Risk Management in the 21st Century

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Cumbre Latinoamericana de Riesgo Financiero

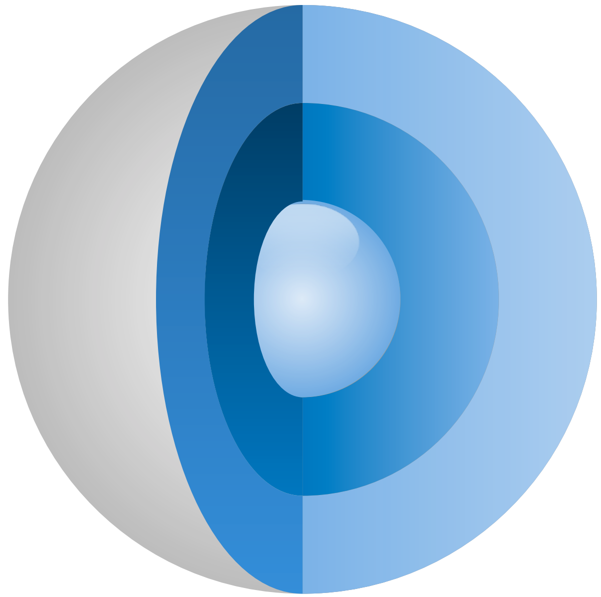
Chatham Financial Overview

Strategic Risk Assessment

Hedging Strategy & Execution

Hedge Accounting

Derivative & Debt Valuation



Derivative Regulatory Compliance

Legal (ISDA)

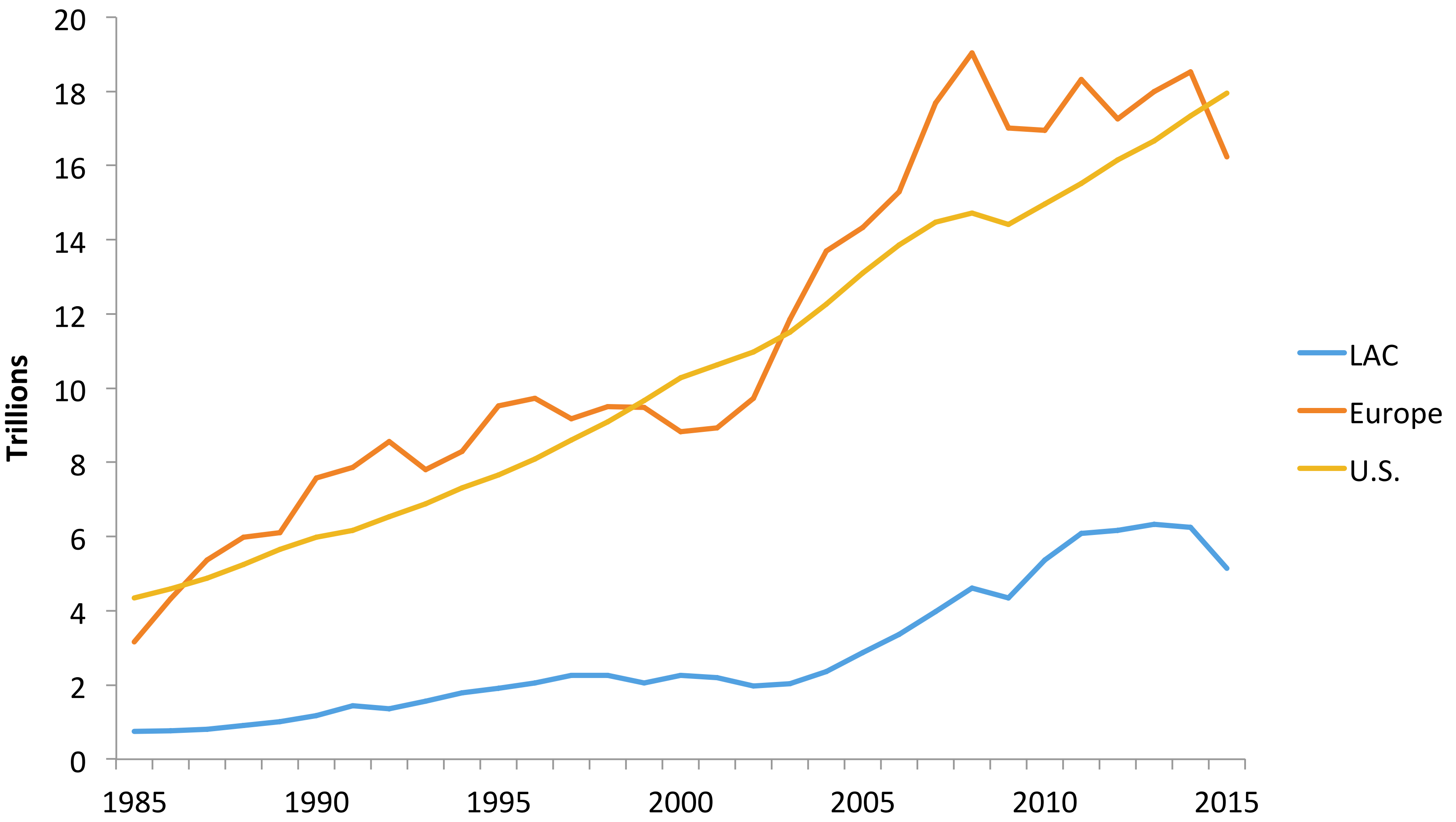
Balance Sheet Risk Management

Turn-key Swap Program for Commercial Borrowers

1.800 clients globally, including 150 financial institutions
Transaction management of over $500 billion of hedges annually

