IBM

*Designing Debt*

Prof. Ian Giddy

New York University
First Principles

- Invest in projects that yield a return greater than the minimum acceptable hurdle rate.
  - The hurdle rate should be higher for riskier projects and reflect the financing mix used - owners’ funds (equity) or borrowed money (debt).
  - Returns on projects should be measured based on cash flows generated and the timing of these cash flows; they should also consider both positive and negative side effects of these projects.

- Choose a financing mix that minimizes the hurdle rate and matches the assets being financed.

- If there are not enough investments that earn the hurdle rate, return the cash to stockholders.
  - The form of returns - dividends and stock buybacks - will depend upon the stockholders’ characteristics.

- Manage financial risk
The Agenda

- What determines the optimal mix of debt and equity for a company?
- How does altering the mix of debt and equity affect the value of a company?
- What is the right kind of debt for a company?
Foreign Exchange Exposure

Value of the Euro

Source: pacific.commerce.ubc.ca/xr
What Hedging Instruments?

- What Protection Needed?
  - Volatility & Direction
    - OTC options, Caps and Floors
  - Direction
    - Forwards, Futures, Swaps
  - Complex risks Or arbitrage
    - Exotics, Hybrids, structured notes

Complex risks Or arbitrage

Exotics, Hybrids, structured notes

Forwards, Futures, Swaps

Direction

OTC options, Caps and Floors

Volatility & Direction

What Protection Needed?
Heineken and the Euro

- How was the Dutch company Heineken affected by the fall in the Euro in 1999-2000?
- Look at
  - The Euro
  - The company’s sales
  - The company’s production
Heineken and the Euro

How was the Dutch company Heineken affected by the fall in the Euro in 1999-2000?

Look at:
- The Euro
- The company’s sales
- The company’s production

<table>
<thead>
<tr>
<th>Location</th>
<th>Fixed Assets</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Netherlands</td>
<td>2,341</td>
<td>1,063</td>
</tr>
<tr>
<td>Rest of Europe</td>
<td>8,874</td>
<td>4,027</td>
</tr>
<tr>
<td>Western Europe</td>
<td>1,972</td>
<td>895</td>
</tr>
<tr>
<td>Africa</td>
<td>685</td>
<td>311</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>1,613</td>
<td>732</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,485</strong></td>
<td><strong>7,028</strong></td>
</tr>
</tbody>
</table>

Data: 1999 figures, millions of Euro

Source: http://www.heinekencorp.nl
Heineken and the Euro

• How was the Dutch company Heineken affected by the fall in the Euro in 1999-2000?

• Look at the company's sales, the company's production, and the exchange rates.
Translation vs Economic Exposure

Accounting exposure

- Exposure = "Exposed" assets - "exposed" liabilities

Economic exposure

- Exposure = How will an unanticipated exchange rate change affect the cash flows of the firm?
  - Domestic sales
  - Exports
  - Domestic costs
  - Import costs
A Hedging Roadmap

Motivations for Hedge

Driven by company views
- Volatility: options, Direction: forwards, debt
  - Market risk remains

Driven by company needs
- Company has economic exposure
  - Forwards, swaps or debt
- Company has natural hedge
  - No need for hedging
Case Study: IBM

K. DERIVATIVES AND HEDGING TRANSACTIONS

Derivatives and Hedging

The company operates in approximately 35 functional currencies and is a significant lender and a borrower in the global markets. In the normal course of business, the company is exposed to the impact of interest rate changes and foreign currency fluctuations. The company limits these risks by following established risk management policies and procedures including use of derivatives and, where cost-effective, financing with debt in the currencies in which assets are denominated. For interest rate exposures, derivatives are used to align rate movements between the interest rates associated with the company’s lease and other financial assets and the interest rates associated with its financing debt. Derivatives are also used to manage the related cost of debt. For currency exposures, derivatives are used to limit the effects of foreign exchange rate fluctuations on financial results.

The company does not use derivatives for trading or speculative purposes, nor is it a party to leveraged derivatives. Further, the company has a policy of only entering into contracts with carefully selected major financial institutions based upon their credit ratings and other factors and maintains strict dollar and term limits that correspond to the institution’s credit rating. When viewed in conjunction with the underlying and offsetting exposure that the derivatives are designed to hedge, the company has not sustained a material loss from these instruments.

