Accounting for Debt

Issuing Debt

A. Borrower's books

Debt transactions are an exchange involving receipt by the borrower of cash today, in return for a stream of promised payments in the future. To reflect this, the borrower increases the amount of assets (cash) and the amount of liabilities (debt). As always, we have to start with the valuation aspect. By the no-free-lunch theorem,

FMV of debt = Cash Received (before any issue costs, just to keep life simple)

This identity may be called the fundamental identity from which one then derives the accounting identity:

FMV of Debt = Face Value of Debt ± Premium or Discount on Debt

And of course the premium or discount depends on whether the coupon rate (r_c) exceeds the discount rate (r_m) or not. The following relationship is basic:

If $r_c > r_m$, then the debt is issued at a premium (issuer gets more cash than face value).
If $r_c < r_m$, then the debt is issued at a discount (issuer gets less cash than face value).

All sensible accounting for debt is based on the effective interest method, i.e. on the idea that time value of money is crucial to adjust for. [*If an entity does not use the effective interest method, their accounting theory is out of date (and wrong). No ifs, no buts.*]

Quick check:
Record the sale of 10% $500 debentures for cash when r_m is (1) 8%, (2) 10%, (3) 12%.

B. Lender's Books

The fundamental identity still holds, i.e.,

Cash Paid = FMV of Debt (this is now an asset for the lender)

and

FMV of Debt = Face Value of Debt ± Premium or Discount on Debt

The only difference is that for the lender the debt is an **asset**.

Quick check:
Record the purchase of 10% $500 debentures for cash when r_m is (1) 8%, (2) 10%, (3) 12%.

Accounting for periodic interest payments

A. Borrower's books

To understand the effective interest method, we need the concept of carrying value:

Carrying value at time t = Face Value of Debt ± Unamortized Premium or Discount on Debt at time t

or, in symbols,

$$V_{ct} = V_F \pm U_t$$

Note that U_t, the unamortized discount or premium at time t, changes every accounting period whereas V_F, the face value of the debt does not generally change. Thus, most of the time, all changes in V_{ct} are due to changes in U_t.

Every period, an interest cost equal to $r_m*V_{c(t-1)}$ is charged to interest expense (why? … this is the discount rate times the effective amount borrowed during period t). However the debt holders are only paid r_c*V_F (why? … this is the "coupon payment"). The difference, i.e., $r_m*V_{c(t-1)} - r_c*V_F$ is the amount of premium or discount amortized during the current period. This gives us the equation for U_t, the unamortized discount after t periods:

$$U_t = U_{t-1} - [r_m*V_{c(t-1)} - r_c*V_F]$$

i.e. the unamortized premium or discount at the end of the previous period *minus* the amount amortized this period. If you have been paying attention to all this, you must have noticed that in the equation I just gave you, only U and V_c have a time indicator (the t in the subscript) attached to them. In other words, you will have noticed that the r_m, r_c and V_F values do not change with time. This is as it should be (why? … they are all fixed by contract when the debt is issued … i.e., they are "contract parameters").

Quick check:
Record the discount amortization for the 3 cases above for one or two years. Interpret what goes on in the T-accounts and journal entries. Does this make sense?

B. Lender's books (all amounts same as in borrower's books)

Interest income = $r_m*V_{c(t-1)}$

Cash received = r_c*V_F

Amount of discount/premium amortized: $r_m*V_{c(t-1)} - r_c*V_F$

Carrying value: $V_{ct} = V_F - U_t$, where, as before, $U_t = U_{t-1} - [r_m*V_{ct-1} - r_c*V_F]$

Debt Restructuring

A. Lender's books (note here we do the lender first … its simpler).

In debt restructuring, the carrying value of the old debt is swapped for the carrying value of the new debt. For the lender this involves forgiving part of the carrying value of the debt in its books and is always occasion to record a loss.

Loss = Carrying value of old debt – NPV of new debt = $V_{ct[old\ Debt]} - V_{c[New\ Debt]}$

where $V_{c[New\ Debt]}$ is the NPV and hence the carrying value of the new debt.

To account for this change in value, we write out the value of the old debt asset and write in the value of the new debt asset with any difference being a loss that goes to Net Income (and thence reduces stockholders' equity). Thus both the assets and liabilities sides of the balance sheet are "shrunk" by the amount of the loss.

Quick check
Record a loss, see how it flows through to the I/S and B/S.

B. Borrower's books

While the lender always recognizes a loss in troubled debt restructurings, the buyer does not always recognize a gain. This fundamental asymmetry is the only interesting thing here from an accounting perspective. The rule is:

> If $V_{ct[Old\ Debt]}$ > Sum of all interest and principal payments under new loan, recognize a gain.
> If not, do nothing.

