

Taxation, Negative Amortization and Affordable Mortgages

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Innovative mortgage loans on personal residences that can improve housing affordability by deferring interest are tax disadvantaged. This Article describes and quantifies that disadvantage for a variety of deferred-payment mortgages and argues that the federal government should eliminate the disadvantage.

I. NEGATIVE AMORTIZATION

Home mortgages with negative amortization have received a bad reputation.¹ Negative amortization, which occurs when the periodic payment on a debt instrument is less than the accrued interest, refers to an increase in the outstanding balance between one payment and the next. The outstanding balance of a loan rises during the period of negative amortization, even though the borrower is making regular payments, because the accrued but unpaid interest is added to the outstanding balance of the loan.² Although the prospect of negative amortization sounds scary to some people,³ like a disease to be

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¹ See, e.g., John Adams, *How to Buy a House; Big Loan Makes Up for Small Downpayment*, ATLANTA J. & CONST., Oct. 13, 1991, § H, at 4; *Concern Expressed on Neg Am Loans*, NAT'L MORTGAGE NEWS, Nov. 26, 1990, at 18; Kenneth Harney, *Think Twice About 'Cheap' Mortgages*, WASH. POST, Nov. 3, 1990, § E, at 1; Diane Henry, *Talking: Negative Amortization: Pro & Con*, N.Y. TIMES, Aug. 1, 1982, § 8, at 1; Benny Kass, *Careful Research Needed Before Committing to an Adjustable-Rate Mortgage*, WASH. POST, May 4, 1991, § F, at 6 (“[u]nder no circumstances can I recommend the negative amortization mortgage”).

² See WILLIAM BRUEGGEMAN ET AL., REAL ESTATE FINANCE 132, 165-67 (8th ed. 1989); *A Mortgage Glossary for Home Buyers*, THE WASH. TIMES, May 1, 1992, § H, at 11.

³ David W. Myers, *Your Mortgage; Negative Amortization Stirs Unease*, LOS ANGELES TIMES, Oct. 21, 1990, § K, at 8 (some housing experts are “downright scared” about negative amortization mortgages).

avoided at all costs,⁴ mortgage instruments with negative amortization can improve housing affordability in an inflationary environment.⁵

Since the mid-1960s, when inflation became commonplace in the U.S. economy, there has been widespread concern with the harmful impact of inflation on housing affordability, especially on first-time home buyers.⁶ In order to lessen the effect of inflation on the ability of many people to achieve the American dream of homeownership, a plethora of mortgage instruments with negative amortization have been developed,⁷ and the federal government has authorized regulated mortgage lenders to make loans in many of these forms.⁸ Economists, lawyers and housing experts have debated the advantages and disadvantages to borrowers, lenders and the economy of these various instruments.⁹ Throughout this debate it has generally been assumed, either implicitly or explicitly, that these new mortgage instruments will be treated as favorably under the federal income tax law as traditional mortgages.¹⁰ This is

⁴ William N. Eskridge, Jr., *One Hundred Years Of Ineptitude: The Need for Mortgage Rules Consonant with the Economic and Psychological Dynamics of the Home Sale and Loan Transaction*, 70 VA. L. REV. 1083, 1190 n.335 (1984) ("Consumers Union takes the position that negative amortization should be prohibited"); Don Campbell, *'Negative' Potential of Mortgages*, CHI. TRIB., Feb. 9, 1991, at 10 ("[t]he moral: avoid [adjustable rate mortgages] with a negative amortization potential like the plague"); Henry Unger, *Don't Sign a Mortgage Uninformed*, ATLANTA J. & CONST., May 6, 1991, § C, at 1.

⁵ See Phil Roosevelt, *Fannie Mae Supports Loans Linked to 6-Month CD Rate*, AM. BANKER, Sept. 28, 1990, at 6 (quoting an official from the Office of Thrift Supervision); see also discussion *infra*, especially notes 15-24 and accompanying text.

⁶ See, e.g., Donald R. Lessard & Franco Modigliani, *Inflation and the Housing Market: Problems and Potential Solutions*, in NEW MORTGAGE DESIGNS FOR STABLE HOUSING IN AN INFLATIONARY ENVIRONMENT 13 (Franco Modigliani and Donald Lessard eds., 1975). Although deferred-payment mortgages can make homeownership more affordable, their use will have little or no impact on other housing affordability issues, such as providing shelter for the homeless.

⁷ See GRANT NELSON & DALE WHITMAN, REAL ESTATE FINANCE LAW 670 (2d ed. 1985).

⁸ *Id.*

⁹ See, e.g., Richard Cohn & Donald R. Lessard, *Recent Research on Indexation and the Housing Market*, 31 J. FIN. 403 (1976); Robert Edelstein, *Discussion*, 31 J. FIN. 443 (1976); Robert Edelstein & Jack Guttentag, *Interest Rate Change Insurance and Related Proposals to Meet the Needs of Home Buyers and Home Mortgage Lenders in an Inflationary Environment*, in CAPITAL MARKETS AND THE HOUSING SECTOR: PERSPECTIVE ON FINANCIAL REFORM 191 (Robert M. Buckley et al. eds., 1977); Stanley Iezman, *Alternative Mortgage Instruments: Their Effect on Residential Financing*, 10 REAL EST. L.J. 3 (1981).

¹⁰ See, e.g., Daniel Holland, *Tax and Regulatory Problems Posed by Alternative Nonstandard Mortgages*, in NEW MORTGAGE DESIGNS FOR STABLE HOUSING IN AN INFLATIONARY ENVIRONMENT, *supra* note 6, at 271; Stanley Surrey, *Discussion*, in NEW MORTGAGE DESIGNS FOR STABLE HOUSING IN AN INFLATIONARY ENVIRONMENT, *supra* note

not the case. Unfortunately, the bias some people have against such deferred-payment mortgages is reflected in the tax law,¹¹ thereby discouraging everyone from using them. This Article describes and measures the tax cost of these alternative mortgages.¹² It also argues that the tax disadvantage associated with negative amortization should be eliminated.

II. THE TILT PROBLEM AND DEFERRED-PAYMENT MORTGAGES

For some time, housing experts have recognized that when inflation is more than minimal, the traditional, level-payment, fully-amortized mortgage design increases the real burden of the beginning loan payments. This happens because inflation forces borrowers to make higher initial payments in order to compensate for the lower inflation-adjusted value of their later payments. This acceleration in the real burden of the loan payments is called the tilt problem,¹³ and a number of innovative mortgage designs have been proposed that have as their primary objective improving housing affordability by eliminating the tilt.¹⁴ The object of these instruments is to improve the correlation between the borrower's nominal income and mortgage payments, thereby improving housing affordability.

A. Inflation and the Fixed-Rate Mortgage ("FRM")

In order to understand what the designers and proponents of deferred-payment mortgages are trying to accomplish, the best place to begin is with the traditional 30-year FRM, which first became widespread in the 1930s.

6, at 292; Robert Buckley & John Tuccillo, *An Analysis of Nonlevel Payment Mortgages*, in CAPITAL MARKETS AND THE HOUSING SECTOR: PROSPECTIVES OF FINANCIAL REFORM, *supra* note 9, at 271; Susan Woodward & David Crowe, *A Power-Packed Mortgage*, 5 SECONDARY MORTGAGE MARKETS 2, 7 (Fall 1988). *But see* Terrence Clauretie & John Marts, *Alternative Mortgages Have Hidden Costs*, 14 REAL EST. REV. 69 (1984).

¹¹ The phrases "deferred-payment mortgages" and "mortgages with negative amortization" are synonymous. A deferred-payment mortgage is a mortgage on which negative amortization can occur.

¹² An interesting question for further study is whether tax considerations are indeed responsible for the small market share held by deferred-payment home mortgages.

¹³ *See* Lessard & Modigliani, *supra* note 6, at 15-23; Buckley & Tuccillo, *supra* note 10, at 273-74.

¹⁴ Some of these mortgages also address the portfolio lag or term intermediation problem. This problem arises when the interest rate the borrower pays the lender is locked in for a longer time than is the lender's cost of funds. Accordingly, if the lender's cost of funds rises, as happened in the 1960s and 1970s, the lender will be squeezed between its high cost of funds and its low return on investment. *See* NELSON & WHITMAN, *supra* note 7, at 670; Buckley & Tuccillo, *supra* note 10, at 273-74.

Introduced in an era of little or no inflation, the 30-year FRM was designed to spread the cost of financing a home evenly over several decades.¹⁵

In an era with little or no inflation, such as the United States experienced in the twenty years following World War II, the real burden of the FRM payments is roughly constant over the terms of the mortgage. However, in an era with even moderate inflation, the FRM no longer spreads the burden evenly. Instead, the burden of the mortgage payments declines over time at a rate equal to the rate of inflation.¹⁶

If the effects of inflation were merely to reduce the burden of the mortgage payments, borrowers would be delighted, although lenders would not. This is the effect of unanticipated inflation. For example, mortgage loans that originated during the 1950s and the 1960s were made at very low rates because inflation was nonexistent or low and because the expectation was that it would remain so. Consequently, when inflation increased in the 1970s, homeowners with existing mortgages benefited at the expense of lenders.

When inflation is anticipated, however, it tends to be incorporated into the current level of interest rates in order to preserve the lender's real return. Thus, the higher the level of anticipated inflation, the higher the nominal rate of interest.¹⁷ Accordingly, because the FRM is structured so that the nominal payment is constant over the mortgage term, the higher the level of anticipated inflation, the higher the nominal monthly mortgage payment. Consequently, if inflation occurs roughly as anticipated, the real value of the payments will decline, and the present value of the entire stream of payments will be about the same with inflation as it would have been with the lower interest rate and no inflation.

An example might be useful. Consider the purchase of a house for \$125,000, with a standard 20% downpayment. The downpayment is \$25,000

¹⁵ The FRM is a long-term, fully-amortized mortgage. The monthly payment on a FRM is equal in dollars over the entire mortgage term, with each payment composed partly of interest and partly of principal. Fully-amortized means that the monthly payment on a FRM is calculated so that the payments will amortize the principal and pay all interest over the loan term. See Woodward & Crowe, *supra* note 10, at 2.

¹⁶ Although the real value of the payment declines at the rate of inflation, the real, after-tax payment will not fall as fast. This is because the principal repayments, which increase over the term of the FRM, are not deductible. More generally, the after-tax payments on a FRM are not constant, although the before-tax payments are, because interest is deductible whereas principal is not. Except at very low levels of inflation, the smoothing out effects of interest deductibility will be exceeded by the tilt imposed by inflation.

¹⁷ The most straight-forward case of this is the Fisher Effect, which states that each 1% increase in inflation will result in a 1% increase in nominal interest rates. The simulations in part V assume that the Fisher Effect holds.

and the mortgage loan is \$100,000. With no inflation and a real interest rate of 4%, the monthly payment on a 30-year FRM will be \$477. Using the lender's guideline that a borrower's mortgage payments amount to no more than 28% of pre-tax income,¹⁸ the house can be purchased by someone with an annual income of as little as \$20,460, assuming, of course, that the purchaser had the \$25,000 downpayment. In an environment with anticipated inflation of 6% a year and a nominal interest rate of 10%, the monthly mortgage payment would jump to \$878.¹⁹ Accordingly, a much higher minimum income of \$37,610 would be required to purchase the same house.²⁰

As the preceding discussion illustrates, the nominal FRM payment is higher, the higher the expected level of inflation. However, the effect of anticipated inflation is not to increase the present value of the anticipated mortgage payments. To see this, assume that actual inflation equals expected inflation, in which case the real value of the payments on the 10% FRM will fall at a rate of 6% a year. Thus, for the last 19½ years of the mortgage term, the real value of the monthly payments on the 10% FRM will be below those on the 4% FRM, even though the nominal payment on the 4% FRM is less than the nominal payment on the 10% FRM. What has happened is that inflation has reduced the value of the dollar and therefore the real value of the mortgage payments. Inflation, which is a general rise in the price level, is likely to raise income and house prices, making it easier for the homeowner to meet the mortgage payments and protecting the lender's collateral.²¹ Thus, the

¹⁸ See NELSON & WHITMAN, *supra* note 7, at 777 n.3.

¹⁹ Although inflation will raise the borrower's income in the future, relative to both what it is now and what it would have been without inflation, the expectation that inflation will occur in the future is unlikely to raise the borrower's current income. See Woodward & Crowe, *supra* note 10, at 3.

