

RESOURCE ALLOCATION: A HAYEKIAN PARADIGM FOR MARITIME CONGLOMERATES

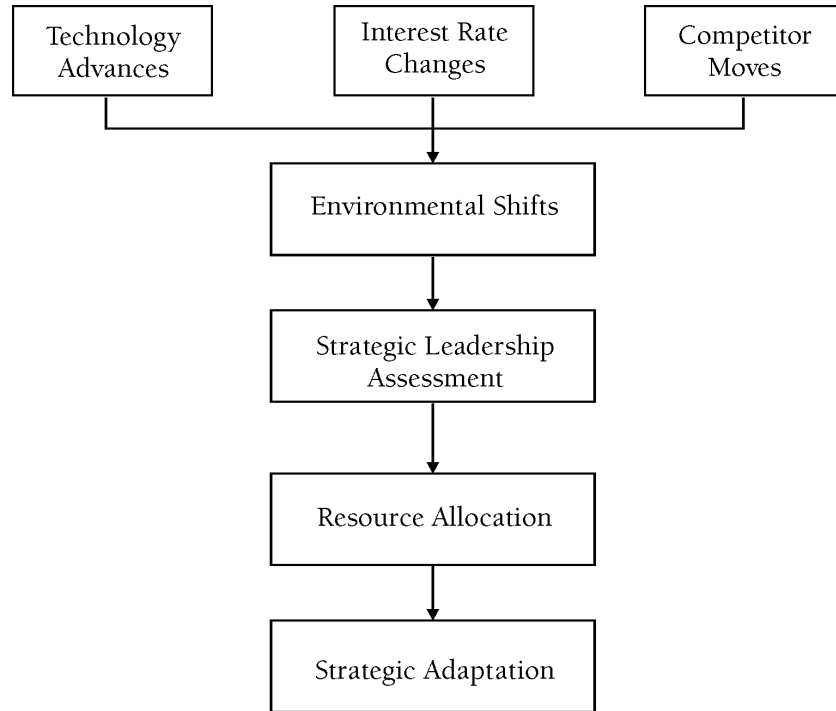
GARY A. LOMBARDO AND ROBERT F. MULLIGAN

Resource allocation, a ubiquitous process in organizations, represents a curious dilemma for strategic leaders. Although the expressed purpose of allocating resources is to position organizational subunits for the future, the relevant management literature recognizes that funds are given, in many cases, based on past performance. The implied algorithm is “past success leads to future success.” This approach may be effective during evolutionary time periods, but it can be ineffective during dramatic shifts in the marketplace. This is especially true for conglomerate organizations interacting with numerous task environments representing multiple and differing industry sectors.

The resource allocation process in a conglomerate organization is critical to the enterprise’s ability to undergo strategic adaptation to realign the corporate mission and strategic goals during environmental shifts. The focus of this article is to respond to the question, “How should a conglomerate organization decide to allocate resources to its subunits?” The resource allocation process is embedded in a series of events beginning with activities in the task environment and ending with the organization’s strategic adaptation efforts (Figure 1). This conceptual scheme attempts to sequence the activities or processes through which firms adapt to compete in a changing task environment.

GARY A. LOMBARDO is professor of maritime business in the Department of Marine Transportation at the United States Merchant Marine Academy. ROBERT F. MULLIGAN is assistant professor of economics in the Department of Business Computer Information Systems and Economics at Western Carolina University College of Business and a research associate of the State University of New York at Binghamton. Institutional support provided by the U.S. Merchant Marine Academy is gratefully appreciated. Financial support was provided for a preliminary investigation in the form of a summer research grant from the Western Carolina University College of Business and a Visiting Research Fellowship from the American Institute for Economic Research, which are gratefully acknowledged. The authors remain responsible for any errors or omissions.

Figure 1
Events Related to an Organization's Resource Allocation Process



Source: Developed by authors.

The resource allocation process is influenced by the antecedent events of environment shifts and strategic leadership assessment. As the organization recognizes environmental shifts—namely, technology advances, interest-rate changes, and competitor moves—the organization's dominant coalition is faced with the need to assess how to allocate resources to maintain or enhance organizational competitiveness. Given the dynamic nature of most task environments, the open-system orientation results in exogenous influences changing past resource allocation patterns. Competitor moves and technology advances typically influence an inherently imitative, "me-too strategic adaptation" that results in the emulation of best industry practices. To encourage effective entrepreneurial efforts and offer a prescription for conglomerates to implement a "first-mover strategic adaptation," this investigation focuses on the influence of interest-rate changes on the resource allocation process.

