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Intech CEO Adrian Banner's quest for universal truth in stockmarkets

by Jonathan Shapiro

LOUIE DOUVIS

Intech CIO Adrian Banner's quest for universal truth in music and maths led him from the Willoughby Town Hall to a $64b pot of assets.

When Sydney teenager Adrian Banner topped the state with perfect HSC scores in maths and science, a Sydney Morning Herald reporter asked him why he wanted to study science rather than medicine.

"I think it's great that doctors are smart, but it's strange having doctors who are so smart and scientists that aren't," he told the education editor in 1992. "Maybe it should be the other way around."

Banner, who as a four-year-old played his piano composition at the Willoughby Town Hall, was torn between his two loves – music and numbers. And when he got a scholarship to Princeton University, famed in the field of maths, he was set to fulfil his dream of following his father, a professor at UNSW, into academia.

That was until the summer of 2000 when he answered a campus advert for an internship at a money management firm called Enhanced Investment Technologies.

"It was very mathematical. I didn't really have a great sense of what the company did and they hired me to solve particular problems," he says.

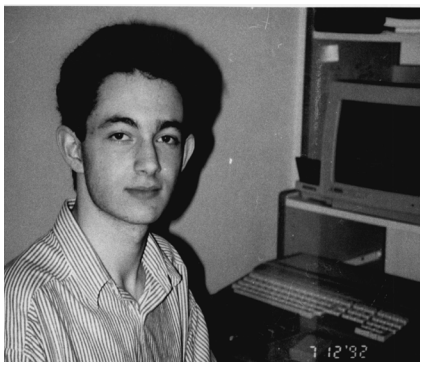
Within 12 years, Banner would be running the firm, now known as Intech (and now oversees more than $US46 billion ($58.8 billion) of assets under management), making him one of the highest ranking Australians in the industry.

"I really didn't intend to go into finance – that was not on my radar," he says.

Fruitful career

It has been a fruitful career. Academics however, have an uneasy relationship with turbulent and emotive financial markets. The quest to find patterns and order within them has destroyed countless reputations and billions of dollars over many decades.

And while academic theories – such as Harry Markowitz's "Modern Portfolio Theory" have been taught to generations of finance students,



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As a teenager, Adrian Banner topped NSW with perfect HSC scores in maths and science in 1992.

they've born little resemblance to how securities markets actually behave.

Princeton mathematician Robert Fernholz took a more scientific, or descriptive, approach to explaining stock markets. In 1982 he formulated his "Stochastic Portfolio Theory" which he based on observations of market prices, rather than conjecture.

Five years later, in 1987, Fernholz created Enhanced Investment Technologies (Intech) to invest in these insights. The office was opposite the Princeton campus in New Jersey to attract people such as of Banner. (The firm was acquired by Janus Capital and is now part of Janus Henderson.)

His task during his internship in 2000 was to explain a persistent pattern in financial markets that is common in both nature and society. The distribution of capital across the stockmarket tended to be fairly uniform.

The US market's largest stock may change over time – from US Steel, to General Electric to IBM to Exxon to Apple. But the size of the biggest stock relative to other stocks, and as a share of the total market didn't change. The same applies to the 100th and 1000th largest stock.

"The amazing thing is that you draw this graph over time, it doesn't change. We have backed it out to the 1920s there are fewer stocks but the shape is the same."

