**Executive Master in Financial Investments**

**Individual Assignment**

 **LAST NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ SURNAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**The assignment consists of three parts, which carry equal weight in determining the final grade. The first two parts concerns the two tutorials in excel that were covered during the lectures of July 3, 2019 and July 9, 2019. The last part requires that you summarize one paper chosen from a list made available by Prof. Guidolin. Return your answers in PDF format no later than 11:59 pm of July 31, 2019 by sending an e-mail to Massimo.guidolin@unibocconi.it**

**PART 1**

**Answer the following questions by copying and pasting results in the appropriate space. Use the same spaces to write comments when required. Use the same data that you have analyzed in class during the lecture of July 3, 2019 (they are posted on the class web site).**

1. Suppose that you live in a world where there are only two risky assets: equities and corporate bonds. Compute the annualized means, the correlation between the two assets, and the annualized variance-covariance matrix and copy and paste the results in the space below. Also compute the mean and standard deviation of a portfolio with weights equal to 70% for the equity and 30% for corporate bonds and paste them in the space provided below.
2. Compute the weights of the Global Minimum Variance Portfolio and paste the results below together with the mean and standard deviation of the GMVP.
3. Use the Solver to compute the weights of the minimum variance portfolio with a mean equal to 7.00% and paste them below. Also report the mean, variance, and standard deviation for this portfolio. Do you think that this portfolio belongs to the efficient portion of the mean-variance frontier? Clearly explain your reasoning.
4. Use the Solver to compute the weights of the minimum variance portfolio with a mean equal to 10.00% and paste them below. Also report the mean, variance, and standard deviation for this portfolio. How would your answer change if you constrained the weights to be positive? Explain why in your opinion you get this result.
5. Now suppose that a risk-free asset is added to the asset menu and that you can borrow and lend at the risk-free rate. Use the Solver to compute the weights of the tangency portfolio and report them below, together with the statistics of such a portfolio (including the Sharpe ratio).

**PART 2**

**Referring to the material covered during the lecture of July 9, 2019, answer the following questions by copying and pasting the relevant results in the appropriate space. Use the same spaces to write comments when required.**

Go to

<https://finance.yahoo.com/screener/mutualfund/new>

and look for data on one US equity *mutual* fund (i.e., with an allocation to equity of 85% or more) for which you can find at least 10 years of *monthly* data (i.e., the data should be in existence since at last early 2009, but in any case for your calculations use the maximum amount of data that is available for your to download). Of course, there is nothing special about using yahoo finance, any source of data will work (e.g., Bloomberg), provided it has enough information and a sufficiently long time series to answer what follows. Make sure to compute returns on each share of the fund and not to use prices (compute log-returns using the closing price, i.e., $r\_{t}=ln⁡(\frac{Pclose\_{t}}{Pclose\_{t-1}})$). The data concerning the market portfolio and the risk-free rate are those provided in the lecture of July 9, 2019.

1. Please indicate the complete name of the fund and its code its, the net asset value, the annual report net expense ratio, who’s managing the fund and since when, the Morningstar “stylebox” classification, the category/ classification to which the fund belongs to, and the date of inception of the fund.
2. Compute the Sharpe ratio and the Treynor ratio of the fund. What is the limitation of using the Sharpe ratio to assess the quality of the management applied to this fund? What is the Treynor ratio of the fund and why would using this ratio be more sensible and when?
3. Estimate and report below the Jensen’s alpha (under a single-state CAPM-style model) and the information ratio for your fund.
4. Perform a Fama’s performance decomposition similar to what we have discussed during the lectures. Please copy and paste (as an image, to simplify matters) the same table (duly filled out) as we have used during the lectures to obtain a performance decomposition adding a column to represent your fund. Do you think that the management of the fund has been creating value? Is the monthly value added by the fund’s management worth the management fees that the fund is charging?

**PART 3**

**Choose one paper from the list provided by Prof. Guidolin (via web site) and produce a summary of the content of approximately 1000 words. A good summary should contain what the research question(s) of the Author(s) is (are) and why it is relevant, what is (in brief) the methodology that the Author(s) adopt to answer the question(s) and what are the main results.**