



# INSURANCE LINKED SECURITIES FOR TERRORISM: A RISK MODELING PERSPECTIVE

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# DISCUSSION TOPICS

- Key Principles of Terrorism Risk Modeling – Insights into Frequency of Successful Attacks
- Terrorism Risk Transfer to the Capital Markets - Industry Challenges and Opportunities

# TERRORISM INSURANCE IS EFFECTIVELY INSURANCE AGAINST THE FAILURE OF COUNTER-TERRORISM



The Five Eyes Alliance (USA, UK, Canada, Australia & New Zealand) has an annual intelligence budget of \$100 billion

The unfunded cost of the U.S. West Coast earthquake early warning system is ~\$15 million

To justify this huge intelligence budget, **major terrorist plots need to be interdicted**

**Since 9/11, ALL major terrorist plots against the Five Eyes Alliance that might have caused catastrophic loss have been interdicted**

# COUNTERFACTUAL ANALYSIS MATTERS

In countries with effective counter-terrorism efforts, terrorist can not attack at will, and this explains why there have been so few terrorist plots that have evaded interdiction in the western alliance since 9/11

RMS Modeled Frequency considers:

- Number of Plots/Year
- Likelihood of Evading Interdiction
- Likelihood of Avoiding Technical Difficulty

A counterfactual analysis of plots in the 15 year post-9/11 shows that the counterfactual frequency has been close to the RMS modeled frequency of about one-half

# TOO MANY TERRORISTS SPOIL THE PLOT

Cell Size	1	2	3	4	5	6	7	8	9	10
Plot Interdiction Probability	0.26	0.46	0.60	0.70	0.78	0.84	0.88	0.91	0.93	0.95

*‘For a large operation against the US, pick a number of brothers not to exceed ten...’*

*Osama bin Laden  
Abottabad Pakistan*

# TERRORISTS FOLLOW THE PATH OF LEAST RESISTANCE IN WEAPONRY



Nice  
July 14, 2016



Manchester  
May 22, 2017

Since 9/11, all the successful terrorist attacks against the Western Alliance have involved improvised or light military weapons.



Paris  
January 7, 2015

# TERRORISM IS THE LANGUAGE OF BEING NOTICED

Madrid 2004



London 2005



Boston 2013



Each of these successful attacks achieved very high leverage = impact / input

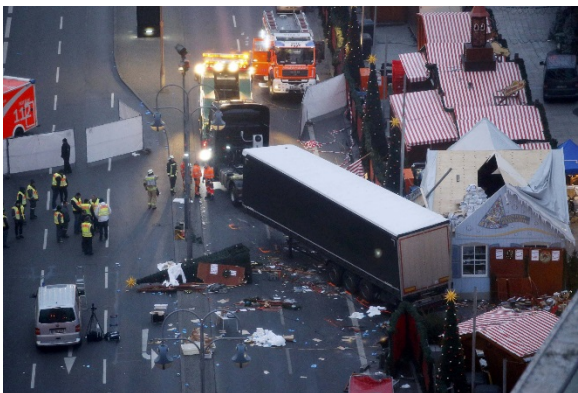
Paris 2015



Nice 2015



Berlin 2016



London 2017



# A SUICIDE BOMBER CAN ONLY DIE ONCE

Terrorist targeting is selected to be optimal based on:

- Ease of execution, given prevailing security measures
- Alignment with Jihadi objectives
- Impact (loss, media publicity, etc)

**Salman  
Abedi**



Died at the Manchester Arena  
on May 22, 2017

GIVEN THE INCREASED  
CONFIDENCE IN ASSESSING  
TERRORISM RISK, WHY HAVE  
WE NOT SEEN MORE CAPITAL  
MARKET TRANSACTIONS?

# CHALLENGES OF TERRORISM ILS RISK TRANSFER

- Current State of the Market
  - Increase in stand-alone coverage driven by affordable pricing and flexible coverage (40+ major insurers providing \$3-4B in capacity)
  - Cost of ILS expensive relative to traditional re(insurance)
  - Trend toward casualty and liability losses from recent global events
  - Impact of TRIPRA
- Market apprehension and concern about the future prospect for catastrophic terrorist attacks and government involvement

# RMS TERRORISM RISK ANALYSIS TO SUPPORT ILS

- RMS undertook the risk analysis for the first and only stand-alone terrorism catastrophe bond: Golden Goal Finance Ltd. (FIFA) in 2003
- Terrorism exposed catastrophe bonds and collateralized reinsurance
- Excess Mortality catastrophe bonds with terrorism risk exposure

Year	Sponsor (deal name)	Coverage	Rating
2015	Swiss Re (Vita Capital VI)	Australia, Canada, UK	Rated by S&P
2015	AXA Global Life (Benu Capital Limited)	US, France, Japan	Rated by S&P
2013	SCOR Global Life (Atlas IX Capital)	US	Rated by S&P
2012	Swiss Re (Mythen Re Series II)	UK	Rated by S&P
2012	Swiss Re (Vita Capital V Series I)	Australia, Canada, US	Rated by S&P
2011	Swiss Re (Vita Capital IV Series V & VI)	Canada, Germany, UK, US	Rated by S&P
2010	Swiss Re (Vita Capital IV Series III & IV)	Canada, Germany, Japan, US	Rated by S&P
2009/10	Swiss Re (Vita Capital IV Series I & II)	UK, US	Rated by S&P

# PROSPECT OF TERRORISM ILS RISK TRANSFER

- 15 years of experience gives confidence in the ability to understand and model terrorism risk and account for the effectiveness of counter-terrorism efforts
- Increased demand for products such as CBRN coverage and extended business interruption loss (e.g. loss of attraction)
- Future of TRIPRA – restructure could cause a reduction in market capacity which would increase price and make ILS more attractive
- Possible triggering events include
  - Large conventional terrorist attacks (excluding CBRN)
  - Complex terrorist attacks involving many active operatives
  - Attacks that cause hundreds of fatalities
  - Attacks that cause catastrophic levels of business interruption
  - Certain buildings in high risk areas like NYC

# CONCLUSIONS

- The availability of data on terrorist attacks, plots, and threat groups has led to increased confidence in using risk models to assess the potential loss and frequency associated with catastrophic terrorism attacks, and companies charge premiums to cover the expected loss
- Continued proficiency of counter-terrorism action provides a solid security platform for future development of the terrorism insurance market and ILS transactions
- RMS' view that ILS provides a good opportunity to increase private market participation, fill the coverage gap, and potentially play a role in reshaping government participation
- RMS has seen an interest from ILS in understanding the dimensions of terrorism risk and leveraging that into opportunities

# THANK YOU