

Title: Untitled

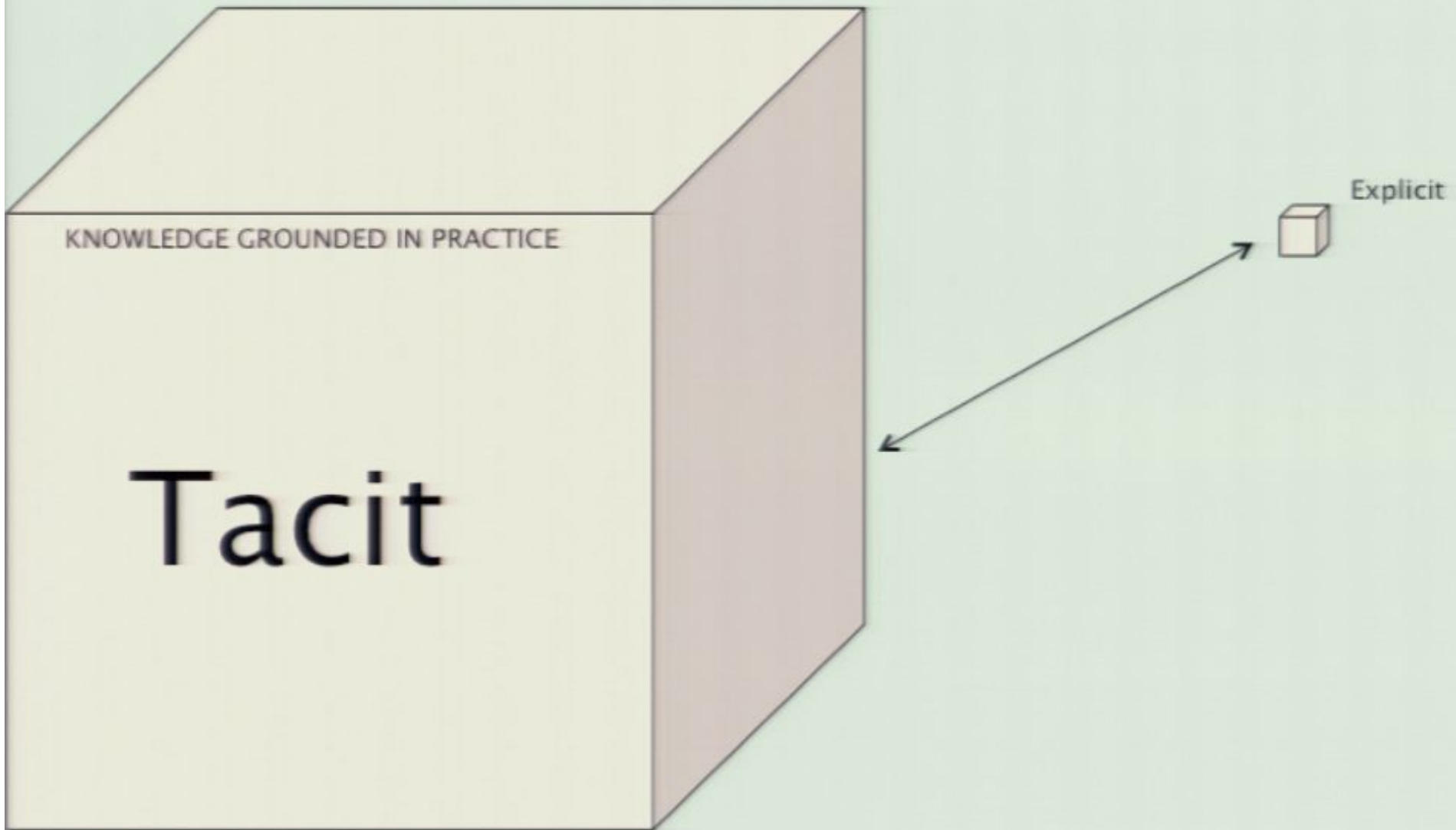
Date: May 01, 2009 11:20 AM

URL: <http://pirsa.org/09050023>

Abstract: TBA







Téchné experiential knowledge	Epistémé, propositional knowledge, Epistemic base
Empiricism	Rationalism
Engineering	Mathematics
Know How	Know What
Tacit	Explicit
Epilogism, <i>historia a sensate cognitio,</i> <i>Autopsia,</i> non-demonstrative knowledge	Induction, inference demonstrative knowledge
Bricolage	Scholarship
Hayekian price formation Opacity	Central Planner Arrow Debreu lattice state space
Adjustment	Expectation
Fat Tony (in T & H)	Black-Scholes
Ecological decision- making, Gigerenzer	Neoclassical economics, Kahneman, Tversky

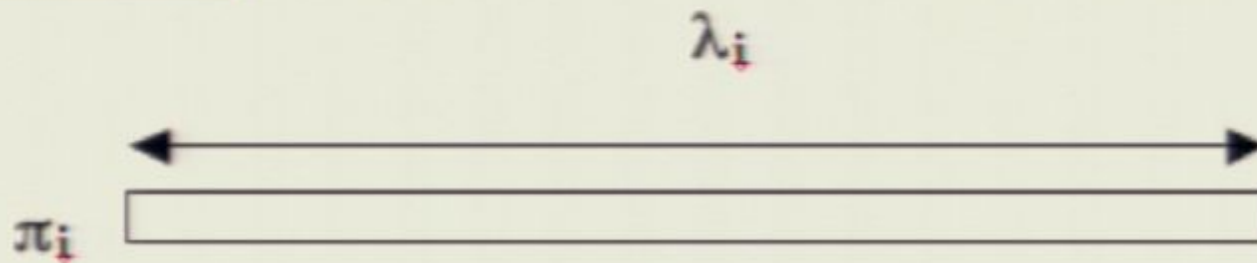
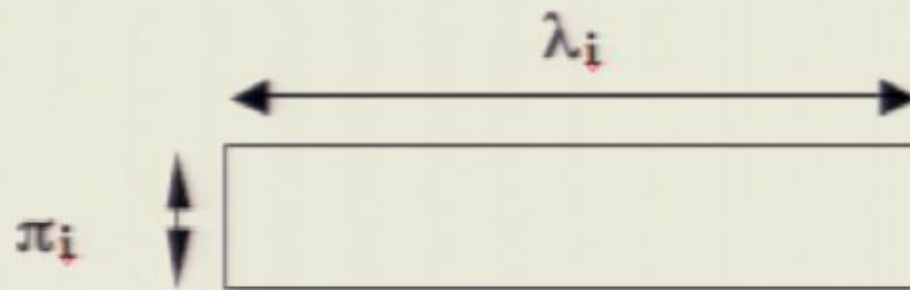
Two Issues

- Inverse Problem
(or non-observability of a random process)
- Preasymptotics
(strong or weak)

Fallacy of Small Probability

One 'Quant' Sees Shakeout
For the Ages -- '10,000 Years'

