

Risk Transmission

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What is Risk Transmission?

- ▶ Movement of **risk** from one counterparty A to another counterparty B.
 - ▶ Loosely: The purchase by A of **insurance** from B against the specified risk.
- ▶ Generally accompanied by a compensatory payment (**return**) from A to B.
- ▶ So risk-transmission is a **market** for the pricing and exchange of risks.
- ▶ Equivalently it is a market for **investment**.

Tradable Risks: Supply and Demand

Source	Firms	Households	FIs
Supply of risks	Financing <ul style="list-style-type: none"> ▶ Equity ▶ Debt Risk Management <ul style="list-style-type: none"> ▶ Market risks ▶ Credit risks 	Financing <ul style="list-style-type: none"> ▶ Consumption smoothing Insurance <ul style="list-style-type: none"> ▶ Life / health / disability 	Financing <ul style="list-style-type: none"> ▶ Equity ▶ Debt Risk Management <ul style="list-style-type: none"> ▶ Market risks ▶ Credit risks
Demand for risks	Investments	Investments	Insurance <ul style="list-style-type: none"> ▶ Retail risks ▶ Market risks Financing <ul style="list-style-type: none"> ▶ Credit risks

Market for Transmitting Risks

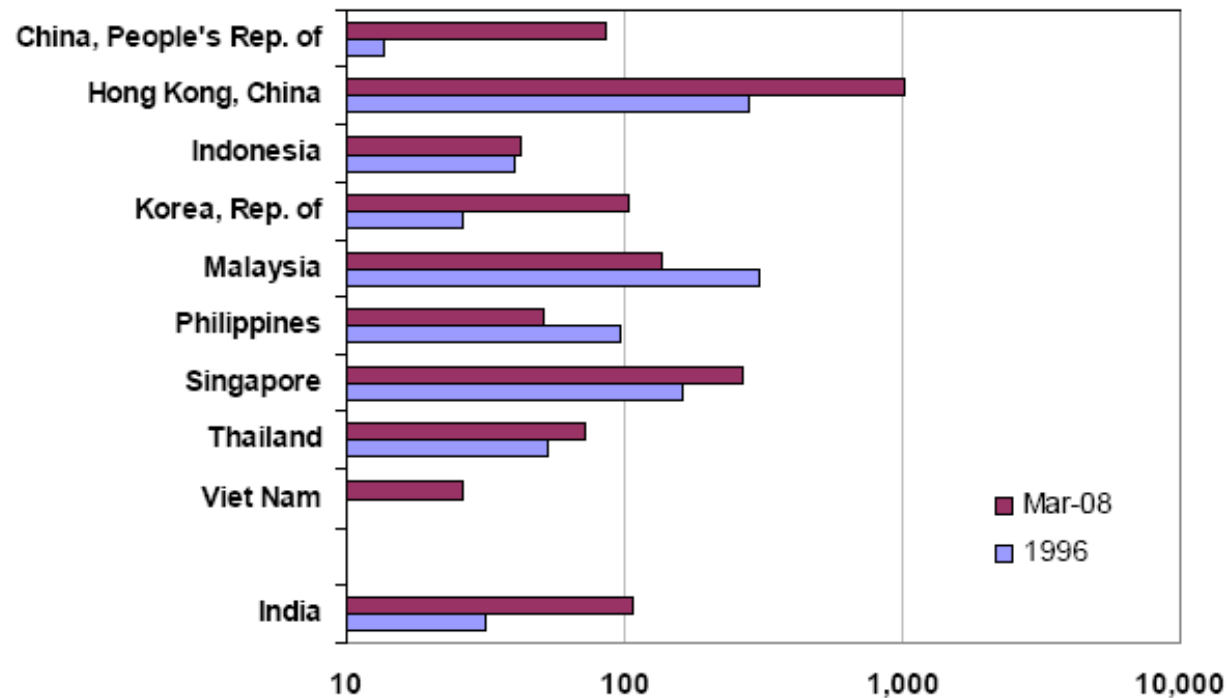
- ▶ Equity and debt markets
 - ▶ Financing/liquidity risks.
- ▶ Derivatives markets
 - ▶ Market risks (prices, interest rates, ...)
 - ▶ Credit risks (default risk)
- ▶ Insurance markets
 - ▶ Health, life, disability
 - ▶ Catastrophe