²⁰ Two primary underwriting standards are used for home mortgages. The first is the maximum loan-to-value ratio, which is typically 80% for loans not insured by HUD. The second is the maximum payment-to-income ratio, which is usually 28% of pre-tax income. The first standard determines the minimum downpayment; the second, the minimum income. Hence, the maximum downpayment the borrower can make is one constraint and her income is the second constraint on the maximum house price. Because both constraints have to be met, the more binding constraint is determinative. Accordingly, as inflation rises, the income constraint becomes more important. This is because expected inflation does not directly affect house prices and therefore, has little or no impact on the minimum downpayment, but it does increase the minimum income by raising the interest rates.

²¹ The real value or burden of the mortgage payment represents the real resources that could otherwise be consumed if the mortgage payment was not made. Because inflation tends to increase the price of all goods, the \$878 monthly mortgage payment can buy less each year. The real value of the mortgage payments is most often described as the ratio of the nominal payment to the consumer price index ("CPI"), when the CPI is arbitrarily set equal to one at the time the mortgage loan is originated.

impact of inflation and the traditional mortgage to increase the real burden of the mortgage payments in early years and reduce the burden in later years.²² This acceleration of the burden in the early years (while maintaining the present value of the burden over the full term) is the tilt problem, and is illustrated by the downward sloping curve in Table 1.²³ It arises because the traditional mortgage design, which keeps the nominal payment constant over the mortgage term, accelerates the inflation-compensation. In effect, each month the borrower must compensate the lender for the full impact of inflation on the outstanding loan balance as well as pay the real interest and some of the real principal.²⁴ As a result, inflation coupled with the traditional mortgage design

²² The effect of inflation on housing prices and wages is an important issue in the debate over deferred-payment mortgages. If inflation affects all prices, including homes and wages equally, then deferred-payment mortgages will not increase defaults relative to traditional mortgages and no inflation. However, if the effect is more complex, such as if the nominal prices and wages are sticky downward, then default rates could increase more from using deferred-payment mortgages than from eliminating inflation. In any event, it is commonly thought that the use of deferred-payment mortgages will increase defaults in the current inflationary environment relative to what they are with traditional mortgages, assuming underwriting standards are unchanged, because the smaller early payments with deferred-payment mortgages will reduce the buyer's equity at every point in time. However, two kinds of default exist. First, the borrower chooses not to make payments because it is irrational to do so in light of the relation between the market value of the property and the size of the outstanding debt; second, the borrower does not have the income to make the current payments. Although deferred-payment mortgages will increase the frequency of the first kind of default and the cost to lenders, it is uncertain how the latter kind of default is affected by deferred-payment mortgages, which have smaller payments during the early years but larger payments in the later years. This is because a mortgagor in payment trouble has two options: sell the property or default. For a given house, a borrower with traditional mortgage is more likely to run into payment trouble, but is less likely to default when in trouble because the equity is larger. If the underwriting standards for the payment-to-income ratio are unchanged and the borrower with a deferred-payment mortgage purchases a more expensive house so that the payment-to-income ratio is the same, then the probability of running into payment trouble is initially equal and thereafter higher with the deferred-payment mortgage. Moreover, given the existence of payment trouble, the probability of default is higher for the deferred-payment mortgage. Thus, unless stricter underwriting standards are used, default risk will be increased by deferred-payment mortgages. Accordingly, the effect on default risk depends on what the underwriting standards would be for the various deferred-payment mortgages. See Woodward & Crowe, *supra* note 10, at 6.

²³ Edelman & Guttentag, *supra* note 9, at 193. All tables are located in Appendix, at pages 1379-83.

²⁴ In the above example, the mortgage interest rate jumped from 4% to 10% when inflation jumped from 0% to 6%. In the absence of inflation, with a 4% interest rate, the balance outstanding at the end of the first month is \$99,855.92. Of the \$477.42 paid to the

can put homeownership out of reach for some Americans and require others to settle for smaller, less expensive homes.

B. *Taxonomy of Deferred-Payment Mortgages*

In order to overcome the effects of the tilt problem on housing affordability, several different mortgage instruments have been designed that reduce the nominal payments in the early years of the loan and increase the nominal payments during the later years. These instruments all use negative amortization to provide some relief to the mortgagor from the tilt in real mortgage payments caused by inflation and the traditional mortgage design. So far, none of these deferred-payment mortgage instruments has made more than a small inroad into the marketplace. These mortgage instruments include the graduated-payment mortgage, the constant-payment-factor variable-rate mortgage, the price-level adjusted mortgage, and the shared appreciation mortgage.²⁵

1. *Graduated-Payment Mortgage ("GPM")*

The simplest of the deferred-payment mortgages is the GPM. The GPM is a fully-amortizing mortgage whose monthly payments increase regularly and by specified amounts over the term of the mortgage. The increases on a GPM are specified at the time the mortgage loan is made; they do not depend upon any contingency. Thus, the borrower knows the full schedule of payments, as well as the schedule of prepayments that would retire the loan, when the mortgage is made.²⁶

The most common forms of GPMs have payments that increase annually by specified percentage over the first 5 to 10 years of the mortgage loan and remain constant thereafter. At least in theory, a GPM could be designed that increased at a constant rate over the entire mortgage term.

lender, \$144.08 is a repayment of principal and \$333.34 is interest. Assuming actual inflation equals anticipated inflation of 6% annually (0.5% monthly), the balance outstanding on the FRM at the end of the first month is \$99,955.76. Of the \$877.57 paid to the lender, \$44.24 is principal and \$833.33 is interest. Of the \$833.33 interest, \$333.33 is compensation for the use of money over the month, and \$500 is compensation for the impact of inflation on the \$100,000 loan balance at the start of the month. Thus, with a FRM, the lender is compensated for the expected impact of inflation on the loan balance each month when the payment is made.

²⁵ These alternative mortgage instruments do not exhaust those designed to eliminate the tilt problem. However, most of those left out are similar to the ones discussed.

²⁶ Deferred-payment mortgages are of two types: those with planned payment increases and those with contingent payment increases. Of the various instruments described in this Article, only the GPM has planned payment increases.

The GPM was initially conceived as an instrument for young mortgagors who expected to see their incomes rise in the future. The lower payments allow the mortgagor to qualify for a larger loan and therefore purchase a larger house. This could reduce the oft-noted but extremely expensive practice of trading up, whereby families purchase successively larger and more expensive homes as their incomes rise.²⁷

The mechanics of a GPM are as follows.²⁸ Consider a \$100,000, 30-year GPM at 8.5% with payments increasing 2.5% annually for 5 years and remaining level thereafter.²⁹ The monthly payment on such a mortgage is \$699 in the first year, \$717 in the second year, and reaches \$791 in the sixth year, in which it remains as long as the loan is outstanding. Given an interest rate of 8.5% a year, compounded monthly, \$708 of interest accrues in the first month.³⁰ Thus, there is \$9 of negative amortization in that month, which leaves an unpaid balance of \$100,009 after the first month's payment. By the end of the first year, there is \$113 of negative amortization, and the unpaid balance is \$100,113. Thus in the first month of the second year, \$709 of interest accrues. Because the monthly payment of \$717 exceeds the accrual of interest by \$8, the outstanding balance by the end of that month will fall to \$100,105, and it will continue to fall over the remaining life of the loan.³¹

Of all the deferred-payment home mortgages, more financial intermediaries have authority to originate GPMs than any other instrument. GPM loans are authorized by several of the federal agencies that regulate mortgage lending, and Congress has authorized the Federal Housing Administration ("FHA") to insure GPMs under Section 245 of the National Housing Act.³² By regulation,

²⁷ These costs include the opportunity cost of not living in the house the homeowner can afford based on her long-term income and the transaction costs incurred in moving, including brokerage commissions.

²⁸ Formulas describing the alternative mortgage instruments discussed in this paper can be found in the appendix to Richard Cohn & Stanley Fischer, *Alternative Mortgage Designs*, in *NEW MORTGAGE DESIGNS FOR STABLE HOUSING IN AN INFLATIONARY ENVIRONMENT*, *supra* note 6, at 70-73.

²⁹ This example is derived from the one given in Rev. Rul. 77-135, 1977-1 C.B. 133, 134.

³⁰ The interest that accrues in the first month is given by the following equation: $(.085/12) \times \$100,000$, which equals \$708.33. Because interest is compounded monthly, the annual interest rate is divided by 12 to arrive at the monthly interest rate. Throughout this Article, all interest rates assume monthly compounding.

³¹ Positive amortization or simple amortization occurs when the outstanding balance of the mortgage is falling because the periodic payment exceeds the accrued interest. BRUEGGEMAN ET AL., *supra* note 2, at 105.

³² Under § 245(a) of the National Housing Act, the FHA will insure GPMs with the following scheduled payment increases:

Plan 1—2.5% a year for 5 years

the Office of Thrift Supervision ("OTS"), formerly the Federal Home Loan Bank Board ("FHLBB"), authorizes federally-chartered savings and loan associations to originate and hold GPMs.³³ National banks regulated by the Office of the Comptroller of the Currency ("OCC") and federal credit unions regulated by the National Credit Union Administration ("NCUA") can also offer GPMs. In essence, the OCC and NCUA have deregulated GPMs, and their regulations preempt state laws that would limit these lenders as to loan amount repayment schedule or term.³⁴

The authority to issue GPMs is not limited to federally-chartered institutions. In 1982, Congress enacted the Alternative Mortgage Transaction Parity Act ("Parity Act")³⁵ in order to eliminate inconsistencies between federal and state regulation of alternative mortgage instruments. The Parity Act, which does not authorize lenders to originate or hold any particular mortgage instrument, permits state-chartered lending institutions to originate and hold the same alternative mortgage instruments as their federal counterparts.³⁶ Thus, for example, state-chartered savings and loan associations can originate GPMs because federally-chartered savings and loan associations have the authority to do so. Although the Parity Act preempts more restrictive state regulation, more permissive state regulation is not preempted. States were given the opportunity to opt out of federal preemption, and several did so before the opportunity expired in 1985, including New York³⁷ and

Plan 2--5% a year for 5 years

Plan 3--7.5% a year for 5 years

Plan 4--2% a year for 10 years

Plan 5--3% a year for 10 years

12 U.S.C. § 1715z-10 (1988). In addition, the balance of the loan, taking into account the unpaid interest that is added to the principal, must never exceed 97% of the initial appraised value of the property. 12 C.F.R. §§ 203.45, 203.436 (1992). The GPM loan permitted by the Veterans Administration is similar to FHAs Plan 3, for which payments increase at 7.5% a year for 5 years. 38 C.F.R. § 36.4309(e) (1991). The HUD Handbook 4240.2 CHG 2, issued Jan. 29, 1980, contains financial tables for GPMs. See NELSON & WHITMAN, *supra* note 7, at 781 n.19.

³³ 12 C.F.R. § 545.33 (1992). The outstanding balance of the loan may not exceed 125% of the property's initial appraised value, unless the loan also provides for payment adjustments every 5 years, beginning no later than the 10th year of the loan, in an amount sufficient to amortize the remaining balance over the remaining term with constant payments. 12 C.F.R. § 545.33(d) (1992). These are not very restrictive requirements.

³⁴ 12 C.F.R. Part 34 (OCC) (1992) and 12 C.F.R. § 701.21 (NCUA) (1992).

³⁵ Pub. L. No. 97-320 (1982) (enacting 12 U.S.C. §§ 3802(1) et seq.).

³⁶ Alternative mortgage instrument is defined very broadly in the Parity Act and would appear to cover all of the deferred-payment mortgages discussed in this Article. See 12 U.S.C. § 3802(1) (1982).

³⁷ N.Y. BANKING LAW § 6-g (McKinney 1991).

Massachusetts.³⁸ In the discussion that follows, I will describe federally-chartered lenders authorized to originate various alternative mortgage instruments. However, most state-chartered lenders have the same authority.

2. *Constant-Payment-Factor Variable-Rate Mortgage ("CPFVRM")*

This mortgage is a variant of the now common adjustable-rate mortgage ("ARM"), which is also referred to as the variable-rate mortgage ("VRM").³⁹ As its name implies, the CPFVRM uses two interest rates—an accrual rate and a payout rate. Interest accrues on a CPFVRM at a nominal rate that reflects anticipated inflation, but a second lower rate is used to calculate the mortgagor's monthly payment.⁴⁰

The CPFVRM addresses both the tilt problem and the portfolio lag problem. The economists at the Massachusetts Institute of Technology who designed the CPFVRM recognized that the cost of funds to the financial intermediary, the interest the intermediary pays on deposits, is the sum of the risk-free rate, a premium for risk and a premium for inflation. Because this is the intermediary's cost of funds, it is important for the intermediary to use a similar interest rate on the mortgage loans it makes (appropriately adjusted for risk) in order to overcome the portfolio lag problem. However, if interest not only accrued at this rate, but was also paid out using this rate (which is how an ARM operates), no relief from the tilt problem would be provided to borrowers. Accordingly, the designers proposed that the interest be paid out using an interest rate that reflects only the risk-free rate of interest and the risk premium, but not the inflation premium. As a result, the inflation premium is paid off over the length of the mortgage because it gets added to the outstanding balance as negative amortization. Thus, depending upon the payout rate that is selected, some or all of the inflation premium is deferred with the CPFVRM. This will smooth out the real burden of the mortgagor's payments and is likely to provide a better match between mortgage payments and income.

