

Leveraging existing research to deliver business value

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Charles River Development
CSRA, December 12, 2013

So, what is the state
of systemic risk



Image: sodahead.com

Step 1:

A Survey of Systemic Risk Analytics

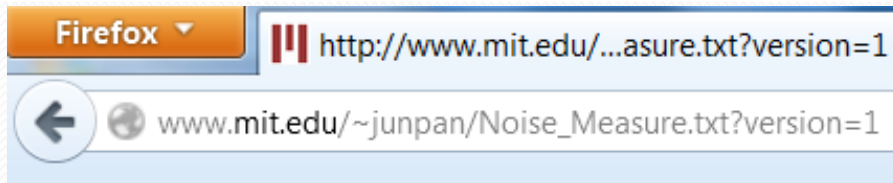
<u>Systemic Risk Measure</u>	<u>Section</u>
Macroeconomic Measures:	
Costly Asset-Price Boom/Bust Cycles	A.1
Property-Price, Equity-Price, and Credit-Gap Indicators	A.2
• • •	
Measures of Illiquidity and Insolvency:	
Risk Topography	F.1
The Leverage Cycle	F.2
Noise as Information for Illiquidity	F.3
Crowded Trades in Currency Funds	F.4
Equity Market Illiquidity	F.5
Serial Correlation and Illiquidity in Hedge Fund Returns	F.6
Broader Hedge-Fund-Based Systemic Risk Measures	F.7

Table 1: Taxonomy of systemic risk measures by data requirements.

Source: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2170926

Step 2:

Noise as information for illiquidity



```
% Updated Version, June 2013
%date      noise measure
19870102   6.04327456
19870105   5.75653258
19870106   6.15327799
19870107   5.74054641
19870108   6.10725327
19870109   5.52545874
19870112   5.51740693

...

20121220   1.055901538
20121221   1.228782466
20121224   1.139781594
20121226   1.003600144
20121227   1.030767168
20121228   1.31706219
20121231   1.225253317
```

1. The data is one year old.
2. How to interpret the numbers?

Step 3: Making sense of the data



Q1: Do we have up-to-date time series?

Q2: How to make sense of a single measure?

Q3: How do all these measures work together?

Image: 123rf.com

Topics for discussion

- Life beyond publication
- Develop a single indicator for systemic risk

Life after publication

- Shiller's investor confidence index

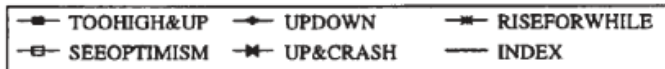
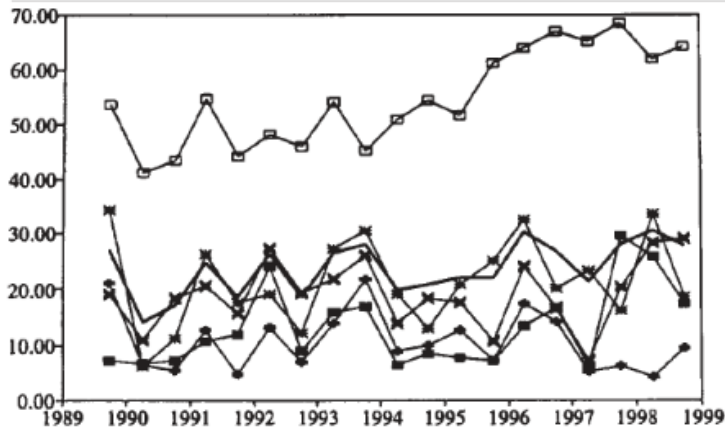
From original paper, 2000



