Failure to Share Natural Disaster Risk

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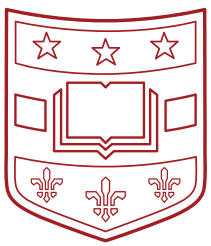

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Why do we care?

- Financial frictions for intermediaries matter for asset pricing
  - Theory (Brunnermeier-Pedersen 2009 RFS, He-Krishnamurthy 2013 AER; Brunnermeier-Sannikov, 2014 AER)
  - Evidence (Adrian-Etula-Muir, 2014 JF; He-Kelly-Manela, 2017 JFE; Haddad-Muir, 2018)
- Goal: Test if prices reflect risk-exposures of financial intermediaries in a setting that is somewhat cleaner from omitted risk factors

What the paper does?

- Focus on catastrophe bonds linked to natural disaster occurrence
- Arguably, little exposure to traditional macroeconomic risks
  - Little interest rate or credit risk
- Argues expected excess returns to cat bonds would be zero if not for risk averse intermediaries

Main findings

- Estimates cross-sectional regressions:

$$E_t\left(R^e_{i,t+1}\right) = \lambda_{0,t} + \lambda_{cat,t}\hat{\beta}_{i,t} + \varepsilon_{i,t}$$

t	$\lambda_{0,t}$	(t-stat)	$\lambda_{cat,t}$	(t-stat)	$\lambda_{cat,t} - E_t\left(R^e_{cat,t+1}\right)$	(t-stat)	R^2	N	$N_{clusters}$
2003	**1.47**	16.98	**2.14**	17.42	**-1.45**	-11.78	0.73	30	12
2004	0.09	0.12	**1.54**	3.11	-0.31	-0.63	0.51	36	18
2005	**0.84**	6.56	**1.09**	12.08	**-0.88**	-9.72	0.42	34	16
2006	-2.51	-2.54	**7.62**	9.62	2.13	2.69	0.82	33	18
2007	**1.49**	3.10	**3.78**	5.01	-0.96	-1.27	0.71	40	28
2008	**1.53**	4.88	**2.86**	8.11	**-1.18**	-3.35	0.72	33	27
2009	**3.29**	5.10	**4.03**	5.14	**-2.97**	-3.79	0.71	22	17
2010	**3.10**	5.51	**1.99**	5.50	**-2.86**	-7.90	0.53	30	21
2011	1.07	1.25	2.62	2.54	-0.77	-0.75	0.42	22	15
2012	**1.21**	3.23	**4.08**	11.69	**-1.58**	-4.54	0.84	31	27
2013	**0.79**	3.75	**2.17**	8.52	**-1.02**	-4.02	0.76	42	35
2014	**1.15**	6.20	**1.39**	5.09	**-1.22**	-4.45	0.54	48	39
2015	**1.09**	7.04	**1.23**	6.85	**-1.12**	-6.22	0.60	50	39
2016	**0.90**	5.56	**1.02**	5.28	**-0.70**	-3.65	0.53	40	29
2017	0.53	2.38	**1.21**	3.64	-0.08	-0.25	0.31	46	32
2018	0.35	1.21	1.15	2.56	0.08	0.17	0.29	44	31
FM	**1.23**	9.41	**2.06**	11.67	**-1.10**	-9.02	0.49	63	