The mechanics of a CPFVRM are as follows. Consider a \$100,000, 30-year CPFVRM with a 4% payout rate and an accrual rate 2% above the current rate on Treasury Bills, and assume that both the accrual rate and the monthly

³⁸ MASS. GEN. L. ch. 224 (1985).

³⁹ The most successful alternative mortgage instrument, the ARM, does not address the tilt problem, only the portfolio lag problem. *See* Woodward & Crowe, *supra* note 10, at 3. However, ARMs with payment caps also address the tilt problem. These ARMs set a maximum rate at which the payment can increase, with any difference between the payment and accrued interest added to the loan balance as negative amortization. BRUEGGEMAN ET AL., *supra* note 2, at 165-67.

⁴⁰ Lessard & Modigliani, *supra* note 6, at 29-31; Cohn & Fischer, *supra* note 28, at 65-67.

payment are adjusted each month. If the interest rate on Treasury Bills for the first month is 8%, the accrual rate is 10%, or 0.83% a month. Thus, the balance at the end of the first month when the first payment is made is \$100,830. The payment at the end of the first month is calculated as the payment on a \$100,000, 30-year FRM at 4%, which is \$477, leaving a balance at the start of the month of \$100,353. Assuming the index rate drops to 7.5%, the accrual rate becomes 9.5%, or 0.79% a month, which yields a balance of \$101,146 when the second payment is made. The payment at the end of the second month is calculated as the payment on a \$100,353, 29-year 11-month FRM at 4%, which is \$480, leaving a balance at the start of the third month of \$100,666. This process continues as long as the mortgage is outstanding.⁴¹

The broadest grant of authority for the origination of alternative mortgage instruments is contained in regulations issued by the FHLBB in 1983. These regulations apply to federally-chartered savings and loan associations, and through the Parity Act, to most state savings and loan associations. These regulations seem broad enough to cover the issuance of CPFVRMs.⁴²

3. Price-Level Adjusted Mortgage ("PLAM")

The PLAM is the most direct approach of dealing with the tilt problem. In contrast to traditional mortgages, the PLAM is designed to keep the real payment (not the nominal payment) constant. Over time, the nominal payment rises with inflation, keeping the purchasing power of the payments constant. Thus, the lender receives its compensation for inflation more slowly with a PLAM than with a traditional mortgage.

Technically, a PLAM is a mortgage that calls for periodic payments at one month intervals and adjusts the outstanding balance of the debt each month to compensate for the impact of inflation.⁴³ The PLAM also provides for regular changes in the monthly payment such that the adjusted periodic payments will fully amortize the outstanding balance of the debt instrument at the stated fixed

⁴¹ The CPFVRM is a self-amortizing loan. This means that the mortgage will be fully paid by the end of a 30-year term without a balloon payment. Accordingly, negative amortization cannot continue indefinitely.

⁴² 12 C.F.R. § 545.33(e) (1992). These regulations permit federally chartered savings and loan associations to make loans that provide for deferral of interest and periodically adjust the interest rate, payment, or balance in accordance with certain indices. The CPFVRM is authorized so long as the interest rate adjustments correspond to the movement of an interest rate index. The payment adjustments satisfy the requirement that they relate to changes in the loan balance.

⁴³ This is likely to be done by indexing the balance to the Department of Labor's Consumer Price Index, with a lag of several months. See Woodward & Crowe, *supra* note 10, at 5.

rate of interest over the remaining term of the mortgage. Because compensation for inflation is directly built into the PLAM, the stated fixed rate of interest reflects only the real component of the nominal interest rate.

The mechanics of a PLAM are as follows. Consider a \$100,000, 30-year PLAM at 4%. If the inflation adjustment for the first month is one-half of 1%, then the balance at the end of the month after the calculation of the inflation compensation but before the calculation of interest is \$100,500. Because the PLAM accrues real interest of 4%, which is one-third of a percent monthly, there is an additional accrual of interest of \$335, bringing the balance to \$100,835 just prior to the payment. Thus, the total interest that accrues (0.835%) is the sum of the inflation adjustment (0.5%), the real interest (0.333%), and the product of the inflation adjustment and the real interest (0.002%). The first payment on the PLAM is \$480 and is equal to the payment on a \$100,500, 30-year FRM at 4%. This leaves a balance at the start of the second month of \$100,355. Assume that for the second month the inflation adjustment is six-tenths of 1%. Inflation increases the outstanding balance to \$100,957 which with interest becomes \$101,294. The second payment on the PLAM is equal to the payment on a \$100,957, 29-year 11-month FRM at 4%. This comes to \$483. The inflation-adjusted value of this second payment is equal to that of the first payment. The computation process continues as long as the mortgage is outstanding, and the inflation-adjusted value of every payment is equal. The PLAM is illustrated in Table 2.

The OTS authorizes federally chartered savings and loan associations to issue PLAMs,⁴⁴ and in 1983 Congress authorized the FHA to insure PLAMs. No other federal agency has explicitly authorized PLAMs.⁴⁵ However, the U.S. Department of Housing and Urban Development ("HUD") has been working on a pilot program for PLAMs with FHA insurance.⁴⁶ Thus far, HUD has not implemented its pilot program.

⁴⁴ 12 C.F.R. § 545.33(e)(2) (1992) (adjustments to payment and loan balance based on an inflation index are permissible).

⁴⁵ Until 1983, the enforceability of PLAMs was in doubt. In *Aztec Properties, Inc. v. Union Planters National Bank*, 530 S.W.2d 756 (Tenn. 1975), *cert. denied*, 425 U.S. 975 (1976), the Tennessee Supreme Court held that inflation-indexation violated the 1933 Gold Clause, which prohibited requiring payment in a particular form of currency or coin other than the U.S. dollar. In 1983, Congress enacted 31 U.S.C. § 5118(d)(2), which effectively repealed the Gold Clause, removing any doubts about the enforceability of contracts with inflation-indexation clauses.

⁴⁶ See Woodward & Crowe, *supra* note 10, at 5.

4. *Shared Appreciation Mortgage ("SAM")*

The SAM, sometimes called a participation mortgage, pays periodic interest at a fixed or variable rate lower than the market rate of interest. In order to compensate the lender for the lower stated interest, the lender also receives a stated percentage of the increase in the value of the property when the borrower transfers or refinances the real estate or at a specified date, whichever occurs first. This second interest component is called the shared appreciation provision, or the equity kicker. From the borrower's viewpoint, the advantage of the SAM is the lower monthly payment. This allows the borrower to qualify for a larger loan and thereby purchase a larger and more expensive house.⁴⁷

An example of how a SAM works follows. Consider the purchase of a house for \$125,000 using a \$100,000, 10-year SAM at 6% that calls for the lender to receive 40% of the appreciation and uses a 30-year amortization schedule. The monthly payment on the SAM is equal to that of a \$100,000, 30-year FRM at 6%, which is \$600. Assume that the house is sold at the end of 8 years for \$165,000. The appreciation is \$40,000, and the lender receives 40% of this, \$16,000, as interest by virtue of the shared appreciation provision. The outstanding balance on the loan when the property is sold is \$91,018, which the lender receives upon sale as a repayment of principal. Thus, the original owner receives \$57,982, which includes \$24,000 profit and \$33,982 as a return of capital. The latter includes the \$25,000 downpayment and \$8982 of equity from the principal repayment during the 8 years.

The OTS is the only major regulatory agency explicitly authorizing SAMs.⁴⁸

III. TAXATION OF DEFERRED-PAYMENT MORTGAGES

Home mortgages with negative amortization are tax disadvantaged because federal tax law requires that the lender include the interest in its income as it accrues, but prevents the borrower from deducting the interest from her income until she actually pays it. As their name implies, deferred-payment mortgages defer some of their interest, that is, accrue interest before paying it out, thereby causing the lender's inclusions to run ahead of the borrower's deductions.

⁴⁷ See generally, Ronald Friend, *Shared Appreciation Mortgages*, 34 HASTINGS L.J. 331 (1982).

⁴⁸ 12 C.F.R. § 545.32(b)(3) (1992) (federal savings and loan associations can receive a portion of their compensation for making a loan in the form of a percentage of the amount by which the market value of the property has appreciated).

A. *Taxation Generally*

Negative amortization on home mortgages raises three basic tax issues: the timing of interest inclusions and deductions; the allocation of payments between interest and recovery of principal; and the characterization of negative amortization as acquisition indebtedness or home equity indebtedness.

1. *Timing*

The Tax Code draws a distinction between two kinds of interest—qualified periodic interest payments (“QPIP”) and original issue discount (“OID”). QPIP is defined as interest payments made at regular intervals that are the product of the outstanding balance of the loan at the beginning of an accrual period and a fixed rate of interest or a variable rate of interest that is tied to an objective interest index (“qualified variable rate”).⁴⁹ QPIP payments are accounted for by the borrower and the lender at the time of payment.⁵⁰

OID refers to all payments of interest other than QPIP.⁵¹ OID is pervasive, and elaborate rules have been developed to deal with the treatment of OID, especially with the timing of OID.⁵² The impact of these rules is to place all parties to a loan transaction, regardless of whether they use the cash or the accrual method of accounting, on the accrual method with respect to a loan.⁵³

⁴⁹ Prop. Treas. Reg. § 1.1273-1(b)(2)(ii), 51 Fed. Reg. 12,022 (1986).

⁵⁰ I.R.C. §§ 61, 163(a) (1986). This is true for taxpayers who use the cash disbursements and receipts method of accounting or the accrual method of accounting. Because QPIP payments are made as they accrue, it makes little difference whether they are taxed as they are paid or accrued.

⁵¹ OID can exist in a wide variety of loan transactions, including an instrument issued for less than face value, the payment of points on a loan, a debt instrument that pays multiple rates of interest, or a debt instrument when the total amount of interest is contingent upon the happening of some future event or events, such as inflation, the dollar-mark exchange rate, or an index of house prices. See David P. Hariton, *The Taxation of Complex Financial Instruments*, 43 TAX L. REV. 731 (1988).

⁵² The OID rules are contained in I.R.C. §§ 1271 through 1275 and the accompanying proposed and temporary regulations, which the Treasury Department originally issued in April 1986 and has since amended. The regulations were first released in 51 Fed. Reg. 12,022, 12,022-97 (1986). Three useful descriptions of these very complex regulations are DAVID GARLOCK, *A PRACTICAL GUIDE TO THE ORIGINAL ISSUE DISCOUNT REGULATIONS* (1988); Lawrence Lokken, *The Time Value of Money Rules*, 42 TAX L. REV. 1 (1986); Noel Cunningham & Deborah Schenk, *Coping with Original Issue Discount* (N.Y.U. School of Law mimeograph) (1986).

⁵³ There are exceptions to these rules for short-term loans and for small dollar amounts.

Accordingly, the OID rules would generally require that the parties account for the OID on a home mortgage as it accrues.

This, however, is not the whole story for most deferred-payment home mortgages. A provision in the Tax Code known as the personal use exception, section 1275(b), provides that an individual who has incurred a debt to purchase or carry personal use property, which includes a personal residence,⁵⁴ cannot deduct the OID that has accrued until it has been paid.⁵⁵ It is this provision, in concert with the rules for when OID accrues, that results in the tax disadvantage to deferred-payment mortgages. For it is the personal use exception that defers borrowers' deductions, thereby causing the mismatching of lenders' inclusions and borrowers' deductions.⁵⁶

2. *Interest Stacking Rule*

Interest stacking refers to the allocation of payments between interest and principal. Accordingly, the interest stacking rule determines not only the timing of the interest inclusions and deductions but also the amortization schedule. The OID rules establish a two-step procedure for allocating a payment between principal and interest. First, the payments of QPIP, which are always interest, must be identified. Next, the remaining payments are then divided between OID and principal. The OID rules treat a payment as first coming out of accrued but unpaid OID. To the extent that the non-QPIP portion of a payment exceeds the amount of accrued OID, the rest of the payment is treated as a repayment of principal.⁵⁷ If the payment is less than the sum of the QPIP and the accrued OID, then no portion of the payment is allocated to principal. In this case, the outstanding balance will have increased between the current period and the previous period. Thus, when there is negative amortization, the entire payment is interest. Additionally, the payment of previous negative

⁵⁴ Personal use property is defined as property substantially all of the use of which by the taxpayer is not in connection with the taxpayer's trade or business or for the production of income. Prop. Treas. Reg. § 1.1275-2(f)(3), 51 Fed. Reg. 12,022 (1986).

