

# Country Insurance:

Reducing systemic vulnerabilities in LAC

A Regional Study by:

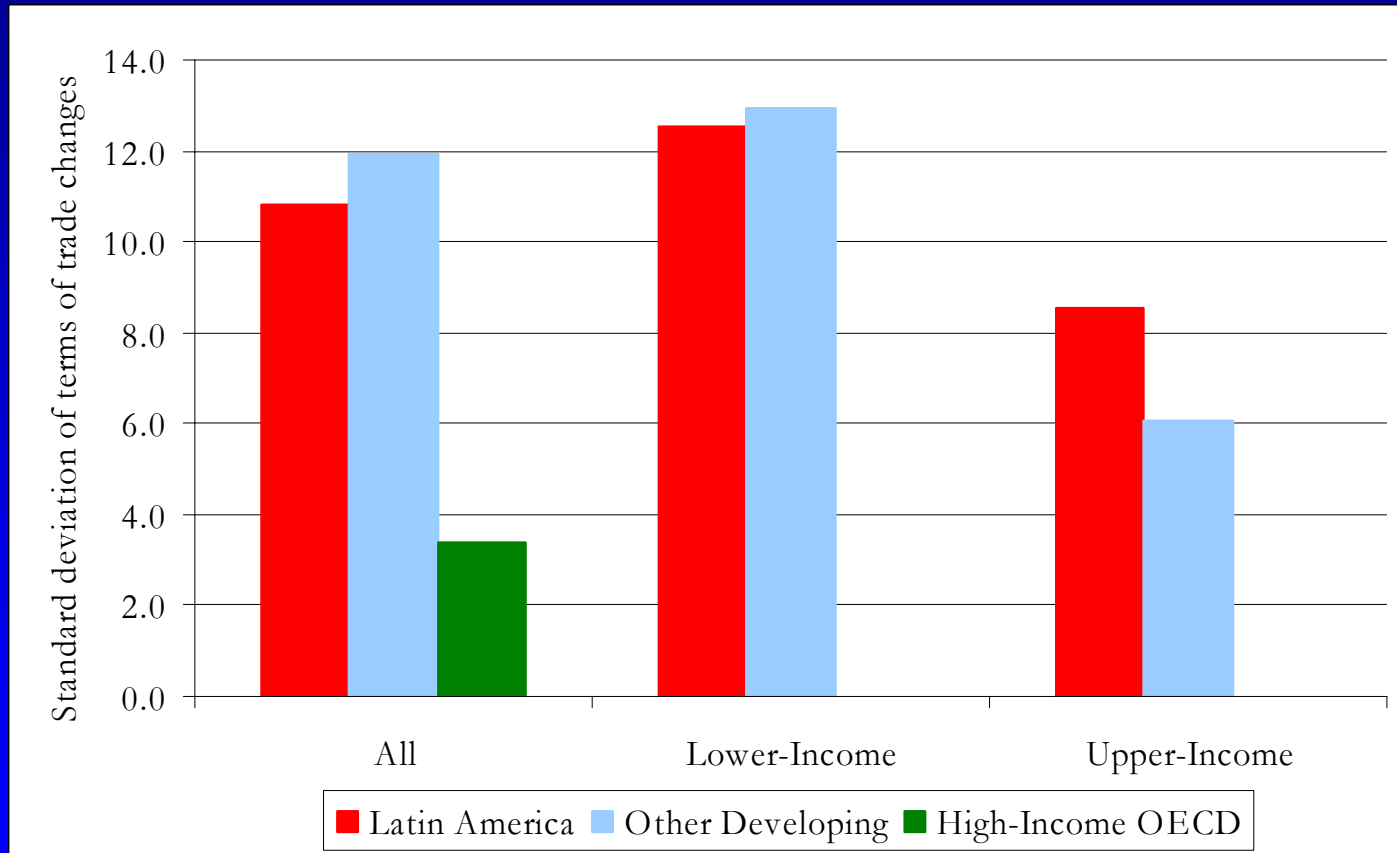
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Tito Cordella  
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# Road map

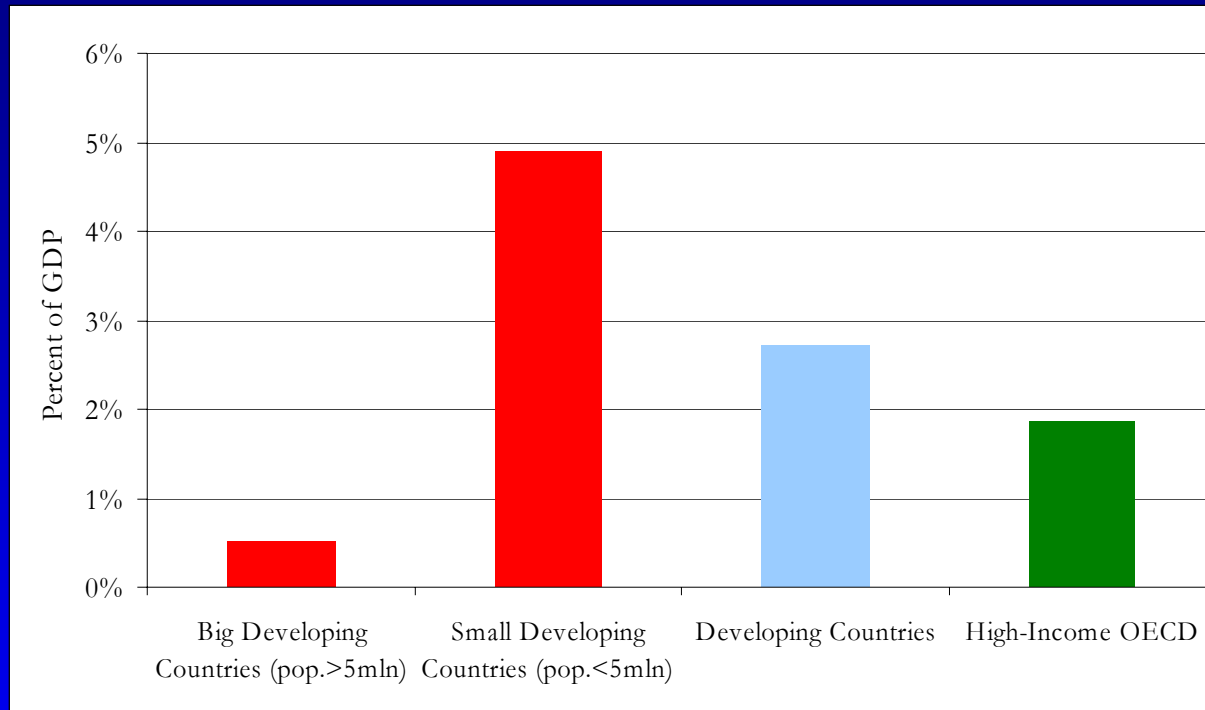
- Developing economies are exposed and vulnerable to exogenous shocks
- Rationale for “country insurance”
- How countries have dealt with such shocks:
  - Financial Shocks (liquidity)
  - Real Shocks
    - Terms of Trade
    - Natural Disasters
- The Policy Challenges for the WB (and other IFIs)
  - New Financial instruments