In its hedging programs, the company employs the use of forward contracts, interest rate and currency swaps, options, caps, floors or a combination thereof depending upon the underlying exposure.

A brief description of the major hedging programs follows:

Debt Risk Management

The company issues debt on the global capital markets, principally to fund its financing lease and loan portfolio. Access to cost-effective financing can result in interest rate and/or currency mismatches with the underlying assets. To manage these mismatches and to reduce overall interest cost, the company primarily uses interest-rate and currency instruments, principally swaps, to convert specific fixed-rate debt issuances into variable-rate debt (i.e., fair value hedges) and to convert specific variable-rate debt and anticipated commercial paper issuances to fixed rates (i.e., cash flow hedges). The resulting cost of funds is lower than that which would have been available if debt with matching characteristics was issued directly. The weighted-average remaining maturity of all swaps in the debt risk

Source: IBM Annual Report, 2001
Financing Choices

Assets’ value is the present value of the cash flows from the real business of the firm

Value of the firm = PV(Cash Flows)

From
How much debt?
to
What kind of debt?

You cannot change the value of the real business just by shuffling paper
- Modigliani-Miller
Corporate Financing Choices: What Kind of Debt?

- Fixed/floating
- Currency of denomination
- Maturity or availability
- Domestic/Euro
- Public/private
- Asset-based
- Credit enhanced
- Swapped
- Equity-linked
Ciba-Geigy: What Kind of Debt?
Short Term or Long Term?

- In 1992, Ciba had fixed assets of SF13.9 billion and capital expenditures of SF1.9 billion.
- Yet the majority of Ciba's debt is in the short-term commercial paper, bank debt, and suppliers-credit markets.
- This suggests that if the proportion of debt financing as a whole is increased, much of it should be in the form of long-term debt.
Currency of Denomination of Ciba's Debt? What Should It Be?

- Geographic location of sales and capital assets.
- Currency distribution of sales.
- Nature of the company's businesses
# Currency of Ciba’s Assets and Debt

<table>
<thead>
<tr>
<th></th>
<th>Geographic distribution of</th>
<th>Currency distribution of sales</th>
<th>Remarks on economic exposure</th>
<th>Estimated currency distribution of debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed assets</td>
<td>41%</td>
<td>2.4%</td>
<td>Net short position because much of production, but little of sales, here</td>
<td>9%</td>
</tr>
<tr>
<td>Sales</td>
<td>43%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.K.</td>
<td>27%</td>
<td>5.4%</td>
<td>Part of sales effectively U.S. dollar denominated</td>
<td>7%</td>
</tr>
<tr>
<td>Other Europe</td>
<td>27%</td>
<td>34.6%</td>
<td></td>
<td>21%</td>
</tr>
<tr>
<td>U.S. and Canada</td>
<td>23%</td>
<td>41.3%</td>
<td></td>
<td>54%</td>
</tr>
<tr>
<td>Latin America</td>
<td>4%</td>
<td>5.3%</td>
<td>Most of sales effectively dollar denominated</td>
<td>2%</td>
</tr>
<tr>
<td>Asia</td>
<td>4%</td>
<td>10.9%</td>
<td>Part of sales effectively U.S. dollar denominated</td>
<td>6%</td>
</tr>
<tr>
<td>Rest of the world</td>
<td>1%</td>
<td>5%</td>
<td>Most of sales effectively dollar denominated</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What Kind of Debt?
Some Considerations

- **Fixed/floating:**
  - How certain are the cash flows? Are operating profits linked to interest rates or inflation?

- **Currency:**
  - Consider currency of the assets: currency of denomination vs. currency of location vs. currency of determination.

- **Maturity or availability:**
  - Are the assets short term or long term? Should the firm assume ease of refinancing, or buy an option on access to financing?
### Designing Debt

#### Start with the Cash Flows on Assets/Projects
- **Duration**
- **Currency**
- **Effect of Inflation**
- **Uncertainty about Future Growth Patterns**
- **Cyclicality & Other Effects**

#### Define Debt Characteristics
- **Duration/Maturity**
- **Currency Mix**
- **Fixed vs. Floating Rate**
  - More floating rate if CF move with inflation, with greater uncertainty on future
- **Straight versus Convertible**
  - Convertible if cash flows low now but high exp. growth
- **Special Features on Debt**
  - Options to make cash flows on debt match cash flows on assets

