



IDENTIFYING VALUE

Man & Machine - A Symbiosis not a Competition

"Computers are useless. They can only give you answers." - Pablo Picasso (1881-1973)

During the industrial revolution, machines started to replace physical labour and as a consequence we have thereupon focused on what sets us apart: the human mind and its potential for creativity. Thanks to commercialisation of steam engines, the invention of new machines in agriculture as well as the organization of work known as factory systems, our civilisation used the gain in efficiency, invented new areas of activity and was rewarded with rising living standards and improvements in human rights.

The simultaneous progress of machines and computers lead to the development of fully automated processes in several industries utilizing computer software to control machinery. Particularly, computers have become exponentially more and more sophisticated. Just think of your smartphone, which has more computing power than the computers NASA used in 1969 to guide humans across more than 350,000 kilometres of space to the moon. Additionally, big data and artificial intelligence are gaining popularity. Even some tasks of decision makers in several industries such as automated agriculture are starting to be taken over by fully automated and intelligent tools.

Automation is also influencing the asset management industry and the offerings of investment products. The unresolved controversy of active vs. passive investments which has been around for decades is just one development in this direction. Even though active managers, on average, underperformed passive in recent years, there has always been a strong cyclicity in the leadership between the two. Nevertheless we see continuous outflows out of actively managed funds and generally heavy price pressure in our industry as a result of the current underperformance of many managers. As usual, the market reacts pro-cyclical to performance, rather than contrarian. Lately, some asset managers are starting to replace stock pickers with computerized algorithms. Whenever everybody thinks alike, it could be worthwhile to focus on the fundamental research and facts first before deciding to follow. Will active managers continue to underperform? Are portfolio managers not good at picking stocks? Who should then be the ones to program and feed the computer with ideas and inputs? In our opinion, it is time to take a step back and consider how we can learn from one another by analysing the strength and weaknesses of portfolio managers and algorithms.

The unpleasant truth for stock pickers – human flaws vs. advantages

Humans are bad decision makers, in particular when faced with uncertainty. Emotions and heuristics systematically cause investors to make forecasting errors and are therefore, in our opinion, the main reasons for mispricings in the marketplace. As a result the pendulum of investment psychology is constantly fluctuating between optimism and pessimism, between greed and fear, between risk tolerance and risk aversion. Investors rarely learn the lessons of history, particularly when it comes to their own behaviour and decision making. How do you react when the markets drop 50%? Are you willing to buy when prices are down and



uncertainty is high? In order to learn the lessons from history, we need a critical reflection of our behaviour and try to understand our weaknesses. If you are claustrophobic you should definitely not go to a game of Borussia Dortmund and buy tickets for the legendary “Südtribüne”. Having said that, it is part of the human psychology to ignore the past and believe that “this time it’s different”.

At the beginning of each process, every stock picker is already prone to the subjective decision. As humans, we are governed by emotions often resulting from good or bad experiences when it comes to stocks, sectors and countries. This leads us to avoid or prefer some stocks before even starting to dig deeper. Subconsciously, we always find a reasoning and explanations underpinning our notion, also called confirmation bias. Subsequently, each crossroad during the investment process is a potential trap for our human flaws.

On the flip side, some analysts have indisputable in-depth company, sector, peer-group and country-specific know-how. Humans also offer the unique ability of logical reasoning (e.g. some companies might be cheap but also expensive for a reason). The fundamental approach of stock pickers may detect circumstances, like M&A activities, lawsuits but also regime changes, which appear to be in the dead angle for solely computer based approaches. Computerized back tests are a result of a certain framework which is never identical after going live, and where rather small adjustment can cause big changes in outcomes. Further on, there is and always will be a vital importance of experience to see patterns, anticipate regime changes and put them into perspective.

The unpleasant truth for computers – strengths and vulnerabilities

The unquestionable advantage of systematic processes lies in the consistent and invariably objective decision making. At the same time, the comparability of unbiased judgements with a processing power able to run calculations for thousands of companies “error free” should not be denied. Whenever new information arrives the computer recalculates and revises the decision based on the data available without regards to the past and immune to confirmation- and consistency-bias as well as herding and other human flaws. This strength of a computer guarantee the execution of a defined, transparent and reliable process unaffected of human misjudgement. With the right instructions, as in our holistic CHICCO process, a computer is also able to focus on the base rate (to choose an appropriate reference class and consider the distribution of potential outcomes), while humans tend to fall into the trap of overrating the specific case rate (decision based on own experience and company specific information). The important question is: How many companies managed to take a certain path? Humans often times cannot see the forest while focusing on a single tree and in that process lose sight of where they are in a given cycle. Rather, they are often peering to exceptional companies (e.g. Apple) instead of the probability of a company achieving the goals discounted in the price?

In order for a process to be repeatable, causation and correlation is essential. Computer struggle keeping apart correlation and causation potentially leading to wrong assumptions sometimes only based on special patterns of results and numbers without questioning them. The constant over-simplification of analysis exclusively on some predefined figures makes computers vulnerable to wrong conclusions as a result of data errors and one-time events. Computers are slowly starting to have the ability to see patterns, but are still reliant on humans to scrutinize them in order to verify their explanatory power. Hans Moravec, an artificial intelligence and robotics experts compares computers and humans well by saying: “It is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skill of a one-year-old when it comes to perception and mobility.”



The table below summarizes the **strength and weaknesses of humans and computers**:



Source: Lingohr & Partner

All this said, for exceptional performance we have to focus on our strengths. For unlocking the potential for the greatest gains, we also need to understand the sources of alpha and improve our weaknesses. Better computers could be one way to success, however, what for us turns out to be much more promising is doing a smarter job of humans and computers working together.