Equity Markets

Region	Dec 2007	Dec 2008	Dec 2009	Dec 2010
Americas	24.3	13.9	18.9	22.1
Asia Pacific	17.9	9.2	14.7	17.4
Europe-ME Africa	18.6	9.4	14.2	15.3
Total	60.9	32.6	47.8	54.9

EEA Equity Markets

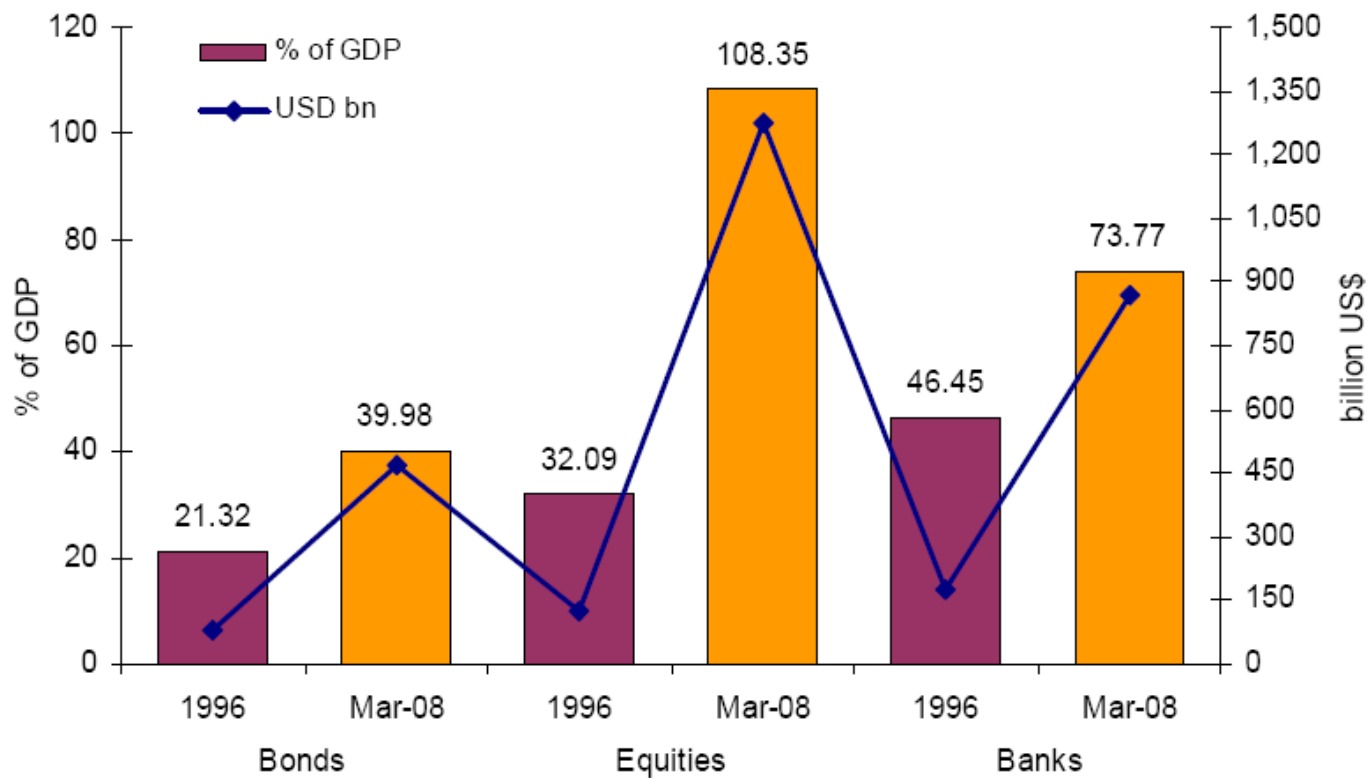
Figure 2: Equity Market Capitalization (% of GDP)