SHILLER

FIGURE 1

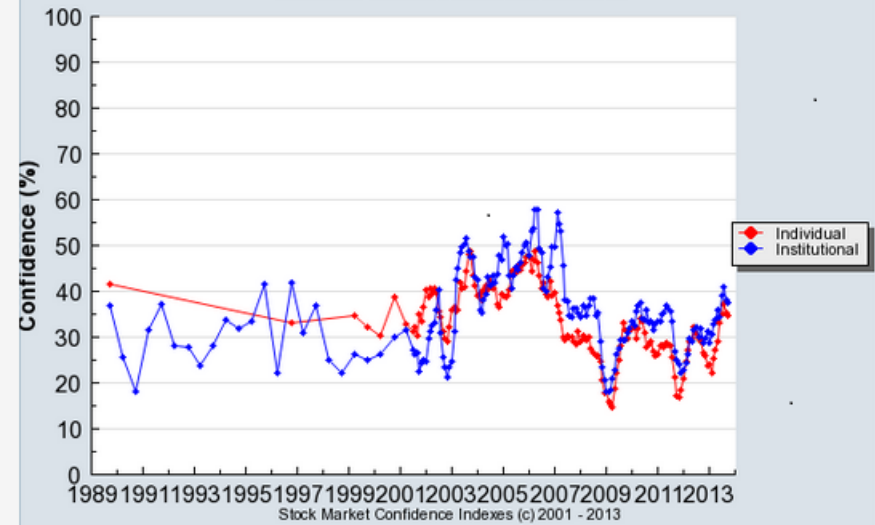
Indicators of Bubble Expectations and the Bubble Expectations Index



From Yale website, 2013



Crash Confidence Index



<http://icf.som.yale.edu/stock-market-confidence-indices-united-states>

Go-live: runaway successes

- S&P/Case-Shiller home-price index
 - Composite 10/20 published by S&P
 - Extended coverage by FiServ, Inc.
- VIX index
 - Measure the implied volatility of S&P500
 - Paper by Brenner and Galai in 1989
 - In 1993, the Chicago Board Option Exchange (CBOE) started to compute VIX on a real-time basis
- It doesn't have to be this successful to be valuable

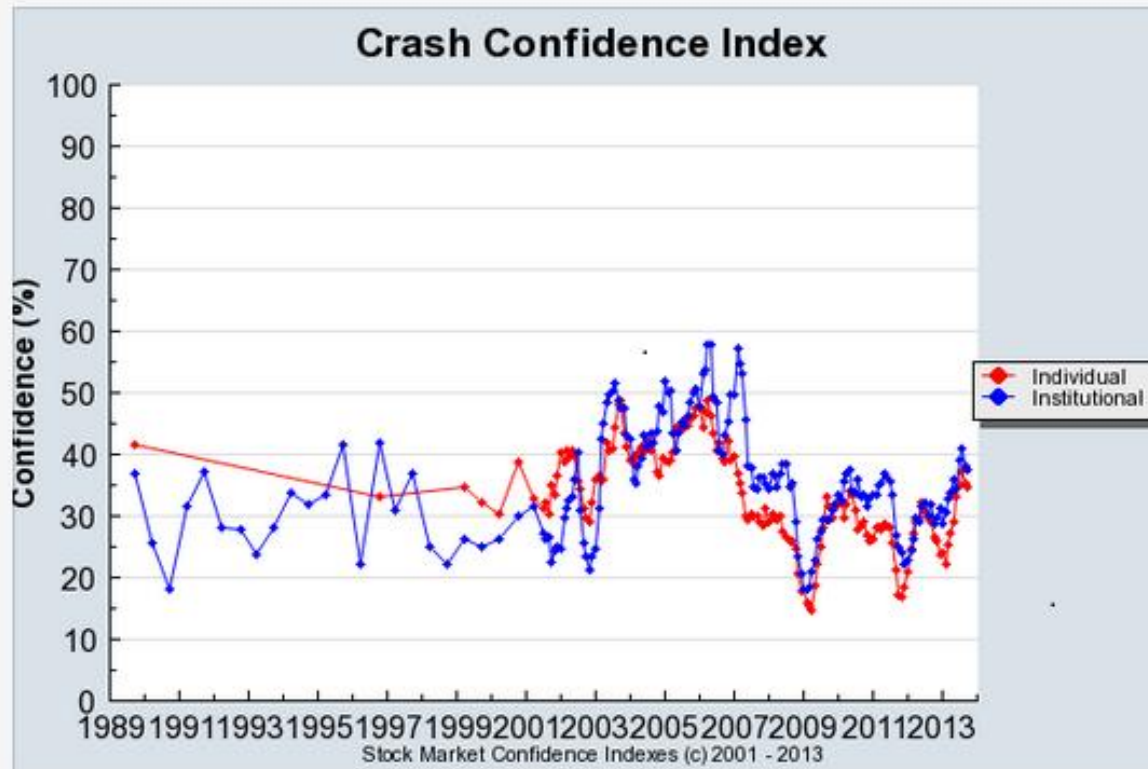
Challenges for publishing live time-series