Measuring volatility by rank

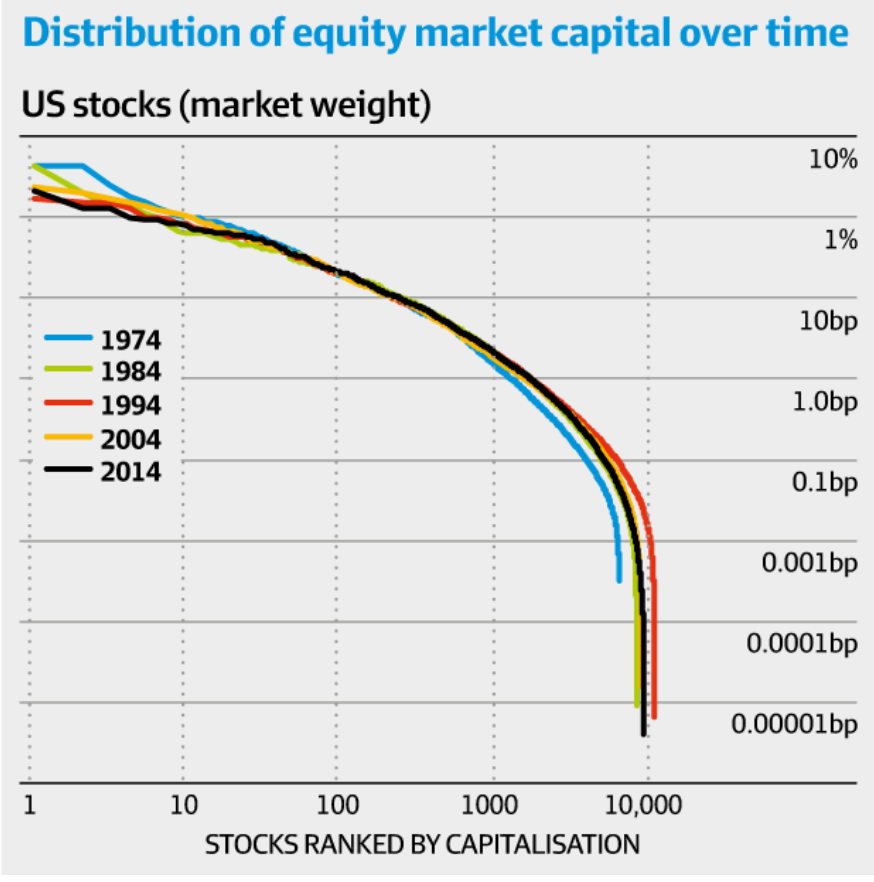
The distribution of stocks in the market obeys something similar to a Pareto Principle – a "power law" probability distribution which is commonly observed in science, nature and society. It's sometimes expressed as the 80:20 rule, in which for instance, 80 per cent of the country's wealth is held by 20 per cent of the population.

"It's a pretty safe bet that the 100th-ranked stock's going to be about the same size as it is even in five, 10 years from now because it has been for 80 years," he says.

"There aren't laws of investing like there are laws of physics but there is a general idea that most people try to act in general self-interest. Ultimately some of these things seem to be somewhat universal so you can start to say can we model with maths."

STEVE CHRISTO

Adrian Banner, aged 14.



SOURCE: INTECH

What their models found was there was a "linear relationship" between the size, or rank, of the stock and its volatility.

"We are able to measure the volatility by rank and find actually the variance of stocks grows pretty much linearly with the ranking number where one is the biggest. It obeyed a law – the 100th largest stock was half as volatile as 200th."

Intech has used mathematics to get an edge on a part of the stockmarket where inefficiencies are the least likely to exist. Supplied

So how do you monetise this "universal law"? Well, as Banner explains, you could simply buy the 100th largest stock. If it grows to become the 99th largest stock, it's out-performed the market and you can sell it at a profit.