The environment confronting firms includes currently available technology, prevailing market interest rates, and competing firm behavior. Whenever one of these components changes, or is expected to change, firms face an environmental shift. Technological advances present the challenge of combining

existing installed capital with newer capital and other resources to achieve a higher rate of return. As technological improvements lower the costs of production, decision makers discover that more and more of their contemplated investment possibilities can be expected to yield a profit. This occurs even if the market interest rate is constant, and in fact, might not occur if the market interest rate rises to exactly offset the advantage offered by the new technology. Technological change may also facilitate a firm's penetration of a new market sector.

Changes in interest rates reposition the margin between profitable and unprofitable investment projects. The market interest rate represents the opportunity cost for any resource allocation within the firm, or for allocating resources from outside the firm. Projects with expected returns lower than the market rate of interest expected to prevail over the life of the project normally are not undertaken. An exception occurs in the case of loss-leader activities which are undertaken only because they are expected to lead to more profitable opportunities later. Taken together, loss-leader and any activities piggybacked on a loss-leader must yield an expected return at least as high as the market interest rate.

Firms also respond to competitor moves. Although "first mover" firms receive the most attention for their entrepreneurial prowess, firms are compelled to respond to the actions of other firms. Often the response is mere imitation of the first mover, but significant entrepreneurial activity also occurs when firms incorporate lessons learned in what may be termed "innovative imitation."

Environmental shifts occur when any of the three components of the business environment change: technology, interest rates, or competitor moves. Firm managers perceive and anticipate the environment they operate in, and respond by constructing contingency plans. Contingency planning may be informal and vague, as, for example, managers develop simple and often unarticulated rule-of-thumb responses in advance of interest-rate changes. The firm's task environment changes as technology improves, as interest rates are adjusted in the market or by the central bank, or by competitor moves. Firm managers seek to anticipate the future task environment and respond appropriately.

Firm management performs strategic leadership assessment in two stages: the first stage consists of an assessment of the future task environment and the second stage consists of formulating an appropriate response. Firms often avoid conscious consideration of this function, maintaining the *status quo* by default in a mistaken effort to avoid transactions and information costs. Firms have an opportunity to exercise informed decisions or simply rely on adherence to traditional behavior and practice, and traditional products and markets. Firms face two challenges: first, accurate assessment of the future task environment, and second, correct formulation of a viable strategy. Failure in either is costly. Different firms have different approaches to strategic

leadership, for example, some firms pursue increased market share while others seek increased profits.

Coase's (1988a, p. 7; 1988b, pp. 38-46) insight that the division of labor is organized in firms, rather than through spontaneous voluntary contracting among individuals in order to minimize transaction costs, implies that the transaction costs which can be avoided through firm organization more than offset any inefficiencies imposed by firm organization. Presumptively, the mere existence of firm organization demonstrates that it successfully minimizes transaction costs, at least most of the time.

Firms operationalize their strategic thinking by allocating resources among productive internal activities. Often a firm's mission statement and strategic planning documents suggest one emphasis for the firm, but resource allocation indicates the firm's real priorities and true intentions. Resource allocation cannot give misleading signals. Firms realize strategic adaptation proactively or by default. Strategic adaptation occurs by default through the accumulation of successive allocation decisions, unless a firm's leadership intentionally defines a strategic vision. Often, passively managed firms attain a level of structural maladaptation, but periodically overcome maladaptive inefficiencies through massive reorganization. This process can be seen as evidence of an attempt to avoid transaction costs (Coase 1988a, pp. 43-46).

This article presents a synthesis between Hayek's theory of production structure and investment, and the organizational strategy literature. The rest of this research investigation is organized as follows: "Literature Review" surveys the organizational strategy literature with respect to resource allocation issues; "Exogenous Challenges: A Prescriptive Application of Austrian Capital Theory" discusses how Austrian capital theory can be used to guide resource allocation within firms; "Implications for Maritime Conglomerates" illustrates an application to a particular type of diversified business enterprise; and "Conclusion" presents concluding remarks.