Src: ADB, India's Bond Market, 2008

Financial Sector Development in India

Figure 1: Financial Sector Development in India



Src: ADB, India's Bond Market, 2008

Debt Markets I: Money Markets

Instrument	Dec 2008	Dec 2009	Dec 2010
Commercial Paper	709	599	511
USD	213	175	162
EUR	340	306	240
GBP	107	81	75
Financial Institutions	550	526	446
Corporate	61	34	24
Other Instruments	423	333	402
Total	1,132	932	913

Src: Bank for International Settlements, Mar 2011 Report

Debt Markets II: Bond Markets

Instrument	Dec 2008	Dec 2009	Dec 2010
Floating Rate	7,892	8,353	7,870
USD	2,227	2,257	2,164
EUR	4,463	4,668	4,301
Financial Institutions	7,553	7,994	7,484
Corporates	217	197	169
Fixed Rate	14,428	17,274	18,394
USD	5,830	6,974	12,228
EUR	6,298	7,592	7,382
Financial Institutions	10,165	11,809	12,228
Corporates	1,954	2,605	3,114
Total	22,717	26,071	26,751

Src: Bank for International Settlements, Mar 2011 Report

EEA Bond Markets

Table 1: India and EEA Bond Markets (% of GDP), March 2008

	Government	Corporate	Total
China, People's Rep. of	46.1	4.7	50.8
Hong Kong, China	8.7	35.3	44.0
Indonesia	17.1	2.0	19.1
Korea, Rep. of	48.8	61.8	110.6
Malaysia	48.1	37.5	85.6
Philippines	33.3	3.5	36.8
Singapore	41.2	30.7	72.0
Thailand	40.7	15.9	56.6
Viet Nam	14.6	2.1	16.7
India	36.1	3.9	40.0

Src: ADB, India's Bond Market, 2008

EEA Bond Markets

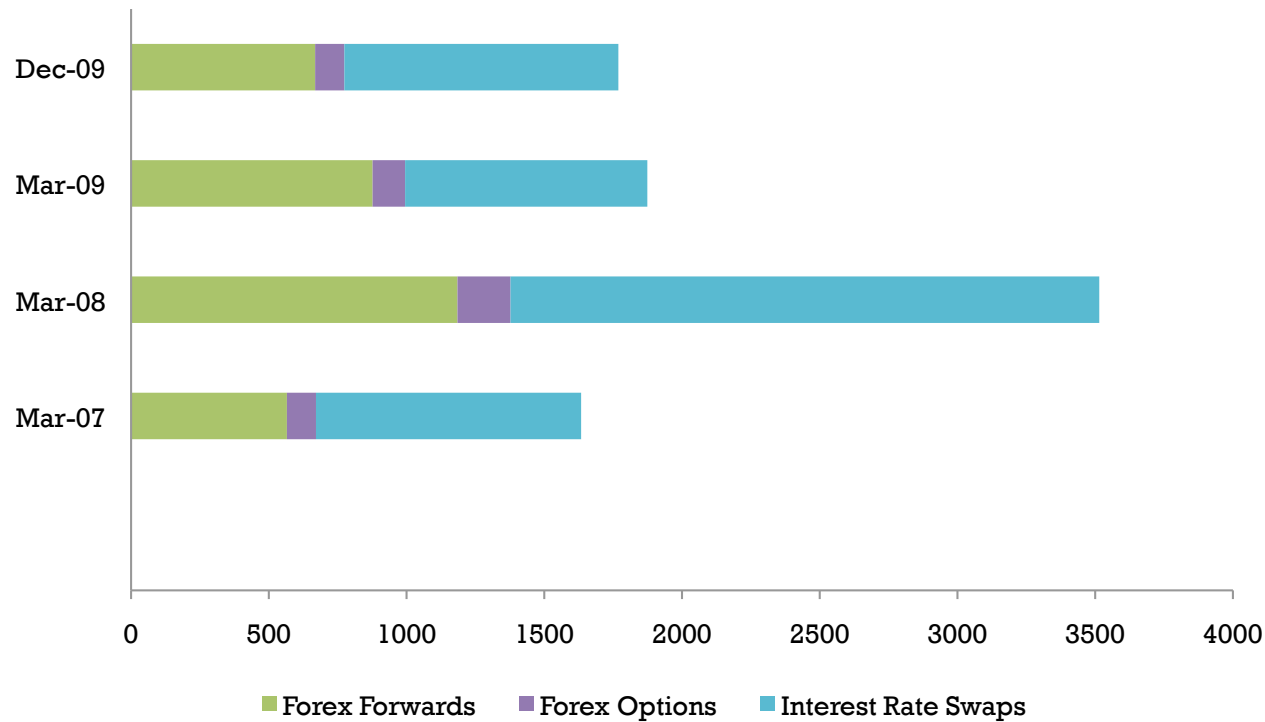
Table 2: India and EEA Bond Markets (in US\$ billion), March 2008

