

**Developing Good Measures to Advance Management Accounting  
and Control Research: A Discussion of “Corporate Frugality: Theory,  
Measurement and Practice”\***

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## **Developing Good Measures to Advance Management Accounting and Control Research:**

### **A Discussion of “Corporate Frugality: Theory, Measurement and Practice”**

#### **1. Introduction**

Many empirical researchers in management accounting and control use field-based quantitative methods, such as survey research, to capture and analyze data from organizations. Researchers who employ these methods should rely on appropriate measures (clearly defined and carefully validated) of theoretically relevant constructs,<sup>1</sup> which can be replicated and successfully used in future research. Anderson and Lillis (2011), hereafter A&L, intend to develop one such measure. They propose a measure of a novel construct, “corporate frugality” which, they claim, can affect the design and effectiveness of cost management and control systems. This discussion presents a general set of criteria that can be used to evaluate whether a new measure shows potential to advance the literature and, more specifically, it examines the corporate frugality measure proposed by A&L in light of these criteria.

Based on a review of the individual consumer frugality literature in marketing and anecdotal evidence on frugality, A&L define corporate frugality as “an enduring corporate trait of consistent, disciplined management of spending to achieve long term strategic objectives and sustainable profits” (A&L, xxxx). The authors measure corporate frugality in a company using 11 survey questions, presented in Figure 1, measured on a seven-point Likert scale (where 1 = very strongly disagree and 7 = very strongly agree). The questions capture three attributes of corporate behavior: disciplined spending, resourcefulness in the use and the reuse of inputs, and deferred gratification. To demonstrate the discriminant validity of their corporate frugality measure, A&L show that it is distinct from other potentially related measures studied in prior literature, including organizational culture archetypes as defined in the Competing Values framework (Quinn and Rohrbaugh 1981),

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<sup>1</sup> Constructs are concepts adopted to conduct scientific research that are not directly observable by the researcher (Kerlinger and Lee 2000, 42; Nunnally and Bernstein 1994, 85).

strategic types as defined by Porter 1980, and budgetary control indicators as defined by Van der Stede 2000 and Margison and Ogden 2005. In addition, A&L show that frugal companies manage costs differently from non-frugal companies. Specifically, frugal companies are more likely to control costs by using incentive pay (e.g., evaluating and compensating employees based on the achievement of cost targets), investing in efficiency-enhancing technologies and improving internal operations (e.g., employing waste reduction and productivity-enhancing methods), and employing sourcing strategies and value chain analyses “to manage costs at the boundaries of the firm” (A&L, xxxx).

- INSERT FIGURE 1 HERE -

This discussion proceeds as follows. Section 2 presents a set of criteria that can be used to evaluate the quality and relevance of a measure, based on methods described in articles and textbooks in the social sciences (especially in the fields of psychology, management, and education). Section 3 uses these criteria to evaluate A&L’s corporate frugality measure and argues that this measure is likely to be relevant to practitioners and academics in management accounting and control. The authors’ effort to propose and carefully validate this measure is likely to have positive payoffs. Nevertheless, I also argue that the definition of the measure could be more clearly delineated, and that the applicability of the measure at different levels of a company or to other samples outside of that studied by the authors is still subject to question. Furthermore, some of the validity tests rely on measures that are not necessarily well established and are subject to same source bias, suggesting that further validation is required before the corporate frugality measure can be broadly applied to develop theory. Section 4 offers concluding remarks.

## **2. Criteria to evaluate the quality and relevance of a measure**

Empirical researchers can benefit greatly from identifying and improving measures of theoretically relevant constructs. A high-quality measure is one that can be used to quantify the

attribute(s) of an object (which capture(s) the essence of the construct) with as little random error and bias as possible and that allows the researcher to categorize objects based on this (these) attribute(s) (Nunnally and Bernstein 1994, 3). In the case of A&L's corporate frugality measure, the objects are organizations and the attributes that characterize those objects are patterns of disciplined spending, resourcefulness in the use and the reuse of resources, and deferred gratification.

