TAXATION OF FOREIGN EXCHANGE GAINS AND LOSSES*

by

Jenny Bourne Wahl
U.S. Treasury Department

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Office of Tax Analysis
U.S. Treasury Department, Room 4040
Washington, D.C. 20220

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I. INTRODUCTION

The Tax Reform Act of 1986 (TRA) substantially changed the taxation of foreign exchange gains and losses (FEGL). The principal objective underlying the new tax law on FEGL is to encourage the recognition of income on an economic rather than a tax-induced basis. This paper evaluates the extent to which that objective is reached. It begins by developing an optimal tax rule for FEGL in a simplified world, from the standpoint of worldwide efficiency.[1] The optimal rule is recast to conform with existing U.S. tax law on other types of gains and losses. The reformulated rule, which treats expected and unexpected FEGL differently, departs from optimal taxation. As a result, capital may be misallocated. Moreover, taxpayers with the same realized income may not pay the same taxes and the fisc may be whipsawed. The reformulated rule is then compared to the TRA legislation and to pre-TRA law. The TRA rule does not generally adopt optimal taxation, nor does it implement the bifurcated rule consistent with existing law, primarily for administrative reasons. TRA's asymmetric treatment of branches and subsidiaries may be particularly distortive. The table at the end of the appendix summarizes the optimal tax rule, the reformulated rule, and the U.S. tax rules for FEGL before and after TRA.

U.S. taxpayers experience FEGL because the dollar values of foreign-currency-denominated holdings fluctuate. These holdings could represent a direct foreign-currency transaction or a U.S. company's interest in a foreign affiliate. Section II describes the no-tax equilibrium condition for taxpayers with multicurrency holdings. Section III develops an optimal tax rule for determining the timing and amount of FEGL. Section IV refashions the optimal rule in light of established U.S. tax law. Emphasis is given to the policy of primary taxing power over domestic income, limitations on carryover rules, accrual taxation of certain gains and losses but realization-based taxation of other gains and losses, and tax deferral for foreign subsidiary earnings. Section V discusses U.S. law concerning FEGL taxation, and section VI summarizes the analysis.

II. EQUILIBRIUM UNDER NO TAXES

The following notation will be used throughout the paper:

π_{t+1} = the expected inflation rate from time t to time t+1,
i_{t+1} = the one-period before-tax nominal interest rate at time t,
r_{t+1} = the one-period expected before-tax real interest rate at time t,
T_{t+1} = the tax rate,
S_t = the spot exchange rate at time t (dollars/foreign currency),
S_{t+1} = the spot exchange rate for time t+1 expected at time t.

For the first four variables, those with an asterisk denote foreign variables, those without denote domestic variables. For example, π^*_{t+1} is the expected foreign inflation rate from time t to time t+1. If rates are assumed to be constant over time, no subscript appears.

In a no-tax world, three conditions are assumed to hold ex ante. Relative purchasing power parity (PPP) equates the expected rate of change in the exchange rate between two currencies to the difference between expected national inflation rates:

$$\ln(S_{t+1}/S_t) = \pi_{t+1} - \pi^*_{t+1}. \tag{1}$$

The currencies of countries with inflation expected to exceed U.S. inflation are anticipated to depreciate against the dollar ("depreciating currencies"), and currencies of countries with inflation expected to be smaller than U.S. inflation are anticipated to appreciate against the dollar ("appreciating currencies"). Uncovered interest rate parity (UIP) equates the nominal interest rate differential between investments denominated in different currencies to the expected rate of change in the exchange rate between the currencies:[2]

$$i_{t+1} - i^*_{t+1} = \ln(S_{t+1}/S_t). \tag{2}$$

The Fisher (1930) equations equate the expected real return on an investment to the difference between the nominal return and the expected inflation rate.

$$i_{t+1} = r_{t+1} + \pi_{t+1} \tag{3a}$$

$$i^*_{t+1} = r^*_{t+1} + \pi^*_{t+1} \tag{3b}$$

In a no-tax world a U.S. taxpayer can invest domestically or abroad, either directly or through an affiliate. By combining (1) and (2) and substituting (3a) and (3b), equation (4) results:

$$r^*_{t+1} = r_{t+1}. \tag{4}$$

Equilibrium condition (4) implies equality of expected real returns for similar investments denominated in different currencies. Therefore, worldwide efficiency is attained.

Suppose income taxes are introduced. For simplicity, assume there is a single type of investment and a single representative corporate taxpayer.[3] The taxpayer will adjust investments to equalize expected after-tax real returns. To fulfill the worldwide efficiency condition, taxes must be imposed so that the equilibrium expected before-tax real returns to investments denominated in different currencies are equal, i.e., so (4) holds.

III. OPTIMAL TAXATION

A. Anticipated FEGL

1. Nominal versus Real Income Taxation

Both π and π^* are likely to be nonzero; if $\pi > \pi^*$ the foreign currency is expected to appreciate against the dollar, and if $\pi < \pi^*$ the foreign currency is expected to depreciate against the dollar. To economize on notation without loss of generality, suppose that the U.S. has no expected inflation ($\pi_{t+n} = 0$ for all $n \geq 0$). This implies that dollar and real income are the same. For this section, suppose also that only the U.S. imposes tax ($T^*_{t+n} = 0$ for all $n \geq 0$). Assuming nominal income is taxed at a constant rate of T, equation (2) is rewritten as:

$$i_{t+1}(1-T) - i^*_{t+1}(1-T) = \ln(S_{t+1}/S_t). \tag{2*}$$

Equilibrium is therefore represented by equation (4*):

$$r^*_{t+1} = r_{t+1} + \frac{T}{1-T}\pi^*_{t+1}. \tag{4*}$$

If taxes are imposed in this fashion, the equilibrium expected before-tax real return is greater for a depreciating-currency investment and less for an appreciating-currency investment than the equilibrium expected before-tax real return for a dollar investment. Therefore, equilibrium depreciating-currency investment will be less than optimal and appreciating-currency investment greater than optimal. This result is directly related to the taxation of nominal income. If only real income were taxed, equilibrium condition (4) would hold and capital would be efficiently allocated.

2. Realization versus Accrual Taxation

Equations (2*) and (4*) implicitly assume that expected FEGL are never recognized. For instance, if $i^* > i$ because $\pi^* > 0$, income from a depreciating-foreign-currency-denominated asset with a given original dollar basis appears to pay greater tax each period than income from a dollar asset with the same dollar basis. However, (2*) and (4*) omit the potential tax consequences at the end of the asset-holding period.

Under U.S. tax law, the extreme case represented in the previous section is unlikely to occur. Rather, recognition of expected FEGL might be deferred until the close of a transaction or the liquidation of an affiliate, that is, until realization. If so, nominal

income would be taxed in interim periods and efficiency condition (4) could be undermined, but (4*) would hold with equality only for infinitely lived foreign operations. If expected FEGL were instead accrued for tax purposes, only real income[4] would be taxed and efficiency condition (4) would hold. The following paragraphs derive equilibrium conditions for both infinitely and finite-lived foreign operations under accrual- and realization-based taxation of FEGL.

Suppose nominal interest rates, the tax rate, and the inflation rate π^* are constant, and $\pi=0$. The taxpayer is assumed to invest \$1 initially when $S_0=1$ and to reinvest all income into the business until period N, when the operation is liquidated. Equation (5) shows the expected after-tax real present value of domestic operations:

$$\int_0^N e^{i(1-T)\tau} e^{-r(1-T)\tau}\, d\tau. \tag{5}$$

If expected FEGL were recognized on an accrual basis, equation (6) would express the expected after-tax real present value of foreign operations:

$$\int_0^N e^{(i^*-\pi^*)(1-T)\tau}\, e^{-r(1-T)\tau}\, d\tau. \tag{6}$$

Equating (5) and (6) yields an equilibrium condition in which $r=r^*$, showing that accrual taxation is efficient.