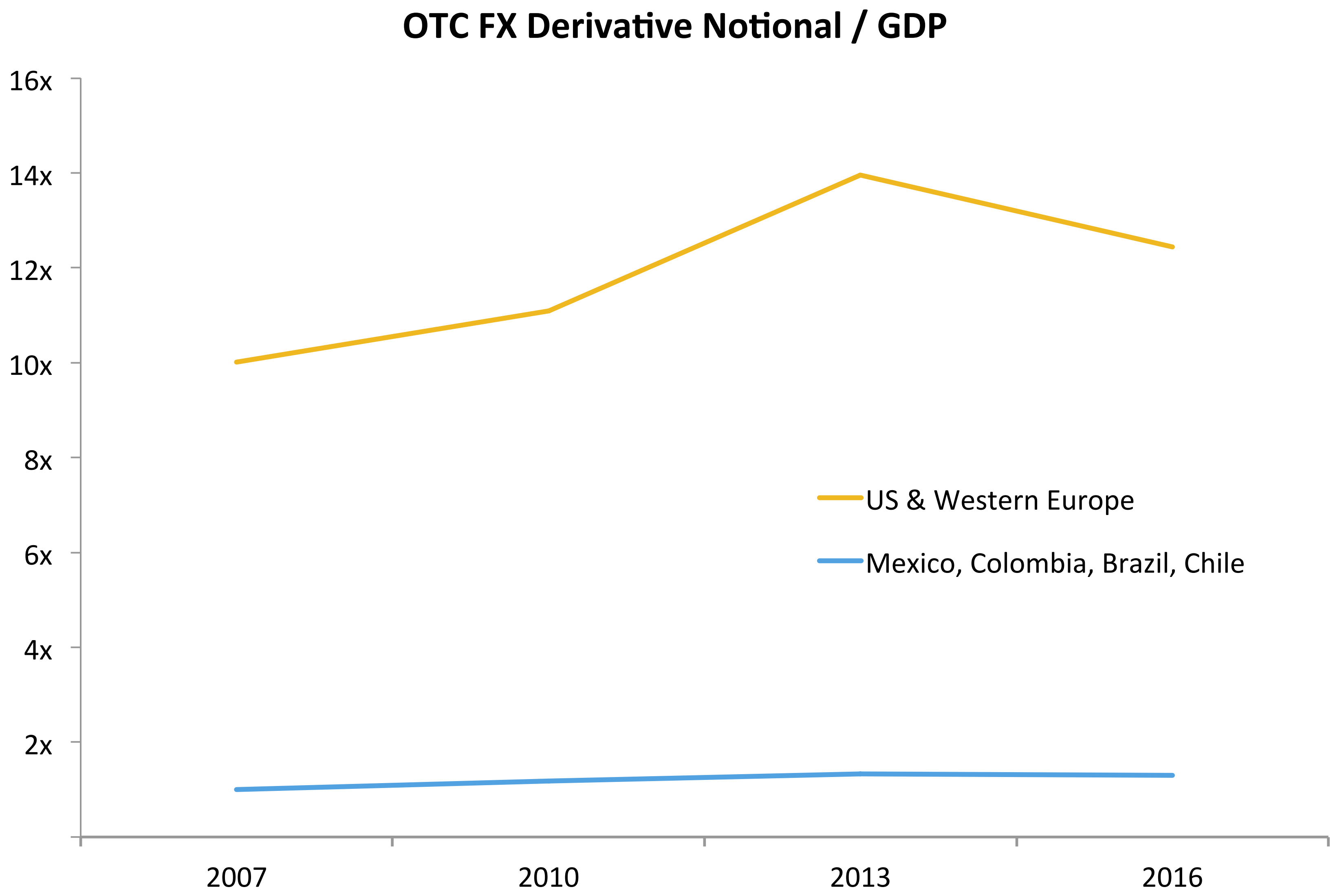
ADVISORY | TECHNOLOGY | SOLUTIONS

GDP: LatAm, Europe, U.S.



SOURCE: World Bank

FX Derivatives: US & Europe are 12x Latin America



SOURCE: BIS

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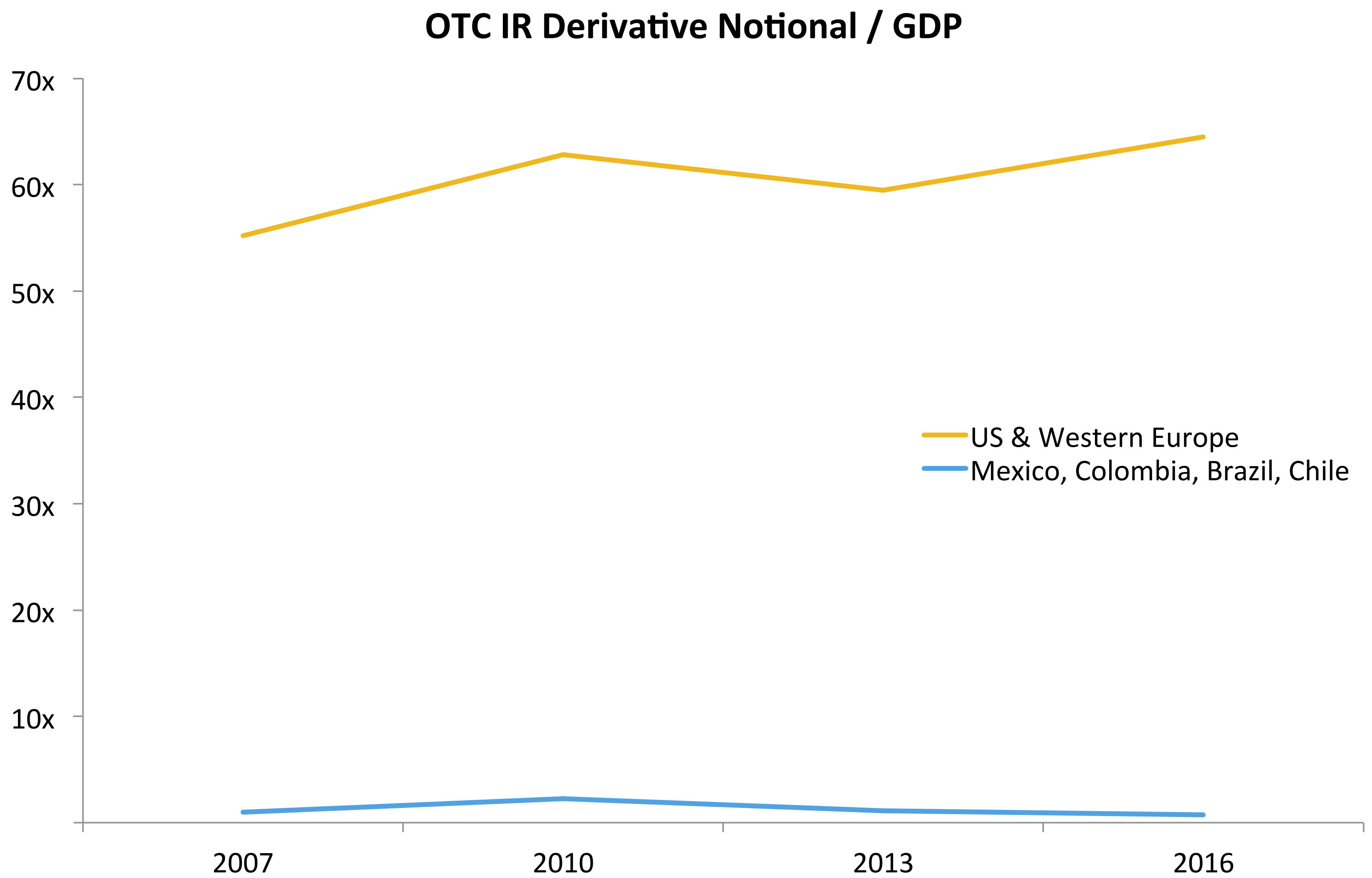
IR Derivatives: US & Europe are 60x Latin America



