

FINANCIAL RISKS MANAGEMENT

DECREASING RISKS DURING
XXTH CENTURY SECOND HALF
INCREASING RISK LATER ON

XXI TH CENTURY INCREASING RISKS

- Geopolitical risks (Middle east, Asia..) on rates
- Speculation linked monetary and market risks
- Leverage linked financial risks and new rate markets

- Prudential methodology has to improve to prevent very frequent crisis

QUALITATIVE AND QUANTITATIVE METHODOLOGIES

- These methodologies are, usually, complementary for
 - Asset management
 - Risk controls on rate portfolios
 - All prudential controls
- Specially with an increasing rate risk environment

Chap 1 Cautious behavioural investing

- Statistical behavioural study of U.S. institutional managers by
 - Leibovitz
 - Pr Ross
- qualitative and quantitative approach to different cautious management styles are complementary

BEWARE

- Beware herd following on new rate markets
- Beware growing bubbles
- Beware of brokers marketing !
- Beware of Wall street strategists close following
- Beware bubble bursting on credit

Chapter 2: SAFETY FIRST PHILOSOPHY

- Cautious asset management philosophy in an increasing risks period
- with cautious rate managers
- with cautious institutions
- Beware of excessive cautiousness
- Beware of media prone Wall street strategists

Consistent doubts on forecasts

- Doubts on financial sectors published data about loans, bad debts and rate products outstandings
- Doubts on financial sectors published forecasts
- Beware of extrapolations
- Doubts on rates and currencies forecasts of media conscious Wall street strategists
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Chapter 3 PROCESS AND CAUTION

- When rates scenario forecast is wrong:
- Top down process is prone to bad results
- Bottom up process results on bonds and credits are resilient
- Benchmarking process results are very much dependent to tracking error constraint

TOP DOWN BOND MANAGEMENT RISKS

- Bond management top down process is based on rate forecasting subject to mistakes on macroeconomic forecasts.
- Models are helpful to study effects of forecasted moves and alternatives scenarios
- Vasicek model is helpful as the simplest model that is a good support for reasoning on mean reversing scenarios

BOTTOM UP BOND MANAGEMENT RISKS

- Quantitative liquidity screening and scoring
- Fundamental research on liquidity and rating
- Spread modelling
- Valuation screening by models that are precise and complicated is used in many bottom up process

BENCHMARKED BOND MANAGEMENT RISKS

- Risk budgets based on Bayesian rate scenarios approach
- Tracking error based on Bayesian rate scenarios approach
- Value at risk based on Bayesian rate scenarios approach and maximum tracking error allowed

Chapter 4

PRUDENTIAL METHODOLOGY

- What kind of risk budgets for what kind of score?
- Bond liquidity scoring
- Debtor rating stability scoring
- Valuation cheap/dear indicator scoring
- Global score and global risk based on Bayesian scenarios approach

Increasing risks to be controlled

- Management risks including derivative products and new products
- Globalisation induced risks
- Crisis induced risks models
- Crisis induced non gaussian distributions

Risk measurements used for portfolio control

- Variance includes noise effect
- Value at risk does not include noise effect but does not meet Artzner conditions (sub additivity)
- Conditional value at risk meet Artzner conditions
- Tail value at risk
- are studied in the second book : « quantitative methods for financial risks management »

STRESS TESTING

- Micro economic stress tests on yield curve
- Macro economic stress tests on yield curve
- on one parameter (rate or inflation rate)
- on two parameters linked by some correlation
- effects on risk measures (oil price and wages index, for exemple)

BAYESIAN APPROACH

- Bayesian approach to include crisis risks in VaR, CVaR, TVaR
- Effects on rates of :
- Geopolitical crisis scenario
- Climatic crisis scenario
- Monetary crisis scenario
- Financial crisis scenario
- Systematic banking crisis
- Bubble bursting

