TOWERS PERRIN

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International Marketplace

The Newly Opened Reinsurance Market in Brazil

CANE Spring Meeting

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Carlos Teixeira, MIBA, MSc

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Facts about Brazil

- 10th largest economy in the world
- 5th largest population
- 5th largest land mass
- Insurance premium around $34 billion in 2007
  - Roughly 40% of Latin America's total
  - 20th in the world
- Reinsurance premiums:
  - $2.2 billion in 2007
  - Estimated $3.6 - $4.4 billion in 2011

Effective April 15, Brazil's reinsurance market is being opened up to competition

- Long-awaited change:
  - Brazilian Reinsurance Institute (IRB) – monopolist reinsurer since 1939
  - Unsuccessful attempts to open the market starting in 1999, due to legal challenges
  - New reinsurance laws in 2007 establish conditions to open the market to domestic and international reinsurers

New laws make provision for 3 types of reinsurers

Main Requirements	"Local"	"Admitted"	"Occasional"
Head Office	In Brazil	Elsewhere for 5+ years	Elsewhere for 5+ years
Representative Office in Brazil	Yes	Yes	No
Minimum Required Capital	About $35 million	$100 million	$150 million
Minimum AM Best Rating or Equivalent	-------	B+	B++
Reserves in Brazil	100%	0% - 30% according to rating	No restrictions
Companies	IRB, Munich, J. Malucelli, European Fund	Lloyds, Swiss, Scor Expected: Gen Re, Mapfre, Transatlantic, Hannover, Partner, etc.	No records

- At least 60% of all cessions must be placed with local reinsurers until January 2010. After that, this will be lowered to 40%.
- Life and Private Pension reinsurance is restricted to local reinsurers

New laws make provision for 3 types of reinsurers – cont.

- Admitted reinsurers: need to hold an account bound to regulators to back the portion of reserves required to be funded in Brazil.
  - Balance in this account can never be less than $1 million (life business only) or $5 million (all lines)
- Cessions to occasional reinsurers will be limited to a threshold (TBD, probably around 10% of ceded premiums)
- Occasional reinsurers can not be domiciled in “tax havens”

After 70 years of reinsurance monopoly, insurers in Brazil will now face more complex reinsurance decisions

Basic Question:

"As an insurer, how do I decide how much risk to retain and how much to transfer?"

Buy ***less*** reinsurance?

- Excess of capital
- Retain more premium
- Reduce transaction costs
- Why share profits?
- Increase investments

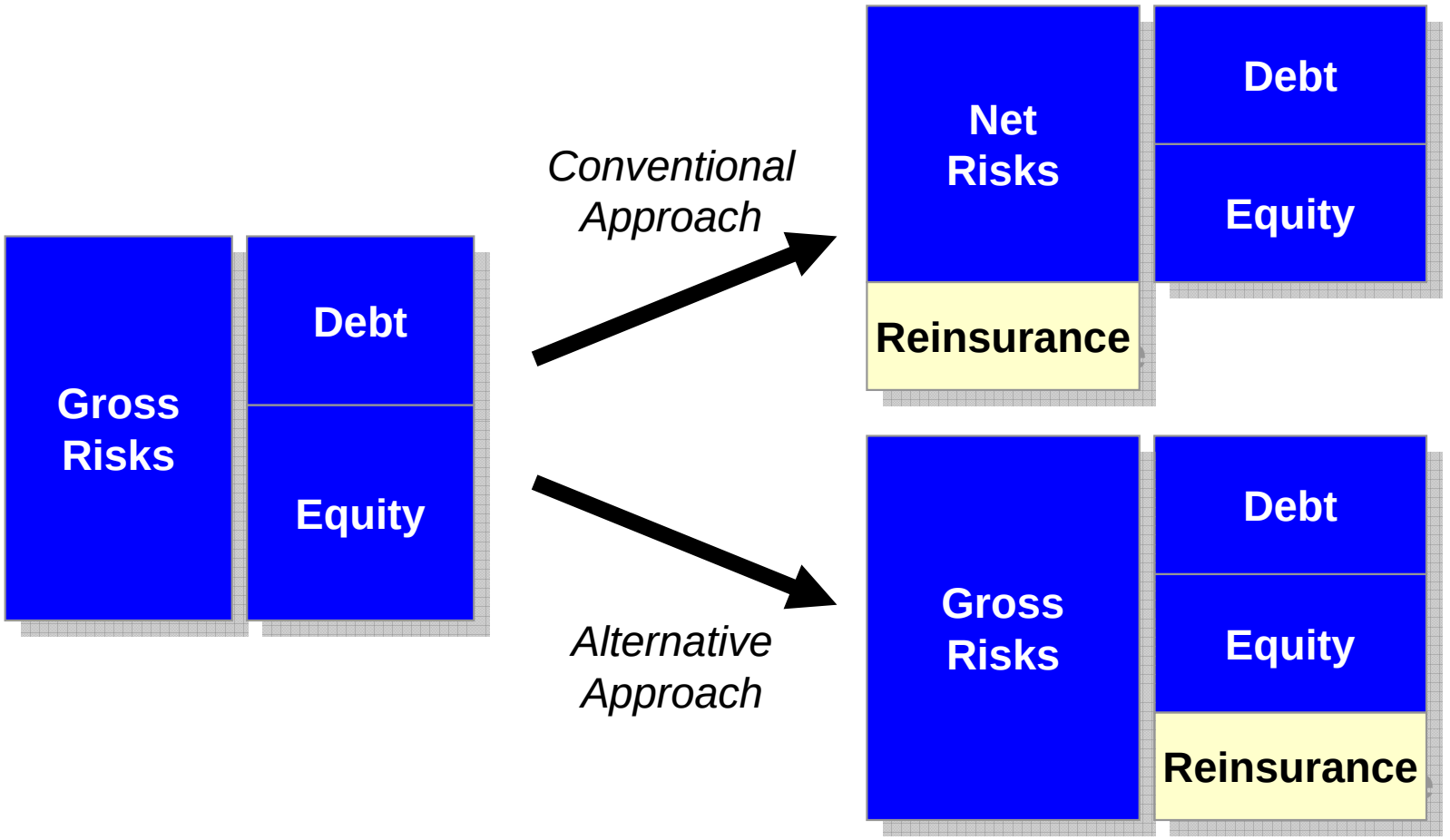
Buy ***more*** reinsurance?

