



FACULTY/COLLEGE	College of Business and Economics
SCHOOL	School of Accounting
DEPARTMENT	Accountancy
CAMPUS(ES)	APK
MODULE NAME	Empirical Finance
MODULE CODE	EMF 9X04
SEMESTER	First
ASSESSMENT OPPORTUNITY, MONTH AND YEAR	Final Summative Assessment Opportunity June 2019

ASSESSMENT DATE	4 June 2019	SESSION	08:30 – 13:30
ASSESSOR(S)	Prof I Botha		
MODERATOR(S)	Prof G Els (Internal)		
	Prof A Saayman (External -NWU)		
DURATION	5 hours (300 min)	TOTAL MARKS	100

NUMBER OF PAGES OF QUESTION PAPER (Including cover page)	6
---	---

INFORMATION/INSTRUCTIONS:

- This is an open-book assessment opportunity.
- Students have to answer **TWO** questions. **Question 1** is compulsory for all students. Students then have a choice between **Question 2** and **Question 3**.
- An Excel file is provided with the data.
- Silent, non-programmable calculators may be used.
- **NB!** Only information on the MS Word document will be marked – rough work and answers anywhere else will not be marked.
- **HAND IN EVERYTHING!**
- Save your EViews file and MS Word file. Use your student number and initials and surname as a file name, e.g. 21634390_JDoe
- Email your EViews and MS Word file to ilseb@uj.ac.za.

QUESTION 1 (THIS QUESTION IS COMPULSORY)**[60 marks]**

Evidence suggests that financial development can reduce overall energy consumption by achieving energy efficiency. This will stimulate economic growth which have a knock-on effect on firms and consumers. Consider this nexus and determine the causal relationship between energy consumption, financial development and economic growth in South Africa.

BACKGROUND

Energy forms the lifeblood of the world economy as it is an essential input to producing almost all of the goods and services of the modern global economy. This sector's activities relate to and strengthen the rest of the economy as energy forms an input for almost all production processes of goods and services. Supply interruptions of sources of energy are known to have a great impact on the economy. In addition, stable and lower energy prices are known to help stimulate the growth rate of any economy. This is because lower energy prices result in increased disposable income for consumers and lowering costs for firms. The resulting improved profit margins for firms and higher disposable income for consumers provide incentives for accelerated rates of growth.

Over the last three decades, the papers focusing on the nexus between energy consumption and economic growth commonly found a significant relationship. It is therefore rational to anticipate a significant relationship between financial development and energy consumption as well. Evidence suggests that financial development can reduce overall energy consumption by achieving energy efficiency. The question of whether energy consumption and/or financial development sway the rate of economic growth of a country or a region has shaped an important query in the literature for some time. This interest is driven primarily from the important policy implications that can be obtained from such studies in relation to the desired action(s) that can accelerate the rate of economic growth and prosperity of a country. The theoretical relationship between the variables in question is unclear, and it could only be resolved through empirical analysis.

REQUIRED:

In light of the energy crisis in South Africa and the well-developed financial sector, write an **ESSAY** on the causal relationship between energy consumption, financial development and economic growth. Empirically explore the causal link between these variables and provide evidence of the existence of a long-run and short-run relationship between these variables. Comment on the possible implications of your findings on profit margins of firms and disposable income of consumers.

Consider the following in your answer:

- Use the articles provided to form the theoretical framework for your essay.
- Estimate the appropriate model(s) to determine the long and short run dynamics between the variables.
- Conclude your findings on the causal relationship in relation to the findings in literature.

ADDITIONAL RESOURCES PROVIDED:

- An excel file with a data base.
- Four articles that will guide you *inter alia* on the structure, background, choice of variables and models to write the essay and answer the question.
- The articles provided are listed below:
 - Abosedra, S., Shahbaz, M. & Sbia, R. (2014). The Links between Energy Consumption, Financial Development, and Economic Growth in Lebanon: Evidence from Cointegration with Unknown Structural Breaks. *Journal of Energy*, 2015.
 - Shahbaz, M. & Lean, H.H. (2012). Does financial development increase energy consumption? The role of industrialization and urbanization in Tunisia. *Energy Policy*, 40.
 - Islam, F., Shahbaz, M. & Alam, M. (2011). Financial development and energy consumption nexus in Malaysia: A multivariate time series analysis, MPRA.