⁵⁵ I.R.C. § 1275(b); Prop. Treas. Reg. § 1.1275-2(f), 51 Fed. Reg. 12,022 (1986).

⁵⁶ My USC colleague, George Lefcoe, suggests that the deferral of deduction might help homeowners budget their finances over time. Deferring the tax deduction until payment gives owners the deduction when they are likely to need it most—when they make the corresponding mortgage payment. If the deduction were available when the interest accrued, some homeowners might be led to believe that they could afford a more expensive house based on their current after-tax income than they can actually afford over the mortgage term. Although the deferral might help some homeowners balance their finances, this assistance is available only at the cost of increasing the present value of the after-tax payments of all homeowners with deferred-payment mortgages.

⁵⁷ Prop. Treas. Reg. § 1.1272-1(e)(2)(ii), 51 Fed. Reg. 12,022 (1986).

amortization is always treated as coming out of accrued and previously unpaid OID.

3. *Characterization of Indebtedness*

As a result of the Tax Reform Act of 1986, personal interest is not generally deductible. An exception to this rule is that interest paid on qualified residence indebtedness is deductible. Qualified residence indebtedness comprises acquisition indebtedness and home equity indebtedness.

Acquisition indebtedness is any indebtedness incurred in acquiring, constructing, or substantially improving a taxpayer's residence that is secured by that residence.⁵⁸ Home equity indebtedness is any indebtedness other than acquisition indebtedness secured by the taxpayer's residence.⁵⁹ Acquisition indebtedness is subject to a maximum of \$1 million, whereas home equity indebtedness is limited to \$100,000.⁶⁰ In addition, acquisition indebtedness is limited to the cost of constructing or purchasing the residence, including the cost of improvements.⁶¹

The characterization issue raised by deferred-payment mortgages is whether the negative amortization on these mortgages can be treated as home acquisition indebtedness or whether it must be treated as home equity indebtedness, which is subject to a lower cap. In recently released regulations, the Treasury Department has stated that interest that accrues on acquisition indebtedness will be treated as acquisition indebtedness, and such negative amortization is not subject to the restriction that acquisition indebtedness is limited by the cost of acquiring and improving the property.⁶² However, the \$1 million limitation on acquisition indebtedness still applies and thus, could limit the deductibility of interest that accrues on negative amortization.⁶³

The treatment of negative amortization as acquisition indebtedness is favorable to taxpayers and removes one possible tax impediment to deferred-payment mortgages. If the negative amortization were not treated as acquisition indebtedness, purchasers of houses in the several hundred thousand dollar price range who selected deferred-payment mortgages would have seen a disallowance of substantial interest deductions had inflation continued at its

⁵⁸ I.R.C. § 163(h)(3)(B) (1986).

⁵⁹ I.R.C. § 163(h)(3)(C) (1986) (indebtedness not secured by a residence is not qualified residence indebtedness regardless of the use to which the loan proceeds are put).

⁶⁰ I.R.C. § 163(h) (1986).

⁶¹ I.R.C. § 163(h)(3)(B)(i)(I) (1986).

⁶² Temp. Treas. Reg. § 1.163-11T(b) (1990).

⁶³ See Temp. Treas. Reg. § 1.163-11T(d) (1990), Example 2(ii). Although several provisions in the tax code are indexed for inflation, the \$1 million limitation on home acquisition indebtedness is not.

recent level. This could have significantly increased the tax cost of deferred-payment mortgages to these taxpayers.⁶⁴

B. Application to Specific Mortgages

A technical discussion of the tax treatment of the various types of deferred-payment mortgages follows, with an emphasis on the tax disadvantage. In general, the tax disadvantage stems from the timing of the interest accruals and the personal use exception, which together operate to defer the mortgagor's interest deductions relative to the mortgagee's interest inclusions when there is negative amortization.⁶⁵

1. *GPM*

Under the OID rules, all of the payments on a GPM are discounted such that the present value of the payments equals the initial loan principal. The internal rate of return that equates the present value of the payments and the loan principal is the yield to maturity ("YTM") on the mortgage loan. The product of the monthly YTM and the original loan principal (also called the issue price) is the interest that accrues in the first month. The mortgage payment made at the end of the first month is treated as interest up to the amount of interest that accrues and thereafter as a return of principal. The sum of the original loan principal and the interest that accrued in the first month less the interest that was paid in that month is the adjusted issue price ("AIP") of the note. The product of the AIP and YTM is the interest that accrues in the second month. The same formula applies in all following months; over time, AIP changes, but YTM is constant.

⁶⁴ What is likely to be less well appreciated is that this favorable view might set up an additional tax arbitrage possibility for borrowers with deferred-payment mortgages over and above that which is available with traditional mortgages. The possibility arises because a homeowner can in effect deduct the interest she pays on the money she borrows to invest in bonds that produce interest exempt from tax or in equities that defer gain for tax purposes. This is the same arbitrage possibility, although to a lesser degree, that a cash-rich purchaser of a house faces. Such a purchaser can pay cash for the house or take a mortgage and invest the cash in tax-exempt or tax-deferred instruments. If she does the latter, she is in effect deducting the interest borrowed on funds used to finance tax-favored investments. Under reasonable assumptions, the tax benefit from this arbitrage possibility is overshadowed by the tax cost of the personal use exception.

⁶⁵ ARMs with payment caps can produce negative amortization. This negative amortization results in the same tax disadvantage that other deferred-payment mortgages exhibit.

As long as there is more than a minimal amount of graduation, a GPM will produce negative amortization in the early years. Because the personal use exception denies the taxpayer a deduction for interest that has accrued but has not yet been paid, this deferred interest will not be deductible by the borrower until it is paid. The interest will, however, be included by the lender as it accrues. Thus, the borrower's interest deductions (but not the lender's interest inclusions) are deferred by using a GPM relative to a mortgage without negative amortization.⁶⁶

Applying these rules to the \$100,000 GPM at 8.5% with payments increasing by 2.5% annually for 5 years described in section II.B.1, the issue price is \$100,000 and the YTM is 8.5%. Thus, in the first month, \$708 interest will accrue and will be included by the lender; the interest stacking rule implies that the payment of \$699 will come out of accrued interest and will therefore be currently deductible by the borrower. Thus, the AIP at the end of the first month is \$100,009. By the end of the first year, the lender will have inclusions of \$8503, and the borrower will have deductions of \$8390; the difference of \$113 represents the negative amortization of the loan over the year and is the source of the tax cost. Thus, at the end of the first year, the AIP is \$100,113. In the first month of the second year, \$709 of interest accrues and is included by the lender. At the end of that month, the borrower pays \$717, all of which is then deductible. In effect, the borrower is paying the interest that currently accrues plus \$8 of interest that accrued in year 1. It will take the borrower until early in year 3 to pay all of the interest that accrued in year 1.

2. CPFVRM

Under the OID rules, the payout interest rate is a qualified variable rate. Accordingly, the product of the payout rate and the AIP at the beginning of the month is treated as QPIP;⁶⁷ it is deductible by the borrower and includible by the lender when it is paid, which is also when it accrues. The interest that accrues but is not treated as QPIP is classified as OID. The excess of the interest that accrues each month over the interest that is paid (both QPIP and accrued OID) is added to the AIP of the loan each month to get the AIP at the beginning of the following month. If the payment exceeds the accrued interest, which will happen towards the end of the mortgage term even with high rates of inflation, the excess reduces the AIP.

Applying these rules to the \$100,000 30-year CPFVRM with a 4% payout rate and an accrual rate 2% above the current rate on Treasury Bills described

⁶⁶ The application of the OID rules to a GPM produces the same tax consequences for borrowers and lenders that was described in Rev. Rul. 77-135, 1977-1 C.B. 133.

⁶⁷ See *supra* part III.A.1.

in section II.B.2, the 4% payout rate is a qualified variable rate. Accordingly, \$333 of the \$477 payment at the end of the first month is QPIP, included by the lender and deducted by the borrower when paid. The difference between the interest that accrues in the first month (\$830) and the QPIP (\$333) is OID (\$497). The \$497 of OID that accrues in the first month is included in the lender's taxable income, but by virtue of the personal use exception, it cannot be deducted by the borrower until it is actually paid. The borrower's payment in the first month (\$477) exceeds the amount of QPIP by \$144. Because the accrued OID (\$497) exceeds the non-QPIP portion of the payment, the interest stacking rule implies that the entire \$144 is treated as coming out of accrued OID, and it is therefore currently deductible. Thus, the AIP at the start of the second month is \$100,353, and the lender's inclusion in the first month exceeds the borrower's deduction in that month by \$353.

3. *PLAM*

The tax treatment of PLAMs was clarified in 1990 when the U.S. Treasury Department issued proposed and temporary regulations covering the taxation of PLAMs.⁶⁸ According to the Treasury, although in form a PLAM is a debt instrument with a fixed rate of interest and a principal balance that is adjusted monthly for inflation, it is economically equivalent to a debt instrument with a fixed principal balance and a variable rate of interest that changes monthly. Accordingly, the recently introduced regulations were modeled after the qualified variable rate rules, which were described in connection with the CPFVRM. The regulations treat a PLAM as accruing interest at a rate that is the sum of the real interest rate, the inflation rate and the product of the real interest and inflation rates. The real interest rate is treated as the payout rate.

Applying these rules to the \$100,000, 30-year PLAM described in section II.B.3, the accrual rate in the first month is 0.835, which is the sum of the inflation rate, the contract interest rate and the product of the two. The 4% contract interest rate is a fixed interest rate. Thus, the interest that accrues in the first month is \$835. Of this amount, \$333 ($\$100,000 \times 0.00333$) is QPIP, which means that \$502 of OID accrues in the first month and is included in the lender's income. The first payment (\$480) exceeds the amount of QPIP (\$333) by \$147. Because this is less than the amount of accrued OID (\$502), the entire \$147 is treated as a payment of accrued OID and is therefore currently deductible by the borrower. The tax disadvantage arises because the accrued but unpaid OID, \$355, is currently includible by the lender but, by virtue of the personal use exception, is not currently deductible by the borrower. The AIP at the start of the second month is \$100,355, which is also the outstanding

⁶⁸ T.D. 8281, 1990-1 C.B. 37.

balance. Thus, the interest that accrues in the second month (assuming inflation is six-tenths of 1%) is \$939 and the QPIP payment is \$335. Hence, the OID accrual in the second month is \$604. The second payment is \$483, of which \$335 is a payment of QPIP, leaving \$148. The amount of accrued but unpaid OID prior to the second payment is \$960. Thus, the entire \$149 payment comes out of accrued OID, making it currently deductible by the borrower. Thus, the AIP at the start of the third month is \$100,812. The calculations in succeeding months proceed in the same manner.⁶⁹

4. SAM

The tax treatment of the SAM is significantly different than the tax treatment of the other deferred-payment mortgages. With the other deferred-payment mortgages, interest accrues for tax purposes as it accrues economically. However, with the SAM, the recognition of interest is deferred until payment. This is because the contingent interest is a function of the price of the property, which as recent history demonstrates, can fall. The possibility of the price falling implies that the contingent interest might ultimately be less than that which has accrued based on the current market value. Because of this possibility, the contingent interest is not recognized as the house appreciates but only upon payment.⁷⁰ Accordingly, although the borrower's deductions are

⁶⁹ Huston McCulloch argues that PLAMs would not be tax disadvantaged relative to traditional mortgages even if the borrower could not deduct accrued interest until payment. According to McCulloch, there would be no disadvantage because the borrower could always make a partial prepayment of the accrued interest and receive a current deduction. Thus, if the borrower chooses not to prepay, it must be because she is better off having the additional cash today even though her tax liability is larger. See J. Huston McCulloch, *PLAMs: Affordable Mortgages from Inflation-Proof Deposits*, F.H.L.B. CIN. Q. REP. 1982 at 2, 7. Leaving to one side the issue of whether borrowers would have a right to make penalty-free prepayments of all or part of the accrued OID, McCulloch does not appear to dispute the tax cost of reducing the tilt problem by deferring interest using a PLAM.