The Telescope Problem

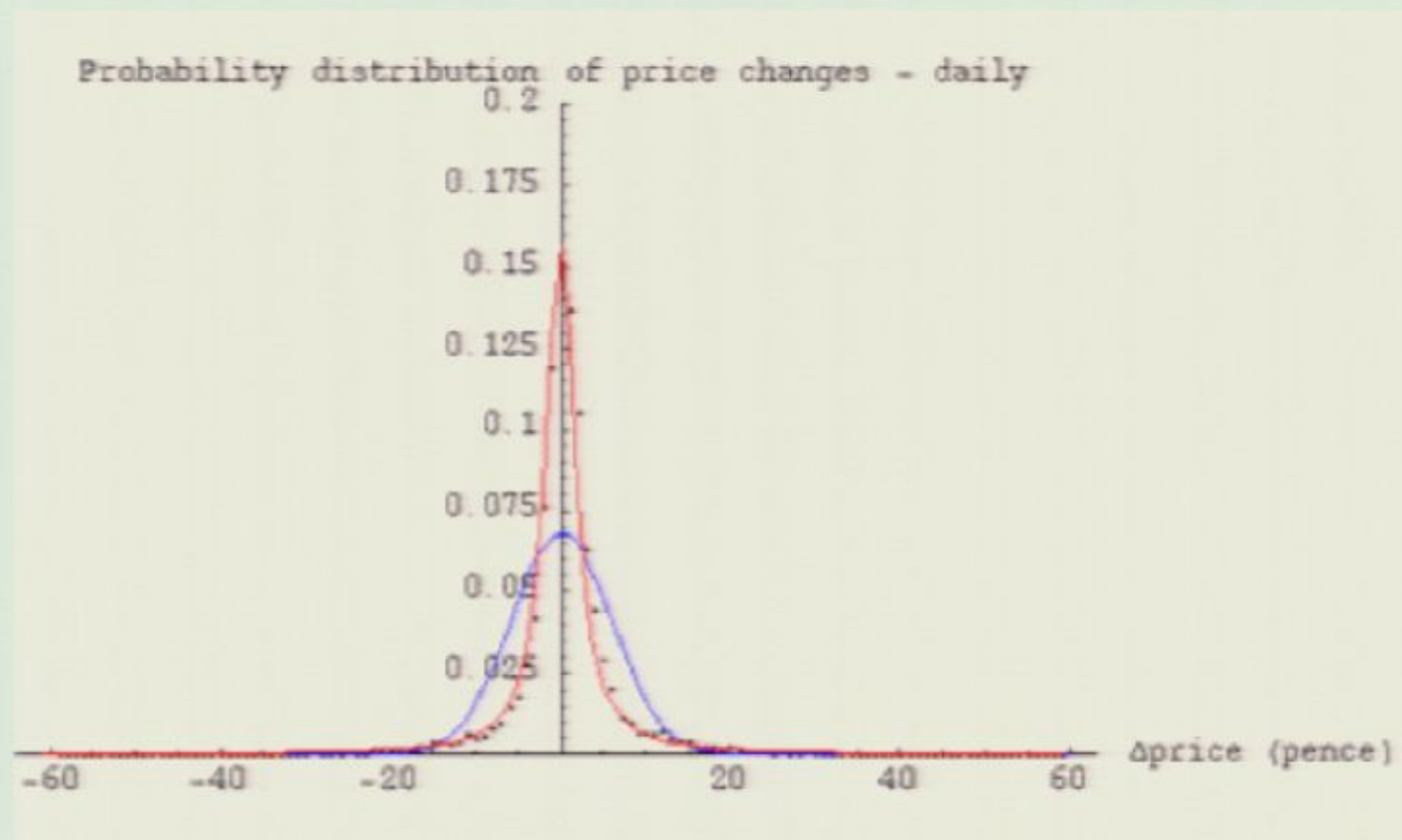


Two Domains



Type 1– CLT in
real time

Type 2– No CLT
in real time

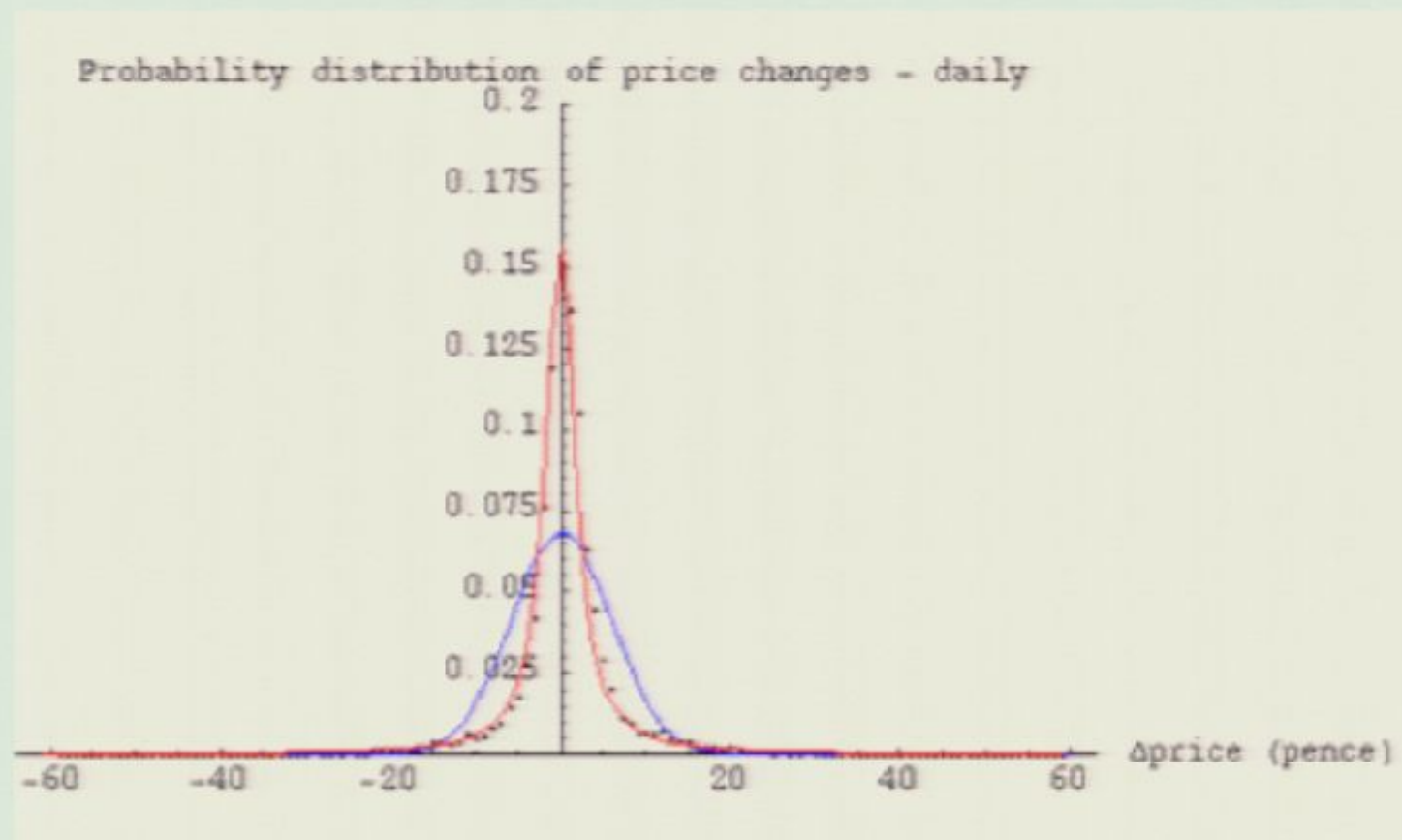


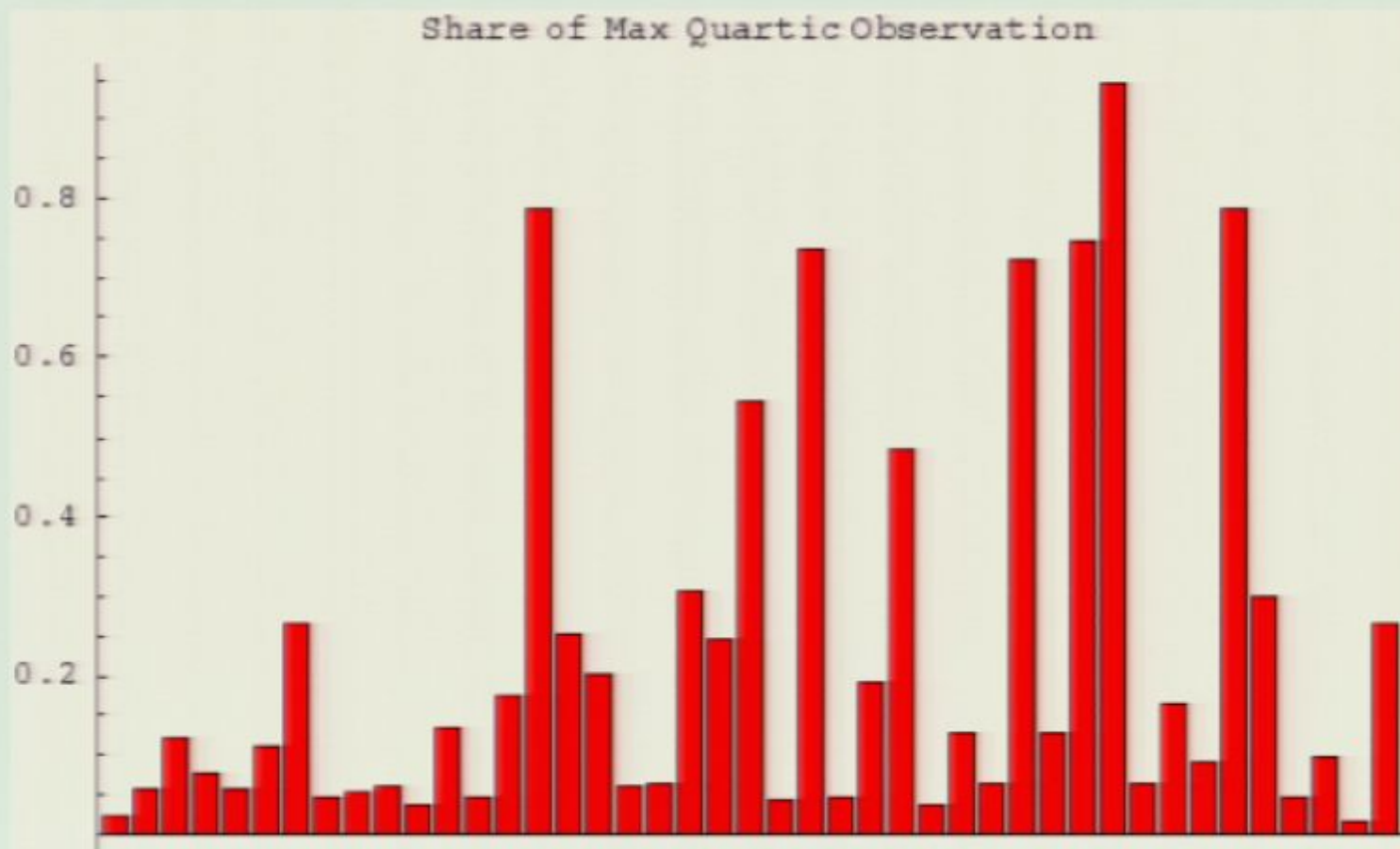
Two Domains



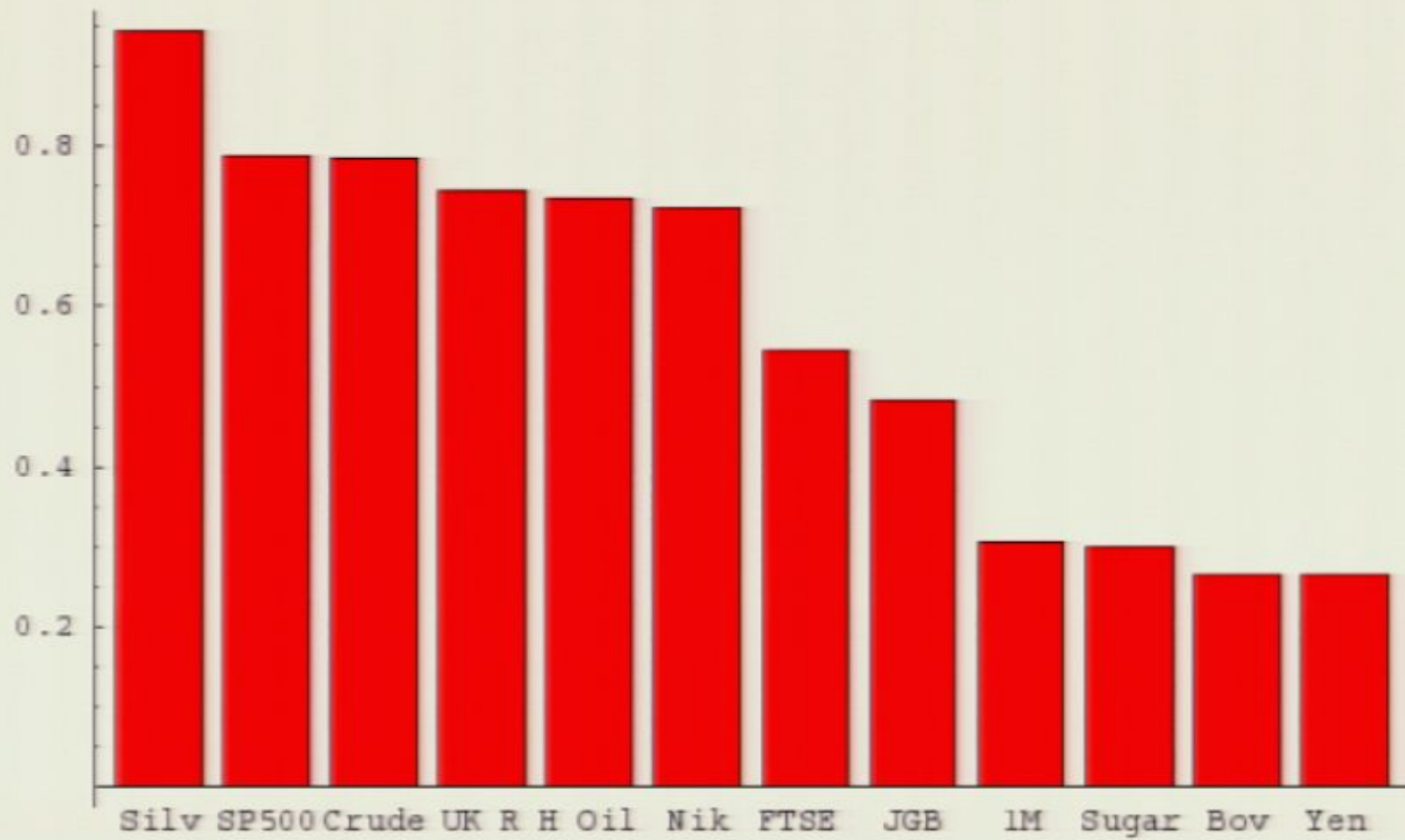