If expected FEGL were recognized on a realization basis, (6) would be rewritten as:

$$\int_0^N e^{(i^*(1-T)-\pi^*)\tau} e^{-r(1-T)\tau}\, d\tau - Te^{-r(1-T)N} \int_0^N e^{-\pi^*\tau}\, d\tau, \tag{7}$$

where the second term represents lump-sum taxation of FEGL at the termination of operations. Intuitively, one would expect the second term in (7) to go to zero as N goes to infinity.[5] Equating (5) and (7) as N goes to infinity therefore produces equilibrium condition (4*). If N is finite, however, equating (5) and (7) yields the following equilibrium condition:

$$e^{(i^*(1-T)-\pi^*)N} e^{-r(1-T)N} - 1 - Te^{-r(1-T)N}(e^{-\pi^*N} - 1) = e^{i(1-T)N} e^{-r(1-T)N} - 1. \tag{8}$$

Simplifying,

$$e^{(r^*(1-T)-T\pi^*)N} + T(1 - e^{-\pi^*N}) = e^{r(1-T)N}. \tag{9}$$

The second term on the left-hand side is negative if $\pi^*<0$ and positive if $\pi^*>0$, implying that:

$$r^* \gtrless r + \frac{T}{1-T}\pi^* \qquad \text{as } \pi^* \left(\lessgtr 0. \right. \tag{10}$$

Equation (10) simply says that operations in an appreciating-currency country would have to earn a larger real rate of return if FEG were taxed in the future than if they were never taxed. Conversely, depreciating-currency operations could earn a smaller real return if FEL

reduced taxable income in the future rather than never reducing taxable income. However, r^* would remain lower than r for appreciating-currency operations (and higher than r for depreciating-currency operations) as long as $T>0$ and tax were applied to realized rather than accrued income. Therefore, efficiency condition (4) is violated under realization-based taxation whether foreign-currency operations are perpetual or not.

3. Transactions

The preceding analysis can be applied to direct transactions. Borrowers and lenders can choose the currency in which a transaction is denominated. Interest rates, expected exchange rates, and taxes codetermine the equilibrium quantity of a given currency used for transactions, and UIP implies that expected FEGL are similar to interest income and expense. For example, expected foreign exchange gains (FEG) on the principal of an outstanding foreign-currency-denominated loan compensate a lender for charging an interest rate lower than the rate on a similar dollar-denominated loan.

Suppose a U.S. taxpayer can lend either a dollar or a unit of foreign currency for two years when $S_0=1$. Let $i=r=.15$, $T=.5$, and $\pi^*=-.05$. The equilibrium expected after-tax present value of \$1 equals \$1, so the following holds[6]:

$$\int_0^2 e^{i(1-T)\tau} e^{-r(1-T)\tau}\, d\tau = e^{.15(.5)2-.15(.5)2} - 1 = 0.$$

If FEGL are accrued, the taxpayer is indifferent between lending dollars and lending foreign currency if the following holds:

$$\int_0^2 e^{(i^*-\pi^*)(1-T)\tau} e^{-r(1-T)\tau}\, d\tau = e^{(i^*+.05)(.5)2-.15(.5)2} - 1 = 0.$$

The solution is $i^*=.10$, which implies that $r^*=.15$ and worldwide efficiency is attained. Because $\pi^*<0$, i^* is less than i, showing the compensating effect of expected FEG.

If FEGL are taxed when realized, the taxpayer will be indifferent between dollar- and foreign-currency-denominated loans if the following holds:

$$\int_0^2 e^{(i^*(1-T)-\pi^*)\tau} e^{-r(1-T)\tau}\, d\tau - Te^{-r(1-T)2} \int_0^2 e^{-\pi^*\tau}\, d\tau$$

$$= e^{(i^*(.5)+.05)2-.15(5)2} - 1 - .5e^{-.15(.5)2}(e^{(.05)2} - 1) = 0.$$

The solution is $i^*\simeq.0943$, which implies that $r^*<r$. Therefore, if stated interest is the basis for taxation and FEG are recognized when realized, worldwide efficiency will be violated and the equilibrium amount of lending in appreciating currencies (i.e., those for which $\pi^*<0$) by U.S. taxpayers will be greater than optimal.

By the same token, if stated interest i^* is the basis for tax deductions, equilibrium borrowing in depreciating currencies by U.S. taxpayers will be greater than optimal. Expected foreign exchange losses (FEL) on the borrowed principal should reduce the stated

interest payments before a deduction is allowed if worldwide efficiency is to hold. If recognition of FEL is deferred until the close of a transaction, however, inflation is permitted to increase deductions in interim years. Because this enables borrowers to defer income recognition, they will therefore desire greater-than-optimal amounts of depreciating-currency loans.

4. Affiliates

The optimal tax rule for foreign-currency transactions can readily be extended to foreign affiliate investments. If a U.S. parent invests in a domestic affiliate, the discounted expected after-tax change in real net worth is:

$$\int_0^N e^{i(1-T)\tau} e^{-r(1-T)\tau}\, d\tau. \tag{11}$$

If the U.S. parent invests in a foreign affiliate, it has generally been allowed to use a net-worth or a profit-loss method of income recognition. Under the net-worth method, the affiliate's dollar net worth is calculated at the end of a period, and the increment over the last period's dollar net worth is taxed. Under the profit-loss method, annual profit (translated into dollars) is taxed but recognition of FEGL is deferred until affiliate investments (contributed capital and retained earnings) are repatriated to the parent.

Suppose a U.S. company contributes \$1 to a foreign affiliate when $S_0 = 1$, assuming π^*, i^*, i, and T constant. Suppose the affiliate retains earnings and contributed capital until period N. If income earned through a foreign affiliate is taxed on the basis of increased net worth (net-worth method), FEGL are recognized on an accrual basis.[7] Equation (12) shows the discounted expected after-tax change in real net worth under this method:

$$\int_0^N e^{(i^*-\pi^*)(1-T)\tau}\, e^{-r(1-T)\tau}\, d\tau. \tag{12}$$

If the income basis is instead the stated affiliate profit translated into dollars (profit-loss method), FEGL are taxed upon realization. The discounted expected after-tax change in real net worth equals:

$$\int_0^N e^{(i^*(1-T)-\pi^*)\tau} e^{-r(1-T)\tau}\, d\tau - Te^{-r(1-T)N} \int_0^N e^{-\pi^*\tau}\, d\tau. \tag{13}$$

Clearly, (11) corresponds to (5), (12) to (6), and (13) to (7). Therefore. if the net-worth method is used for foreign affiliates, (11) and (12) should be equal at the margin so $r=r^*$ and worldwide efficiency is attained. If the profit-loss method applies. (11) and (13) should be equal at the margin. As a result, (9) represents equilibrium so $r^*<r$ if $\pi^*<0$ and $r^*>r$ if $\pi^*>0$. The equilibrium before-tax real return expected for new investments will be smaller in appreciating-currency countries and greater in depreciating-currency countries than the before-tax real return expected for U.S. investments. Accordingly, investment will be greater than optimal in deflationary countries and smaller than optimal in inflationary countries if the profit-loss method is used.

B. Unanticipated FEGL

Accrual of unanticipated FEGL is irrelevant for efficiency, because economic decisions are based on expectations. However, unanticipated FEGL should be accrued under optimal taxation. Otherwise, neutrality among taxpayers with the same income may not be preserved, and the fisc will be whipsawed because taxpayers can choose the timing of income recognition. (See section IV.B for more detail.) Therefore, taxable FEGL on a U.S. taxpayer's investment, loan, or borrowing are calculated by using the realized exchange rate rather than the expected exchange rate under optimal taxation. Unanticipated FEGL equal the difference between actual and expected FEGL.

IV. FEGL TAXATION CONSISTENT WITH THE RESTRICTIONS OF EXISTING U.S. TAX LAW

Thus far, the optimal tax rule for FEGL has ignored existing law. Four areas of U.S. tax law have an important influence on the equilibrium conditions. First, the U.S. claims primary taxing power over U.S. income. Second, taxpayers must carry over net losses from a given period to offset income in earlier or later periods, carryovers do not accrue interest, and maximum carryover periods are limited. Third, anticipated gains and losses are accrued under original issue discount (OID) rules but other anticipated and most unanticipated gains and losses are recognized only when realized. Fourth, U.S. taxes are deferred on income earned through foreign subsidiaries until dividends are repatriated to the U.S. taxpayers.[8] The first restriction is an income sourcing issue, discussed in section A. The latter three are income timing issues, discussed in section B. The following paragraphs show that, although the optimal rule can be reformulated to be consistent with existing law, the reformulated rule may violate the efficiency condition, lead to non-neutrality among taxpayers, and allow taxpayers to choose the timing of income recognition, thus giving rise to potential whipsaw of the fisc.

A. Source of Income or Expense

1. The Foreign Tax Credit

The U.S. taxes the worldwide income of U.S. taxpayers but permits a credit for foreign income taxes imposed on foreign-source taxable income. The amount of taxable income by source is computed by first determining the sources of gross income items, then allocating expenses to domestic- and foreign-source income. The taxpayer is generally granted a foreign tax credit only up to the point where the average foreign tax rate on foreign-source income equals the U.S. tax rate.[9] This "foreign tax credit limitation" equals

$$\frac{\text{(foreign-source taxable income)}}{\text{(worldwide taxable income)}} \times \text{pre-credit U.S. tax liability on worldwide income.}^{10} \qquad (14)$$

The limitation ensures that the foreign tax credit offsets U.S. tax on foreign-source income

only. If the average foreign tax rate were higher than the U.S. rate and the U.S. had no limitation, a taxpayer could reduce U.S. tax on domestic-source income.