# The case for country insurance

# Terms of trade volatility

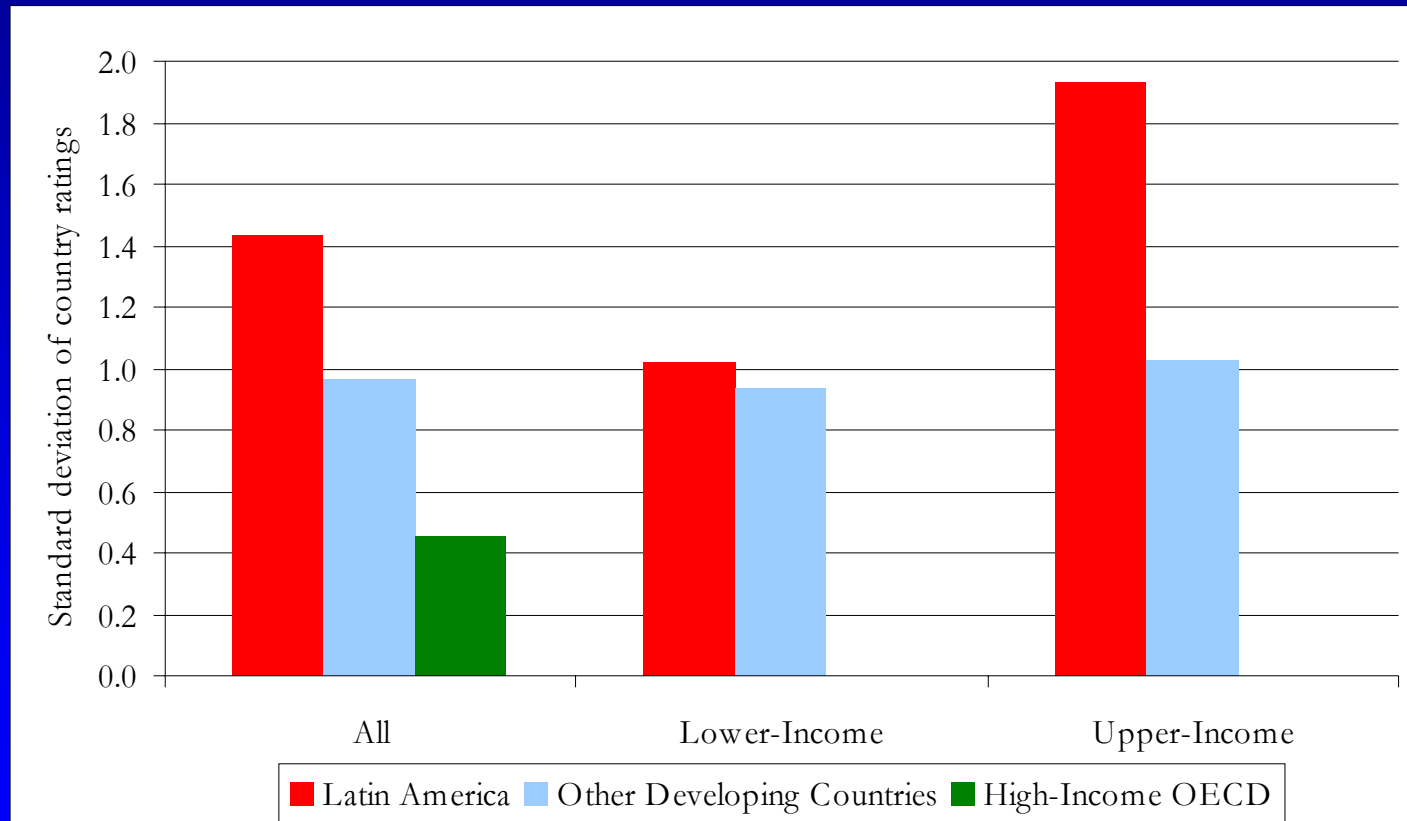


# Natural Disasters



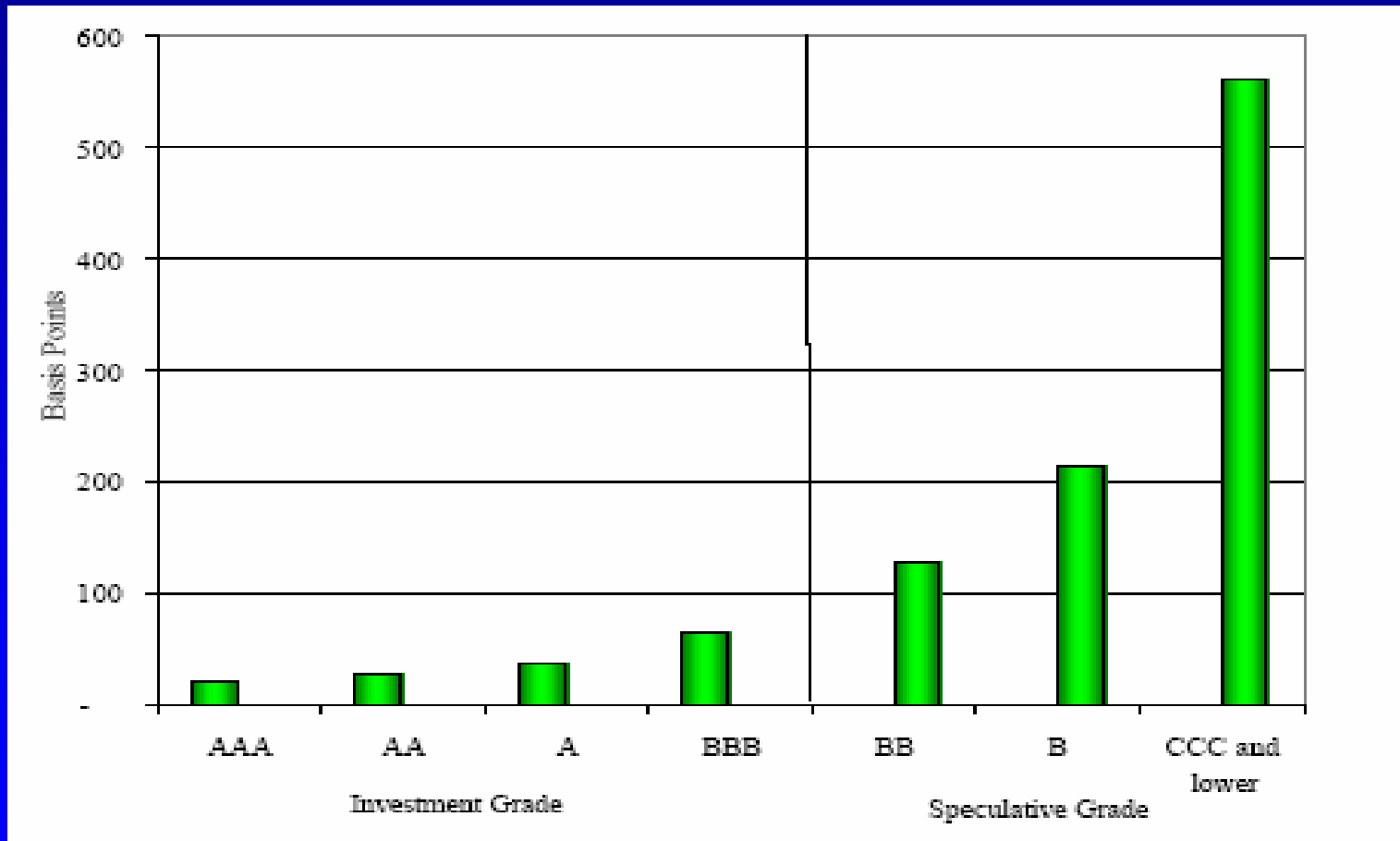
	Europe and Central Asia	Latin America and Caribbean	Middle East and North Africa	South-East Asia and Pacific	Sub-Saharan Africa	High-income Countries
Annual average shocks in the region	9.89	26.40	7.31	51.40	17.36	34.24
Annual average shocks per country	0.37	0.80	0.52	1.35	0.36	0.62