- Regulatory pressure
- It is cheap now!
- Share losses with reinsurers
- Cat and litigation forecasts
- Increase policy limits
- "The safer the better"

"How can I compare the cost-benefit of different proposed reinsurance structures?"

"Which reinsurer is offering the best program for the collective business I write?"

From a corporate finance perspective reinsurance should be viewed as a form of capital

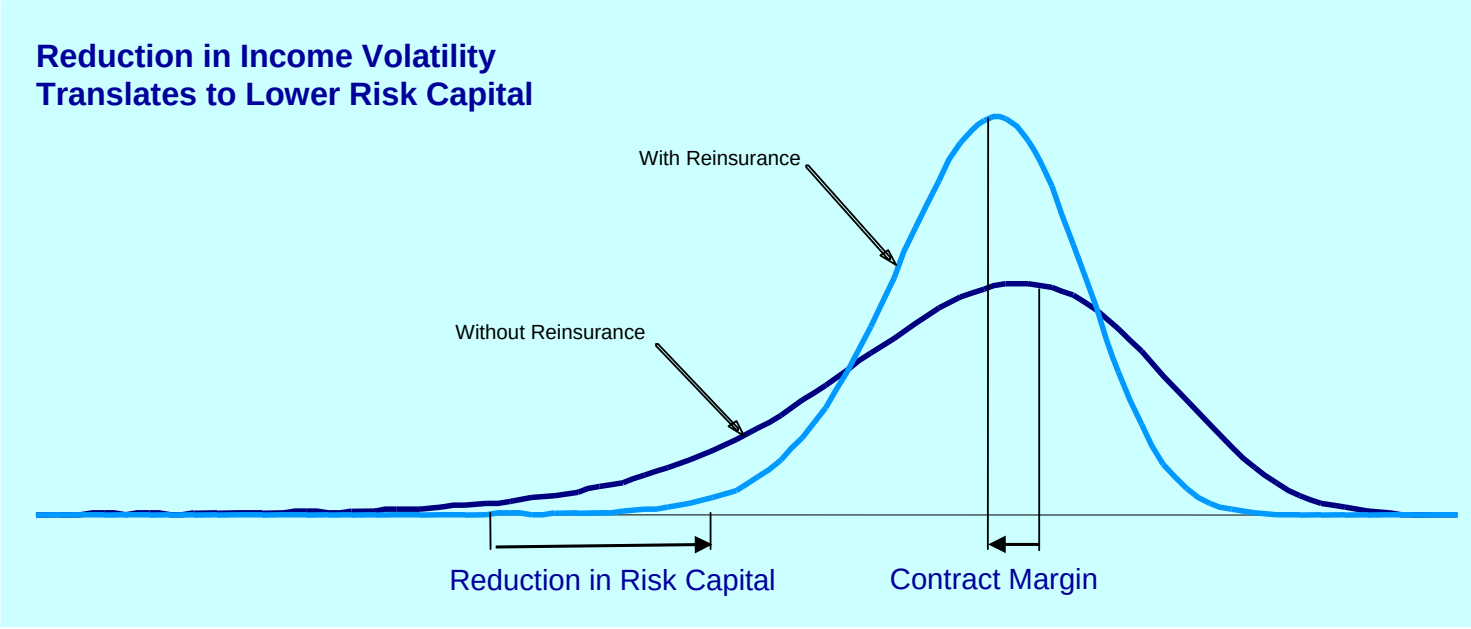


Reinsurance strategy is a decision about the portfolio of capital:

Reinsurance can create value when its cost is <u>less</u> than the cost of other sources of capital

Determining the value of a reinsurance contract requires a comparison of marginal costs and benefits

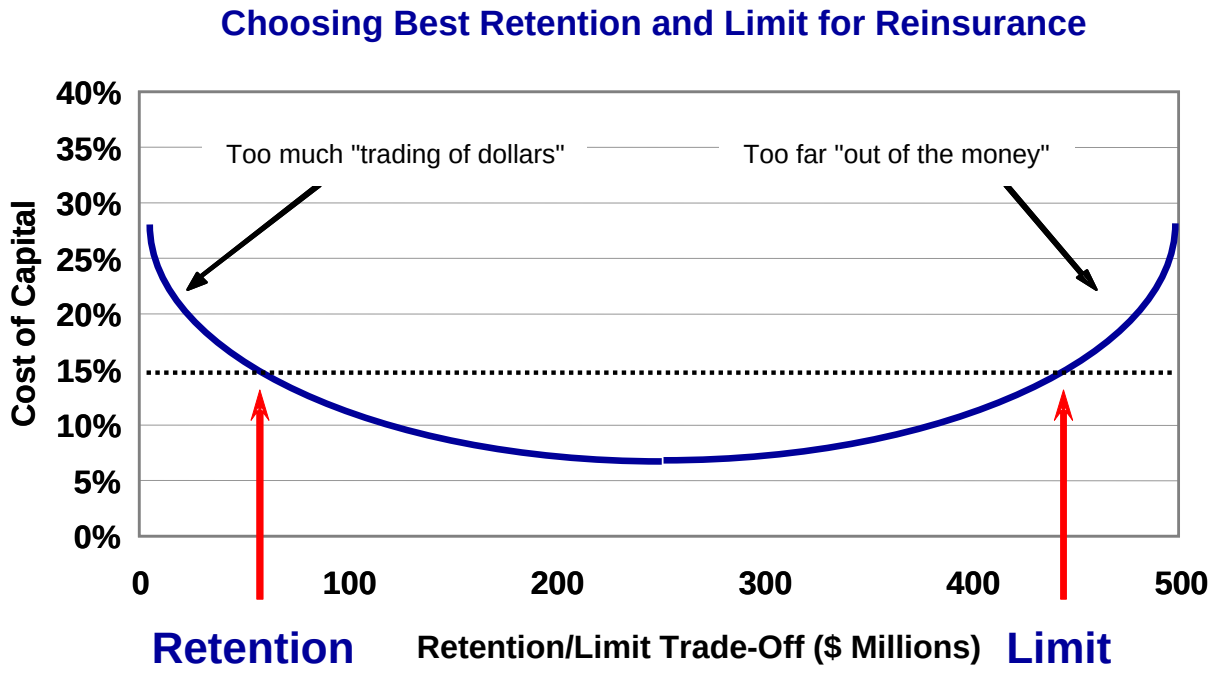
- Cost of contract
  - Contract price less the net present value of expected recoveries
  - We call this the “Contract Margin”; it reduces the expected return
- Benefit of contract
  - Risk capital required to support volatility is reduced
  - Benefit of reduction determined as “change in risk capital” x “cost of capital”
  - We call this the change in the “cost of risk capital”



- The contract adds value if the contract margin is less than change in cost of risk capital

The corporate finance framework leads to rational decisions about retentions and limits of coverage

To assess the cost-benefit of alternative programs with varying limits and retentions we examine the trade-off between alternative sources of capital.