Type 1– CLT in
real time

Type 2– No CLT
in real time

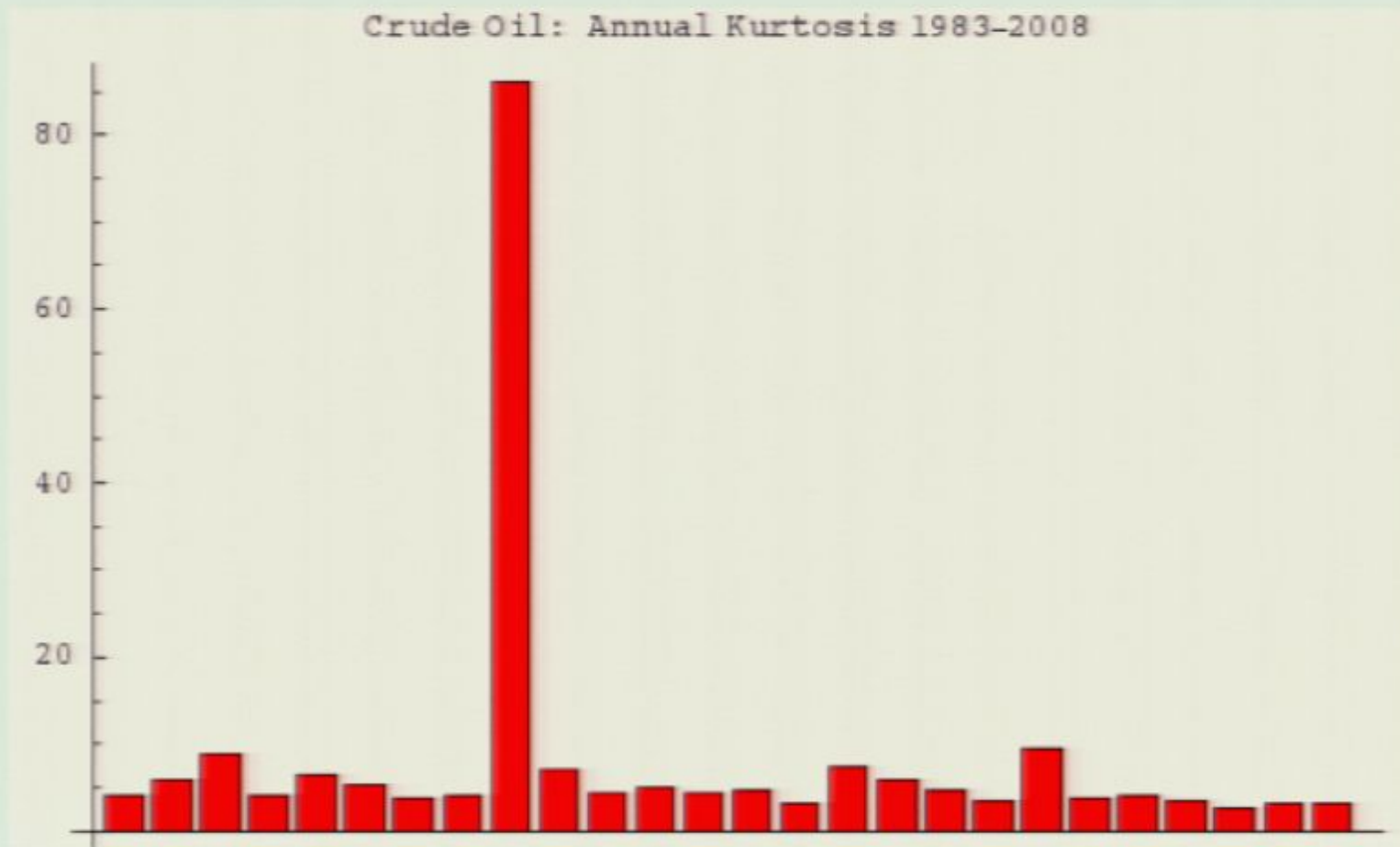


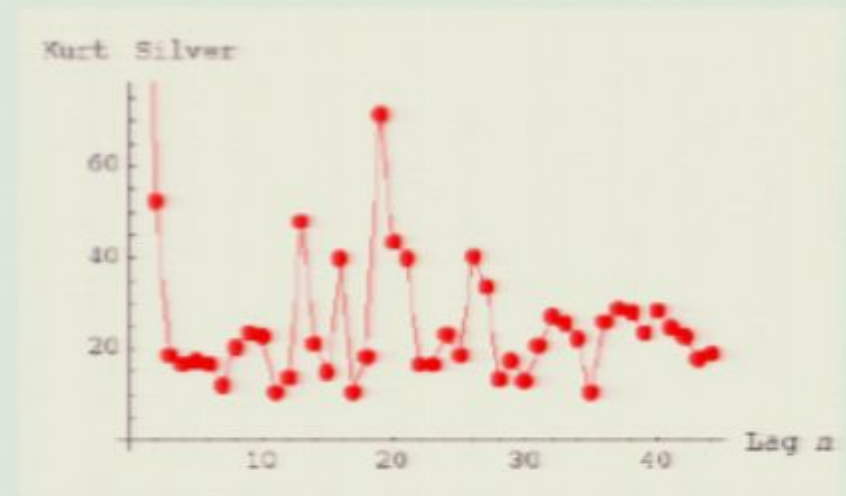
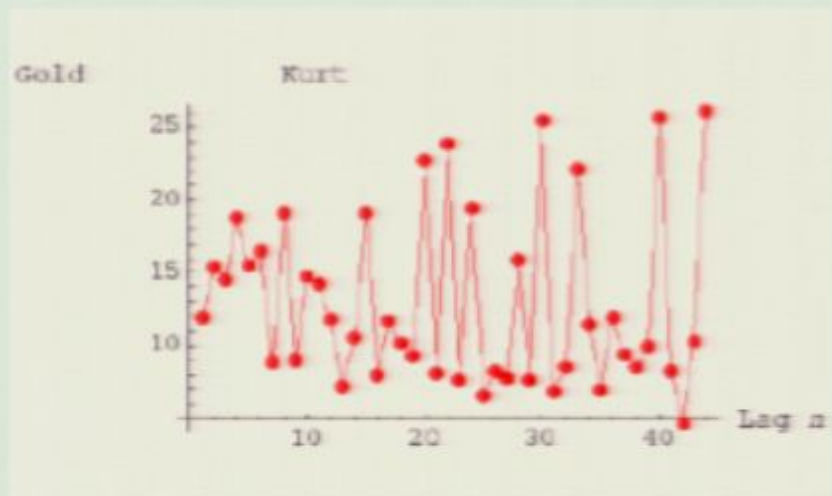
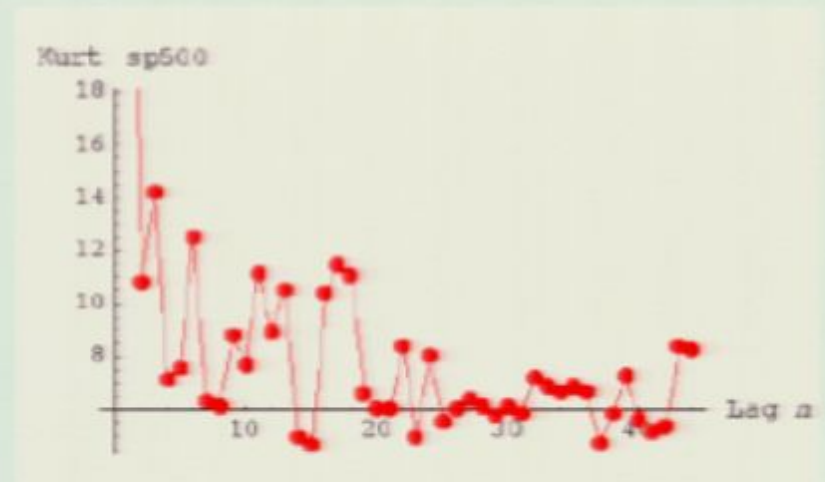
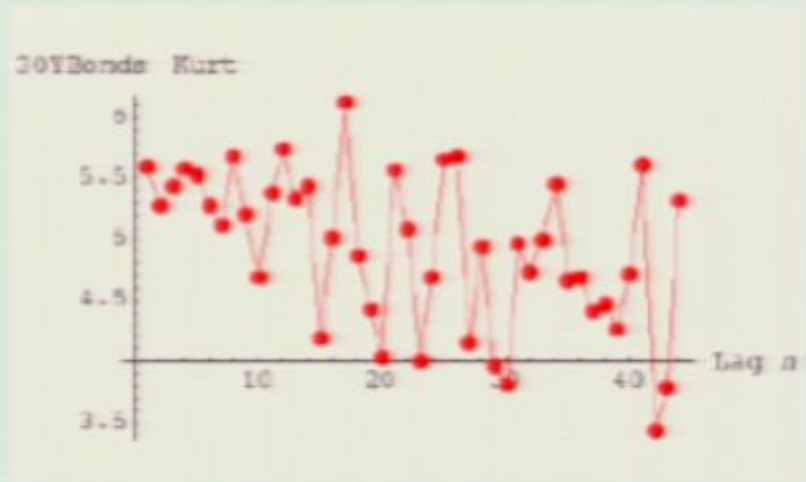


