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Sceptical Thoughts on the Way to Basel

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('Is Basel Faulty?' or 'Faulty Pillars')

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Current Features of the Basel Debate

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Considerable focus on the implementation, on the data quality issue on the validation of the results.

The underlying philosophy has been rarely challenged

Is this proposed approach:

- conceptually desirable, but in practice difficult to implement
- conceptually desirable, and robust to implement
- conceptually dubious?

Where Does Economic Capital Fit In?

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- History of a concept
- The promise of economic capital
- Managing a financial institution on the basis of economic capital – the implications
- Economic capital as an indicator of the 'advanced status' of a bank?

Why Quantitative Market Risk Management Works (Better)

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- The privileged status of market VaR
- The evolution of a standard (EVT, copulae, co-integration, tail dependence, etc)
- The temptation of a transliteration (credit, private equity, investment portfolios, residual value,etc)
- The underlying assumption: **the future must look** (perhaps in a sophisticated way) **like the past**

Why the FLLP Assumption Works Reasonably Well in Market Risk

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- High frequency data
- Timescales of evolution of market dynamics much longer than frequency of data collection ("Is Bretton-Woods relevant?" and, "Do we care?")
- The short memory of regulator-approved internal models

The holding period

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- Holding periods on the trading book are measured in days, not months.Consequences:
  - Plentiful data (daily returns needed)
  - Long-term trend becomes irrelevant (compare with the Equity Premium Puzzle – a bet on the temperature)

Producing Conditional Estimates

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All statistical methods should give estimates based on the *current* state of the world.

Often this creates no problem in market risk: the frequency of data collection is so high that we can have many data points from the current regime, whichever it might be.

I need not characterize the current state of the world – no need to collect data from similar past 'history patches'.

Producing Conditional Estimates

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Difficulties in conditioning information

- Need of a non-statistical model for determining 'relevant' information – a 'better match' is not necessarily more informative
  - Relevance for market risk: October 1998 and $/Y move
- Regime switches
  - Recognizing which regime I am in is not trivial: every new piece of news at the same time changes the probability of regime A or B. Given A or B, it updates the estimate of the relevant quantity in regime A or B

From market to credit quantitative risk management: a simple translation?

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Two different sets of problem:

- Capital calculation is based on stand-alone quantities (PD, EaD, LGD) – no correlation effects. **Question**: Can these quantities be estimated in a robust way? Is it useful to do so?
- Economic Capital borrows heavily (conceptually) from the VaR approach because of the co-dependence. **Question**: Can the co-dependence be reliably estimated? Does it make sense to do so?

PD, EaD, LGD etc

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- Regulators require several years' worth of data
- Frequency with which data are collected is however much lower. Two consequences:
  - Few data points
  - The data collected today often applies to different states of the world – 'waiting' is not necessarily a solution: does the future still look like such a distant past (securitization, CDOs, disintermediation, access to capital markets, etc)
  - The business cycle

Problems with the Business Cycle

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- Even if a business cycle could be easily identified, this would still reduce dramatically the availability of data points
- And identifying a business cycle can be very difficult…

The statistical impasse:

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- In the credit world, the estimates required by the regulators, to be meaningful, should reflect the *current* state of the world;
- The vector of variables that describe this state of world is relatively high-dimensional (we need information about inflation, GDP growth, unemployment, state of the housing market, etc. in order to characterize the current state);
- The greater the number of financial variables required to identify the current state, the fewer the statistically relevant occurrences in any fixed data set, and the greater the need to extend our empirical information back in time;
- When we have to rely on such ancient information, it becomes very doubtful if it is at all relevant to today's world.

Dealing with Rare Events

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- Features of high-quality, low PD portfolios (large corporate portfolio)
- Large (relative) fluctuations in experienced defaults in any given year
- Informational asymmetries

The Dangers of Economic Capital

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All the problems above, plus new ones:

- The dangers of optimization (Jorion)
- Science-fiction percentiles (99.75, 99.9%)
- Behavioural response to very-low probability events
- Difficulty in estimating tail dependence – the lesson from CDOs and Rating Agencies
- Is this really how a bank runs its business?

Managing Risk and Managing Uncertainty

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- A precise definition of the two
- Does it matter?
  - 0.6/0.4 head-or-tail lottery played once
  - 0.6/0.4 head-or-tail lottery played 1,000 times (NB: probability of loss with 1,000 draws ~1 * 10E-10)
  - What if the probability of tail had been estimated with an error of +/- 0.15? (NB: if p(T)=0.55 the probability of loss is 75%!)
- Implications for Economic Capital (and Asset Allocation, Portfolio Management, etc): robustness of strategy to uncertainty in the model parameters

An Alternative

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- Creating scenarios for strategic decision-making
- Integrating different parts of a bank
- The uncertainty principle of risk management
- A role for statistical information