The decision criterion is simple…

$$\frac{\text{Contract Margin}}{\text{Change in Risk Capital}} > \text{Cost of Capital}$$

…raise your retention

Reinsurance Optimization

A Case Study

Background

- A regional Property and Casualty Insurer wants to optimize two key elements in its existing reinsurance program:
  - Property Cat Cover
  - Property XS Cover
- More specifically, this company wants to:
  - Evaluate the overall effectiveness of each key program element, and
  - Determine the “optimal” retentions and limits to buy in each program element

Analysis: model results by Cat layer

- Many layers in the Property Cat program seem to add value to the company

Reinsurance Program Element	After-Tax Economic Reinsurance Cost	Marginal Capital Benefit	CORC	Prob. of Adverse Result: After-Tax Return Below -10%	Prob. of Adverse Result: All-Lines Combined Ratio Above 110%
No Reinsurance				3.66%	1.28%
Layer 1 (100M xs 1M)	$18,287	$19,722	92.72%	3.66%	1.17%
Layer 2 (100M xs 101M)	2,656	32,575	8.15%	3.60%	1.05%
Layer 3 (100M xs 201M)	1,773	32,847	5.40%	3.61%	1.04%
Layer 4 (100M xs 301M)	1,487	32,868	4.52%	3.61%	1.05%
Layer 5 (100M xs 401M)	1,310	31,233	4.20%	3.62%	1.10%
Layer 6 (100M xs 501M)	1,245	29,765	4.18%	3.62%	1.19%
Layer 7 (100M xs 601M)	1,208	28,858	4.19%	3.61%	1.22%
Layer 8 (100M xs 701M)	**1,158**	**28,919**	**4.01%**	**3.63%**	**1.26%**
Layer 9 (100M xs 801M)	1,144	27,510	4.16%	3.63%	1.29%
Layer 10 (100M xs 901M)	1,108	26,209	4.23%	3.63%	1.30%
Layer 11 (100M xs 1001M)	1,083	23,847	4.54%	3.64%	1.30%
Layer 12 (100M xs 1101M)	1,053	22,006	4.79%	3.65%	1.30%
Layer 13 (100M xs 1201M)	1,060	22,050	4.81%	3.65%	1.29%
Layer 14 (100M xs 1301M)	1,078	21,959	4.91%	3.65%	1.29%
Layer 15 (100M xs 1401M)	1,074	20,360	5.28%	3.65%	1.28%
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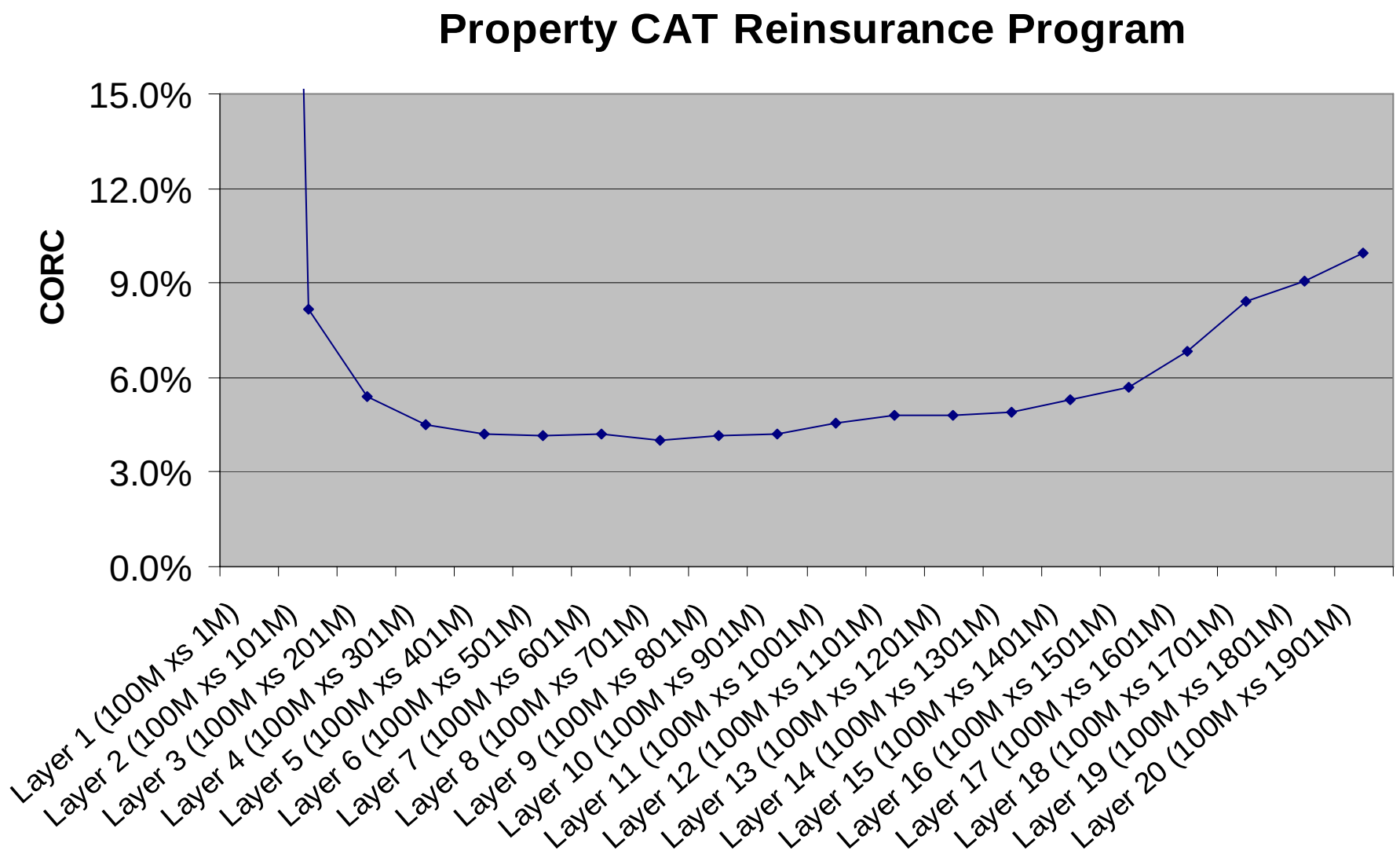
Layer 20 (100M xs 1901M)	1,023	10,256	9.97%	3.66%	1.28%

