



# Equity Linked Debt

---

Copyright © 1998-2006  
Investment Analytics



# Agenda

---

- Equity-linked Debt Structures
  - SUNs & other ELNs
- Full and Partial Principal Protection
- ELN's from Issuer's and Investor's Perspectives
- Product Structuring
- Tax Design Considerations
- Examples of ELN Structures
  - SIGNs
  - GROIs
  - MIPS

# Roadmap: Equity-Linked Debt

Debt

Stock

Short Put

•Buy-write

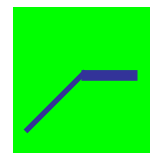
•PERCS

•Put Warrants

•SHIELDS

•PRIMES

•ELKS



Equity Swap



Call



OTM Call

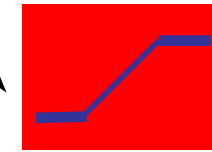


•DECS

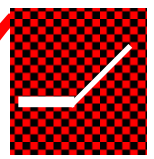
•PRIDES

- Floor
- Warrants
- SCORES

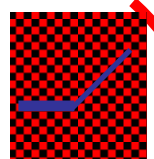
Call Spread



•Collar



- PENS
- SUPERS
- GROIS



•Convertibles

# Equity Linked Debt Structures

## OPTION INSTRUMENT

- S&P , FTSE, CAC, DAX, NIKKEI
- ATM/OTM CALL
- CALL SPREAD
- KNOCKOUT OR OTHER EXOTIC



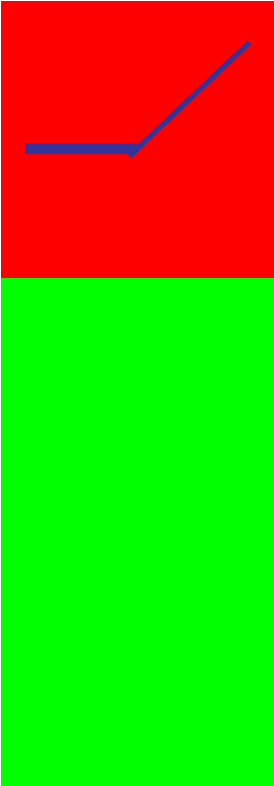
## DEBT INSTRUMENT

- TERM : 3 - 8 YEARS
- COUPON: LOW OR ZERO
- ISSUER: A-RATED



# Structured Debt Products

---

- 
- Guaranteed Debt with an Equity 'Kicker'
  - Equity Kicker:
    - % of the upside appreciation of an index
      - Known as the *participation percentage*
  - Debt Component:
    - Principal Protected:
      - Principal fully guaranteed
    - Partial Principal Protection:
      - Principal guaranteed to specified level