SOURCE: BIS

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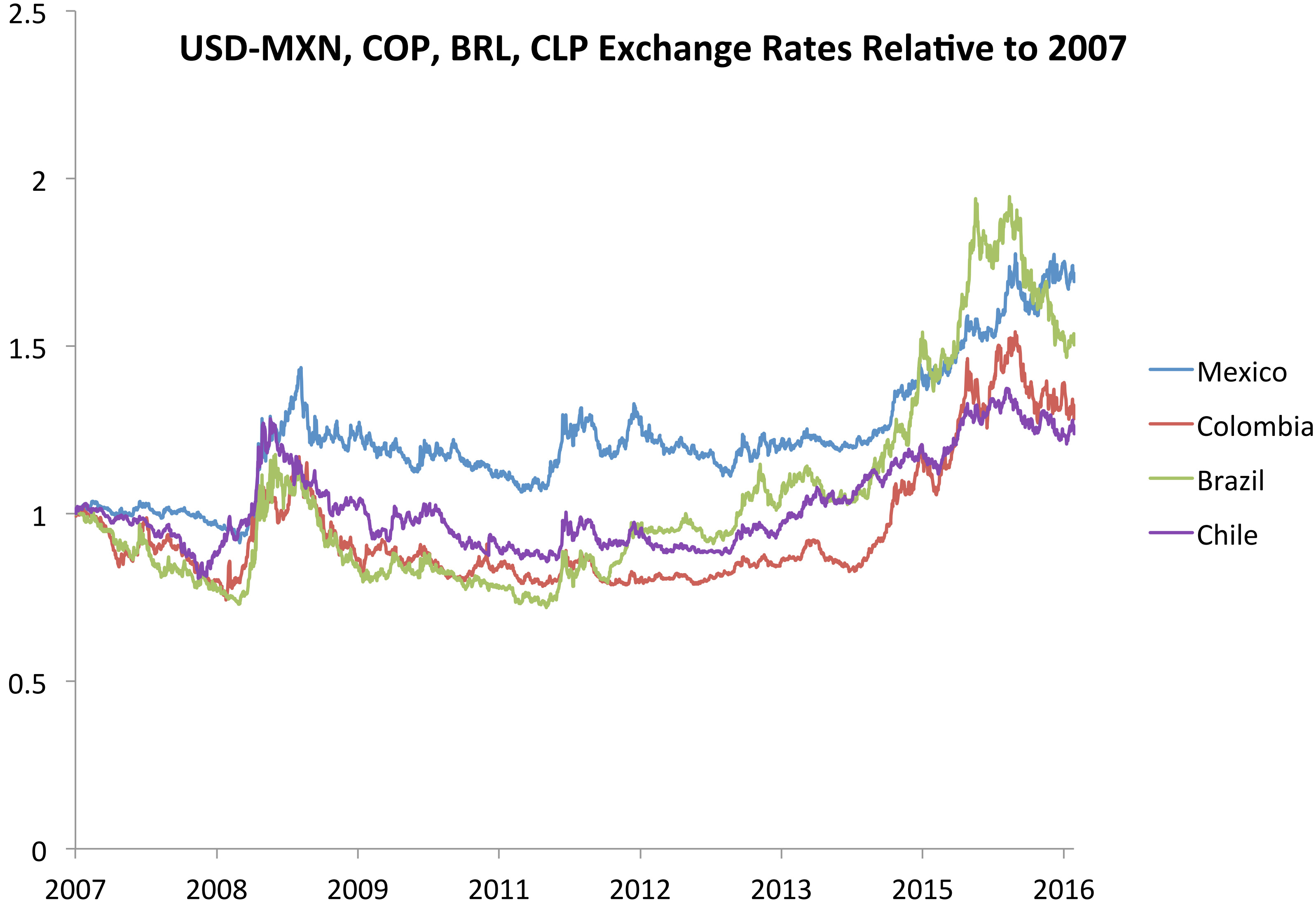
High FX Volatility in Latin America