#### Overlay tax preferences
- **Deductibility of cash flows for tax purposes**
- **Differences in tax rates across different locales**
- If tax advantages are large enough, you might override results of previous step

#### Consider ratings agency & analyst concerns
- **Analyst Concerns**
  - Effect on EPS
  - Value relative to comparables
- **Ratings Agency**
  - Effect on Ratios
  - Ratios relative to comparables
- **Regulatory Concerns**
  - Measures used

#### Factor in agency conflicts between stock and bond holders
- **Observability of Cash Flows by Lenders**
  - Less observable cash flows lead to more conflicts
- **Type of Assets financed**
  - Tangible and liquid assets create less agency problems
- **Existing Debt covenants**
  - Restrictions on Financing

#### Consider Information Asymmetries
- **Uncertainty about Future Cashflows**
  - When there is more uncertainty, it may be better to use short term debt
- **Credibility & Quality of the Firm**
  - Firms with credibility problems will issue more short term debt

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**Commodity Bonds**
**Catastrophe Notes**
**Operating Leases**
**MIPs**
**Surplus Notes**
**Convertible**
**Puttable Bonds**
**Rating Sensitive Notes**
**LYONs**

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Approaches for Evaluating Asset Cash Flows

I. Intuitive Approach
- Are the projects typically long term or short term? What is the cash flow pattern on projects?
- How much growth potential does the firm have relative to current projects?
- How cyclical are the cash flows? What specific factors determine the cash flows on projects?

II. Project Cash Flow Approach
- Project cash flows on a typical project for the firm
- Do scenario analyses on these cash flows, based upon different macro economic scenarios

III. Historical Data
- Operating Cash Flows
- Firm Value
## The Financing Details: Intuitive Approach for Disney

<table>
<thead>
<tr>
<th>Business</th>
<th>Project Cash Flow Characteristics</th>
<th>Type of Financing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creative Content</td>
<td>Projects are likely to</td>
<td>Debt should be</td>
</tr>
<tr>
<td></td>
<td>1. be short term</td>
<td>1. short term</td>
</tr>
<tr>
<td></td>
<td>2. have cash outflows are primarily in dollars (but cash inflows could have a substantial foreign currency component)</td>
<td>2. primarily dollar</td>
</tr>
<tr>
<td></td>
<td>3. have net cash flows which are heavily driven by whether the movie or T.V series is a “hit”</td>
<td>3. if possible, tied to the success of movies.</td>
</tr>
<tr>
<td>Retailing</td>
<td>Projects are likely to be</td>
<td>Debt should be in the form of operating leases.</td>
</tr>
<tr>
<td></td>
<td>1. medium term (tied to store life)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. primarily in dollars (most in US still)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. cyclical</td>
<td></td>
</tr>
<tr>
<td>Broadcasting</td>
<td>Projects are likely to be</td>
<td>Debt should be</td>
</tr>
<tr>
<td></td>
<td>1. short term</td>
<td>1. short term</td>
</tr>
<tr>
<td></td>
<td>2. primarily in dollars, though foreign component is growing</td>
<td>2. primarily dollar debt</td>
</tr>
<tr>
<td></td>
<td>3. driven by advertising revenues and show success</td>
<td>3. if possible, linked to network ratings.</td>
</tr>
</tbody>
</table>
## Financing Details: Other Divisions

<table>
<thead>
<tr>
<th>%</th>
<th>Projects are likely to be</th>
<th>Debt should be</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme Parks</strong></td>
<td>1. very long term</td>
<td>1. long term</td>
</tr>
<tr>
<td></td>
<td>2. primarily in dollars, but a significant proportion of revenues come from foreign tourists.</td>
<td>2. mix of currencies, based upon tourist make up.</td>
</tr>
<tr>
<td></td>
<td>3. affected by success of movie and broadcasting divisions.</td>
<td></td>
</tr>
<tr>
<td><strong>Real Estate</strong></td>
<td>1. long term</td>
<td>1. long term</td>
</tr>
<tr>
<td></td>
<td>2. primarily in dollars.</td>
<td>2. dollars</td>
</tr>
<tr>
<td></td>
<td>3. affected by real estate values in the area</td>
<td>3. real-estate linked (Mortgage Bonds)</td>
</tr>
</tbody>
</table>
FINANCING ALTERNATIVES AVAILABLE TO MAJOR CORPORATIONS

Debt?
Equity?
What kind?