LITERATURE REVIEW

Resource Allocation

The importance of resource allocation activities has long been recognized by management scholars (Pondy 1970) as well as economists. The resource allocation process is a major aspect of intraorganizational dynamics, setting the tone for and influencing subunit success as the antecedent for organizational evolution. The complexity and tensions inherent in the resource allocation process are derived from the dynamic nature of the task environment in which the organization operates. In a static environment, resource allocation patterns would be unchanging; a previous year's allocation would be replicated during subsequent annual cycles. Precisely because fundamental changes in task environments occur, an effective organization is required to adapt strategically to maintain and ideally enhance its industry position in terms of sales and profitability. If core practices remain unchanged in this

dynamic context, lowered performance outcomes are likely (Schumpeter 1942; Hannan and Freeman 1984; Tushman and Anderson 1986; Levinthal 1994). Exogenous challenges require that strategic leaders change resource allocation patterns.

Five distinct streams within the management literature argue in favor of effective resource allocation as essential for strategic adaptation: contingency and resource dependence literature (Thompson 1967; Pfeffer and Salancik 1978); strategic change literature (Ginsberg 1988; Rajagopalan and Spreitzer 1997); organizational learning and evolution literature (Nelson and Winter 1982; Tushman and Romanelli 1985; Levinthal and March 1993); ecologists' literature (Hannan and Freeman 1984; Haveman 1992; Usher and Evans 1996); and external institutional pressures literature (Selznick 1957; Stinchcombe 1965; Miles and Cameron 1982; Haveman 1993; Levinthal and March 1993; Kraatz and Zajac 1996).

The resource allocation process is recognized as crucial to organizational success. This testament to the importance of funding subunits appropriately is constrained by the fact that all enterprises have finite resources. Resource allocation breeds intraorganizational competition due to this finite and scarce nature of funding. As a result, subunit managers, recognizing that future resource availability may become less certain, find it difficult to justify self-restraint (Kramer 1989). The priority to get as much funding as possible during each resource allocation cycle results in the suboptimal communal management of a shared resource (Komorita and Parks 1994).

A Strategic Approach

The resource allocation process should be able to develop strategic flexibility to respond to changing environmental conditions (Hitt, Keats, and DeMarie 1998). The process should inspire a level of subunit teamwork and interpersonal dynamics that does not cast the effort in a "winners and losers" context at the subsidiary level but rather, offers all participants a supportive environment. The specific allocation of resources represents the content dimension whereby organizational performance is strengthened. The process aims at increased market share and/or profitability, ultimately resulting in increased resources to be allocated in subsequent cycles. Resource allocation efforts should be forward-looking, supporting the organization's vision for its future. Thus, the process should be systematic, rather than a series of annual episodic events devoid of continuity of purpose.

A systematic view of the resource allocation process emphasizes the need for strategic leaders to connect present behavior (resource allocation) to the achievement of corporate objectives (satisfying the organization's mission). This temporal integration (Jones 1988) is an essential element of the resource allocation process. If funds are committed to initiatives that fail to progress the organization in terms of goal attainment, subsequent resource allocation cycles will have diminished funds to support future strategic initiatives. Over time, the organization will suffer as shrinking resource availability will diminish the

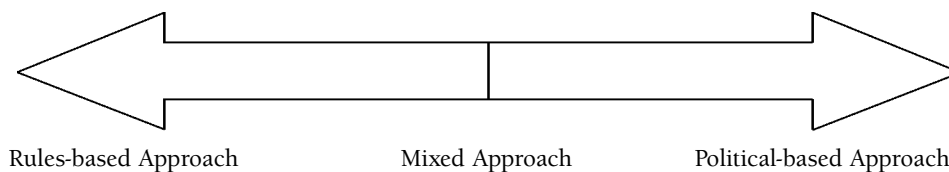
strategic leaders' ability to advance the organization's interests in terms of gaining market share and/or profitability. The strategic leaders' roles are to allocate resources to maximize total return within the constraints of the subunits' probabilistic success (Collier 1984).

Rules versus Politics

The specific resource allocation process used in a particular organization may be viewed along a continuum of choices. At one end of the continuum, the resource allocation process represents a rigid rules-based approach; at the opposite end, a pure political-based approach may be found (Figure 2).

