The Point About Stress Tests

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☒ Tuesday, 5 May 2009 | ☒ John A Morrison

... a number of years ago in 'another place', 'another paper' { the past is another country } I tried to articulate in English what a 'Reduced Form' econometric equation; the mathematics of Risk Management (understood since Pythogoras); what such an algebraic formula was actually trying to say. This was in relation to Stress Testing for Basel II Pillar 2 ...

This morning I could be back at school or University, reading this; "City traders are braced for turmoil in UK financial sector stocks this week, when the Federal Reserve releases results of health checks on 19 US banks on Thursday. At least two big banks are believed to have failed the "stress tests"." from here: the Herald[1].

The Supervisory Equations

- 3 regulatory equations published by the Bank for International Settlements (BIS)

$$E(\tilde{x}_{t+1}) = g_1\{X^t, Z^t\}$$

$$P(\tilde{x}_{t+1} \geq \bar{x}) = g_2\{X^t, Z^t\}$$

$$\Omega(\tilde{Y}_{t+1} / \tilde{x}_{t+1} \geq \bar{x}) = f\{X^t, Z^t\}$$

- These are not a 'private language'
- They are instances of simple Factor equations
- The Factor Model is a standard approach to modelling forward views of the relationship of economic variables in applied economic modelling

- Simple explanation of the BIS equations
- Equation 1: The expected value of a macroeconomic variable at some point in the future is a function of both the historic behaviour of that variable (through time in the past) and the set of factors which influenced that variable during the same period in the past.
- Equation 2: If we apply a statistical approach to the first equation, we can predict the probability of our variable being a given value in the future.
- Equation 3: This is a function to describe what happens when an extreme event occurs; where the distress function of the macro economic variable leads to a function describing losses in the financial system.
- Equation 3 is the macro stress test equation

But it's just not the point! The article paints a picture of not only the financial markets but also the risk departments of the banks themselves hanging around behind the bike sheds in short pants waiting to get punished as the government, like the headmaster in the shape of the US Treasury reads out the results of stress tests (like examinations) which we know that two of the pupils have failed. It's ridiculous, the British Bankers Association yesterday warned the UK Treasury Select committee to stop criticising bank management! Until managers in banks do a little growing up and conduct their own stress tests to produce their own internal ratings of risk and their own estimates of economic capital then they are going to be treated globally not only by the authority of the state but also by the body politic

as recalcitrant teenagers.

Why don't they realise (bank management I mean) that they have run out of road. They have been hanging around on the sidelines of the pitch rubbing tearful eyes complaining that statistics was "just too hard" for them (awwwwwh) and they could not do it. They have been doing this for at least 6 or 7 years, Basel II made it crystal clear that they had to participate in a modern supervisory framework which required banks to conduct internal stress testing to quantify economic capital which supervisors would review and agree. They did not do it. Now ([as we have blogged elsewhere on this site](#)[2]) a recent conference in Chicago, sponsored by REvolution Computing and MICROSOFT HPC has published detailed techniques on how to do stress testing in a Free (yes FREE)[Open Source development environmnent called R](#)[3] . Still the banks are looking for a way NOT to do this! And they complain at the same time that the state is doing it for them. After they have created a financial and economic catastrophe the likes of which only my grandfather could remember!

THE WEE GREEN MAN

I give up! Clearly the academics and some of the software industry is taking its social responsibilities seriously but the banks are just tripping out 5-bullet lists of so-called good practice, the academics and the software engineers are stepping up to the plate, they can do no more, it seems to me, if the management incumbent in the banks will just not take its legal and social duties seriously and engage with the rest of society. There is no room for relcacitrant teenagers in senior positions in society anymore, they hold us all hostage to their pecadillos as they dance angels on pinheads avoiding what is required of them. Until bank management get a grip, accept that what they have been asked to do by Basel II is the only way forward and that expertise and technology exists NOW and is available to them and that they must deploy it then disruption to market activity and banking generally by state interference is inevitable with the consequnet constraints upon the liberty of us all and disruption to free market pricing of credit and liquidity.

