
Backus/March 31, 1998

Emerging Markets

0. Overview

- International Diversification
- Short History of Emerging Markets
- Brady Bonds
- Interest Sensitivity Revisited
- Recent Developments

1. International Diversification: Pros and Cons

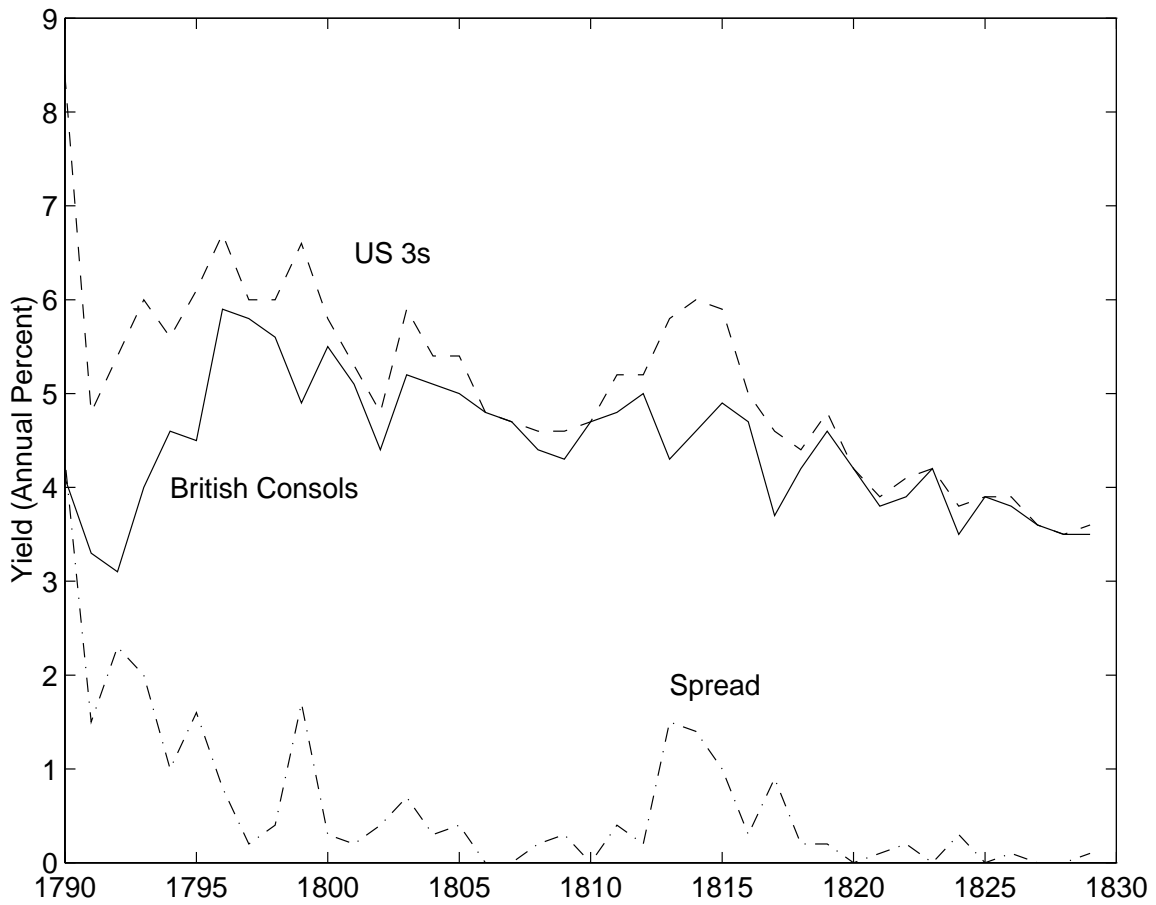
- Investments in emerging markets
 - Similar to other international investments
 - but with more extreme properties

- Advantages:
 - High expected returns
 - Risks diversify a domestic portfolio

- Disadvantages:
 - Expected returns hard to gauge in a changing world
 - Risks large, hard to quantify, and correlated
 - Risks include currency volatility
 - Transactions costs high, liquidity often low
 - Harder to enforce foreign contracts
(Not “can they pay,” but “will they pay”)
 - Foreigners always vulnerable to robbery

2. Short History of Emerging Markets

- US in 1790: Hamilton funded Revolutionary War debt
- Spread over British consols (Sylla, Wilson, and Wright):



2. Short History of Emerging Markets (continued)

- Bank loans increased dramatically 1975-81
- Defaults and workouts throughout the 1980s
- Brady plan converted loans to bonds
- Emerging markets evolved into eurobonds and equity
- Loans continued to be important in parts of Asia

3. Brady Bond Background

- 1975-81: banks loaned billions to emerging markets
 - Largely sovereign debt (countries, not companies)
 - Remember: bank customers fled to public markets
- 1979-82: Volcker initiates US rate increases to fight inflation
- August 1982: Mexico defaults, soon followed by Brazil, Argentina, Philippines, . . .
- Nine largest US banks had loans with book value more than twice bank capital
- Next seven years involved negotiations between creditors and debtors that stressed austerity and economic reform in exchange for financial assistance, on the theory that the countries would then grow out of their debts
- Nevertheless, the 80s were a lost decade in these countries

3. Brady Bond Background (continued)

- Secondary market developed in the 1980s for loans, just as we see in (say) Russia today

- US Treasury Secretary Nicholas Brady announced in March 1989 a new attempt to use markets to reduce debt burden on both debtors and creditors