SOURCE: BIS

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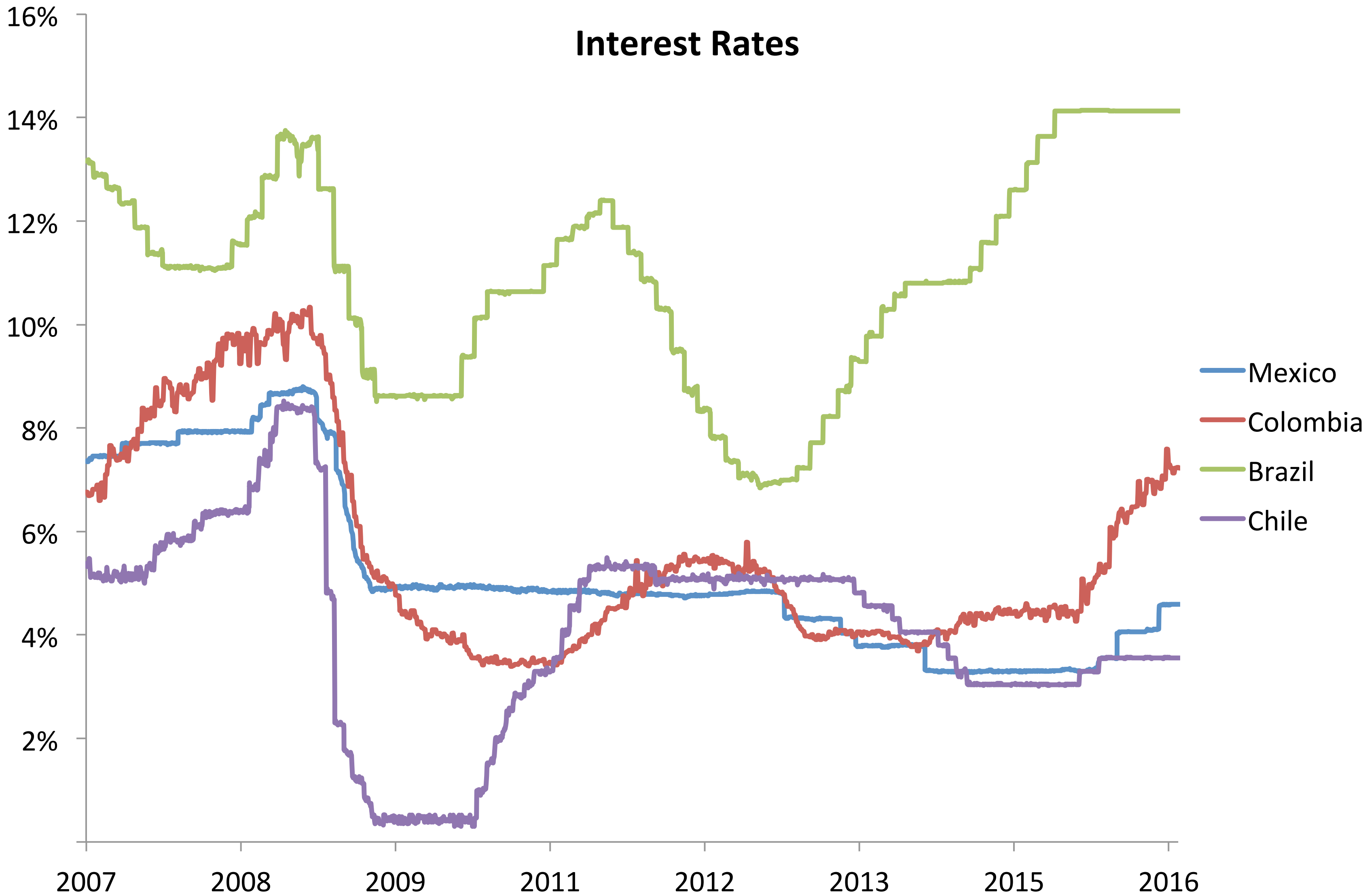
High Interest Rate Volatility in Latin America



SOURCE: BIS

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Globally, Banks Use Derivatives to Manage Exposure to FX and IR Risk

