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# Fixed Income and
# Asset-Liability Management
# *Are long bonds out there?*

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Twist Financial

# Hot topics in long bonds

| | |
|---|---|
| Inflation linked Bonds | Real liability hedge |
| | Canadian vs. global opportunities |
| | Derivatives |
| Nominal Bond Strategies | Should you go long now? |
| | Supply and liquidity of long term bonds in Canada |
| | Role of credit in a long mandate? |
| | Subtleties of strips |
| | Benchmark selection |

# Inflation linked bonds

Inflation linked bonds

- Now 4% of average Canadian plan assets*
- Limited maturities and liquidity in Canada
- Are global ILB's a good alternative?
  - Currency risk
  - Inflation correlations vs. ILB return correlations
  - Interest rate correlations play a role in effectively hedging Canadian inflation in foreign markets
  - Active management can add value

Inflation derivatives

- Relatively new market growing fast

*Source: PIAC

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# Canadian vs. Global Government Inflation Linkers

| Country | # issues | % Weight | Duration | Real Yield |
|---|---:|---:|---:|---:|
| World | 68 | 100 | 9.5 | 1.98 |
| ***Canada*** | ***4*** | ***3.4*** | ***16.0*** | ***1.88*** |
| US | 19 | 39.5 | 8.2 | 2.50 |
| UK | 11 | 23.8 | 11.8 | 1.50 |
| France | 10 | 15.6 | 8.4 | 1.84 |
| Japan | 8 | 3.3 | 8.7 | 1.02 |
| Italy | 5 | 8.1 | 7.7 | 2.08 |
| Greece | 1 | 1.2 | 14.6 | 2.22 |
| Sweden | 6 | 3.7 | 9.5 | 2.00 |
| Germany | 1 | 0.8 | 9.0 | 1.90 |
| Australia | 3 | 0.7 | 8.1 | 2.48 |

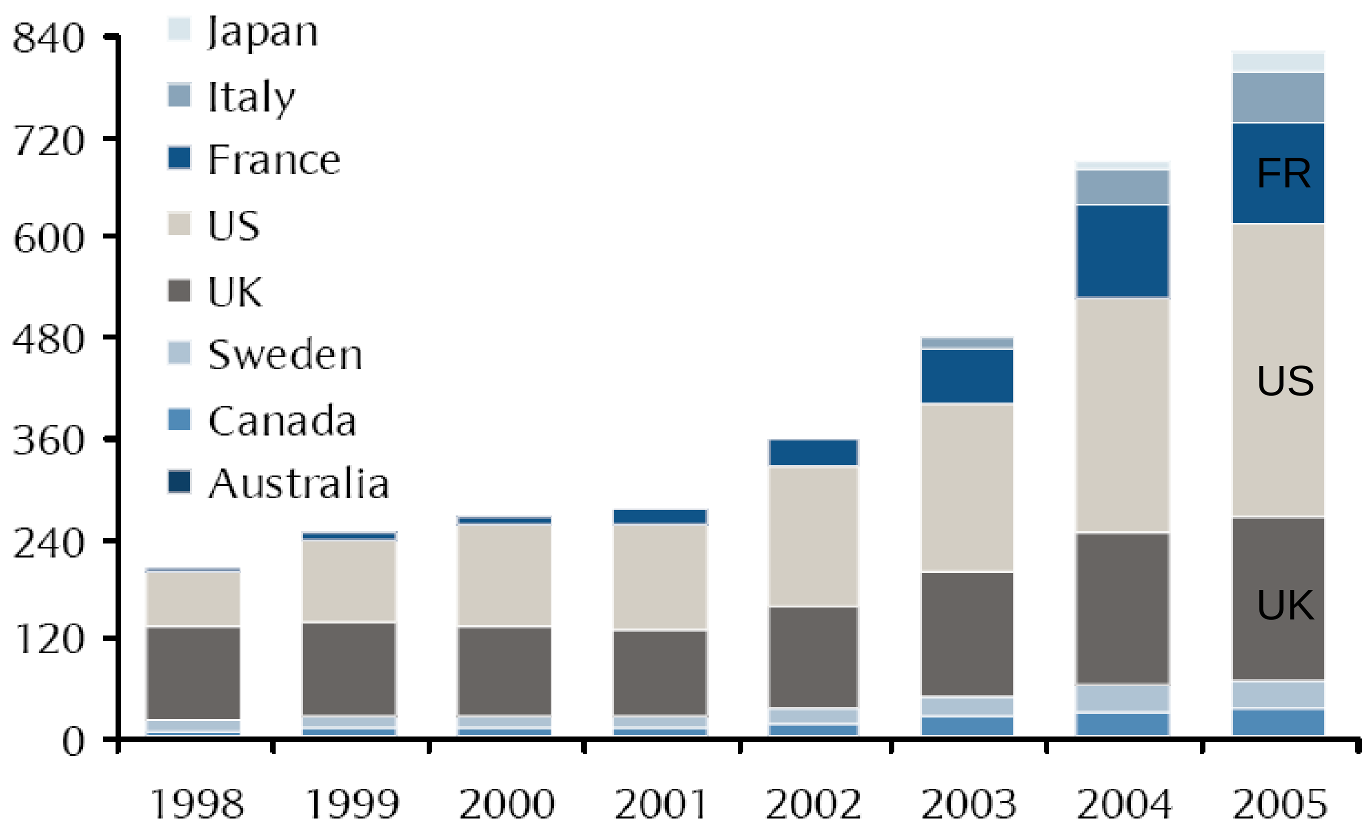
**Total market cap $US840 billion.  Average annual growth 30% over 10 years.**