Rant over!

.... the 'Stress Test' tag on asymptotixhere[4].....

UPDATE 18th July 2012

... a number of years ago in 'another place', '**another paper**[5]' { the past is another country } I tried to articulate in English a 'Reduced Form' econometric equation; the mathematics of Risk Management (understood since Pythogoras); I tried to depict what such an algebraic formula was actually trying to say. This was in relation to Stress Testing for Basel II Pillar 2 ... that is it above there in the little '**Supervisory Equations**' box.

It's really not so hard but it is hard enough & so little understood that it has been open to 'gaming' and manipulation; the algebra has been manipluated or 'rigged' is the new term; arcane debates initiated by naive regulators who couldn't read the maths themselves facillitated sharp risk managers with agendas to maximise or minimise a given variable or simply just massage the overall result; 'gaming or rigging' the supervisory system. Ironically the answer to that sort of thing is only more complex maths, there is no other way; if the bad guys game the simple maths becasue the 'supervised' are too lazy or stupid to get it together then the supervisors will have no choice but to use real maths, in my view the maths of Rational Expectations to model this Game Theory; since that is all they have 2 defeat these miscreants....

Here are some references (asymptotix linx) which point towards the issues I see in 2012 & how they have intensified since 2006;-

the elephant in the data centre[6]

The Sharp End Issue of the Credit Crunch in 2008[7]

THAT ARMAGEDDON SUMMER OF 2010[8]
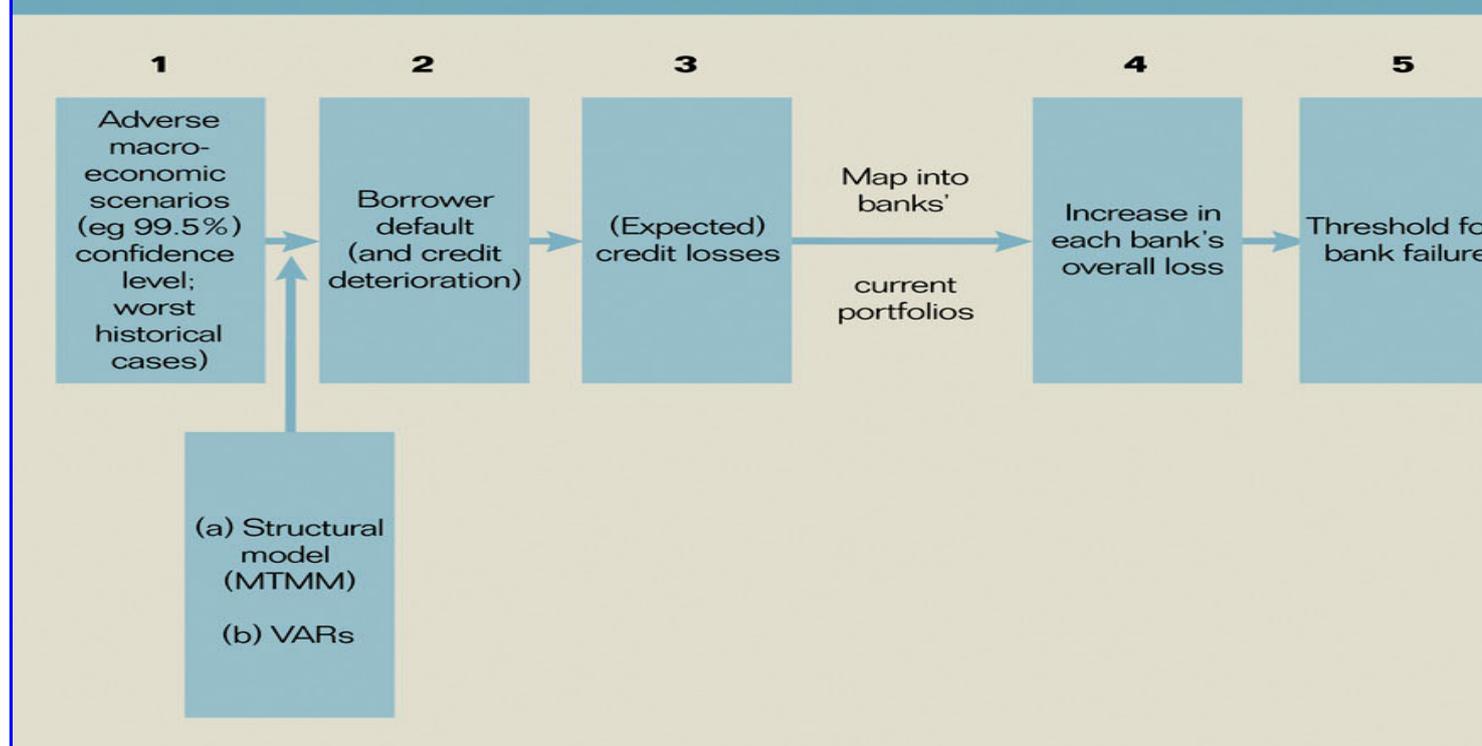
Transparency Analytics and Big Data[9]