⁷⁰ In 1991, the Treasury Department issued a revised version of Proposed Treasury Regulation §1.1275-4, describing the tax treatment of debt instruments calling for contingent payments. 56 Fed. Reg. 8308 (1991). The new proposed regulation applies to debt instruments that provide for noncontingent payments at least equal to the issue price of the instrument and for contingent payments that are determined by reference to the value of publicly traded property. Prop. Treas. Reg. § 1.1275-5(g), 51 Fed. Reg. 12,022 (1986). Accordingly, the amendments would not apply to SAMs for two reasons. First, SAMs do not have to provide for noncontingent payments at least equal to the amount borrowed. Second, the contingent payments of all SAMs are a function of the value of the mortgaged house, which is not publicly traded property. For a discussion of the amendments to the proposed regulation, which has the effect of bifurcating a covered-debt instrument into a straight-debt instrument and other property, see David P. Hariton, *New Rules Bifurcating*

deferred with a SAM, the lender's inclusions are also deferred; thus, there is no mismatching between deductions and inclusions.

In 1983, the Treasury issued guidance on the tax treatment of homeowners with SAMs. Revenue Ruling 83-51 provides that the homeowner can deduct the contingent interest on a SAM when the contingent interest is paid. The treatment on the lender's side is the same, although the authority comes from the OID rules. The OID rules provide that OID is recognized when it becomes fixed, which is when its floor can be reasonably ascertained.⁷¹ Because there is the possibility that previously accrued contingent interest will be eliminated by a fall in price, there is no recognition until repayment for the lender.⁷²

The deferral of both the borrower's interest deductions and the lender's interest inclusions with a SAM creates the possibility of a tax benefit to the parties from using a SAM. If the lender's marginal tax rate exceeds the borrower's, there is a tax savings from using a SAM instead of a traditional mortgage. Because the corporate marginal tax rate is 34%, whereas many homeowners are likely to have marginal tax rates of 28 or 31%,⁷³ there is the possibility of some tax savings from the use of SAMs.⁷⁴ Such a savings, however is contingent upon the individual taxpayer being able to use the entire interest deduction in the year it is paid, and without reducing her marginal tax rate significantly.

Returning to the \$100,000 SAM described in section II.B.4, the property is purchased for \$125,000 using a SAM that calls for 6% interest, a 30-year amortization schedule, and gives the lender 40% of the appreciation as compensation for the below-market interest. The monthly payment is \$600 and the property is sold after 8 years for \$165,000. The monthly payment is divided between principal and interest on the same basis as the corresponding FRM.⁷⁵ None of the appreciation is subject to tax until it is realized, which occurs in the eighth year when the property is sold. As a result of the shared appreciation provision, the lender receives \$16,000. This amount is includible

Contingent Debt—A Mistake?, 51 TAX NOTES 235 (1991); Lawrence Lokken, *New Rules Bifurcating Contingent Debt—A Good Start*, 51 TAX NOTES 495 (1991).

⁷¹ Prop. Treas. Reg. § 1275-5, 51 Fed. Reg. 12,022 (1986).

⁷² See 9 U.S. Tax Rep. (RIA) ¶ 8564.08 (Aug. 27, 1992) (treatment of REIT income from a shared appreciation provision).

⁷³ For a discussion of individual federal marginal income tax rates following the Revenue and Reconciliation Act of 1990, see Clark Blackman, *How the New Tax Law Will Affect Your Bottom Line*, 13 AAI JOURNAL 25 (1991). State income tax rates, which vary across states, have been ignored.

⁷⁴ Treasury was quite aware of this possibility when it issued Rev. Rul 83-51. In order to forestall the possibility of greater tax arbitrage among entities with high and low marginal tax rates, Treasury limited the ruling to home mortgage loans only.

⁷⁵ This amounts to a deferral of interest.

by the lender and deductible by the borrower as interest in the year the sale occurs.

As the above discussion illustrates, the tax treatment of SAMs is qualitatively different from that of the other deferred-payment mortgages. With the SAM, both the lender's interest inclusions and borrower's interest deductions from the shared-appreciation provision are deferred until payment. There is, therefore, no mismatching of inclusions and deductions with a SAM.

Additionally, there are significant agency costs that occur with SAMs but not with the other deferred-payment mortgages. Of all the deferred-payment mortgages, the SAM is the only one for which the amount owed is a function of a variable that is partially within the control of one of the parties: the value of the house, which is affected by the mortgagor's actions. When a house is mortgaged with a SAM, the mortgagee receives some of the upside if the mortgagor improves the house, and pays some of the downside if the mortgagor does not care for the house. As a result, the SAM reduces the mortgagor's incentive to take care of the house and increases the mortgagee's incentive to monitor the mortgagor's activities.⁷⁶ Due to these agency costs SAMs are rarely used as mortgages on home residences, except for loans among family members.⁷⁷ Accordingly, the rest of this Article will focus on deferred-payment mortgages other than the SAM.

IV. REFINANCING

The discussions above and below presume that the mortgagor has a single deferred-payment mortgage. As the above section has shown, the tax cost of using a deferred-payment mortgage in connection with a personal residence derives from the personal use exception, which defers the deduction on accrued interest (negative amortization) until it is paid. In this section, I consider the possibility of reducing the tax cost of deferred-payment mortgages through a technique using two or more mortgages.

A homeowner desirous of obtaining a deferred-payment mortgage but not wishing to incur the tax cost of such a mortgage might try the following: take a deferred-payment first mortgage on the house and establish a line of credit on the house with a second mortgage from another lender. Whenever there would be negative amortization on the first mortgage, the homeowner should draw on

⁷⁶ These costs are not absent with other mortgages, but they will usually be of much smaller magnitude.

⁷⁷ See Lewis Freiberg, *The Problem with SAM: An Economic and Policy Analysis*, 1 HOUSING FIN. REV. 73, 84 (1982). The effect is reinforced by various mortgagor protection provisions, which increase the default risks borne by lenders.

the line of credit and use that money to pay the negative amortization.⁷⁸ Economically, this would have the effect of substituting a first mortgage debt for a second mortgage debt. However, from a tax perspective, the homeowner would assert that she is paying all of her interest as it accrues and therefore can take a current deduction for the interest on the first mortgage that she paid.⁷⁹ According to the taxpayer's argument, what is critical is that she has replaced *interest* outstanding on a first mortgage with *principal* outstanding on a second mortgage.

In the second month, the homeowner will repeat the process. She will pay out-of-pocket, less than the full amount of interest, so she will take an additional draw from the line secured by the second mortgage in order to pay interest that would otherwise accrue on the first mortgage. The homeowner will claim a current deduction and will economically have the same amount of debt outstanding. This process will continue as long as the interest accruing on the first mortgage exceeds the payment on the homeowner's deferred-payment plan. Once the out-of-pocket payment exceeds the interest accruing on the first mortgage (plus any required repayment of principal), the homeowner will use the difference to reduce the second mortgage. The process will continue until the two mortgages are retired.

If the taxpayer's characterization of the transaction is respected, she can substantially reduce the tax cost of using deferred-payment mortgages. She will not, however, eliminate it. The source of this tax cost is the interest accruing on the second mortgage. This interest is not paid as it accrues, and is therefore not currently deductible, if at all. From the perspective of the first mortgage, the interest that is not currently deductible is only the accrued interest on the accrued interest. The taxpayer benefits from the transaction because she can currently deduct the accrued interest, only having to defer a deduction for the interest that accrues on the accrued interest.⁸⁰

The existing authority supports the view that a current deduction will be allowed for interest paid on a first mortgage when the taxpayer takes a second

⁷⁸ The equity for this line of credit would come from rising nominal house prices. If there is a fall in the real price of housing, there might not be enough equity.

⁷⁹ The proposed PLAM regulations make clear that the second mortgage would not be treated as acquisition indebtedness. Treas. Reg. § 1.163-11T(c) (1990). Alternatively, if the second mortgage were so treated, perhaps because the authorities integrated the two mortgages, the interest on the first mortgage would not be considered paid.

⁸⁰ Even this tax disadvantage can be eliminated by incurring a third-mortgage debt and using the proceeds to pay the interest on the second mortgage. Subject only to the \$100,000 limit on home equity indebtedness, in theory, the entire cost of a deferred-payment mortgage can be eliminated through a series of mortgages. However, because of the transaction costs of establishing numerous lines of credit, the discussion is limited to the case of two mortgages.

mortgage from a different lender. Thus, the homeowner should use a lender other than the first mortgagee for the second mortgage because a taxpayer cannot take a deduction for interest paid when the interest is paid with a loan from the original lender.⁸¹

The existing authority on when interest is paid deal overwhelmingly with one-shot transactions: the taxpayer takes out a loan and uses all or a portion of the proceeds to pay interest on a prior loan. In contrast, the arrangement contemplated here might last for many years, with a homeowner regularly drawing on a line of credit for perhaps a decade or longer in order to pay interest on a first mortgage. Moreover, in order for taxpayers without substantial outside assets—those most likely to suffer from the tilt problem—to use this multiple-mortgage technique, there will have to be restrictions on the credit line secured by the second mortgage. To ensure that the total costs, including default costs, are not increased, the borrower's ability to draw on the credit line will have to be restricted; the right to draw must be limited so that the sum of the outstanding balances on the two mortgages is no greater than that which would be outstanding on a single deferred-payment mortgage without making additional interest payments. For to do otherwise, would likely substantially increase the default costs.

Because of the long term of the arrangement and the restrictions necessary on the second mortgage to keep default costs down, whether the tax authorities would treat as "paid" the interest accruing on the first mortgage to the extent of the increase in the outstanding balance of the second mortgage is uncertain. The dual-mortgage technique raises a more difficult question than the usual one-shot transaction. I could find only one similar matter, and in that the deduction was permitted. Private Letter Ruling 8425005 approved a current deduction by a farmer when interest paid by a state through a farm support program created a liability of the farmer to the state to repay the loan. However, private letter rulings cannot be relied on by taxpayers besides the requesting party.⁸²

There is a long history of tax avoidance transactions that are tied to the interest deduction and the Internal Revenue Service has a number of weapons

⁸¹ *Battlestein v. IRS*, 631 F.2d 1182, 1184 (5th Cir. 1980) (en banc), *cert. denied*, 451 U.S. 938 (1981); *see also* *Franklin v. Comm'r*, 683 F.2d 125, 127 (5th Cir. 1982) (current deduction denied taxpayer for interest paid to lender using funds borrowed from same lender but allowed for interest paid to other lenders having participation interests in same loan). If, however, the borrowed funds were commingled with the taxpayer's other funds, and the lender did not have control over the funds, the deduction might be allowed when there was only one lender. *Burgess v. Comm'r*, 8 T.C. 47 (1947). *Contra* *Wilkerson v. Comm'r*, 655 F.2d 980, 983 (9th Cir. 1981).

⁸² *See* Rev. Proc. 88-1, 1988-1 I.R.B. 7.

available that it could use to challenge the taxpayer's characterization.⁸³ Although by no means an easy case for the Service to win, one weapon would be *Goldstein v. Commissioner*,⁸⁴ in which the Second Circuit denied a taxpayer a deduction for interest paid on a debt because the transaction was designed solely for tax reasons. Goldstein, having had the good fortune to win the Irish Sweepstakes, tried her hand at overcoming the progressive income tax. She borrowed \$945,000 from two banks to finance \$1 million of Treasury securities, and paid over most of the rest of her earnings to the banks as prepaid interest. The goal was to spread out over a number of years, and therefore at lower rates, her winnings from the sweepstakes. The court disallowed the taxpayer's interest deductions holding that the debt was incurred solely for the purpose of securing the deduction. A similar argument could be made with respect to the two mortgage plans described above, because the sole reason for taking the second mortgage is to accelerate interest deductions without changing either the taxpayer's out-of-pocket payments or outstanding indebtedness.

Given the amounts involved and the long term, it is really a matter of policy for the tax authorities to decide when the interest is paid using the dual-mortgage technique. Because it is not clear what policy would be adopted, the simulation results presented in the next section calculate the tax costs both without refinancing and assuming that refinancing is respected for tax purposes. Obviously, the tax costs associated with deferred-payment mortgages could be reduced, perhaps substantially, if the multiple-mortgage technique were approved.

V. CALCULATION OF TAX COST

This section presents the results of simulation studies conducted to estimate the tax cost associated with various deferred-payment mortgages other than the SAM. This tax cost can be seen as a cost of eliminating or reducing the tilt problem when there is a mismatching of lender's inclusions and borrower's deductions. In general, the more interest that is deferred and the longer the period of deferral, the greater is the tax cost from using a deferred-payment mortgage. The main result of the simulations is that the cost of eliminating the

⁸³ Because of the variety of tax-avoidance transactions, it is difficult to generalize about what is and what is not a prohibited tax avoidance scheme. See BORIS I. BITTKER & MARTIN J. MCMAHON, JR., *FEDERAL INCOME TAXATION OF INDIVIDUALS* ¶ 18.3 (1988).