- Result:
 - Banks agreed to reduce their claims in return for credit enhancements on remaining exposure: collateral to guarantee interest and principal, help from IMF and World Bank to institute economic reforms, etc
 - Many of these claims were converted to Brady bonds: dollar-denominated debt in a variety of types
 - Trading volume on emerging market debt rose from 1.5 billion in 1985 to 200 billion in 1992 to . . .
 - Spreads fell sharply, with blips in 1994-95 and 1997

4. Brady Bond Examples

- Overview
 - Dollar denominated
 - Mixture of credit exposures, guarantees
 - Fixed and floating rate
 - Call and sinking fund provisions common
 - Occasional ties to commodity prices

- Argentina Par Bond
 - Par bond (issued at face value, below-market fixed rate)
 - Matures: March 2023
 - Coupon (step-up): 4% through 1994, 4.25% in 1995, 5% in 1996, additions of 0.25% through 1999, fixed at 6% thereafter; semi-annual payments
 - Guarantees: principal (collateralized by US zeros) plus 6% (“rolling interest guarantee”)
 - Other features: callable at par
 - Ratings: Baa3, BB

4. Brady Bond Examples (continued)

- Brazil C Bond
 - C (“capitalization”) bonds
 - Matures: April 2014
 - Coupon: 8%, semi-annual payments
 - Guarantees: none
 - Rating: B1, BB–

- Mexico NMB Bond
 - NMB (new money bond)
 - Matures: March 2005
 - Coupon: 6-month LIBOR + 81.25 BPs, semi-annual payments
 - Guarantees: none
 - Other features: callable, pro-rata redemption starting 9/97
 - Rating: Ba2, BB

4. Brady Bond Examples (continued)

- Philippine FLIRB
 - FLIRB (“front-loaded interest reduction bond”)
 - Matures: November 2020
 - Coupon (step-up): 4% through 1994, 5% through 1997, 6% through 1998, 6-month LIBOR + 81.25 BPs thereafter; semi-annual payments
 - Guarantees: 6% until 12/98
 - Other features: callable, sinking fund
 - Ratings: not rated

- Venezuela Par Bond
 - Matures: March 2020
 - Coupon: 6-month LIBOR + 81.25 BPs, payable semi-annually
 - Guarantees: principal, 14 months of interest
 - Other features: callable, issued with oil-linked certificates
 - Ratings: Ba2, B+

5. Brady Bond Analytics

- Market quotes (March 30, 1998)

Issue	Price	Blended Yield	Stripped Yield	Sovereign Spread
Arg Par	77.118	8.132	10.443	220
Arg FRB	92.743	9.085	9.085	338
Bra C	84.765	10.277	10.277	450
Bra EI	75.927	9.328	9.328	361
Bra Par	90.691	8.181	10.446	224
Bul IAB	78.834	10.493	10.493	476
Mex Dis	94.821	7.635	9.799	175
Mex Par	85.593	7.616	9.769	173
Nig Par	73.219	9.051	13.195	315
Per Par	49.417	7.720	9.739	174
Phi FLIRB	90.750	9.021	9.074	330
Ven NMB	92.843	9.484	9.484	378
Ven DCB	91.396	9.412	9.412	369

Source: Bloomberg.

5. Brady Bond Analytics (continued)

- Example (courtesy of JP Morgan via Bloomberg)
 - 5% bond with annual payments
 - Maturity: 5 years
 - Guarantee: principal
 - Spot rates:

Maturity	US Treas	Sovereign
1	6.00	16.00
2	6.50	16.50
3	7.00	17.00
4	7.25	17.25
5	7.40	17.40

- Valuation:
 - Using treasury spot rates (wrong!): 90.47
 - Using sovereign spot rates (wrong!): 60.84
 - Using each as appropriate: 85.98

$$85.98 = \frac{5}{1 + .1600} + \frac{5}{(1 + .1650)^2} + \dots$$

$$+ \frac{5}{(1 + .1740)^5} + \frac{100}{(1 + .0740)^5}$$

5. Brady Bond Analytics (continued)

- Blended yield: the usual yield to maturity

$$85.98 = \frac{5}{1+y} + \frac{5}{(1+y)^2} + \cdots + \frac{105}{(1+y)^5}$$

Solution: $y = 8.56\%$

Remark: mixes sovereign and guaranteed cash flows

- Stripped yield: yield on sovereign cash flows only

$$\begin{aligned} \text{Value} &= \frac{5}{1+.1600} + \frac{5}{(1+.1650)^2} \\ &+ \cdots + \frac{5}{(1+.1740)^5} = 16.00 \\ 16.00 &= \frac{5}{1+y} + \frac{5}{(1+y)^2} + \cdots + \frac{5}{(1+y)^5} \end{aligned}$$

Solution: $y = 16.98\%$

Remark: isolates pure sovereign risk

- Sovereign spread: spread over US spot rates on sovereign cash flows

$$\begin{aligned} 85.98 &= \frac{5}{1+.0600+s} + \frac{5}{(1+.0650+s)^2} \\ &+ \cdots + \frac{5}{(1+.0740+s)^5} + \frac{5}{(1+.0740)^5} \end{aligned}$$

Solution: $s = 0.1000 = 1000 \text{ BPs}$

5. Brady Bond Analytics (continued)

- Stripped yield is the obvious choice

- Bells and whistles
 - Floating rates
 - Rolling interest guarantee: subtle

- Sensitivity to
 - US treasury rates
 - Spread over treasuries