Source:  Barclays Capital, January 2005

# Inflation Linked Bonds Market Size

($ bn)

Japan, Italy, France, Germany, Greece recent new issuers




Source: Barclays Capital

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# Inflation Correlation vs. Canada

| | 1971-2005 | | | Last 10 years | | |
|---|---|---|---|---|---|---|
| **Country** | **Avg** | **Std Dev** | **Corr** | **Avg** | **Std Dev** | **Corr** |
| US | 0.16% | 1.7% | **86%** | -0.46% | 0.7% | **62%** |
| UK | -1.54% | 3.0% | **79%** | -0.56% | 1.1% | **2%** |
| Japan | 1.46% | 3.4% | **69%** | 2.06% | 1.4% | **-40%** |
| Europe | -0.17% | 1.2% | **42%** | 0.22% | 0.8% | **47%** |
| Sweden | -0.65% | 2.3% | **79%** | 1.01% | 1.0% | **48%** |
| Combined | 0.37% | 0.9% | **75%** | -0.05% | 0.6% | **79%** |

Average and std dev of (Canadian inflation – other inflation)
i.e. positive average means Canadian inflation is higher. Data is currency hedged.

Source: Barclays Capital, Bloomberg

# Canada vs. U.S. Inflation Correlation

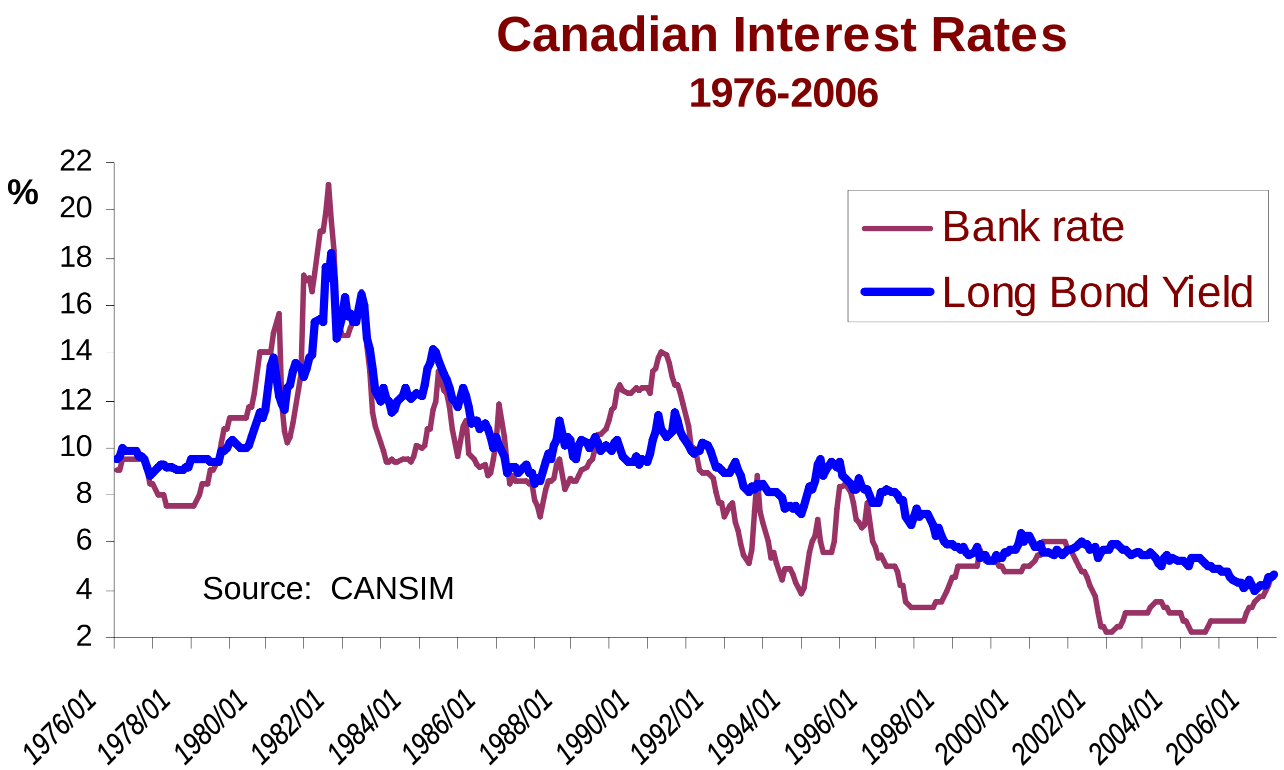

*Source: Bloomberg and Barclays Capital.* *y/y monthly data*

Even Canada vs. U.S. inflation correlation fluctuates in the short term, but long term is high

