WORLDQUANT UNIVERSITY

Case Studies in Risk Management: Group Work Project

MSc Financial Engineering

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1. Overview

In every course of the WQU Master's in Financial Engineering, students are required to complete a group work project. Groups are geographically banded and consist of 3-5 students who are able to communicate via a forum. All groups are given the same topic for their projects – a topic designed to assess not only their understanding of the course content, but also their skills of analysis and application.

Your research should favor authoritative, scholarly sources, and you must reference all sources where relevant. Not only are you required to cite accurate and relevant facts, but you should also present your own clear logic when linking and contextualizing these facts.

All submission dates are published on the learning platform. If you have any questions, remember to post them on the "Ask your Lecturer" forum. The forum's most upvoted questions will be addressed in a live lecture hosted on the platform.

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2. Context

This assignment is centred around students' abilities to integrate skills and synthesize knowledge. The assignment will require students to reflect on the content and theory covered in the course as well as previous courses when considering the case study.

This course has analyzed a variety of crises around the world, from the Great Depression to the Crisis of 1987 and the Asian Crisis. In this assignment, the South African economy from 1994 to 2009 will used as a case study. Students will be required to analyze the effects of policy and global politics on the South African economy from the period 1994 to 2009.

South African history provides students with the opportunity to investigate the effects of socio-political and economic hardship during apartheid (1948-1994) and the series of economic and financial policies implemented by the democratic governments under Nelson Mandela and Thabo Mbeki which aimed to reform and liberalize the South African economy. Policies like the **Reconstruction and Development Programme** (RDP) and **Growth, Employment and Redistribution** (GEAR) aimed to rectify the decline of economic and financial indicators and bolster foreign investment and capital growth.

In this period, markets saw a clear structural shift in the factors underpinning equity markets, as industrials replaced the declining mining sector. Divestment by the **Johannesburg Stock Exchange** (JSE) listed companies in the South African economy as the "post-1994" privatization of state-owned companies and the popularity of dual listings radically altered the composition of the exchange. In a paper by Page (1986), mining and non-mining sectors were shown on the JSE to be either negatively or uncorrelated and strong predictors of expected returns, rendering Market Beta either insignificant or underestimated across sectors of the exchange. This, along with the under-development of options markets, transaction costs, market concentration and liquidity, presented many challenges for investors in managing and diversifying their risk (Bradfield & Kgomari, 2004; Kruger & Van Rensburg, 2008).

3. Outline

In each of the three submissions for this group work project, students will be expected to use the tools for analysis and context provided throughout the modules to produce a response to the following:

- **Submission 1:** students are required to present a hypothesis on the key drivers in South African economic change and development over the period 1990-2009, using a macroeconomic and historical assessment of the situation.

- **Submission 2:** students must use both statistical analysis and macroeconomic modeling to identify a single key primary risk factor or economic variable and its effect on both the economy and methods in portfolio risk management. This will help students to discuss the validity of their analysis in Submission 1.

- **Submission 3:** students must write a proposal to foreign investors, analyzing key differences and challenges faced in their investment decisions. Students will be required to integrate both an economic and political analysis with some kind of forecast on markets using scenario planning, identifying the effects of likely fiscal and monetary policy responses and their effect on the investment environment. This would date from 2009 and would include responses to the Global Financial Crisis of 2007-2009.

3.1 Submission 1: Historical Analysis

To assess the policy proposals, legislation, and government gazettes, the following websites can be used:

- https://opengazettes.org.za/
- https://www.parliament.gov.za/
- http://www.saflii.org/

Pages like South African History Online will help to examine periods like apartheid and the Mandela (1994-1999) and Mbeki (1999-2008) presidencies.

To complete this part of the project, students will need to write a structured, concise paper that fully addresses the themes of the submission and explores multiple levels of social, economic, political, and historical contexts. Groups are required to have clear introductions and conclusions, and to reference their work sufficiently. Referencing guides for the Harvard or Chicago system are available online. The paper should be no less than 2,000 words and no more than 3,000 words.

3.2 Submission 2: Data-modeling

This section will require students to extend on the traditional data-modeling workflow used in both research and industry. Using their analysis of the political and economic environment in Submission 1, students will have to both source and motivate their data-selection and modeling decisions given these insights.

Students will be required to provide and analyze graphs, conduct exploratory analysis, and discuss the validity of the statistical and macroeconomic models they have chosen to apply. Similar to the discussion of interest rates and commodity prices as key drivers in the Asian Crisis and the Crash of '87, students will be required to identify and analyze the effects of a single primary risk factor or macroeconomic variable and its effect on both the economy and traditional approaches to portfolio risk management.

This primary risk factor or macroeconomic variable may include interest rates, market concentration, monetary supply or commodities prices. This course has made extensive use of the World Bank Data Portal, which should provide a wide assortment of data-points for students to motivate for. Students may also make use of the South African Reserve Bank website for sourcing data or other online services.

3.3 Submission 3: Synthesis and Recommendations

The final submission requires a written and graphic response to the growing problems in the South African economy around 2009. Students must explore public and monetary policy and must justify policy change by using their knowledge of historical contexts and their knowledge of risk factors and risk management.

Students are required to investigate monetary policy in South Africa and the institutional responses they expect from the South African Reserve Bank to changes in the South African economy. Students must discuss the challenges to traditional risk management strategies and financial models, given the concentration, liquidity, and systematic risk factors in South Africa and its effect of investor decisions.

3.4 References

Bradfield, D. and Kgomari, W. (2004). *Concentration: Should we be mindful of it?* Unpublished research paper, Cadiz.

Kruger, R. and Van Rensburg, P. (2008). "Evaluating and constructing equity benchmarks in the South African portfolio management context". *Investment Analyst Journal* 67(37):5–17. DOI: 10.1080/10293523.2008.11082495.

Page, M.J. (1986). "Empirical testing of the Arbitrage Pricing Theory using data from the Johannesburg Stock Exchange". *South African Journal of Business Management* 17(1):38–42.