Thus far, foreign taxes have been assumed to be zero. Under the credit system, the total tax rate on domestic-source income is T and the total tax rate on foreign-source income is the greater of T or T*, abstracting from carryovers. As long as $T>T^*$, the analysis in previous sections could apply and worldwide efficient capital allocation could be achieved if anticipated FEGL were accrued.

If the U.S. reserves primary taxing power over U.S.-source income, however, U.S. taxpayers will not want to allocate capital efficiently if the average foreign tax rate always exceeds the U.S. rate. (If the average foreign rate fluctuated above and below the U.S. rate, the taxpayer would have some leeway because foreign tax credits can be carried back two years and forward five.) Given this constraint, the source of income and expense items can clearly be important. If the foreign tax rate exceeds the U.S. rate, the U.S. taxpayer is said to have "excess foreign tax credits." Example one of the appendix shows cases in which the taxpayer has foreign tax credits exactly offsetting U.S. taxes, has excess foreign tax credits, and has a shortage of foreign tax credits. Given worldwide income and foreign taxes, if the taxpayer could transform $1 of domestic-source income into foreign-source income (thus increasing the foreign tax credit limitation), it could reduce net U.S. tax liability by T. The same result follows if the taxpayer could transform $1 of foreign-allocated expense into $1 of domestic-allocated expense. The source rules for FEGL must therefore be carefully written so taxpayers are not induced to reallocate investments for tax reasons.

2. Source of FEGL

a. Anticipated FEGL

For purposes of this analysis, existing interest source rules are assumed to be correct. Interest income received from foreigners is generally foreign-source; interest expense is allocated ratably to foreign and domestic sources on an asset basis.[11] Because anticipated FEGL are the same as interest, the reformulated rule nets them against stated interest income or expense and sources the net amount according to interest-sourcing rules. If anticipated FEGL were sourced differently than interest, the taxpayer might favor certain currencies for transactions and investments. For instance, if anticipated FEGL were domestic-source and the taxpayer had excess foreign tax credits, it might be induced to lend depreciating currencies (rather than dollars) to foreigners in order to keep its foreign tax credit limitation artificially high. Because the lender expects FEL, it would charge a higher interest rate on the depreciating-currency loan than on a dollar loan. The inflated interest income would be foreign-source while the FEL would be an expense allocated to domestic sources. Therefore, the foreign tax credit limitation would be artificially high and more foreign taxes could be credited than if anticipated FEL were first netted against interest income.

For foreign-currency-denominated transactions, the expected net yield will be positive, so lenders will expect net interest income ($i^*-\pi^*$) and their anticipated FEGL would be foreign-source under the reformulated rule. Borrowers of foreign currency will expect net

interest expense ($i^*-\pi^*$), so their anticipated FEGL would be allocated to foreign and domestic sources. Foreign affiliate investments will presumably produce expected income so anticipated FEGL would be foreign-source in this case.

b. Unanticipated FEGL

Unanticipated FEGL are not like interest and therefore require different sourcing rules. Under UIP, unanticipated FEGL are random and should average out over time. Assuming that taxpayers have unlimited carryovers of foreign tax credits and net operating losses (NOLs), unanticipated FEGL could be sourced as all foreign or all domestic, as long as unanticipated gains and losses were treated symmetrically. If unanticipated FEGL were instead treated as interest, the taxpayer could use up excess foreign tax credits generated by non-FEGL foreign-source income and lower U.S. tax on U.S.-source income, which would defeat the purpose of the foreign tax credit limitation.

The following example clarifies this. Suppose domestic assets equal foreign assets so interest expense is allocated equally to foreign and domestic sources. Suppose an excess-credit taxpayer has unanticipated FEG of $20 on a loan in year one and unanticipated FEL of $20 on a borrowing in year two.[12] The table below shows that, if unanticipated FEGL were either foreign- or domestic-source, the taxpayer would pay the same cumulative tax as if no unanticipated FEGL occurred. However, if unanticipated FEGL were sourced as interest, cumulative tax would be lower.

Either domestic or foreign sourcing of all unanticipated FEGL would be acceptable if the value of carryovers were preserved and carryover periods were unlimited. A second-best solution would permit taxpayers to use the more generous domestic-based rules. (Domestic sourcing is also consistent with sourcing rules for other types of gains and losses under 26 USC 865.) If a taxpayer had large FEL in a given year that were sourced as foreign, it could generate excess foreign tax credits. The taxpayer would be likely to have compensatory FEG in another year, but the gain could occur outside of the carryover period and the excess foreign tax credits would expire. In theory, domestic sourcing could cause a similar problem if FEL were large enough to force worldwide income to be negative. However, most U.S. taxpayers have more U.S. than foreign income against which to balance a FEL. Also, NOL carryover rules are more generous than foreign tax credit rules, with carrybacks of three years and carryforwards of fifteen years for NOLs and carrybacks of two years and carryforwards of five years for foreign tax credits. Under domestic sourcing, therefore, U.S. taxpayers would be less likely to be in a loss-carryover position and would have a longer carryover period should a loss occur.

B. Timing of Recognition of FEGL

1. Anticipated versus Unanticipated FEGL

The calculation of anticipated FEGL on foreign-currency-denominated transactions is closely related to the calculation of original issue discount (OID), a procedure which determines interest income on dollar-denominated debt instruments sold at below-par prices (e.g., zero-coupon bonds). An OID transaction analogous to the lending example of section

CUMULATIVE TAX PAID UNDER VARIOUS SOURCING RULES FOR UNANTICIPATED FEGL
(dollars)

	No FEGL		Foreign Sourcing		Domestic Sourcing		Interest Sourcing	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Domestic income	100.0	100.0	100.0	100.0	120.0	80.0	100.0	90.0
Foreign income	100.0	100.0	120.0	80.0	100.0	100.0	120.0	90.0
Pre-credit tax	68.0	68.0	74.8	61.2	74.8	61.2	74.8	61.2
Foreign tax	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4
Foreign tax credit	34.0	34.0	37.4	27.2	34.0	34.0	37.4	30.6
U.S. tax	34.0	34.0	37.4	34.0	40.8	27.2	37.2	30.6
Total tax (before carryover)	71.4	71.4	74.8	71.4	78.2	64.6	74.8	68.0
Excess credits	3.4	3.4	(3.4)	10.2	3.4	3.4	(3.4)	6.8
Total tax (after carryover)	71.4	71.4	74.8	68.0	78.2	64.6	74.8	64.6
Cumulative tax	71.4	142.8	74.8	142.8	78.2	142.8	74.8	139.4

NOTE: Non-FEGL income is assumed to be $200 annually, split equally between foreign and domestic sources. Assets are also assumed to be equally split so interest expense is allocated evenly to foreign and domestic sources. The taxpayer has unanticipated FEG of $20 in year 1 and unanticipated FEL of $20 in year 2 for columns three through eight. The taxpayer incurs a 37.4 percent foreign tax rate on non-FEGL foreign-source income.

III.A.3 is the purchase of a two-year dollar bond with a face value of $\$e^{-\pi^*}$ ($\pi^*<0$), an issue price of \$1, and a stated interest rate of i^*. The OID rules in the U.S. tax code accrue the implicit gain on the principal, assigning a taxable yield of $i^*-\pi^*$. (See Garlock 1987.)

Although the OID rules tax anticipated gains and losses on dollar-denominated debt instruments on an accrual basis, other anticipated and unanticipated gains and losses on dollar-denominated assets and liabilities are not usually taxed until the property is sold or exchanged. The prime example of realization-based taxation is the treatment of capital gains. Economists generally agree that capital gains should be taxed on an accrual basis (see, for example, Musgrave and Musgrave 1984). Because capital gains are not accrued, however, accrual of unanticipated FEGL would treat dollar-denominated and foreign-currency-denominated assets and liabilities asymmetrically and could distort economic incentives.

The arguments for recognition upon realization are generally based on administrability, fairness, and stability objectives, among others. Accrual-based taxation may require frequent and complex calculations by the taxpayer. Moreover, carryover periods are limited, so an accrued unanticipated loss might expire before it could offset an unanticipated gain. With progressive tax rates, even if unanticipated FEGL offset over time the FEG might be taxed at a rate different than the rate at which the FEL is deducted. In addition, accrual of unanticipated gains and losses could cause large swings in tax bills and in the fisc. One can demonstrate this result by considering the tax treatment of a foreign affiliate, recalling that the alternatives are the net-worth method (which requires accrual) and the profit-loss method (which does not). Example two of the appendix shows that, even though total (undiscounted) U.S. tax liability is the same over time for both methods, the net-worth method causes great variability in annual U.S. taxes.

To conform with existing U.S. tax rules on timing of recognition, the optimal tax rule needs to be reformulated. The OID rules provide a precedent for taxing anticipated FEGL on an accrual basis. However, capital gains rules point to realization-based taxation of unanticipated FEGL.

