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Author(s): Michael S. Knoll

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A Tax-induced Clientele for Index-linked Bonds: A Comment

MICHAEL S. KNOLL*

ABSTRACT

This comment describes the U.S. federal income tax treatment of corporate bonds that are indexed for inflation and argues that these bonds do not have a tax-induced clientele in the United States.

IN AN ARTICLE THAT appeared in the December 1988 edition of *The Journal of Finance*, Shalom Hochman and Oded Palmon (hereinafter H&P) (1988) conclude that the absence of inflation index-linked, or I-L bonds, cannot be attributed to tax considerations due to a tax-induced clientele for I-L bonds. Last year, subsequent to the publication of the H&P article, the Treasury Department issued a new proposed and temporary regulation, Section 1.1275-6 (1990), which describes how inflation-indexed home mortgages will be taxed. This new regulation subjects inflation-indexed mortgages to a tax treatment different than the one H&P postulate for I-L bonds. If I-L bonds are also taxed according to the principles contained in this regulation, which seems likely, there will not be a tax-induced clientele for these bonds.¹ Instead, tax considerations will neither favor nor disfavor I-L bonds when compared with nominal bonds.

These points can be illustrated using the steady-state, two-period framework of H&P with alternative \$1 investments in an I-L and a nominal bond. For simplicity, assume that each period is a tax year, and let r be the stated annual rate of interest on a nominal bond, r the stated annual real rate of interest on an I-L bond, and π the annual inflation rate, which is constant and fully anticipated. Also, let t_p be the personal tax rate and t_c the

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¹ The newly released regulation, by its own terms, directly applies only to price-level adjusted mortgages or PLAMs that are secured on owner-occupied residential property. A PLAM is a mortgage whose periodic payments are structured to be constant in purchasing power (Woodward and Crowe (1988)). The Treasury Department is expected to subject I-L bonds to the same tax treatment as PLAMs because I-L bonds are in substance like PLAMs, and a basic tenet of U.S. federal tax law is that transactions should be taxed in accordance with their economic substance.

corporate tax rate on ordinary income.² The issuer of a \$1 nominal bond with a 2-year term will pay the holder \$ R stated interest at the end of year 1, and \$ R stated interest and \$1 return of principal at the end of year 2. The issuer of a \$1 I-L bond with a 2-year term will pay the holder stated interest of \$ $r(1 + \pi)$ at the end of year 1 and \$ $r(1 + \pi)^2$ at the end of year 2. Upon redemption at $t = 2$, the issuer will also pay the holder \$ $(1 + \pi)^2$ as a repayment of principal with compensation for inflation.

The tax treatment of the issuer and holder of a nominal bond is clear. The entire stated interest paid each year is subject to tax as interest. The Tax Code requires that the holder report this interest as ordinary income, and it permits the issuer a deduction for the interest, subject to the usual limitations on the interest deduction. Applying these principles to the \$1 investment in nominal bonds, and assuming that the after-tax interest received by the holder at the end of the first year is reinvested in nominal bonds, the terminal value of such an investment is given by the expression:

$$\$[1 + (1 - t_p)R]^2. \quad (1)$$

According to H&P, there are two important differences in the tax treatment of nominal and I-L bonds. First, the return on a nominal bond held to maturity will consist of interest only, whereas the return on an I-L bond held to maturity will consist of a combination of interest and capital gains. Second, the compensation for the inflation-induced erosion of the principal of a nominal bond is taxed every period as ordinary income, whereas the corresponding compensation on an I-L bond is taxed as capital gains when the bond is sold or retired. Thus, H&P claim that the holder and issuer of an I-L bond will include and deduct the stated interest payments as they are made, and upon redemption the holder will report the inflation compensation as a capital gain and the issuer will have a nondeductible expense of this same amount (H&P, p. 1257).

I-L bonds, however, will not be taxed as H&P suggest. Instead, the entire return on an I-L bond held to maturity will be treated as interest by both holder and issuer, and the inflation compensation will accrue for tax purposes as inflation occurs. This is true for both holder and issuer and regardless of whether a taxpayer uses the cash or accrual method of accounting.³ The regulation implies that regardless of how the payments are labeled by the parties, an I-L bond will accrue interest at a variable rate that changes yearly. The variable rate on an I-L bond is the sum of the real interest rate (r), the inflation adjustment (π), and the product of the two ($r\pi$). Thus, the rate that is used to impute interest for tax purposes on an I-L bond is

² The U.S. corporate income tax is a flat 34% for all corporations with incomes above \$335,000. The highest federal marginal tax rate on individual incomes is 31%. Foreigners, who would be likely to hold many of these instruments, are not taxed by the federal government on interest received from U.S. sources.

