

INSTITUT FÜR WELTWIRTSCHAFT
Advanced Studies in International Economic Policy Research

International Financial Markets
Prof. Richard M. Levich

March 2006

This course offers an overview of international financial markets. The course focuses on the economic determinants of key international financial market prices (spot and forward exchange rates, offshore money market and bond rates, currency option prices and swap rates), important pricing relationships and the characteristics of innovative financial products and trading practices in these markets.

The course begins with an overview of the institutional and organizational characteristics of the foreign exchange market. We review the basic arbitrage conditions that are relevant for international financial markets and then apply them to the case of several recent product innovations. Next, we cover the theory of market efficiency as applied to international financial markets. We review the empirical evidence regarding the behavior of exchange rates and the efficiency of these markets, and examine the implications of these results for exchange rate forecasting. We then turn to specific segments of the international financial market — offshore deposit and bond markets, foreign currency options, and interest rate and currency swaps. Again we focus on the theoretical determinants of prices, the formulation of empirical tests for pricing and efficiency in these markets, institutional features of the markets, and other key issues for private agents and public policymakers.

Instructor:

RICHARD M. LEVICH is Professor of Finance and International Business at the Stern School of Business, New York University, and a Research Associate at the National Bureau of Economic Research.

Pedagogy:

The course consists of lectures/discussions, exercises, and case analyses allowing students to apply principles developed in class to actual international financial market situations.

Schedule:

Each of the "Topics" listed in the outline below normally covers a half-day of in-class work. The remainder of each day is allocated to reading and preparation of exercises or case discussions, individually and in groups.

Readings:

Reading assignments are made from the following books:

Richard M. Levich, *International Financial Markets: Prices and Policies*, second edition, (New York: Irwin/McGraw-Hill, 2001).

Readings marked with an asterisk (*) are **not** required and are listed only to suggest additional studies that may be of interest. Copies of these readings will be available through the Institute's library or from Professor Lehment.

Student Evaluations:

The course grade will be determined as follows: Final examination 90%, Cases and class participation 10%.

Topic 1 — Monday, 13 March 2006, 09.00 - 12.00

The Foreign Exchange Market, Market Microstructure and Financial Innovation

1. Foreign exchange market participants and trading mechanics
2. Market size, growth, and trading patterns
3. Institutional features, dealing risks, methods for mitigating trading risks
4. Topics in market microstructure
 - a. Quote shading versus inventory adjustment
 - b. Sources of trader profits
 - c. Competition and the bid-ask spread
5. Innovations based on covered interest arbitrage
 - a. Long-term forward contracts
 - b. Swap-driven issues
 - c. Synthetic commercial paper

Readings: Levich, Chapter 3.

Richard Lyons, *The Microstructure Approach to Exchange Rates*, Chapters 1-2, (Cambridge, MA: MIT Press), 2001.

(*) David Hsieh and Allan Kleidon, "Bid-Ask Spreads in Foreign Exchange Markets," in Frankel, Galli and Giovanni (eds.), *The Microstructure of Foreign Exchange Markets*, (Chicago: University of Chicago Press), 1996.

(*) Richard Lyons, "Tests of Microstructural Hypotheses in the Foreign Exchange Market," *Journal of Financial Economics*, 1995, pp. 321-51.

(*) Roger D. Huang and Ronald W. Masulis, "FX Spreads and Dealer Competition Across the 24-Hour Trading Day," *Review of Financial Studies*, Vol. 12, No. 1, Spring 1999.

(*) Geir Høidal Bjønnes and Dagfinn Rime, "Dealer Behavior and Trading Systems in Foreign Exchange Markets," *Journal of Financial Economics*, March 2005, pp. 571–605.

Assignment: None

Topic 2 — Tuesday, 14 March 2006, 09.00 - 12.00

Efficiency of Foreign Exchange Markets and Forecasting Exchange Rates

1. Theory of exchange market efficiency
2. Technical trading models
3. Trading models and the currency overlay
4. A taxonomy of approaches to forecasting exchange rates
5. Forecasting exchange rate jumps and crashes
6. Forecasting exchange rates in the long run
7. Forecast performance evaluation

Readings: Levich, Chapters 7 and 8.

Richard Lyons, "The Failure of Empirical Exchange Rate Models: Room for Optimism?" *Economic Policy*, web essay posted June 2002 at <http://www.economic-policy.org/pdfs/responses/Lyons.pdf> .

Kenneth Rogoff, "The Failure of Empirical Exchange Rate Models: No Longer New, But Still True," *Economic Policy*, web essay posted May 2002 at <http://www.economic-policy.org/pdfs/responses/Kenneth-Rogoff.pdf> .

John F.O. Bilson, "The Forward Parity Puzzle," manuscript, Melbourne Business School, August 2003.

John Okunev and Derek White, "Do Momentum-Based Strategies Still Work in Foreign Currency Markets?," *Journal of Financial and Quantitative Analysis*, Vol. 38, no. 2 (June 2003), pp. 425-47.

Silber, "Technical Trading: When It Works and When It Doesn't," *Journal of Derivatives*, 1994.

