

# An Empirical Test Of The View Of Inventory As A Liability In Explaining Financial Distress: A Comment

Robert C. Kee, (E-mail: rkee@cba.ua.edu), University of Alabama  
Michael T. Dugan, (mdugan@cba.ua.edu), University of Alabama

## Abstract

*In a recent article appearing in this journal, Foster, Sullivan, and Ward (FSW) examined the assertion of the theory of constraints (TOC) and just in time that holding inventory is harmful or a liability to a firm's operations. In this comment we demonstrate that inventory is not inherently a liability but rather is a symptom of more fundamental problems within many firms' operations. Therefore, addressing these problems rather than inventory per se is the primary means of relieving a firm's financial distress. In this comment we also examine the FSW assertion that more detailed inventory information should be reported to enable financial statement users to construct the performance measures of the TOC. The performance metrics of the TOC are short-term measures of economic performance and represent a small subset of the information used to guide managerial decisions. Consequently, external financial statement users who have a longer decision horizon and who do not have access to the firm specific information with which the TOC is used would derive limited benefit from TOC performance measures.*

## Introduction

In a recent article appearing in this journal, Foster, Sullivan, and Ward (FSW) examined the assertion of the theory of constraints (TOC) and just in time (JIT) that holding inventory is harmful or a liability to a firm's operations. The authors used logistic regression to evaluate the incremental explanatory power of the amount of inventory held by a firm to discriminate between healthy

and distressed manufacturing firms. Based on the increased explanatory power from using inventory as a liability to distinguish between healthy and distressed manufacturing firms, the authors stated that the FASB should consider requiring companies to report more detailed inventory information (Foster et. al. 1998, 93). FSW indicate that reporting the amount of material, labor, and overhead in work in process and finished goods inventories would enable a firm's financial statement users to construct the performance measures of the TOC. It is hypothesized that

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that this information would aid potential lenders and investors in assessing the potential for future cash flows and in comparing alternative investment decisions (Foster et. al. 1998, 92).

The purpose of this note is to examine the issue of inventory as harmful to a firm's performance and the assertion that additional inventory information should be provided to lenders and investors to construct the TOC performance measures. The note demonstrates that inventory is not inherently a liability but rather is a symptom of more fundamental problems within many firms' operations. Therefore, addressing these problems rather than inventory per se is the primary means of relieving a firm's financial distress. For lenders and creditors, understanding why and when inventory is harmful is critical to determining the economic implications of a firm's reported inventory amount. Secondly, the note will examine the implications of reporting more detailed inventory information to enable financial statement users to construct TOC performance measures. The strengths and limitations of the TOC will be examined to assess the usefulness of its performance measures for assisting lenders and investors in assessing the potential for future cash flows and comparing alternative investment decisions.

### **Inventory as a Liability**

Direct material, work in process, and finished goods inventory are held to facilitate a firm's production and marketing functions. Manufacturing involves a chain of interrelated activities that begin with purchasing material from suppliers and end with the delivering of produced goods to customers. The role of inventory is to provide a buffer between interdependent manufacturing activities and enable the firm to cope with a failure anywhere in its production processes. For example, direct material inventory relieves production from the consequences of late delivery, substandard quality, and other problems associated with an unreliable vendor. Conversely, work in process buffers

production from the effect of downtime, variation, and quality problems in a manufacturing activity. Finally, finished goods enables marketing to meet customer demands when the firm has long lead and cycle time and cannot produce efficiently in small production runs. These problems in a firm's production processes create the need for inventory and additional overhead transactions such as moving, storage, inspection, rework, expediting, and overtime. For many firms, the cost of these non-value added transactions represents a significant portion of their production cost.

Large inventories are frequently a symptom of more fundamental and structural problems within a firm's production processes. As these problems are corrected, the firm's overhead cost will decline as well as the quantity of inventory needed to facilitate production. Therefore, the JIT and TOC perspective of inventory as a liability reflects the correlation between the amount of inventory held and the structural problems in a firm's production processes it is used to cope with. However, reducing inventory per se will not improve a firm's performance. JIT and TOC advocate reducing inventories to expose production problems, correct the problems, and redeploy and/or eliminate the overhead related resources that are no longer needed. Solving production problems and managing the excess resources that result enhance a firm's productivity and economic performance. In the FSW study, employing inventory as a liability is a surrogate for the structural problems in a firm's operations that caused the firm to hold excessive inventory. This distinction in evaluating the decision usefulness of inventory for predicting financial distress is important. Firms that decrease inventory without a program of process improvement and plan for managing excess overhead resources will not enhance their competitive position. Conversely, firms with excessive inventory because of a rapid decline in sales represent a different form of potential financial distress. Organizations with otherwise efficient production processes can shift their prod-

uct mix and marketing strategies to increase sales and reduce inventory. However, firms with problematic manufacturing operations are much more limited with respect to reversing their financial distress. Consequently, it is critical to distinguish between firms with excess inventory because of structural production problems and those with declining sales. Equally important, it is crucial to understand what steps a firm's management is using to reduce inventory. Firms reducing inventory through a program of process improvement may be expected to enhance their performance, while firms without a program of process improvement may not.