Fourth Moment Contribution $\frac{\text{Max}[X^4]}{\sum X^4}$



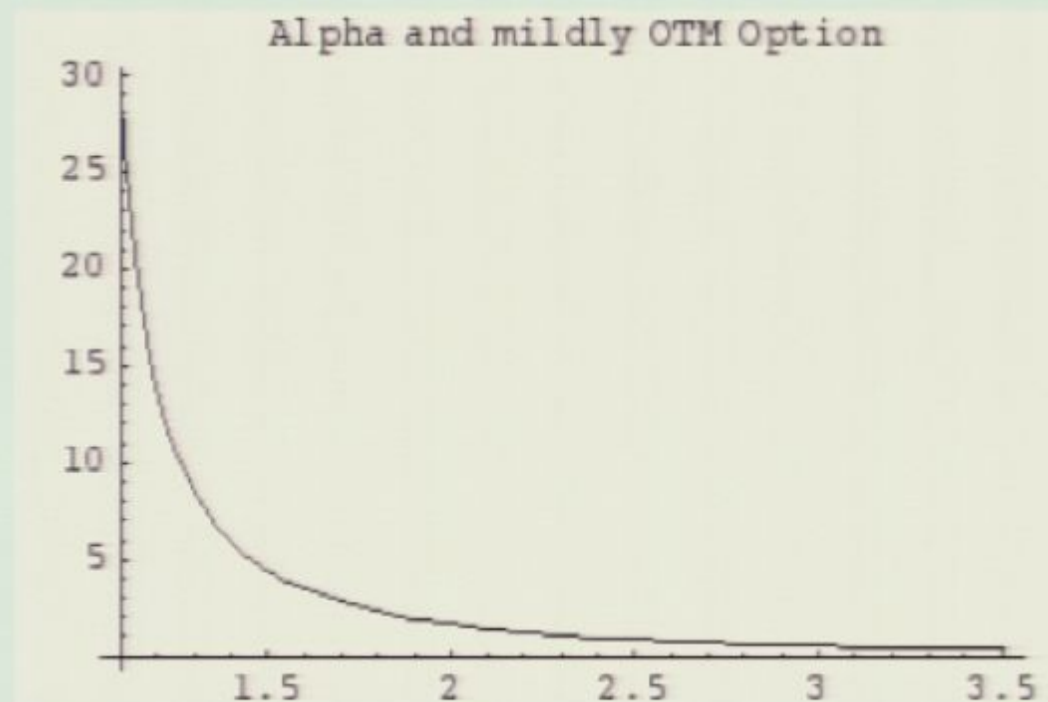
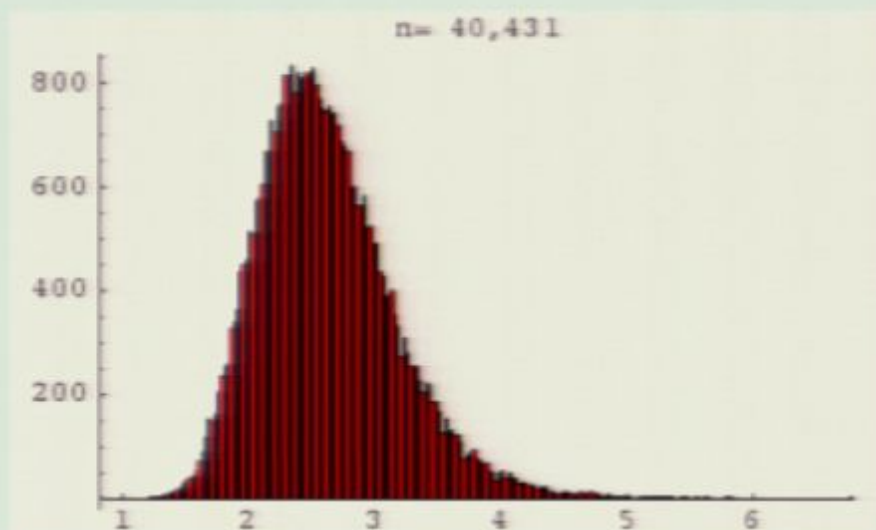
Temporal Instability



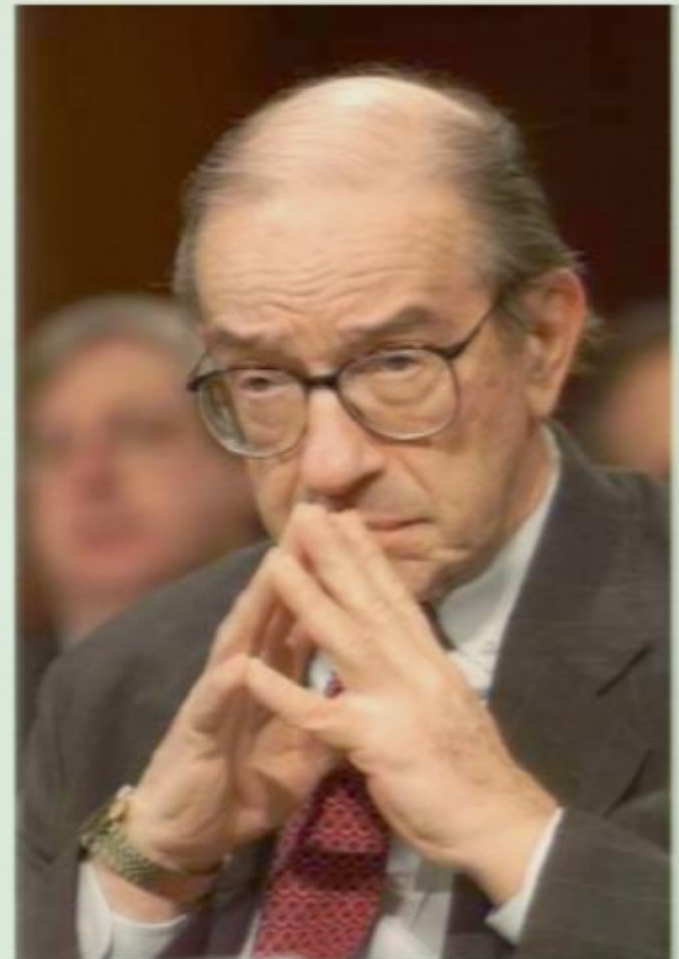
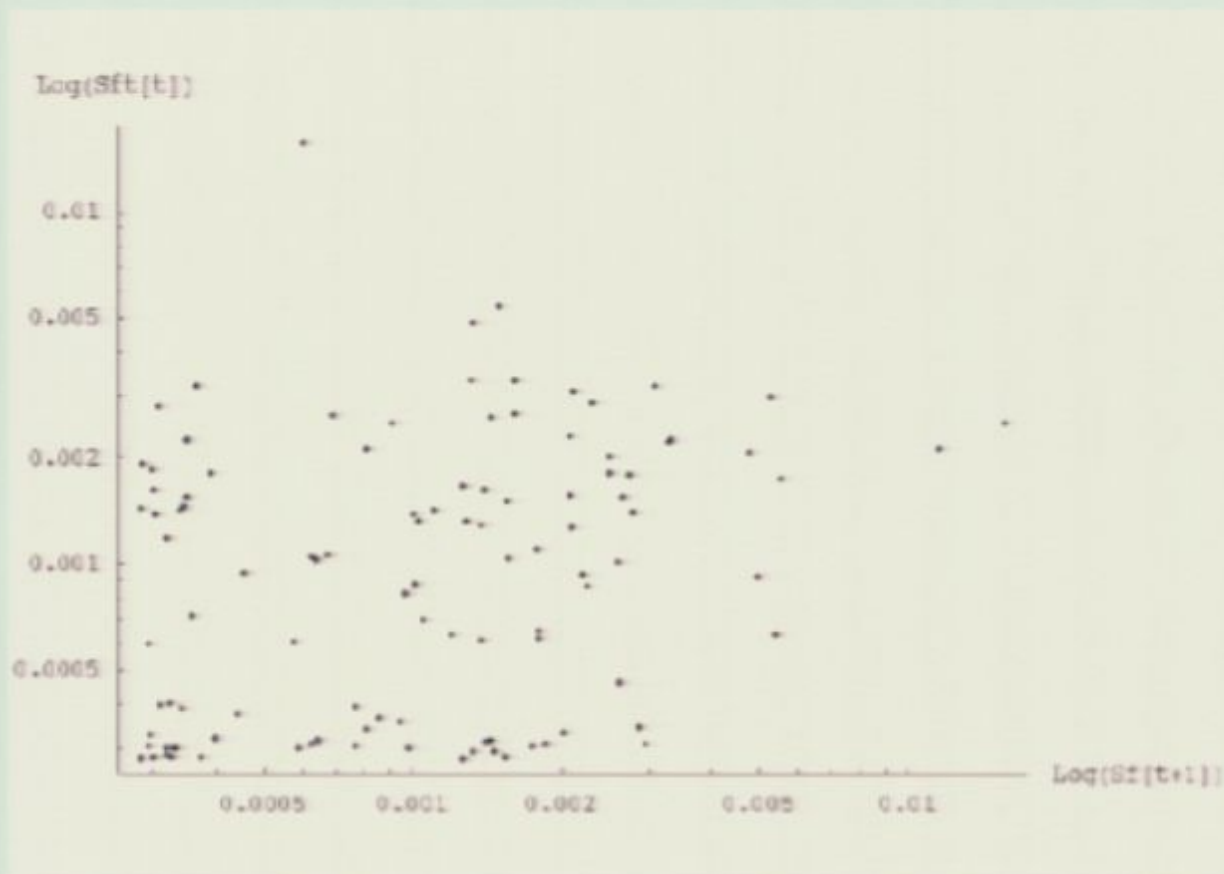