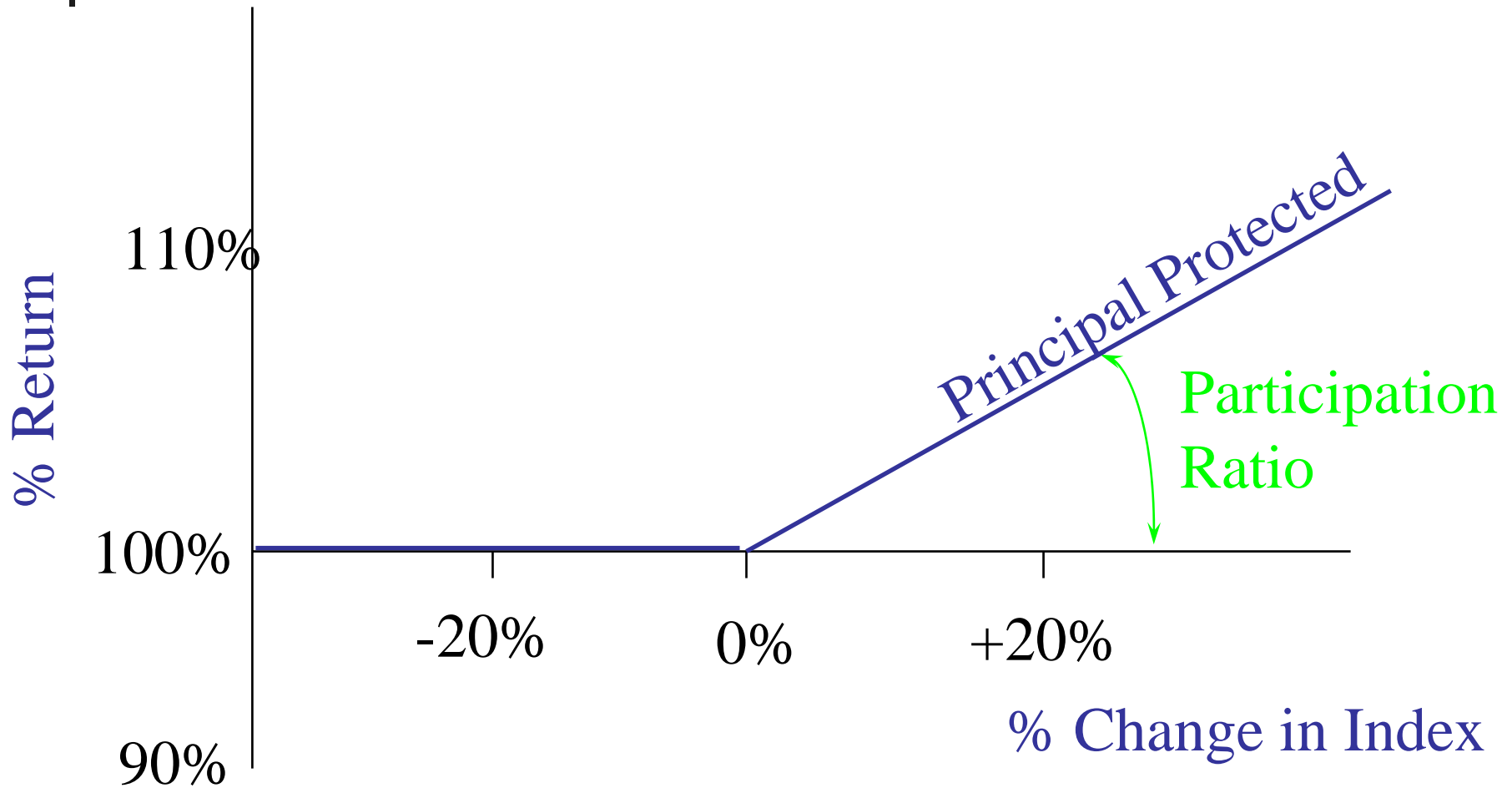


# Examples of ELN Issues

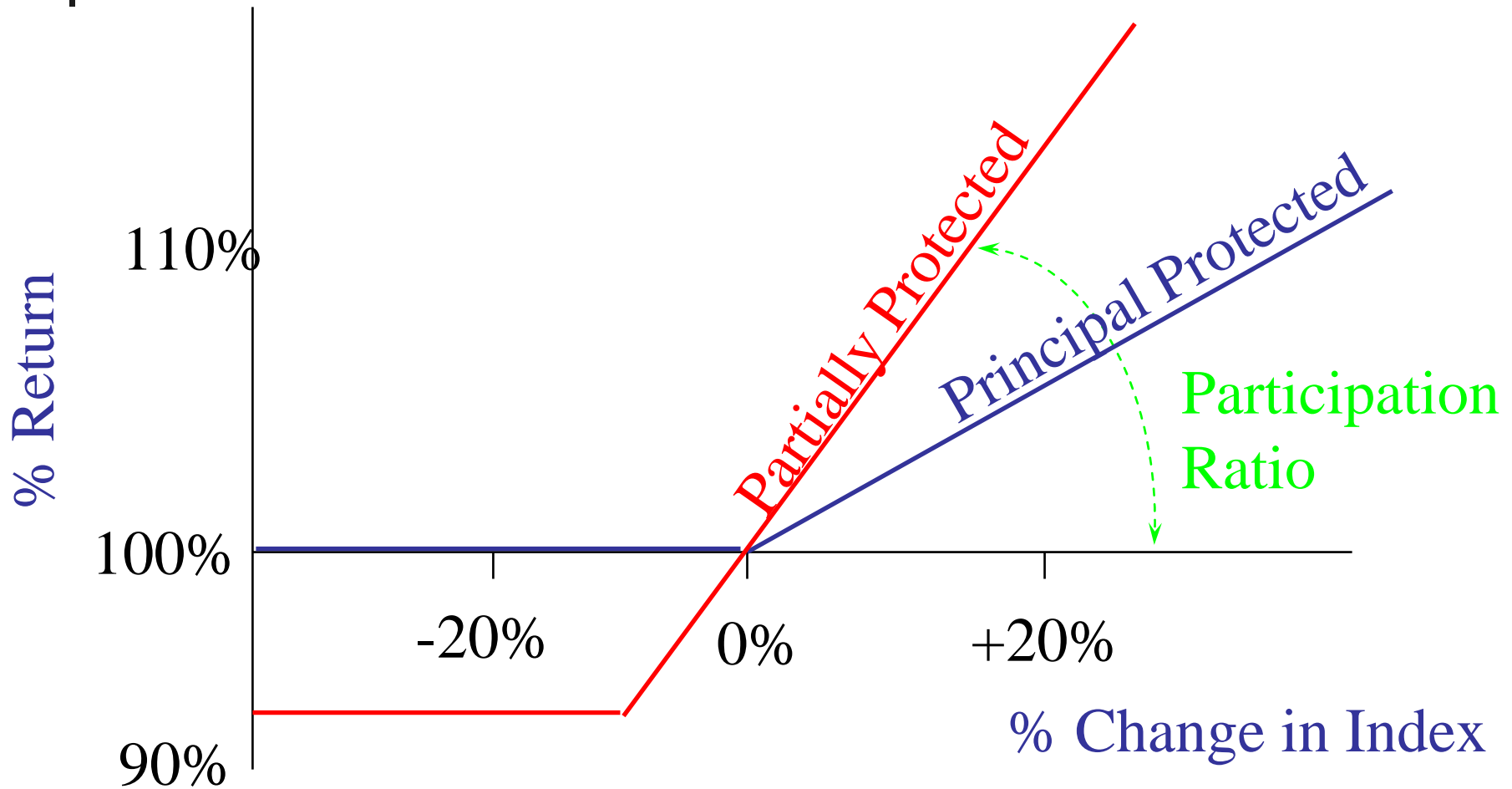
---

- SIGN (Goldman, Sachs)
  - 'Stock Index growth Note'
  - \$100MM SIGN issue for Repl. Austria 1991
- AKA:
  - SUN - 'Super Upside Note'
  - MITTS - 'Market Index Target-Term Securities' (Merrill)
  - SMART - Stock Market annual Reset Term notes
  - SIRS - 'Stock Index Return Securities' (Paine Webber)
  - SUPER - 'Structured Upside Participating Equity Receipt'