⁸⁴ 364 F.2d 734 (2d Cir. 1966), *cert. denied*, 385 U.S. 1005 (1967). *Sheldon v. Comm'r*, 94 T.C. 738 (1990), is a recent application of *Goldstein*.

tilt problem is substantial for moderate levels of inflation, and it increases rapidly with the rate of inflation.⁸⁵

Consider, for example, a mortgagor with a 30-year PLAM at 4% calling for monthly payments, and who has a marginal tax rate of 28%.⁸⁶ One way to measure the tax cost is by the increase in the real, after-tax internal rate of return ("IRR") of the payments on the PLAM to the borrower over the payments on an identical PLAM assuming that the borrower pays all of the interest as it accrues. Using this method,⁸⁷ Table 1 shows that the tax cost of using a PLAM to eliminate the tilt problem, when the house and mortgage are kept until the loan matures, is less than 5 basis points if annual inflation is less than 3%, around 15 points if inflation is 4%, 31 points with 5% inflation and 50 points with 6% inflation. The tax cost jumps to 94 basis points with inflation at 8% and it soars to 144 points with inflation at 10%.⁸⁸ Measured in terms of an increase in the net present value of the after-tax payments, the cost is less than 1% with 3% inflation, around 2% when inflation is 4%, 4.5% at 5% inflation, and 7.5% at 6% inflation, 15% with inflation at 8%, and 24% when inflation reaches 10%.⁸⁹ In other words, when inflation is 10%, the

⁸⁵ The results of my analysis differ from those presented by Terrence Clauretje and John Marts, who find that depending on the borrower's tax rate and the length of time the mortgage is outstanding, there can be a tax advantage or disadvantage from using a deferred-payment mortgage. Clauretje & Marts, *supra* note 10, at 73. According to my analysis, there is never a tax advantage from deferral.

⁸⁶ The reported tax costs are an increasing function of the mortgagor's marginal income tax rate, taking into account both federal and state income taxes. Because most homeowners have a combined marginal tax rate above 28%, the simulations generally underestimate the tax cost.

⁸⁷ Calculations are made assuming that taxes are paid (and thus the benefits of deductions are received) monthly instead of yearly. This has the effect of increasing the tax cost. The rationale for this convention, besides computational tractability, is that taxes are actually paid as they are withheld from wages or as quarterly estimated tax payments are made and not when annual returns are filed. A basis point is one one-hundredth of 1%.

⁸⁸ The real, after-tax rate of interest on a PLAM with a given stated real interest rate is a declining function of the inflation rate. This is because inflation compensation is treated as interest, not as a return of principal. Thus, if the marginal tax rate for lenders is positive, the market-determined stated real interest rate might be an increasing function of expected inflation. The higher the stated real interest rate, and therefore the higher the after-tax rate of interest for borrowers, the greater the tax cost of PLAMs. This is because the reduction in the present value of deferred tax deductions is greater, the higher the discount rate. Accordingly, if the stated real interest rates on PLAMs were an increasing function of anticipated inflation, the tax cost of PLAMs would be even higher than as given above.

⁸⁹ The increase in the present value of after-tax payments is larger than an equivalent payment in the form of loan points because loan points are usually deductible when paid and therefore generate an immediate tax benefit to the borrower. The increase in the present

present value of the after-tax payments on a \$100,000 PLAM at 4% equals the present value of the after-tax payments on either a \$124,000 FRM at 14% or a \$124,000 PLAM at 4% on which no unpaid interest is allowed to accrue.⁹⁰

As Table 1 demonstrates, the tax cost of the personal use exception to a borrower with a PLAM is an accelerating function of the long-term rate of inflation. This acceleration is due to the regular compounding of interest. Because of the compounding effect, the amount of suspended interest increases more than linearly as inflation increases. In addition, because the payment is a linearly increasing function of inflation, it takes longer to retire the suspended interest the higher the inflation rate, which further reduces the present value of the deduction. These two effects combine to produce the result that the cost of eliminating the tilt is an accelerating function of the long-term rate of inflation.

Not surprisingly, the tax cost of using a deferred-payment mortgage increases with the holding period. Thus, the tax cost is reduced when the mortgage is repaid early, or alternatively when the accrued OID is paid and thereafter all OID is paid as it accrues.⁹¹ The increase in the tax cost from maintaining the mortgage for an additional year is just the present value of receiving the deduction from the accrued interest one year later. Accordingly, the incremental tax cost to the borrower from a PLAM rises and falls with the amount of accrued OID. This implies, as shown in Table 2, that the tax cost to the borrower of keeping the mortgage outstanding an additional year is higher, the higher the long-term rate of inflation. In addition, as Table 2 shows, the share of the ultimate tax cost of holding the mortgage to maturity that can be avoided by repaying the mortgage in any given year is higher, the higher the long-term inflation rate.

Because a taxpayer is permitted to deduct the negative amortization on a home mortgage loan when she sells her house, even if she buys another house and takes out a new loan, the tax cost of deferred-payment mortgages is lower for taxpayers who expect to sell their homes frequently.⁹² Moreover, because

value of the after-tax payments does not generate a similar tax benefit because the impact of tax considerations is taken into account in its calculation.

⁹⁰ As of August 1992, 30-year FRMs were available at around 8%, the 1-year rate on an ARM (taking out the teaser rate) was around 5% and inflation was running at around 2% annually. This suggests an inflation premium for the 30-year FRM of around 5%. This implies that the initial payment on a PLAM would be about 60% of that on a FRM and that the anticipated after-tax cost of the deferred deductions with a PLAM would be about \$4500 for each \$100,000 borrowed.

⁹¹ There is an important caveat. For this result to hold, the taxpayer must be able to use the entire deduction in the current year. There is no provision to carryover the deduction to another tax year if the taxpayer cannot currently use the entire interest deduction. The possibility of not being able to use the full interest deduction increases the potential tax costs of using deferred-payment mortgages.

⁹² The same caveat applies. This is true only if the full deduction can be used at the taxpayer's marginal tax rate in the year the house is sold.

the negative amortization on a loan cannot be deducted when a loan is refinanced, tax considerations encourage borrowers with deferred-payment mortgages to buy and sell homes more often. As Table 2 shows, the reduction in the tax cost to a borrower with a PLAM from shorter holding periods is relatively larger for higher inflation rates. Accordingly, if anticipated inflation is high, taxpayers should pay close attention to how long they plan to keep a house if they are considering using a deferred-payment mortgage. Indeed, most mortgages are not kept 30 years. Ten years is closer to the norm. The tax cost of a PLAM when the house is sold after 10 years, assuming that the full value of the deduction can be realized, is 0.46% of the present value of the after-tax payments with 3% inflation, 2.75% with 6% inflation, 4.86% with 8% inflation, and 7.41% with 10% inflation.

An alternative way of reducing the tax cost to the borrower using a deferred-payment mortgage is for the borrower to increase her payments, thereby reducing the interest that accrues. Table 3 shows the tax cost of CPFVRMs using different payout rates. Table 3 is constructed on the assumption that the real rate of interest for home mortgage loans is 4% and the Fisher Effect holds. Accordingly, the real value of the payments on a 4% CPFVRM is constant over time. With higher payout rates, the real value of the payments falls over time, and the rate of decline is higher, the higher the payout rate. As shown in Table 3, a higher payout rate increases the size of the first payment, but lowers the tax cost. Once again, the cost of eliminating some of the tilt is much less than the cost of eliminating it entirely. This suggests, given the current tax law, that some homeowners might be willing to pay the tax cost of eliminating part of the tilt, but not all of it.⁹³

Although fully eliminating the tilt in mortgage payments can be quite expensive, the tax cost associated with the various GPM plans is modest. This is illustrated in Table 4. Of the five GPM plans, the tax costs are highest for Plans III and V. However, the tax cost associated with using either of these plans would be less than \$500 on a \$100,000 mortgage, with an annual interest rate of 10%. The corresponding cost of using a CPFVRM with a 4% payout rate would be nearly \$7500. Although the tax cost associated with the GPM is much lower than that associated with the CPFVRM, the latter has a much lower initial payment (\$479) than do either of the GPMs (\$667 for Plan III and

⁹³ Arthur Houston and William Scott have described a family of mortgage instruments, which they call hybrid PLAMs, that permit the borrower and lender to simultaneously and independently set the degree of payment tilt and allocate the inflation risk. William H. Scott, Jr., and Arthur L. Houston, Jr., *Inflation, Risk, Payment Tilt, and the Design of Partially - Indexed Affordable Mortgages*, unpublished manuscript (1992). The increasing cost of reducing more of the payment tilt suggests that homeowners might be interested in these instruments.

\$735 for Plan V). Thus, the reason why the tax cost associated with the GPM is so modest is that it eliminates only a small portion of the tilt.

The simulation studies described above were all conducted under the assumption that the taxpayer used a single mortgage and did not attempt to pay accrued interest through additional borrowing. As described in section III.C., it is uncertain whether taxpayers would be permitted a current deduction for the interest paid through additional borrowing. If a current deduction were not permitted, then Tables 1 through 4 simulate the tax cost of using deferred-payment mortgages. If, however, such a deduction were allowed, then the tax costs associated with deferred-payment mortgages could be less than those indicated by Tables 1 through 4. This is demonstrated in Table 5, which reworks Table 1.

Table 5 is constructed assuming an initial 4% PLAM of \$300,000 and a second PLAM that is used to pay the accrued but unpaid interest on the first PLAM. Because of the \$100,000 limit on home equity indebtedness, the tax cost of using a deferred-payment mortgage (expressed as a percentage of the original mortgage balance) is a function of the original mortgage balance. Accordingly, the results in the far right column of Table 5 strictly apply only to \$300,000 PLAMs. The second column is calculated assuming that there is no limit on home equity indebtedness. A comparison of the second and third columns indicates that the tax costs are identical if the balance on the second mortgage never reaches \$100,000. Thus, for inflation rates of 6% or less, column the second will apply to all PLAMs for less than \$300,000.⁹⁴

Table 5 demonstrates that the tax cost to some homeowners of using deferred-payment mortgages might be substantially reduced if mortgagors borrowed, using second mortgages, the funds needed to pay accrued interest on their first mortgages. The reduction is greatest if the inflation rate is low and if the \$100,000 limit on home equity indebtedness is not reached.⁹⁵ However, if

⁹⁴ With a \$300,000 first mortgage, the second mortgage balance reaches a maximum above \$100,000; thus, the limit on home equity indebtedness binds, when inflation is above 6%. With an initial mortgage balance of \$100,000, the limitation on home equity indebtedness starts to have an effect when inflation is around 7%. With 10% inflation, the initial mortgage balance has to be about \$40,000 for the limit on home equity indebtedness not to be reached.

⁹⁵ The actual cost can probably be further reduced. Table 5 assumed there were two mortgages—the initial mortgage and a second mortgage that was used to pay accrued but unpaid interest on the first mortgage. If borrowing from one lender to pay interest due another will generate a deduction, then the homeowner could further reduce the tax cost of using deferred-payment mortgages by taking out a third mortgage to pay the accrued but unpaid interest on the second mortgage. Whether this would be worthwhile would depend on the relative size of the tax savings and the transactions costs of an additional mortgage loan. See *supra* part III.C.

the \$100,000 limit is substantially exceeded, then the reduction in the tax cost is modest.⁹⁶ Thus, the multiple-mortgage borrowing technique, if respected, would not substantially benefit all taxpayers under all inflationary scenarios.

VI. CHANGING THE TAX LAW

Proponents of deferred-payment mortgages emphasize the improved correlation between mortgage payments and income that these instruments make possible and argue that this improved correlation will make homeownership easier to achieve for those families squeezed out by the tilt problem. Pointing to the FRM, which was designed in a low-inflation era with the purpose of spreading the burden of buying a house evenly over a long time, supporters argue that in an era of even moderate inflation deferred-payment mortgages are needed to smooth out the burden. Proponents of deferred-payment mortgages are especially critical of ARMs without payment caps, which they view as far more dangerous than deferred-payment mortgages. These ARMs can produce payment shock, a sharp jump in the monthly payment when the interest rate rises in response to an expectation that inflation will increase.⁹⁷ This payment shock can be devastating for a family on a tight budget.⁹⁸

The critics of deferred-payment mortgages focus on default risk. They begin by noting that if lenders employed their current underwriting standards, the default risk on deferred-payment mortgages would be higher than that on traditional mortgages. Such an increase in defaults, even though the homeowners presumably knew what they were getting into, would be disastrous. They argue that the prospect of even more families being thrown out of their homes in foreclosure proceedings is politically and morally

⁹⁶ It is possible for the tax cost to be increased through the two-mortgage financing technique. This can occur when the second mortgage greatly exceeds \$100,000, the point after which interest on any increase in the outstanding balance of the second mortgage is disallowed. However, in such a case, the technique would not be used.