	Government	Corporate	Total
China, People's Rep. of	1,712.93	175.16	1,888.10
Hong Kong, China	18.41	74.96	93.37
Indonesia	77.23	9.13	86.36
Korea, Rep. of	450.49	570.48	1,020.97
Malaysia	101.30	79.00	180.30
Philippines	54.50	5.68	60.17
Singapore	74.93	55.87	130.80
Thailand	112.31	44.00	156.31
Viet Nam	10.76	1.56	12.32
India	423.97	45.79	469.76

Src: ADB, India's Bond Market, 2008

Derivatives Markets: Indian Banks

Outstanding derivatives of Indian banks: notional principal amount in billion USD



Src: OTC derivative markets in India, Ms.Gopinath S, Financial Stability Review, July 2010

Derivatives Markets: OTC Notionals

	Dec-98	Dec-01	Dec-04	Dec-07	Dec-08	Dec-09	Jun-10
Total contracts	80,309	111,178	258,628	585,932	598,147	603,900	582,655
Foreign exchange contracts	18,011	16,748	29,289	56,238	50,042	49,181	53,125
Forwards and forex swaps	12,063	10,336	14,951	29,144	24,494	23,129	25,625
Currency swaps	2,253	3,942	8,223	14,347	14,941	16,509	16,347
Options	3,695	2,470	6,115	12,748	10,608	9,543	11,153
Interest rate contracts	50,015	77,568	190,502	393,138	432,657	449,875	451,831
Forward rate agreements	5,756	7,737	12,789	26,599	41,561	51,779	56,242
Interest rate swaps	36,262	58,897	150,631	309,588	341,128	349,288	347,508
Options	7,997	10,933	27,082	56,951	49,968	48,808	48,081
Equity-linked contracts	1,488	1,881	4,385	8,469	6,471	5,937	6,260
Forwards and swaps	146	320	756	2,233	1,627	1,652	1,754
Options	1,342	1,561	3,629	6,236	4,844	4,285	4,506
Commodity contracts	408	598	1,443	8,455	4,427	2,944	2,852
Gold	175	231	369	595	395	423	417
Other commodities	233	367	1,074	7,861	4,032	2,521	2,434
Forwards and swaps	137	217	558	5,085	2,471	1,675	1,551
Options	97	150	516	2,776	1,561	846	883
Credit default swaps			6,396	58,244	41,883	32,693	30,261
Single-name instruments			5,117	32,486	25,740	21,917	18,379
Multi-name instruments			1,279	25,757	16,143	10,776	11,882
Unallocated	10,387	14,384	26,613	61,387	62,667	63,270	38,327

