THE IMPACT OF TAXATION ON THE CURRENCY-OF-
DENomination DECISION FOR LONG-TERM FOREIGN
BORROWING AND LENDING

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Abstract. This paper shows the distorting effects of different tax regulations on the effective absolute and relative costs of long-term borrowing in different currencies. In particular, if expected borrowing costs are equal before tax, then the process of minimizing expected after-tax borrowing costs generally involves borrowing the weakest currency.

International interest arbitrage normally ensures that the nominal yield differential between debt denominated in different currencies equals the expected rate of change of the exchange rate. ¹ This is formalized in the International Fisher Effect (IFE) which says that expected yields, adjusted for anticipated exchange rate changes, should be the same in all currencies. ² In the absence of taxes, therefore, corporations willing to base decisions solely on expected costs should be indifferent between issuing debt denominated in one currency or another. ³ The presence of taxes, however, distorts the interest arbitrage relationship, because interest rates on fixed-rate debt with a maturity extending beyond a single period cannot be at parity both before tax and after tax.

This paper discusses some of the current alternative tax treatments of exchange gains and losses on foreign currency loans and shows how these tax effects can be integrated into the computation of effective after-tax differences in the costs of borrowing (and returns on investing) in different currencies and countries. The analysis is then extended to determine the impact of taxation on the decision to prepay foreign currency-denominated debt.

The most interesting conclusion is that if arbitrage equilibrates real yields before tax (that is, the IFE holds pretax), then the classic corporation prescription—to issue weak currency debt—is correct on an after-tax basis from the standpoint of minimizing expected financing costs. A possible exception would be the case of a firm operating under the laws of a country such as Sweden which permits exchange losses on foreign currency debt to be recognized immediately for tax purposes even though not yet actually realized. The paper begins by discussing the relationship between interest parity and taxes. Throughout the remainder of this paper, the terms “interest rate parity” and “the International Fisher Effect” will be used interchangeably.

This paper shows that the interest rate parity relationship depends on the tax status of the marginal market participant. As such, it would be preferable to have a complete model of market equilibrium. This would require taking into account the relevant tax laws in each country and the funding requirements of all potential borrowers and lenders, along with their individual tax positions and the arbitrage possibilities available to them. The result of such an analysis would be to determine the marginal tax rate implicit in the interest parity relationship. The

INTRODUCTION

INTEREST RATE PARITY AND TAXATION

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scope of this paper, however, is more limited. It takes interest rates as exogenous and then discusses their implications for borrowers and lenders whose marginal tax rates differ from the tax rate implicit in the actual parity relationship.

In general, the parity relationship will be determinate only if there is identical tax treatment of all borrowers and lenders in all countries. Because tax rates and policies differ among countries and because tax status differs among participants, however, the implied tax rate in the parity relationship is theoretically indeterminate. The International Fisher Effect will hold before tax (an implicit tax rate of zero) only if the market is dominated by tax-exempt institutions (such as, pension funds, governments, or the World Bank) or by those able to avoid taxes by skillful arbitrage activities. Given the important role played by multinational corporations (MNCs) in the world’s financial markets, however, it is conceivable that the implied tax rate will be greater than zero. This is similar to the case of U.S. tax-exempt bonds that carry lower interest rates than taxable bonds of comparable risk and maturity.

The limited empirical evidence available [for example, Aliber and Stickney 1975] suggests that the IFE holds pretax. This is probably due either to the low power of the tests used or to the dominant role played by those institutions with an effective marginal tax rate of zero.

Regardless of the tax rate implicit in the interest parity relationship, borrowers and lenders in specific countries with specific tax rules may be biased towards domestic or foreign currency-denominated loans. The purpose of this paper is to explore these regulations and resulting biases, beginning in the next section with a one-period loan in which interest and principal are repaid at the end of the period.

### Short-Term Yield Differentials

Assume that a firm operating overseas (either a local company or the foreign subsidiary of an MNC) requires short-term funding. The firm is trying to decide whether to borrow the local currency at an interest rate of \( r_i \) or Eurodollars at \( r_{us} \). If the local corporate income tax rate is \( t \) and all foreign exchange losses (gains) are tax deductible (taxable) at this rate, then the company is indifferent between borrowing dollars or local currency (LC) if the after-tax dollar cost of borrowing Eurodollars, \( r_{us}(1 - t) - dt \), is just equal to the effective after-tax dollar cost of borrowing one dollar’s worth of the local currency, \( r_i(1 - d) (1 - t) - d \), where \( d \) is the expected local currency devaluation (revaluation for \( d < 0 \)) relative to the dollar.^[4][See Shapiro 1975 for a fuller explanation of these formulas.] This equality is satisfied when \( r_{us} = r_i(1 - d) - d \). In this case, the borrowing decision is independent of the tax rate. Similar formulas and conclusions hold with regard to lending in different currencies.

If exchange losses on the principal of a foreign currency debt are not tax deductible, however, as in England, then the effective after-tax dollar cost of borrowing Eurodollars equals \( r_{us}(1 - t) \), and the point at which effective interest rates are equal occurs when

\[
r_{us} = r_i(1 - d) - \frac{d}{1 - t}.
\]

Taxes do influence the borrowing decision here. The net effect is to make it more advantageous to borrow sterling or whatever the local currency happens to be. For example, suppose that \( r_{us} = .14 \), \( r_i = .20 \), \( d = .05 \), and \( t = .5 \). Then before-tax expected dollar yields equilibrate because \( .14 = .2(1 - .05) - .05 \). With the introduction of taxes, however, the dollar interest rate would have to decline to .09 for after-tax rates to be equal. In other words, if a firm were indifferent before tax between borrowing sterling at 20 percent or dollars at 14 percent, it no longer would be indifferent after tax.

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