# ELN with Principal Protection



# ELN with Partial Principal Protection



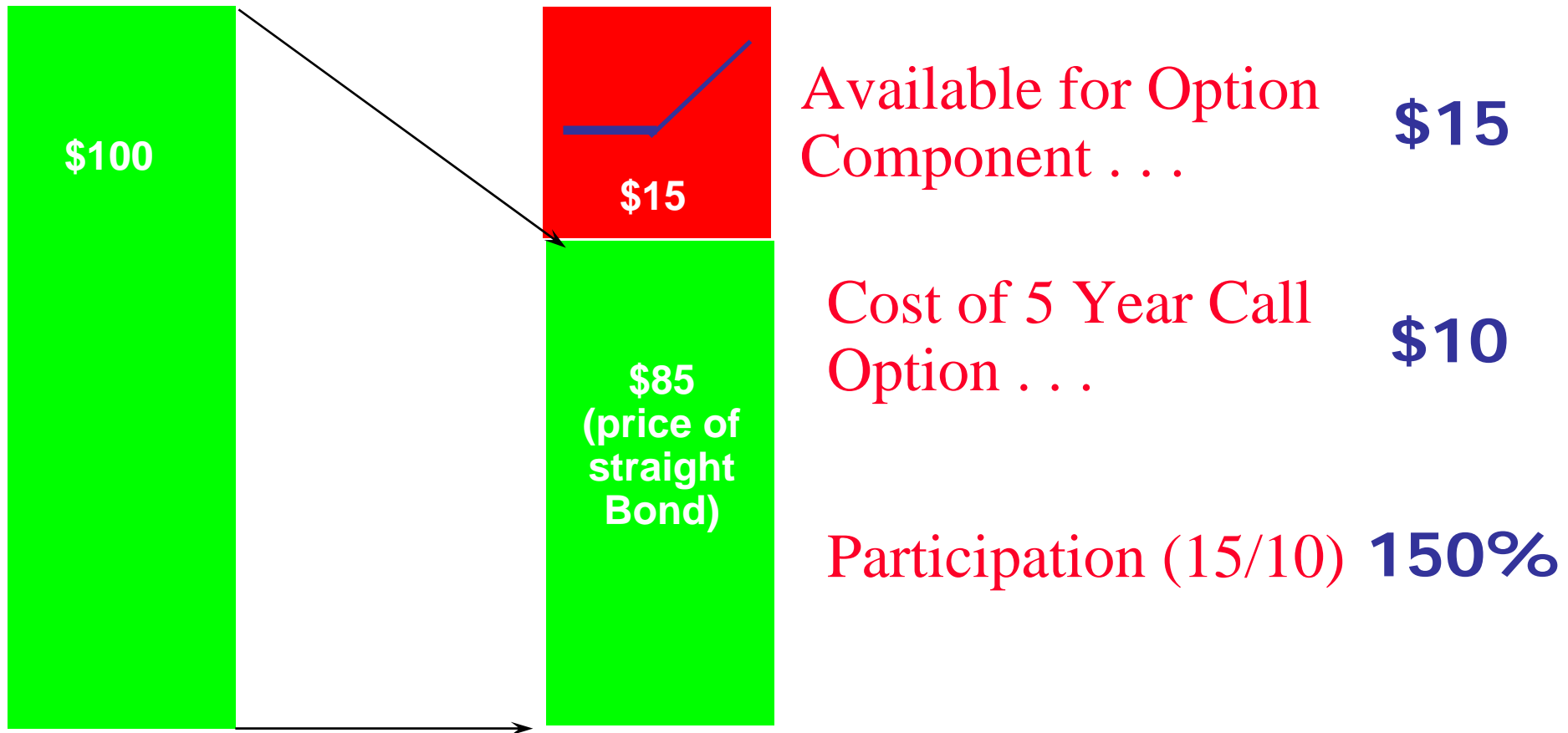


# Issuer's & Investor's Perspectives

---

- Issuer:
  - Lower cost of funds
  - Attract new depositors
  - Outlet for surplus options inventory
- Investor
  - Single transaction achieves debt & equity exposure
  - Optionality can be difficult/expensive to replicate
  - FDIC Insured (CDs)

# Product Structuring



**5 YEAR NOTE**



# Tax Design Considerations

---

## ■ Principal Protected

- Principal is guaranteed, term > 1yr
- Product is bifurcated for tax purposes
- Split into OID note + call option
- **PROBLEM:** OID note tax treatment
  - Interest is imputed & taxed each year
  - Even though no (or low) cash flows

## ■ Partially Protected

- Less than 90% principal is guaranteed
- Issue not bifurcated
- Taxed only on excess of original price, when and if paid



# Institutional Factors

---

- Securities Laws
  - ELN's
    - Issuers have inventory of shelf registered MTN's, including ELNs
    - Others individually SEC registered
    - State 'Blue Sky' law compliance is necessary
  - Participation CD's
    - Exempt from SEA 1933 registration requirements
    - Exempt from Blue sky requirements in many states
    - Authority from banking regulator required



# ELN's vs CDs

---

	ELNs	CDs
SEC registration & Blue Sky	Yes	No
Secondary Trading	Yes	Not allowed to sell or unwind
FDIC Insurance	No	Yes
Issuers	Corporate, Sovereign	Banks



# Lab: Republic of Austria SIGNS

---

## ■ Issue Details:

- \$100MM Note
- Zero Coupon
- Tenor 5.5 years
- Credit: AAA
- Notes to be priced at par
- Participation in the S&P 500 index
- 100% Principal Protected

## ■ Questions

- What is the maximum participation you could offer?
- How much of a turn did Rep. Austria make in the original offering (100% participation)?