⁹⁷ Although most ARMs have annual interest rate caps that prevent the interest rate from rising more than 2 or 3 points at a time, interest-rate capped-ARMs can still produce substantial payment shock as seen in the following example. Suppose that an increase in expected inflation from 4 to 6% boosts the interest rate on an ARM from 7 to 9%. On a \$100,000, 30-year ARM this would produce a 21% jump in the monthly payment from \$665 to \$804. Even assuming an immediate 6% rise in income to keep up with inflation, the income increase is less than one-third of the payment increase. This example comes from Woodward & Crowe, *supra* note 10, at 3.

⁹⁸ The advocates of deferred-payment mortgages do not see the FRM as a panacea. Not only is there the tilt problem, but borrowers have to pay a premium with FRMs to compensate lenders against the risk of interest rates rising.

unacceptable. Alternatively, if underwriting standards were tightened, keeping the default risk in check, potential homebuyers would have to come up with larger downpayments. This, the critics argue, many families would be unable to do. Those purchasers who can afford a house with a traditional mortgage but could not come up with a larger downpayment would be either closed out of the market or forced to purchase less housing with deferred-payment mortgages.⁹⁹

It is generally agreed that to prevent a sharp increase in the number of defaults, deferred-payment mortgages will use tighter underwriting standards than traditional mortgages.¹⁰⁰ This might, although it will not necessarily, require larger downpayments but lower incomes to purchase equivalent housing. It is possible to tighten underwriting standards by lowering the payment-to-income ratio without increasing the loan-to-value ratio. Because the early year payments on the deferred-payment mortgage are smaller than those on the corresponding FRM or ARM, this will have the dual advantages of reducing the likelihood of default while reducing the minimum income required to purchase the house.¹⁰¹ However, even if the market-determined underwriting standards require larger downpayments, deferred-payment mortgages would still be useful for those potential homeowners who can make the larger downpayments and afford more expensive houses. Although those who could not make larger downpayments would not benefit from the introduction of deferred-payment mortgages, they would not be harmed either, as long as traditional mortgages were still available.¹⁰²

The proposal advanced in this Article is to reform the tax treatment of deferred-payment mortgages, not to eliminate traditional mortgages from the marketplace and replace them with deferred-payment mortgages. Such a reform will put the two kinds of mortgages on a par, eliminate the tax advantages from choosing one over the other, and allow homeowners to select whichever is best for them financially.

The effect of such a change on the demand for deferred-payment mortgages and the subsidy to homeowners would depend on the reasons for consumers'

⁹⁹ See Edelstein, *supra* note 9, at 444-45.

¹⁰⁰ For example, HUD's proposed regulation for insuring PLAMs would have established a maximum payment-to-income ratio of 20%, as opposed to 29% for FRMs, and a maximum loan-to-value ratio below the 97% used for FRMs. See Woodward & Crowe, *supra* note 10, at 5.

¹⁰¹ J. Huston McCulloch suggests that PLAMs be underwritten using a 20% downpayment and a 20% payment-to-income ratio. He argues that such PLAMs would be safer than traditional mortgages while allowing buyers to afford more expensive houses. McCulloch, *supra* note 69, at 4, 5.

¹⁰² More accurately, any harm would be indirect. They are harmed to the extent that competition with more buyers raises prices.

resistance to these mortgages. There are three groups of consumers classified according to the reasons why they would or would not use deferred-payment mortgages if they were available. The first group would not use these mortgages, even if they were available, because of their tax cost. For these consumers, eliminating the tax disadvantage could produce a significant improvement in welfare by permitting them to improve their consumption pattern over time.¹⁰³ It would not, however, increase a homeowner's tax subsidy if she merely replaced a traditional mortgage with a deferred-payment mortgage.¹⁰⁴ However, to the extent that new purchasers are brought into the market or existing purchasers decide to purchase more expensive houses, there will be an increase in the tax subsidy.

A second group of consumers would use deferred-payment mortgages, even with the tax disadvantage, if they were available.¹⁰⁵ For these consumers, eliminating the tax disadvantage would result in an increase in the tax subsidy.

A third group of consumers do not like these mortgages for non-tax reasons. For instance, if larger downpayments were required with deferred-payment mortgages, then those potential homeowners who could not come up with larger downpayments would not be induced to use deferred-payment mortgages by eliminating the tax disadvantage.

Evidence on the relative importance of the income and downpayment constraints is limited. What evidence there is suggests that the downpayment

¹⁰³ How such a benefit would be split between current and future homeowners depends on how much of the benefit were capitalized into the price of land and existing structures. If the benefit were fully capitalized, which would occur only if there were no increase in housing supply, then existing homeowners would get the entire benefit of the change in law. Those who did not currently own a house, the intended beneficiaries, would receive no benefit. The supply of owner-occupied housing is probably elastic because rental housing can be converted to owner-occupied housing, suggesting that purchasers will get much of the benefit.

¹⁰⁴ It could be argued that such a rule would encourage tax arbitrage, further increasing the tax subsidy. By taking the money that would otherwise be used to pay the mortgage and purchasing tax-deferred or tax-exempt investments, the homeowner is effectively using tax-deductible borrowings to generate tax-deferred income. A simple means of eliminating this double benefit is to deny any taxpayer with a deferred-payment home mortgage the deduction for accrued but unpaid OID on that portion of her mortgage that can be offset by tax-favored investments such as municipal bonds. For an argument that under certain circumstances arbitrage will not realize a double benefit so there is no need for such a restriction, see Alan Auerbach, *Should Interest Deductions Be Limited?*, in *UNEASY COMPROMISE: PROBLEMS OF A HYBRID INCOME-CONSUMPTION TAX* (Henry Aaron et al. eds., 1988).

¹⁰⁵ One possible reason why these mortgages might not be available in the United States is because they have not yet been adequately promoted. This argument is made by Susan Woodward and David Crowe for PLAMs. Woodward & Crowe, *supra* note 10, at 7.

constraint prevents more potential homeowners from purchasing their first house than does the income constraint. However, many find the income constraint to be more restrictive. Thus, there is good reason to believe that eliminating the tax disadvantage would significantly increase homeownership.¹⁰⁶

It might be suggested that the tax disadvantage with deferred-payment mortgages should not be eliminated because this would amount to increasing the already excessive subsidy to housing. Even granting the premise that the subsidy to homeownership should not be increased, it does not follow that the tax disadvantage should not be eliminated. The existing tax law has several harmful effects. It is wasteful because it encourages excessive trading up. It is also unfair because it discriminates against those without a lot of liquid assets.¹⁰⁷ There are more efficient and fair methods of reducing the subsidy to homeownership, such as allowing a deduction for less than 100% of the interest or reducing the caps on acquisition or home equity indebtedness, that do not have the harmful effects that the existing regime has.

There are several ways that the tax law could be amended to eliminate the tax disadvantage associated with deferred-payment mortgages. Among these, the only means of eliminating the tax disadvantage without raising fundamental tax policy issues is by repealing the personal use exception. This would benefit those homeowners and potential homeowners adversely affected by the tilt problem.

A. Elimination of the Personal Use Exception

A simple means of putting deferred-payment and traditional mortgages on an equal footing is to accelerate the borrower's tax deductions with the former by eliminating the personal use exception. Eliminating the personal use exception would permit homeowners to deduct interest on home mortgages as the interest accrued,¹⁰⁸ thereby removing the tax disadvantage that arises from the accrual of unpaid interest. Such action, however, would not amount to a major change in the cash method of tax accounting. This is because the OID rules already place all parties on the accrual method with respect to almost all

¹⁰⁶ Peter Zorn, "Mobility-Tenure Decisions and Financial Credit: Do Mortgage Qualification Requirements Constrain Home Ownership?", 17 AREUEA (Journal of American Real Estate and Urban Economics Association) 1 (1989).

¹⁰⁷ Those without liquid assets but a good income suffer most from the tilt problem. Those with liquid assets but a smaller earned income can compensate for the tilt by liquidating assets, which those with few liquid assets but good earning potential cannot do because they cannot draw on that potential.

¹⁰⁸ Legislative action would be required to amend I.R.C. § 1275 (1986).

debt transactions. Under the OID rules, a cash method taxpayer accounts for the interest on loans she receives and extends as it accrues.

The legislative history lacks any discussion of why the personal use exception was put into the law when the OID rules were extended to cover debt instruments issued by individuals. One commentator suggested that the reason behind the enactment of the personal use exception is that the extension of the OID rules would provide a windfall to individuals, who are almost all on the cash method, by allowing them to take deductions on the accrual method.¹⁰⁹ Although individual issuers would be better off if they could deduct interest as it accrues, why this would amount to a windfall is not clear because the OID rules place all taxpayers, both cash and accrual method (including the lender in the same loan transaction), on the accrual method with respect to covered loan transactions. The personal use exception carves out an exception from this general principle under limited circumstances, the unintended and undesirable effect of which is to make housing less affordable, especially for first-time homebuyers.

An additional benefit from the repeal of the personal use exception is the elimination of the problem with potentially unusable deductions when the property is sold.¹¹⁰ This was a major disadvantage with the current tax law's treatment of deferred-payment mortgages, raising the tax cost of these mortgages above the levels reported in the simulations. Repealing the personal use exception will eliminate the build-up of deductions that can be taken only when paid. This would be especially beneficial to those who sell their houses when they are in financial distress or after retirement, both circumstances in which the capacity for and the value to the borrower of the interest deductions are likely to be small.

It might be argued that eliminating the personal use exception is unnecessary if the multiple-mortgage technique is approved. This does not follow because the multiple-mortgage technique reduces the tax cost of using deferred-payment mortgages but does not eliminate it. Even if the multiple-mortgage technique could eliminate the entire tax cost, it would be costly to implement. The transaction costs incurred by the borrower in dealing with multiple lenders are wasteful as each lender will need to learn about the property and the mortgagor. A related argument is that the dual-mortgage technique is preferable to eliminating the personal use exception because the benefits of the dual-mortgage technique accrue primarily to lower and moderate income taxpayers.¹¹¹ Although the simulation results suggest that the benefits

¹⁰⁹ H.B. McCawley, *The Measurement of Interest on Mortgage Indebtedness*, 5 TAX MGMT. REAL EST. J. 125 (1989).

¹¹⁰ See *supra* note 91.

¹¹¹ This occurs because the second mortgage is treated as home equity indebtedness, which has a \$100,000 limit. See *supra* part III.C.

would primarily fall to less wealthy homeowners, in practice this is less clear. Given the costs of setting up the arrangement and the sophisticated nature of the technique, the benefits might not flow to the less wealthy, but to the wealthy and financially sophisticated.

Another set of arguments in favor of maintaining the personal use exception are based on the argument that deferred-payment mortgages should be discouraged. Critics of deferred-payment mortgages argue that the use of these mortgages should be discouraged because the default risk is too high. Why this should be so is unclear: the risk might be lower. However, even assuming that the market-determined underwriting standards for deferred-payment mortgages are deemed to be too permissive, the appropriate response is to tighten the underwriting standards by regulation and not to discourage borrowers from using these mortgages by reducing their tax benefits. Some mortgagors have claimed that unscrupulous sellers and brokers have induced them to purchase houses using graduated-payment mortgages without telling them that their payments will rise.¹¹² However, fraud perpetrated on borrowers is no reason to reduce the tax benefits of defrauded borrowers. Reducing the tax benefits is not likely to help the borrowers.

B. Change Timing of Interest Accruals

A second method of eliminating the tax cost of deferred-payment mortgages would be to defer lenders' interest inclusions. For example, requiring that borrowers and lenders take account of interest on home mortgages as the interest is paid could eliminate the tax cost of deferred-payment mortgages, even though borrowers would still find the present value of their deductions reduced. The tax disadvantage could then be eliminated by selling mortgages to high-bracket taxpayers, such as corporations and individuals, who gain as much, if not more, by the deferral of income as borrowers lose, and thus presumably would be willing to accept a lower interest rate. Such a change, however, is very unlikely to occur because it would create arbitrage possibilities. Arbitrageurs could buy deferred-payment mortgages and pay for them by issuing debt that has characteristics similar to the pool of mortgages they hold. In this case, an arbitrageur's interest deductions would run ahead of its interest inclusions, producing a tax benefit. Competition in the arbitrage market would tend to compete away the profit through lower interest rates, and the ultimate effect would be to increase the tax subsidy to homeownership. As compared with traditional mortgages, deferring

¹¹² Doug Bailey & Peter Canellos, *New York Thrift Agrees to Suspend Boston Foreclosures; Mass. Officials Checking Possible Illegalities*, BOSTON GLOBE, Mar. 11, 1992, at 73.

the recognition of interest would provide deferred-payment mortgages with a tax advantage. Accordingly, homeowners might select deferred-payment mortgages even if on balance they favored traditional mortgages for non-tax reasons.