Figure 2 lists three criteria to assess whether a measure is good based on the objectives stated in the previous paragraph. The methods used to examine whether or not a measure meets these three criteria have been (and continue to be) extensively discussed in the social sciences literature (Kane 2001). My intent is not to enter this discussion but, rather, to identify a simple set of criteria that could be useful to evaluate a measure—in line with Churchill's 1979 paradigm for developing measures.

- INSERT FIGURE 2 HERE -

The first criterion in Figure 2 examines the potential impact of a measure. The level of demand of a measure is high if a significant number of researchers are interested in the construct underlying the measure, and the determinants and consequences of that construct. The relevance of a measure increases if it can contribute to testing and developing theory, and/or if the insights that can be gained from using the measure are of interest to practitioners. If the potential impact of the measure is small, then the measure is of limited value and the next criteria become irrelevant.

The second criterion examines the quality of the measure. A measure is likely to be of high quality if the domain of the construct is well specified and the measure is reliable and valid for its intended purpose. The domain of the construct is well specified when the researcher is able to delineate exactly what is included and what is excluded from the definition of the construct, as well as the context and the population to which the measure applies (Churchill 1979).

Assessing the reliability and validity of the measure amounts to evaluating the extent to which the measure accurately represents the construct within its relevant domain. A *reliable* measure is one that is precise and which therefore exhibits only a minimum amount of random error. Reliable measures should yield the same or similar results, even if the measurements are made by different researchers or at different times under stable conditions (Nunnally and Bernstein 1994, 213–4). Researchers can estimate the reliability of a measure using different methods, such as (a) internal consistency reliability, which examines correlations across several items used to measure the construct (Cronbach alpha estimates are usually recommended), and (b) alternative forms reliability, which examines correlations between two similar (but not identical) sets of survey items applied to the same subjects at two different points in time, usually two weeks apart (Peter 1979; Nunnally and Bernstein 1994, 251–4).<sup>2</sup> A *valid* measure is one that represents the intended, and only the intended, construct (Nunnally and Bernstein 1994, 83) and which is, to the extent possible, free of bias. Common tests used to assess the validity of a measure include (a) convergent validity tests, which verify the existence of a high correlation between the measure evaluated and other measures of the same construct estimated using different methods, (b) discriminant validity tests, which verify that the measure evaluated is not just a reflection of measures of other constructs, and (c) nomological validity tests, which verify that the measure behaves as expected, according to theory (Cronbach and Meehl 1955; Campbell and Fiske 1959; Campbell 1960; Peter 1981).<sup>3</sup>

The third and final criterion to evaluate a measure relates to its “usability.” The process followed to construct the measure, as well as the data sources required to complete this process,

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<sup>2</sup> Other common reliability tests include the test–retest and the split halves methods. However, these tests are inferior to the tests described above (for a discussion, see Peter 1979).

<sup>3</sup> Other common validity tests include face validity, content validity, and criterion validity tests. Yet, these tests have certain limitations, since they cannot always be applied to assess the validity of measures. Refer to Nunnally and Bernstein 1994 and Carmines and Zeller 1979 for a critical review of these additional tests.

should be accessible to several researchers. Practical matters should be considered: The process to construct the measure should be simple and clear, constructing the measure should not require a great investment of time and/or resources, and the measure should be easy to interpret (Miller, Linn, and Gronlund 2009). A significant body of knowledge will only be developed if multiple researchers are able to use the proposed measure.

### **3. How does corporate frugality fare against these criteria?**

#### ***Demand for the corporate frugality measure***

According to A&L, the construct corporate frugality has often been used by practitioners to describe well-known corporate values (embodied by firms such as IKEA, Southwest Airlines, Walmart, and Toyota) that are relevant to achieving management control. Nevertheless, this construct has not been defined or measured in the management accounting and control literature. By introducing and carefully validating a measure for this construct, A&L could potentially advance the literature, given that some scholars claim that (a) corporate shared values should be the foundation for the design, implementation, and effectiveness of control systems and (b) “very little work has been undertaken to assess the impact of different cultural assumptions on the working of management control systems” (Merchant and Otley 2007, 798).