DEBT
- Fixed
  - Interest rate swap
- Floating
  - Long term
  - Currency swap
  - Non-dollar
- Committed facility
  - Dollar
  - Private placement
- Public offering
  - US CP
  - Euro CP
  - Bank debt
- Hybrid
  - Callable
  - Index-linked
  - Convertible
  - Straight
  - Stripped
  - Unstripped

EQUITY
- Equity options
  - Private sale
    - Full rights
    - Restricted
  - Public offering
    - Domestic
    - International
Case Study: IBM

Source: morningstar.com

### Income Statement

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales $Mil</td>
<td>78,508</td>
<td>81,667</td>
<td>87,548</td>
<td>88,396</td>
<td>85,866</td>
<td>82,442</td>
</tr>
<tr>
<td>Operating Income $Mil</td>
<td>9,098</td>
<td>9,164</td>
<td>9,755</td>
<td>9,145</td>
<td>9,295</td>
<td>---</td>
</tr>
<tr>
<td>Income Tax $Mil</td>
<td>2,934</td>
<td>2,712</td>
<td>4,045</td>
<td>3,441</td>
<td>3,230</td>
<td>---</td>
</tr>
<tr>
<td>Net Income $Mil</td>
<td>6,073</td>
<td>6,308</td>
<td>7,692</td>
<td>8,073</td>
<td>7,713</td>
<td>4,894</td>
</tr>
<tr>
<td>Earnings/Share $</td>
<td>3.00</td>
<td>3.29</td>
<td>4.12</td>
<td>4.44</td>
<td>4.35</td>
<td>2.79</td>
</tr>
<tr>
<td>EPS (Cont Ops) $</td>
<td>3.00</td>
<td>3.29</td>
<td>4.12</td>
<td>4.44</td>
<td>4.35</td>
<td>3.18</td>
</tr>
<tr>
<td>Dividends/Share $</td>
<td>0.39</td>
<td>0.43</td>
<td>0.47</td>
<td>0.51</td>
<td>0.55</td>
<td>0.58</td>
</tr>
<tr>
<td>Total Shares Mil</td>
<td>1,965</td>
<td>1,866</td>
<td>1,810</td>
<td>1,763</td>
<td>1,733</td>
<td>1,690</td>
</tr>
</tbody>
</table>

### Cash Flow $Mil

<table>
<thead>
<tr>
<th>Fiscal year-end: December</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>TTM = Trailing 12 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Cash Flow</td>
<td>10,111</td>
<td>9,274</td>
<td>14,265</td>
<td>14,615</td>
</tr>
<tr>
<td>- Capital Spending</td>
<td>5,959</td>
<td>5,616</td>
<td>5,660</td>
<td>5,083</td>
</tr>
<tr>
<td>= Free Cash Flow</td>
<td>4,152</td>
<td>3,658</td>
<td>8,605</td>
<td>9,532</td>
</tr>
</tbody>
</table>

### Balance-Sheet Breakdown

<table>
<thead>
<tr>
<th>Assets</th>
<th>$Mil</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>5,216.6</td>
<td>6.2</td>
</tr>
<tr>
<td>Other Current Assets</td>
<td>32,099.4</td>
<td>38.2</td>
</tr>
<tr>
<td>Long-Term Assets</td>
<td>46,640.0</td>
<td>55.6</td>
</tr>
<tr>
<td>Total</td>
<td>83,956.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Liabilities and Equity</th>
<th>$Mil</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Liabilities</td>
<td>30,239.0</td>
<td>36.0</td>
</tr>
<tr>
<td>Long-Term Liabilities</td>
<td>31,625.0</td>
<td>37.7</td>
</tr>
<tr>
<td>Shareholders' Equity</td>
<td>22,092.0</td>
<td>26.3</td>
</tr>
<tr>
<td>Total</td>
<td>83,956.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Geography

<table>
<thead>
<tr>
<th>Geographic Information</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2001</td>
<td>2000</td>
<td>1999</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>$35,215</td>
<td>$37,216</td>
<td>$37,171</td>
<td>$23,028</td>
</tr>
<tr>
<td>Japan</td>
<td>11,514</td>
<td>12,128</td>
<td>10,411</td>
<td>4,034</td>
</tr>
<tr>
<td>Other countries</td>
<td>39,137</td>
<td>39,052</td>
<td>39,966</td>
<td>9,572</td>
</tr>
<tr>
<td>Total</td>
<td>$85,866</td>
<td>$88,396</td>
<td>$87,548</td>
<td>$36,634</td>
</tr>
</tbody>
</table>

*Revenue is attributed to countries based on location of customer.

