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Risk/Return, a Chimera?

By Sylvestre Frezal

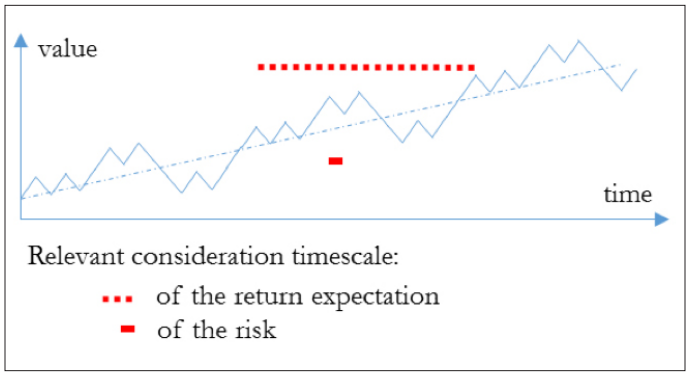
In the short term, you don't get the expected return—risk may be relevant, but expectation is not. In the long term, the risks offset and disappear—expectation is relevant, but risk is not. A decision is judged on a given temporal scale—either the short term or the long term. Then, when using risk/return, you rely on an inconsistent concept. Let's clarify this point and its impacts.

A quantified optimization of risk/return is often considered as an investment best practice, both for asset managers, investment departments of insurers, or even considering the robo advisors proposed to non-professionals. Is this relevant? Does a quantified risk/return improve decision making? Does it provide objectivity? I do not think so.

THE QUANTITATIVE RISK/RETURN, AN OPERATIONALLY FALLACIOUS CONCEPT

Expectation is what remains once the risks have mutualized, statistically offsetting each other—when considering a risk/expected return couple, the time horizon on which expectation can be observed is at least one order of magnitude longer than the one on which risk can be observed.

Figure 1



The design flaw of the risk/expected return is that such a couple relies on a time horizon inconsistency. For a given decision-maker, "risk" has a meaning at a timescale when "return" does not, and vice-versa. There is no timescale, at which risk and expectation both have an operational meaning.

In other words, from an operational viewpoint, the quantified risk/return does not exist: either expectation is a good estimate of the result that we will get, meaning that the risk is negligible, or the risk is not negligible, meaning that expectation is significantly far from the result that we will get. If we want expectation to be concrete and meaningful, then risk has to be insignificant; and reciprocally, if the risk is significant, then expectation is totally virtual and has no concrete meaning. For example, if I know that at the end of the year, my stocks will either drop by 20 percent or raise by 30 percent and if I invest only till the end of the year, then I do not care about the fact that, in the long run, the stock return would be on average of either 4 percent or 7 percent. Concretely, expected return does not provide us an estimation on the return which we will actually get, even if you invest for 10 years. This can be observed in Table 1, an example of a gold return.

Table 1

Gold Return	Global Return	Annual Return
1960–1970	2%	0%
1970–1980	1607%	33%
1980–1990	-38%	-5%
1990–2000	-27%	-3%
2000–2010	339%	16%

A QUANTIFIED RISK/RETURN DISTORTS OUR UNDERSTANDING OF THE SITUATION

Although expectation is not an estimate of the return which will actually be observed, it is generally perceived as such by the risk/return users—as a kind of "best estimate." As a consequence, the decision-maker representation of the world is biased.

The decision maker was not able to forecast the future? Now he has two known, given figures; the two parameters being determined, the world seems to be deterministic. The quantification made the feeling of randomness disappear. Paradoxically, people then tend to consider that (i) they should systematically get the expectation and that (ii) a risk which did not occur should not have been considered as a risk. (See sidebar.)

A TOOL WHICH CANNOT OFFER THE EXPECTED QUANTITATIVE OBJECTIVITY

The claimed ambition, the raison d'être, of the quantitative tools relying on risk/return is to objectivize the decision. In practice however, when the risk is significant, it is not possible to objectively calibrate a statistical indicator. Let's take again the example of the expectation, and consider the DJ total return. Which time period shall we use? Shall we consider that we are in a post-financial crisis world? (9.9 percent) Shall we consider that our world is the world of the internet era? (2.3 percent) Shall we consider that nowadays economics is the one of the post oil-shock period? (9 percent) And if we had asked ourselves these questions in 2014 rather than 2016, the results would spread on a wider range: 12.8 percent, 1.5 percent and 6.1 percent.

