Ralph's International Operations

Ralph is analyzing pro forma financial statement results for his international operations. The CurrTran Co. is a wholly-owned foreign subsidiary of Domestic Co. CurrTran manufactures and sells its products in the local (foreign) market; while Domestic Co. does the same in the domestic market. CurrTran maintains monetary assets (cash and equivalents plus receivables) in approximately equal amount to monetary liabilities (largely obligations to suppliers); these amounts are always approximately zero at financial reporting dates and consequently will be ignored to keep the problem simple. Excess funds from CurrTran are repatriated to Domestic Co. Domestic Co. provides all long-term financing separately from manufacturing operations through a wholly-owned finance subsidiary. Consolidated financial reports are prepared in the domestic currency.

CurrTran Co.'s price-level experience is consistent with the local economy's price-level experience. That is, unit prices on products currently purchased and sold by CurrTran change at rates consistent with changes in prices generally. For example, if the current inflation rate is 5% and last period's unit sales price was $10f$ (f is the generic label employed for the foreign currency in this example) then this period's unit sales price is $10.50f$; similar relations apply to current investment costs.

For the first period of CurrTran's operations the following results are expected:

Revenues	2,000f
Cost of goods sold	1,250
Depreciation expense	178
Selling, general and administrative expenses	200
Net income	372f
Other transactions include:	
Cash purchases of inventory	1,500f
Cash investments in property, plant & equipment	200f

Accrual transactions are as follows:

$$CGS_t = 5/6 * (Inventory_{t-1} + purchases_t)$$

$$Depr_t = 8/9 * (PPE_{t-1} + investments_t)$$

Therefore, in period five and after the (inflation-free) results are expected to be as follows:

Revenues	2,000*f*
Cost of goods sold	1,500
Depreciation expense	200
Selling, general and administrative expenses	200
Net income	100*f*
Other transactions include:	
Cash purchases of inventory	1,500*f*
Cash investments in property, plant & equipment	200*f*

Domestic Co. is interested in the reported impact of CurrTran Co.'s results on the forecasted pro forma consolidated reports. Therefore the task at hand is to forecast the results for CurrTran Co. and translate those into domestic currency results.

Equilibrium relations between currency exchange rates and inflationary experiences

When markets are free of trading frictions and capital flows freely. Currency exchange rates adjust to reflect relative inflationary experiences across different economies to preserve purchasing power parity. For instance, suppose that at time 0 the spot exchange rate on currency between domestic currency (say U. S. dollars) and foreign currency (generically labeled *f*) is $2/1*f*. Therefore, the same representative basket of goods and services can be purchased for $200 or 100*f* at time 0. Suppose that domestic inflation is 5% during period one and foreign inflation is 10% during period one. Now the same

representative basket of goods and services can be purchased for \$210 or 110f at time one. Accordingly, the exchange rate for money during period one will be \$2.1/1.10$f \approx$ \$1.9091/1f. If the same experience occurs for a second period, then the representative basket of goods and services can be purchased for \$200 x $(1.05)^2 \approx$ \$220.50 or 100f x $(1.10)^2 \approx$ 121f. The exchange rate for money during period two will be \$2.205/1.21$f \approx$ \$1.8223/1f.

Institutional details related to foreign currency translation

Whenever one entity has substantial or controlling influence over another entity so that equity method or consolidated method accounting applies, foreign currency translations are employed to restate results in the investor's reporting currency. It is important to distinguish between these translations and foreign currency conversions or exchanges. The former are applied to measure results in one common unit, while the latter are actual transactions in which one currency is exchanged for another.

There are three steps in the measurement process. [1] The first step involves making the foreign accounting conform to domestic GAAP; this does not mean that the accounting is done identically to the manner it would have been done had the foreign entity operated domestically. There are numerous rules and we will not bother with all of the details but rather we'll assume CurrTran's accounting conforms with domestic GAAP.

The second step involves remeasurement of the accounting results in the functional currency. The functional currency is the currency of the primary economic environment in which the entity operates. This is frequently the local currency, as in the CurrTran Co. case and no remeasurement is called for. If remeasurement in the functional currency is needed, then the local currency results are restated in terms of the functional currency at the historical exchange rates that prevailed when assets were acquired for most operating assets. For assets carried at current market values (for instance, securities)

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[1] The details are consistent with but not necessarily limited to Financial Standards Board Statement No. 52 on foreign currency translation and U. S. GAAP.

remeasurement is done at the current exchange rates. Any remeasurement gains or losses are reported in current net income.

The third step is translation to domestic currency or the investor's reporting currency. The functional currency results are translated into domestic currency at either the (a) current exchange rate, or (b) the historical exchange rate. The current rate applies in most settings.