The rules-based approach for resource allocation can follow any number of algorithms found in various organizations. This approach is defined by an adherence to pre-established policies that prescribe how resources are to be allocated to requesting subunits within an organization. One school of thought considers that objective criteria; e.g., subunit workload and relative contribution to organizational goals (Baldrige 1971), internal contextual variables; e.g., size and technology (Daft 1978), or centrality; e.g., the degree that a subunit's initiatives support the organization's mission (Hackman 1985), dominate the decision process. The ideal metric, capturing past performance and shifts in the task environment, will result in adherence to an exclusively rules-based approach. The reality is that the rules-based approach invariably uses an algorithm that is not sufficiently robust to capture the dynamic complexities as time marches forward and tends to be inward-looking at the enterprise rather than outward looking, considering environmental shifts. The inadequacy of the rules-based approach moves strategic leaders to substitute political considerations when allocating the scarce resources in an attempt to address the variables of interest not found in the rules-based algorithm.

Figure 2
Resource Allocation Process



Source: Developed by authors.

The strategic management literature has never recognized Austrian capital theory, as exemplified by the Hayekian triangle, as a source for a rules-based approach to allocation. Both the management literature and the Hayekian triangle aim at a description of behavior, not at prescription. Nevertheless, Austrian capital theory has necessary prescriptive implications for strategic decisions by firm decision makers. In contrast, the political-based approach for

resource allocation is a function of the negotiations, compromises, and expediencies that result from the subunit discussion sessions. Both conditions of scarce and drastically changing resources encourage the creation of coalitions within the firm as well as rearrangement of coalition allies (Stevenson, et al. 1985). The resource allocation process is considered as an issue-selling effort to shape changes at the lower levels of the organizational hierarchy by focusing top management attention (Dutton, et al. 2001). In effect, issue selling represents an early stage in the change process affecting the allocation of management attention and subsequently the flow of resources to subunits. When political factors influence the resource allocation process, goals and decision criteria tend to be ill-defined. Thus, bargaining and compromise influence resource allocation outcomes (Cyert and March 1963; Baldrige 1971; Pfeffer and Salancik 1974). Bargaining and power-based mechanisms become more salient than problem-solving mechanisms to resolve subunit conflict and tension when dealing with preferences by members' identification with subunit goals (Friedkin and Simpson 1985).

To accurately describe behavior of firm-level decision makers, the most general construct combines the two competing explanations. The mixed approach for resource allocation tends to use a series of rules supplemented by political considerations. This hybrid process can result in the accrual of all the advantages and disadvantages of the two pure form approaches. Hayek (1973, p. 39) developed a sophisticated distinction between designed and grown or spontaneous orders. Spontaneous orders can be rules-based or politically managed. The combination of rules and political management leads to firm order being difficult to place in Hayek's scheme (Khalil 1995; 1997a; 1997b).

Perceived inequity in the allocation of resources will move subunits from accepting a rules-based approach to introducing political considerations for the disbursement of funds. Alternatively, leading members of subunits who perceive injustice in the resource allocation process may decide to resign their positions and seek employment elsewhere—possibly at a competitor organization.