# Inflation Derivatives

- Growing market in inflation swaps
- Building block is a zero coupon swap
  - Receive/pay inflation over a period, with payment only at maturity
  - Fixed rate on the swap is the breakeven inflation rate
- Two-way market with good liquidity
- Customized products readily available
- Main players are European pension plans and dealers
- CME Euro inflation futures launched in 2005 slow to gain depth, but has fuelled market for short term inflation swaps

# Should you go long now?




- Low yields
- Flat curve
- What's your goal?
- What are the risks?

# Are long bonds out there?

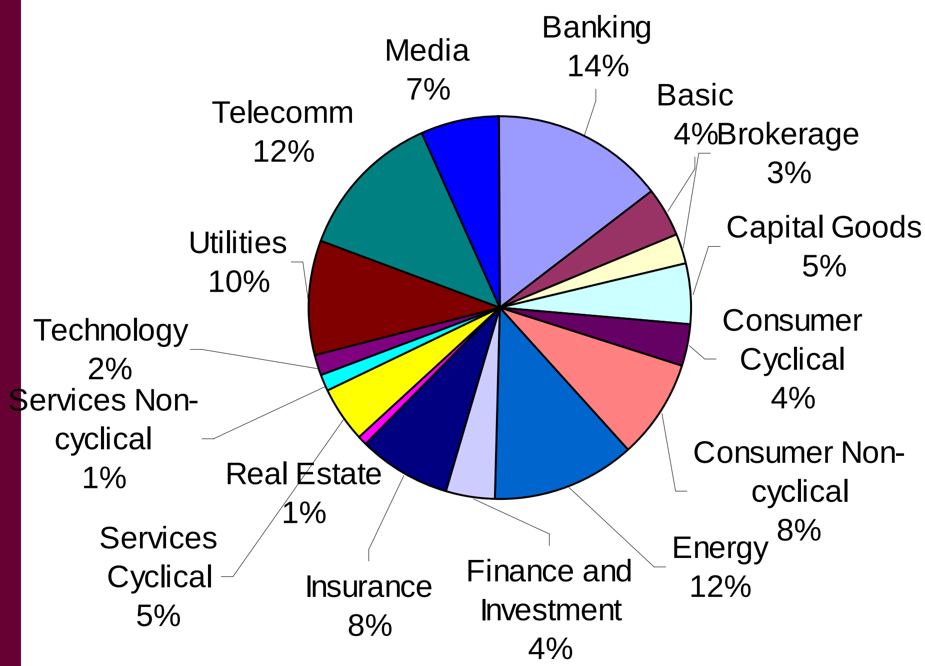
Canadian Bond Index Breakdown

| Index | Market Value ($b) | % | Duration | Yield |
|---|---|---|---|---|
| **Composite** | **629** | **100%** | **6.2** | **4.82** |
| Canada/Agencies | 285 | 45% | 5.8 | 4.56 |
| Provincial | 154 | 24% | 7.9 | 4.92 |
| Corporate/ABS | 177 | 28% | 5.4 | 5.15 |
| Long (> 10 years) | **182** | **29%** | **12.2** | **5.12** |
| Canadas/Agencies | 66 | 36% | 12.8 | 4.68 |
| Provincial | 72 | 39% | 12.2 | 5.16 |
| Corporate/ABS | 38 | 21% | 11.3 | 5.79 |

