

DIRECTED RISK RESEARCH PROPOSAL

Risk Theme	Interest rate risk
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Client Info: (only applicable if proposal is in response to a client problem statement)

PS Title					
Client Name		Designation			
E-mail		Tel (w)		Mobile	

Research Team:

Team Leader	Alex Backwell	Designation	PhD student		
E-mail	Backwell.alex@gmail.com	Tel (w)	0788006435	Mobile	0788006435
Team member		Designation			
E-mail		Tel (w)		Mobile	
Team member		Designation			
E-mail		Tel (w)		Mobile	
Team member		Designation			
E-mail		Tel (w)		Mobile	

University	UCT	Classification	
Theme No		Type	Technology-Push Research
Project No	RP15002	Date	June 2015

PROJECT TITLE: Hedging South African Interest Rate derivatives

PROJECT GOAL:

A bank has many choices in hedging their interest rate products – the goal of this project is to, by careful empirical analysis, recommend some specific approaches.

PROJECT SCOPE

Because sophisticated interest rate modelling is technically difficult, banks tend to manage the interest rate risk of their products using relatively simple models. While the value placed on expediency and tractability is understandable, certain facets of interest rate theory are not captured by the models in common use. The literature has not settled on whether the interest rate market is *complete* (a technical concept arising in financial modelling), nor on the best method for parameterizing interest rate models. Historical hedging analysis is computationally demanding but often feasible if adequate care is taken in executing the necessary computation. The directness of this approach makes it promising to shed light on these and other extremely consequential issues for financial institutions.

PROJECT OBJECTIVES

The project involves writing a great deal of code that imports and cleans South African financial data, and then runs and records the key statistics of realistically implemented hedging algorithms. A number of issues need to be considered in this implementation, primarily ensuring computational feasibility but also rigor in a number of senses. Once the models are well-specified and appropriately calibrated (in a dynamic sense, throughout the testing period), careful comparison and interpretation is required to answer the questions of interest in a satisfactory and scientific way.

RESEARCH OUTPUTS / DELIVERABLES

PUBLICATIONS:	Name(s) / Title(s)
Articles	2
STUDENTS:	Name(s) of Student(s)
Ph.D	Alex Backwell
OTHER:	

APPROACH TO BE FOLLOWED

- 1) As the method is very broad, a great deal of literature requires consultation (there are approximately 30 academic papers that bear directly on the research)
- 2) Construct the appropriate models and hedging approaches
- 3) Implement this computation in an efficient manner on real-world financial data
- 4) Conduct final analysis, exposition and robustness checks

STRATEGIC VALUE TO DIRECTED RISK RESEARCH

The outputs of this research have value for the theorist (the completeness question in particular bears on the fundamental relationship between primary and derivative market risk factors) and, primarily, the practitioner (the results provide direct recommendations on how best to manage interest rate risk – a natural and inevitable risk management problem in any sophisticated economy).