The role of organizational politics in Software Engineering[10]

ASYMPTOTIC ORGANISATIONAL LAYOUTS[11]

Financial Predictive Analytics (FPA)[12]

The New Banking Transparency is inevitably DIY[13]

Framework for Macro Stress Testing UK Ba[...]

1	2	3	4	5
Adverse macro-economic scenarios (eg 99.5%) confidence level; worst historical cases)	Borrower default (and credit deterioration)	(Expected) credit losses	Increase in each bank's overall loss	Threshold fo[...] bank failure

Map into banks' current portfolios

(a) Structural model (MTMM)

(b) VARs

⊠ Tags: <u>ameco</u> [15], <u>ECB</u> [16], <u>ECB SDW</u> [17], <u>ECFIN</u> [18], <u>John Angus Morrison</u> [19], <u>macro-financial</u> [20], <u>macroprudential</u> [21], <u>Revolution Analytics</u> [22], <u>stress test</u> [4]

Source URL (retrieved on *2020-02-25 17:01*): <u>http://www.asymptotix.eu/node/425</u>

Links:
[1] http://www.heraldscotland.com/markets-braced-for-results-of-banking-stress-tests-in-us-1.909258
[2] http://www.asymptotix.eu/node/59
[3] http://www.asymptotix.eu/fpa
[4] http://www.asymptotix.eu/category/tags/stress-test
[5] http://www.asymptotix.eu/content/sap-white-paper-solution-architecture-economic-capital-quantitative-analytics-pre-credit-cru
[6] http://www.asymptotix.eu/node/777
[7] http://www.asymptotix.eu/news/liquidity-risk-sharp-end-issue-credit-crunch-2008
[8] http://www.asymptotix.eu/news/armageddon-summer-2010-lessons-ltro2-2012
[9] http://www.asymptotix.eu/news/financial-services-regulation-supervision-future-transparency-analytics-and-big-data
[10] http://www.asymptotix.eu/news/role-organizational-politics-software-engineering-and-software-architecture-design
[11] http://www.asymptotix.eu/news/public-quantitative-analytics-asymptotic-organisational-layouts
[12] http://www.asymptotix.eu/important-references
[13] http://www.asymptotix.eu/news/new-banking-transparency-inevitably-diy-update
[14] http://asymptotix.disqus.com/?url=http%3A%2F%2Fwww.asymptotix.eu%2Fcontent%2Fpoint-about-stress-tests
[15] http://www.asymptotix.eu/category/topics/ameco
[16] http://www.asymptotix.eu/category/tags/ecb
[17] http://www.asymptotix.eu/category/topics/ecb-sdw

[18] http://www.asymptotix.eu/category/topics/ecfin
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[21] http://www.asymptotix.eu/category/topics/macroprudential
[22] http://www.asymptotix.eu/category/tags/revolution-analytics