Although a theory of frugality does not yet exist in the management accounting and control literature, there exist many opportunities to develop and test theories using the measure proposed by A&L. I provide just three examples of such research opportunities. An interesting first question would be to examine whether frugal firms perform better than non-frugal firms (an implicit suggestion of A&L) and, if so, why. A positive association between frugality and long-term performance might be mediated by different factors, including the implementation of incentive and control mechanisms focused on the achievement of long-term efficiencies, the use of

collaborative contracts with suppliers, and/or the implementation of continuous improvement techniques.

An obvious follow-up question would ask why some firms appear to be less frugal than others. A firm's lack of frugality may be a consequence of managerial opportunism or neglect that could be harmful to the firm. Consistent with this notion, Yermack (2006) finds evidence that firms where the CEO receives higher perquisites (specifically, those where the CEO makes personal use of a company aircraft) report lower returns relative to market benchmarks. However, economically sound reasons can also explain a firm's lack of frugality. One of these reasons is that high-performing employees in certain industries (such as the entertainment industry or the financial industry) are attracted to abundant resources or receiving perks. Another reason is that managers have a limited attention span (Simons and Davila 1998), and some of them may consider it important to focus on priorities different from frugality. A focus on frugality may be seen as dangerous in industries focused on pursuing growth opportunities, such as Google and Microsoft, or in firms where safety is a priority, such as BP or Medtronic. Events such as BP's oil spill in the Gulf of Mexico in 2010 suggest that corporate frugality can even backfire. An article from the *Washington Post* indicates that federal investigators were questioning BP's safety practices and probing "BP's save-money culture" (Achenbach 2010).

Finally, salient stories such as BP's may inspire researchers to study the unintended consequences of frugality, which may not be limited to safety but could extend to other aspects of the business, such as potential underinvestment in positive net present value projects or lack of innovation. In the final version of their article, A&L discuss some of these and several other opportunities for future research. In turn these opportunities suggest that the effort to develop a high-quality corporate frugality measure is worthwhile.

### ***Quality of the corporate frugality measure***

#### *Domain*

Based on A&L's definition of the corporate frugality construct, the corporate frugality measure should represent a *collective approach* of "consistency and discipline in the management of spending" (A&L, xxxx) undertaken with the *purpose* of "achieving long term strategic objectives and sustainable profits" (A&L, xxxx) at a corporate level. The authors capture the collective approach toward minimizing spending specified in the definition using survey items 1 through 5 and 7 through 9, and the purpose of achieving long term objectives/profits using survey questions 6, 10, and 11 (see Figure 1). Several issues are worth highlighting. First, the domain of the construct does not seem to capture every aspect of frugality. For example, none of the 11 questions directly captures the notion that frugality is not deprivation, or that frugality entails values and behaviors that are consistent through good times and bad times. These aspects could have been captured more explicitly by introducing additional survey questions. The "consistency" of a firm's frugal behavior could also have been captured by redefining the ends of the seven-point Likert scale as "never" (instead of "very strongly disagree") and "always" (instead of "very strongly agree").

Second, the limits of the domain are not entirely clear. Specifically, none of the survey items clarifies the meaning of *long term strategic objectives* or *sustainable profits*. Future researchers may ask questions such as what long-term strategic objectives should frugal companies achieve? Does the achievement of sustainable profits require that employees and managers in frugal companies undertake actions to generate (or retain) revenues? Are non-profit organizations excluded from the "corporate frugality" definition? A clearer delineation of the desired long term goals could help clarify the definition of corporate frugality and lead to a more accurate selection of survey items.

Third, the definition of the measure captures two concepts associated with a collective approach toward minimizing spending and serving the purpose of achieving long-term goals. The specification of three attributes of corporate frugality by the authors does not exactly mirror the definition of the construct. It could be useful either to incorporate the aspect related to using resources efficiently (second attribute in Figure 1) as part of the definition of the construct or to retain only two attributes (as suggested by the maximum likelihood factor analysis of the 11 survey items, which yielded two instead of three factors).