If there is a gain, we write down the carrying value of the old debt to new carrying value. If not, we do nothing, just charge the higher imputed interest cost to income during each subsequent period.

Why does this work?

It does not. This accounting treatment is little more than historical debris that bears testimony to the fact that FASB accounting standards are often-times little more than a political compromise. Once upon a time, under FAS 15, the accounting for both borrower and lender was based on whether the total cash flows under the new debt were less than the carrying value of the old debt. Then, in FAS 114, FASB amended the accounting for the lender so that the lender had to recognize a loss if the NPV of the new debt was less than the carrying value of the old debt. However FASB did not amend the accounting for the borrower for political reasons. Kieso et al. note that FASB was worried that tackling the borrower's side would lead to a delay in the issuance of the standard. See pars 114-155 of FAS 114 for the incredibly baroque and convoluted logic FASB used to justify this bizarre asymmetry. *Let nobody accuse us of consistency.*☺

Accounting for Equity

Four sets of issues come up in accounting for equity:

1. Issuing different types of equity instruments.
2. Figuring out the amount attributable to individual instruments in a bundled sale.
3. Handling issue costs.
4. Handling repurchase and re-issuance.

We deal with these as follows:

1. "Every tub on its own bottom": use a separate account for each instrument [when the instrument has a par value as well as a fair value other than par, use a separate par value and additional paid in capital (APIC) account for each instrument].
2. If all values are equally hard, use the proportional method, else incremental method.
3. Reduce capital raised for direct costs, expense indirect costs.
4. Rule 1 + cost basis: Use a separate treasury stock account (at cost) for the accounting for each instrument repurchased. When you reissue the instrument:
   a. If resold at a gain, credit gains to the corresponding APIC account.
   b. If sold at a loss, debit to the corresponding APIC account till the balance in that APIC account goes to zero. Charge the rest of the loss to Retained Earnings.

Issuing equity

A. Determining the amount to credit to equity accounts.

Suppose we issue I separate types or classes of instruments each with a fair market value V_i {i=1,2,3…,I}. If we sell them separately (or if the values are not "bundled"), we simply record an increase in cash equal to $\$\boldsymbol{C}$. Notice that under our maintained assumption, total cash equals the sum of the values of the individual instruments issued, i.e., $\$\boldsymbol{C}=\boldsymbol{V}=\sum_i V_i$. We proceed as follows with the credits: For instruments with no par value, the corresponding Common Stock account is increased by V_i while for instruments with par value, the corresponding Common Stock at Par account is increased by P_i (the par value of the stock issued) and the corresponding APIC account is increased by the remainder of the value i.e., (V_i-P_i). [*Note that we are ignoring issue costs here. We will handle this wrinkle shortly.*]

However suppose we issue these instruments in a bundle for $\$\boldsymbol{C}$ and that $\$\boldsymbol{C} \neq \boldsymbol{V}$. Suppose all the instruments have good "comps" so that our estimates of the values of each instrument are equally "hard." Then we credit the Common Stock and APIC accounts for each instrument with a total amount equal to

$$E_i = V_i * \boldsymbol{C}/\boldsymbol{V}$$

where it is easy to see what is going on as long as we recall that $\boldsymbol{C}$ is the total cash collected while $\boldsymbol{V}$ is the sum of FMVs of the various instruments.

Of this E_i, P_i is credited to the corresponding Common Stock at Par Value account while the residual amount (E_i–P_i) is credited to the corresponding APIC account.

Now suppose the fair market values of some these instruments are "hard", i.e., well established while the fair market values of the rest are "soft". How to proceed?

Answer: Just mix and match.

In other words, first divide up the pool of securities into two groups: H which consists of all the hard-value securities (i.e. securities whose values are measured with greater certainty) and S which consists of all the soft-value securities (i.e., securities whose values are measured with greater uncertainty). We now proceed as follows:

Let $\boldsymbol{V_H} = \sum_{i \in H} V_i$ be the total value of the hard-value securities. Let the total proceeds be, as before, $\$\boldsymbol{C}$. Then, if $\boldsymbol{C} > \boldsymbol{V_H}$, credit each hard-value instrument with value V_i [suitably apportioned between P_i to Common Stock at Par and (V_i-P_i) to APIC].

Take the rest, i.e., $\$\boldsymbol{C} - \boldsymbol{V_H}$ and allocate that to the soft-value securities according to the proportional method.

So now of course, if you are like me you are scratching your head saying "OK, suppose I have more than one security in the set S, how do I know how much of $\$\boldsymbol{C}\text{-}\boldsymbol{V_H}$ to put in the i^{th} instrument in S?" The answer is the same in all such cases in accounting: we are paid to make intelligent (sensible, reasonable, defensible) estimates of values, so just go ahead and make estimates for the FMV of each individual soft-value security (i.e., in S), add up all these estimates to get $\boldsymbol{V_S} = \sum_{i \in S} V_i$ and apply the proportional method to compute:

$$E_i \text{ (for all } i \in S) = V_i * (\boldsymbol{C}\text{-}\boldsymbol{V_H})/\boldsymbol{V_S}$$

Then break up each E_i into a P_i to go into the corresponding Common Stock at Par account and the rest, i.e. (E_i-P_i) is the corresponding APIC.

