk by varying the length of the fixed-rate period.

A complete and robust housing-finance system should offer borrowers a menu of mortgage options, ranging from short-term ARMs for borrowers who can handle payment change to long-term FRMs for borrowers who value payment stability. To assert that the FRM is the preferred alternative for most borrowers is naïve. Many borrowers have shorter-term time horizons and can handle some interest-rate risk. The reason borrowers select a longer-term fixed rate is the fact that government guarantees subsidizes the rate. International experience does not support the assertion that the switch to shorter-duration instruments would lead to massive defaults if and when interest rates increase.

The prohibition of prepayment penalties on fixed-rate mortgages is also misguided. Borrowers should be given a choice—long-term versus short-term fixed rates, with and without prepayment penalties. The market will price the differences, giving price breaks to those borrowers willing and able to handle interest-rate risk. Following Canadian and European tradition, the imposition of a prepayment penalty should be limited. It should not apply to borrowers moving house and it should be limited in term.[16]

Summary

The private sector would continue to originate and hold/sell 30 year FRMs without government guarantees if there was continued consumer demand, but it is hoped that shorter-term mortgages and ARMs become more popular in the future. The most important result of a shift away from the FRM would be a reduction in taxpayer liability for mortgage risk. There is nothing so special about housing finance that government should absorb the credit risk of the vast majority of the mortgage market or underwrite the interest-rate risk of that market. Two episodes of massive taxpayer losses should convince us of that fact.

[15] Canada supports its mortgage market through default insurance and cash-flow guarantees comparable to FHA insurance and Ginnie Mae guarantees in the United States. The market share of government-backed mortgages is considerably less, however, with approximately 50 percent of mortgages backed by government insurance and 25 percent of mortgages backed by guarantees. European countries (with the exception of the Netherlands) do not support their mortgage markets through insurance or guarantees.

[16] For example, the maximum term over which the penalty applies is 5 years in Canada and the Netherlands and 10 years in Germany.

Table 1. Interest Rate Volatility and Mortgage Refinancing

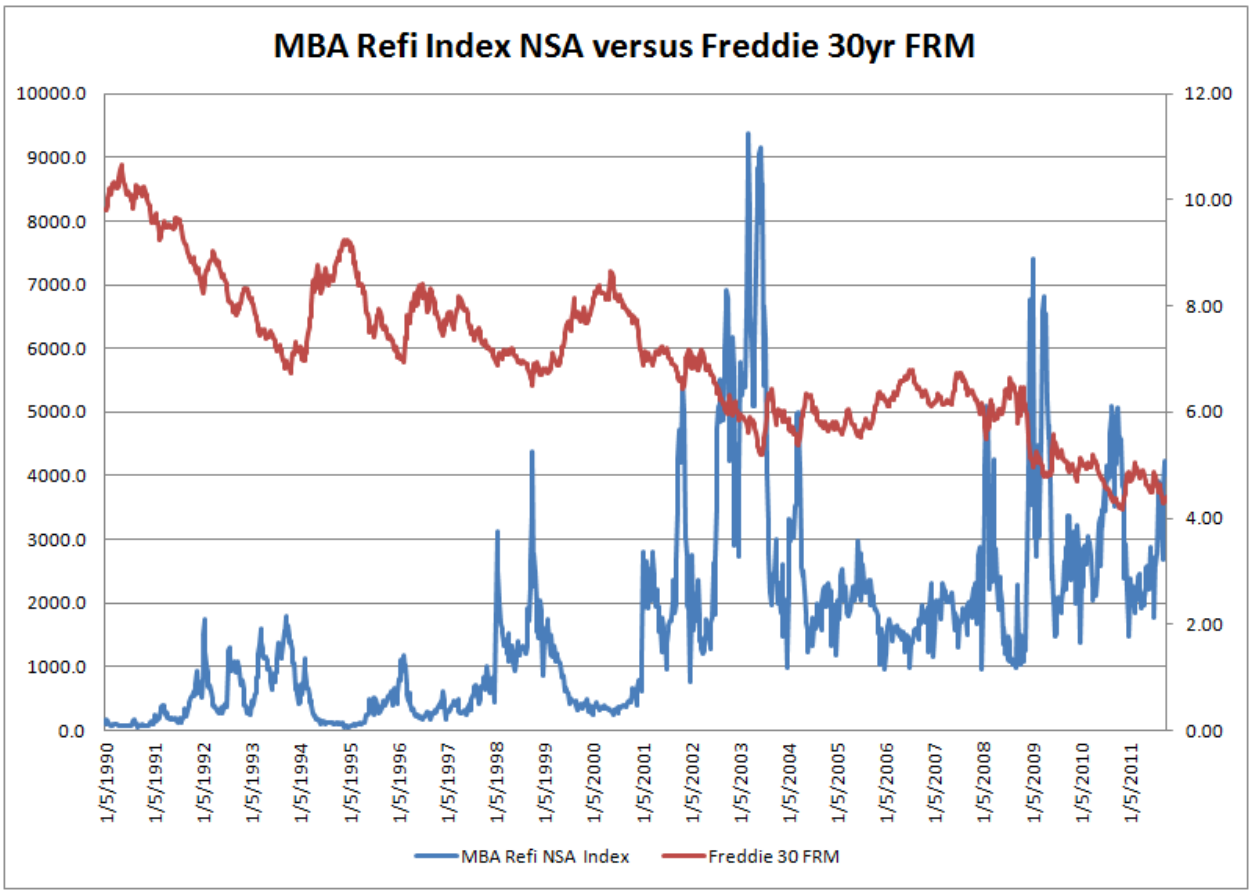

Table 2. Mortgage Design Concentrations by Country

	Variable rate	Short term fixed	Medium term fixed	Long term fixed
Australia	92%	8%		
Canada	35%		55%	10%
Denmark		17%	40%	43%
France	33%			67%
Germany	16%	17%	38%	29%
Ireland	91%		9%	
Japan	38%	20%	20%	22%
Korea	92%		6%	2%
Netherlands		15%	66%	19%
Spain	91%	8%		1%
Switzerland	2%		98%	
UK	47%	53%		
US	5%			95%
Source: Michael Lea, International Comparison of Mortgage Product Offerings, 2010.				