Src: Bank for International Settlements, Mar 2011 Report

Derivatives Markets: OTC Values

	Notional Amounts Outstanding			Gross Market Values		
	Dec-06	Dec-08	Jun-10	Dec-06	Dec-08	Jun-10
Total contracts	418,131	598,147	582,655	9,791	35,281	24,673
Foreign exchange contracts	40,271	50,042	53,125	1,266	4,084	2,524
Forwards and forex swaps	19,882	24,494	25,625	469	1,830	925
Currency swaps	10,792	14,941	16,347	601	1,633	1,187
Options	9,597	10,608	11,153	196	621	411
Interest rate contracts	291,581	432,657	451,831	4,826	20,087	17,533
Forward rate agreements	18,668	41,561	56,242	32	165	81
Interest rate swaps	229,693	341,128	347,508	4,163	18,158	15,951
Options	43,221	49,968	48,081	631	1,764	1,501
Equity-linked contracts	7,488	6,471	6,260	853	1,112	706
Forwards and swaps	1,767	1,627	1,754	166	335	189
Options	5,720	4,844	4,506	686	777	518
Commodity contracts	7,115	4,427	2,852	667	955	457
Gold	640	395	417	56	65	44
Other commodities	6,475	4,032	2,434	611	890	413
Forwards and swaps	2,813	2,471	1,551			
Options	3,663	1,561	883			
Credit default swaps	28,650	41,883	30,261	470	5,116	1,666
Single-name instruments	17,879	25,740	18,379	278	3,263	993
Multi-name instruments	10,771	16,143	11,882	192	1,854	673
Unallocated	-	-	7,614	-	-	-
	43,026	62,667	38,327	1,709	3,927	1,788

Src: Bank for International Settlements, Mar 2011 Report

Derivatives Markets: Exchange Traded

	Dec-98	Dec-00	Dec-02	Dec-04	Dec-06	Dec-08	Sep-10
Futures	8,355	8,353	10,357	18,902	25,675	19,507	24,420
Interest rate	8,031	7,908	9,956	18,165	24,476	18,732	23,109
Currency	32	78	52	113	178	124	217
Equity index	292	367	349	624	1,021	651	1,095
North America	3,527	4,281	5,894	10,458	13,724	10,137	12,691
Europe	2,894	2,314	3,275	5,972	8,149	6,506	7,762
Asia and Pacific	1,677	1,502	1,083	2,290	3,363	2,467	3,051
Other Markets	257	255	104	181	439	397	917
Options	5,620	5,897	13,475	27,619	43,722	38,237	53,239
Interest rate	4,623	4,734	11,759	24,604	38,116	33,979	47,796
Currency	49	21	27	61	79	129	148
Equity index	948	1,141	1,688	2,954	5,527	4,129	5,295
North America	3,868	3,886	7,810	17,073	27,771	19,533	26,558
Europe	1,503	1,881	5,527	10,336	15,067	18,116	24,845
Asia and Pacific	205	95	108	133	681	219	384
Other Markets	44	35	30	78	204	369	1,452

Src: Bank for International Settlements, Mar 2011 Report

Derivatives Market Development

- ▶ Range of risks transferrable:
 - ▶ Commodity prices (4000 years)
 - ▶ Currencies, equities, interest rates (1970s)
 - ▶ Credit risk (1990s)
 - ▶ Others: Energy, weather, catastrophes, volatility
- ▶ Range of instruments
 - ▶ Forwards (4,000 years); futures (since 1800s)
 - ▶ Options (esp since 1970s)
 - ▶ Swaps (1980s)
- ▶ Hugely-increased participation

Creating a Market

- ▶ Identifying risks to be transferred
- ▶ **Instruments** for transferring risks
- ▶ Ability to **measure** the risks
- ▶ Ability to **price** the risks
- ▶ **Legal framework** for contract enforceability
- ▶ **Regulatory** considerations

Potential Hindering Factors

- ▶ Complexity/inability to understand risks
 - ▶ Equity markets circa 1800
 - ▶ Derivatives markets, esp. credit derivatives in the 2000s
- ▶ Poor instrument design
 - ▶ GNMA futures, 1975-1987
- ▶ Information asymmetries/costs
 - ▶ CDOs and other securitized products
 - ▶ Transactions/monitoring costs
- ▶ Moral hazard issues.
- ▶ Absence of legal framework.
- ▶ Regulatory restrictions, government policies.

