Executive Summary

Problem

In the lecture *Asset Management: Investments* at the University of Zurich, bachelor students [1] voluntarily solve three exercises. These excel-based tasks are called *Involving Activities* and are launched throughout the semester in order to gain exam points in advance. The individual exercises serve to deepen the studied material and apply the theory previously taught. The *Involving Activity 3* asks the students to create a momentum strategy based on 18 given stocks. Thereby, the students build two momentum strategies by choosing their individual look-back and holding period. The first strategy is a long-only strategy, referring to buying the stock with the anticipation of its increase in market value, and the second one is a long-short strategy, whereas this further implies selling the stock with the anticipation of a decrease in market value. At the end of the *Involving Activity 3*, they are demanded to compare their results with the buy-and-hold strategy.

Until now, the *Involving Activity 3* has lacked a clear structure, enabling a very individual interpretation by every student resulting in various solutions. This had the effect of every exercise having to be corrected manually resulting in a huge effort and time exposure for the student assistants. Thus, the following thesis aspires to update the *Involving Activity 3* among two different aspects. The exercise should, on the one hand, remain to be individual for every student and, on the other hand, allow for an automated correction by structuring and standardizing the exercise more. Within the scope of this thesis, a correction tool has been developed and written in the programming language Python to evaluate the momentum strategies exercise of the students. The tool is designed to allow for flexibility in the input data, look-back and holding periods.

Method

Within the scope of this thesis, a correction tool has been developed and written in the programming language Python to evaluate the momentum strategies exercise of the students. The tool is designed to allow for flexibility in the input data, look-back and holding periods.

Results

The main objective of this thesis was, as mentioned before, to develop an automated correction tool to efficiently correct the *Involving Activity 3* in the course *Asset Management: Investments*. To ensure adaptability with regard to lock-back and holding periods, an option for individual selection has been incorporated into the *Involving Activity 3* at the outset of the exercise. Additionally, the input data comprising historical stock prices

[1] The course involves students and executive education participants to solve the relevant exercise but for simplicity reasons, those two groups are summarized and only referred to as students from now on

of 18 shares have been loaded into Python. As a result, the correction tool designed in Python is capable of accommodating updates to input data, such as changes in share prices or dates, and also on the look-back and holding period. Moreover, in order to provide the students with more flexibility in determining their rankings, an option was implemented where students are allowed to choose between using either the arithmetic or geometric mean as the basis for their ranking. This would allow students to select the method that best aligns with their personal preferences and understanding of the data. The more structured exercise enhances the students' understanding and promotes successful outcomes. Additionally, the integration of automated correction represents an efficient solution for grading, leading to significant time savings and greater objectivity in evaluation. The tool also promotes comparability among students, contributing to more informed decision-making. Further, a manual for the *Headcoach* responsible for correcting the *Involving Activity 3* is provided.

Discussion

The thesis's primary goal has been accomplished. The use of the correction tool remains an effective and efficient approach for correcting the *Involving Activity 3*. The objective and automated nature of the correction process enables faster processing times and helps minimize errors that may occur when correcting by hand, making it a valuable addition to the course *Asset Management: Investments*. Some additional implementations potentially enhancing the correction of the *Involving Activity 3* were examined. It may be possible to optimize the code to handle larger datasets more efficiently, thereby reducing the need for manual adjustments. Also, to address the drawback of not being capable of providing personalized feedback to students, a possible extension of the tool could include generating customized feedback for each student.