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MEMORANDUM FOR

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From: Bob Conrad

Subject: Depreciation

The IMF proposed calculating tax depreciation using open-ended pooled asset accounts with the declining balance method. I have supported this proposal for a number of years, and I believe that the proposed tax changes for the post-election period are the opportune time to begin implementation. Below some aspects of the system are discussed, along with examples and a proposal for depreciation of tangible personal property (generally machinery and equipment), intangible property, research and development, and pre-production expenses for natural resource projects (oil and gas, mining, and forestry).

I. Benefits of Open-Ended Pooled Accounting

Pooled accounting is a method in which assets are classified in groups, the book (or tax) value of the group is reported as the aggregate value of all assets in each classification, and depreciation is computed for the aggregate tax value of the classification. The immediate implication is that there is no need to compute depreciation, or the various remaining balances, on an asset-by-asset basis. For example, traditional vintage accounting requires two depreciation computations for a machine placed in service in 2017 and a machine placed in service in 2018. Open-ended pooled accounting requires only one computation because the two machine values are aggregated through time as assets are placed in service (or subtracted as retired). The method is facilitated by applying declining balance depreciation, a method under which the monetary balance of the pool (the adjusted basis in US terminology), is reduced by a constant proportion each tax period. Note that it is not possible to reduce the balance of the pool to zero simply by reducing the value by a constant proportion each year. The balance can be reduced to zero in only two cases: First, if the accrued value of disposals is equal to or greater than the remaining value (adjusted basis) and second, if there are extraordinary disposals such as damage by fire or entity liquidations.

Open-ended pooled accounting has a number of benefits, including:

a. Declining balance depreciation is more in accord with empirical studies of economic depreciation,

b. There is relative computational simplicity,

c. Gains and losses from asset disposals are automatically included, making separate computations of capital gains and losses unnecessary for such assets (including automatic recapture in the case of accelerated depreciation),

d. Inflation adjustments can be accommodated as needed/required, and

e. A tax incentive such as accelerated depreciation can be incorporated as needed.

Some examples of the computations are presented in Tables 1 – 4. There are seven steps to computing all possibilities for a particular group.[1] Assumptions used to compute each table are: the depreciation rate is 20% and the initial value of the depreciation pool is 1,000.00. Table 1 reflects the situation in which an investment of 500.00 is made and depreciation is computed for the full year. The basis for depreciation this year (line 5) is equal to the summation of the initial basis and the amount of qualified investment this year, or 1,500.00. A depreciation value of 300.00 (line 6) results. The ending basis of the pool (line 7) is equal to the difference between the basis for depreciation this year (line 5) and depreciation this year (line 6). The ending basis becomes the initial basis for depreciation next year.

Table 2 is based on the assumption that the 500.00 investment is made during the last half of the year, and a half-year convention is used (see below). The basis for depreciation this year then includes only half of this year's investment value (line 5) with no change in the subsequent steps.

Disposals are illustrated in Table 3 where it is assumed that some of the equipment is disposed during the year, for an accrued value of 280.00. This value reduces the basis for depreciation this year. Again, the remaining steps are unaffected. One additional adjustment is necessary in cases where the value of disposals is greater than the initial basis plus any investment this year. For example, suppose the value of line 4 in Table 3 was equal to 1,155.00. The resulting value of the basis for depreciation this year (line 5) would be negative (-155.00). The procedure in this case is to set the value of the pool to zero for both depreciation purposes and as the ending basis, and then to include 155.00 in taxable income as a gain.

Finally, Table 4 is an illustration of the situation where there is an investment in both halves of the year as well as a disposal. As shown, the steps are purely mechanical and yield the correct result given the variety of events.

II. Factors to Consider

Some decisions must be made about the design of any depreciation system.

a. When to Begin Depreciation

There are two options for when to allow a taxpayer to begin depreciation: date of purchase or date placed in service. The date-of-purchase rule simply means that the taxpayer may begin taking depreciation (adding the value of the asset to the pool) at the time when the taxpayer takes possession of the asset. The placed-in-service rule means the taxpayer may not begin to take depreciation until the date the asset is actually used to produce income. An example will illustrate the difference in the rules. Suppose a taxpayer buys a computer for business purposes on 1 August 2019 but does not begin to use

[1] One additional step would be required to include inflation adjustments into the depreciation system.

the computer until 15 January 2020. Under the date-of-purchase rule, the taxpayer would be allowed to take depreciation in 2019, perhaps with a half-year convention. Under the placed-in-service rule, the taxpayer would have to wait until 2020 to begin depreciation.

