

Measuring Sustainability of Strategic Performance

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Abstract

This paper proposes the assessment of sustained superior performance by means of two measures called Static Performance and Dynamic Performance. The first evaluates the attained superior performance, and the second gauges its sustainability over time. This proposal builds primarily on the fact that, under the strategic management perspective, a firm's prevalent objective is the pursuit of sustained superior performance. Three basic conceptual dimensions stem from this objective: relativity, sign dependence, and dynamism. They serve as the foundation to the two performance measures presented. In contrast to the measures and methods in extant literature, our proposal provides: (i) a dynamic approach by considering the progress or regress in performance over time; and (ii) a cardinal measurement of performance differences and its changes over time. The paper also develops an axiomatic framework that any measure of strategic performance should comply to be theoretically and managerially sound. Finally, an empirical application to the Spanish banking sector during 1987-1999 is used to illustrate the measures.

Key words

Sustained superior performance, persistent performance, profit differences, sustainable competitive advantage.

1. Introduction

Performance evaluation is important in management, economics and especially in strategic management, having an essential role in many empirical studies at the industry, group, firm or business unit level. Performance is the outcome of implementing strategies, and it reveals the success or failure of organisations. The purpose of this paper is to propose two measures of strategic performance with concept validity for the field of strategic management, and from these, a definition of sustainability of strategic performance will be derived. Concept validity implies that a measure must be relevant for the decision-makers (managers, shareholders or other stakeholders), methodologically sound and generalisable across different settings.

Strategy evaluation has to consider what managers expect from strategies, because strategic management is mainly interested in the survival of the firm in the real competitive arenas, where managers are the principal decision-makers.¹ For managers, and for other stakeholders, performance evaluation aims at discriminating success from failure in the strategies implemented. It can be agreed that managers relate success to obtaining certain levels of performance, that is, their target returns - in the most generic sense - or that strategies happen to offer better returns than expected. These targets frequently range from minimum, nonnegative economic profits to returns superior to those of competitors (e.g., Mao, 1970; March and Shapira, 1987; Baird and Thomas, 1990). Logically, managers would like to avoid the failure to achieve their targets, which is the object of study in literature on risk perception and measurement. This branch of literature will be used to support some of the proposals made in this paper.

When an outsider wishes to evaluate strategies pursued by an organisation, he may not know what the particular returns targeted by managers are. But literature on strategic management provides a prevalent objective for organisations in competitive settings. This objective is to pursue sustainable competitive advantage that leads to superior performance (e.g., Porter, 1985, 1991; Grant, 1991). Therefore, this becomes the main task for managers, to find strategies which create, renew, and struggle to maintain competitive advantage. Even in hypercompetitive contexts (D'Aveni, 1994), the mission of organisations aims at superior

¹ The leading role of managers does not underestimate the fact that they should comply with the interests of shareholders (or other prevalent stakeholders) if the agency problem is controlled.

performance, which needs continuous improvement and innovation to be sustained - with increasing difficulty - by means of creating new competitive advantages and destroying previous ones. Thus, it is argued here that performance evaluation should consider the assessment of competitive advantage and also the evaluation of its sustainability. As competitive advantage refers to superior economic performance, sustainability refers to the maintenance of this superiority, in contrast to the erosion of the privileged position in performance. As we shall see, in this paper we present a proposal for measuring the attainment of a sustained superior performance.

The path followed in this research starts with: (i) revisiting what the aim of organisations is from the point of view of strategic management, which we have summarised in this Introduction, (ii) deriving the implications of this objective, and (iii) building on existing literature in strategic management and related fields to provide foundations and elements of discussion on the validity of measures. The next section will be devoted to the theoretical work of the second and third steps of the research path. As a result of exploring literature and the basic desirable properties for a measure of performance and of finding limitations on measures existing in literature, the third section proposes the two measures of performance evaluation, static and dynamic performance, and the consequent definition of sustainable superior performance. The fourth section introduces an application to the Spanish banking sector and a final section of conclusions closes the paper.