Swap Short-term Variable Rate Funding to Fixed

Swap Floating Rate Assets to Fixed

Hedge Foreign Denominated Funding

Floor on Short-term / Variable Rate Assets

Forward Hedge Anticipated Funding

Cap on Short-term / Variable Rate Funding

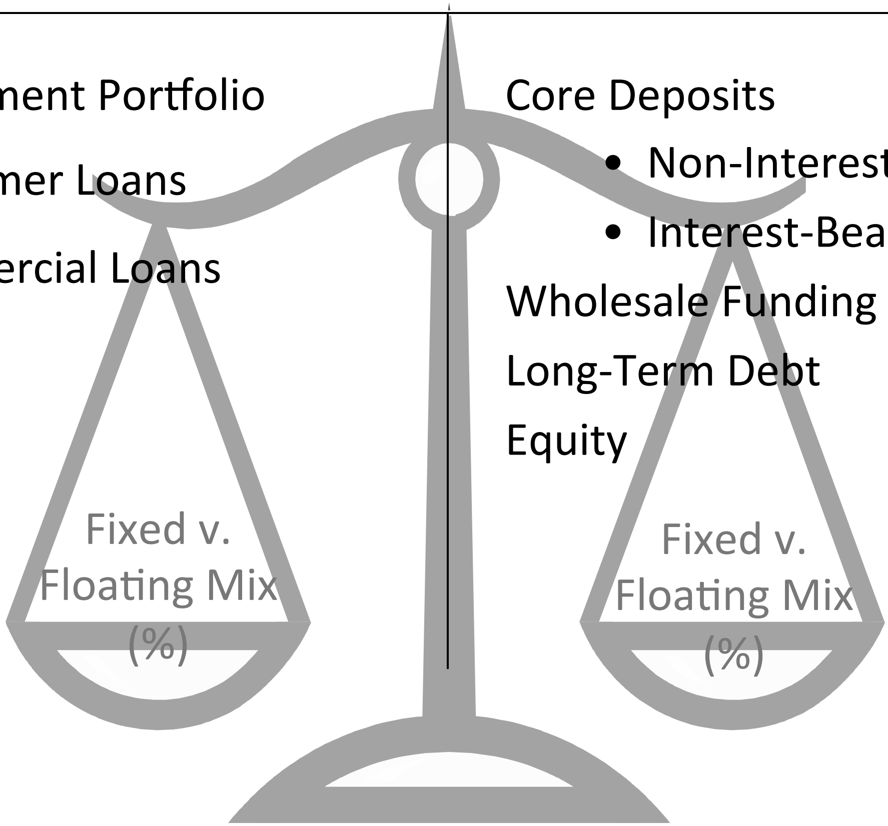
Swap Fixed Rate Assets to Floating

Swap Fixed Rate Funding to Floating

Hedge Foreign Denominated Investments

Why Should Banks Use Derivatives for A/L Management?

Assets	Liabilities/Equity



Assets

Investment Portfolio

Consumer Loans

Commercial Loans

Liabilities/Equity

Core Deposits
- Non-Interest
- Interest-Bearing

Wholesale Funding

Long-Term Debt

Equity

Benefits

✓ Highly efficient and effective tools for risk management

✓ No modifications are required to a bank's existing assets & liabilities

Derivatives enable a bank to strategically alter the nature of its assets/liabilities without modifying any of the underlying characteristics of the balance sheet

Efficiently Reduce *Asset* Sensitivity

Common scenarios in a low interest rate environment

- Core deposit funding costs have hit a natural “floor”
- Excess liquidity with lack of high-yielding assets
- Low-yielding, floating-rate loan portfolio
- Low-yielding, investment portfolio due to bond prepayments
- High fixed-rate debt still intact

➢ Net impact: relatively high fixed-rate costs in return for lower floating-rate returns

Potential hedging solutions

- Swap floating-rate loan portfolios to fixed – Commercial or consumer loans
- Swap fixed rate debt to floating – Fixed-rate bond issuances, subordinated debt
- Floors on floating-rate assets

Efficiently Reduce *Liability* Sensitivity

Positioning the balance sheet in advance of rising rates

- Substantial floating-rate funding through money market accounts or short-term, wholesale funding
- Large fixed-rate mortgage or commercial loan portfolio
- Long-term, fixed-rate investment portfolio with extending durations

Opportunity to lock in today's funding costs for future financings

Potential hedging solutions

- Swap short-term or floating-rate funding to fixed
- Swap individual fixed-rate loans to floating
- Cap borrowing costs
- Lock in costs today for an anticipated future financing
- Offer swaps directly to customers who want fixed-rate loans ("back-to-back" program)
  - Lend floating
  - Enter into back-to-back swaps
    - Swap customer loan to fixed
    - Execute an offsetting swap with a dealer bank to convert the bank back to floating

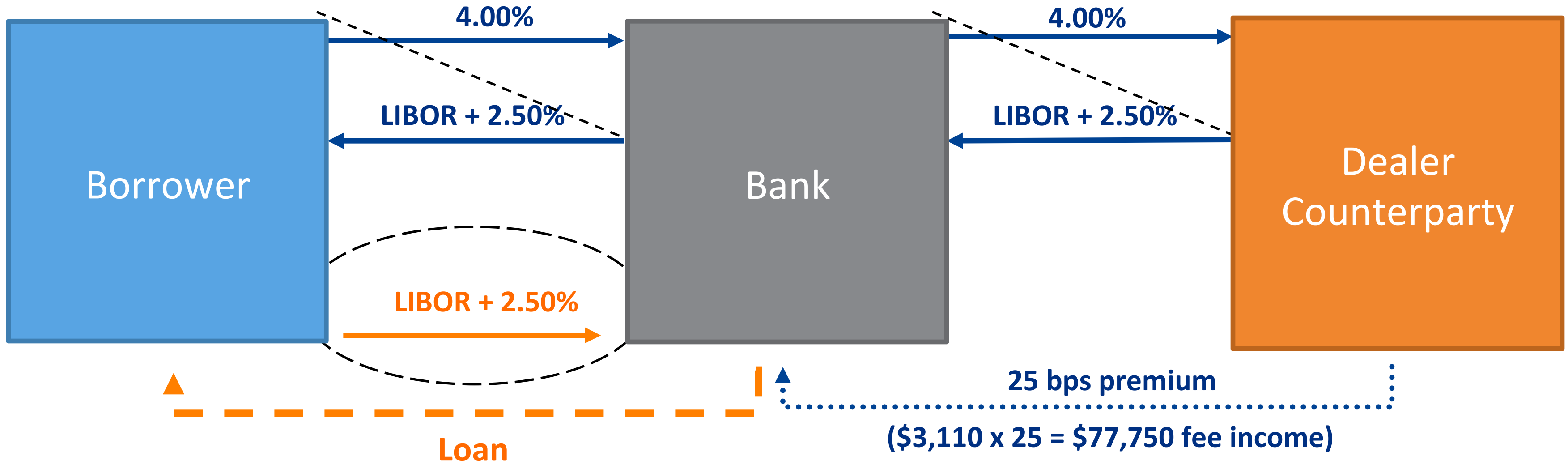
Back-to-Back Swap Overview

Loan
- $5 million loan
- 25-year amortization
- 7-year term, L+250
- DV01 = $3,110

Wholesale Swap Rate = 1.25%
Credit Spread = 2.50%
Market Rate = *3.75%*
Bank Profit (25 bps) = <u>0.25%</u>
"Retail" Swap Rate = 4.00%