Sampling Error & Pareto Tails

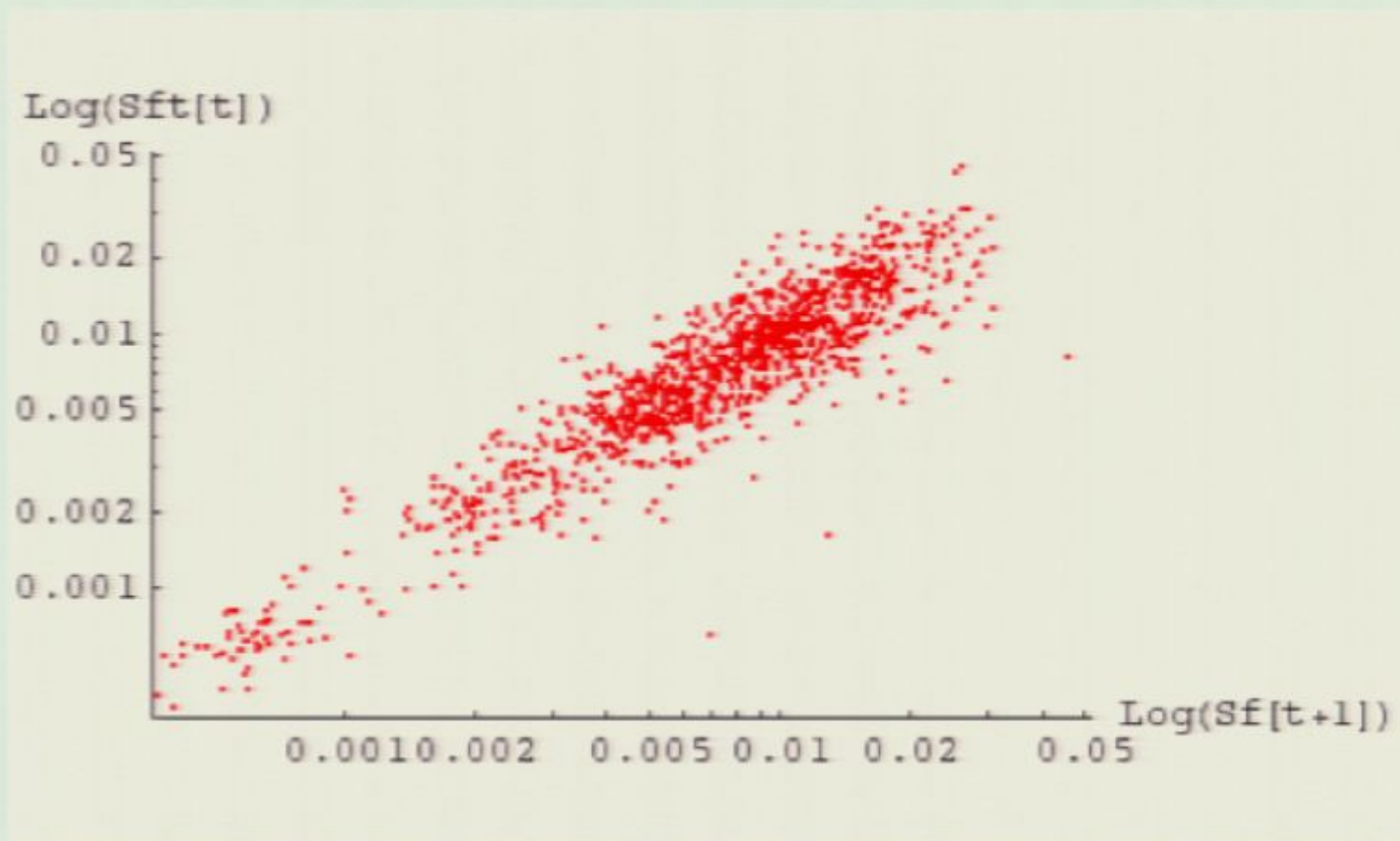
- Shortfall EXTREMELY sensitive to α



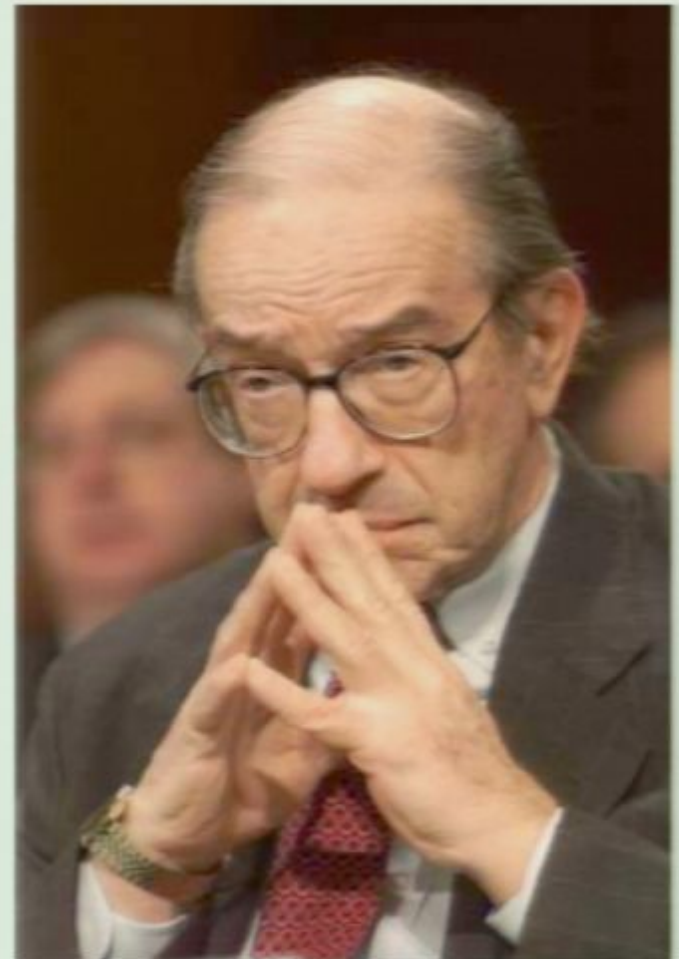
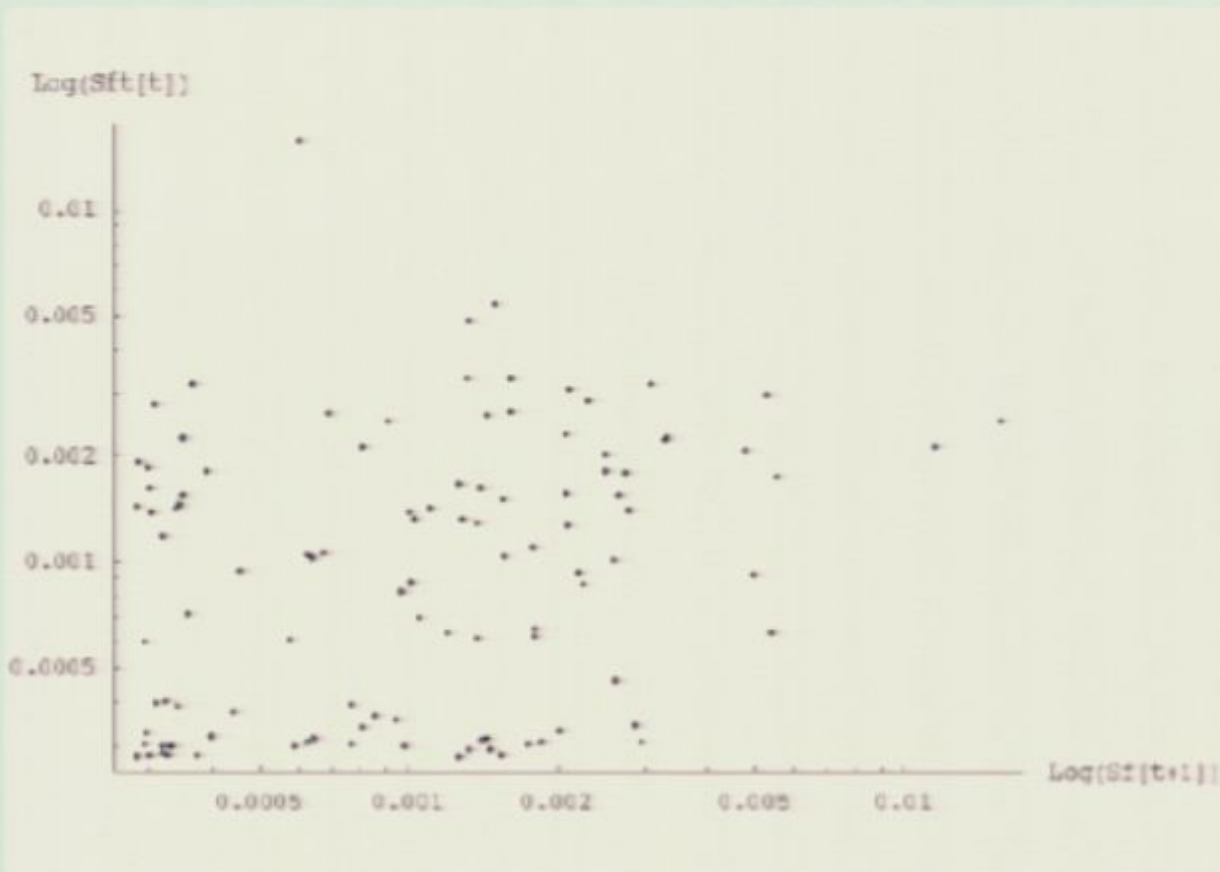
Past & Future



