The Profitability of Moving Average Trend Lines in the Top40

Project Proposal

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(GNGASH001) Ashley Gengiah

**GNGASH001@myuct.ac.za**

**Abstract**: (150 Words)

The Paper will review the profitability of technical analysis in the form of moving average trend lines in the Top40 market capitalization in the JSE. Moving averages are considered relatively insufficient in predictive ability. We will look at the data from the 2005-2016 and observe different moving average strategies (methodology) used in calculating predictive ability and profitability in the Top40 companies. (motive, method, analysis and conclusions). The Abstract will be completed when the results are finalized and conclusions can be drawn.

Keywords: technical analysis, Top40, moving average, predictive ability, profitability

**Breaking down the topic.**

(Questions that need to be answered and additional content needed in the project)

Main Topic: Profitability of moving average trend lines in the Top40

1. What do we mean by profitability?

Is it worthwhile to actively invest in specific moving average trading techniques after considering transaction costs? Once we have analyzed the data and come up with a feasible model, we will be able to obtain conclusion.

1. Technical analysis relating to the weak efficient market hypothesis (literature review)

The literature refers to weak form EMH as the prices reflecting all relevant information. This implies that markets are efficient and arbitrage should not be attainable through technical analysis. (Fama,1991)

1. Moving averages and how they are calculated. (literature review)

The study will focus mainly on simple moving averages and exponential moving averages.

1. How moving averages are used in determining buy or sell signals (literature review)

Many methods will be discussed in the literature review and a final method will be chosen after reviewing many different methods.

1. Clarifying the Top40 companies and whether or not an index needs to be used?

Top40 companies based on their market capitalization.

1. Where is the company’s data taken from? (Bloomberg terminal)
2. How to incorporate transaction costs in our model?

The model itself will have to include a specific amount for transaction costs.(Will be finalized once the data is analyzed)

1. What time frame is used in calculating the trend lines. (2005-2016)

Have to consider the financial crisis.

1. Determining a model to calculate the profitability of moving averages trend lines. (methodology)

**Introduction:**

(Trying to lay a foundation but will come back once the literature review is finished)

Technical analysis involves using the volume and latest stock prices to determine models and technical trading indicators for a given set of data. Moving averages is an example of technical analysis. Moving averages are the most widely known and used by practitioners and financial traders in the markets. (Sobreiro, V.A,. et al, 2016)

In current literature technical analysis is considered to have a low predictive ability and provide relatively low returns. (will be elaborated more after finalizing literature review)

Moving averages provide a simple method to determining when stocks should be bought or sold. The main strategy of moving averages is to determine a trend in share prices. This trend is then plotted in the form of a moving average trend line. The short/sell signal occurs when the price is below the moving average and long/buy signal occurs when the price is above the moving average. We will write a model to calculate when these signals occur through-out our time frame and if it provides profitable returns.

There are other techniques in using moving averages which manipulate simple and exponential moving averages to determine more information about the market.

**Literature Review**

My key literature is mainly based on the journal submitted by Sobreiro, V.A et al. The journal focuses on moving averages trading rules in BRICS and emerging stock markets. The paper starts by explaining technical analysis in terms of the efficient market hypothesis. (Sobreiro, V.A,. et al, 2016) Prices follow the theory of random walk and prices fully reflect all available information. (Fama, 1991). If all information is available in the prices, then additional information such as moving averages shouldn’t provide any financial profitability. Technical analysis is justified in Brock, Lakonishok and Lebaron paper by providing evidence of excess returns generated from moving average strategies.

The 2 main Moving Averages discussed are simple moving average and exponential moving average. Simple moving averages is the sum of latest stock prices divided by the number of stock prices:

(Simple moving average calculation)

Where:

Pt is the closing price of the stock in t period.

n is the relative position of the current period observed; and

k is the number of periods included un the SMA calculation;

Simple averages are the easiest to interpret however exponential moving averages provide stronger predictive ability in market prices.

(Exponential moving average calculation)

where:

is the closing price of the stock in the previous period.

n is the relative position of the current period observed; and

k is the number of periods included un the EMA calculation;

is the EMA in the previous period.

After providing suitable calculations for 2 moving averages, 2 more moving averages were calculated each having different lengths. The one moving averages had more periods while the other moving average had less periods. The moving average with the shorter periods is known as the short MA while the moving average with the longer periods is known as the long MA. The strategy implemented required buying if the short MA crosses the long MA from below and sell if the opposite occurred. This was performed on 4021 stocks.