# The credit risk channel

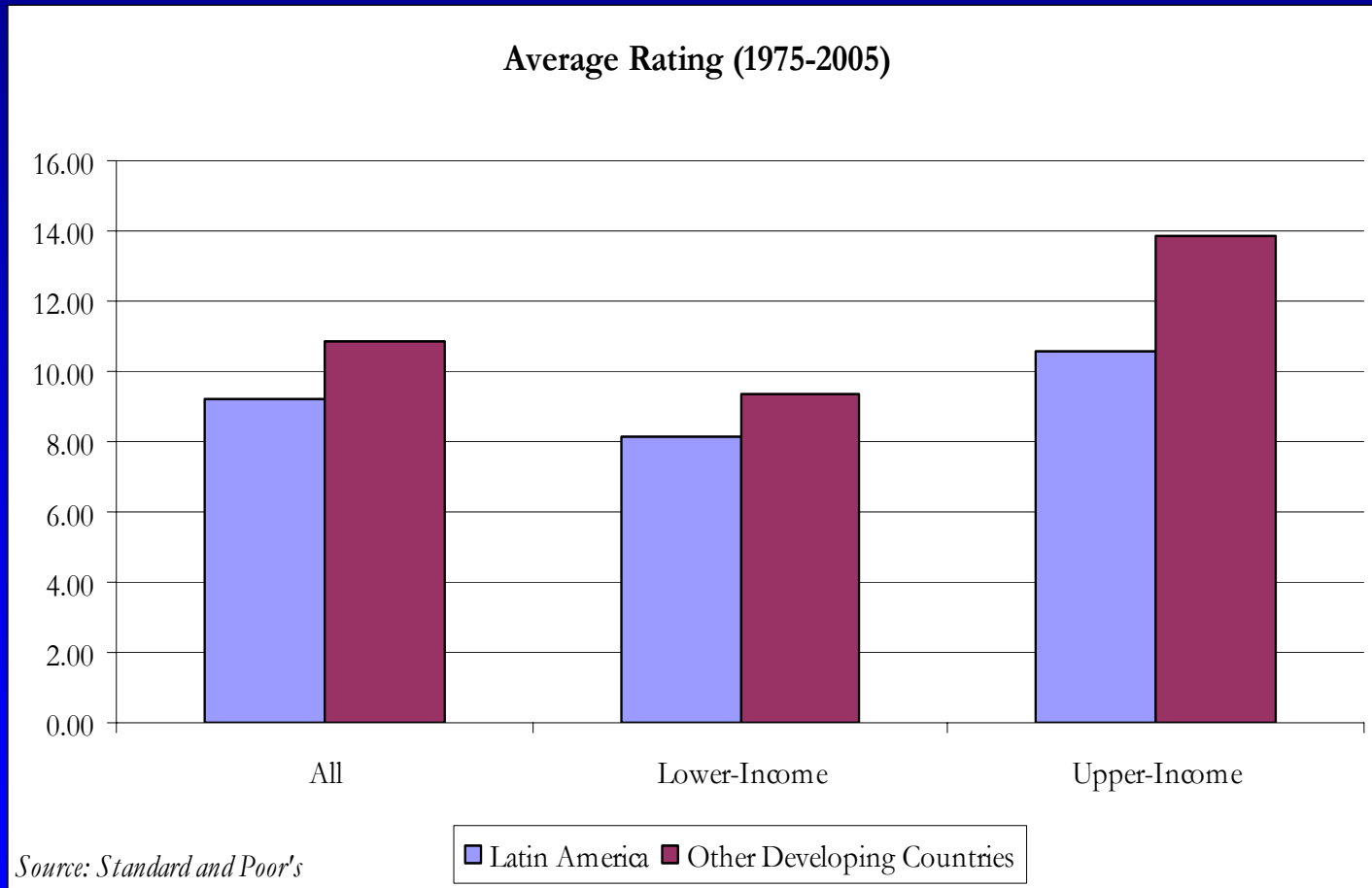


# The credit risk channel

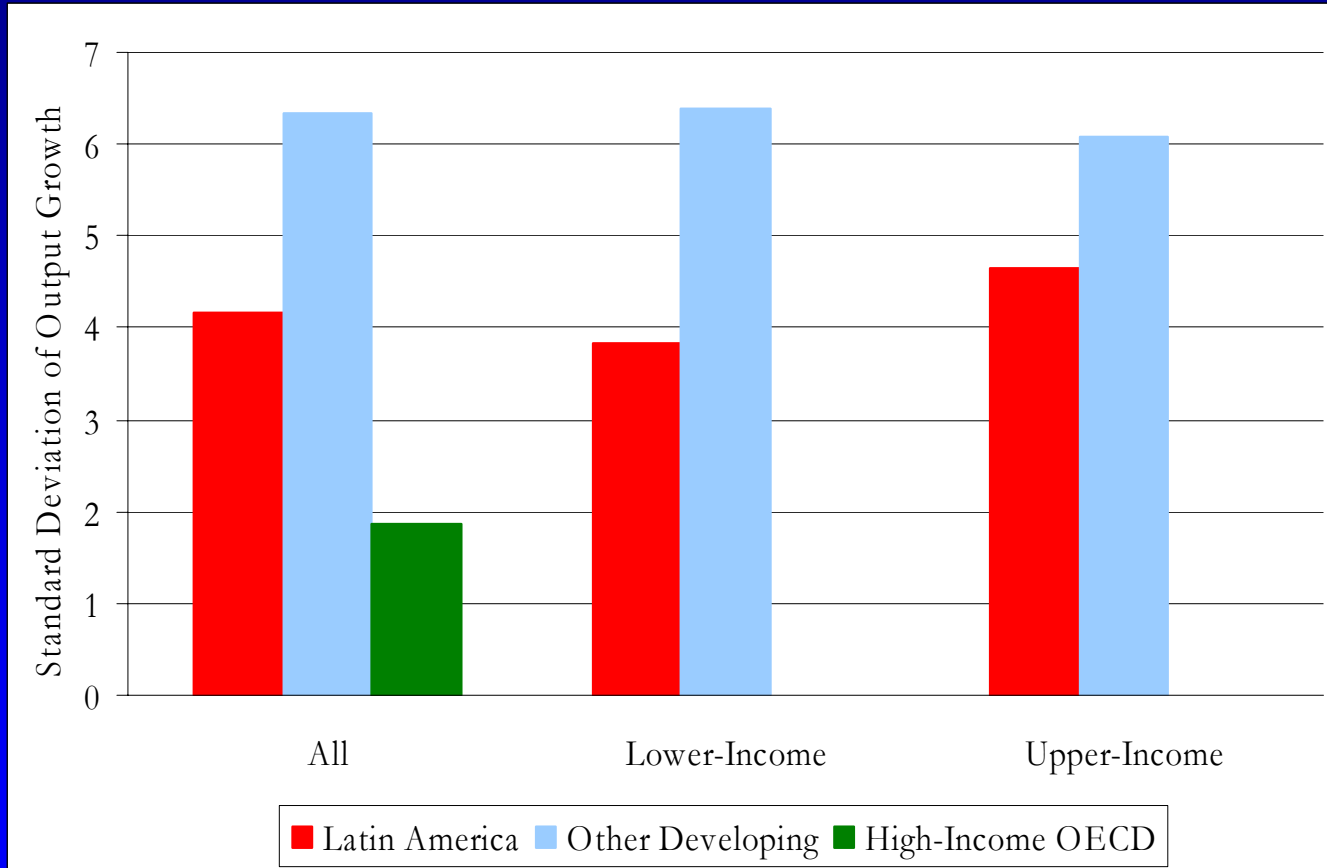
Sovereign risk premium volatility (1975-2006)



