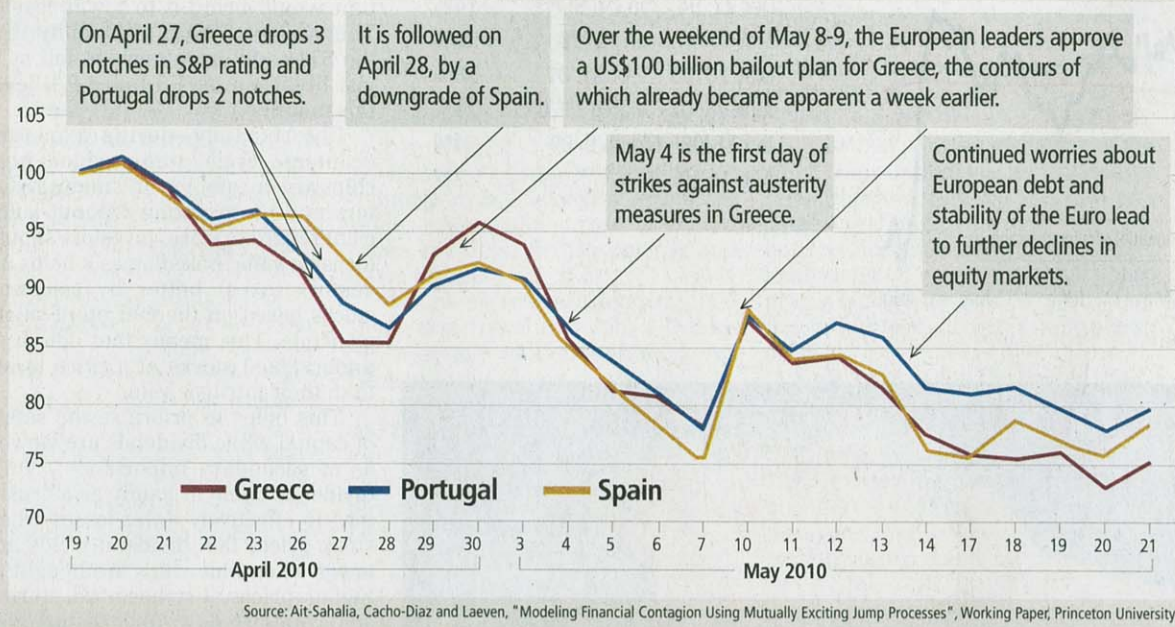


Anatomy of jumps

Greece: April-May 2010 stock returns



'Standard' models can't explain crashes

Professor presents mathematical model for 'jumps', advises investors to decide on investment policy before any crisis, reports **GENEVIEVE CUA**

AS grave uncertainties roil markets, some in the academe are working to model financial crises and the domino effect that can ensue, as a shock in one major market sparks off turmoil in other markets and assets.

Yacine Ait-Sahalia, director of Bendheim Centre for Finance at Princeton University, presented a mathematical model for "jumps", a deceptively innocuous term for market shocks or sudden downdrafts such as has been seen in recent weeks and years.

The big question is – how should portfolios be optimised with a view to such shocks?

Speaking to an audience of investment managers this week, Professor Yacine says there is no mechanism in the classical formula to account for sudden market moves. "We tend to optimise portfolios well for good times when we don't need it, but not for bad times when optimisation will be helpful."

Prof Yacine is also the Otto A. Hack 1903 Professor of Finance and Economics. He was the guest speaker at a lunch this week, jointly organised by the Centre for Asset Management Research & Investments and the Investment Management Association of Singapore.

Classical finance assumes a rational market where risk-averse investors allocate assets broadly between a market portfolio and cash, with a view to maximising returns at a given level of risk.

Any number of factors can derail that smoothly functioning assumption, however, as recent years have painfully shown. In a crisis, asset correlations converge, for instance, which means that most risk assets rise and fall together. Investors cease to be rational and turn risk averse at the worst time, selling down assets that have already been beaten down and exacerbating the plunge. All these mean that diversification, which is supposed to shield portfolios from the worst of losses, may well fail at extreme moments.

Prof Yacine's presentation touched on the nature of crises, where a shock in one market appears to raise the probability of successive shocks not only in the affected asset class, but also in other asset classes. These crashes, he says, cannot be explained by "standard" models which tend to see market shocks as discrete and independent events.

Examples of the contagion effect of shocks include the crash in October 2008 where over a space of five trading sessions, the US market dropped 35 per cent, and sparked a slide as well in the Pacific and European markets. The current downturn is yet another instance.

About October 2008, he says: "This (price fall) was a move you might have expected to see once every few years on average. . . But to have a move like this every day for five days in a row, an event like this (is) very, very unusual – almost impossible under any of the standard models."

To capture the possible contagion effect of market shocks, Prof Yacine uses a model called "Hawkes processes", originally used to model epidemics. Under this model, a shock in one region of the world or segment of the market raises the intensity of jumps or shocks occurring, before things eventually "mean revert" or return to some long-term average level.

What should investors do? There are some who believe that in the long term, asset prices will settle to a long-term average and time will smooth out short-term volatility. The rub of this thinking is that in a vicious downdraft where most asset prices plunge, you could well lose most of your savings, making recovery difficult.

Prof Yacine proposes that instead of classical theory's two-asset portfolio, investors should have basically three assets – an asset that is a long position on market risk; a long/short fund which hedges against "jump risks", and cash or the money market.

He told reporters after the presentation that investors should basically hold assets that benefit from a flight to quality. These include US Treasuries, yen assets, German bund and gold. Today, a diversified portfolio may already include a modest allocation to gold, and certainly some to bonds.

At times of crisis, investors should rebalance their portfolio, buying more of the hedges against so-called jump risk.

He said: "Once you see a jump or turbulent times, you need to rebalance, with anticipation that there will be more jumps and that they're not isolated."

"Rebalancing a portfolio is a disciplined way of fighting the worst behavioural instincts which lead you to make major investment mistakes. . . If you force yourself to rebalance, that leads you to buy more of what has dropped in value and sell what has gone up."

The catch is that investors should decide on their investment policy before any crisis, and stick to it, rather than formulate a policy on the fly. "It's very difficult to invent yourself a rebalancing policy in the middle of a crisis. You need to have a policy you are comfortable with in good times and are committed to sticking to. That's the key; you need to (do) it automatically. If you think about it, you give a chance for behavioural factors to come into play."

Another catch is that picking up the "jump hedges" such as gold or US Treasuries when a crisis hits means you are likely to be buying when prices of those assets have already risen. Gold, for instance, yesterday briefly crossed a record US\$1,900 an ounce.

"If you weren't properly hedged at the first jump, you get a chance to re-hedge. Clearly it will be costly to rebalance. The first jump will change the prices of assets, but that's life – there is no free lunch," Prof Yacine says.



'Rebalancing a portfolio is a disciplined way of fighting the worst behavioural instincts which lead you to make major investment mistakes.'

– Prof Yacine