Client executes above market, or "retail" swap rate with Bank

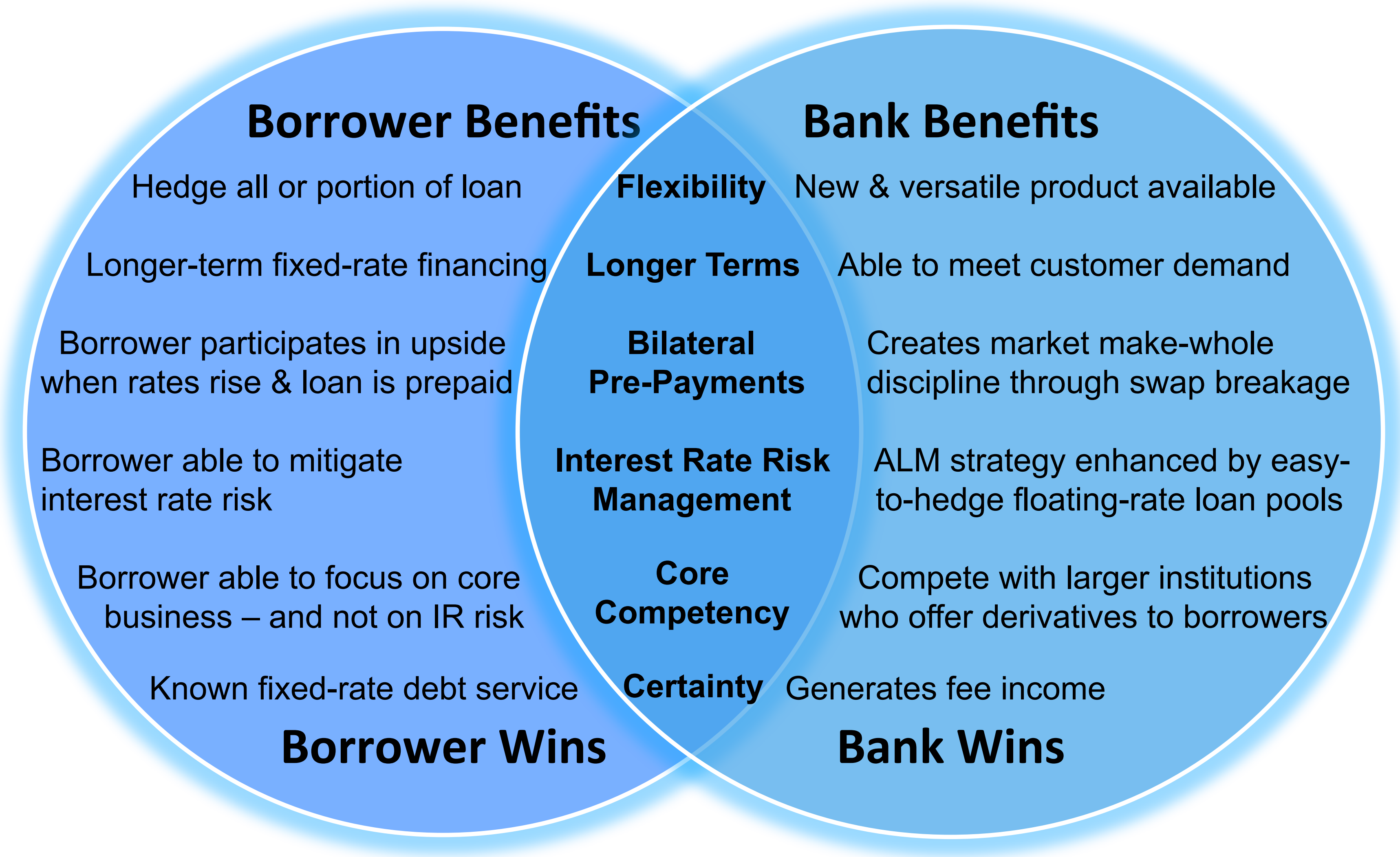
Bank pays same "retail" swap rate to Swap Counterparty



($3,110 x 25 = $77,750 fee income)

Swap Counterparty will pay PV difference between wholesale market swap rate & retail swap rate to Bank as an upfront fee

Benefits of a Back-to-Back Swap Program

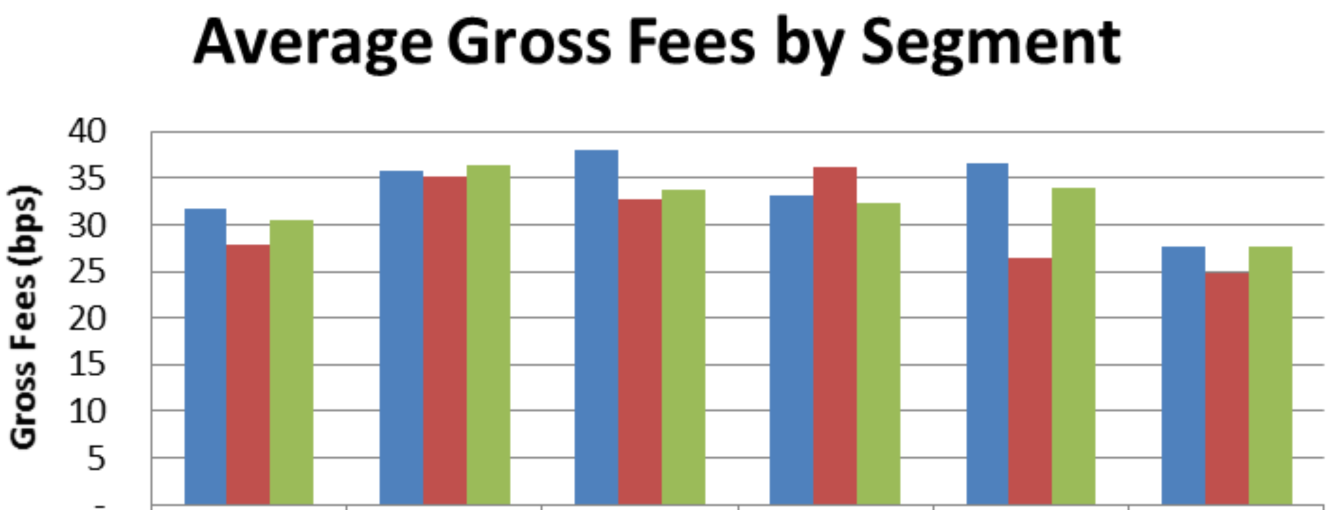


Borrower Swap Data (Chatham Clients – YTD 2016)

