A mathematical logic approach to the shareholder vs stakeholder debate

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Keywords
Leadership, Management, Shareholder value analysis, Stakeholders

Abstract
Uses an innovative approach to analyze the long-standing claim that companies exist to maximize shareholder value. Five statements supporting this claim are tested using mathematical logic. Each one is found to be false. The community of business theorists, consultants, academics, and management practitioners that espouse shareholder value as the singular purpose of business are thus shown, from this perspective, to be wrong.

Introduction

The overarching business practices of large, publicly traded, companies are typically divided into two categories: shareholder- or stakeholder-driven. The US model for business has been overwhelmingly shareholder-driven for the last 15 years (Rappaport, 1998), where most CEOs believe that their mission is to maximize shareholder value. In other countries, such as Japan and Germany, many companies are managed using stakeholder-centered business practices (Inamori, 1997; Matsushita, 1994; Nikkei, 2001a, b; Wessel, 2001). The success of the US economy in the late 1990s has propelled shareholders to pressure senior management for higher returns using US-style business practices (Taylor, 1999; Dvorak *et al.*, 2000; Shirouzu *et al.*, 2000; Shirouzu, 2000; Zaun, 2000; Wessel, 2001).

Senior managers that are strongly influenced by shareholders, or otherwise adhere to a purely economic view of business, must make tradeoffs between other key stakeholders such as: employees, suppliers, customers, governments, or labor unions (Fulghum, 1999; Maremont and Berner, 1999; Emiliani, 2000a; Greimel, 2000; Heilemann, 2000; Schultz, 2000; Deutsch, 2001; Geyelin and Martinez, 2001). Optimizing business performance along a single dimension, with principal accountability to only one stakeholder, suggests that success is best achieved by dividing, rather than leveraging, key stakeholders.

Importantly, local optimization diminishes senior management's ability to develop an accurate view of reality (Emiliani, 2001). Having an accurate view of reality would result in the spontaneous and universal characterization of business as a socio-economic activity. The true purpose of business would be clear and its course sustained over time with appropriate maintenance. But instead, witness the prevalence of business practices and metrics that distort reality (Emiliani, 2001) or are divisive (Brady, 2000; Green, 2000; Emiliani, 2000a; Richards, 2000; Tully, 2000; Ball, 2001).

Philosophical arguments are typically used to explore the validity of shareholder versus stakeholder views of business (Rappaport, 1998; Gabor, 2000; Kennedy, 2000). While intellectually challenging, philosophical arguments may not be sufficient to persuade senior managers to change their behaviors. Further, the shareholder versus stakeholder debate is rooted in subjective thought, with concomitant biases and stereotypes. This results in artificial barriers that ensure superficial treatment of an issue that is of great importance to all people that work for a living.

The purpose of this paper is to use formal logic in examining whether or not businesses exist to maximize shareholder value. Five simple statements are rigorously analyzed using mathematical logic (Solow, 1990; Emiliani, 2000b; 2001). The statements contain logical outcomes if the starting hypothesis is true, in support of the claim that businesses exist to maximize shareholder value. There are three simple preconditions that serve as the foundation for ensuing analyses:

1. the company is a for-profit;
2. the company is publicly traded via stock markets; and
3. the company's output is supported by various stakeholders, such as employees, suppliers, customers, investors, communities, labor unions, complementors, competitors, etc.

Note that these preconditions are not abstract. Rather, they are the plain reality of many companies yesterday, today, and tomorrow. The method of proof, truth tables, requires checks against reality to test

Management Decision
39/8 [2001] 618–622

[ISSN 0025-1747]

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pragmatic statements and their efficient outcomes. These are not inert academic arguments.

Proof of Statement No. 1

If companies exist to maximize shareholder value, then all stakeholders will focus on maximizing shareholder value.