The current rate method translates functional currency results to domestic currency results at the current exchange rate (an average rate for the current period is frequently employed for current period transactions such as revenues). Since the current exchange rate frequently differs from the exchange rate prevailing when the asset was acquired, this difference produces a difference in the domestic-currency measurement of the foreign entities' net worth and is called a foreign currency translation gain or loss. (Remember it is due to the measurement difference between current and historical exchange rates on net assets.) Foreign currency translation gain or loss adjustments are not reported in net income but rather are reported in the owners' equity section of the consolidated balance sheet.

The temporal method or historical rate method applies to foreign entities operating in hyperinflationary environments. Hyperinflationary environments are usually defined as economies experiencing greater than100 percent annual inflation; Brazil is an example of a country that has experienced hyperinflation on occasion. Since hyperinflation can produce results that are very difficult to interpret, the investor's reporting currency or the domestic currency is assumed to be the functional currency for the foreign entity's operations. Translation is applied at historical exchange rates (this is simply the remeasurement process) and no translation gains or losses arise. (Notice this does not apply to CurrTran Co.)

Part A

Suppose that zero inflation is expected in both the foreign and domestic economies over the next five periods and that the currency exchange rate at time zero is $2/1*f*.

Prepare forecasted pro forma results for CurrTran for the first five years of operations measured in both the foreign and domestic currencies. That is, identify forecasted income statement (revenues; cost of goods sold; depreciation expense; and selling, general & administrative expenses), and balance sheet (inventory; property, plant & equipment; and owners' equity -- including foreign currency translation gain or loss) results for the first five years in the foreign currency and translate to domestic currency results. Treat any excess cash generated as dividends repatriated from CurrTran to Domestic.

(Notice relative inflation and the currency exchange rate are constant throughout the period consequently there is no foreign currency translation gain or loss reported in owners' equity.)

Part B

Suppose that beginning in period 6, inflation in the foreign economy is expected to accelerate to 10% per period and zero inflation is expected to continue in the domestic economy. This inflation differential is expected to persist indefinitely from period 6 and after. Thus, the relative price index (RPI; with base period time zero) and currency exchange rates are as follows (for simplicity, use period-end rates as the average rates):

t	1	2	3	4	5	6	7	8	9	10
RPI	1.00	1.00	1.00	1.00	1.00	1.10^1	1.10^2	1.10^3	1.10^4	1.10^5
exch. rate $\$/f$	$\$2/$ $1.00f$	$\$2/$ $1.00f$	$\$2/$ $1.00f$	$\$2/$ $1.00f$	$\$2/$ $1.00f$	$\$2/$ $1.10^1 f$	$\$2/$ $1.10^2 f$	$\$2/$ $1.10^3 f$	$\$2/$ $1.10^4 f$	$\$2/$ $1.10^5 f$

Prepare forecasted pro forma results for CurrTran for the next five years (years six through ten) of operations measured in both the foreign and domestic currencies. That is, identify forecasted income statement (revenues; cost of goods sold; depreciation expense; and selling, general & administrative expenses), and balance sheet (inventory ; property, plant & equipment; and owners' equity -- including foreign currency translation gain or loss) results for the first five years in the foreign currency and translate to domestic currency results. Treat any excess cash generated as dividends repatriated from CurrTran to Domestic.

This means that transactions amounts (measured in the foreign or functional currency) beginning with period 6 are as follows:

$\text{Purchases}_{t+5} = g^t \, 1500$

$\text{Investments}_{t+5} = g^t \, 200$; where g is the relative price index in the foreign economy

$\text{CGS}_t = 5/6 * (\text{Inventory}_{t-1} + \text{purchases}_t)$

$\text{Depr}_t = 8/9 * (\text{PPE}_{t-1} + \text{investments}_t)$

In turn, using the standard relation between beginning account balances and transactions, account balances beginning with period 6 are as follows:

$\text{Inventory}_t = 1/6 * (\text{Inventory}_{t-1} + \text{purchases}_t)$

$\text{PPE}_t = 1/9 * (\text{PPE}_{t-1} + \text{investments}_t)$

Part C

Suppose that we combined restatement to general-price levels (restate all results in terms of some base year monetary unit, say time 0) and currency translations to the above analysis.

How would the results for part A and part B be revised?

Would it matter if we applied restatement at the foreign relative price index first followed by translation at historical exchange rates or translation at current exchange rates followed by restatement at the domestic relative price index?
More specifically, the former implies restatement to time 0 foreign currency based on the relative price index concurrent with arms-length transactions and then translation from foreign to domestic currency based on the time 0 currency exchange rate. While the latter implies translation at the currency exchange rate concurrent with arms-length transactions then restatement to time 0 domestic currency based on the domestic relative price index concurrent with arms-length transactions. Clearly, these are identical but the accounting seems more cumbersome for the latter.