Analysis: model results by Cat layer



Analysis: model results by XS layer

- Given the assumed pricing parameters, none of the layers in the Property XS program appear to be cost effective

Reinsurance Program Element	After-Tax Economic Reinsurance Cost	Marginal Capital Benefit	CORC	After-Tax Return Below -10%	All-Lines Combined Ratio Above 110%
No Reinsurance				3.66%	1.28%
Layer 1 (100M xs 100M)	$17,499	$1,573	1112.71%	3.61%	1.30%
Layer 2 (100M xs 200M)	9,622	471	2044.81%	3.63%	1.29%
Layer 3 (100M xs 300M)	6,713	331	2030.56%	3.63%	1.30%
Layer 4 (100M xs 400M)	5,253	275	1913.30%	3.64%	1.29%
Layer 5 (100M xs 500M)	4,264	212	2008.58%	3.64%	1.29%
Layer 6 (100M xs 600M)	3,526	186	1900.67%	3.64%	1.29%
Layer 7 (100M xs 700M)	2,985	158	1888.20%	3.64%	1.30%
Layer 8 (100M xs 800M)	2,620	180	1456.51%	3.64%	1.29%

Analysis: model results combining Cat layers

- Most effective layers are combined until company's cost of capital is reached

Reinsurance Program Element	After-Tax Economic Reinsurance Cost	Marginal Capital Benefit	CORC	Prob. of Adverse Result: After-Tax Return Below -10%	Prob. of Adverse Result: All-Lines Combined Ratio Above 110%
No Reinsurance				3.66%	1.28%