This type of statement is called a conditional statement. It consists of two simpler statements: the hypothesis "if companies exist to maximize shareholder value" and the conclusion "then all stakeholders will focus on maximizing shareholder value". In mathematical terms:

Hypothesis p: if companies exist to maximize shareholder value,
Conclusion q: then all stakeholders will focus on maximizing shareholder value.

Symbolically this is written as $p \rightarrow q$, or in words as "if p, then q". In order for this statement to be true, the conditions defined in Table I must be satisfied:

Table I is called a "truth table". Constructing a truth table for the statement "if companies exist to maximize shareholder value, then all stakeholders will focus on maximizing shareholder value" yields results shown in Table II.

Notice that the truth values for $p \rightarrow q$ in Table II are different from those shown in Table I. Thus, the statement "if companies exist to maximize shareholder value, then all stakeholders will focus on maximizing shareholder value" is false. The rationale is shown in Table III.

These outcomes are consistent with what we know from direct experience in business, if we choose to acknowledge it.

Table I

p	q	p → q
True	True	True
True	False	False
False	True	True
False	False	True

Proof of Statement No. 2

If companies exist to maximize shareholder value, then all other stakeholders will willingly sacrifice their interests.

Hypothesis p: if companies exist to maximize shareholder value"
Conclusion q: then all other stakeholders will willingly sacrifice their interests''

The results yielded are shown in Table IV. The statement "if companies exist to maximize shareholder value, then all other stakeholders will willingly sacrifice their interests'' is false. The rationale is similar to that shown in Table III.

Proof of Statement No. 3

If companies exist to maximize shareholder value, then all other stakeholders will benefit.

Hypothesis p: if companies exist to maximize shareholder value.
Conclusion q: then all other stakeholders will benefit.

The results yielded are shown in Table V. The statement "if companies exist to maximize shareholder value, then all other stakeholders will benefit" is false. The rationale is similar to that shown in Table III.

Proof of Statement No. 4

If companies exist to maximize shareholder value, then shareholders will always be satisfied with the company's financial performance.

Hypothesis p: if companies exist to maximize shareholder value.
Conclusion q: then shareholders will always be satisfied with the company's financial performance.

The results yielded are shown in Table VI. The statement "if companies exist to maximize shareholder value, then shareholders will always be satisfied with the company's financial performance" is false.

Table II

p	q	p → q
If companies exist to maximize shareholder value	then all stakeholders will focus on maximizing shareholder value	False
If companies exist to maximize shareholder value	then all stakeholders will not focus on maximizing shareholder value	True
If companies do not exist to maximize shareholder value	then all stakeholders will focus on maximizing shareholder value	False
If companies do not exist to maximize shareholder value	then all stakeholders will not focus on maximizing shareholder value	True

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The rationale is similar to that shown in Table III.

Proof of Statement No. 5

If companies exist to maximize shareholder value, then management's decisions will be acceptable to all stakeholders.

Hypothesis p: if companies exist to maximize shareholder value,
Conclusion q: then management's decisions will be acceptable to all stakeholders.

The results yielded are shown in Table VII. The statement "if companies exist to maximize shareholder value, then management's decisions will be acceptable to all stakeholders" is false. The rationale is similar to that shown in Table III.

Discussion

It is apparent from this analysis that companies do not exist solely to create shareholder value. The community of business theorists, consultants, academics, and practitioners that espouse shareholder value as the singular driver of business activity are simply wrong. Companies operate in a socio-economic environment that functions more effectively when key stakeholders are included in business practices and decision making (Mikami, 1982; Ohno, 1988; Womack *et al.*, 1990; Nishiguchi, 1994; Nishiguchi and Beaudet, 1998; Cooper and Slagmulder, 1999; Fujimoto, 1999). Thus, businesses exist to fulfill many needs, not just shareholder value (Basu, 1999). Widespread recognition of this reality would no doubt improve both business education and work experiences (Emiliani, 2000c; Caux, 2001).