**Includes all non current assets except non current financial instruments and deferred tax assets.

Source: IBM Annual Report, 2001
### Debt

Source: IBM Annual Report, 2001

#### J. Borrowings

**Short-term Debt**

<table>
<thead>
<tr>
<th>(Dollars in Millions) at December 31</th>
<th>2001</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial paper</td>
<td>$4,809</td>
<td>$3,521</td>
</tr>
<tr>
<td>Short-term loans</td>
<td>1,564</td>
<td>3,975</td>
</tr>
<tr>
<td>Long-term debt: Current maturities</td>
<td>4,815</td>
<td>2,709</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$11,188</strong></td>
<td><strong>$10,205</strong></td>
</tr>
</tbody>
</table>

The weighted-average interest rates for commercial paper at December 31, 2001 and 2000, were 1.9 percent and 6.7 percent, respectively. The weighted-average interest rates for short-term loans at December 31, 2001 and 2000, were 4.0 percent and 2.9 percent, respectively.

#### Long-term Debt

<table>
<thead>
<tr>
<th>(Dollars in Millions) at December 31</th>
<th>Maturities</th>
<th>2001</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. dollars: Debentures:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.22%</td>
<td>2027</td>
<td>$500</td>
<td>$500</td>
</tr>
<tr>
<td>6.5%</td>
<td>2028</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>7.0%</td>
<td>2025</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>7.0%</td>
<td>2045</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>7.125%</td>
<td>2096</td>
<td>850</td>
<td>850</td>
</tr>
<tr>
<td>7.5%</td>
<td>2013</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td>8.375%</td>
<td>2019</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>Notes: 6.3% average</td>
<td>2002-2014</td>
<td>2,772</td>
<td>2,933</td>
</tr>
<tr>
<td>Medium-term note program: 5.4% average</td>
<td>2002-2014</td>
<td>3,620</td>
<td>4,305</td>
</tr>
<tr>
<td>Other: 4.5% average</td>
<td>2002-2009</td>
<td>828</td>
<td>1,092</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11,320</td>
<td></td>
<td>12,430</td>
</tr>
</tbody>
</table>

### Other Currencies

(average interest rate at December 31, 2001, in parentheses):

- Euros (4.4%) 2002-2009 3,042 3,042
- Japanese yen (1.1%) 2002-2014 4,749 4,845
- Canadian dollars (5.8%) 2002-2011 441 302
- Swiss francs (4.0%) 2002-2003 151 231
- Other (6.1%) 2002-2014 726 275

**Total** 20,429 21,125
Hybrid Financial Instruments

Prof. Ian Giddy
New York University
Managing Hybrid Securities

- Principles of hybrid instruments
- Market imperfections as motives for hybrids
- Hybrids in the Eurobond market:
  - Asset-backed securities
  - Warrant bonds and convertibles
  - Index-linked bonds
- Application: callable bonds
A Day in the Life of the Eurobond Market

- Examine the deals
  - Why were each done in that particular form?
  - What determines the pricing?
- Can you break the hybrids into their component parts?
A Day in the Life...

