

Investment Benchmarks: Their ontological and epistemological roots.

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Abstract

This paper investigates the ontology and epistemological justification behind investment benchmarks through the lens of a logical positivist paradigm. This is relevant because the field of finance is often critiqued by moral philosophers and has to justify itself as having a philosophical basis. It is introduced with a Greek δείκνυμι thought experiment on the social good of such benchmarks. This is done to draw the reader into a mindset that questions their epistemological underpinning. It asks what the nature of benchmarks is and answers this within the context of the broad academic finance tradition that is dominated by positivists, empiricists and a few critical realists.

Keywords

Philosophy, Ontology, logical positivist, epistemology, investment, benchmark, indexes, finance.

Salviati: *"If we see a stockmarket benchmark index that goes up, it is clear that invested wealth in aggregate is increasing. Do you not agree with me?"*

Simplicio: *"Yes, that is obvious."*

Salviati: *"If that is true, then the stockmarket benchmark has a social good; but the stockmarket benchmark index can also go down; an effect which is contrary to your supposition. Do you therefore see that from your assumption that the stockmarket benchmark index has a social good, I can infer that it does not?"*

Salviati and Simplicio were fictional men created by Galileo (1632). In their dialogue Simplicio suggests numbers are *"trifles which later spread among the vulgar"*. As the introductory improvised dialogue between Salviati and Simplicio illustrates, investment benchmarks are important to both academics and practitioners. They measure wealth creation and destruction. Despite the widespread practice of benchmarking, Yasin (2002) points out there is no unifying theory.

An introduction to benchmarks can be found in Conover, et al., (2013). Ontologically, their objective reality is the starting point of the investment process and they are used for measurement and attribution at the end point. This determines the epistemology and method used in their construction. The dictionary defines them as representing *"standardized tools that that can be used as a point of reference"*. In this respect, they must be well defined and built according to transparent and replicable rules. Stock market indexes are the most widely recognized investment benchmarks.

The objective of investment benchmarking is twofold. The first is as a proxy for an asset class return and second to decide how to allocate investments among broad asset classes. There is extensive literature on what makes benchmarks valid and how to choose them (see Lehmann and Modest (1987)). In this respect, the construction of such benchmarks is a process based on reliable empirical method. A summary of this method is provided by Kat, et al., (2001). It is based on positive theorizing and is a statement of *"what is"*. The process is not based on *"value judgement"*, benchmarks are designed to explain and measure investment outcomes. With this in mind, academic usage of investment benchmarks that fall within the logical positivist paradigm can prove useful to establish theory from best practice. In this respect, the aim of this paper is to clarify the nature of benchmark time series and not to attempt to answer unanswerable questions.

Schlick (1936) was the father of logical positivism. This school of thought was developed by a loose gathering of philosophers called the Vienna Circle. Its philosophical tradition emphasises observation and reason as the basis of understanding. Despite this foundation, the roots of modern finance and positivism can be traced back to the British empiricists. Investment benchmarks are, however, not considered part of the empiricist tradition as they are simply a financial tool from which it is possible to derive verifiable empirical evidence. The treatment of the mathematical returns generated by financial assets can be very methodical and sometimes fall into the realm of logic, hence its appendage to the positivist label.

In a practical sense, investment benchmarks demand a philosophical realism in respect of the treatment of the time series of investment returns. Research into them must therefore be objective. It is, as a consequence, widely accepted that investment portfolios require benchmarks that can measure and attribute performance. In a Platonist world view, they have an independent objective

existence. It is the reliance on logic that gives some mathematical comfort in the benchmark's output. Financial academics can therefore use benchmarks in their research whilst noting Morgan, et al's, (1980) observation that their use is directly linked to assumptions about ontology, epistemology, and human nature.

Logical positivism and its close sibling logical empiricism, use tautology and observations from experience. It dismisses the normative pretensions of many of the philosophical traditions. In this sense the grounding of benchmark usage in a logical positivist paradigm exposes them to ethical critique. They have the failing that their underlying attribution of value and the use of time series in their construct do not allow for moral judgments.