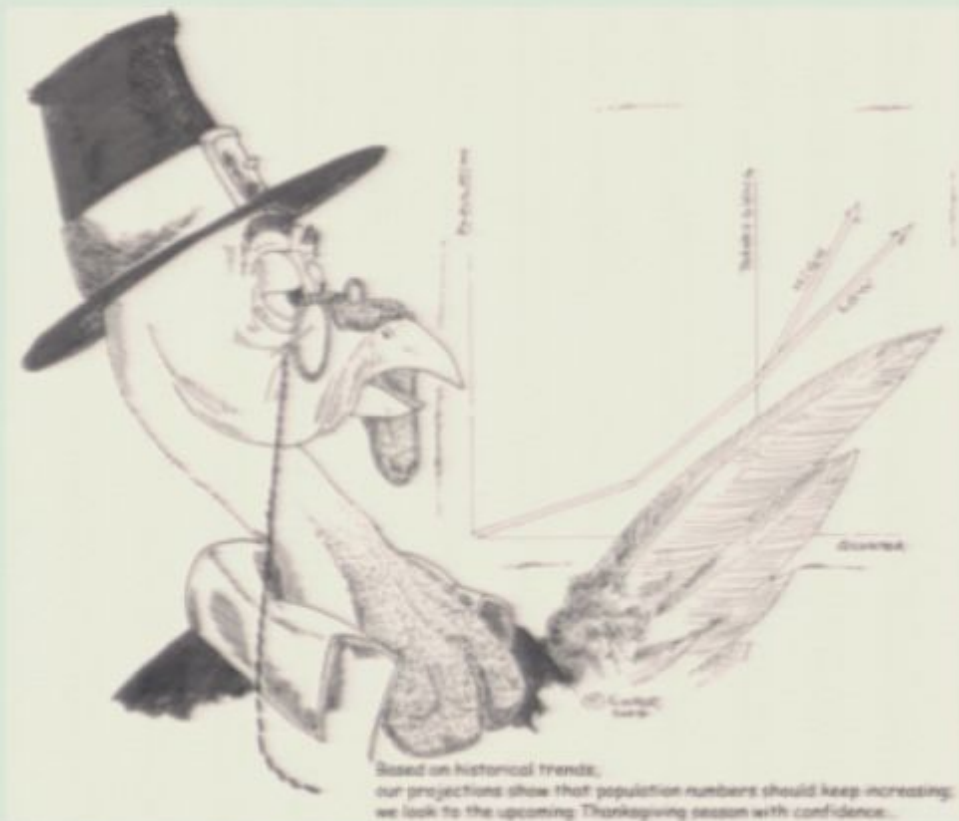
Regular is predictive of regular



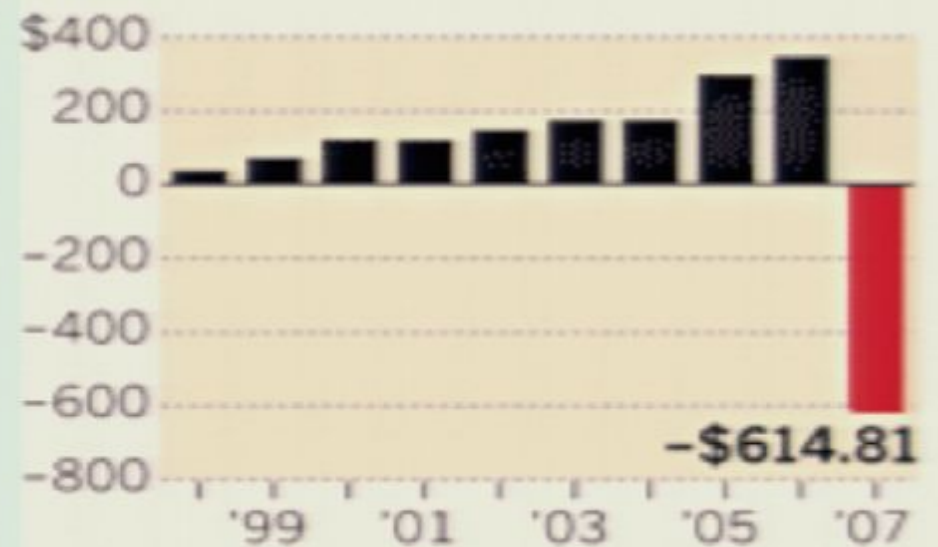
Past & Future



Moral hazard



IndyMac's annual net income
(In millions)



Source: Bloomberg News

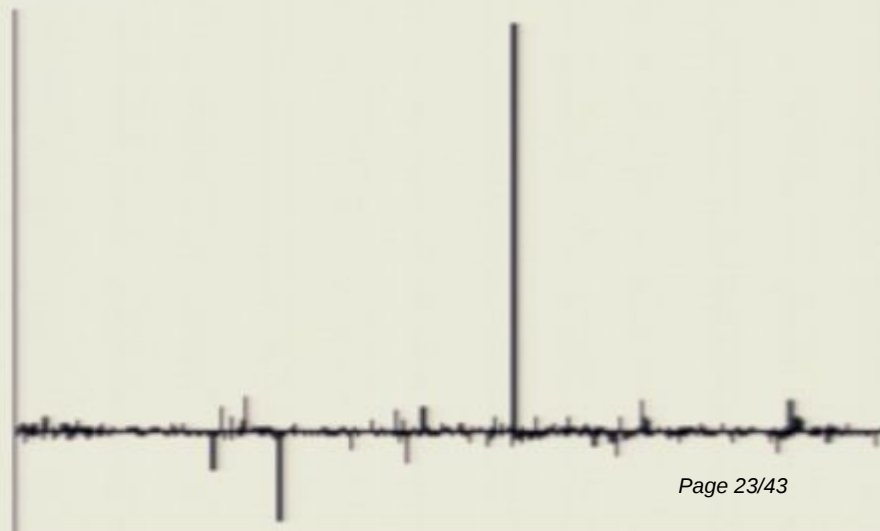


“The Great
Moderation”

Type-1 Noise



Type-2 Noise



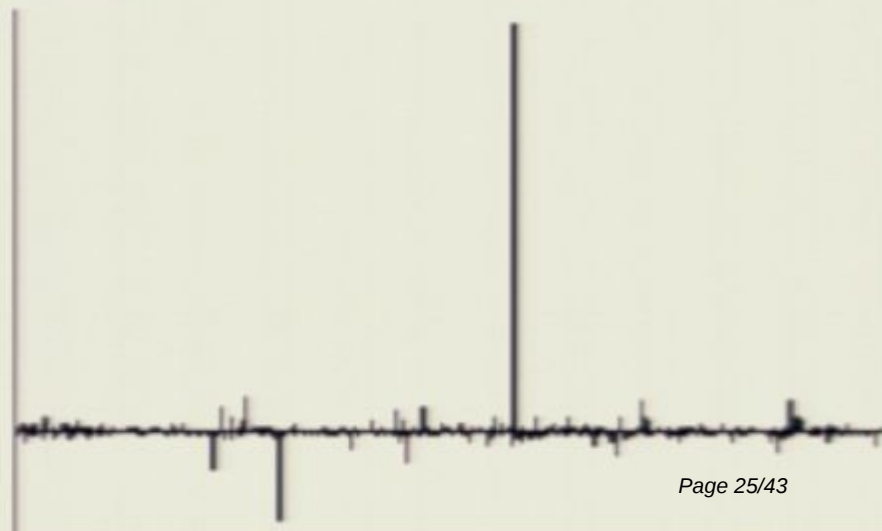


“The Great
Moderation”

Type-1 Noise



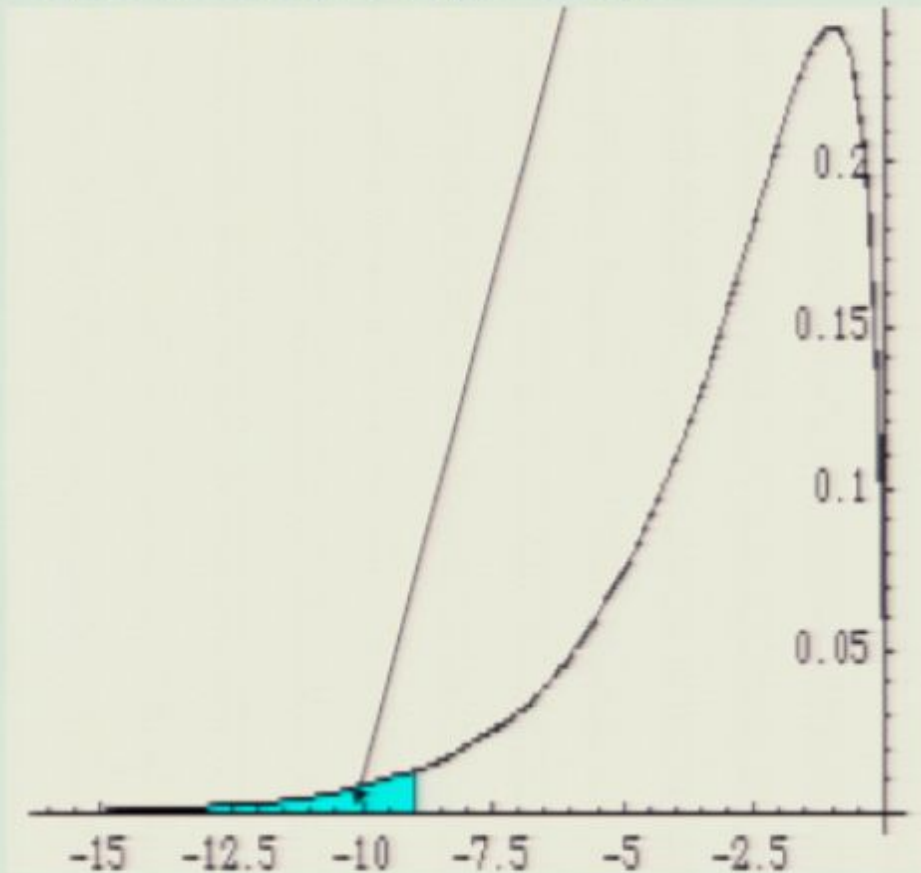
Type-2 Noise



Left Tail

Left Tail & Silent Evidence (Diagoras problem)