Borrower Swap Data YTD* 2016	
Total Trades	1,463
Average Term	7.9 years
Longest Term	25 years
Shortest Term	4 months
Average Spread over 1M LIBOR	228 bps
Highest Spread	500 bps
Lowest Spread	125 bps
Average Notional Amount	$6,075,000
Highest Notional Amount	$84,000,000
Lowest Notional Amount	$116,000

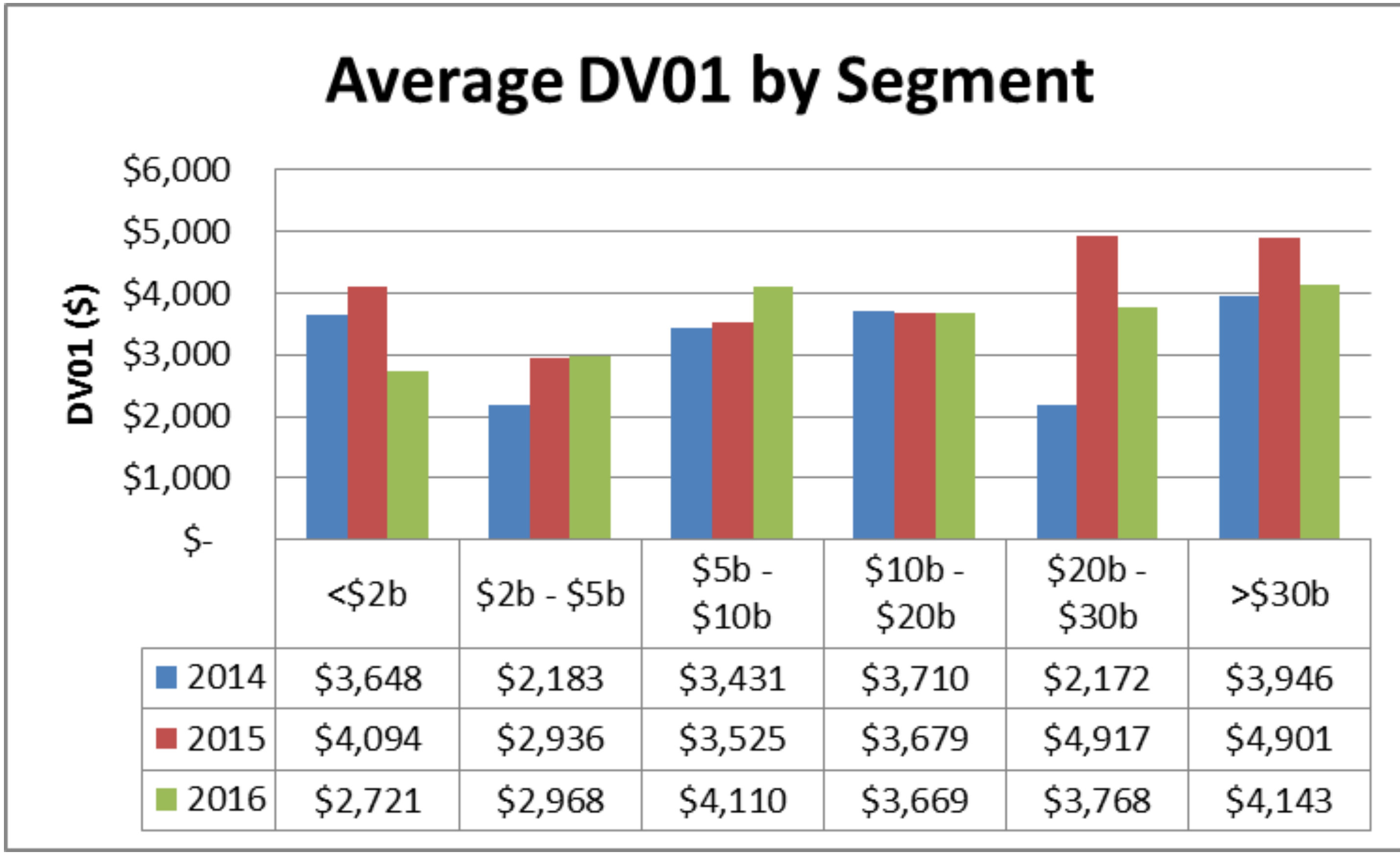
*YTD as of August 25, 2016

Average Gross Swap Fees



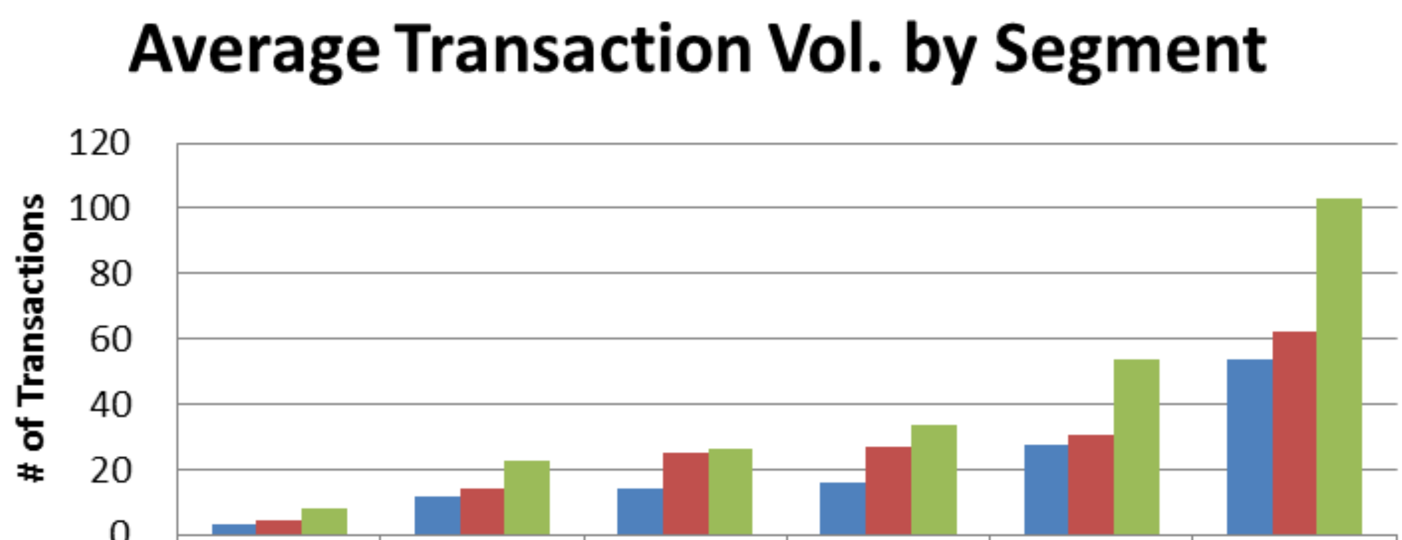
	<$2b	$2b - $5b	$5b - $10b	$10b - $20b	$20b - $30b	>$30b
2014	31.75	35.66	37.95	33.06	36.57	27.55
2015	27.92	35.20	32.81	36.14	26.46	24.84
2016	30.48	36.44	33.73	32.22	33.90	27.63

Average DV01



	<$2b	$2b - $5b	$5b - $10b	$10b - $20b	$20b - $30b	>$30b
2014	$3,648	$2,183	$3,431	$3,710	$2,172	$3,946
2015	$4,094	$2,936	$3,525	$3,679	$4,917	$4,901
2016	$2,721	$2,968	$4,110	$3,669	$3,768	$4,143

Transaction Volume



	<$2b	$2b - $5b	$5b - $10b	$10b - $20b	$20b - $30b	>$30b
2014	3.00	11.88	14.41	15.90	27.75	53.67
2015	4.60	14.25	24.88	26.78	30.80	62.50
2016	8.04	22.87	26.03	33.36	53.87	102.91

Note: 2016 figures represent projected deal volume based on YTD data

Why Should Banks Actively Manage FX Risk?

FX changes can impact the value of your equity investment in a foreign asset

- 50% depreciation of local currency vs foreign asset currency = 50% loss of equity
- Could impact bank's capital ratios / regulatory compliance
- Hedge initial equity at the time of investment with a rolling FX forward strategy

Foreign debt becomes more expensive to service as local currency depreciates

- Cost of buying foreign currency to service debt increases as local currency depreciates
- Foreign denominated debt can be hedged with a cross currency swap

Exposure to foreign borrower credit risk increases as foreign currency depreciates

Derivatives enable banks to hedge initial equity investment in a foreign asset, lock in cost of foreign debt, & provide local currency loan products to customers

Why Aren't More LatAm Banks Using Derivatives?

- Negative publicity surrounding derivatives
- Lack of knowledge about derivative products
- Greater familiarity with on-balance sheet strategies
- Perceived regulatory barriers