### **Theory Of Constraints**

The TOC uses three performance measures to guide resource allocation decisions: throughput, the rate at which the system generates money through sales, operating expenses, all money spent turning inventory into throughput, and assets, all money the system invests in purchasing things the system intends to sell. Operationally, direct material is treated as a variable cost, while labor and overhead are treated as a fixed cost. Under the TOC, a product's price less its direct material cost or throughput is used to evaluate the economic consequences of resource allocation decisions. The TOC is a form of variable costing or the contribution margin approach to decision making (Noreen et al.). Like variable costing, the TOC is a short run optimization model. Over an intermediate or long run decision horizon, a firm's managers have some control over labor and overhead. Therefore, using throughput as a decision criterion may lead to suboptimal decisions in some circumstances. That is, the cumulative effect of a series of short run decisions made over time made with the TOC may be suboptimal relative to a decision made initially based on a long-term perspective.

The usefulness of the TOC is partially a result of its focus on production bottlenecks and process of continuous improvement. The TOC

emphasizes identifying the bottleneck that limits the firm's output and managing the firm subject to this factor. Simultaneously, process improvement efforts are direct at relieving the constraint. As one bottleneck is relieved, another one will appear. The process of managing the firm with respect to the new constraint while efforts are directed at relieving it is repeated, leading to successive expansions in the firm's production and profitability. The TOC represents a process of ongoing improvement focusing on the areas of the firm's operations with the highest potential for increasing profitability, i.e., the bottlenecks that limit production. Its use creates an environment for identifying and solving production problems. In effect, the TOC is a process that promotes organizational adaptation, learning, and change.

### **Financial Reporting Of TOC Performance Measures**

The suggestion of FSW that the cost of material, labor, and overhead in work in process and finished goods inventories be reported in the firm's financial statements would be relatively inexpensive to provide since the information already is available for internal reporting purposes. However, the decision usefulness of the TOC performance measures computed from these data for financial statement users is debatable. In its Statement of Financial Accounting Concepts No. 2 (FASB, 1980), the FASB asserts that relevance and reliability are the primary qualitative attributes that make financial accounting information decision useful. The TOC metrics of throughput, operating expenses, and assets are most likely not lacking in reliability, but rather in relevance, as described below.

The TOC metrics of throughput, operating expenses, and assets are near-term measures of a firm's economic performance. Credit and investment decisions are frequently long-term decisions and based on extended projections of a firm's future cash flows. Furthermore, managers use throughput, operating expenses,

and assets in conjunction with other information such as the bottleneck activity and its capacity, production and marketing opportunities, input and output prices, and other firm-specific data to make production related decisions. Consequently, the metrics of the TOC may be of limited relevance to lenders and investors in evaluating a firm's managers from a stewardship perspective and predicting the firm's future performance from a decision usefulness perspective. Finally, much of the power and usefulness of the TOC involve its exploitation and relief of the bottleneck activities that restrict the firm's production. However, the TOC performance measures do not reflect the potential benefits of these processes on the firm's future profitability and cash flows.

Furthermore, FSW's suggestion that TOC performance measures be made available to financial statement users raises the larger issue of whether managerial accounting information in general should be supplied to external financial statement users. Managerial accounting has experienced a revolution in the last decade with cost and/or management systems such as activity-based costing, total quality management, economic value added, and others. Should the metrics from these systems be reported in the firm's financial statements as well as those of the TOC? The performance measures from the TOC and other systems provide managers with information for understanding the economic consequences of resource allocation decisions. Based on these measures and other firm specific information, the TOC and other systems are used by managers to make resource allocation decisions. Furthermore, these decisions are made within the larger framework of the firm's strategic and operational plans. In effect, the TOC and other accounting systems represent a small portion of the total information set used to guide a firm's economic affairs. Therefore, the performance measures of the TOC and other systems are much more relevant to a firm's managers than its external financial statement users. The potential for interpreting information from the TOC and

other systems out of the decision context in which they are being used severely limits their potential relevance for external statement users.

### Summary And Conclusion

The purpose of this note was to provide commentary on a recent article by Foster, Sullivan, and Ward in which inventory is treated as a liability in a financial distress prediction setting. This note demonstrated that inventory is not inherently a liability, but rather is a symptom of more fundamental operating problems facing the firm. The note also addressed whether reporting additional information about the composition of manufacturing inventory to enable external users to construct TOC metrics provides relevant information for the decision contexts typically faced by such users. Managerial accounting systems such as the TOC and JIT provide insights into how structural problems in a firm's manufacturing processes influence a firm's economic performance. Consequently, future research in bankruptcy prediction should exploit the insights provided by these and other managerial accounting systems to better understand the causes of financial distress. However, before additional managerial or other information is reported externally, its decision usefulness to financial statement users must be demonstrated. □

### References

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