Specifying the domain of the corporate frugality construct not only requires that the construct be precisely defined, but also that the context in which the measure applies be clarified. In this regard, A&L do not provide explicit guidance. It is difficult to conclude from the authors' analysis that the new measure can be applied broadly, given that the reliability and validity tests they conduct are based on a potentially biased sample (166 surveys filled out by a group of accountants, mostly from small, privately held firms, self-selected from a population of over 20,000 American Institute of Certified Public Accountants members addressed by email). Additionally, it is not clear why the authors choose to define frugality at a corporate level rather than at a business unit level or a work group level. Future research could measure the frugality of several business units (or work groups) in different firms and explore the extent to which variation in the frugality measure is explained at the work group, business unit, and/or firm levels.

### *Reliability*

Despite A&L's exploratory factor analysis of the 11 survey questions identifies two factors (presumably with eigenvalues greater than one), the authors argue that the theory on consumer frugality suggests that three separate attributes of frugality exist. They assess the reliability both of the three attributes separately and of the overall measure of frugality by conducting internal consistency reliability tests. The survey items for each of the three attributes of corporate frugality

have Cronbach alphas that range between than 0.70 and 0.91, and the three attributes load into a single factor of overall frugality that explains 74 percent of the variance in the attributes. The authors do not examine the reliability of the measure using alternative forms or other methods.

### *Validity*

The authors measure corporate frugality using a single survey method. Thus, they do not assess convergent validity. It might be possible to find multiple respondents to the survey or to use alternative proxies of corporate frugality to assess the convergent validity of the frugality measure. Examples of alternative proxies include long-term efficiency measures (such as a firm's three-year average asset turnover relative to industry peers) or spendthrift measures (such as measures of the perks received by firm executives). Instead of assessing convergent validity, A&L complement their analysis with interviews of executives in 10 Australian firms. These executives identify frugality with a cultural orientation reflecting disciplined spending and long term cost/benefit tradeoffs. These views resonate with both the collective approach and long-term orientation described in A&L's definition of frugality.

A&L pay special attention to assessing the measure's discriminant validity. Their study shows that frugality is distinct from (a) the organizational culture types described by the Competing Values framework (Quinn and Rohrbaugh 1981), namely, a group culture, a developmental culture, a hierarchical culture, and a rational culture; (b) the strategy archetypes of low cost and differentiation (Porter 1980); and (c) a "budget-oriented" culture, described by proxies for budget firmness, management attention to budget achievement, target difficulty, and budget-based rewards (Van der Stede 2000; Margison and Ogden 2005). Generally speaking, the authors do a good job ruling out the possibility that the frugality measure reflects other constructs different from that introduced by the authors. Nevertheless, it is important to recognize two caveats in this analysis. First, the measures used in the discriminant validity tests have limitations. In particular,

A&L create an ad hoc measure of Porter's strategy archetypes instead of using a measure validated in previous literature (e.g., Dess and Davis 1984; Miller 1988). In addition, the Competing Values organizational framework is probably not the best measure to capture organizational culture. This measure is meant to capture organizational effectiveness rather than organizational culture, and it was developed based on the opinions of seven (unidentified) individuals with doctoral degrees and research interests in the field of organizational effectiveness (Quinn and Rohrbaugh 1981). The authors do not provide convincing arguments to dismiss the use of other, perhaps more appropriate, organizational culture measures (e.g., Hofstede, Neuigen, Ohayv and Sanders 1990; O'Reilly, Chatman and Caldwell 1991; Denison and Mishra 1995). Second, there exist other constructs from which corporate frugality should be distinguished, including efficiency constructs that capture a firm's success in producing as large as possible an output from a given set of inputs (e.g., Farrell 1957) and lean practices constructs that capture a firm's aim to minimize waste (e.g., Shah and Ward 2007).

Finally, A&L assess the nomological validity of the corporate frugality measure by examining whether or not frugal companies implement cost management practices that differ from those implemented by non-frugal companies. In general, nomological tests entail "investigating both the theoretical relationship between different constructs and the empirical relationship between measures of those different constructs" (Peter 1981, 135). Although A&L do not explicitly specify how corporate frugality is expected to be associated with cost management practices from a theoretical perspective, their interpretation of the results seems to be aligned with several principles that they describe regarding the expected behavior of frugal companies (in Section 2 of their article). For example, the authors indicate that frugality should be associated with the judicious use of resources to achieve long-term goals, but not with cost-cutting reactions in times of crisis. Consistent with these principles, the nomological tests show that frugal companies are more likely than non-frugal companies to engage in long-term behaviors such as investing in

efficiency-enhancing technologies and employing sourcing strategies to control material and supply costs, but are not more likely to employ potentially harmful cost-cutting techniques such as laying off employees, freezing or reducing salaries, or reducing service to customers. Overall, the nomological validity tests presented suggest that the corporate frugality measure behaves as expected: It is associated with cost management practices implemented to achieve greater efficiencies, to improve internal activities, and to reward cost performance.