These results lead to an important question: Can senior managers rightfully be called "leaders" if they focus on optimizing individual parts of the business to maximize shareholder value (Emiliani, 2000d)? Are western business pundits correct in identifying Henry Ford, Alfred Sloan Jr, Thomas Watson Jr, Bill Gates, and Jack Welch, as the greatest business leaders of the twentieth century (Stewart *et al.*, 1999; Colvin, 1999)?

Or are senior managers that focus on optimizing the whole, minimizing or eliminating tradeoffs between key stakeholders, the real leaders (Emiliani 2000d)? Are eastern business pundits correct in identifying Konosuke Matushita, Soichiro Honda, Akio Morita, Masaru Ibuka, and Kiichiro Toyoda as the twentieth century's best business managers (Nikkei, 2001a, b)?

This paper argues, using mathematical logic, that companies do not exist to maximize shareholder value. While shareholder value is important, it should not be the driver. Balance must be achieved among other important factors such as:

Table III

$p \rightarrow q$	Rationale
False	All stakeholders do not focus on maximizing shareholder value
True	Some stakeholders may focus on maximizing shareholder value
False	All stakeholders do not focus on maximizing shareholder value
True	Some stakeholders may focus on maximizing shareholder value

Table IV

p	q	$p \rightarrow q$
If companies exist to maximize shareholder value	then all other stakeholders will willingly sacrifice their interests	False
If companies exist to maximize shareholder value	then all other stakeholders will not willingly sacrifice their interests	True
If companies do not exist to maximize shareholder value	then all other stakeholders will willingly sacrifice their interests	False
If companies do not exist to maximize shareholder value	then all other stakeholders will not willingly sacrifice their interests	True

Table V

p	q	$p \rightarrow q$
If companies exist to maximize shareholder value	then all other stakeholders will benefit	False
If companies exist to maximize shareholder value	then all other stakeholders will not benefit	True
If companies do not exist to maximize shareholder value	then all other stakeholders will benefit	False
If companies do not exist to maximize shareholder value	then all other stakeholders will not benefit	True

Table VI

p	q	p → q
If companies exist to maximize shareholder value	then shareholders will always be satisfied with the company's financial performance	False
If companies exist to maximize shareholder value	then shareholders will not always be satisfied with the company's financial performance	True
If companies do not exist to maximize shareholder value	then shareholders will always be satisfied with the company's financial performance	False
If companies do not exist to maximize shareholder value	then shareholders will not always be satisfied with the company's financial performance	True

Table VII

p	q	p → q
If companies exist to maximize shareholder value	then management's decisions will be acceptable to all stakeholders	False
If companies exist to maximize shareholder value	then management's decisions will not be acceptable to all stakeholders	True
If companies do not exist to maximize shareholder value	then management's decisions will be acceptable to all stakeholders	False
If companies do not exist to maximize shareholder value	then management's decisions will not be acceptable to all stakeholders	True

- technological strength (inclusive of production practices);
- employment creation;
- contribution to society;
- management philosophy;
- environmental responsibility; and
- corporate behavior (Nikkei, 2001b).

The compass for true leadership points unmistakably to stakeholder-centered management practices.

Summary

The claim that companies exist to maximize shareholder value was formally tested using mathematical logic. Five statements that support the claim were analyzed. Each statement was found to be false.

A disturbing trend has recently emerged where companies that have a tradition of stakeholder-centered business practices are under increasing pressure to adopt US-style shareholder-centered business practices that are known to divide key stakeholders and result in wasteful turmoil. Investors demanding emulation of US-style business practices negate the reality that businesses have both economic and social responsibility. Senior managers are urged not to succumb to the influence of investors and seek alternatives to ensure balance.

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Application questions

1 In raising the debate from a philosophical to a factual, data-driven approach, has the author established a new standard for corporate responsibility?
2 What other business issues can be examined using this problem-solving technique? Use mathematical logic to test the truth of the following statement: "If stock options align management's interests with shareholders' interests, then management's decisions will always favor the interests of shareholders?".
3 What actions can shareholder-driven senior managers take to restore balance among stakeholders?