2. Background on Strategic Performance Evaluation

Many of the models and measures used to evaluate performance have been borrowed from financial economics and statistical decision theory. These models provide measures which summarise performance by aggregating the series of obtained returns. The most traditional approach is the mean-variance model, which presents the mean as a measure of the centrality of returns and variance as a measure of its variability. The mean is widely accepted as a valuable description of a series of returns, but there is more discussion on the use of variance, which is qualified as a measure of risk, *ex post*, in that context. Alternative approaches have abandoned variance to complement the mean with other measures aimed at considering what decision-makers perceive as risk, such as semi-variance, deviations below a target level or some derivative of a covariance, like the beta of the Capital Asset Pricing Model (Malkiel,

1989). However, strategy research has recently identified that reliance on those existing measures may not be adequate for the concept and use in management research, especially in the case of the measures of risk, which in *ex post* settings should have the task to summarise the information of outcomes which is not included in a measure of centrality like the mean. As Bettis and Thomas (1990) note, there is a need to work on a definition and a measure of risk by going beyond the mere adoption of definitions and measures from disciplines apart from management. Several researchers state that risk measures used in strategic management have low concept validity (Baird and Thomas, 1990; Miller and Leiblin, 1996) because they do not capture the concept of risk perceived and employed by managers and investors. More recently, Ruefli Collins and LaCugna (1999) have called for research on the concept and measure of risk for the field of strategic management.

Some outstanding articles on risk perception give support to our approach to performance evaluation, because risk perception considers what managers or investors want and what they do not. Mao (1970) finds that managers perceive risk as the failure to achieve their target returns, in accordance with maximising the value of the firm, and consider the growth of returns and its stability as important. Aaker and Jacobson (1990) state that marketing risk can be considered as the probability of loss or the shortfall in achieving a certain return level fixed as the target. In the field of decision theory, Fishburn (1984) considers risk as a judgement of outcomes according to targets desired and preferences, which means that risk involves the discrimination between more and less desirable returns. In conclusion, these classical pieces of literature consider that success, what managers and investors want, consists of attaining and exceeding targets, and failure is what they do not want, falling short of targets.

As was presented in the Introduction, from the point of view of strategic management, sustainable superior performance can be considered a prevalent objective for organisations. The analysis of this objective reveals three dimensions which will be herein analysed and contrasted with literature.

Relativity

Relativity arises from the definition of success as the reaching of targets, making it necessary to compare the returns obtained with targets to discriminate between good and bad returns. Admitting the long-term objective of pursuing sustainable superior performance, those targets

will be fixed using external data. This property has been especially considered in literature on the concept and measurement of risk (e.g., March and Shapira, 1987; MacCrimmon and Wehrung, 1986). Targets are also relevant in the downside measures proposed for strategic management (Miller and Leiblin, 1996; Miller and Reuer, 1996), and in the field of finance with deviations from target measures (e.g., Stone, 1973) or downside CAPM measures (e.g., Bawa and Lindenberg, 1977; Harlow and Rao, 1989).

Sign dependence

The second basic dimension is sign dependence, which points out that perception makes a distinction between returns according to their position relative to targets, and that valuation should take that into account. It is precisely the sign of the deviation from the target which marks the distinction between success or failure. According to sign dependence, achieving and exceeding targets is positively evaluated and should increase the value of performance success, and failing to achieve targets is negatively evaluated and decreases the performance success of the organisation. This property is explicitly defended in literature on *ex ante* performance assessment, such as in the behavioural decision theory (e.g., Fishburn, 1982, 1984; Luce and Fishburn, 1991), in the prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992) and in the classical, expected utility frameworks used in economic decision theory (e.g., Kreps, 1990).

In contrast to sign dependence, measures based on variance make no distinction in the contribution of outcomes above or below targets. As regards to downside risk measures, such as semi-variance or deviations below target, their proposal is that returns above the target, neither add to nor reduce the value of risk.

Dynamic evaluation

Sustainability is associated with avoiding the erosion of superior performance, that is, with maintaining the advantage over time or even improving it. Therefore, this dimension requires the consideration of the time-ordering of outcomes. Literature has referred to this property as path dependence. For example, Bettis and Mahajan (1990) explicitly consider it in performance evaluation and propose a time-series methodology. Fiegenbaum and Thomas (1990) implicitly consider this dimension by designing a measure which calculates deviations of returns with respect to an average of returns of the previous four years. Collins and Ruefli (1992) propose an ordinal path-dependent - but not sign-dependent - approach where

performance is evaluated by the changes over time of the position of a firm in the ranking of returns of the industry.

The three properties arising from the analysis of the concept of sustainable competitive advantage share some grounds with the Strategic Reference Point Theory (Fiegenbaum et al., 1996), which states that the formulation of reference points or targets with which to evaluate performance have to draw upon three sources of information: internal capability, external conditions and time.