³ The Tax Code generally places all taxpayers, both cash and accrual method, on the accrual method with respect to the payment and receipt of interest (Lokken (1986, p. 20)).

$r + r\pi + \pi$. H&P, therefore, underestimate the rate at which interest accrues for tax purposes on an I-L bond by the inflation adjustment, π , which leads them to conclude that the parties can defer income and convert interest into capital gain by issuing an I-L bond instead of a nominal bond.⁴

Applying the principles contained in the new regulation to a \$1 investment in I-L bonds at the beginning of year 1, the borrower will deduct and the lender will include $\$(r + r\pi + \pi)$ interest in year 1 and $\$(1 + \pi)(r + r\pi + \pi)$ interest in year 2. It can be shown that the terminal value of a \$1 investment in I-L bonds, assuming that the after-tax interest is reinvested in I-L bonds, is:

$$\$[1 + (1 - t_p)(r + r\pi + \pi)]^2. \quad (2)$$

Substituting t_c for t_p in equations (1) and (2) gives the cost to the corporation of issuing either a \$1 nominal or a \$1 I-L bond, when the interest is reinvested. The corporation will be indifferent between issuing the two kinds of debt if and only if the total interest on the two kinds of debt are equal, that is, $r + r\pi + \pi = R$.⁵ In this case, investors will also be indifferent between the two kinds of debt. If $r + r\pi + \pi > R$, all investors will have a tax-induced preference for I-L bonds but all issuers will have a tax-induced preference for nominal bonds, and conversely. Equilibrium exists only when $r + r\pi + \pi = R$, and when this condition holds all issuers and all investors, regardless of their own tax rates, are indifferent between nominal and I-L bonds.

It follows that there is not a tax-induced clientele for I-L bonds. This is because an issuer and a holder cannot reduce the present value of their combined taxes by issuing an I-L bond instead of a nominal bond, regardless of their tax brackets. It also follows that the absence of I-L bonds cannot be attributed to tax reasons. This is because the present value of the combined tax liability of an issuer and a holder would not be any higher if the borrower issued an I-L bond instead of a nominal bond.⁶ Thus, H&P's conclusion, that the absence of I-L bonds from the U.S. capital market cannot be explained by an unfavorable tax treatment, still stands. This conclusion, however, does not rest on H&P's conclusion, that there is a tax-induced clientele for I-L bonds. Instead, it rests on the conclusion that, compared with a nominal bond, an I-L bond neither defers income for tax purposes nor converts ordinary income into capital gains.

⁴ The tax treatment described above is not equivalent to the treatment posited in footnote 8 of H&P's article. In that footnote, H&P argue that there would be a tax-induced clientele for I-L bonds if the inflation compensation were taxed as interest but not realized until maturity.

⁵ This result differs from H&P's conclusion (see their equation 4) that in a steady-state equilibrium the stated interest on a nominal bond will exceed the total interest on an I-L bond.

⁶ Although the absence of I-L bonds cannot be attributed to tax considerations, tax considerations will discourage individuals from using PLAMs for home mortgages. Section 1275(b)

requires cash-method taxpayers (essentially individuals) to deduct, if allowable, interest on loans incurred to purchase or carry personal use property (which includes owner-occupied residences) when the interest is paid. Because lenders must include the interest as it accrues, lenders' taxable inclusions of income will run ahead of borrowers' tax deductions when inflation is more than minimal so unpaid interest accrues on a PLAM. This will impose a tax cost from using a PLAM relative to other mortgages that do not accrue unpaid interest. This tax cost exists even if the lender's marginal tax rate is effectively zero (e.g., it is a pension fund or a foreigner), because the present value of the borrower's deductions is reduced.

An anonymous referee pointed out that although tax considerations will discourage most homeowners from using PLAMs, tax considerations might actually encourage a few homeowners to use PLAMs. This possibility arises because the negative amortization on a PLAM is treated along with the principal as acquisition indebtedness (the interest on which is deductible) up to \$1 million; in contrast, secondary mortgages are treated as home equity indebtedness, which has a \$100,000 limit. Accordingly, a home owner who is considering taking a traditional mortgage that does not accrue unpaid interest and later intends to take a large secondary mortgage, which would produce a lot of nondeductible interest, could possibly reduce his or her taxes by taking a PLAM instead. Such a possibility arises only if the secondary mortgage is in excess of \$100,000 and the tax benefit from the preferential characterization of the negative amortization with the PLAM exceeds the tax cost of the deferral of the deductions.

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