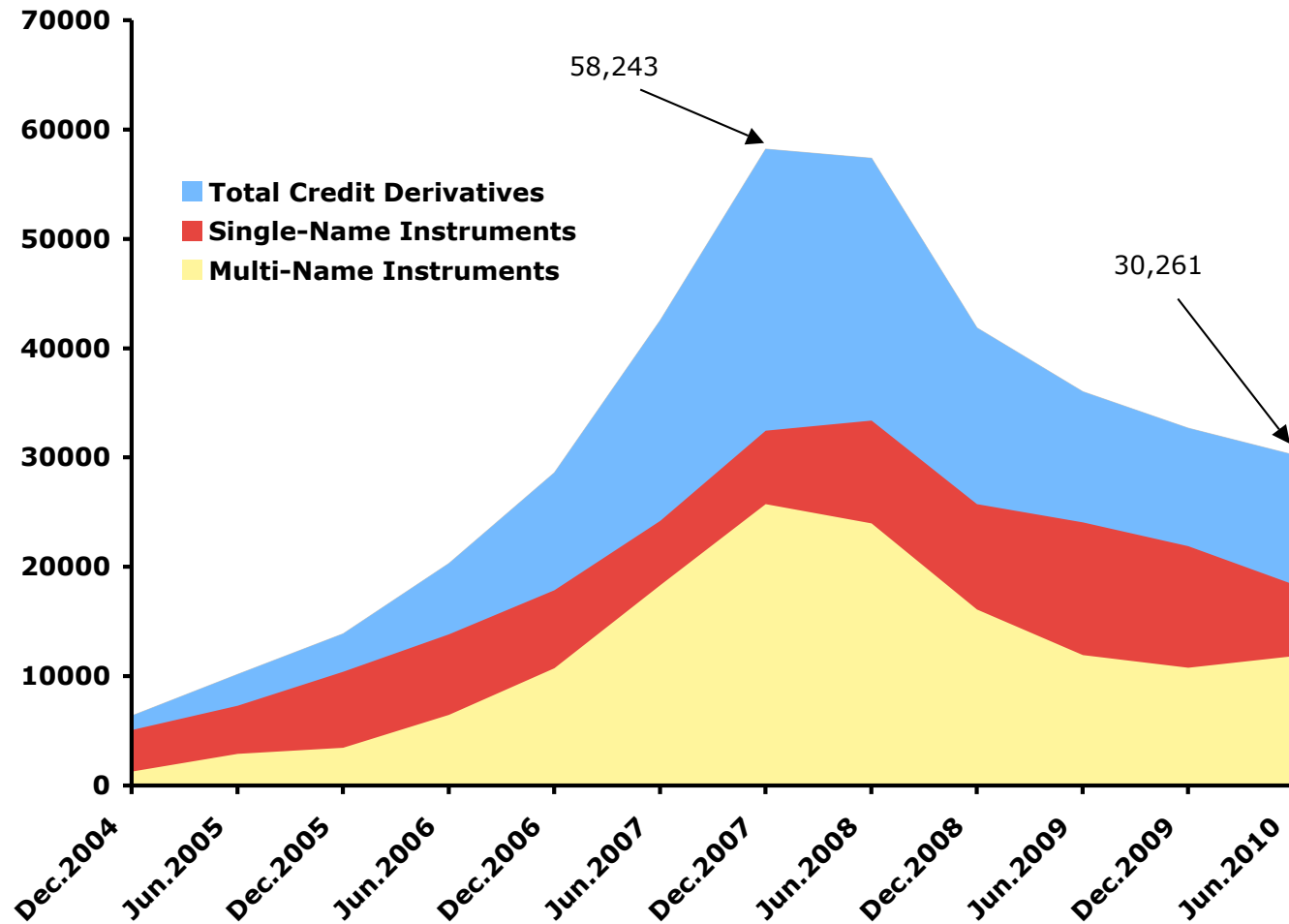
Some Considerations

- ▶ Welfare improvements: Risks move from those who “own” them to those who want the exposure
- ▶ Systemic effects:
 - ▶ Derivatives transfer, not eliminate, risk
 - ▶ Regulatory arbitrage
 - ▶ Risk-appetite externalities. Information asymmetries/costs