Given the current relatively flat tax schedule and a corporate tax rate just above the top individual tax rate, there would be only a slight advantage from using a deferred-payment mortgage, even assuming that the entire tax benefit of the deferral is passed on to borrowers. However, with a more progressive tax schedule, there could be substantial benefits from deferral for taxpayers who are not in the upper brackets. Although this would tend to equalize the tax benefits across income levels, and so might be considered desirable, there are more direct methods of equalizing the benefits, such as giving a tax credit (instead of a deduction) for a fraction of the interest paid each year and reducing the limits on acquisition and home equity indebtedness.

There would still be problems from changing the timing of interest accruals on home mortgages. First, the proposal would not place traditional and deferred-payment mortgages on a par. It would be attractive to eliminate the tax disadvantage associated with deferred-payment mortgages, because of their potential in improving housing affordability for homebuyers. No argument has been offered for providing a greater benefit to deferred-payment mortgages over traditional mortgages. Second, increasing the subsidy by channeling the mortgage funds through arbitrageurs is an inefficient way of increasing the home mortgage interest subsidy because of the transaction costs that are incurred. Also, to the extent that arbitrage is imperfect, some of the economic benefits will go to the most efficient arbitrageurs, who are unintended beneficiaries. Third, requiring borrowers and lenders to account for interest on home mortgages as the interest is paid does not ameliorate the problem of borrowers being unable to use all of their deductions when they sell their houses. Fourth, changing the timing of interest accruals is likely to produce further confusion in an already confused and complicated area of the law, the taxation of hybrid debt instruments, because the timing of the interest accruals on an instrument will depend on the nature of the instrument, whether it is a home mortgage or not. Although the first two of these problems might not be severe, given the current flat tax schedule, they could become acute if a more progressive tax schedule is adopted once again. Because eliminating the personal use exception effectively remedies the tilt problem without creating new problems, it is preferred to putting the parties to a home mortgage loan on the cash method for the loan.

C. Elimination of Home Mortgage Deduction

A third, although imprecise, method of removing the tax disadvantage is to eliminate the deduction for home mortgage interest. If home mortgage interest

were not deductible, then it would not matter when the borrower took account of the interest for tax purposes because it would always be a nondeductible expense. Accordingly, if the home mortgage deduction were eliminated, deferred-payment mortgages would no longer suffer a tax disadvantage.¹¹³ Whether this would have a significant impact on the use of deferred-payment mortgages depends on how significant an impediment the tax disadvantage is to the use of these mortgages.¹¹⁴

The question of whether there should be a home mortgage deduction has been hotly debated for many years, and a detailed discussion of the merits of such a change to the tax system is beyond the scope of this Article.¹¹⁵

¹¹³ Indeed, in this case, the SAM could produce a substantial tax advantage. If the home mortgage deduction were eliminated but the current tax treatment of lenders was maintained, SAMs would be an attractive means for lenders to defer tax. Competition among lenders could then be expected to tend to pass this advantage on to borrowers through lower interest rates.

¹¹⁴ Indexing the tax system for inflation would also eliminate the tax disadvantage from deferred-payment mortgages. This would raise even more fundamental questions of tax policy.

¹¹⁵ Although the home interest deduction has long been considered a sacred political cow, that might be changing as attention is increasingly focused on the national deficit and poverty issues. See Jacqueline Salmon, *Mortgage Tax Break: Time to Pare it Down?*, WASH. POST, May 17, 1992, at H1. Those who favor the deduction, often claim that homeownership is a fundamental part of the American dream that the federal government has a duty to support. 131 Cong. Rec. S5238 (daily ed. May 2, 1985) (statement of Sen. Bentsen). Furthermore, they argue that the mortgage interest deduction keeps housing affordable. *Crane Urges Lawmakers to Save Home Mortgage Deduction*, TAX NOTES TODAY, Sept. 27, 1990, at 199-88. Beyond economics, proponents of the home mortgage interest deduction claim that a house is more than an investment, it is a home. *More than Just a House*, BOSTON GLOBE, Apr. 15, 1990, at A24. Moreover, homeownership promotes social and economic benefits for the family, the surrounding community and other goals, such as education. *Rosty Blocks Two Bartlett Amendments to Housing Bill*, TAX NOTES TODAY, Aug. 9, 1990, at 165-61. On the other side, although the deduction is intended to increase homeownership, the benefits of the deduction overwhelmingly flow to the wealthy. According to the Congressional Joint Committee on Taxation, of the 24.1 million taxpayers who claimed the home mortgage interest deduction in 1991, households with adjusted gross incomes of more than \$100,000 received 30% of the benefits. More than half of the benefits went to households whose income exceeds \$75,000, while households with income below \$40,000 received less than 10% of the benefits. See Salmon, *supra*. To remedy the imbalance and raise government revenues, many advocate greater limitations on the home mortgage deduction. The proposed changes are gaining support across party lines. Some Republicans favor the change as an implicit tax increase that will cut the deficit, whereas some Democrats support the change because it would equalize the benefits from the deduction across income groups. See Salmon, *supra*. The proposal is also well liked by economists who view the mortgage interest deduction as distorting the economy by moving

Obviously, the elimination of the home mortgage deduction would have large wealth and incentive effects throughout the economy, and putting deferred-payment and traditional mortgages on an equal tax footing would be among the least significant of these. Thus, suffice it to say, that if the home mortgage deduction were eliminated, the tax disadvantage associated with deferred-payment mortgages would disappear.¹¹⁶

VII. CONCLUSION

Homeownership is a cherished part of the American dream. In addition, because homeowners usually have a greater stake in their community than do renters, many observers believe that wider homeownership is a means of improving social conditions.¹¹⁷ Unfortunately, inflation has prevented many Americans from becoming homeowners. Traditional mortgages, such as the FRM and the ARM, coupled with inflation have produced the tilt problem, increasing the burden of early mortgage payments, which has put homeownership out of reach for many Americans. Fortunately, there is a solution. Creative mortgage instruments, such as the GPM, CPFVRM and PLAM, can smooth out the real burden of the mortgage payments. However, these instruments, which in order to eliminate the tilt produce negative amortization, are treated unfavorably under the existing tax law by virtue of the personal use exception. Moreover, the tax cost of eliminating the tilt by using a deferred-payment mortgage is substantial when inflation is moderate, as it has been for several years, and it rises rapidly with inflation. Congress should, therefore, repeal the personal use exception, which would eliminate the tax disadvantage associated with deferred-payment mortgages, thereby placing traditional and deferred-payment mortgages on par and making homeownership more affordable for those Americans squeezed by inflation.

resources towards housing and away from industry. Norton, *What Ought to be Done About Taxes*, FORTUNE, Mar. 25, 1992, at 99. Even so, support is not universal. Limiting or eliminating the deduction would have a strong negative impact for housing and home prices, increasing the number of defaults and foreclosures. See James Flanigan, *Deficit-Fighters Eye Mortgage Interest*, LOS ANGELES TIMES, July 25, 1990, at D1. It would also hurt those involved in the building trades, and might unfairly hurt those in high cost housing regions. See Salmon, *supra*. Still others have questioned the distributional effects of eliminating the deduction, arguing that the middle class would be hurt most because the rich have alternative means of sheltering their income from tax. See *More than Just a House, supra*.

¹¹⁶ It is worth noting that PLAMs are used in several developed countries with moderate levels of inflation, including Australia, Canada and Denmark. In none of these three countries is a tax deduction allowed for home mortgage interest. However, in Australia and Canada the government provides mortgage insurance and therefore, may subsidize the default risk.

¹¹⁷ See *Rosty Blocks Two Bartlett Amendments to Housing Bill, supra* note 113.

APPENDIX

Table 1

TAX COST OF PERSONAL USE EXCEPTION WITH PLAMs

30-year PLAM at 4%
with monthly payments
28% marginal tax rate

Yearly Inflation	Real After-Tax IRR Interest Deductible When		Cost IRR	Cost NPV	Initial Payment Ratio
	Paid	Accrued			
	Percent		Basis Points		Percent
0	2.88	2.88	0	0	100
2	2.3218	2.3209	0.09	0.01	79.70
3	2.0860	2.0421	4.39	0.63	71.87
4	1.9156	1.7637	15.18	2.21	65.20
5	1.7936	1.4858	30.78	4.53	59.49
6	1.7059	1.2084	49.75	7.43	54.58
7	1.6425	0.9314	71.11	10.80	50.33
8	1.5966	0.6548	94.18	14.59	46.63
10	1.5388	0.1031	143.57	23.58	40.54

The initial payment ratio is the ratio of the first payment on the PLAM to the first payment on the corresponding FRM, expressed as a percentage. The interest rate on the corresponding FRM is 4% above annual inflation.

Table 2

TAX COST OF PERSONAL USE EXCEPTION WITH PLAMs

30-year PLAM at 4%
with monthly payments
28% marginal tax rate
PLAM prepaid without penalty

End of Year Repayment Occurs	Cost as percentage increase in after tax NPV for an annual inflation rate of			
	3%	6%	8%	10%
Percent				
1	0.01	0.04	0.07	0.10
2	0.03	0.15	0.27	0.41
3	0.07	0.33	0.58	0.89
4	0.11	0.57	1.00	1.52
5	0.16	0.85	1.50	2.29
6	0.22	1.18	2.07	3.16
7	0.28	1.54	2.71	4.13
8	0.34	1.92	3.39	5.17
10	0.46	2.75	4.86	7.41
12	0.55	3.60	6.41	9.78
15	0.63	4.85	8.72	13.34
20	0.63	6.56	12.07	18.65
25	0.63	7.40	14.18	22.25
30	0.63	7.43	14.59	23.28

Table 3

TAX COST OF PERSONAL USE EXCEPTION WITH CPFVRMs

30-year mortgage with monthly payments

nominal interest = 4% + inflation

28% marginal tax rate

Yearly Inflation	4% Payout		6% Payout		8% Payout	
	Cost NPV	Initial Payment Ratio	Cost NPV	Initial Payment Ratio	Cost NPV	Initial Payment Ratio
	Percent					
0	0	100	0	125.58	0	153.70
2	0.01	79.63	0	100	0	122.38
3	0.64	71.76	0	90.11	0	110.29
4	2.22	65.06	0.29	81.71	0	100
5	4.56	59.33	1.63	74.52	0.01	91.22
6	7.48	54.40	3.76	68.32	0.87	83.61
7	10.87	50.13	6.44	62.96	2.70	77.05
8	14.69	46.41	9.56	58.29	5.10	71.34
10	23.45	40.29	16.86	50.60	11.06	61.93

The initial payment ratio is the ratio of the first payment on the CPFVRM to the first payment on the corresponding FRM, expressed as a percentage.

Table 4

TAX COST OF PERSONAL USE EXCEPTION WITH GPMs

30-year GPM
with monthly payments
28% marginal tax rate

Cost as percentage increase in after-tax NPV

GPM Plan	I	II	III	IV	V
Pymt Inc. (%)	2.5	5	7.5	2	3
Grad. Prd. (yrs.)	5	5	5	10	10
Annual Interest Rate					
	Percent				
4	0	0	0	0	0
6	0	0	0.03	0	0
7	0	0.02	0.09	0	0.04
8	0	0.06	0.18	0.01	0.13
9	0.01	0.13	0.31	0.07	0.28
10	0.03	0.22	0.47	0.16	0.47
11	0.07	0.33	0.66	0.29	0.68
12	0.12	0.47	0.88	0.43	0.91
14	0.26	0.79	1.36	0.74	1.39

Table 5

**TAX COST OF PERSONAL USE EXCEPTION WITH PLAMs
WHEN MORTGAGE REFINANCING PERMITTED**

30-year PLAM at 4%
with monthly payments
28% marginal tax rate
accrued OID paid using second mortgage
first mortgage loan of \$300,000

Real After-Tax Increase in Cost of Payments

Yearly Inflation	No Refinancing	No Limit on Home Equity Indebtedness	\$100,000 Limit on Home Equity Indebtedness
Percent			
0	0	0	0
2	0.08	0	0
3	1.39	0.22	0.22
4	3.84	0.93	0.93
5	7.14	2.17	2.17
6	11.14	3.90	3.90
7	15.75	6.12	11.27
8	20.91	8.78	16.88
10	32.79	15.41	29.54