# Lab: Republic of Austria SIGNS

---

- Worksheet: Rep. Austria SIGNS

- Assume:

- S&P500 index stands at 645.25
- Volatility is 21.2%
- Dividend yield is 2.6%
- Yield on AAA 5 1/2 securities is 6.25%

- Method:

- Value the straight debt (use PRICE fn)
- Cost the call option
- Work out the participation %



# Solution: SIGNS Issue

---

## Value of Debt

Par Value	100.00
Value of straight debt	71.28
Residual (% of par)	28.72%

## Cost of Call Option

\$ price	\$158.56
As % of Par (\$ Price / S&P500)	24.57%

Note:  $[FV / (S\&P500 \times 100)] \times \text{price} \times 100 / FV$

---

## Participation Percentage

(Residual % / Option % = 28.72% / 24.57%)	116.9%
---	--------



# Lab: Republic of Austria SIGNS

---

- Redesign as a Partially Protected Issue
  - 90% protection
  - 80% protection
  - What is the Participation Percentage in each case?
- Method:
  - Option
    - Need to find appropriate option strike X:
    - $90 + \text{Participation \%} \times (\text{SP500} - X) = 100$
    - Use trial & error
  - Participation Percentage:
    - $[\text{Residual \%} + (1 - \text{Protection \%})] / \text{Option \%}$



# SIGNS - Re-Engineered

- | Protection | Strike | Option % | Participation % |
|------------|--------|----------|-----------------|
| 90%        | 599.35 | 27.55%   | 140.5%          |
| 80%        | 566.00 | 29.90%   | 162.9%          |
- Note Participation:
    - Residual % = 28.72% as before
    - Participation % =  
 $[28.72\% + (100\% - 90\%)] / 27.55\% = 140.5\%$
  - Look at Payoff chart