The problems inherent in a recognition-upon-realization rule are potential lack of neutrality among taxpayers and whipsawing. Two taxpayers with the same income, one having anticipated gains and the other having unanticipated gains, will pay different taxes. The taxpayer's discretion over the timing of recognition of unanticipated gains and losses can also lead to whipsawing of the fisc. Stiglitz (1981) showed the whipsawing problem for capital gains, and a similar argument can be made for FEGL. Suppose unanticipated FEGL are sourced as foreign. If a taxpayer had unanticipated FEG on an assets (either from a direct transaction or held through affiliates) and also had excess foreign tax credits on other foreign-source income, it could recognize the FEG by selling the asset. Because FEG are not taxed abroad, foreign taxes would not change. However, the foreign tax credit limitation would increase, enabling the taxpayer to use up excess foreign tax credits against the untaxed FEG. If excess foreign tax credits counterbalanced pre-credit U.S. tax liability on the FEG, the taxpayer could recognize the FEG free of tax. It could then purchase a similar set of assets to replace the sold asset. (Wash sale rules could prevent purchase of a single similar asset.) Conversely, suppose FEGL are sourced domestically. A taxpayer could recognize unanticipated FEL and lower U.S. tax on U.S.-source income. It could then purchase a replacement set of assets.

2. Deferral of Taxation on Income Earned Through Foreign Subsidiaries

Although branch earnings are included annually in the consolidated income of the branch's U.S. parent, subsidiary earnings are generally included only when distributed as dividends. The reasoning that has been used is that a branch is a part of the U.S. parent and therefore should be taxed like the parent, but a subsidiary is a sovereign entity and its earnings generally should not bear U.S. tax until in the hands of a U.S. taxpayer. When dividends are repatriated, a U.S. parent is entitled to an indirect or "deemed-paid" credit for foreign income taxes paid by the foreign subsidiary. The credit is based on the percentage of total profits repatriated and the parent's percentage of ownership. Although Hartman (1985) has shown that deferral is irrelevant for existing investment, it is important for new investment if foreign tax rates differ from U.S. tax rates. (Also see Newlon 1986.)

a. Dollar-Based Foreign Subsidiaries[13]

Deferral for a dollar-based foreign subsidiary leads to an equilibrium before-tax return abroad that is lower than the return in a no-tax regime if the foreign tax rate is lower than the U.S. rate and dividends are not repatriated every year. For example, if a wholly owned subsidiary repatriated contributed capital of $1 and all after-foreign-tax income at the end of its second year of operation, U.S. tax and the net repatriation amount would be calculated as follows (assuming the taxpayer has a shortage of foreign tax credits):[14]

Net income inclusion	$(1-T^*)[2i^* + i^{*2}(1-T^*)]$
Gross-up for foreign taxes	$T^*[2i^* + i^{*2}(1-T^*)]$
Gross income inclusion	$2i^* + i^{*2}(1-T^*)$
Pre-credit U.S. tax	$T[2i^* + i^{*2}(1-T^*)]$
Foreign tax credit	$T^*[2i^* + i^{*2}(1-T^*)]$
Net U.S. tax	$(T-T^*)[2i^* + i^{*2}(1-T^*)]$
Net repatriation amount (after-tax income and contributed capital)	$[1 + i^*(1-T)]^2 + (T-T^*)i^{*2}(1-T).$

Assuming that repatriation of earnings and contributed capital always occurs after two periods, r^* is given by the following equilibrium equation.[15] The second term reflects the effect of deferral.

$$[1 + r(1-T)]^2 = [1 + r^*(1-T)]^2 + r^{*2}(T-T^*)(1-T) \tag{15}$$

Clearly, $r^* > r$ as $T^* > T$ and $r^* < r$ as $T^* < T$. Therefore, deferral favors prospective dollar investment in low-tax countries in the form of subsidiaries and in high-tax countries in the form of branches.

b. Foreign-Currency-Based Foreign Subsidiaries

The optimal timing rule would accrue all FEGL on subsidiary investments, and the reformulated timing rule would accrue anticipated FEGL and recognize unanticipated FEGL when the U.S. parent realizes them. Deferral of U.S. tax on foreign subsidiary earnings makes both rules impossible to fulfill. At best, anticipated FEGL on investments remaining in the subsidiary, plus all FEGL not previously recognized on repatriated dividends, could be recognized at the time of dividend repatriation. As in the case of dollar investments, low-tax countries would be favored for prospective foreign-currency-denominated subsidiary investments under this scheme.

Practically speaking, deferral makes direct recognition of anticipated FEGL on unrepatriated subsidiary investments difficult. Deferral implies that only net dividends, translated at the exchange rate on the date of distribution, may be included as net income to the U.S. parent. Net dividends are, however, grossed up by foreign taxes to obtain the gross income inclusion. Anticipated FEGL on unrepatriated investments could therefore be recognized indirectly by adjusting the gross-up for foreign taxes, as shown in the following paragraphs.

(1) Current Translation of Foreign Taxes

If taxes are translated at the exchange rate in effect on the date of repatriation ("current translation"), only FEGL on repatriated dividends are recognized. Suppose foreign subsidiaries repatriate all earnings (but not contributed capital) at the end of the second year of operation. The following example shows that current translation of foreign taxes leads to no U.S. tax if $T=T^*$ and $S_0=1$.

	Year 1	Year 2	Total
Gross income	i^*	$i^*[1 + i^*(1-T^*)]$	$i^*[2 + i^*(1-T^*)]$
Foreign taxes	T^*i^*	$T^*i^*[1 + i^*(1-T^*)]$	$T^*i^*[2 + i^*(1-T^*)]$
After-tax income	$(1-T^*)i^*$	$(1-T^*)i^*[1 + i^*(1-T^*)]$	$[1 + i^*(1-T^*)]^2 - 1$
Net income inclusion ($)			$(1-T^*)[2i^* + i^{*2}(1-T^*)]S_2$
Gross-up for foreign tax ($)			$T^*[2i^* + i^{*2}(1-T^*)]S_2$
Gross income inclusion ($)			$[2i^* + i^{*2}(1-T^*)]S_2$
Pre-credit U.S. tax ($)			$T[2i^* + i^{*2}(1-T^*)]S_2$
Foreign tax credit ($)			$T^*[2i^* + i^{*2}(1-T^*)]S_2$
Net U.S. tax ($)			$(T-T^*)[2i^* + i^{*2}(1-T^*)]S_2$ $= 0$ if $T=T^*$
After-tax repatriation (Y_{at})			$(1-T)[2i^* + i^{*2}(1-T^*)]S_2$

In this example, net income to the U.S. parent is the current value of net subsidiary income. FEGL on subsidiary income is explicitly recognized because each foreign currency unit of net income was worth \$1 in year one and $\$S_1$ in year two but is included in income at $\$S_2$. FEGL on contributed capital, however, remains unrecognized until the capital is repatriated. The current translation method therefore closely resembles the profit-loss method for branches. Accordingly, investment in countries with expected deflation would be greater than investment under worldwide efficiency, and investment in countries with expected inflation would be lesser, that is, $r^* > r$ as $\pi^* > 0$ and $r^* < r$ as $\pi^* > 0$ (assuming the taxpayer has a shortage of credits).

(2) Historical Translation of Foreign Taxes

Suppose net dividends and net earnings are translated at the exchange rate in effect at the time of repatriation, but foreign taxes are translated at the exchange rate in effect at the time taxes were paid ("historical translation"). In the example above, the gross-up for foreign tax and the foreign tax credit would therefore equal $T^*i^*S_1 + T^*i^*[1+i^*(1-T^*)]S_2$. Historical translation of foreign taxes increases the effective expected foreign tax rate T' above the statutory rate for depreciating-currency countries (where $S_1 > S_2$) and decreases it below the statutory rate for appreciating-currency countries (where $S_1 < S_2$). Equation (16) shows the relationship for the two-year repatriation example:

$$T' = T^* + \left(\frac{i^*T^*(1-T^*)(S_1 - S_2)}{i^*[T^*(S_1 + S_2) + S_2(1-T^*)(i^* + 2)]} \right). \tag{16}$$

For a given investment in a subsidiary, equation (17) shows that dollar income after all taxes would be greater for investments in depreciating-currency countries under historical translation than under current translation of foreign taxes. The reverse would be true for investments in appreciating-currency countries.

$$Y'_{at} = [2i^*(1-T^*) + i^{*2}(1-T^*)^2]S_2 + i^*T^*[(S_1 + S_2)(1-T^*) - 2S_2(1-T^*)] \tag{17}$$

$$Y'_{at} \left(\begin{matrix} > \\ < \end{matrix} \right. Y_{at} \text{ as } S_1 \left(\begin{matrix} > \\ < \end{matrix} \right. S_2$$

Historical translation of foreign taxes would therefore encourage investment in inflationary countries and discourage investment in deflationary countries relative to investments under current translation (assuming the taxpayer has a shortage of foreign tax credits). Accordingly, historical translation appears comparable to a net-worth method for subsidiaries, because it may indirectly recognize anticipated FEGL on unrepatriated investments. However, it is not a perfect extension because of deferral. Unlike the net-worth and profit-loss methods for branches, current and historical translation of foreign taxes will not necessarily yield the same total taxes over the time a subsidiary is established to the time it is liquidated.