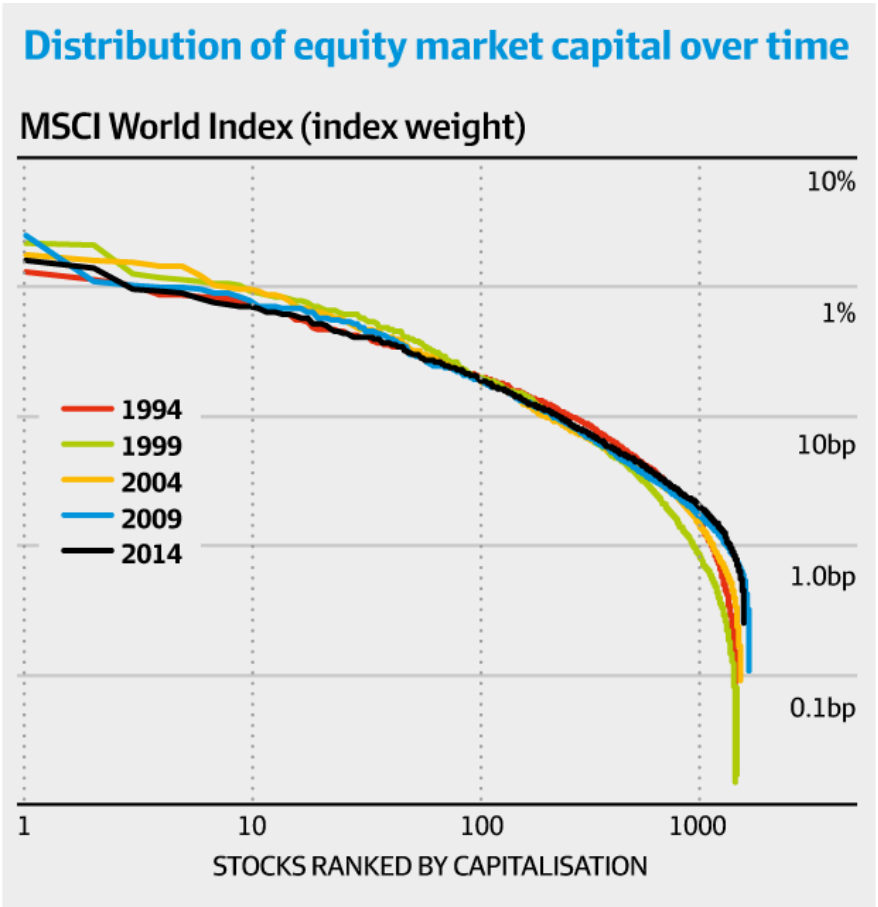
You can also buy the stock that's fallen at its now cheaper price. Of course, it could go the other way. The 100th stock could fall to 101, in which case you're selling at a loss and now buying the new 100th ranking stock at a higher price.

But such as the asymmetric nature of stocks (short sellers can only make 100 per cent if a stock falls to zero, but "long investor" could in theory double, triple or quadruple their money), the gains are larger than the losses, even though each event is equally likely.

"Because the upside is bigger than the downside – volatility is a source of reward not just something that has to be controlled from risk point of view," Banner says.

That is in essence how Intech has used mathematics to get an edge on a part of the stockmarket where inefficiencies are the least likely to exist – large cap US equities.

The flagship Enhanced Plus Fund has beaten the S&P 500 by 1.3 percentage points per annum. That may seem like a modest amount but compound that back to its inception in 1987 and quite a gap opens up.



SOURCE: INTECH

A long, successful experiment

Banner's career in finance has been one long, successful experiment. His musical talents have taken him to New York's Lincoln Centre and the Montreal Jazz festival with his jazz/folk fusion band, the Klez Dispensers. His wife, Amy, is the violinist. They have two children.

And even though he didn't follow his other dream of devoting himself to maths and science, would he still give reporters all those years ago the same response? Would he still have chosen a life of research?

"You are driven to understand something. That is the whole point of research. To come up with something new that no one has ever come up with before," Banner says.

"That could be a new theorem in math, it could be a new psychology observation, a new engineering technique or even a new critique of a 14th-century poem. It's human creativity."

And it turns out that beating the market and understanding it's greater truths are harmonious.

"It's in our DNA to want to understand. We don't just want to say: 'Well there's this behavioural thing that goes on, we can exploit it'. We want to know why is it really there ... because if you understand something it's more likely to persist."

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