2 layers combined (200M xs 601M)	$2,399	$51,553	4.65%	3.62%	1.14%
3 layers combined (300M xs 501M)	3,635	74,340	4.89%	3.61%	1.00%
4 layers combined (400M xs 501M)	4,776	93,878	5.09%	3.56%	0.98%
5 layers combined (500M xs 501M)	5,903	109,223	5.40%	3.53%	0.90%
6 layers combined (600M xs 401M)	7,257	126,741	5.73%	3.51%	0.66%
7 layers combined (700M xs 301M)	8,716	143,279	6.08%	3.49%	0.51%
8 layers combined (800M xs 301M)	9,839	153,115	6.43%	3.50%	0.48%
9 layers combined (900M xs 301M)	10,909	161,712	6.75%	3.47%	0.46%
10 layers combined (1000M xs 301M)	11,998	169,019	7.10%	3.45%	0.42%
11 layers combined (1100M xs 301M)	13,043	174,689	7.47%	3.45%	0.39%
12 layers combined (1200M xs 301M)	14,134	178,937	7.90%	3.46%	0.38%
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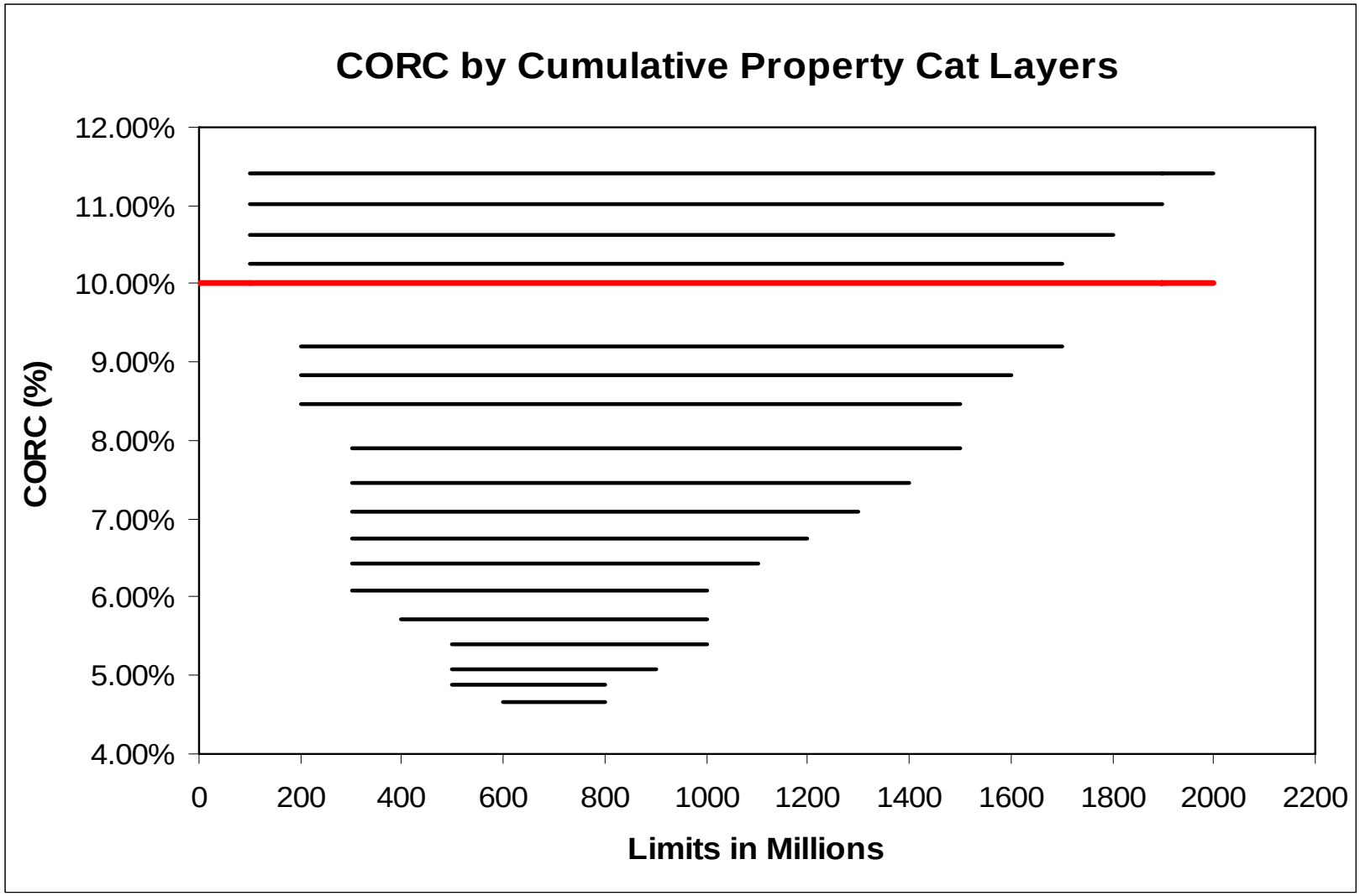
19 layers combined (1900M xs 101M)	23,761	208,402	11.40%	3.48%	0.16%
20 layers combined (2000M xs 1M)	41,941	198,207	21.16%	3.62%	0.16%

Analysis: model results combining Cat layers

- Most effective layers are combined until company's cost of capital is reached



Questions?

- **Carlos Eduardo Teixeira**

  (860) 843-7142

  carlos.eduardo.teixeira@towersperrin.com