The results were not successful for South Africa compared to the other BRIC countries.

The second piece of literature is based on the journal by Abeyratna Gunasekarage and David M.Power. The paper refers to profitability of moving averages in the South Asian stock markets. The paper discusses the implications of the efficient market hypothesis which explains that profits should not be possible using technical analysis.

Moving average techniques require buy and sell signals after comparing short and long run simple or exponential moving averages. (Gunasekarage, A, Power, D.M, 2001). The paper discusses 2 moving average techniques which are: Variable length moving average(VLMA) and fixed length moving average(FLMA). VLMA signals to buy when short MA is above the long MA by an amount larger than the band.( Brock et al, 1992). FLMA focuses on crossing over of long and short MA’s. A sell signal occurs when the short MA crosses the long MA from above. The Data from 4 indices are analyzed using the 2 moving average techniques: VLMA & FLMA.

The initial hypothesis of no profits is disproved at the end of the paper as sufficient evidence is provided to show that variable length moving averages provide excess returns compared to the average market.

The last reviewed paper is written by Cheol-Ho Park and Scott H.Irwin. It’s called what do we know about the profitability of technical analysis.

The paper defines the Efficient Market Hypothesis (EMH) and discusses the lack of predictive ability using technical analysis. The paper splits technical analysis into old and modern studies. Old studies left out a lot of essential requirements such as riskiness of trading and transaction costs. In the modern studies transaction costs are considered.

The results show that after taking into account transaction costs there was no profits which is consistent with the weak form of the EMH.

(Additional literature will be consulted for the literature review)

**Methodology**: (incorporated into the literature review)

I intend to answer my research question by analysing each of the Top40 companies using specific moving average techniques mentioned in the literature review. The analysis of each company will allow for comparisons and identifying companies that provide significant profits. Similar techniques that are used in past studies will be used in this project.

The most common and easiest method would be calculating simple and exponential moving averages for both long and short periods. Using these long and short SMA’s and EMA’S to Calculate when buy and sell signals occur.

An important feature that needs to be included is transaction costs. These will be handled in the actual pricing of stocks in our model. The inclusion of transaction costs will provide an accurate depiction of the profitability of moving average trend lines in the Top40

(Other methods will be discussed and looked at in further detail once the literature review is completed)

**Importance of this research**

The research of this paper is specifically important to investors in the top40 market. The research will hopefully provide information that will either justify or disprove the predictive ability and profitability of moving average while considering transactional costs and other factors specific to moving averages.

**Limitations of the Study**

No recent studies done on moving average trend lines in the Top40. Difficult to compare results to other studies.

Considering transaction costs in an appropriate manner. Adding transaction costs to all the prices of stocks or only adding it once the stock has indicated some sort of buy or sell signal.

(This will be finished once the literature review is completed.)

**Final Plan**

(Layout)

Title, name and abstract

Introduction

Background

Important literature on the topic without writing out the whole literature review.

Methodology and data

(What exact procedure was used in determining the profitability of the weighted moving averages. What precise models were used and how was the efficient market hypothesis taken into account. Transaction costs were included in analyzing the data.)

Main body

Refer to the analyzed data and explain what occurred.

Results

Discussion and conclusions (not summary and conclusions)

References

Plagiarism declaration

Appendices

**Timeline**

9th May: Proposal Hand in date.

19th May: Rectify any problems with my proposal

1st June: Rough Draft of literature review (Present to supervisor to confirm if I’m on the right track)

12th June: Literature Review

24th June: Receive feedback

July/August holidays: Start writing rough draft

11th September: Submit rough draft

20th October: Consult supervisor on final draft

6th: November: Submit final draft

**References**

Brock, W., Lakonishok, J. & LeBaron, B., (1992) “Simple technical trading rules and the stochastic properties of stock returns.” *J Finance 47*, 1731-1764

Fama, E.F(1991). *Efficient Capital Markets:II The Journal of Finance*, 46: 1575-1617

Gunasekarage, A & Power, D.M. (2001). “The profitability of moving average trading rules in South Asian stock markets.”*Emerging Markets Review* 2.1 : 17-33.

Park, C-H & Irwin, S. H. (2007). “What do we know about the profitability of technical analysis?” *Journal of Economic Surveys*, 21(4), 786-826.

Sobreiro, V.A et al. (2016) “The profitability of moving average trading rules in BRICS and emerging stock markets*.” The North American Journal of Economics and Finance* 38 86-101