The Vienna Circle did not devote much attention to ethics. Indeed, Schlick (1936) claimed that ethics was just a descriptive terminology and thereby effectively dismissed the debate. Aside from this, the biggest issue with claiming benchmarks are grounded in logical positivism is that they in themselves do not measure anything. They are, after all, simply a measurement tool. That said, those that do construct them do so for a measurement reason and the philosophical backbone of logical positivism refers to their usage.

As a result of the practical investment world's philosophical realism, the use of benchmarks use in performance evaluation means that precision and accuracy are necessary. They are often built on the back of a tradition of finance termed Modern Portfolio Theory first postulated by Markowitz, (1968). There is a well-developed body of knowledge on benchmark usage that stems from this. The theory is considered a confirmed hypothesis despite a number of critiques. Kuhn (2012) would have observed that it is believed despite mounting evidence against it. It builds on the economic concept of perfect markets were in effect theorised through Platonic abstraction. The market benchmark proxy that is derived from it is based on the assumption that all stocks in an investment universe are represented. This is a concept that Carnap (1928) would have found familiar.

In the logical positivist paradigm knowledge can be obtained by observation and experiment. As such, the scientific method employed in benchmark construction forms the basis of the knowledge behind their use. This means the concepts of determinism, empiricism, and generality all play a part. In benchmarking, the investment universe has quantities that are never exact, that require measurement and through which that patterns can be observed. As a result, academic research into the latter is required in order to ensure that benchmarks are optimal. This requires an Aristotelian approach to observation and categorization.

Despite their foundations, benchmarks are not underpinned by philosophical certainty. It still not known what is the most appropriate benchmark for each and every asset class. There remains, therefore, an academic question that can be addressed using logical deduction based on the theorised mathematical relationship between risk and return. The random and representative sampling that is required for a benchmarks construction may help develop deductive research, but that sampling can be pre-disposed to miss important elements of the investment universe.

Understanding the philosophical underpinning is important because benchmarks have many uses. These can be found in Bailey, et al., (1990). In a dualist sense, they provide the framework for analysis. Not only do benchmarks help measure and attribute, but as Siegel (2003) wrote, they *"determine the performance of investment managers perhaps more than any other influence"*.

Investors need to know the nature of the risk that their portfolios incorporate. This allows them to understand its “*relative risk*” and compare it with “*expected return*” and communicate expectations in respect of how assets will be invested. In this way, benchmarks provide accountability.

Benchmark enquiry through a logical positivist lens obscures the role they play in communication, an important human element which philosophy has spent many millennia exploring. The knowledge they impart may be non-inferential but clearly benchmarks do possess authority. In order to understand benchmarks it is useful to understand investor expectations. In a philosophical way, investment outcomes relative to a benchmark can be seen to be based on the tenants of the empirical position. These are often framed in finance in terms of asset classes and the return time series that they generate.

Individual agents in the stock market are heuristic, they enjoy free will. That said, the positivistic paradigm is criticized due to its lack of regard for the subjective states of individuals. In this respect, the theory behind optimal benchmarks can be critiqued for assuming investors are rational. A benchmark that incorporates group decisions partially addresses this such as peer group benchmarks typical of those used by Jagannathan, et al., (2010). According to the critics of this paradigm, objectivity needs to be replaced by subjectivity in the process of scientific inquiry. This gave rise to anti-positivism or naturalistic inquiry.

In the practical world, there is more than one asset class. As a consequence there is the need for different benchmarks to address them. A degree of philosophical pragmatism is involved in practitioners’ choice of benchmarks. It is assumed that it is appropriate if it works satisfactorily. Academics, however, are more focused on a benchmarks ability to identify the skill those practitioners have. There are also different securities and sub-groupings within each asset class.

In the way that Salviati challenged Simplicio, one should critically reflect whether an index is the best benchmark at this granular level, its construction rules, security selection and weights. In order to address the positive critique, it is worth considering the extent to which a benchmark can be truly objective and to what extent it is conditioned by the construction method. In constructing a benchmark from scratch, one could apply the ‘*Tabula Rosa*’ approach proposed by Locke (1841). It does not suffer the scepticism that arises from impression and recollection.