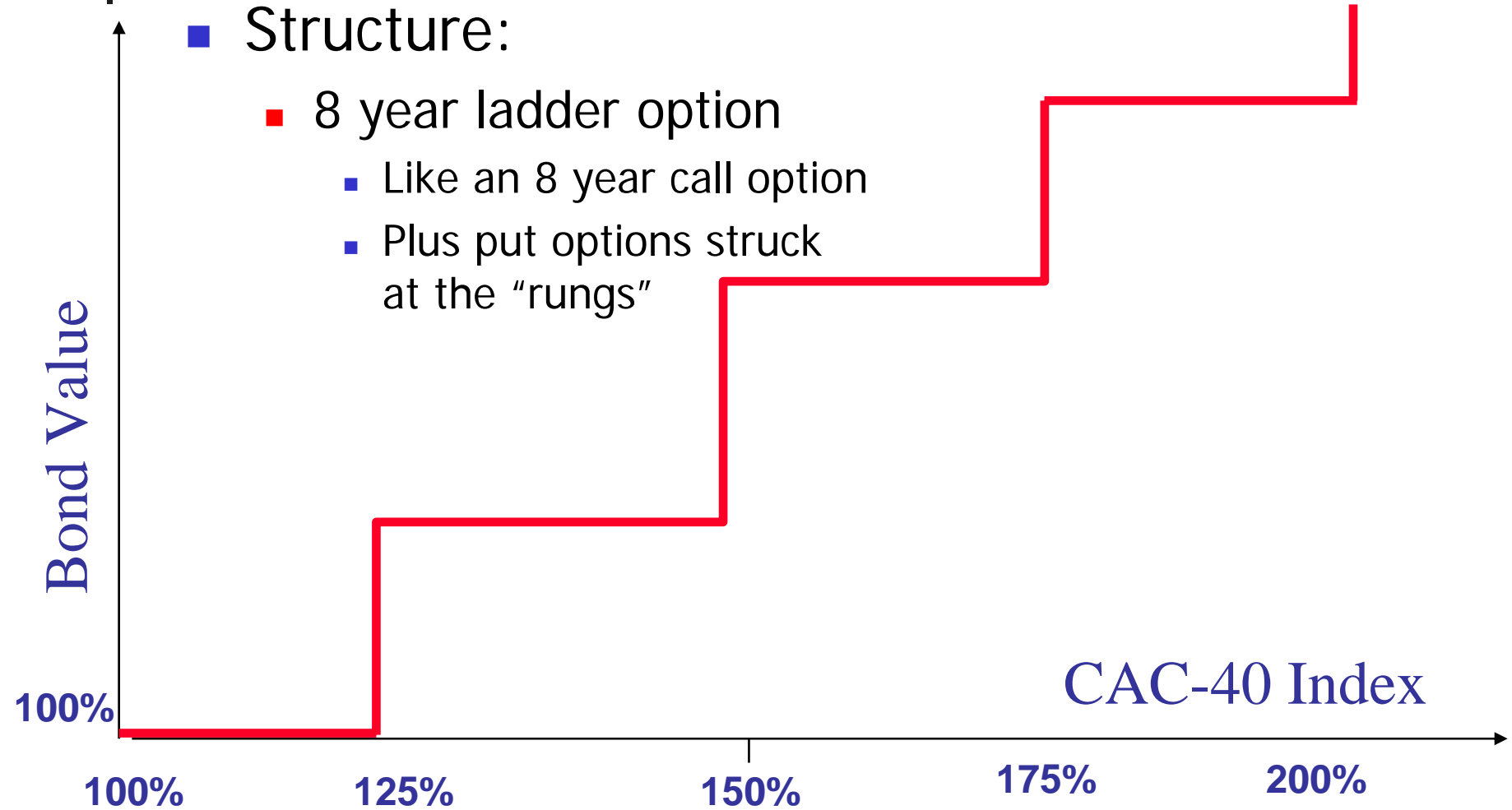
# Credit Foncier CAC-40 Ladder GROI

---

- 8 Year Zero Coupon Bond
  - Issued at par
  - Principal Protected
- Linked to CAC-40 via “ladder” structure:
  - Six “rungs” ranging from 125% to 250% of initial CAC-40 level
  - Whenever CAC-40 passes a rung, investor is guaranteed rate of return associated with that rung

# Credit Foncier CAC-40 Ladder GROI

- Structure:
  - 8 year ladder option
    - Like an 8 year call option
    - Plus put options struck at the "rungs"



