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Ruben Agazzi,Davide Abete, Fabrizio Cominetti

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ABSTRACT

The project consist in the creation of portfolios, utilizing FTSE MIB index stocks, using different criteria in order to select the assets of the portfolios with a final analisys of the returns and risks of the portfolios

1 INTRODUCTION

In this project, the goal consists in creating different porfolios, using FTSE MIB index stocks, using different criteria in order to select the assests of the portfolios. Finally we make some analisys on the created portfolios, such as the returns and the level of risk of the portfolios, in order to see which one is the better performing.

2 DATASET

The dataset used consists in past data about the FTSE MIB index, in particular is composed of daily data about the past 5 years of every singular stock present in the FTSE MIB index, obtained using the yahoo finance API.

2.1 Dataset Columns

The dataset is composed by the following columns:

- Date: Date relative to the datas of the singular stock.
- Open: Opening price of the stock.
- High: Highest price reached by the stock in the current day.
- Low: Lowest price reached by the stock in the current day.
- Close: Closing price of the stock.
- Volume: Trading volume of the stocks.
- Adjusted Close: Closing price adjusted after accounting for any corporate actions.
- log ret: This column is calculated using the adjusted close prices, is the logarithm of the adjusted close price of the current day of the stock subtracted by the logarithm of the adjusted close price of the previous day.

2.2 Data Exploration

The data did not present missing data so all the data is used inside the project.

3 PARAMETERS

Afetr obtaining the data, we proceeded to obtain some parameters relative to the single stocks, in order to create the portfolios.

3.1 Rolling Regression

In order to obtain some of the parameters needed we proceeded to do a step of rolling regression on every single stock. The rolling regression was made using data about the past 180 days, and repeated for every week. The rolling regression is made using the Security Market Line(SML):

$$r_i = \alpha_i + \beta_i(R_M) + e_i$$

From the various rolling regressions we obtain the following parameters:

- Beta: is the beta coefficient obtained directly from the regression, this parameter indicates the Systematic Risk, in other words the risk that cannot be diversified away.
- Residual Variance(σ_{ei}): Is the variance of the residuals of the regression.
- R-Squared: R-Squared statistic obtained from the rolling regression, indicates how well the regression can fit the data.

We decided to not use also the α coefficient because in most of the regressions it wasn't statistically significative.

3.2 Other parameters

The other parameters used to build the portfolios are:

- Log returns: weekly logarithmic returns of the single stock.
- Risk: weekly risk of the single stock, obtained by calculating the variance of the weekly returns of the stock.

4 PORTFOLIO SELECTION

In this phase we selected five different portfolios using different criteria. In general the portfolios are selected by ordering the weekly stock parameters in decrescent order, and selecting the top and bottom 10% of the ordered stocks. The parameters used for the portfolio creation are:

- Beta Coefficient
- Stock variance
- Stock returns
- Residual variance
- R-Squared

La realizzazione di questo progetto ha avuto come obbiettivo quello di costruire diversi portafogli, ciascuno sulla base di specifici parametri come R^2, β^2 (rischio sistematico), σ^2 (rischio totale), al

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Table 1. This is an example table. Captions appear above each table. Remember to define the quantities, symbols and units used.

A	B	C	D
1	2	3	4
2	4	6	8
3	5	7	9

fine di effettuare un confronto in termini di rendimento medio atteso, volatilità e rapporto tra i due, di tutti i portafogli con il principale indice di benchmark dei mercati azionari italiani il FTSE MIB. Per fare ciò siamo partiti da una serie temporale giornaliera riguardante i prezzi di un insieme di stocks e abbiamo considerato come spazio temporale di investimento 5 anni, precisamente dal 2017-06-08 al 2022-06-08. Per ogni stock nell'arco temporale è stata eseguita una regressione dei log-returns ottenuti. . . (inserire calcolo) su un campione di 180 giorni, ottenendo R^2, α e β. Successivamente, abbiamo selezionato il primo e ultimo 10 per cento delle stocks ordinate in ordine decrescente sulla base ad esempio dell' R^2, al fine di costruire un portafoglio caratterizzato da assets di uguale peso, che è stato ribilanciato settimanalmente fino alla fine del campione.
Abbiamo calcolato i rendimenti settimanali di ciascuna stock, mediante la differenza tra il log-return corrente e quello della settimana precedente, al fine di calcolare i rendimenti settimanali dell'intero portafoglio come la media pesata dei rendimenti delle singole stock calcolate precedentemente. Inoltre, abbiamo ottenuto i rendimenti settimanali dell'indice FTSE MIB come la differenza tra il rendimento della settimana successiva e quello della settimana precedente. Dopo aver fatto queste operazioni, facendo partire il prezzo da 100 e sommando o sottraendo a questo con cadenza settimanale il rendimento di ciascuna settimana, abbiamo potuto confrontare graficamente con un grafico delle serie storiche i rendimenti settimanali del portafoglio da noi costruito con i rendimenti settimanali dell'indice FTSE MIB, osservando come il rendimento del portafoglio sia prevalentemente maggiore di quello generato dall'indice.

5 METHODS, OBSERVATIONS, SIMULATIONS ETC.

Normally the next section describes the techniques the authors used. It is frequently split into subsections, such as Section 5.1 below.

5.1 Maths

Simple mathematics can be inserted into the flow of the text e.g. $2 \times 3 = 6$ or $v = 220\,\mathrm{km\,s^{-1}}$, but more complicated expressions should be entered as a numbered equation:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}. \quad (1)$$

Refer back to them as e.g. equation (1).

5.2 Figures and tables

Figures and tables should be placed at logical positions in the text. Don't worry about the exact layout, which will be handled by the publishers.

Figures are referred to as e.g. Fig. 1, and tables as e.g. Table 1.

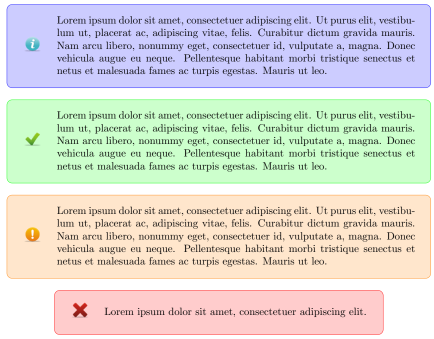

Figure 1. This is an example figure. Captions appear below each figure. Give enough detail for the reader to understand what they're looking at, but leave detailed discussion to the main body of the text.

6 CONCLUSIONS

The last numbered section should briefly summarise what has been done, and describe the final conclusions which the authors draw from their work.

ACKNOWLEDGEMENTS

The Acknowledgements section is not numbered. Here you can thank helpful colleagues, acknowledge funding agencies, telescopes and facilities used etc. Try to keep it short.

DATA AVAILABILITY

The inclusion of a Data Availability Statement is a requirement for articles published in MNRAS. Data Availability Statements provide a standardised format for readers to understand the availability of data underlying the research results described in the article. The statement may refer to original data generated in the course of the study or to third-party data analysed in the article. The statement should describe and provide means of access, where possible, by linking to the data or providing the required accession numbers for the relevant databases or DOIs.

REFERENCES

APPENDIX A: SOME EXTRA MATERIAL

If you want to present additional material which would interrupt the flow of the main paper, it can be placed in an Appendix which appears after the list of references.

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