B. Issue costs

First split up the direct issue costs between instruments based on the E_is. (NOT on FMV)
Direct issue costs of any instrument reduce the corresponding APIC.
If there is no credit balance in the corresponding APIC, all unabsorbed direct issue costs for that instrument are charged to Retained Earnings. (see E15-4 .. good eye Steven!! ☺)

C. Purchase & reissue of treasury stock

- All purchases to be kept at cost in a separate account for each instrument.
- Compute gain or loss on reissue (sale of treasury stock) using either FIFO or wtd. average costs.
- Credit gains to corresponding APIC.
- Debit losses to corresponding APIC till APIC balance is reduced to zero. Thereafter the reissue losses on that instrument go into Retained Earnings.

Dividends

For cash or kind dividends, reduce retained earnings and reduce the amount of the asset disbursed by the FMV of assets distributed. [***Important***: Getting the asset to be distributed to FMV may involve either a revaluation gain or loss which will affect net income and hence retained earnings and stockholders' equity.]

Stock dividends are treated differently depending on whether they are large or small (why? because the regulators made a bad decision in the past and have not gotten around to correcting themselves yet). "Large" is anything > 25% or so. "Small" is anything that is not large (yes sir/ma'am, its as precise as that!). [Conceptually, many believe that all stock dividends should be treated the same and the treatment for the large dividends is the right one.]

If small stock dividends are paid, we decrease retained earnings with the market value of stock and increase Common Stock (or Common Stock at Par and APIC). [Suppose par value is $1, market value is $30. Then reduce retained earnings by $30, increase CS at par by $1 and increase APIC ($1 Par Common Stock) by $29.]

If large stock dividends are paid, we reduce retained earnings by par value of Common Stock paid as dividend and increase Common Stock at Par. [Suppose par value is $1, market value is $30. The reduce retained earnings by $1, increase CS at par by $1.]

If there is a stock split, (or a reverse-split) do nothing. Just record the change in the number of shares outstanding.

Computing Diluted EPS

Make a list of dilutive securities. All dilutive securities must be converted and the number of additional shares issuable must be included in computing fully diluted EPS.

We will consider dilutive securities in three layers:

1. Instruments with tax-deductible fixed or variable payment rights (debt)
2. Preferred stock
3. Warrants, options and other convertibles with an exercise price.

To find out if a convertible bond (i.e. debt instrument) is dilutive, proceed as follows:

1. Let the undiluted EPS be *EPS*.
2. Let the amount paid to the holders of the instrument be ***A***.
3. Add back ***A*** to the net income before tax. Recompute post-tax income. Let this income number be $\boldsymbol{I_{New}}$.
4. Compute the maximum number of shares that the holders of that instrument would get (let the maximum conversion rate be ***r***). Add this to the total number of weighted average shares outstanding during the year. Call this new number $\#_{New}$. Note that
   $\#_{New}$ = Wtd avg Common Shares outstanding
   + ***r*** * Wtd average number of instruments outstanding.
5. Compute $EPS_{New} = I_{New}/\#_{New}$.
6. If $EPS_{New} < EPS$, then the security is dilutive, otherwise it is non/anti-dilutive.

Since payments to preferred stock are not tax deductible, add back any payments to preferred stockholders, convert their shares to common and see if $EPS_{New} < EPS$. If so, then these are dilutive.

Finally, if the exercise price of the options and warrants is less than the average stock price for the period, those are convertible. In that case, the amount of dilution (i.e., the number by which to increase the common stock outstanding in the denominator of the fully diluted EPS computation) is computed as follows. Let ***r*** be the number of options required to buy 1 share of stock. The amount of dilution is:

$$\frac{[\text{Mkt price of Stock} - \boldsymbol{r}*\text{Exercise Price of Option}]}{\text{Market Price of Stock}} * \frac{\#\text{ of options outstanding}}{\boldsymbol{r}}$$

When multiple securities are dilutive:

1. Order all dilutive securities by the amount by which they would dilute EPS.
2. Convert the most dilutive security first. Check using steps listed above if the next most dilutive security would still be dilutive. If yes, convert that also and proceed to the next dilutive security and so on. If at any step a security is non/anti-dilutive, stop.
3. Compute fully diluted EPS based on the number of common shares that would be outstanding if all the securities identified as being dilutive in step 2 above are converted. [When doing this remember to add back to the numerator all payments made to holders of the instruments being converted (net of tax).]