Contribution

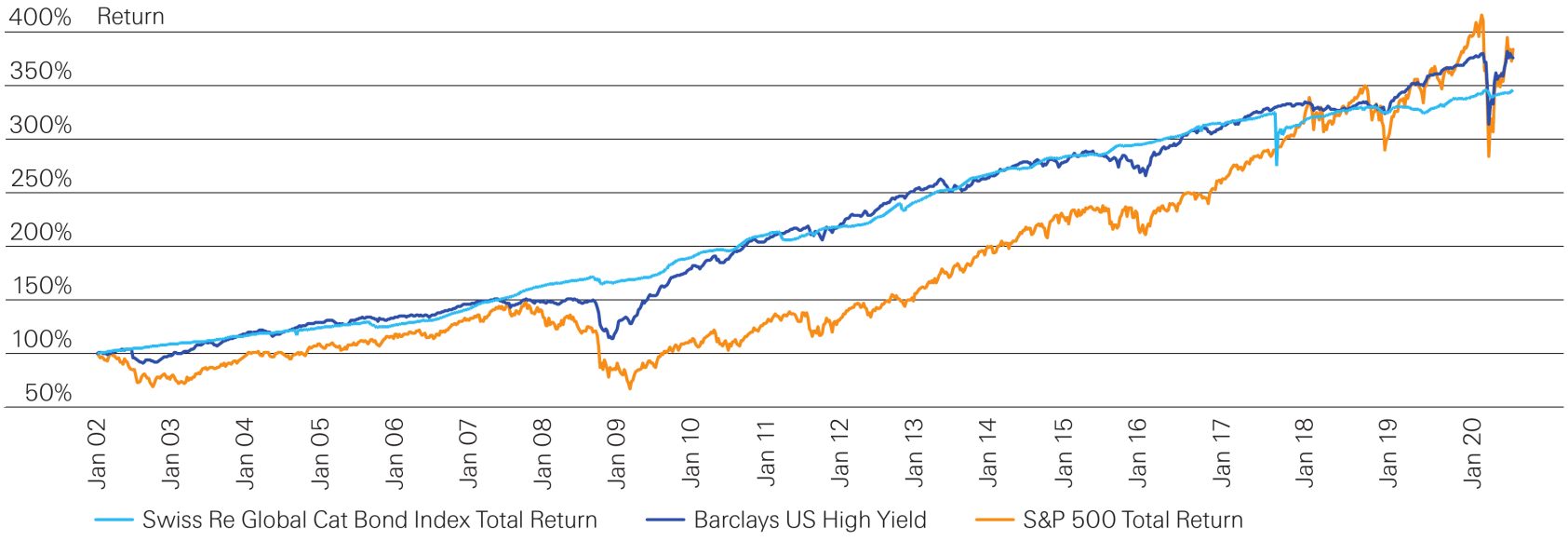
- Intermediary AP literature has looked at many other asset classes but not cat bonds
- Cat bonds have been studied extensively by Froot and O'Connell (1999, 2008) and Froot (2001)
- The paper makes clear a set of assumptions under which the cat bond risk premium can be interpreted as an intermediary risk premium

Suggestion 1: Independence assumption

- Central assumption: natural disasters are independent of aggregate wealth
- Used to reject explanations based on macroeconomic risk factors
- What about true catastrophes?

Suggestion 1: Independence assumption

Swiss Re Global Cat Bond Total Return Index (SRGLTTR) vs other relative benchmarks [7]



Source: Swiss Re Capital Markets and Bloomberg LP, as of June 30, 2020

Suggestion 2: Peso problems

- But what if we were lucky?
- Most of the cat bonds in the sample cover North America and Europe
- What if a natural disaster devastated the US?
- Manela-Moreira (2017 JFE) find that wars and government-related uncertainty are priced risks
  - But natural disasters are not! Good news for this paper

Suggestion 3: Knock on effects

- Some severe natural disasters can have knock on effects on the economy, markets, and society
- Jha-Liu-Manela (2020) find that uninsured disasters like severe epidemics and earthquakes tend to worsen public sentiment toward the financial sector
  - Long-term effects on GDP and credit growth
- From specialist's perspective, holding an asset that defaults at the same time AUM go out the door and regulatory costs rise
  - Risky!
- Channel is related but not quite the He-Krishnamurthy (2013) story

My take

- Really nice contribution to our understanding of cat bond pricing
- Compelling evidence consistent with the intermediary asset pricing model
- Careful work ruling out many alternative stories

Other suggestions / minor points

- The standard errors and t-stats in Table 3 (and others) are hard to believe. For example, the first line has a t-stat of 17 for a cross-sectional regression with 30 assets ...
- Also, because the betas are simulated and noisy, there are well-known issues with generated regressors here. Can you use the simulated values to account for this noise?