3. Static and Dynamic Performance

Sustainable competitive advantage is the achievement of a superior performance over competitors which can be maintained over time. This objective implies a double incremental sense of performance which has to be considered in strategic evaluation. Firstly, competitive advantage is defined as outperforming competitors, as was considered in the relativity dimension. A measure of performance should inform one about the degree of achievement or not of this superior performance, in function of the magnitude of the achievement and its frequency. This can be measured periodically by comparing the outcome returns of an organisation to the returns of competitors, which can be considered a static evaluation because it allows for the measurement of the achievement of the period-by-period goal. This will be the aim of the static performance measure. But, secondly, sustainability implicitly bears out the desire of continuous improvement in returns, which needs the property of dynamism. This evaluation will be carried out by the dynamic performance measure.

Accordingly, the main requirement for a conceptually valid measurement of performance is the compliance with the three previously explained dimensions: relativity, sign dependence and dynamic evaluation. The first two dimensions will be implemented in a measure of static performance. And the third dimension generates the dynamic performance measure. For simplicity, we will refer to the firm level of organisation, considering that there is no loss of generality.

The property of relativity can be put into practice by comparing the returns of a firm i at time t , x_{it} , with a reference or target level for the same period, x_t^{ref} , generating what in literature has been called performance discrepancy or deviation, δ_{it} , as:

$$\delta_{it} = x_{it} - x_t^{ref} .$$

This performance discrepancy can be considered the degree to which the returns of firm i have outperformed the reference level. Conforming to the objective of competitive advantage, the reference level should be a proxy of the best performance of the industry or the group under analysis. Nevertheless, other interesting reference levels are the average of an industry, the average of a group, or the return of a specific competitor used as a benchmark. If $\delta_{it} > 0$, the firm's performance is above the target, and if $\delta_{it} < 0$, it is below the target. The additive aggregation of δ_{it} over n periods produces the measure of static performance (SP_i), which using discrete historical returns data is defined as²:

Definition of Static Performance

The measure of static performance for a firm referred to a period comprised between 1 and n is the mean value of δ_{it} from $t=1$ to n :

$$SP_i = \frac{1}{n} \sum_{t=1}^n \delta_{it} = \frac{1}{n} \sum_{t=1}^n (x_{it} - x_t^{ref}) .$$

If $SP_i > 0$, the firm achieved a superior performance because its returns have been, on average, above the reference level. If $SP_i < 0$, the firm has not shown superior returns because outcomes have been below reference levels, and if $SP_i = 0$, the firm has had, on average, the same returns as the reference showing neither an advantage nor a disadvantage. This measure can have a centrality interpretation as the average static position of the returns of a firm relative to the reference levels. A similar type of measure is proposed by Miller and Leiblin (1996), who define a downside risk measure to evaluate *ex ante* or *ex post*

² When returns are a distribution of continuous data, the expression for the static performance measure is $SP_i = \int \delta_{it} dp$, where p is the density function of returns.

performance with a parallel interpretation, but only considering returns below the reference level.

The property of dynamism is meant to reflect the sustainability of superior performance, that is, to measure the maintenance or the erosion of the advantage. Therefore, the measure should increase if returns positively deviate from the reference levels, that is, if SP_i increases, and should decrease if returns negatively deviate from the reference levels, that is, if SP_i decreases. The measure of dynamic performance will be defined to incorporate this property. Let z_{it} be the relative performance change from period $t-1$ to period t as:

$$z_{it} = \delta_{it} - \delta_{it-1}.$$

If $z_{it} < 0$, the firm has suffered an erosion in its returns relative to the reference levels in this transition from $t-1$ to t , failing to achieve any objective of sustainability. If $z_{it} = 0$, the firm has maintained its position relative to reference levels, but it could have a superior performance or not. If $z_{it} > 0$, the firm has improved its position, meeting its dynamic objective to build superior performance. The aggregation of that behaviour over time is carried out in the measure of dynamic performance (DP_i).³

Definition of Dynamic Performance

The measure of dynamic performance for a firm i in a period comprised between 1 and n is the mean value of z_{it} from $t=1$ to n :

$$DP_i = \frac{1}{n} \sum_{t=1}^n z_{it} = \frac{1}{n} \sum_{t=1}^n (\delta_{it} - \delta_{it-1}).$$

If $DP_i < 0$, the firm has, on average, suffered an erosion in its returns relative to the reference levels, failing to achieve any objective of sustainability. If $DP_i = 0$, the firm has maintained its position relative to reference levels in the period under analysis. If $DP_i > 0$, the firm has, on average, improved its position, meeting its dynamic objective to build

superior performance. Apart from dynamism, DP_i involves the other two properties because it ultimately aggregates on δ_{it} , which complies with relativity and sign dependence.