Example: Credit Default Swaps

- ▶ Instrument for transferring default risk from one entity to another.
 - ▶ Clarity on risk that is transferred?
 - ▶ Measurement/pricing of the risk?
 - ▶ Legal/enforcement issues?
 - ▶ Moral hazard/info asymmetry issues?
 - ▶ Regulatory arbitrage considerations?
 - ▶ Other systemic effects?

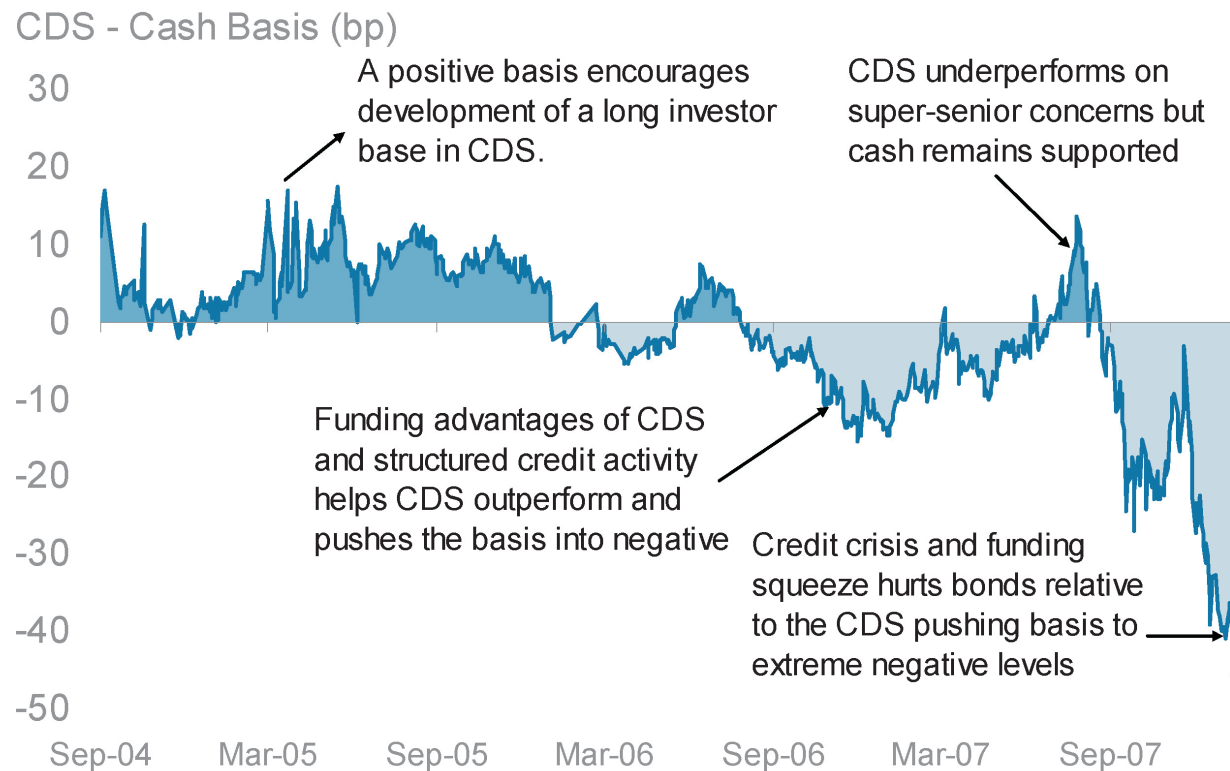
CDS Market Growth (USD, Trillions)



The CDS-Bond Basis Behaviour

Exhibit 1

Evolution of Corporate CDS-Cash Basis (2004-07)