(*) John F.O. Bilson, "Value, Yield and Trend: A Composite Approach to Foreign Exchange Trading," in A. Gitlin (ed.), *Strategic Currency Investing*, (Chicago: Probus Publishing), 1993.

(*) Nelson Mark, "Exchange Rates and Fundamentals: Evidence on Long-Horizon Predictability," *American Economic Review*, Mar. 1995, pp. 201-18.

(*) José Campa and Kevin Chang, "Arbitrage-Based Tests of Exchange-Rates Target Zones: Evidence from ERM Cross-Rate Options," *American Economic Review*, September 1996.

(*) James R. Lothian. and Mark P. Taylor. "Real Exchange Rate Behavior: The Recent Float from the Perspective of the Past Two Centuries," *Journal of Political Economy*, June 1996, pp. 488-509.

Assignment: Ford Motor Credit Company

Topic 3 — Wednesday, 15 March 2006, 09.00 - 12.00

The Offshore Markets: Eurocurrencies and Eurobonds

1. Eurocurrencies
 - a. First principles - credit creation, institutional setting
 - b. Market size, location of offshore centers
 - c. Determination of Eurocurrency deposit rates
 - d. Risks of Eurocurrency deposits
 - e. Competitive responses to offshore markets

2. Eurobonds
 - a. Background - market dimensions, currency composition
 - b. Regulatory and institutional features
 - c. Primary market - competitive conditions, the gray market
 - d. Problems and risks - excess competition, conflicts of interest
 - e. Pricing of Eurobonds, arbitrage opportunities
 - f. Global bond funds, with and without currency hedging

Readings: Levich, Chapters 9, 10 and 14

Lee R. Thomas. "The Performance of Currency Hedged Foreign Bonds," *Financial Analysts Journal*, May-June 1989.

Levich and Thomas, "Internationally Diversified Bond Portfolios: The Merits of Active Currency Risk Management," *Financial Analysts Journal*, October 1993.

(*) Kidwell, Marr and Thompson, "Eurodollar Bonds: Alternative Financing for U.S. Companies," *Financial Management*, Winter 1985.

(*) Livingston and Zhou, "The Impact of Rule 144A Debt Offerings Upon Bond Yields and Underwriter Fees," *Financial Management*, Winter 2002.

(*) Andrew K. Rose and Mark. M. Spiegel, "Offshore Financial Centers: Parasites or Symbionts?" FRB of San Francisco Working Paper No. 2005-05, May 2005.

(*) Matthew McBrady and Michael Schill, "The Currency Denomination Decision: Do Firms Seek Bargains in International Bond Markets?" January 15, 2005. Available at <http://ssrn.com/abstract=672624>

Assignment: None

Topic 4 — Thursday, 16 March 2006, 09.00 - 12.00

Foreign Currency Options

1. First principles — Terminology, contract specifications
2. Pricing of Currency Options
 - a. Discrete time binomial approach
 - b. Continuous time lognormal approach
 - c. Options on spot and options on futures
 - d. The impact of early exercise
 - e. Pricing relationships: put-call-forward parity
3. Estimation of spot currency volatility
 - a. Historical estimates
 - b. Implied volatility
 - c. Time varying volatility
 - d. Practical problems with empirical estimates
4. Empirical studies of pricing models and efficiency
 - a. Options on spot - Philadelphia Exchange
 - b. Options on futures - Chicago Mercantile Exchange
 - c. Alternative models considered - the 'pure jump' process
5. Management of trading position risks
 - a. Delta hedging
 - b. Gamma and Theta risk

Readings: Levich, Chapter 12

Borensztein and Dooley, "Options on Foreign Exchange and Exchange Rate Expectations," *IMF Staff Papers*, December 1987.

(*) Bodurtha and Courtadon, *The Pricing of Foreign Currency Options*, Monograph Series in Economics and Finance, New York University Salomon Center, #1987-4/5.

(*) Baillie and Bollerslev, "The Message in Daily Exchange Rates: A Conditional Variance Tale," *Journal of Business and Economic Statistics*, July 1989.

Assignment: "Gifts from FX Students"

Topic 5 — Friday, 17 March 2006, 09.00 - 12.00

Currency and Interest Rate Swaps

1. Background - Origins of swaps, comparative advantage
2. Market size, market structure
3. Institutional features - accounting treatment, notional value, Master Swap Agreement
4. Cash flow requirements in interest rate and currency swaps
5. Risks of swaps
6. Risk measurement - amortization and diffusion effects
7. Applications of swaps
8. Pricing of swaps

Readings: Levich, Chapter 13.

Peter Garber, "Derivatives in International Capital Flows," NBER Working Paper No. 6623, June 1998.

Feron and Handjinicolaou, "Swap Credit Risk: The Simulation Approach," *Journal of International Securities Markets*, Winter 1987, pp. 135-48.

(*) Sheridan Titman, "Interest Rate Swaps and Corporate Financing Choices," *Journal of Finance*, September 1992, pp. 1503-16.

Assignment: None

Final Examination