- Lack of hedge accounting expertise and/or IT systems

Interest rate and FX uncertainty / volatility

+ Cost of on-balance sheet risk management strategies

= Derivatives can be effective solutions for managing interest rate sensitivity

Benefits of Derivatives Outweigh the Risks

- $600T global market that has grown up since 1985
- U.S. and Europe have already gone through the learning curve
- Regulation is much more mature today
- IFRS 9 closely aligns the accounting with the economics…and has streamlined many of the hedge accounting requirements
- Valuation models are excellent and readily available
- Accounting systems / expertise are mature and highly capable
- Flexible, efficient, and customizable risk management tools

Cornerstones of a Growing Derivatives Market

Market Liquidity	Regulation
Accounting	Systems & Technology

"Breaking Ground" for a Bank Hedging Program

Lay the Foundation

- Board and management education
- Hedging policy and approval
- Swap counterparty documentation
- Regulatory / accounting groundwork
- Assess IR & FX risk, borrower demand, suitability

Build the House – take a programmatic approach

- Balance sheet hedging program
  - Assess-Structure-Execute-Designate-Document
- Back-to-back swap program
  - Training, setup, and implementation
  - Promote to commercial borrowers
- Net investment hedging
- Trade finance hedging

"Top 10 List" for Building a Derivatives Program

1. *Hedging Policy – defines the program limits: Board of Directors*
2. *Procedures – roles, responsibilities, controls: Senior Management*
3. *ISDA – establish dealer trading lines: Senior Management*
4. *Program Objectives – desired economic outcomes: ALCO*
5. *Regulator Approval – confirm policy, procedures, objectives: Legal*

"Top 10 List" for Building a Derivatives Program (cont.)

6	*Hedging Strategy – align economic & accounting objectives: ALCO*
7	*Auditor Approval – confirm hedge designation: Accounting*
8	*Execute Hedge Transactions – best price/terms: Treasury/Trading*
9	*Ongoing Hedge Accounting – effectiveness, JEs: Accounting/Tech*
10	*Documentation/IT System – valuations, trade confirm: Tech*

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