There are three problems with the tax treatment of foreign subsidiaries. First, deferral of recognition of unanticipated FEGL allows the taxpayer discretion over timing, so the fisc can be whipsawed no matter which method of translating foreign taxes is used. Second, even

though historical translation attempts to accrue income, deferral of recognition of anticipated FEGL until the first dividend repatriation after a capital contribution can cause an inefficient capital allocation. Third, historical translation may permit the taxpayer to generate artificial gains and losses on subsidiary investments. Suppose a U.S. taxpayer has a shortage of foreign tax credits. The taxpayer may choose to repatriate income from a given country because unanticipated exchange rate movements in the time between income is earned and the time it is repatriated have caused the effective foreign tax rate on that income to exceed the U.S. rate. If the taxpayer instead has excess foreign tax credits, it can repatriate from a country with an effective tax rate lower than the U.S. rate. Example three of the appendix shows that the taxpayer can generate an artificial loss or gain on the original investment abroad, even though at the time of repatriation the original investment has not changed in value. Therefore, historical translation of foreign taxes creates marginal tax incentives for repatriation where no economic incentive exists.

V. U.S. LAW ON THE TAXATION OF FEGL

A. General Tax Rule

1. Timing of Recognition of FEGL

U.S. tax law follows the optimal timing rule for certain foreign currency transactions denominated in the currencies of major trading partners. However, neither pre-TRA law nor TRA adopted the optimal rule of accruing FEGL, or the reformulated rule taxing anticipated FEGL annually and unanticipated FEGL upon realization, for other transactions or for affiliates.

Pre-TRA law taxed all FEGL accrued on foreign currency contracts (such as forwards, futures, and options) denominated in yen, pounds sterling, Deutsche marks, guilders, Swiss francs, French francs, Canadian dollars, or the ECU. This rule remains intact in present law. (See 26 USC 1256.) However, before TRA, taxpayers could recognize FEL on other transactions currently but defer recognition of FEG.[16] Similarly, taxpayers could use either a net-worth or a profit-loss method to translate branch profits[17] and could translate foreign taxes paid by subsidiaries at either current or historical exchange rates.[18] Each of these rules not only allowed whipsawing of the fisc but also reduced the possibility of attaining worldwide efficiency.

The President's Tax Proposals (1985) advocated the reformulated timing rule of accrual taxation for anticipated FEGL and realization-based taxation for unanticipated FEGL on transactions. However, Congress implemented taxation upon realization for all FEGL from transactions other than foreign-currency contracts and from branches. This was done for administrative reasons. Although anticipated FEGL from short-term transactions could be reasonably well-determined by using forward exchange rates as proxies for expected future spot exchange rates, forward rates are not readily available for the long term. This makes estimation of expected future spot rates and anticipated FEGL for long-term transactions and affiliate investments difficult. A logical extension of the non-accrual system implemented for transactions and branch investments is current translation of foreign taxes attributable to repatriated subsidiary dividends. However, the new tax law is inconsistent because it

requires historical translation of foreign taxes for subsidiary earnings, which resembles an accrual system.

2. Source of FEGL

The reformulated rules call for interest-based sourcing of anticipated FEGL and either domestic or foreign sourcing of unanticipated FEGL. Although these rules are fulfilled in present tax law for foreign affiliates (and also were for subsidiaries before TRA), they are not (and generally were not before TRA) for foreign-currency-denominated transactions.

Before TRA, taxpayers could arrange to have all FEG from transactions be foreign-source (by passing title to the foreign currency abroad), and to have FEL allocated on the basis of the income generated by the foreign currency (domestic or foreign).[19] Because income generated by foreign-currency transactions is generally foreign-source, both FEG and FEL were likely to have been foreign-source. FEGL on subsidiary investments were sourced as foreign, although the source of FEGL on branch investments was not explicitly established.

In contrast with pre-TRA law, TRA sources all FEGL from transactions domestically. However, TRA sources all FEGL on foreign affiliate investments as foreign.

3. Effects of TRA Timing and Source Rules

To the extent currencies can be identified as appreciating or depreciating against the dollar and nominal changes in income enter the tax calculation, TRA rules can distort economic choices for transactions and branch investments because some FEGL are accrued and some are not, and because sourcing rules for anticipated FEGL on transactions are inconsistent with interest-sourcing rules. The manner of distortion depends on the taxpayer's foreign tax credit position.

For example, suppose a U.S. taxpayer has \$X of dollar-denominated foreign-source income and \$Y of dollar-denominated domestic-source income. It lends one unit of foreign currency. The following table shows the total tax it would expect to pay under the reformulated rule and under the TRA rules for $S_0 = 1$ and π^*, i^*, i, and T constant.

Suppose the taxpayer is in equilibrium under the reformulated rule. The TRA rules would induce a change in equilibrium behavior. If the taxpayer has excess foreign tax credits, the TRA rules for a given amount of lending would allow it to pay lower taxes if $\pi^* > 0$. To be in the same equilibrium tax credit position, the taxpayer would be willing either to increase lending of depreciating currencies (thus lowering the real return below r for these currencies) or to lend to foreign countries with higher tax rates than T^*, or both. Furthermore, because the taxpayer could recognize FEL (and thus lower taxable income) earlier under accrual, it would prefer to acquire more of certain types of foreign currency contracts. For instance, it could buy depreciating foreign currency forward. If the taxpayer instead has a shortage of foreign tax credits, under the TRA rules it could shift tax payment of $(-\pi^* T)$ from year one to year two for transactions in which FEGL are not accrued. Given a certain amount of lending, it would pay a lower discounted value of taxes for these transactions if $\pi^* < 0$. The taxpayer would therefore be willing to increase lending of appreciating currencies.

INCOME AND TAXES UNDER THE VARIOUS RULES
(lending example)

	Reformulated Rule		TRA Rule (non-accrual)		TRA Rule (accrual)	
	Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
Total income	$Y+X+i^*-\pi^*$	$Y+X+(1-\pi^*)(i^*-\pi^*)$	$Y+X+i^*$	$Y+X+(1-\pi^*)(i^*-\pi^*)-\pi^*$	$Y+X+i^*-\pi^*$	$Y+X+(1-\pi^*)(i^*-\pi^*)$
Foreign income	$X+i^*-\pi^*$	$X+(1-\pi^*)(i^*-\pi^*)$	$X+i^*$	$X+i^*$	$X+i^*$	$X+i^*$
EXCESS-CREDITS TAXPAYER						
U.S. tax	YT	YT	YT	$\{Y-\pi^*[2+(i^*-\pi^*)]\}T$	$(Y-\pi^*)T$	$\{Y-\pi^*[1+(i^*-\pi^*)]T$
Foreign tax	$(i^*+X)T^*$	$(i^*+X)T^*$	$(i^*+X)T^*$	$(i^*+X)T^*$	$(i^*+X)T^*$	$(i^*+X)T^*$
SHORTAGE-OF-CREDITS TAXPAYER						
Total tax	$(Y+X+i^*-\pi^*)T$	$[Y+X+(1-\pi^*)(i^*-\pi^*)]T$	$(Y+X+i^*)T$	$[Y+X+(1-\pi^*)(i^*-\pi^*)-\pi^*]T$	$(Y+X+i^*-\pi^*)T$	$[Y+X+(1-\pi^*)(i^*-\pi^*)]T$

NOTE: For q small, $1+q \simeq e^q$. For example, taxable interest under the reformulated rule of $\int_0^1 e^{(i^*-\pi^*)\tau}\,d\tau$ in year 1 is approximated by $(i^*-\pi^*)$, and of $\int_1^2 e^{(i^*-\pi^*)\tau}\,d\tau$ in year 2 is approximated by an interest rate of $(i^*-\pi^*)$ multiplied by a base amount of $(1-\pi^*)$. This base approximates the principal value of $e^{-\pi^*}$ at the end of year 1.

These results follow for two reasons. In the excess-credits case, the important factor in the TRA rules is domestic sourcing of FEL from lending depreciating currencies, which would increase the foreign tax credit limitation above the reformulated-rule level. Domestic sourcing would permit the taxpayer to lower its overall tax bill for a given amount of lending. In the shortage-of-credits case, sourcing would make no difference but the deferral of recognition of FEG from lending appreciating currencies would permit the taxpayer to lower the discounted value of its overall tax bill.