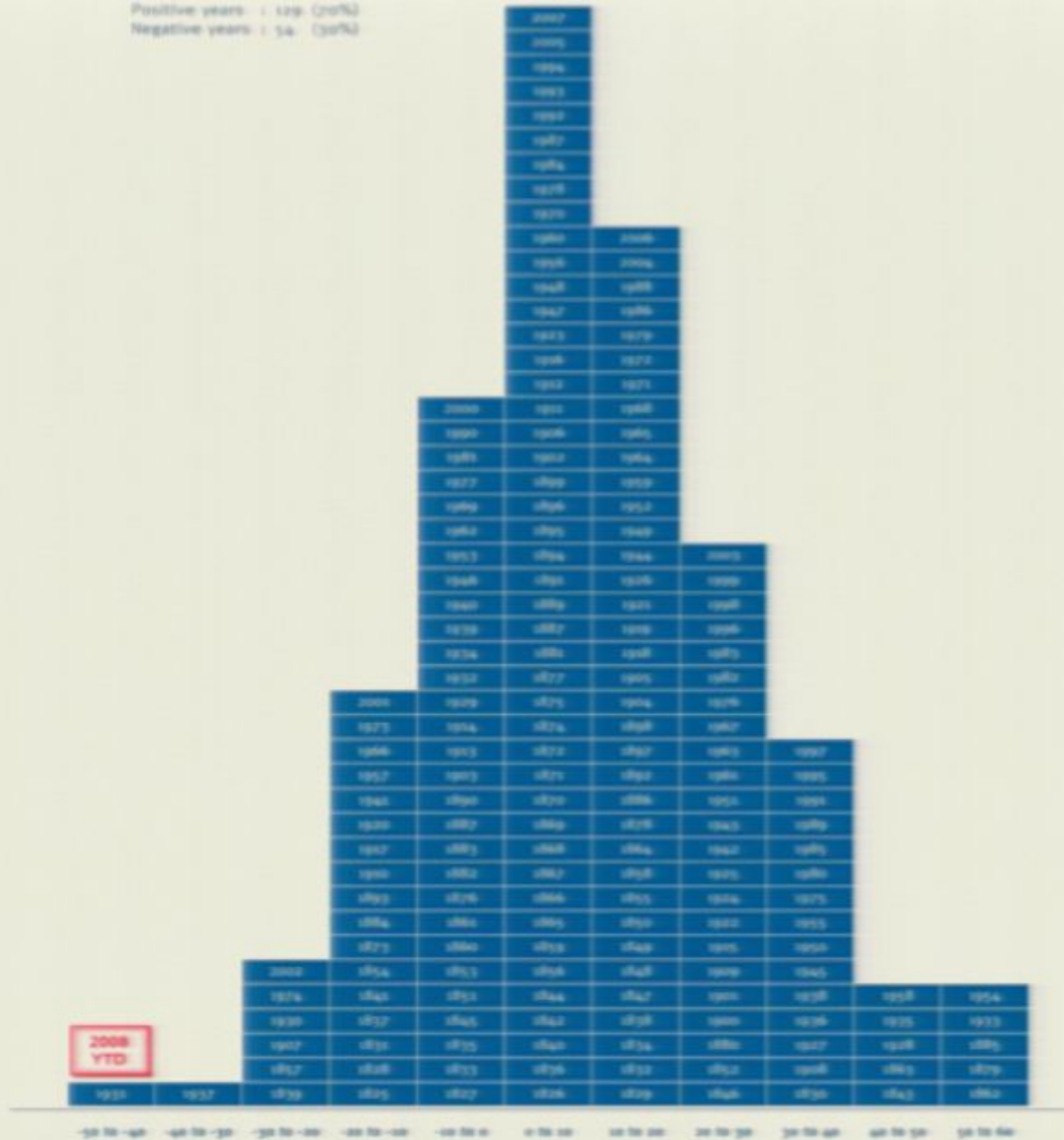
Invisible Left Tail



“conditional on my being here, I didn’t need health insurance”

Bill Fung

Positive years : 129 (20%)
 Negative years : 54 (9%)



Fallacy of single event probability

- **No such thing as typical “war”**
- **Shocks/Jumps are not lottery tickets**

Conditional Expectation

$$E[X|_{X>K}]$$

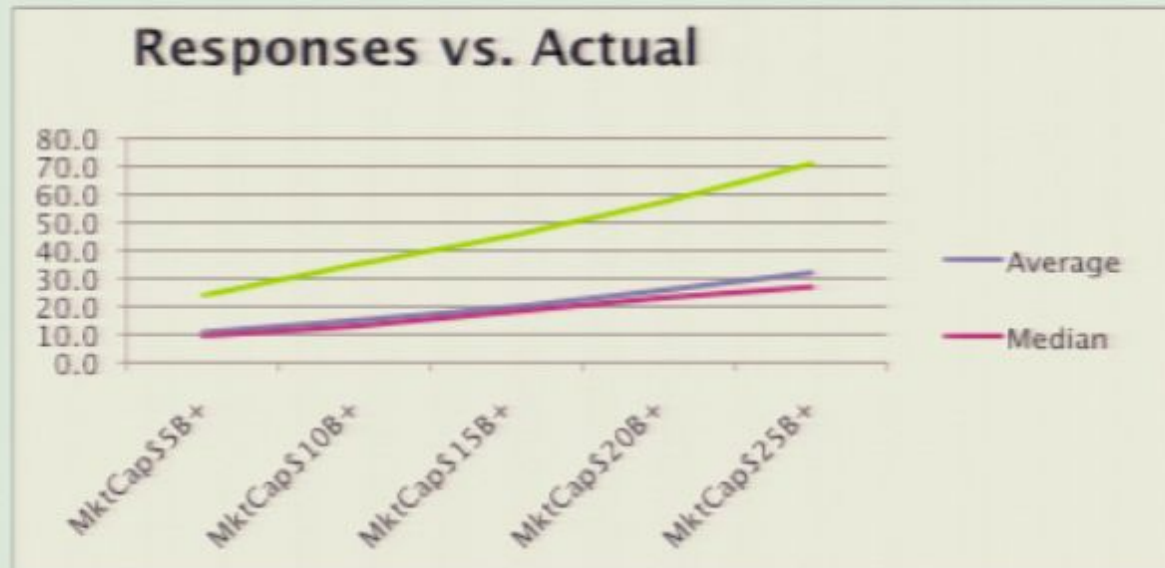
Thin Tailed

$$\lim_{K \rightarrow \infty} E[X|_{X>K}] = K$$

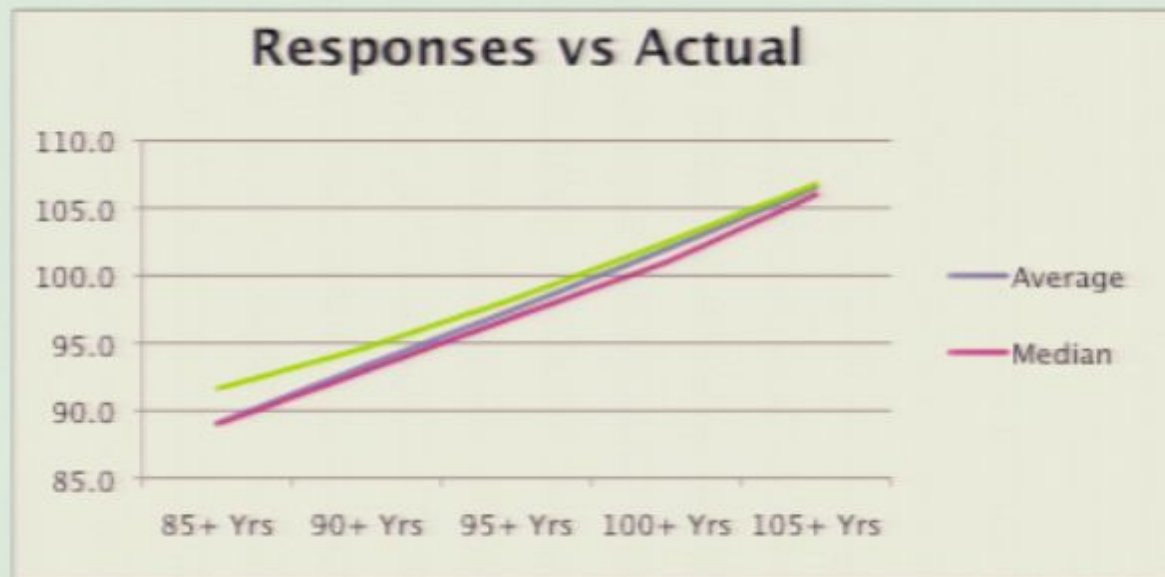
Table 1- Conditional expectation for moves > K, 43 economic variables

K Mean Deviations	Mean Move (in MAD) in excess of K	n
1	2.01443	65958
2	3.0814	23450
3	4.19842	8355
4	5.33587	3202
5	6.52524	1360
6	7.74405	660
7	9.10917	340
8	10.3649	192
9	11.6737	120
10	13.8726	84
11	15.3832	65
12	19.3987	47
13	21.0189	36
14	21.7426	29
15	24.1414	21
16	25.1188	18
17	27.8408	13
18	31.2309	11
19	35.6161	7
20	35.9036	6