Advantages of a combining man & machine – Example: Freestyle Chess

Chess had a long-standing reputation as a unique nexus of the human intellect, therefore only a truly intelligent machine could beat it. As Garry Kasparov describes in his book¹, chess does not offer an element of luck as both opponents have all available information at all times. Nothing is out the players' control. Another interesting fact about chess is that it still remains unclear what exactly separates a good from a great chess player. However, in 1997 a computer, Deep Blue, built by IBM managed to defeat Garry Kasparov, perhaps the greatest chess player of all times.

In the years following the loss of humans over machines, a new variation of the game was invented called "freestyle chess". Thereby chess players and computers join forces, hence players are allowed to select their moves by utilizing inputs of machines. The best chess players excelled at recognizing patterns and strategic planning, both appear to be weaknesses of chess computers which, however, could calculate tactical complication in a matter of seconds. As a consequence the joint teams appear to be superior and manage to beat humans as well as machines alone. Another interesting discovery was, that above a certain level, additional skill of the chess player made the team less effective. The main reason for this phenomenon appeared to be the players' over-estimation of their own ability.

¹ Deep Thinking, Where Machine Intelligence ends and human creativity begins, G. Kasparov, 2017



What reveals to be the most important takeaway, in order to achieve greatest results, is the necessity to understand one's strength and limitations and act accordingly.

Insights from Freestyle Chess for investing

Even if not immediately apparent, there are similarities between chess and the field of investing vividly illustrated in a Credit Suisse paper². Both fields are exposed to human flaws and mistakes, offering the opponent the opportunity to win. Further on, in chess as well as in investing, new information arrives all the time. As a result, whenever new information arrives and you must update your decision, which proves not to be easy for humans. Warren Buffet said it best: *“What the human being is best at doing is interpreting all new information so that their prior conclusions remain intact.”* Last but not least in both field, in order to succeed, you need to rely on a strong process. While chess is mainly reliant on skill, in investing, short-term outcomes are predominately determined by luck. Nevertheless, also in investing a good process and therefore skill will lead to success in the long-run assuming you can stay the course.

Lingohr & Partner is one of the pioneers to assemble single puzzle-stones to build a holistic and systematic process for identifying value opportunities and to take indiscriminate advantage of human misjudgement. In addition it is built to protect ourselves from falling for misjudgements, and hence being other investor's alpha, too. Therefore we have for a long time strived to identify the strength of humans as well as those of a computer in order to benefit by combining them in our process. Both sides can not only learn from each other but also express warnings when needed. For better decision-making, we have integrated our joint team know-how (collective intelligence), our insights from research, and experience into our CHICCO process.

Systematic Managers can be fundamentally driven

Often, managers using systematic approaches are accused of being “black boxes”, being ruled solely by computers and suffering a lack of conviction. These charges are not true for us. When building our process, we always start with a concept based on fundamental inputs to make rational sense. Thereby, we use our human judgement to research, question, build, revise, implement but also monitor our strategy. Also, the broad diversification among stocks is by no means a result of a lack of conviction, but to the contrary the strong belief in our process which works on population. We win by the average not with home runs.

Nowadays, all systematic managers are put into one basket while there is a wide differentiation among them. But only few of our competitors can look back at more than 25 years of experience and know-how about fundamental metrics as well as expertise in building proprietary factors and models. The vast computing power of our back testing engine using a comprehensive database with point in time data since 1989, gives us the opportunity to analyse in detail and identify the causes for mispricings. On that basis, we strive to create a reliable and repeatable process. Our detailed understanding of what drives our investment returns on country and sector level, as well as the concepts based on economic rational implemented in our models sets us clearly apart. **Overall, we act as Investors and have a strong contrarian mind-set giving us the strength to build models for the future instead of the past. Fundamental thoughts are always holding the reigns** even behind computers used in our investment process. Our philosophy protects us from over-fitting on a specific past environment as well as fall victim to performance chasing.

² Lessons from Freestyle Chess, Credit Suisse, M. Mauboussin, D. Callahan, 2014



PERCEPTION OF SYSTEMATIC MANAGERS	PRACTICE AT LINGOHR & PARTNER
<ul style="list-style-type: none">• Intransparent models based on statistical analyses• No fundamentals behind approach	<ul style="list-style-type: none">• We are investors not mathematicians• We use purely fundamental inputs• We build concepts based on fundamentals and economic rational• not backward looking and overfitting
<ul style="list-style-type: none">• Process is ruled by machines and algorithms• humans are merely passengers	<ul style="list-style-type: none">• Investment Team researches, questions, builds and monitors process• Fundamental overlay to challenge and improve process
<ul style="list-style-type: none">• Over-diversified portfolios• Missing conviction	<ul style="list-style-type: none">• We know our strengths and weaknesses• Strong conviction in our process which works on population
<ul style="list-style-type: none">• No distinction between systematic managers• USPs are hard to identify	<ul style="list-style-type: none">• Pioneer – 25 years of experience in factors and models• Value Investors – Contrarian mindset• Detailed know-how and proprietary factors• Country specific approach• Fundamental negative selection

We at Lingohr & Partner will continue to ask questions, and use computers to deliver answers, and thereby integrate our convictions and the resulting conclusions into our investment process. We believe in our proven process, focusing on finding bargains and combining factors into models which make conceptual and fundamental sense. One of the keys to our long-term investment success is hard work, great patience and strict discipline. We always stick to our approach especially during periods of headwinds.

Sincerely,

(Goran Vasiljevic & Team)



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