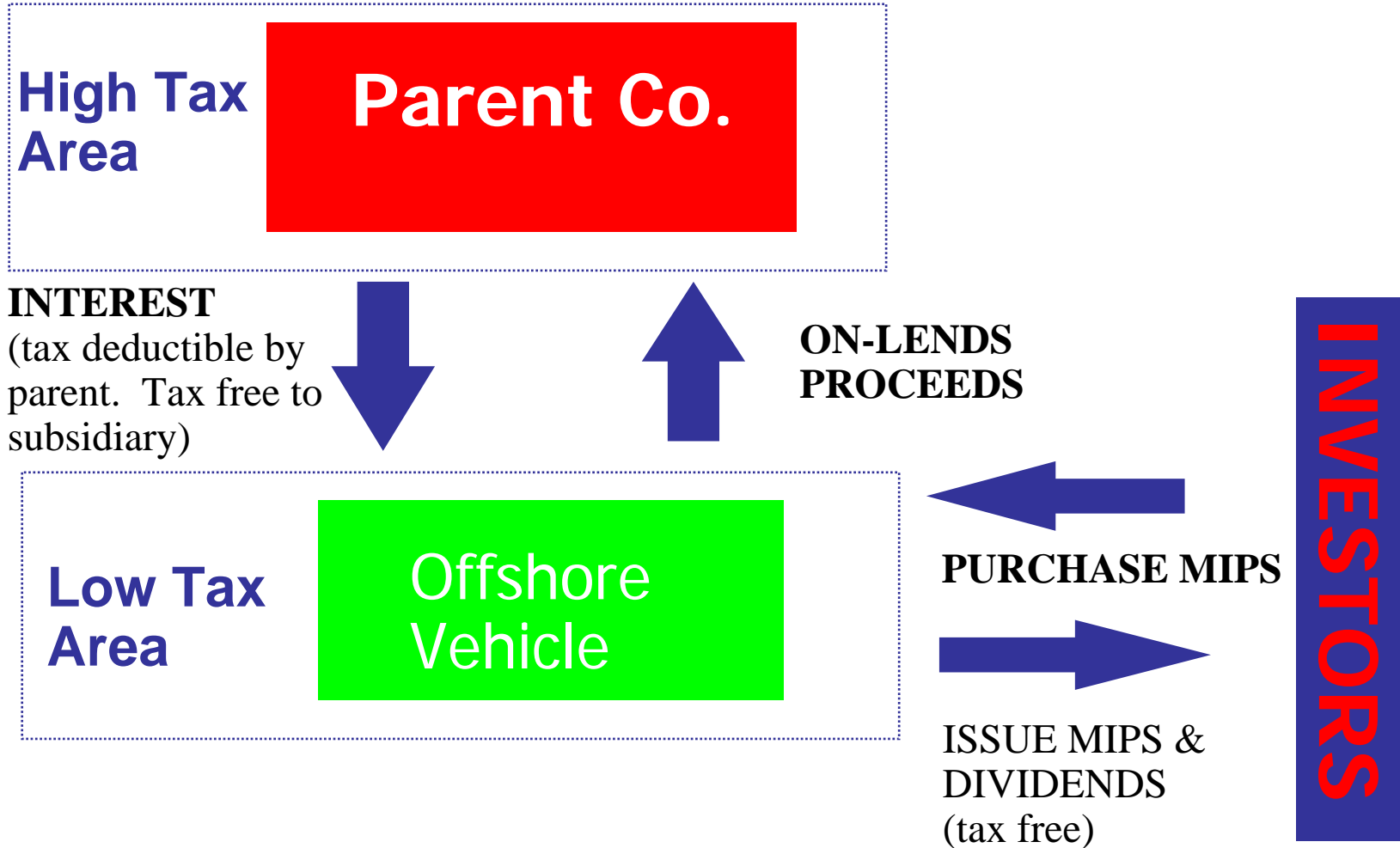


# MIPS: Corporate Equity Swap

---

- Objective: raise additional capital
- Problems:
  - **Debt:** Restricted by existing bond covenants
  - **Equity:** High (after tax) cost of dividends
- Solution: Monthly Income Preferred Securities
  - Goldman Sachs, 1994
  - Trust preferreds
  - Paying monthly dividend
    - 'Dividend' is tax deductible by issuer

# Monthly Income Preferred Shares





# MIPS: Benefits

---

- Sub's interest income tax free
- No withholding tax on MIPS dividends
- Parent's interest payments fully deductible
- Corp. raises equity finance which:
  - Avoids existing bond covenants
  - Pays tax-deductible dividends
  - Avoids equity dilution



# MIP Structures

---

## ■ Convertible MIPS

- MIPS that are convertible into common stock of primary issuer
- Sub/Trust uses MIP proceeds to buy convertible debentures in parent
- Parent entitled to deduct interest as before
- Typical Structure
  - \$50 Par value
  - 30 year maturity
  - 5 year call protection
  - Conversion premium 20% - 25%
  - Yield advantage 4% - 7% over common stock



# TOPS

---

- Trust Originated Preferred Securities (Merrill)
  - TIPS: Trust Issued Preferred Securities (Bear)
- About 20 TOPS issues outstanding
- Very similar to convertible MIPS
  - Quarterly dividends
  - TOPS proceeds used to purchase to buy convertible debentures in parent
  - Convertible into common stock of parent
  - Coupon is tax deductible by parent
  - Debentures do not show up on issuer's balance sheet
    - Primary issuer consolidates financial statements with those of Trust
    - Convertible TOPS show up as minority interest
    - Allows issuer to receive partial equity treatment from rating agencies



# SBC FTSE-100 GROI

---

- Three-tranche debt issue, issued Feb 1992
  - Zero coupon, par value \$60mm
  - Maturity 1 year
- Returns depend on FTSE-100 return:
  - FTSE 100 initial level = 2,552.90
  - Min level is FTSE-100 = 2,680.55 (growth = 5%)
  - Max level is FTSE-100 = 3,344.30 (growth = 31%)

■ Tranche	Min	Max
A	7%	16%
B	4%	22%
C	0%	30%



# Lab: SBC FTSE-100 GROI

---

- Worksheet: SBC FTSE-100 GROI
- Objective: Design tranches so that returns are as indicated
- Assumptions:
  - Each tranche \$20MM
  - FTSE volatility 18.5%
  - Dividend yield 3.5%
  - Yield on 1 year Bills 7.25%
  - Yield on AAA corporate debt 7.50%
  - Fees 60bp
- Method
  - Similar to SIGNS lab, except two strikes to set



# Summary: Equity Linked Notes

---

- Debt with an equity kicker
  - Equity
    - Usually index based (except convertibles)
    - Vanilla/exotic option combos
  - Debt
    - Partially or fully protected
    - Taxation issue
- Structuring & Valuation
  - Calculate value of straight debt, % residual
  - Calculate option cost
  - Participation %