Siegel (2003) suggested that benchmarks have a triple role. These are as benchmarks for actively managed funds, as proxies for asset classes and as templates for passive funds. The majority of these investment benchmarks are chosen by an indirect process. As a result of this, they are assuming a causal relationship that might not be appropriate. The benchmark that managers apply have typically been constructed using abduction. Applying Occam’s razor described in Domingos (1999), finance scholars have adopted the market proxy that is derived from the Capital Asset Pricing Model, as the default benchmark. In philosophical terms, it is not a technical problem of identifying a law of behaviour. Other benchmarks use heuristics as a performance guide. These do not allow for a detailed attribution of performance. The positivist paradigm suggests investment benchmarks should allow for consistency and for benchmarks to be replicated. In order to identify this, one needs to have a degree of academic consistency with the aforementioned Modern Portfolio Theory.

It should be pointed out that positivism is sometimes mistakenly linked to empiricism but this is not the case. One needs to ‘reason’ all the assumptions and one must use a methodological approach to construct an index. In a logical positivist context, benchmarks require operational and analytical

defferentia specifica. Typically, some sort of ostensive classification takes place, such as by sector or industry. The usefulness of taking a positivist approach is that it allows benchmarks to be predictable and controllable. In finance, the central limit theorem suggests that the return time series have a normal distribution. In reality, this is not the case.

Another critique of the positivist approach to benchmarking is the shortcomings of induction. The outliers of investment performance are the ones that impact the investment benchmark averages the most. Mathematical induction, meanwhile, is independent of the process. That said, as the whole universe of investments are known, the critique can be addressed. Despite this, its empirical epistemology is often rejected by philosophers who argue that knowledge can't be derived from its purely numerical output. However using Popper's (2005) stance it is possible to overcome this. In a hypothetico-deductive world, one can construct an optimal benchmark provided a hypothesis can be tested based on trying to reject the null hypothesis that the alternative can deliver a better risk adjusted investment return.

In essence this paper was a thought piece about the nature of benchmarks. Salviati, who was introduced to illustrate the issue of whether benchmarks have a social good, would have concluded they are a market phenomenon and as such ultimately dependent on a time series created by human interaction. They are, after all, created empirically. Despite the critiques as to the validity of many of the basic assumptions, benchmarks do help with quantification and measurement. The ontology and epistemological justification for them lies firmly within the logical positive paradigm. They are therefore useful in empirical method and this forms the basis of scientific enquiry in finance.

Bibliography

- Bailey, J., Richards, T. M., & Tierney, D. E. (1990). *Benchmark Portfolios: Concept and Design*. New York: Harper & Row.
- Carnap, R. (1928). *Der logische aufbau der welt*.
- Conover, C., Broby, D., & Cariño, D. (2013). *Introduction to Benchmarks*. CIPM Reading: CFA Institute.
- Domingos, P. (1999). The role of Occam's razor in knowledge discovery.,. *3(4)*, pp.409-425.
- Galileo, G. (1995. 1632.). *Dialogo sopra i due massimi sistemi del mondo, Giornata seconda.i.*, Landini, Fiorenza/Firenze/Florence, and Guerner.
- Jagannathan, R., Malakhov, A., & Novikov, D. (2010). Do hot hands exist among hedge fund managers? An empirical evaluation. . *The Journal of Finance*, , 65(1), pp.217-255.
- Kat, H., & Brooks, S. (2001). *The statistical properties of hedge fund index returns and their implications for investors*. . london: Cass Business School Research Paper.
- Kuhn, T. (2012). *The structure of scientific revolutions*. University of Chicago press.
- Lehmann, B., & Modest, D. (1987). Mutual fund performance evaluation: A comparison of benchmarks and benchmark comparisons. *The journal of finance*, 42(2), pp.233-265.
- Locke, J. (1841). *An essay concerning human understanding*.
- Markowitz, H. (1968). *Portfolio selection: efficient diversification of investments* (Vol. 16). Yale university press.
- Morgan, G., & Smircich, L. (1980). The case for qualitative research. . (5(4), pp.491-500.).
- Popper, K. (2005). *The logic of scientific discovery*. Routledge.
- Schlick, M. (1936). Meaning and verification. . (45(4), pp.339-369.).
- Siegel, L. (2003). *Benchmarks and Investment Management*. *Research Foundation of CFA Institute*. Charlottesville, VA: CFA Institute.
- Yasin, M. (2002). The theory and practice of benchmarking: then and now. *Benchmarking: An International Journal*, 9(3), pp.217-243.