There are, however, alternative explanations for these results. First, both the frugality and the cost management proxies are measured using the same survey, and are thus exposed to same source bias. The respondents may have tried to provide consistent answers throughout the survey, or a set of answers they considered socially desirable (Bertrand and Mullainathan 2001). Second, some of the frugality and cost management practices were very similar. For example, one of the frugality questions asks whether “managers and employees emphasize waste reduction” (A&L, xxxx) while one of the cost management practices questions asks whether “waste reduction initiatives” are important (A&L, xxxx). A positive association between these two measures would not be surprising. Future research could benefit from using multiple data sources and relating the survey measure of corporate frugality with hard cost management data obtained from firms’ internal records (Ittner and Larcker 2001).

### ***Usability of the corporate frugality measure***

The discussion above suggests that a corporate frugality measure could be valuable to both practitioners and researchers, especially if it is further validated. Yet the use of the measure will be conditioned by its usability. The process by which a researcher can measure A&L’s corporate frugality can be easily replicated and understood in a survey questionnaire. Interpretation of the measure should not require much effort, other than a consideration of the caveats indicated under the domain of the construct. The greatest challenge in gathering the corporate frugality measure

lies in finding a set of respondents willing to complete the survey. To increase the likelihood that other researchers will test hypotheses related to corporate frugality, the authors might consider proposing alternative measures of their construct or sharing some of their data.

#### **4. Conclusion**

A&L present a new construct, corporate frugality, and a set of tests to validate a proposed measure for the construct. I applaud the authors' effort to carefully validate their proposed measure, combining interview and field methods. This type of effort is rare in the management accounting and control field; however, it can lead to enhancing the credibility of findings and consistency across studies.

My discussion reviews the qualities and potential of the measure. I highlight that, although a theory of corporate frugality does not exist in the management accounting and control literature, it is not difficult to envision several venues of future research that could benefit from using this measure. I also point out some concerns regarding the clarity with which the measure is defined, the measure's applicability to other samples different from that utilized in A&L, the quality of the measures that were correlated with the corporate frugality measure to assess both discriminant and nomological validity, and the possibility that the relationships A&L find in the nomological analysis are due to the common method employed. Further validation could result in a more credible measure. Nevertheless, I feel enthusiastic that A&L will spur future research and expect to read several follow-up papers using the frugality measure proposed in this study.

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**Figure 1** Corporate frugality measure

	<b>Employees and managers in the firm...</b>
<b>Spending Discipline</b>	<ol style="list-style-type: none"><li>1. Are careful in how they spend company money.</li><li>2. Try to get the most from company money.</li><li>3. Are disciplined in their use of company resources.</li><li>4. Work hard to contain costs.</li><li>5. Plan carefully before spending.</li></ol>
<b>Resourceful Reuse</b>	<ol style="list-style-type: none"><li>6. Understand that maintaining company assets saves money in the long run.</li><li>7. Emphasize waste reduction.</li><li>8. Try to reuse or redeploy existing resources rather than buying new resources.</li><li>9. Emphasize recycling and reuse.</li></ol>
<b>Deferred Gratification</b>	<ol style="list-style-type: none"><li>10. Spend money in the short run to save money in the long run.</li><li>11. Manage costs for the long run, not the short run.</li></ol>

Source: Anderson and Lillis (2011)

**Figure 2** Criteria to evaluate a measure

- 1 Level of demand for the measure**
- 2 Quality of the measure**
  - Domain of the construct is well specified
  - Reliability
    - » Internal consistency reliability
    - » Alternative forms reliability
  - Validity
    - » Convergent validity
    - » Discriminant validity
    - » Nomological validity
- 3 Usability of the measure**