Source: S&P TSX Canadian Bond Index, CIBC as of June 30, 2006

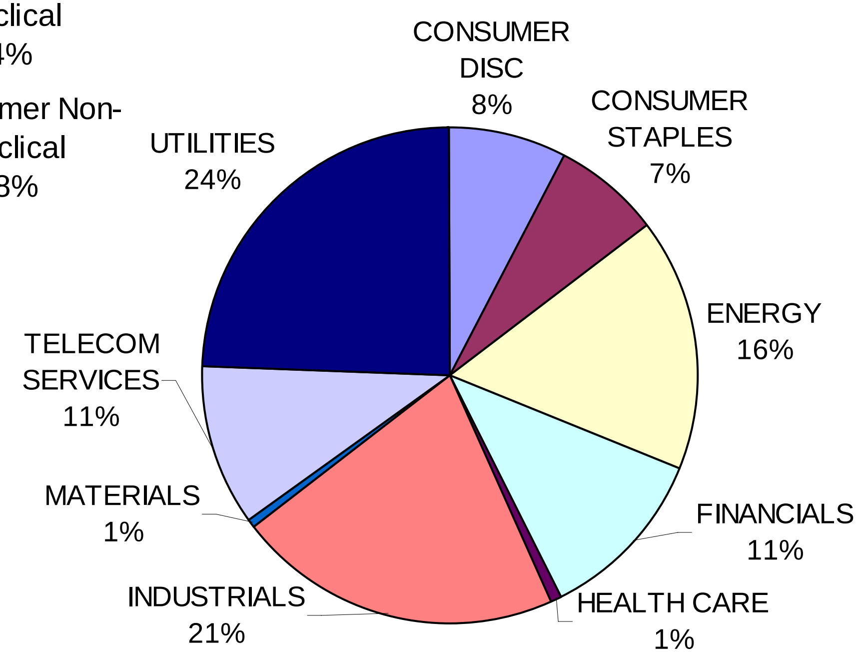
# Are long corporates out there?