Dynamic performance can alternatively be expressed in terms of the dynamic variations of the performance of a firm and the reference target level considering:

$$z_{it} > 0 \Rightarrow \delta_{it} > \delta_{it-1} \Rightarrow (x_{it} - x_{it-1}) > (x^{ref}_t - x^{ref}_{t-1}) \text{ and}$$

$$z_{it} < 0 \Rightarrow \delta_{it} < \delta_{it-1} \Rightarrow (x_{it} - x_{it-1}) < (x^{ref}_t - x^{ref}_{t-1}),$$

showing the equivalence between first considering relativity and then dynamism, or conversely.

The definition of dynamic performance allows that the final relative position of returns of a firm i , δ_{in} , be expressed as a function of the initial position, δ_{i0} , and dynamic performance, as follows:

$$\delta_{in} = \delta_{i0} + n DP_i,$$

and for the final return value for the firm as:

$$x_{in} = x_{i0} + (x_n^{ref} - x_0^{ref}) + n DP_i.$$

Because of its linearity, dynamic performance, DP_i , offers a simple interpretation and connection with the actual returns. It is formulated as an average and can be interpreted either as the average change in the relative position or as the average speed at which the firm has increased (reduced), if DP_i is positive (negative), the distance to the reference levels.

The concepts of static and dynamic performance provide the tools to define sustained superior performance:

³ The expression of DP_i when returns are a distribution of continuous data is $DP_i = \int z_{it} dq$, where q is the density function of returns transitions.

Definition of Sustained Superior Performance

Firm i has revealed a sustained superior performance when its returns show that they have a positive static performance ($SP_i > 0$) and a non-negative dynamic performance ($DP_{it} \geq 0$).

This definition states that when $SP_i > 0$ the returns of a firm show its superior performance, and if this advantage has been sustained over time, then $DP_{it} \geq 0$. When $SP_i > 0$ but $DP_{it} < 0$ the firm has, on average, shown a superior performance but this advantage has been reducing over time, proving not to be sustainable. The worst possible situation in strategic performance is found when a firm has a competitive disadvantage, $SP_i < 0$, which is becoming worse over time, causing a negative dynamic performance, $DP_{it} < 0$.

4. Strategic Performance Measurement in the Spanish Banking Sector

To illustrate the measures proposed and their properties, this paper presents an application to the Spanish banking sector, which analyses the performance of firms competing in the industry from 1987 to 1999. The application considers the operating returns on assets as relevant performance. With this application, we shall show that static performance describes the degree of achievement of superior performance for each banking firm in the period, and dynamic performance captures the time trend of superior performance, that is, its observed sustainability over time. Particularly, the strategic performance of three outstanding banking firms shall be studied: Banco Popular, which is the object of a case study in Mintzberg *et al.* (1995), Banco Bilbao Vizcaya Argentaria (BBVA) and Banco Santander Central Hispano (BSCH), these two considered "two battle-hardened power-houses poised to take a run at Europe" according to a recent article in Business Week (April, 23, 2001).

5. Discussion and Conclusions

This paper revisits strategic performance evaluation for strategic management, building on the generic objective for firms of pursuing sustainable superior performance, on strategic management literature and on modern decision theory. The properties derived from the objective of firms are discussed and literature to support our intuitions is presented. Two measures of performance with concept validity are proposed: static performance and dynamic performance. They can be considered substitutes of the traditional mean and variance approach to performance evaluation, because the traditional approach presents several inadequacies, as well as other recent proposals such as downside measures (Miller and Leiblin, 1996; Miller and Reuer, 1996) or strategic risk (Collins and Ruefli, 1992). Moreover, a definition of sustained superior performance is provided, based on the two proposed measures.

The two measures of performance are intended to be generalisable to different empirical contexts by defining the adequate outcome measure. Apart from embodying the concept and properties explained, some decisions have mainly been taken on the method of aggregation of returns, which can be backed up by literature and present theoretical and methodological sound properties.

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