More complicated cases could be constructed. For instance, a taxpayer could have an excess of credits under the reformulated rule but a shortage of credits under the TRA rule for non-accrued transactions if $\pi^*>0$. For a given loan, it would pay lower tax under the TRA rule because the tax rate on foreign source income would be lower in both periods ($T<T^*$) and the tax base in period two would be lower ($Y+X+i^* < Y+X+(1-\pi^*)(i^*-\pi^*)-\pi^*$). It would therefore be willing to make more loans in inflationary currencies or to lend in higher-tax foreign countries.

Similar incentives exist for borrowings and investments in foreign branches under the TRA rules. For borrowings, non-accrual is key. Borrowing in depreciating currencies would lower taxes for a given amount of borrowing relative to the reformulated rule, no matter what the foreign tax credit position the borrower has. Interest payments would be artificially high in the periods before a transaction is closed, and only part of the expense would be allocated to foreign sources. If a borrower has excess foreign tax credits, it could inflate the foreign tax credit limitation in interim periods and lower U.S. taxes and therefore total taxes. At the close of the transaction, the result is that domestic income and therefore total taxes would be lower under the TRA rules for non-accrued transactions. If the borrower has a shortage of credits, worldwide income would be lower under TRA rules in interim periods. Cumulative taxes would be higher but deferred income recognition would make the present value of taxes over the entire period lower.

For investments in foreign branches, non-accrual under the TRA rules is the only important factor. Presumably, $i^*-\pi^*>0$ for investments (unless the tax distortion is extreme), so foreign allocation of FEGL under the TRA rules essentially parallels the reformulated sourcing rule, which nets interest income and anticipated FEGL and sources the net amount as foreign. Therefore, for taxpayers in an excess-credit position in all periods, the ex ante investment decision would not be affected even under TRA's profit-loss method. For those with a shortage of credits, the TRA rule would favor investment in appreciating-currency countries because recognition of anticipated FEG would be deferred. (If deferral of anticipated FEGL caused the foreign tax credit position to alternate between an excess and a shortage, the investment decision might also be affected.)

Several factors mitigate the distortive effect of the TRA rules on transactions and branch investments. First, it is widely accepted (Dornbusch 1978, 1980; Mussa 1979; Frenkel 1981, 1982) that predicted changes in exchange rates account for a very small proportion of actual changes, at least for non-hyperinflationary currencies. This unpredictability makes it difficult for a taxpayer to identify currencies as appreciating or depreciating, especially over the long run. Hyperinflationary currencies are more predictable and TRA provides a special rule for transactions denominated in these currencies. Second, businesses that conduct foreign-currency operations maintain that they hedge their assets and liabilities, particularly long-term ones. As the next section points out, FEGL from

hedging transactions are recognized currently because they are fully anticipated. Finally, at least for branch investments, non-accrual will not generally be responsible for inefficiency. The U.S. tax rate is now below that of most of her major trading partners, meaning that the majority of U.S. companies will have excess foreign tax credits. Therefore, the general constraint that the U.S. limits foreign tax credits to U.S. tax on foreign-source income, rather than non-accrual of anticipated FEGL, will be the principal cause of inefficiency.[20]

The TRA treatment of foreign subsidiaries may prove to be highly distortive, however. Although historical translation of foreign taxes is an attempt to accrue anticipated FEGL, deferral makes it impossible to do so perfectly. Historical translation also offers marginal tax incentives where no economic incentives exist. Finally, the asymmetric treatment of branches (which are taxed on a realization basis) and subsidiaries (which are taxed on a quasi-accrual basis) could skew organizational choices.

B. Exceptions to the General Tax Rule

The TRA rules for timing and sourcing are rationalized by the assumptions that administrative costs of separating unanticipated and anticipated FEGL are prohibitively large and that unanticipated FEGL are relatively more important than anticipated FEGL. In at least two cases, the reverse is true. First, if a taxpayer can hedge against currency fluctuations, its unanticipated FEGL are nil. Second, if a taxpayer lends a hyperinflationary currency, anticipated FEL are likely to be very large and could easily be larger than unanticipated FEGL.[21]

TRA recognized these two cases and prescribed special rules that reinstate interest-based treatment for FEGL. Under IRS Notice 87-11 (1987), hedging transactions are integrated and treated as a single transaction. The timing, source, and character of FEGL are the same as in the analogous single transaction.[22] The lending example in section III.A.3 provides a case in point. The taxpayer can lock in its expected FEG from lending foreign currency (abstracting from transactions costs) by hedging, perhaps through a forward sale of the foreign-currency interest and principal payments. An OID-type rule is applied under TRA and the foreign-source net yield is $i^*-\pi^*$, where $-\pi^*$ represents the locked-in FEG.

An anti-abuse rule in TRA annually accrues FEL on loans denominated in a hyperinflationary currency (as under the optimal tax rule) if the loans are made to increase the foreign tax credit limitation artificially and shelter other foreign-source income. Interest income is recharacterized as domestic-source to the extent of the FEL on the loan. This source rule differs from the reformulated rule. Under the reformulated rule, anticipated FEL offset interest income and are therefore foreign-source. Unanticipated FEGL could be either domestic- or foreign-source. The anti-abuse rule effectively offsets interest income by <u>all</u> realized FEGL up to the point where net interest income would be zero. This rule is the same as the reformulated rule only if there are no unanticipated FEGL, and it is harsher for a taxpayer with excess foreign tax credits and unanticipated FEL.

C. Character and Amount of FEGL

Before TRA, the character of FEGL was important because ordinary and capital income were taxed at different rates. FEGL were characterized as ordinary income if the foreign currency was used as a part of the taxpayer's trade or business. If not, taxpayers could appeal to IRS rules that FEG were capital gains, but to court decisions that FEL were ordinary losses.[23]

Because TRA removed the disparity in tax rates, the question of character is a relatively minor one. (For those interested in the exhaustive review of this topic, however, see O'Neill and Lee 1986.) In determining the amount of FEGL on long-term transactions, however, characterization issues are important if both FEGL and other gains or losses are realized. FEGL are generally characterized as ordinary income or loss by TRA, but other gains and losses on long-term transactions are capital. Suppose a taxpayer has FEG on a long-term bond that are perfectly offset by a capital loss. The bond yields no economic gain or loss. Because capital losses are allowed only against capital gains for corporations (individuals may take up to $3000 of capital loss against ordinary income), it seems that a corporate taxpayer would have to pay tax on the FEG. However, TRA imposes a constraint that the amount of FEGL cannot be larger in absolute value than the total gain or loss realized on the transaction. In the example, both the FEG and the capital loss would be set to zero, resulting in no tax despite the limitation on capital losses.

VI. SUMMARY AND CONCLUSIONS

This paper develops an optimal rule for the taxation of foreign-currency-denominated income earned through transactions and foreign affiliates from the standpoint of worldwide efficiency. The optimal rule, which would implement accrual taxation, is based on the assumptions of ex ante purchasing power parity, uncovered interest rate parity, and the Fisher relation equating expected real returns to nominal returns minus expected inflation.

The optimal rule is reformulated in light of existing U.S. tax law. Four areas are considered: accrual of certain anticipated gains and losses but general recognition of unanticipated gains and losses only upon realization, limited carryover periods, deferral of U.S. tax on income received through foreign subsidiaries, and the U.S.'s primary taxing power over U.S. income.

The first two considerations point toward accrual of anticipated FEGL but recognition of unanticipated FEGL only upon realization. As with capital gains, this treatment may permit whipsawing of the fisc and lead to non-neutrality among taxpayers. The third consideration makes direct recognition of anticipated FEGL from subsidiary investments on an accrual basis impossible. An indirect method is proposed which translates net dividends at the exchange rate in effect at the time of repatriation, but which translates foreign taxes attributable to the earnings producing the dividends at the exchange rate in effect when the taxes were paid. However, deferral of U.S. taxes on subsidiary earnings permits whipsawing, and "historical translation" of foreign taxes allows the taxpayer to generate artificial gains and losses.

The last consideration, the U.S.'s unwillingness to allow foreign taxes to offset U.S. tax on U.S. income, brings forth the issue of sourcing of income and expense items. Under

the reformulated rule, anticipated FEGL (which closely resemble interest income or expense under UIP) would be sourced as interest income or expense for purposes of the U.S.'s foreign tax credit. Unanticipated FEGL (which occur randomly under UIP) would be sourced as all foreign or all domestic. Domestic sourcing would be consistent with the rules for sourcing of other types of gains and losses. Because the U.S. will not credit foreign taxes exceeding the pre-credit U.S. tax on foreign-source income, worldwide efficiency may be unattainable if the foreign tax rate is greater than the U.S. tax rate solely because of the foreign tax credit limitation.