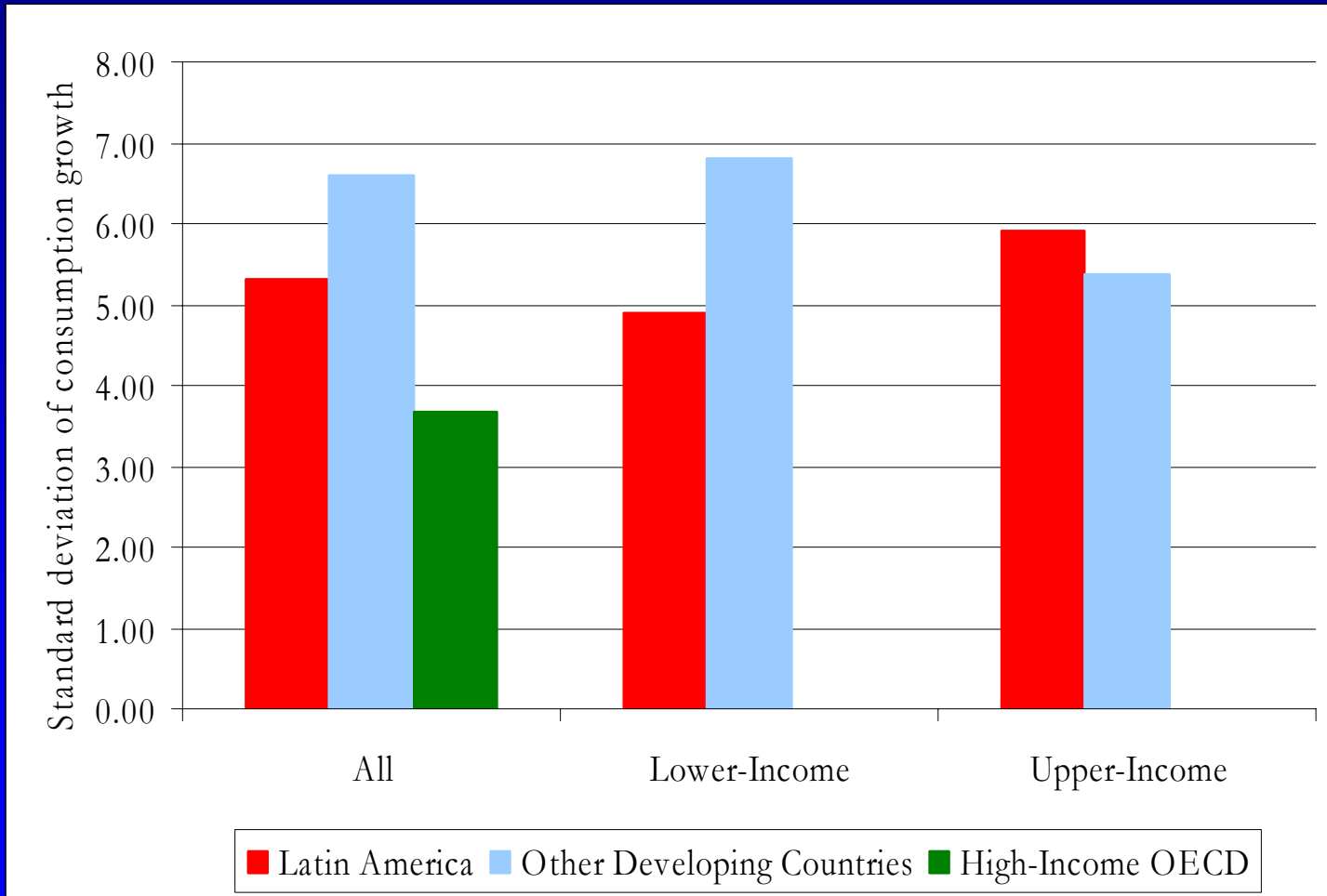
# The credit risk channel



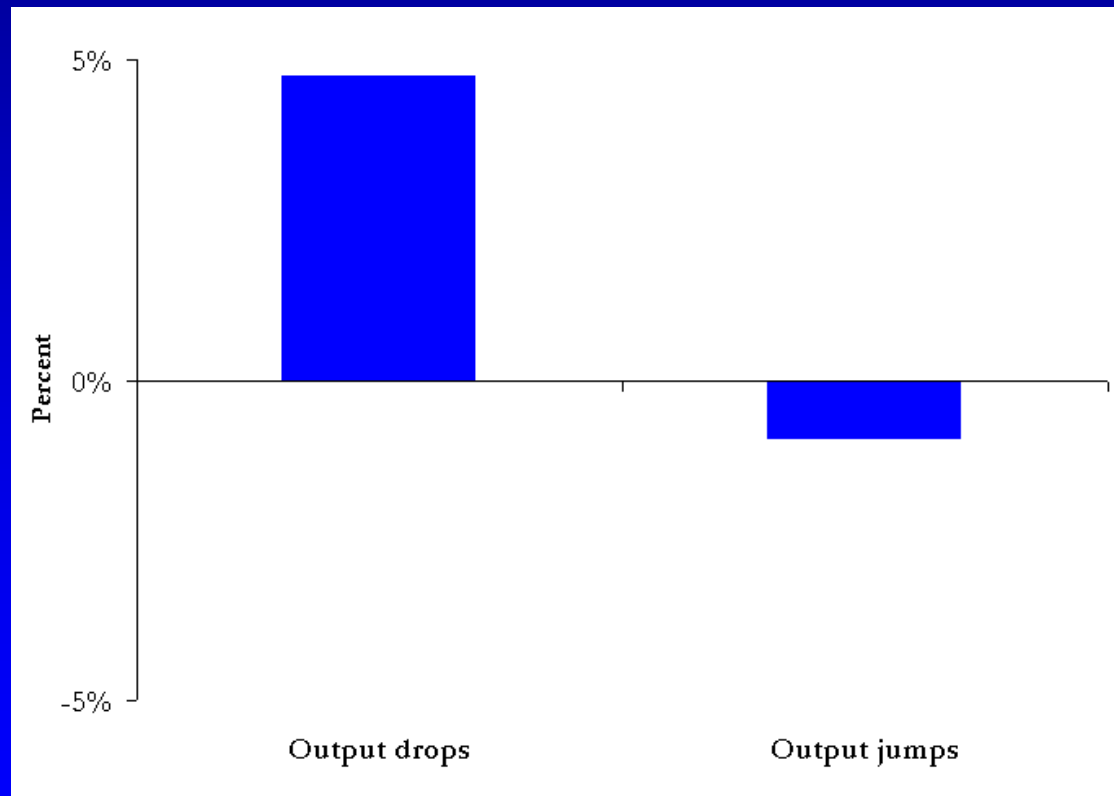
# Output Volatility



# Consumption Volatility



# Volatility and Inequality



# Inequality and Poverty

Dependent Variable	Baseline	Augmented Regression	
	Output Volatility	Output Volatility	Output Drops <i>1/</i>
<b>Gini Coefficient</b>	0.0388 ** (0.00)	0.0173 ** (0.00)	0.0202 ** (0.01)
<b>Income Shares</b>			
Q1 (poorest quintile)	-0.0339 ** (0.01)	-0.0049 (0.01)	-0.0843 ** (0.03)
Q2	-0.0111 ** (0.01)	-0.0049 (0.01)	-0.0251 ** (0.01)
Q3 (middle quintile)	-0.0151 ** (0.01)	-0.0249 ** (0.01)	0.0061 (0.01)
Q4	0.0076 ** (0.00)	0.0069 * (0.00)	0.0001 (0.01)
Q5 (richest quintile)	0.0160 ** (0.01)	0.0108 * (0.01)	0.0109 * (0.01)
<b>Poverty</b>			
Poverty Gap	0.272 ** (0.06)	0.195 ** (0.07)	0.111 ** (0.06)
Headcount index	0.181 ** (0.04)	0.027 (0.05)	0.154 ** (0.05)

Source: Calderón and Levy-Yeyati, 2007

## Conclusions

- Large and volatile exogenous (real and financial) shocks
- Excessive output and consumption volatility
  - In LAC “richer” countries particularly vulnerable
  - The financial channel
- Persistent effects on inequality and poverty
- Hence, the need for country insurance policies

# Country insurance: a primer

# How to deal with exogenous shocks

- Retain Risk
  - Do nothing...
  - Self-insurance
  - Self-protection
- Transfer Risk
  - Market insurance
  - Contingent credit lines (IFIs)
- A fairly priced insurance is the best option to cope with exogenous shocks (together with self protection)
  - Catalytic role
  - “Incentivating” role

# Catalytic insurance

- Borrowing constraints factor in the country's ability to pay in bad times
- Insurance distributes income from good to bad times, reducing default risk and relaxing the constraint
- Can an contingent credit lines substitute for insurance?
  - No. Insurance transfers across states, finance transfers across periods
  - The loan, unlike insurance money, has to be paid back after a bad shock

# “Incentivating” insurance

- Insurance can strengthen the government’s incentives
  - Lowers the probability that the shock ends up in a crisis and lengthens policymakers horizon (Cordella and Yeyati, 2005).
  - Lowers the probability of self-fulfilling runs (Morris and Shin, 2003) and their economic costs (Corsetti et al., 2006), creating incentives for costly reforms
  - Creates incentives to effective self-protection

## But “cheap” insurance is seldom available!

- For common “small” events,
  - Self-insurance is a reasonable option
  - And also doing nothing is reasonable (if the country is creditworthy)
- For unlikely “extreme” events
  - Self-insurance option too expensive in terms of foregone consumption
  - Market insurance is most effective for large rare losses
  - Extreme unlikely events are best insured externally<sub>18</sub>