CDS in the Indian Context

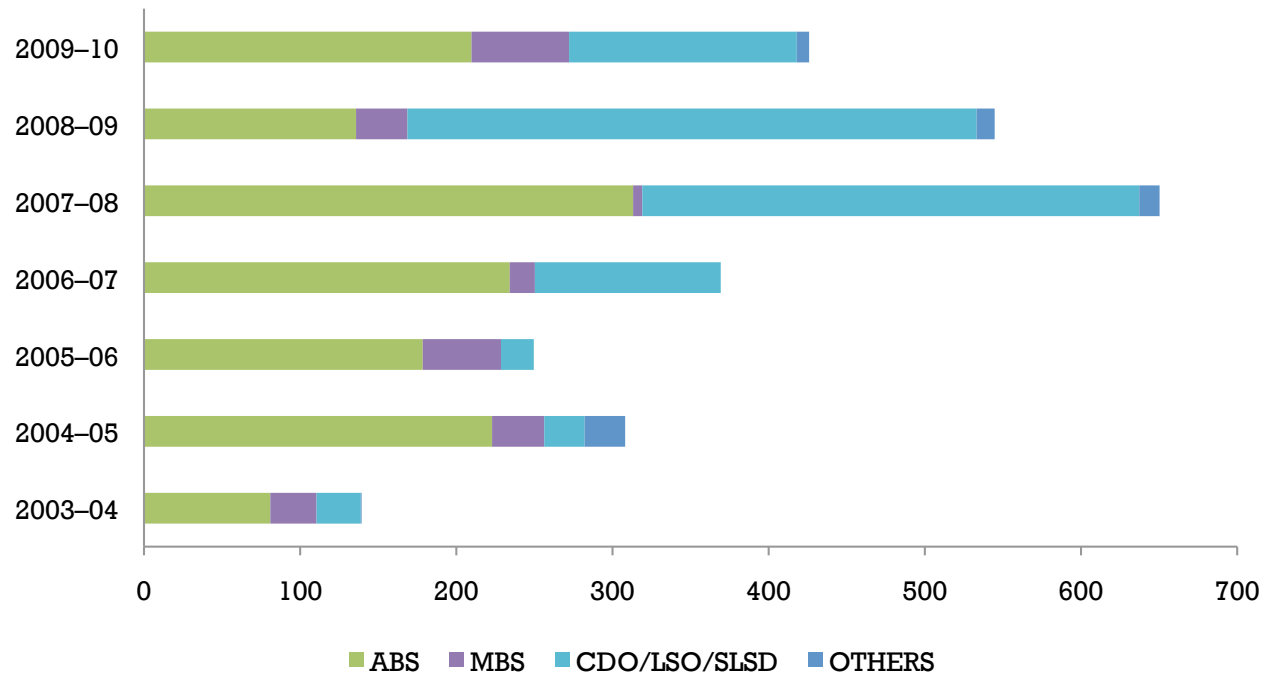
- ▶ Corporate bond market
- ▶ On bank loans?
 - ▶ From bank's standpoint
 - ▶ From buyer's standpoint
 - ▶ Regulatory concerns/considerations

Example: CDOs, Securitizations

- ▶ Risk that is being transferred?
- ▶ Measurement/pricing issues?
- ▶ Moral hazard/asymmetric information issues
- ▶ Regulatory concerns
 - ▶ Cash CDOs/securitizations
 - ▶ Synthetic CDOs

Securitizations in the Indian Context

Trends in structured finance volumes (Rs. bn)



Securitizations in the Indian Context

- ▶ Originators of securitized/structured products(suppliers of risk)?
- ▶ Buyers of the products?
- ▶ Issues:
 - ▶ Risk-measurement
 - ▶ Role of Ratings agencies?
 - ▶ Systemic concerns
 - ▶ Incentive issues

Moving Forward: Key Questions

- ▶ What are the key missing markets? Why are they “missing”?
- ▶ Information issues: Moral hazard and adverse selection
- ▶ Understanding product risks: Measurement and pricing
- ▶ Systemic risks: Externalities and measurement
- ▶ An ignored issue: Incentive structures

Thank you