U.S. tax law implements the optimal timing rule for certain transactions in major foreign currencies. It does not, however, adopt either the optimal or the reformulated timing rule for other transactions or for branches, nor does it apply the reformulated sourcing rule for transactions. Before the Tax Reform Act of 1986 (TRA), taxpayers had to accrue FEGL on major-foreign-currency contracts such as forwards, futures, and options, but could choose any method of recognition they desired for other foreign-currency operations. Rather than interest-based sourcing for anticipated FEGL, all FEGL were generally foreign-source. Therefore, the allocation of capital was inefficient and there was a potential for whipsawing. TRA introduced new legislation on the taxation of FEGL that eliminates choices of method but continues to permit inefficient capital allocation and some types of whipsawing. FEGL from certain major-foreign-currency transactions are accrued as under prior law, but FEGL from most foreign-currency transactions and from foreign branch investments are recognized when realized. FEGL from subsidiary investments are partially recognized on an accrual basis, although deferral makes pure accrual difficult. Rather than interest-based sourcing for anticipated FEGL and domestic sourcing for unanticipated FEGL on transactions, TRA sources all FEGL from transactions domestically.

The TRA rules can distort economic incentives for U.S. taxpayers. Lenders with excess foreign tax credits may be induced to lend more in depreciating currencies and to buy more depreciating-currency forward contracts, while those with a shortage of credits have an incentive to lend more in appreciating currencies than optimal. Borrowers may be induced to borrow more in depreciating currencies. Branch investments in appreciating-currency countries may be greater than optimal for investors with a shortage of foreign tax credits but will be unaffected for investors with excess foreign tax credits. These potential consequences are mitigated by the unpredictability of exchange rates, the exceptions to the non-accrual rule for certain transactions, and (for branches only) the predominance of investors with excess foreign tax credits. Two exceptions, for hedging transactions and loans in hyperinflationary currencies, reinstate the optimal rule of accrual-based taxation and interest-based sourcing because FEGL are largely anticipated in these cases.

The TRA rules for unhedged transactions, hyperinflationary loans, and branches may be justified because the cost of administering an accrual-based system for these might exceed the loss from a realization-based system. In the case of subsidiaries, however, there are special problems. Although administrability arguments swayed Congress to choose realization-based taxation for transactions and branches, a quasi-accrual system was instituted for subsidiaries. As a result, taxpayers may be able to recognize artificial gains or losses. Moreover, the asymmetry in tax treatment of branches and subsidiaries could affect a U.S. company's choice of organizational form for foreign affiliates.

The analysis in the paper is based on simplifying assumptions: that purchasing power parity (PPP), uncovered interest parity (UIP), and the Fisher equations hold ex ante; that the U.S. taxpayer determines the rate of return everywhere; that all assets are taxed in the same fashion, and that all taxpayers bear a uniform rate of tax in the U.S. and abroad. Not everyone supports the assumptions of ex ante PPP and UIP. Additionally, foreign investors help determine rates of return, assets bear different effective tax rates, and the marginal taxpayer may bear effective tax rates larger or smaller than statutory rates. An extension of the analysis could consider these issues in formulating more general rules for the optimal taxation of FEGL.

APPENDIX

A. Examples

1. Foreign Tax Credit Calculation

The following example outlines three cases. In the first, U.S. tax liability on foreign-source income is exactly offset by foreign taxes. In the second, more foreign tax is paid on foreign-source income than the U.S. tax that would have been paid on the same income. In the third, less foreign tax is paid than would have been paid in the U.S. and a residual U.S. tax liability is incurred.

	Exact Offset			Excess Credits			Shortage of Credits		
	Country			Country			Country		
	US	A	B	US	A	B	US	A	B
Taxable income	$100	$100	$100	$100	$100	$100	$100	$100	$100
Home-country tax	34	51	17	34	51	34	34	51	0
After-home-tax income	$66	$49	$83	$66	$49	$66	$66	$49	$100
Worldwide income		$300			$300			$300	
Pre-credit U.S. tax		102			102			102	
Foreign tax credit		$68			$68			$51	
= Min(Taxes paid,			$68			$85			$51
limitation)			68			68			68
Net U.S. tax			$34			$34			$51
Total taxes			$102			$119			$102
Average foreign tax rate		34%			42.5%			25.5%	

2. Fluctuations in Tax Liability under the Net Worth Method if FEGL are Unanticipated

The following example shows that, for the same dollar branch investment and the same time of establishment and liquidation, the net worth and profit-loss methods yield the same U.S. total tax (aside from timing) if all FEGL are unanticipated. However, annual U.S. tax liability varies substantially under the net worth method.

	Net Worth			Profit-Loss		
Initial investment		100x			100x	
Initial exchange rate		$1/1x			$1/1x	
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Expected spot rate	$1/1x	$1/1x	$1/1x	$1/1x	$1/1x	$1/1x
Actual spot rate	$.5/1x	$1.5/1x	$1/1x	$.5/1x	$1.5/1x	$1/1x
Gross income	10.00x	10.66x	11.36x	10.66x	11.36x	11.36x
Foreign tax	3.40x	3.62x	3.86x	3.40x	3.62x	3.86x
Net income	6.60x	7.04x	7.50x	6.60x	7.04x	7.50x
Net worth	$53.30	$170.46	$121.14			
Net income	-$46.70	$117.16	-$49.32	$3.30	$10.56	$7.50
Gross-up	$1.70	$5.43	$3.86	$1.70	$5.43	$3.86
Gross income	-$45.00	$122.59	-$45.46	$5.00	$15.99	$11.36
Pre-credit tax	-$15.30	$41.68	-$15.39	$1.70	$5.43	$3.86
Net U.S. tax	-$17.00	$36.25	-$19.25	$0.00	$0.00	$0.00
Liquidation amount (contributed capital and previously taxed income)			$121.41			$121.41
Cumulative U.S. taxes paid			$0.00			$0.00

3. Distortive Effects of Historical Translation of Foreign Taxes When FEGL Are Unanticipated

Suppose a U.S. parent has subsidiaries in foreign countries X and Y with corporate tax rates equal to the U.S. rate. Current exchange rates are $1/1x and $1/1y and are not expected to change, so that expected returns are the same in both countries. Suppose, however, exchange rates move unexpectedly during the period before dividends are repatriated but return to initial rates in the year of repatriation. The following example shows that, under historical translation of foreign taxes, the taxpayer has an incentive to repatriate from X if it has a shortage of foreign tax credits on other income (because it can generate an artificial loss on its investment) and from Y if it has excess foreign tax credits on other income (because it can generate an artificial gain on its investment). Under current translation of foreign taxes, no such incentives exist.

Historical Translation of Foreign Taxes

	Country X			Country Y		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Gross income	10.00x	10.66x	11.36x	10.00y	10.66y	11.36y
Foreign tax	3.40x	3.62x	3.86x	3.40y	3.62y	3.86y
After-tax income	6.60x	7.04x	7.50x	6.60y	7.04y	7.50y
Actual spot rate	$.5/1x	$1.5/1x	$1/1x	$1.5/1y	$.5/1y	$1/1y
Net dividend			$21.14			$21.14
Gross-up			$10.99			$10.77
Gross dividend			$32.13			$31.91
Pre-credit U.S. tax			$10.92			$10.85
Foreign tax credit			$10.99			$10.77
Net U.S. tax			-$0.07			$0.08
Effective foreign tax rate			34.2%			33.8%

Current Translation of Foreign Taxes

	Country X			Country Y		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Gross income	10.00x	10.66x	11.36x	10.00y	10.66y	11.36y
Foreign tax	3.40x	3.62x	3.86x	3.40y	3.62y	3.86y
After-tax income	6.60x	7.04x	7.50x	6.60y	7.04y	7.50y
Actual spot rate	$.5/1x	$1.5/1x	$1/1x	$1.5/1y	$.5/1y	$1/1y
Net dividend			$21.14			$21.14
Gross-up			$10.88			$10.88
Gross dividend			$32.02			$32.02
Pre-credit U.S. tax			$10.88			$10.88
Foreign tax credit			$10.88			$10.88
Net U.S. tax			$0.00			$0.00
Effective foreign tax rate			34.0%			34.0%

B. Table

The following table summarizes the tax rules discussed in the paper.