Answer any **ONE** of the following two questions.

QUESTION 2**[40 marks]**

Determine whether asymmetries are present in the South African market returns and report on the forecast ability of returns and the implications it has for shareholder risk.

BACKGROUND

One of the primary restrictions of GARCH models is that they enforce a symmetric response of volatility to positive and negative shocks. It has been argued that a negative shock to financial time series is likely to cause volatility to rise by more than a positive shock of the same magnitude. In the case of equity returns, such asymmetries are typically attributed to leverage effects, whereby a fall in the value of a firm's share price causes the firm's debt to equity ratio to rise. This lead shareholders, who bear the residual risk of the firm, to perceive their future cash flow stream as being relatively more risky.

REQUIRED

Write an **ESSAY** on the asymmetry in South African market returns and the forecast ability thereof. Consider the FTSE/JSE returns and fit a GARCH (1,1) as a benchmark model.

- **Model** the mean equation with only the intercept term.
- **Compare** the benchmark model to two asymmetric GARCH models.
- **Present** the results of the three models and evaluate statistically.
- **Critically evaluate** whether asymmetries such as leverage or news effects do exist in these returns.
- After the critical evaluation, evaluate *ex post* forecasts.
 - Evaluate the **in sample** forecast accuracy of these models.
 - Hold out data for the last 10 periods.
 - Evaluate the accuracy of your *ex post* forecasts for these three models in table format. (**Hint:** Forecast the return data for the hold out period with the three models).
 - Conclude on the forecast ability of volatility returns in the SA market.

ADDITIONAL RESOURCES PROVIDED

- An excel file with the data.

- An article that will guide you *inter alia* on the structure, models and findings to answer the question on the existence of asymmetry in the SA market returns and the forecast ability of returns in this market.
- The article provided is listed below:
 - Lin, Z (2018). Modelling and forecasting the stock market volatility of SSE Composite Index using GARCH model, *Future Generation Computer Systems*, 79, pp. 960–972.

QUESTION 3**[40 marks]**

Unemployment remains an economic challenge among emerging markets, particularly SA and Brazil in the case of BRICS. In order to be able to effectively drive the job creation benefits associated with private equity (PE) investments, it is important to answer the question:

What are the drivers/determinants of PE investments among the BRICS countries?

BACKGROUND

Private equity (PE) investments inherently drive business growth among unlisted business entities and in the process bolster the creation of jobs through their unique features that include innovative financing mechanisms and strategic business management input.

The element of job creation associated with PE investments in potential small unlisted businesses can be closely aligned to the South African government's National Development Plan which seeks to promote job creation through small, medium and micro enterprises.

Unemployment arises as a result of unique reasons in different countries. The implications of unemployment have far-reaching economic effects, including low economic production, low consumer consumption and lacklustre economic growth, amongst others. However, it is evident that PE investment enables and bolsters job creation through its features of strategic business support and financing that facilitate business growth as well as job creation.

It is thus important to understand the key idiosyncratic drivers of PE investment among emerging markets so as to enable policymakers or the governments of emerging markets to develop innovative policies that promote and encourage PE investments. The encouragement of PE investments will then in turn positively drive job creation through access to finance for developing and growing unlisted businesses, as well as strategic business support from experienced business practitioners (or investors).

REQUIRED:

Write an **ESSAY** on the determinants of PE investments in the BRICS countries.

Consider the following in your answer:

- Use the articles provided to form the theoretical framework for your essay.
- Develop your own model with the data provided.
- Conclude your findings on the question posed.

ADDITIONAL RESOURCES PROVIDED:

- An excel file with the data.
- The following academic articles will guide you *inter alia* on the structure, background, choice of variables and models to write the essay and answer the question.
 - Oberli, A. (2014). Private Equity in Emerging Markets: Drivers in Asia Compared with Developed Countries. *The Journal of Private Equity*, 17(3), pp. 45-61.
 - Precup, M. (2015). The Future of Private Equity in Europe – The Determinants across Countries. *Romanian Journal of European Affairs*, 15(4), pp. 72-92.

---oOo---