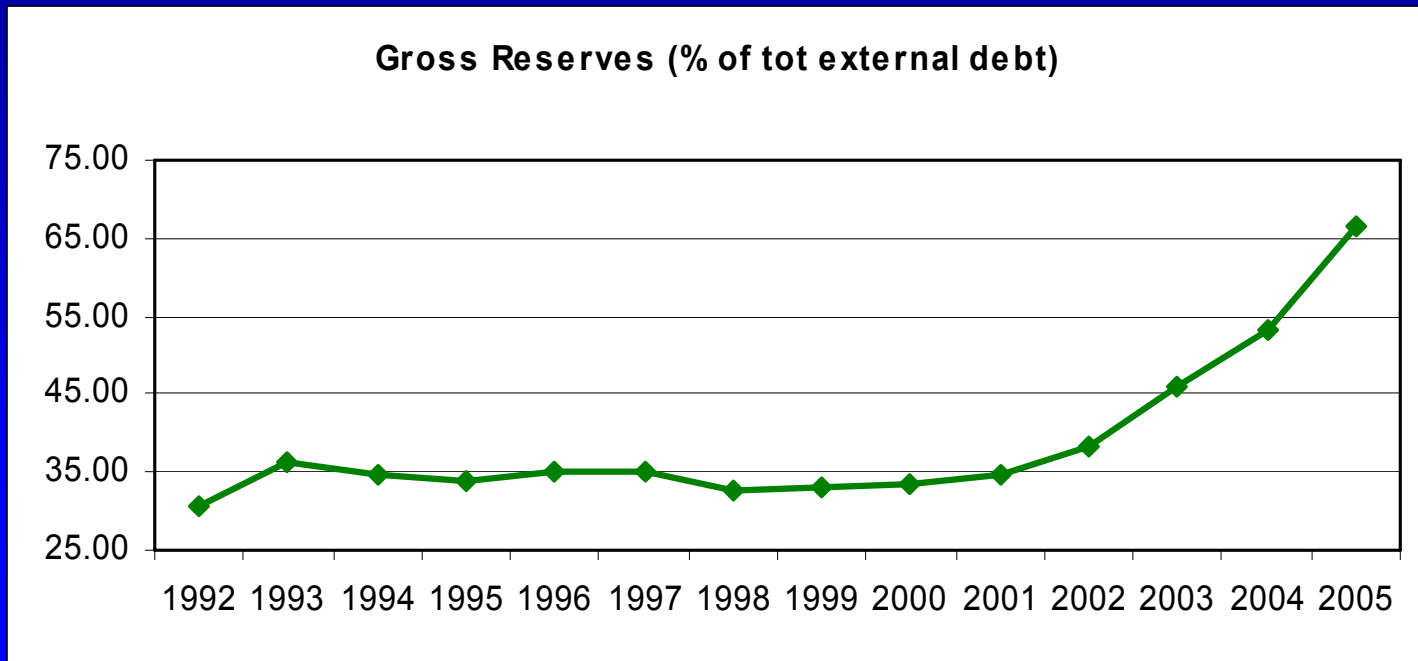
# Financial Shocks

# The case of financial shocks

- What has been the source of vulnerability in the '90s?
  - Sudden stops made possible by currency mismatches!
- The policy response: More effective risk retention!
  - Self Insurance:
    - Creation of large liquidity buffers (costly but...)
  - Self Protection:
    - Creation of large liquidity buffers
    - Sovereign de-dollarization and de-leveraging

# De-dollarization and de-leveraging

## Emerging reserves



Source: Author's calculation based on GDN

# Why little risk transfer?

- Problems of Market Insurance (Argentina, Mexico)
  - Verifiability:
    - the insurable event and the associated loss difficult to verify
    - This creates moral hazard → Large premiums
  - Limited diversification margin (beta countries)
    - Limited coverage
    - Large premiums
    - Insurer's moral hazard
  - Lack of risk retention by market insurers
    - Insuring banks hedging in the run-up to the crisis

## First best: ILLR

- ILLR: provides temporary dollar liquidity at a premium over normal (that is, pre-crisis) interest rates
- Overcomes two drawbacks of private insurance:
  - Lack of risk retention
  - Insurer's moral hazard
- Insuring with IFIs
  - Failed CCL/DDO
    - Unwillingness to provide automatic access
    - IFIs' governance problems
    - Signaling problems

# Natural Disasters

# Natural Disasters

- Assess needs looking both at:
  - Liquidity Gaps
    - Availability of funds in the aftermath of a disaster
  - Resource Gaps
    - Resource deficit in the long run
- Decide how much risk to retain
  - Fiscal space
  - Reliance on donors' assistance
  - Contingent Capital
- And how much to transfer
  - Catastrophe Insurance

# CAT Bonds

Figure 3: Comparison of 2006 Peak, Non-Peak and Diversifying Peril Transactions  
ROL vs. EL — All Issues

- ◆ Peak Perils (U.S. Earthquake)
- Peak Perils (U.S. Hurricane)
- ▲ Non-Peak Perils (European — Wind, Japanese Earthquake)
- Pure Diversifying Perils (Australian Typhoon and Earthquake, Mexican Earthquake, Japanese Typhoon)



- The range of the expected loss spectrum (i.e., the x-axis) was selected to include all diversifying peril transactions that closed during 2006. Because of the limited amount of data, readers are cautioned against extrapolating what pricing might be for other potential issuances on the basis of this figure alone.

# Real Shocks

# Real economic shocks

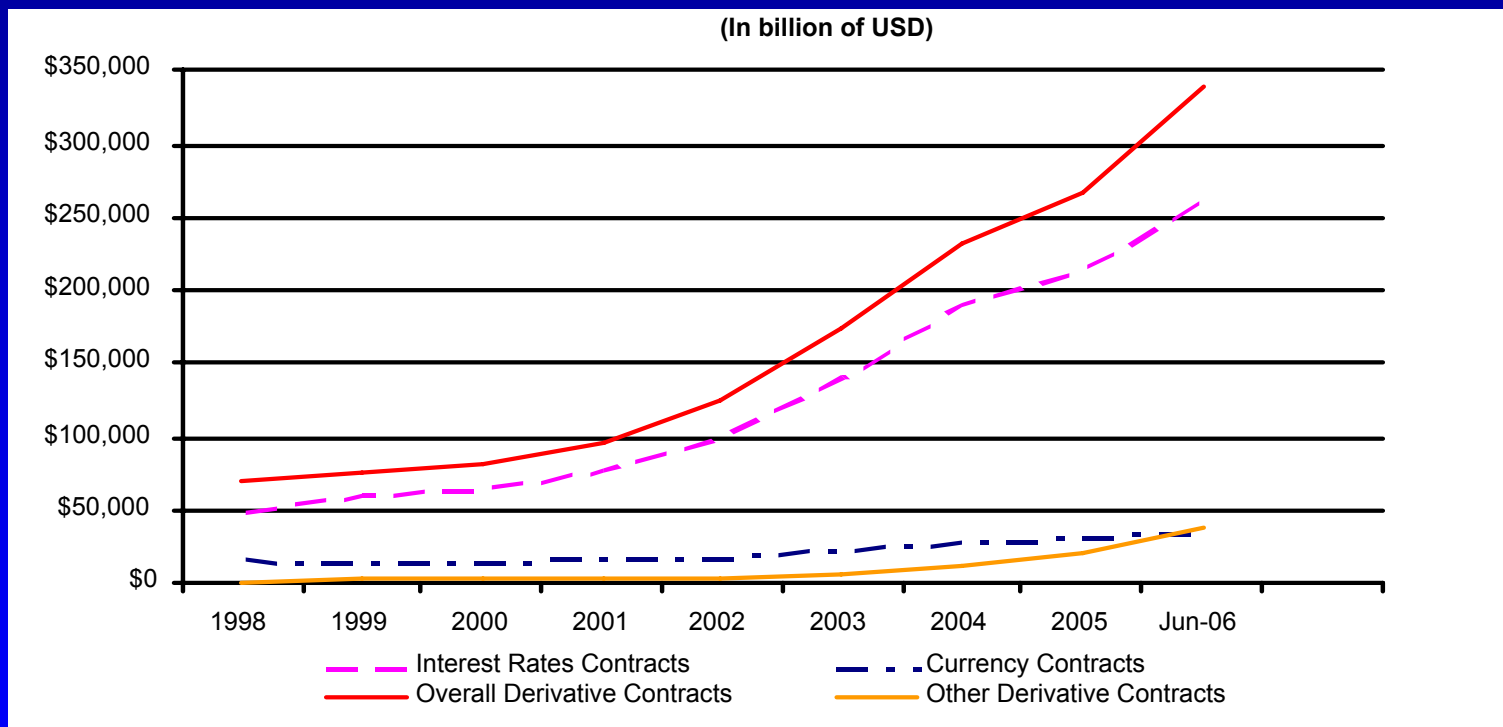
- How to reduce exposure to shocks
  - Avoid mismatches
    - Domestic vs. foreign currency debt
    - Fixed vs. Floating debt
    - Lengthen debt maturity
    - GDP, VIX, Commodity indexed debt
      - Liquidity vs. basis risk
    - Use of derivatives (currency, interest rate, commodities)
  - How costly is to have a “safer” debt composition?
    - Not much if policies are credible...Actually a better composition of debt may decrease the cost of borrowing
  - One should not only look at liabilities
    - asset liabilities management is key