## Merrill Lynch U.S. Long




Poor breakeven spreads in the long end

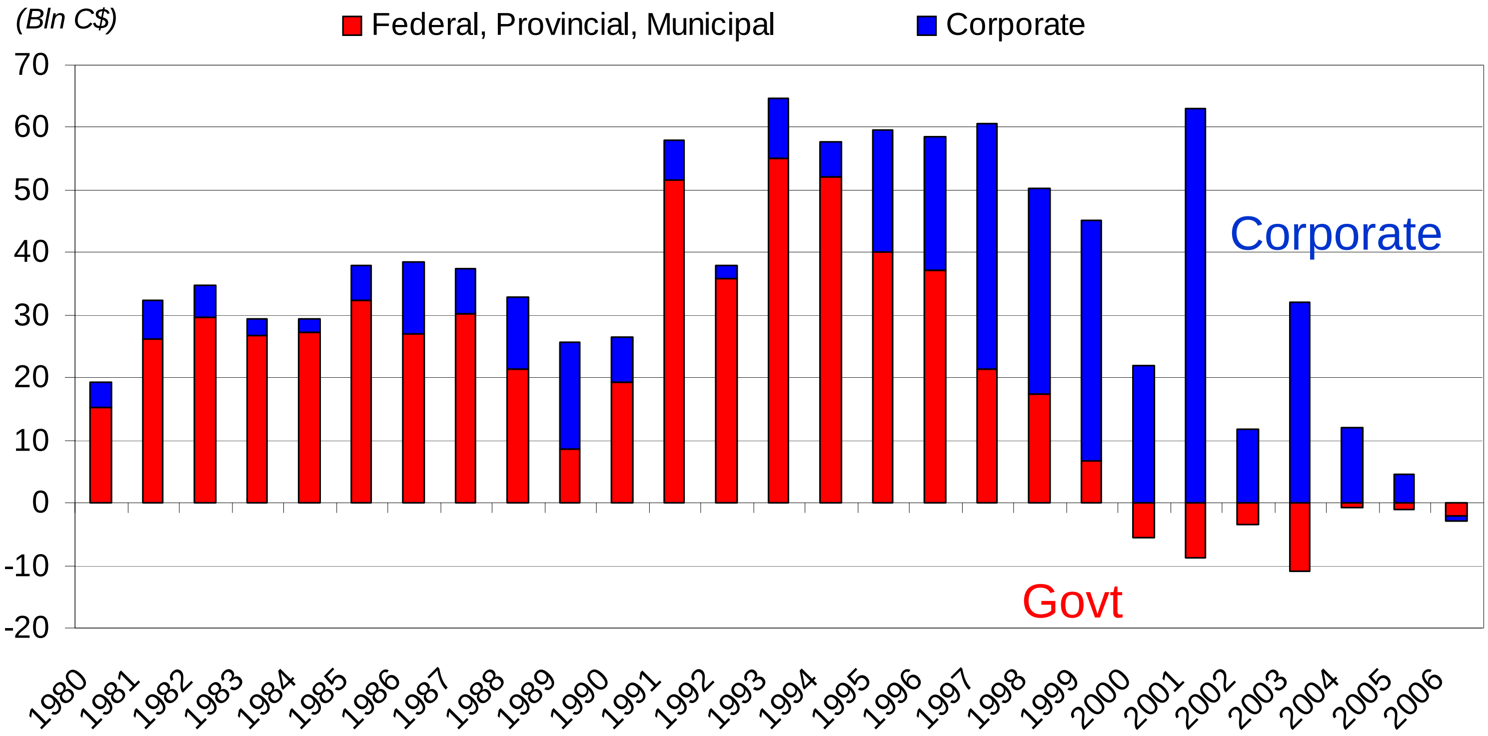
## S&P TSX Canadian Long




Long end dominated by utilities, energy, telecom, infrastucture

TRP, Bell, Enbridge, GTAA

# Net new Canadian bond issuance




Source: Bank of Canada, Standard & Poor's Global Fixed Income Research

Corporate market has grown as net new issuance has been dominated by corporates, but net supply has shrivelled.

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# Long Bond
# New Supply and Trading

| Sector (>10 yr term) | Typical trade | Large trade | Gross new issuance 2005 | Net new issuance 2005 |
|---|---|---|---|---|
| Canada | $10-25 m | >$100 m | $38 b | -$ 7 b |
| Provincial | $10-25 m | >$100 m | $26 b | $ 5 b |
| Corporate | $5-10 m | >$ 25 m | $42 b | $12 b |
| Inflation Linked (RRB) | $5-10 m | >$ 25 m | $ 2.7 b | $ 2.7 b |

Availability and liquidity of RRB's and long corporates is significantly worse than Canadas or Provincials despite relatively greater net new issuance of corporates.