My preference is for the placed-in-service rule, even if application is more administratively burdensome. Invoices, or the date that possession is obtained, may be the major audit document with the date-of-purchase rule. The invoice is also necessary for the placed-in-service rule, in order to verify ownership, but there needs to be an additional record of the date the asset is placed in service. As a practical matter, there may not be much difference for going concerns except at yearend, so administration audits might be concentrated on year-end transactions. A placed-in-service rule, however, is more consistent with standard accrual accounting, particularly for new investments when there is a lag between the time of purchase and the time operations begin. It is preferable to capitalize all expenses and to defer (amortize) preproduction intangible costs such as labor until production begins. I support such capitalization for tax purposes, including for mines as well as oil and gas, so a placed-in-service rule is compatible with this point of view.[2]

b. Treatment in the First Depreciation Period

The amount of depreciation taken in the first year should depend on how much the asset is used, or how long it is owned. In theory, the amount of depreciation could be a proportion of the number of days, or months, the asset is used during the tax year. Practical considerations have reduced the options to two. The first is to allow a full year's depreciation regardless of the date placed in service or purchased. Thus, there is some incentive for investors to cluster depreciable investments at yearend, particularly when there are incentives that correspond to the timing of investments, such as accelerated depreciation or investment tax credits. A practical alternative is the half-year convention under which assets placed in service, or purchased, during the first half of the year get a full year's depreciation, while those placed in service, or purchased, during the second half of the year get half of the normal depreciation. I prefer the half-year convention because it appears to be a reasonable averaging device and so recommend its adoption.

c. Optional Depreciation

Some countries, such as Canada, provide for optional depreciation in any tax period. For example, suppose a taxpayer's depreciation for 2020 is 1,566.00. The taxpayer may take any amount from zero to 1,566.00 in 2020. A taxpayer would only take such an option in situations where tax loss carryforwards are constrained.[3] My view is that tax loss carryforwards should be long enough to make optional depreciation redundant. In addition, optional depreciation may add further complications to the system. In short, taxpayers should be required to take the full value of depreciation in the period in which it accrues.

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[2] Capitalization could be accommodated via an exemption with a date-of-purchase rule. Depreciation of assets purchased prior to the date of production would be deferred. Of course, this is simply a placed-in-service rule for this type of situation.

[3] For example, assuming a FIFO stacking rule for loss carryforwards, suppose there is a remaining tax loss from 2015 of 1,000. Suppose further that taxable income before loss carryforwards and depreciation is 1,200. In this case, the taxpayer would take the remaining tax loss carryforward from 2015, in order to get the full benefit of the loss carryforward. In addition, the taxpayer would take only 200 of the 1,566 in order to have taxable income of zero in 2020. The decision to take only 200, as opposed to the full 1,566, depends on the cumulative tax loss carryforward from the remaining prior four years and expectations about future profitability.

III. Coverage and Rates

Assets should be classified into groups for tax purposes based on current asset lives. One suggested example is supplied here. Some incentive is provided given that I classified the assets at the lower end of their asset lives. Real property and intangible costs for exploration and development of natural resources should not be aggregated into pools. Separate accounting by property or license as the case may be should be maintained for those groups.

a. Pooled Asset Classifications

1. Three-Year Property

i. Computers and office equipment
ii. Specialized manufacturing tools
iii. Other equipment with current asset lives of four years or less

2. Five-Year Property

i. Automobiles
ii. Assets with current asset lives of between five and ten years

3. Seven-Year Property

i. Research and Development Expenditures[4]
ii. Purchased intangible property

4. Ten-Year Property

i. Manufacturing equipment (not otherwise classified)
ii. Heavy trucks and equipment
iii. Communication distribution systems
iv. Specialized heavy industrial equipment such as mining, forestry, and construction
v. Assets with current asset lives of greater than nine years under current rules

b. Separate Classification

1. Real Property

Real property, including buildings and their structural components, can be depreciated over twenty-five years via either straight-line or declining balance depreciation.