# Asset liabilities management

- Insurance vs. hedging
  - Insurance (put options)
    - Transfer downside but keep upside
  - Hedging
    - Eliminate the risk locking future flows
  - The trade-off
    - up-front costs (insurance) vs. loss of the upside (hedging)

# Markets are getting deeper

Figure 3.4 Global OTC derivative market 1998–2006



Source: Bank for International Settlements (BIS).

# Markets are getting deeper

Table 3.7 Currency swaps in U.S. dollars

<i>Latin America, Country</i>	<i>Currency</i>	<i>Trade size</i>	<i>Max Maturity</i>
Argentina	Argentine Peso	\$ 100m	7 -10yrs
Brazil	Brazilian Real	\$ 200-300m	10- 15 Yrs
Chile	Chilean peso	\$ 200m	10 - 20 Yrs
Colombia	Colombian Peso	\$ 100m	20 Yrs
Costa Rica	Costa Rican	\$ 50m	10 Yrs
Dominican Republic	Dominican Republic Peso	\$ 50m	5 Yrs
Guatemala	Guatemalan Quetzal	\$ 50m	3 Yrs
Jamaica	Jamaican Dollar	\$ 25m	7 Yrs
Mexico	Mexican Peso	\$ 200-400m	30 Yrs
Paraguay	Paraguayan Guaran'	\$ 100m	5 Yrs
Peru	Peruvian New Sol	\$ 50 -100m	10 -15 Yrs
Uruguay	Uruguayan Peso	\$ 50m	3 Yrs

# Markets are getting deeper

		Futures / Forward (# of Contracts)											
		Up to 6 Months		6 Months to 1 Year		1 Year to 2 Years		2 Years to 3 Years		3 Years to 5 Years		Greater than 5 Year	
		Daily Volume	Open Interest	Daily Volume	Open Interest	Daily Volume	Open Interest	Daily Volume	Open Interest	Daily Volume	Open Interest	Daily Volume	Open Interest
<b>Crude Oil</b>													
- NYMEX		358	7,214	731	21,767	1,588	21,229	-	3,379	-	15,254	N/A	N/A
- IB A		Will trade futures up to 2012 and OTC swaps up to 2036											
<b>Soybean</b>													
- CBOT		86,517	418,048	5,953	36,797	4,817	54,264	123	1,534	N/A	N/A	N/A	N/A
- IB A		Will trade OTC swaps up to 5 years											
<b>Coffee</b>													
- NYBOT		12,784	125,657	3,885	26,603	783	11,362	N/A	N/A	N/A	N/A	N/A	N/A
- IB A		Will trade OTC swaps up to 3 years											
<b>Wheat</b>													
- CBOT		34,701	247,902	9,442	85,476	1,014	28,404	110	2,396	N/A	N/A	N/A	N/A
- IB A		Will trade OTC swaps up to 3 years											
<b>Corn</b>													
- CBOT		99,844	550,993	51,263	524,944	4,788	153,347	67	17,377	41	1,939	N/A	N/A
- IB A		Will trade OTC swaps up to 5 years											
<b>Copper</b>													
- NYMEX		13,106	72,771	569	8,083	13	795	N/A	N/A	N/A	N/A	N/A	N/A
- IB A		Will trade OTC swaps up to 8 years											

# Policy Challenges: The IFIs' perspective

## Policy: Why so little?

- If countries are so vulnerable to exogenous shocks, why don't they rely more on insurance?
- Is it because of the cost?
- Is it because of demand/political economy problems?
- What has the Bank already done?
- What can it do?

## The cost side

- Most LAC countries are sub-investment grade borrowers
- Thus they cannot obtain ready (and cheap) access to currency, interest rate or commodity swaps because of counterpart risk
- Effective market instruments for long term hedging (as swaps) are credit sensitive
- The Bank can offer its clients swaps at advantageous rates (because of its preferred creditor status) while unloading the position in the market.
  - Interest rate: Brazil, Peru, Colombia, Mexico...
  - Local currency: Colombia, Mexico

# The demand side

- Cost consideration aside, may find it difficult to hedge their exposure
  - Political economy problems
  - Limited risk management expertise
  - Underdeveloped ALM framework
- The Bank can help its clients
  - Building expertise (TA)
  - Putting a seal of approval on certain transactions
  - Embedding options in its lending products

# IBRD Risk Management Products

Balance Sheet Risks	Risk Management Products Available
• Foreign Exchange	• Currency Swaps (incl. Local)
• Interest Rate	• Interest Rate Swaps • Interest Rate Caps and Collars
• Cash Flow/Liquidity	• Customized Repayment
• Commodity Price	• Commodity Swaps
• Credit Risk	• Partial Credit/Policy Based Guarantee
• Contractual Risk	• Partial Risk Guarantee
• Catastrophe Risk	• <b>Work-in-Progress</b> as part of MIC Strategy Implementation