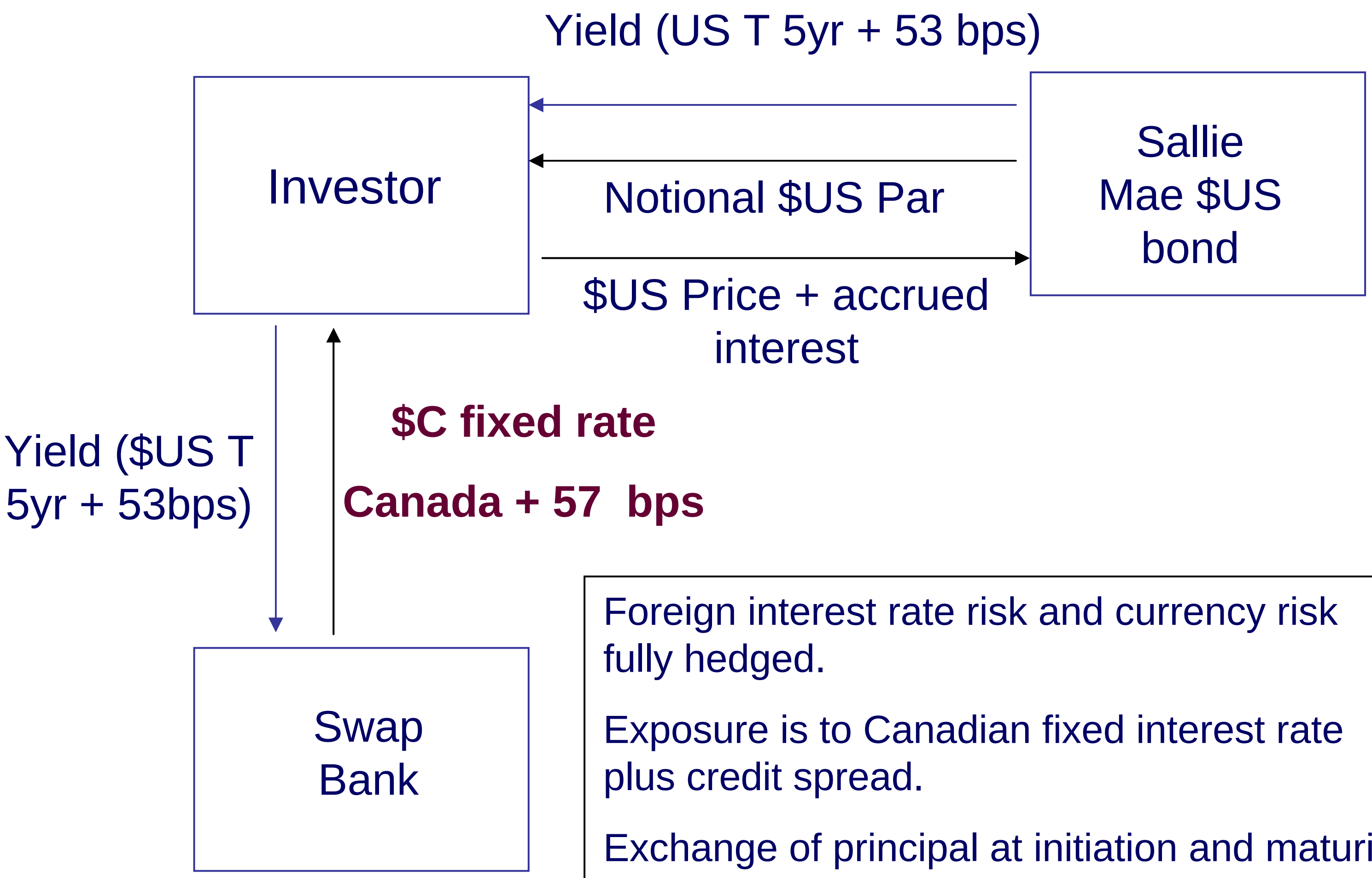
Source: Bank of Canada, Twist

# Alternative Credit Strategies

- Credit as alpha or beta strategy
- Currency and interest rate exposure easily hedged through asset swaps, but requires approval and documentation

| | |
|---|---|
| Global investment grade credit | Liquidity and diversification |
| High Yield | U.S./Europe<br>Credit risk requires expertise<br>interest rate risk < 10 years |
| Emerging markets | Good diversifier |
| Mortgages/MBS | U.S. market is bigger than Treasuries! |
| Credit Derivatives | Pure credit exposure<br>Limited currency risk<br>Still mostly used by banks and insurance companies |

