Economic Capital as an Optimal Hedge against Bank Distress: Case of the Zimbabwean Banking Sector

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Outline

Introduction

Banks' distress

Credit risk management

Basel Committee on Banking Supervision (1974):

Basel I (1988) - minimum capital requirements;
Basel II (1997) - quantitative models,
Basel III (2013) - strengthen the global capital standard.

Credit risk modelling according to the Basel accord;

CAMELS Ratings (1-Outperforming, ... , 5-Failure).

Financial crisis-led bank failures.

Use of predictive analytics in internal risk modelling,

Creation of early warning systems to curb bank failure.

Value at risk (VaR)

Figure: Pro t and Loss distribution: Source – Yamai and Yoshiba (2002a)

Methods - Estimating Economic Capital using VaR Cont'd.

Conditional Value at Risk (VAR)

$$CVaR_p(p) = \frac{\int_{F^{-1}(1-p)}^{R_1} l \; f(l)dl}{p}:$$

Economic Capital (EC) as $EC = UL - EL$;
where

$$UL = q^N; \qquad (1)$$

q^N = quantile of $N(0, 1)$ distribution and $EL = CVaR$:

Returns on Risk Adjusted Capital(RAROC)

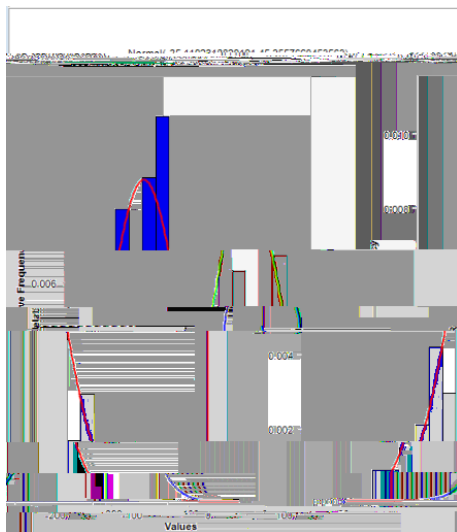$$RORAC = \frac{Net\ Income}{Economic\ Capital}$$

Figure: Loss Distribution Fit: Source – Author

Economic Capital Estimation

	99%	99.90%
EL	-23.322	-25.119
UL	2.12628	2.82447
EC	25.44828	27.94347

Table: EC Estimates

Conclusions

RORAC measures inconsistent with Z-scores for some banks - same risk level (EC) used for all banks.

The same capital requirements (regulatory or economic) cannot be imposed to all banks.

If EC is controlled then probability of default can also be controlled and hence the rating of a bank.

Future work should aim at unifying methodological tools from diverse disciplines to develop models that optimally allocate the EC and automated nancial systems using these models to ease the computation of EC for end users.

"The future of banking is not just about technology, it's about combining it with human intelligence and expertise to offer clients a better experience" - Brian Moynihan, CEO of Bank of America"

THANK YOU!!!!!!!!!!