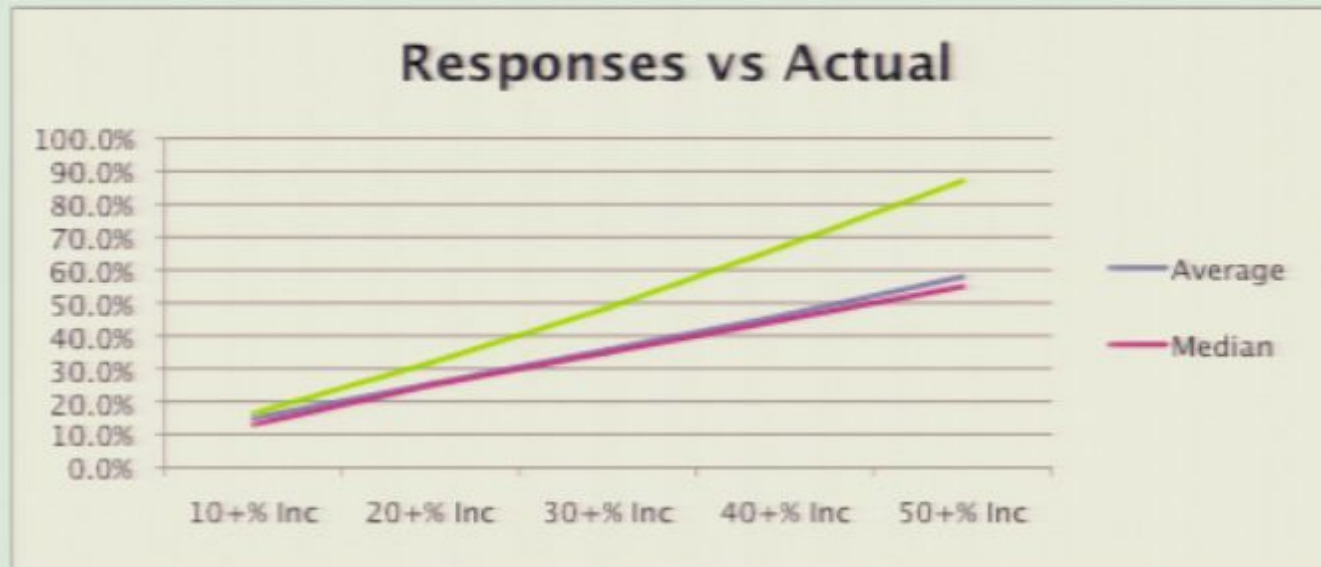
Taleb Goldstein (2009)



Height



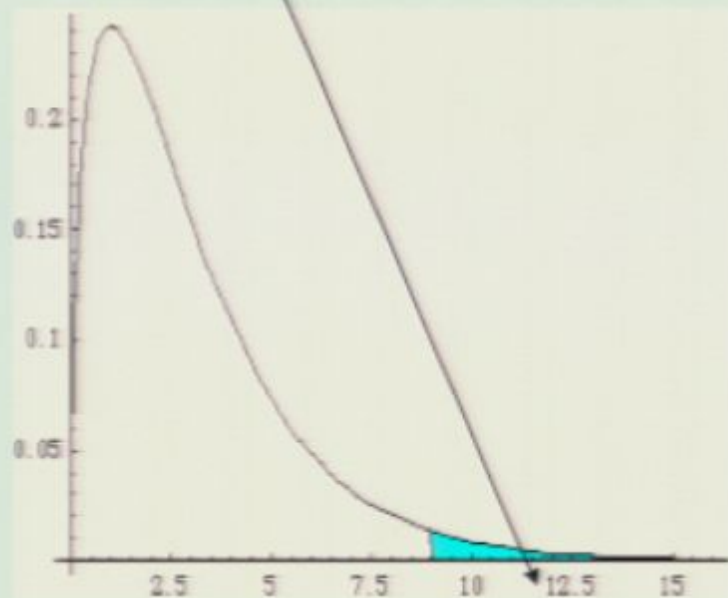
Stocks



APPLICATION	Simple payoffs	Complex payoffs
DOMAIN		
Distribution 1 ("thin tailed")	Extremely robust to Black Swans	Quite robust to Black Swans
Distribution 2 ("heavy" and/or unknown tails, no or unknown characteristic scale)	Quite robust to Black Swans	LIMITS of Statistics – extreme fragility to Black Swans



Unseen Positive Tail Events



Concave to model
Error

Ex: Banks, Short
volatility, security

Convex to model error

Example: Long
options, Biotech,
technology,
entrepreneurship, etc.

APPLICATION	Simple payoffs	Complex payoffs
DOMAIN		
Distribution 1 ("thin tailed")	Extremely robust to Black Swans	Quite robust to Black Swans
Distribution 2 ("heavy" and/or unknown tails, no or unknown characteristic scale)	Quite robust to Black Swans	LIMITS of Statistics – extreme fragility to Black Swans



Table 1- Conditional expectation for moves > K, 43 economic variables

K Mean Deviations	Mean Move (in MAD) in excess of K	n
1	2.01443	65958
2	3.0814	23450
3	4.19842	8355
4	5.33587	3202
5	6.52524	1360
6	7.74405	660
7	9.10917	340
8	10.3649	192
9	11.6737	120
10	13.8726	84
11	15.3832	65
12	19.3987	47
13	21.0189	36
14	21.7426	29
15	24.1414	21
16	25.1188	18
17	27.8408	13
18	31.2309	11
19	35.6161	7
20	35.9036	6

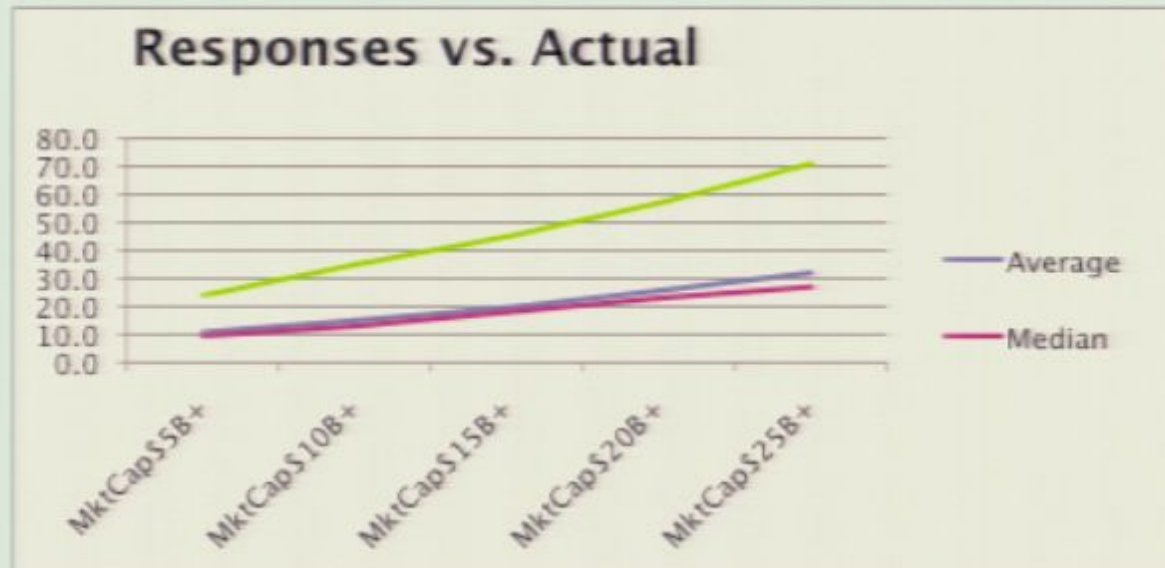
N ~11 mil

Sigma	$E@X_{D \neq D}$	n	ratio $\frac{E@X_{D \neq D}}{E}$	Implied a
-1.	-1.74525	1.5242 $\times 10^6$	1.74525	2.34183
-2.	-3.01389	343952.	1.50695	2.9726
-3.	-4.58148	99404.	1.52716	2.89696
-4.	-6.30102	40525.	1.57525	2.73836
-5.	-8.02031	21156.	1.60406	2.65546
-6.	-9.61995	13058.	1.60333	2.65748
-7.	-11.1952	8720.	1.59932	2.66857
-8.	-12.6746	6245.	1.58432	2.71139
-9.	-14.1636	4613.	1.57373	2.74297
-10.	-15.6078	3528.	1.56078	2.78324
-11.	-17.0819	2742.	1.5529	2.80865
-12.	-18.4656	2199.	1.5388	2.85597
-13.	-19.9193	1770.	1.53226	2.87879
-14.	-21.2999	1458.	1.52142	2.91784
-15.	-22.6279	1219.	1.50853	2.96647
-16.	-23.9772	1024.	1.49858	3.00571
-17.	-25.4426	856.	1.49662	3.01359
-18.	-26.8507	728.	1.4917	3.03374
-19.	-28.7366	594.	1.51245	2.9514
-20.	-30.4193	503.	1.52096	2.91952
-25.	-39.7594	195.	1.59038	2.69383
-30.	-50.6481	105.	1.68827	2.45292
-35.	-64.9988	59.	1.85711	2.16671
-40.	-82.8163	36.	2.07041	1.93422
-45.	-98.1439	26.	2.18098	1.84676
-50.	-113.324	20.	2.26649	1.78958
-55.	-128.696	16.	2.33993	1.74631
-60.	-152.754	12.	2.54591	1.64687
-65.	-160.867	11.	2.47487	1.67802
-70.	-170.105	10.	2.43007	1.69927
-75.	-180.84	9.	2.4112	1.70861
-80.	-180.84	9.	2.2605	1.79333
-85.	-180.84	9.	2.12753	1.88689
-90.	-192.543	8.	2.13937	1.87768
-95.	-226.232	6.	2.38139	1.72391
-100.	-251.691	5.	2.51691	1.65923

Table 1- Conditional expectation for moves > K, 43 economic variables

K Mean Deviations	Mean Move (in MAD) in excess of K	n
1	2.01443	65958
2	3.0814	23450
3	4.19842	8355
4	5.33587	3202
5	6.52524	1360
6	7.74405	660
7	9.10917	340
8	10.3649	192
9	11.6737	120
10	13.8726	84
11	15.3832	65
12	19.3987	47
13	21.0189	36
14	21.7426	29
15	24.1414	21
16	25.1188	18
17	27.8408	13
18	31.2309	11
19	35.6161	7
20	35.9036	6

Taleb Goldstein (2009)



Téchné
experiential
knowledge

Epistémé,
propositional
knowledge,
Epistemic base

Empiricism

Rationalism

Engineering

Mathematics

Know How

Know What

Tacit

Explicit

Epilogism,
*historia a sensate
cognitio*,
Autopsia,
non-demonstrative
knowledge

Induction,
inference
demonstrative
knowledge

Bricolage

Scholarship

**Hayekian price
formation
Opacity**

**Central Planner
Arrow Debreu
lattice state space**

Adjustment

Expectation

Fat Tony (in T & H)

Black-Scholes

Ecological decision-
making,
Gigerenzer

Neoclassical
economics,
Kahneman, Tversky