Changes of commodity and security prices are fit-
ted excellently by the Lévy-stable probability dis-
tributions. Their parameters, α, is the intrinsic
measure of price volatility. The model also ac-
counts for the amplitudes of major events in
economic history. An unprecedented feature is
that price changes have an infinite population
variance. [The Social Sciences Citation Index®
(SSCI®) indicates that this paper has been cited
over 150 times since 1966.]

March 3, 1982

"Early in 1961, while on my way to a seminar, I
stepped into the office of my host, a Harvard
economist. On his blackboard, I noticed a diagram
nearly identical to one I was about to draw. His
diagram referred to a topic of which I knew
nothing—records of the price of cotton. My host
had given up his attempt to model this pheno-
menon, and he challenged me to take over.

"In a few weeks, I had succeeded by introduc-
ing a radically new hypothesis. I preserved the ran-
dom walk hypothesis, that the market is like a lot-
tery or a casino, with prices going up or down as if
determined by the throw of dice. I also preserved
the efficient market hypothesis, that the market's
collective wisdom takes account of all available
information, hence, the price tomorrow and on
any day thereafter will on the average equal
today's price. The third basis of the usual model is
the hypothesis that price changes follow the
Gaussian distribution. All these hypotheses, due to
Louis Bachelier,1 were first faced seriously in
1960. The resulting theory, claiming that price (or
its logarithm) follows a Brownian motion, would
be mathematically convenient, but it badly fails
to fit the data. First of all, the records of throws of a
die appear unchanged statistically, but in com-
parison, the records of competitive price changes
look nonstationary; they involve countless con-
figurations that seem too striking to be attribut-
able to mere chance. A related observation: the
histograms of price changes are very far from the
Galton ogive; they are long-tailed to an astonish-
ning degree, due to large excursions whose size is
obviously of the highest interest.

"My model replaces the customary Gaussian
hypothesis with a more general one, while allow-
ing the population variance of the price changes
to be infinite. The model is time-variant, but it
creates endless configurations; it accounts for all
the data, including both the seemingly nonsta-
tionary features, and the seemingly nonrandom
large excursions.

"A visiting professorship of economics at Har-
vard, 1962-1963, was triggered by a preprint that
covered cotton and diverse commodities and se-
curities. Also, my paper was immediately re-
printed in Cooner's book along with two discus-
sions of it24 and must have affected my becoming
Fellow of the Econometric Society. However, after
a few further forays? my interest was drawn in-
resistibly away from economics, and toward the
very different task of creating the new fractal
geometry of nature.45 Having learned to live with
the unprecedented infinite variance syndrome had
trained me to identify telltale signs of divergence
in the most diverse other contexts, and to account
for them suitably.

"By its style, my work on prices remains unique
in economics: while all the other models borrow
the final formulas of physics, I lean on its basic
mental tool (invariance principles) and deduce
new formulas appropriate to the fact that
prices are not subjected to inertia. My work is also
unique in its power: the huge bodies of data that
fit its constant jumps and swings, but I
manage to fit everything without postulating that
the rules themselves shift and change. Thus, my
models are acknowledged as having opened a
path toward a new and more realistic economics.
Nevertheless, the progress of this new economics
is slow, due to inherent mathematical difficulties
and to my failure to push its development. All too
often (though with notable exception45), a
publication devoted to the totally discredited
Gaussian model quotes my work to show the
author's awareness of his work's limitations, and to
possibly to assuage his conscience."

3. Fama E F. Mandelbrot and the stable Paretoan hypothesis. (Cooner P H, ed.) The random character of stock market prices.
4. Cooner P H. Comments on the variation of certain speculative prices. (Cooner P H, ed.) The random character of stock

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