[4] It is common to allow expensing of research and development costs. This is bad policy in my view and is a poor incentive for encouraging research. All research and development can be pooled because, like exploration, the joint expenses, both successes and failures, contribute to the risk-adjusted returns from the successes that result.

2. Intangible Preproduction Cost for Natural Resource Projects

My view is that exploration, development, and preproduction expenses should be aggregated into one group for tax purposes.[5] One appropriate method to amortize these expenditures is unit of production, a method that would amortize the expenditures over the productive life of the project. An incentive is provided, however, by amortizing the expenditures over a five-to-seven year period on a straight-line basis. The amortization should begin at the date of initial production.

I hope this information is helpful. Once MOPFI management decides on the approach, I will be happy to develop further technical detail.

Thank you.

[5] I understand that it is common to expense such expenditures, but my view is that such expensing is bad policy if the intended tax base in accrued income. The fact that there is significant risks to such expenditures is not a justification, particularly given ring fencing of mining and petroleum projects. Expensing might be provided in the production sharing and mining contracts, but tax policy is applied to all industries. There is no reason, as a tax policy matter, to treat natural resources in anything other than a neutral manner.

Line #	Table 1:	Amount
	Asset Placed in Service during First Half of the Year	
1	Adjusted Basis of Category A at the Beginning of the Year	1,000.00
2	Asset Value Placed in Service During First Half of the Year	500.00
3	Asset Value Placed in Service During Second Half of the Year	
4	Accrued Receipts from Disposals	
5	Basis for Depreciation This Year (Line 1 + Line 2 + .5*Line3 - Line 4)	1,500.00
6	Depreciation this Year (.2*Line 5)	300.00
7	Adjusted Basis of Category A at the End of the Year (Line 1 + Line 2 + Line 3 - Line 4 - Line 6)	1,200.00

Line #	Table 2:	Amount
	Asset Placed in Service during Second Half of the Year	
1	Adjusted Basis of Category A at the Beginning of the Year	1,000.00
2	Asset Value Placed in Service During First Half of the Year	-
3	Asset Value Placed in Service During Second Half of the Year	500.00
4	Accrued Receipts from Disposals	
5	Basis for Depreciation This Year (Line 1 + Line 2 + .5*Line3 - Line 4)	1,250.00
6	Depreciation this Year (.2*Line 5)	250.00
7	Adjusted Basis of Category A at the End of the Year (Line 1 + Line 2 + Line 3 - Line 4 - Line 6)	1,250.00

Line #	Table 3:	Amount
	Disposal at Any Time During the Year	
1	Adjusted Basis of Category A at the Beginning of the Year	1,000.00
2	Asset Value Placed in Service During First Half of the Year	-
3	Asset Value Placed in Service During Second Half of the Year	
4	Accrued Receipts from Disposals	280.00
5	Basis for Depreciation This Year (Line 1 + Line 2 + .5*Line3 - Line 4)	720.00
6	Depreciation this Year (.2*Line 5)	144.00
7	Adjusted Basis of Category A at the End of the Year (Line 1 + Line 2 + Line 3 - Line 4 - Line 6)	576.00

Line #	Table 4	Amount
	Example of New Purchase during both Halves of the Year and a Disposal Combined	
1	Adjusted Basis of Category A at the Beginning of the Year	1,000.00
2	Asset Value Placed in Service During First Half of the Year	500.00
3	Asset Value Placed in Service During Second Half of the Year	500.00
4	Accrued Receipts from Disposals	280.00
5	Basis for Depreciation This Year (Line 1 + Line 2 + .5*Line3 - Line 4)	1,470.00
6	Depreciation this Year (.2*Line 5)	294.00
7	Adjusted Basis of Category A at the End of the Year (Line 1 + Line 2 + Line 3 - Line 4 - Line 6)	1,426.00