# Embedded Options

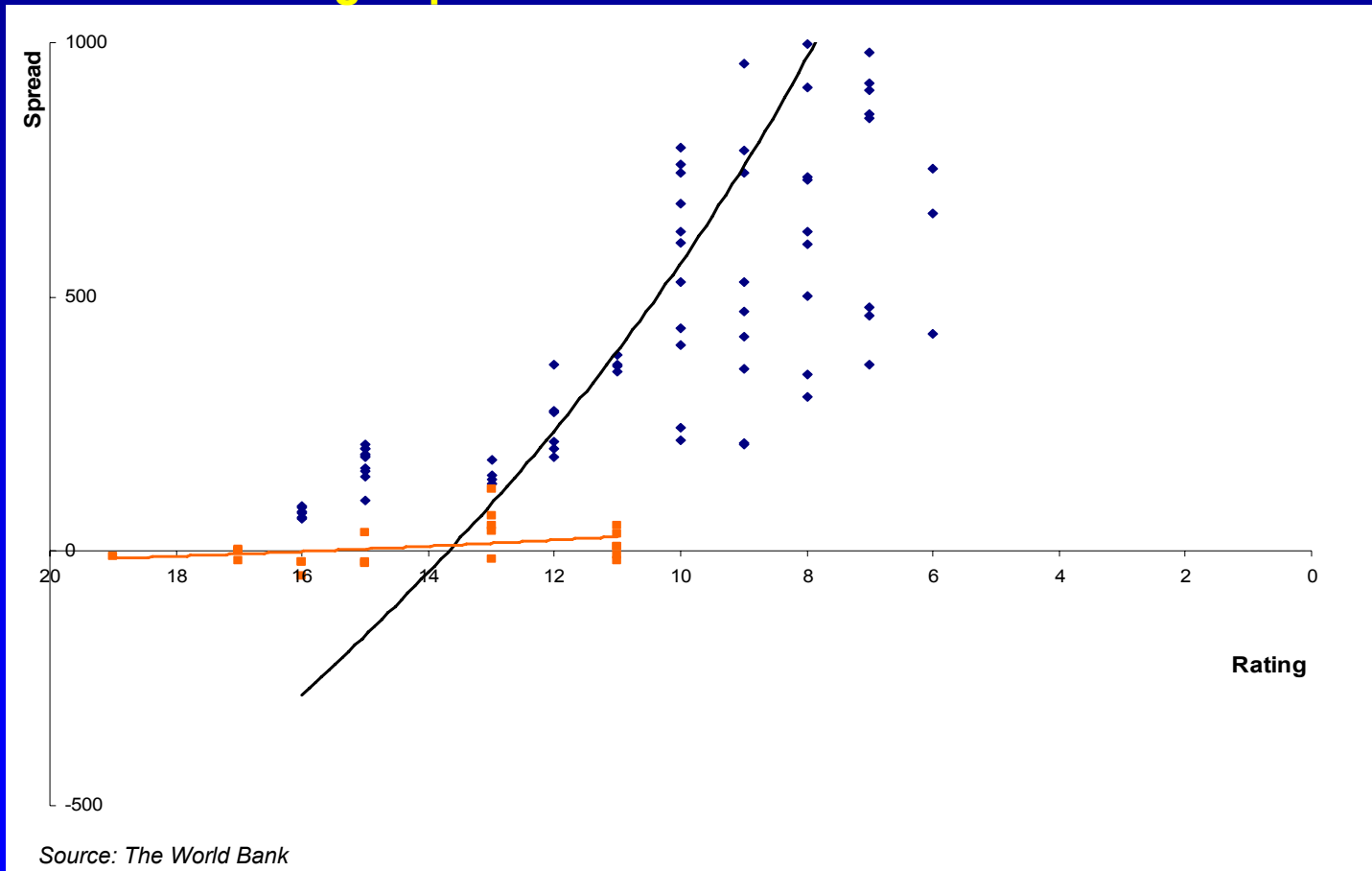
	Total FSLs		Customized repayments <sup>1/</sup>		Used of embedded options <sup>2/</sup>	
	Amount (millions\$)	No. Loans	Amount (millions\$)	No. Loans	Amount (millions\$)	No. Loans
Africa (AFR)	192	9	29	4	75	4
East Asia and Pacific (EAP)	3,360	35	1,518	13	1,150	17
Europe and Central Asia (ECA)	9,746	83	5,747	37	3,064	15
Latin America and the Caribbean (LAC)	34,372	282	18,836	144	7,052	73
Middle East and North Africa (MENA)	4,669	59	2,024	30	1,599	25
South Asia (SAR)	932	10	335	4	–	–
	<b>53,271</b>	<b>478</b>	<b>28,489</b>	<b>232</b>	<b>12,940</b>	<b>134</b>

## However

- If the Bank (IBRD) is only prepared to bear credit risk, it can only help its client by offering a “discount” (or access) on financial products that already exist
- Such “discount” may not be large for some products

# Dollars vs. Peso spreads

## LAC sovereign spreads in dollar & local currencies



# The road ahead

- Complement the market with new customized instruments
    - Refinement of DPL-DDO
    - Catastrophe instruments:
      - Cat-DDO
      - Global Cat Bond
      - Weather Hedges
  - Create a market for bonds denominated in “exotic” currencies
    - GEMLOC
    - Lend in local currency
    - Foreign debt relief initiative
    - Create long-dated currency swaps
- Increase margin to bear noncredit risk.

# MDBs are well capitalized

**Table 3.8 Multilateral development banks (MDBs): equity-to-loan ratio**

	<u>FY97</u>	<u>FY98</u>	<u>FY99</u>	<u>FY00</u>	<u>FY01</u>	<u>FY02</u>	<u>FY03</u>	<u>FY04</u>	<u>FY05</u>	<u>FY06</u>
IBRD	22.06	21.44	20.65	21.23	21.54	22.9	26.59	29.35	31.44	32.94
ADB	44.54	36.79	34.29	35.23	35.1	38.79	46.37	50.89	49.48	47.72
IDB	35.66	31.86	28.88	28.68	28.91	29.24	33.38	37.13	38.38	41.17
AfDB	39.73	41.6	41.8	48.16	50.34	62.28	70.24	80.84	76.55	82.03
EBRD	73.08	60.18	52.49	55.5	62.7	62.03	65.71	63.93	82.12	91.08

## In sum...

- To offer NEW financial instruments to cope with exogenous shocks...
- IFIs should take some risk on its balance sheets!

# Argentina

- When? Late 1996
- How?
  - Swap 32 bps (annual commitment fee) for LIBOR + 205 bps, collateralized by dollar government bonds at 80%, 3 years renewable every three months after that.
- Execution:
  - August 2001, with IMF agreement to dilute the price impact, \$1.77 billion (out of \$4.75 billion by end-2000), down to \$1.35 due to unmet margin calls.

# Mexico

- When: November 1997
- How?
  - \$2.66 bn contingent credit line, 30 bps (commitment fee) for 3M LIBOR plus 50 bps during the first semester (increasing by 25 bps each subsequent semester), 18 months.
- Execution:
  - September 1998, insuring banks contested the trigger, subsequently refused to renew the loan.