Table 3

DJ total return since …	Seen at Year End 2015	Seen at Year End 2013
the financial crisis (01/2009)	9.9%	12.8%
we entered the internet era (01/2000)	2.3%	1.5%
we live in the post oil-shocks economy (01/1982)	9.0%	6.1%

(source : dqydj.com)

Choosing between these different options requires an expert judgement; that is, by definition, a non-quantitatively objectivizable choice. Unfortunately, as it can be seen in Table 3, the dispersion between these expert judgements is wider than the dispersion between asset classes (just compare it to the US 10Y return over the period—depending on the time period chosen, it will be higher or lower). As a consequence, any final output relying on such input cannot be considered as quantitatively objective. The very purpose of the risk/return relying tools, i.e., quantitative objectivity, cannot be reached.

THE DIFFUSED AND PARADOXICAL FEELING OF A DETERMINISTIC WORLD

i. When not getting expectation is perceived as abnormal

During an investment committee meeting, a CFO stated that *"we have a higher level of risk than the market ..."* and was straightforwardly interrupted by a critical business development executive *"in this case, we should have a higher rate of return. I do not feel that's the case ..."*

ii. and not suffering from the risk realization too:

A leading industry lobbyist argued: *"Can you imagine that following the currently selected criteria, those who sold their Apple stock three years ago to buy Greek debt would be exemplary according to Solvency II regulation?"*

Of course, this feeling of a deterministic world leads to cruel disillusion, e.g., to the frequent reproach made to risk models which *"did not anticipate the last crisis."*

A TOOL WHICH DEGRADES GOVERNANCE AND DESTROYS ACCOUNTABILITY

A governance issue then arises as subjectivity tends to become the prerogative of experts rather than the preserve of the decision-makers. Senior managers are the ones who are entitled to activate their subjectivity. But using such tools leads to swap from an assumed subjectivity, located at the official decision-making level, towards a hidden subjectivity, actually concealed into the analysis level.

Furthermore, it will always be impossible to distinguish ex post between the modelled variability and a potential model error—nobody will ever be able to criticize the quality of the calibration; so experts are not accountable. And risk/return never excludes an adverse realization—the decision-maker choosing any allocation on the efficient frontier can always claim having chosen an optimal allocation without being accountable for any catastrophe, should it happen. In a nutshell, neither experts nor decision-makers are accountable—these tools offer nothing but an excellent formalization of *"bad luck."*

SO WHAT? PROPOSING AN INTEGRATED (ANALYSIS-DECISION) TOOL UNDER THE DECISION-MAKER CONTROL

Risk/return use is harmful in several ways: first, because it generates a feeling of determinism and then damages the correct apprehension of the situation; second because it distorts the decision-making level through an oblivious transfer which

prevents accountabilities identification. This calls for new asset allocation methodologies.

A scenario-based approach (see Figure 4) attempts to resolve these issues and leads to abandon the tender illusion of a quantitative objectivity provided by experts.

Figure 4

The three steps of a formal scenarios based optimization

1. Open the field of possible scenarios: identify the future scenarios that could be considered. (*strong support of the experts to the decision makers*)
2. Take responsibility on the strategic vision and risk taking: exclude from the previous list of scenarios these "in which we do not believe" or these which risk is accepted to be run (e.g., a default of U.S. government bonds?) (*decision makers*)
3. Optimize under constraint: maximize the return in the central scenario under the constraint of acceptance of the output in all the other not-excluded-scenarios. (*experts*)

Since several scenarios are considered, the fact that the decision-maker does not know how markets will evolve materializes, and hence it reintroduces the feeling of randomness (step 1). The vision may be incomplete, a scenario can be wrongly neglected, but the perception of the very nature of the phenomenon is no more biased. Furthermore, the fact that the decision-makers chose the scenario to be considered—and what scenarios to disregard—reintroduces stakeholder accountability and improves governance through an explicit and properly located subjectivity (step 2).

Such a methodological evolution modifies the positioning of the technical teams (quantitative ALM) regarding the executive management.

As a matter of fact, technical teams remain of the utmost importance to focus the decision-maker's attention toward possible scenarios which they would not have considered; to draw a typology of those scenarios so that they do not become too numerous to be cognitively handled by the decision-maker (step 1); to estimate impacts; and finally to optimize under constraint (step 3).

The technical teams will be much more exposed. The technical layer that allowed to dissolve their responsibility via the absence of falsifiability disappears. Furthermore, being the vehicles of the widening of the field of possible scenarios and the promoters of a random vision of the future, the technical teams become a source of anxiety for the executive management, where previously, through their reality perception distorting tools, they were a tranquility center. However, they will benefit from an improved visibility and a more strategic positioning through deeper exchanges which will no longer be limited to an efficient frontier presentation. ■

Sylvestre Frezal is the founder and co-director of the chair PARI (ENSAE ParisTech & Sciences Po), focusing on the apprehension of risks and dangers. He can be reached at *sylvestre.frezal@polytechnique.org*.