- Incentive is not strong
- Costs of automation: data and algorithm
- Data is the real challenge
 - Data collection can be a tremendous effort
 - Data access layer may be difficult to automate
 - Example: CRSP database not RDBMS?
 - Consolidate data from multi-sources can be a headache
- How can we help?

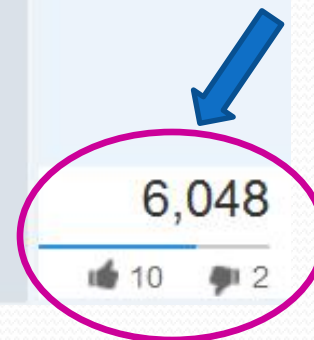
A platform to publish live measures

- Common infrastructure, self-managed content
 - Crowd-sourcing
- This is a common paradigm
 - Wikipedia – its success and troubles
http://en.wikipedia.org/wiki/Wikipedia:List_of_hoaxes_on_Wikipedia
 - Youtube
 - Amazon
 - Facebook
 - LinkedIn

YouTube: # of visits, # of likes



A quick way to evaluate research



Note: the numbers are made-up for illustration only.

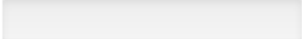
Amazon: Reviews and reviews²

Customer Reviews

★★★★★ (23)

5.0 out of 5 stars

5 star  23

4 star  0

[See all 23 customer reviews](#)

Most Helpful Customer Reviews

52 of 52 people found the following review helpful

★★★★★ **It's like hearing him speak!**

By [M. Dillon](#) [VINE VOICE](#) on January 2, 2003

This collection of talks from Ajahn Chah is well done. His fir

[Comment](#)

Was this review helpful to you?

Another quick
way to evaluate
research

Developing a single measure for systemic risk

- How to make sense of all the measures?
- Is it possible to develop a single measure?
 - Apgar score for newborn health
 - Risk tolerance score
 - Gini index for income inequality

The Apgar score

- Devised in 1952 by Dr. Virginia Apgar.



	Score of 0	Score of 1	Score of 2
Appearance/Complexion	blue or pale all over	blue at extremities body pink (<i>acrocyanosis</i>)	no cyanosis body and extremities pink
Pulse rate	Absent	<100	>100
Reflex irritability	no response to stimulation	grimace/feeble cry when stimulated	cry or pull away when stimulated
Activity	none	some flexion	flexed arms and legs that resist extension
Respiratory Effort	absent	weak, irregular, gasping	strong, lusty cry

Source: wikipedia.org

Gini index – income inequality

Rank	Country	GINI Index	Date of information
1	Lesotho	63.2	1995
2	South Africa	63.1	2005
29	China	47.4	2012
41	United States	45.0	2007
52	Russia	41.7	2011
103	Canada	32.1	2005
136	Sweden	23.5	2005

Source: CIA website. <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html>

Proposal of a single measure for systemic risk

- Pick n categories
 - Macroeconomic measures
 - Cross sectional measures
 - ...
- For each category, pick a few measures
- For each measure, in the scale of 0-10, what is the score?
- Add them up and rescale to 10

Thank you.