NEW INTERNATIONAL BOND ISSUES

<table>
<thead>
<tr>
<th>Borrower</th>
<th>Amount m.</th>
<th>Coupon %</th>
<th>Price</th>
<th>Maturity</th>
<th>Moody's/S&amp;P Ratings</th>
<th>Fees</th>
<th>Bookrunner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celworks Trust 2001-1 (a)</td>
<td>US$200</td>
<td>4.325</td>
<td>99.80</td>
<td>Mar 2008</td>
<td>Aaa/AAA</td>
<td>0.30</td>
<td>JP Morgan/SSB</td>
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<tr>
<td>Korea Tobacco, Ginseng(b)**</td>
<td>US$200</td>
<td>(2.25)%</td>
<td>100</td>
<td>Oct 2006</td>
<td>BB2/BB</td>
<td>1.75</td>
<td>CSFB/UBS Warburg</td>
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<tr>
<td>Absolute Fog StL, CIs A(c)</td>
<td>€765</td>
<td>(c1)</td>
<td>100</td>
<td>Sep 2010</td>
<td>Aa1/AAA</td>
<td>0.15</td>
<td>Deutsche/SG/UBM</td>
</tr>
<tr>
<td>ING Groep NV (S)</td>
<td>€500</td>
<td>6.50</td>
<td>100</td>
<td>undated</td>
<td>A1/A</td>
<td>undisc</td>
<td>ING Barings-EBL</td>
</tr>
<tr>
<td>SHCF (d,e)</td>
<td>€750</td>
<td>41.2</td>
<td>98.55</td>
<td>Nov 2007</td>
<td>Aa1/AAA</td>
<td>0.07</td>
<td>CCF</td>
</tr>
<tr>
<td>Cofiroute</td>
<td>€500</td>
<td>5.875</td>
<td>99.11R</td>
<td>Oct 2016</td>
<td>-/-</td>
<td>0.40</td>
<td>BNP Paribas</td>
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<td>Holdebank</td>
<td>€1.50</td>
<td>6.125</td>
<td>100.125</td>
<td>Dec 2004</td>
<td>Aa3/AA-</td>
<td>0.22</td>
<td>CSFB</td>
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<tr>
<td>Hansbank ***</td>
<td>EEK100</td>
<td>7.625</td>
<td>101 3/8</td>
<td>Sep 2004</td>
<td>Aa2/AA</td>
<td>0.35</td>
<td>Deutsche</td>
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<tr>
<td>Keppel Telekom*</td>
<td>S$150m</td>
<td>2.125</td>
<td>100</td>
<td>Sep 2003</td>
<td>B3/B-</td>
<td>undisc</td>
<td>DBS Bank</td>
</tr>
<tr>
<td>C. Agnicoles Indosuez (f) ***</td>
<td>A$1.5bn</td>
<td>0</td>
<td>100 3/4</td>
<td>Mar 2003</td>
<td>-/-</td>
<td>0.75</td>
<td>CAI, HSBC</td>
</tr>
</tbody>
</table>

Find terms, non-callable unless stated. *With equity warrants. **Convertible. ***Private placement. #Semi-annual coupon. (a) Callable at par after 5 years. If call not exercised, bond pays 30bp over Libor in last year. (b) Fixing next week. Conv. premium: 13-18%. Redemption premium to yield T+125-175bp. Puttable on 31/10/04 at accreted value. Callable from 31/10/04 subject to 13% hurdle at accreting value. (c) Secured on German auto loans originated by Fiat Bank GmbH. Av life 4.24 yrs. (c1) 3-mo Euribor+260bp. (c2) Also class M of €85m retained. (d) Fungible with €2bn. (e) Long first coupon. (f) Redemption linked to hedge fund performance. Unlisted. (S) Subordinated.
Equity-Linked Bonds

- Bonds with warrants
- Convertible Bonds
- Index-linked Bonds

These are all examples of hybrid bonds and should be priced by decomposition.
Convertibles

- Conversion Value
- Market Value
- Market Premium
- Straight Bond Value

Price Per Share of Common Stock

Value of Convertible Bond ($)

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**Warrants**

- **Theoretical Value**
- **Market Value**
- **Market Premium**
- **Theoretical Value**

**Price Per Share of Common Stock ($)**

**Value of Warrant ($)**

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*Designing Debt 40*
Index-Linked

PRINCIPAL REPAYMENT
First Principles

- Invest in projects that **yield a return greater than the minimum acceptable hurdle rate**.
  - The hurdle rate should be **higher for riskier projects** and reflect the **financing mix** used - owners’ funds (equity) or borrowed money (debt)
  - Returns on projects should be measured based on **cash flows** generated and the **timing** of these cash flows; they should also consider both **positive and negative side effects** of these projects.

- **Choose a financing mix that minimizes the hurdle rate and matches the assets being financed.**

- If there are not enough investments that earn the hurdle rate, **return the cash to stockholders**.
  - The **form of returns** - dividends and stock buybacks - will depend upon the **stockholders’ characteristics**.

- Manage financial risk
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