Worst case scenarios

- Crisis added to inflation scenario
- Crisis added to stagflation scenario
- Crisis added to deflation scenario
- Worst case geopolitical or climatic scenarios and subsequent economic financial crisis
- Cumulative crisis possibilities are numerous

Effect of crisis on diversification

- Simple recession
- Simple crisis
- Cumulative crisis
- Worst case scenarios
- Effect on total risk of a bond portfolio

CHAPTER 7

TAKING CRISIS FROM HISTORY

- Best commentated crisis classification
- Kindleberger
- Reinhart and Rogoff
- Kaufman
- Rogoff: « this time is different »
- Average long term rate scenario for a category of crisis

PROCESS TRANSFORM FOR HISTORICAL CRISIS SCENARIO

- To add some risk process
- To multiply by homothetic process
- To increase some parameters of Wilkie model
- To increase some parameters of Alhgrin model

- A choice must be made

CLIMATIC CRISIS

- No historical record
- Climatic crisis: the beginning of a crisis process
- Climatic crisis can add to a crisis process
- Main variable is inflation
- Agricultural commodities or wages would be best inflation explanatory variates in this environment

DETERMINISTIC SCENARIOS

- For geopolitical crisis (middle east, asia)
- For monetary crisis (end of fixed parities in Asia, in Europ)
- For big social crisis
- For big political crisis
- They cannot be covered by usual economic scenarios generators

WITH ONE VARIATE ADDED ?

- Twenty deterministic scenarios devised judgementally by a multi cultural group
- With an added variate: for example,
- Medium term rate
- Oilprice variate for geopolitical crisis scenarios
- Wages index variate for a sociopolitical crisis scenario
- Inflation model linked to oilprice and wages index variates is it better?

TWO VARIATES BETTER THAN ONE?

- For monetary crisis two variates are better
- For social and political crisis wages index is the main variate later inflation could be the main variable
- For geopolitical crisis oil price is the prime mover, later, rate of growth could be the main variable
- With these four linked variates, it is not far from an Economic Scenarios Generator

BOND PORTFOLIO RISK CONTROLS AND CONVEXITY MEASURES

- Based on twenty scenarios with one variate
- Which periodical risk controls on back testing and forward testing comparisons are useful ?
- Bond portfolio measures of dissymmetry :
upside less downside risk
- Dissymmetry of large risks and protective bond convexity management

SCENARIO APPROACH TO DIVERSIFICATION

- The historical crisis scenarios used to build a bond class correlation matrix
- The historical crisis scenarios used to build a currency class correlation matrix
- For increasing inflation period the historical scenarios based bond class correlation matrix is, also, useful
- Qualitative use of these matrix is easier than quantitative optimisation!

BOND CORE SATELLITE APPROACH

- Active cyclical satellite management
- Satellite diversification including indexed bonds satellite
- Satellite diversification including convertible bonds satellite
- Core medium term management and bond portfolio convexity
- Global diversification in crisis

BAYESIAN APPROACH TO GLOBAL RISKS

- Global risk measures using scenarios
- Global risk dissymmetry measures: skewness, value at risk less symmetric measure
higher partial moment less lower partial moment
- Optimisation on dissymmetry workable by trials and errors ?
- Global risk minimization using scenarios workable by trials and errors ?

CONCLUSION

- Crisis anticipation is very uncertain at best
- Dissymmetry of global risk is a cheap protection in case of unforeseen crisis
- To generate portfolios with a lot of cheap risk dissymmetry and great risk dissymmetry, the core satellite previously described is a good process
- To follow this kind of portfolio total risk, global value at risk, risk dissymmetry and great risk dissymmetry, all mentioned measures are useful

MORE COMPARISONS TO BE DONE

- How costly would it be to obtain the same protection by derivative? It depends on anticipation :
- Early anticipation by convexity optimisation is cheap and very crisis resilient
- Core satellite above mentioned diversification is rather cheap and resilient
- To buy late an hedge, to buy late an option and other derivative can be very expensive