TAX RULES

	Optimal Tax Rule	Reformulated Rule	Tax Rules Before TRA	Tax Rules After TRA
Direct Transactions				
Timing	Current recognition	Current recognition of anticipated FEGL (like OID); deferred recognition of unanticipated FEGL	Current recognition of FEL, deferred recognition of FEG for most transactions; current recognition of all FEGL for some major-currency contracts	Deferred recognition for most unhedged transactions; current recognition for major-currency contracts and for hedged transactions
Source		Interest-based for anticipated FEGL, domestic or foreign for unanticipated FEGL	Title passage for FEG, allocated on income basis for FEL	Domestic for unhedged transactions; interest-based for hedged transactions
Character	Basically irrelevant if no difference in tax rates	Basically irrelevant if no difference in tax rates	Ordinary if used in trade or business, otherwise capital according to IRS (FEL ordinary according to courts)	Ordinary for most unhedged transactions, ordinary (interest) in hedged transactions

	Optimal Tax Rule	Reformulated Rule	Tax Rules Before TRA	Tax Rules After TRA
Branches				
Method	Net-worth	Net-worth for anticipated FEGL, profit-loss for unanticipated FEGL	Either modified net-worth or profit-loss	Generally profit-loss
Source		Foreign for anticipated FEGL, domestic or foreign for unanticipated FEGL	Unclear	Foreign
Subsidiaries				
Method	Net-worth	Net-worth type for anticipated FEGL, profit-loss type for unanticipated FEGL (deferral problem)	Either historical translation of foreign taxes (net-worth type) or current translation of foreign taxes (profit-loss type)	Historical translation of foreign taxes (net-worth type)
Source		Foreign for anticipated FEGL, domestic or foreign for unanticipated FEGL	Generally foreign	Foreign

FOOTNOTES

[1]Worldwide efficiency equates after-tax returns to different investments. Domestic efficiency instead equates before-domestic-tax domestic returns to after-foreign-tax foreign returns, because the return to a country is the sum of after-domestic-tax returns and domestic taxes. While a single country is better off using the domestic efficiency criterion if all other countries subscribe to worldwide efficiency, all countries together using a criterion of worldwide efficiency is optimal under an income tax system. See Musgrave and Musgrave (1984), pp. 761-4.

[2]Note that these assumptions are controversial. Although Roll (1979) and Frenkel (1981) support ex ante PPP, Cumby and Obstfeld (1984) do not. Moreover, although Frenkel (1981) and Levich (1978) generally endorse UIP, others do not. (See Cumby and Obstfeld 1984 for a review.)

[3]This allows me to make the standard assumption that a firm maximizes the expected net present value of an income stream, discounting by its real after-tax rate of return.

[4]Recall that $\pi=0$ so dollar income equals real income. If π is not zero, optimal taxation would also require taxation of only real income from dollar operations. Because nominal dollar income is taxed in the U.S., π^* would continue to represent FEGL relative to the dollar but would equal the difference between foreign and U.S. inflation in equations (6) and following. Accrual of anticipated FEGL would make the taxation of dollar and foreign-currency-denominated operations symmetric if π is not zero and nominal dollar income is taxed, but the choice between pecuniary and non-pecuniary activities could be distorted.

[5]In a strict mathematical sense, this is true only if $-(\pi^*+r(1-T))<0$. That is, the expected rate of deflation abroad cannot exceed the real after-tax return to domestic operations.

[6]In the previous section, the taxpayer was assumed to reinvest earned after-tax income into the given operation. For direct transactions, this corresponds to incremental lending of principal by the taxpayer.

[7]The method described abstracts from branch remittances. Provided all FEGL are anticipated, the net worth method would evaluate net worth before remittances to obtain the income inclusion, and remittances would come back without tax and without foreign tax credits.

[8]Only dividends from active income are being discussed. Passive income is treated as if it were distributed to U.S. shareholders as it is earned, similarly to branch income. See 26 USC 951-964.

[9]Some countries (such as the U.K.) attempt to tax each item of foreign-source income separately. Therefore, if the taxpayer had £10 of foreign-source income taxed at 70 percent abroad and £10 taxed at 0 percent abroad, under the U.K. tax rate of 35 percent it would have excess foreign tax credits of £3.5 on the former and pay U.K. tax of £3.5 on the latter. Under an overall limitation, it would pay no U.K. tax and have no excess credits. The U.S. has an overall limitation for many types of income but segregates certain highly taxed income and certain lightly taxed income into separate "baskets" so that the taxpayer cannot average these types of income before calculating U.S. tax liability.

[10]The fraction cannot exceed one. If a taxpayer has domestic losses, it can take a foreign tax credit only up to the tentative U.S. tax liability on worldwide income. If for example worldwide income were zero in a given year, the foreign tax credit limitation would be zero and the taxpayer could not credit any foreign taxes that year.

[11]The principle underlying allocation of interest expense is fungibility of funds. A corporation financing the building of a plant in Britain could borrow from U.S. or British banks. Moreover, bank funds used to finance a British plant could have been borrowed so that the corporation could internally fund the building of a plant in Peru. Therefore, the attribution of the interest expense to foreign or domestic sources is not based on the location of borrowing.

[12]Problems with interest-based sourcing of unanticipated FEGL would arise if, for instance, unanticipated FEG on a borrowing exceeded the stated interest payments. Net interest expense would then be negative and it is unclear whether interest-based sourcing of unanticipated FEGL would call the net amount interest income or would allocate a negative amount to foreign and domestic sources.

[13] I have assumed that an investment in a given country is denominated in the currency of that country. Under present U.S. law, each business unit of a U.S. taxpayer is required to keep its records in terms of its functional currency, or the currency in which it conducts the bulk of its business. This concept was introduced in the Statement of Financial Accounting Standards No. 52: Foreign Currency Translation (1980) and was borrowed by the Treasury Department Discussion Draft on Taxing Foreign Exchange Gains and Losses (1980). Therefore, a Japanese branch may be required to keep records in terms of dollars instead of yen if most of its transactions are in dollars. This does not change the thrust of the analysis.

[14] In this section, I use the approximation $e^q \simeq (1+q)$ for q small, so interest earned over a period is given as i* rather than $e^{i^*}-1$.

[15] I am assuming a given pattern of dividend repatriation and liquidation. These patterns will of course be endogenous.

[16] Both precedents were established in the U.S. Court of Appeals for the Sixth Circuit. The court allowed current recognition of FEL in National-Standard Co. v. Commissioner, 80 T.C. 551 (1983), aff'd 749 F.2nd 369 (6th Cir. 1984). However, in Kentucky & Indiana Terminal Railroad Co. v. U.S. 330 F.2d 520 (6th Cir. 1969), FEG was ruled to be income from the discharge of indebtedness. Under 26 USC 108 and 1017, such income is not recognized currently.

[17] The net worth method as it was applied also caused problems. Long-term assets and liabilities were translated at historic exchange rates, in accordance with generally accepted accounting principles. Therefore, if a foreign branch in a depreciating-currency country had short-term assets exceeding short-term liabilities and long-term liabilities exceeding long-term assets, the calculated change in dollar net worth would have been greater in absolute value than the actual change. If the opposite were true, the calculated change would have been less in absolute value than the actual change.

[18] Current translation was prescribed in Bon Ami Co. v. Commissioner, 39 B.T.A. 825 (1939), and historical translation in H.H. Robertson & Co., 59 T.C. 53 (1972), and American Metal Co., 21 F.2d. 134, 141 (2d. Cir. 1955).

[19] These rules evolved from a somewhat strained interpretation of rules on property disposition. See 26 CFR 1.861-7 and 1.861-8(e)(7).

[20] There is one way that sourcing causes problems with affiliates. FEGL from transactions conducted by an affiliate affect the total amount available for distribution to the parent. However, no FEGL arise for the parent directly. U.S. parents may attempt to conduct transactions that yield FEG through foreign branches and ones that yield FEL through domestic offices in order to increase their foreign tax credit limitation and lower U.S. tax liability.

[21] Not only are anticipated FEGL likely to outweigh unanticipated FEGL for these transactions, the risk of currency fluctuation could easily be eliminated by having a wholly owned foreign subsidiary borrow in the same currency. The lender has domestic-source FEL on the loan. However, the hedge is not integrated under the hedging rules because the subsidiary and its parent are separate taxpayers, so the FEG the subsidiary receives are not recognized by the parent as long as they are not repatriated. Although economic loss matches economic gain, the loss is recognized currently while recognition of the gain is deferred. Moreover, the gain will generally be characterized as foreign-source income, which will increase the foreign tax credit limitation in the year of recognition.

[22] Offsetting balance-sheet items, or "balance-sheet hedges," are prevalent among financial institutions and have not yet been addressed by regulation.

[23] Before TRA, FEGL were ordinary income if foreign currency was used in business under Corn Products Refining Company v. Commissioner, 350 U.S. 46 (1958). Otherwise, the IRS held that FEGL were capital income (Rev. Rul. 78-396, 1978-2 C.B. 114; Rev. Rul. 78-281, 1978-2 C.B. 204; G.C.M. 39294, June 15, 1984) while the courts held that FEL were ordinary income (National-Standard, supra.). IRS Notice 87-68 (1987) has suspended all revenue rulings that rely on or apply the "Corn Products Doctrine."

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