

ROBOT INVESTING
ASSET ALLOCATION FOR PRIVATE BANKING CLIENTS

JOSÉ LUÍS FERREIRA GONÇALVES

STUDENT NO. 2288

INDIVIDUAL REPORT

A Project carried out on the Master in Finance Program, under the supervision of:

Professor Pedro Santa Clara

Theoretical and Methodological Context

In the first meeting with Banco Invest, the bank issued a challenge for its Private Banking sector, which is responsible for the management of its clients' wealth via asset allocation. The challenge was to develop a model which does not require market views as input. Instead, its only input should be market data so that the asset allocation model is independent of behavioural and emotional biases.

Our supervisor and we, thus, decided that the model should be built around two market anomalies, which are yet to be arbitrated away, that have been known to generate consistently attractive returns across roughly every asset class available to an investor. These two anomalies are the value and momentum anomalies, which are both well documented in literature and continue to draw its attention due to its persistence across time and different asset classes. To exploit these anomalies, one solely needs information flowing from financial markets.

The model itself, i.e., the framework in which the value and momentum anomalies are translated into an allocation of wealth across assets, departs slightly from the usual approaches employed in asset allocation. This is because the said approaches do not allow one to perform the allocation exercise based on asset specific characteristics, such as value and momentum, as easily and robustly as the model we propose.

Individual Contributions to the Project

As this project was sort of a finance consultancy project for a company, it was essential to understand the scope and context of what was being proposed to our team. In order to do so, it was necessary to meet with our client and get the most out of it namely during the kick-off meeting. This first meeting took place at Banco Invest, our client, in the presence of our school supervisor, Professor Pedro Santa Clara, who helped us a lot understanding the project. During the initial kick-off, I always tried to be a listener rather than a pro-active person, in the sense that it was essential to understand the point of view of the client, let them explain clearly their proposition and get as much information as possible. Due to my high note-taking skills, we were able to get all the information we needed to start developing some thoughts on the tasks to be performed with the help from our supervisor, who guided us in the best direction by indicating some related literature that would be the basis of our model. I quickly started analysing the suggested literature and immediately tried to adapt what I was reading with the problem I was faced with. Once we figured out how to proceed, after a new meeting with our supervisor, we started developing the model from scratch.

One of my biggest contributions to the project was definitely my modeling skills and the ability to work with several kinds software. As our project was intensively data-dependent, and since I considered myself the most capable person regarding this matter, I immediately step forward to gather all the data required for our project. Besides being comfortable using Bloomberg and Reuters, I saw myself required to learn how to handle Datastream in order to get some specific data we could not find in other terminals. While gathering the data, I must say one of my main concerns was to make the model as practical as possible, i.e., to guarantee that the basket of assets we selected could be easily bought or sold.

Once we downloaded all the required data to get started with the construction of the model, we immediately started modelling its structure in Excel. From the very beginning, I always tried

to construct an Excel model as clean as possible in order to not confuse myself with the high amount of data we were dealing with. Besides the cleanliness, I also put my modelling skills in motion to make the model extremely dynamic and user-friendly. At the end of the project, our client would be able to “play” with the Excel sheet and select whatever specifications he would want - time period, standardizations, exposure restrictions, among others. Up to the conclusion of the first part of the project, i.e., modelling the project, the interaction with my colleagues was crucial to successfully close the first model. While me and Eduardo were constantly checking if our results matched and correcting minor mistakes in our model, Pedro took a deeper and more attentive look at the literature in order to guarantee every calculation was correct. During this stage, one of my biggest concern was to make sure we were not incurring in any kind of forward-looking bias or data mining issues as this could potentially jeopardize the robustness, quality and purpose of our project.

Once we develop the initial model, I was careful enough to make some quick tests to evaluate its results, namely by checking the weights that were being attributed to each asset and question their origin and if they would make sense given the circumstances. As an example, I question myself and the team why would we be investing more in the Portuguese index than in the US market at a certain time and we always got a clear answer for this type of hesitations.

At a certain point in time, we decided to use my Excel model as our project’s default model and we started getting every analysis from it. Moreover, because I was the most familiarized member with the model, I also performed every out of sample analysis, namely by coding some processes to get expanding and rolling windows analysis as described in our final report.

Concluding, I must say I constantly tried to establish a close relationship between our team and our supervisor and the bank’s representatives which was crucial during the initial stage of our project. I also always tried to get the team together and push my colleagues and myself to give our best while assuming an attentive and engaging mindset.

Personal Reflection

First, I would like to highlight this excellent initiative of Nova that allowed us to collaborate with a real institution and a real project. I believe these types of initiatives are crucial to make the bridge between the academic and professional life as they endow us with knowledge that would not be acquired doing other type of projects such as a directed researches.

This was, in my opinion, the most interesting and enriching field lab topic by far, as it regards one of my favourite industries in finance, the asset management industry. I must say this project allowed to strengthen even further my interest in this sector and it endowed me with some knowledge that I would have not acquired if I strictly developed an investment strategy just for academic purposes. One of the biggest advantages of such type of projects is precisely to adapt the literature to the common practises in the industry and try to overcome some restrictions or impossibilities that most of the times do not appear in the literature.

In regard to hard skills, I believe this field lab allowed me to put into practice what I had been learning throughout my Master in Finance. From the very beginning of the project, I immediately got in touch with concepts I had been hearing about during most of my courses which made my understanding of the tasks easier. Due to the extensive literature about the basis of our model, I was also able to explore and learn several investment strategies and approaches I have never heard about before, which I believe made me a more knowledgeable and informed person. Since the project was entirely developed in Excel, I had the chance to enhance my financial modelling and portfolio analysis skills. The number of computations required to perform the allocation strategy required special attention and allowed me to develop more efficient methods to perform certain operations.

Apart from quantitative skills, this project strongly enhanced soft skills which revealed to be essential throughout the entire project. The first and more important was definitely the teamwork. In my opinion, the team and the collaboration between the group members made

the project even more interesting. Every group member, and specially me, were always ready to help each other performing any sort of task or clarifying any doubt. The great teamwork spirit allowed us to perform tasks more efficiently and manage our time in a better way. Moreover, since I was dealing with a considerable amount of data and sensible calculations, I was required to enhance my attention to detail in order not to incur in any kind of forward looking bias or get any computation wrong. Last but not least, I believe I strongly enhanced my communication and interpersonal skills, either by establishing a close contact with the several stakeholders of our project, or even between the team members. The ability to communicate clearly and efficiently and having the right dose of openness to accept new ideas and suggestions, potentially contributed to a better and more fluid work performance.

To conclude, I believe I was able to make a real positive contribution to this project and that my team appreciated what I did during the past three months. I am extremely confident that every single team member put the very best of them in this project and the results are clear.