# Foreign Bond Issue + Swap



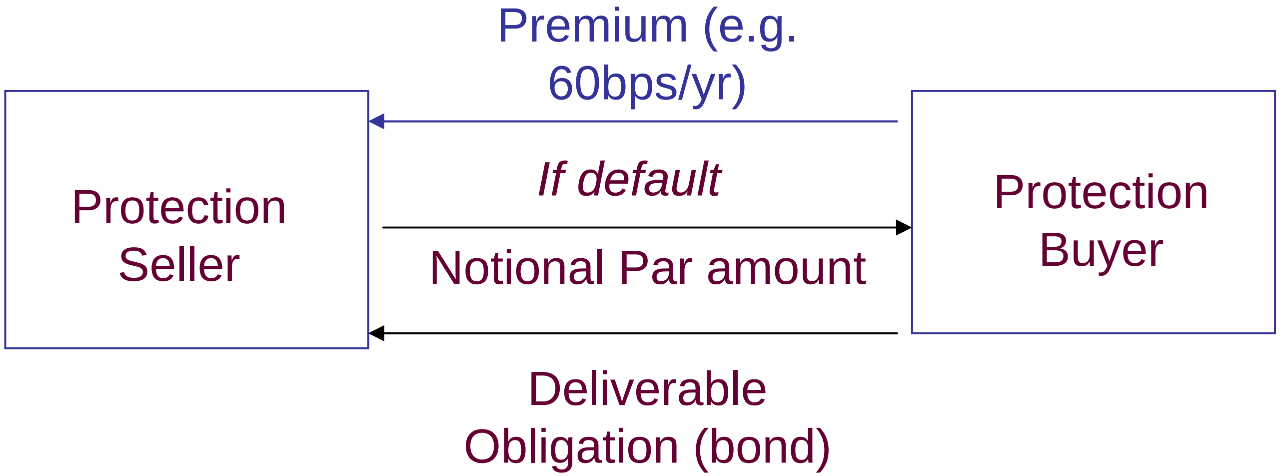

Foreign interest rate risk and currency risk fully hedged.

Exposure is to Canadian fixed interest rate plus credit spread.

Exchange of principal at initiation and maturity at spot.

# Credit Derivatives (CDS)

- Disaggregate pure credit risk (separate from fixed or floating interest rate risk)
- Efficient way to “short” credit, i.e. bet that spread will widen
- Liquidity, Customization, Confidentiality
- Mostly 5 year term



# Interest rate swaps

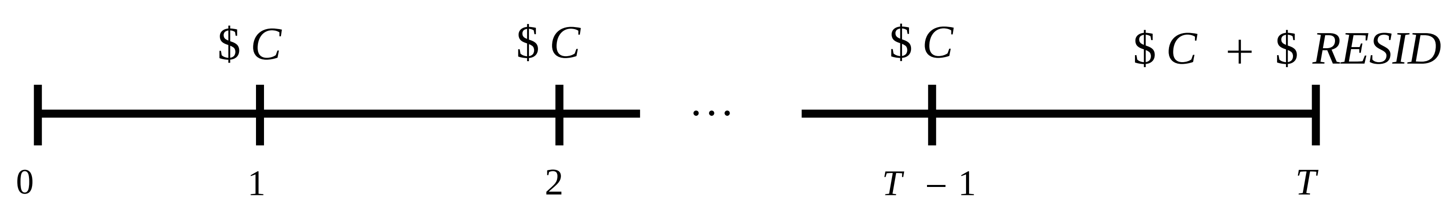
- Interest rate derivative where investor pays/receives a floating rate and receives/pays a fixed rate of interest for a specified period based on a notional amount
- Bond substitute with similar risk profile, but spread reflects counterparty credit risk
- Supply and liquidity in long swaps a function of
  - Credit spreads
  - Two-way flow
  - Ability for dealers to hedge in cash market
- Can execute large customized transactions
- Requires approval, credit, documentation (ISDA)
- Counterparty risk

# Are long bonds long enough?

- 30-year bond duration is only 15 years
- > 30 year bonds
  - No Canadas, some provincials, few corps
  - Very illiquid
  - Individual issues usually held long term
- Strips
  - duration = maturity
  - Coupons and residuals
  - Only a handful are liquid (10 out of 545 issues!)
  - Canadas, Ontario, Quebec
  - Few corporates

# Subtleties of Strips

- Supply is a function of
  - Underlying bonds outstanding
  - Curve shape
  - Demand for coupons vs. residuals
- Sensitivity of strips to curve movement differs from bonds
- Duration alone may not offer adequate risk management
- Convexity matters
- Performance measurement
  - Liabilities vs. benchmark?



# Long benchmark selection

- Long subsector of composite index duration only 12 years
- Market value weight of index of all long bonds and strips >20 year term: 25 year duration
- Drawbacks of existing long market-weighted indices:
  – Not replicable
  – Lack of liquidity
  – May not reflect liabilities
  – Reliability of pricing
- Need for replicable, liquid benchmarks tailored to match liability structure, not just duration

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# Conclusion

| | |
|---|---|
| Inflation linked Bonds | Global ILB's are a good alternative and can be actively managed |
| | Watch developments in inflation derivatives for opportunities |
| Nominal Bond Strategies | Going long now is difficult to swallow, but necessary for risk management |
| | Canadian long corporate availability and diversification is poor |
| | Access credit alpha and beta from other strategies |
| | Strips require expertise |
| | Manage directly vs. liabilities if possible.  Long benchmarks should be replicable and liquid, and reflect liabilities closely |