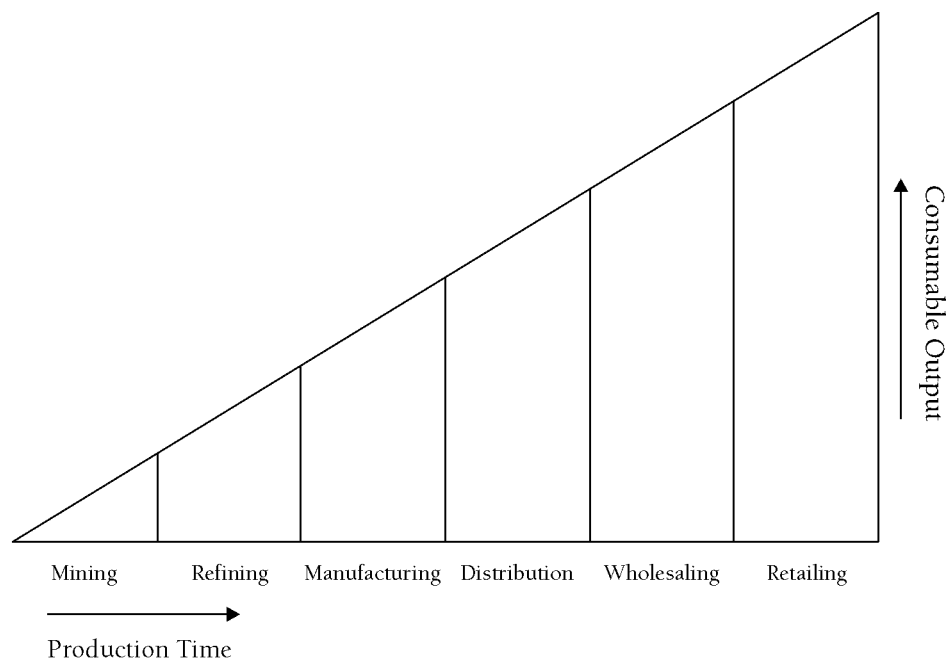
A rules-based approach to guide the resource allocation process may be preferable if all pertinent variables of interest are captured in the algorithm for both static and dynamic environments. Static environments lead to the implementation of existing strategies; dynamic environments lead to the development of new strategies (Carpenter and Westphal 2001). As such, in effective organizations, the resource allocation process for conglomerates facing static environments is a continuation of past efforts. Conversely, effective organizations facing dynamic environments will develop new strategies and, concurrently, require new resource allocation patterns. The challenge arises for strategic leaders to incorporate relevant variables in the rules-based resource allocation paradigm. A given rule may be highly appropriate in the static environment for which it was adopted, but once the environment changes, the search for appropriate rules frequently becomes politicized.

EXOGENOUS CHALLENGES:
A PRESCRIPTIVE APPLICATION OF AUSTRIAN CAPITAL THEORY

The Hayekian Triangle

The Hayekian triangle (Figure 3) can be used to analyze the structure of production and capital investment, and how each process responds to the environment embodied in prevailing market interest rates. A prescriptive interpretation of the triangle would imply that it should be used to guide firms in allocating resources in accordance with prevailing interest rates. The management literature identifies other objective criteria useful to direct resource allocation for most organizations facing a single, relatively static, task environment. Their value, however, weakens when the context is a conglomerate organization facing multiple, dynamic task environments where past performance and centrality do not combine into a series of metrics that can be systematized into a workable paradigm that will lead to the appropriate allocation which can advance the organization and avoid political bickering. Conglomerate organizations offer potential savings in transaction costs over several smaller firms organized over narrower, industry-specific models (Coase 1988a, pp. 45-56).

Figure 3
The Hayekian Triangle



Source: Roger W. Garrison, *Time and Money: The Macroeconomics of Capital Structure* (London: Routledge, 2001), p. 47.

Previous researchers have analyzed the effects of production uncertainty in one sector considering resource allocation in a two-sector model (Batra 1974; Britto 1980; Mills 1983). Consumer preferences (demand function) influence production (Harford and Park 1985). Interest rates influence consumer preferences (demand function), both through affecting households' decisions dividing disposable income between consumption and saving, and their decisions on how much, if any, consumption to fund through borrowing. Interest rates also influence firms' decisions of how much to borrow to finance production, and therefore also impact supply functions. Thus, interest-rate changes in an organization's task environment represent a strong influencing factor in consumption patterns. The research reported in this article expands the analysis beyond a two-sector model and captures the influence of interest rates.

Microeconomic Approach

The Hayekian triangle (Hayek 1931, p. 39; subsequently developed by Hayek 1941, 1966, 1967, 1969) is a model of the production process and macroeconomic resource allocation. Although the Hayekian triangle is the foundation of Austrian macroeconomics, resources are allocated at the firm level in response to prevailing interest rates. Rather than focusing on macroeconomic resource allocation, this article examines the microeconomic process of intrafirm resource allocation. In a certain sense, prevailing market interest rates serve to coordinate the investment and production plans of diverse enterprises and assure a consistent macroeconomic production structure.

Because the triangle models production as taking place over time, the profit or value added from each stage of production must equal or exceed the interest rate available on financial assets. The interest rate functions as an economic opportunity cost. When interest rates increase, the structure of production becomes less roundabout, redistributing productive resources away from producer goods toward consumer goods. When interest rates rise, higher rates of return in production are necessary to compete with the higher-yielding financial instruments. Investment spending necessarily contracts because only a smaller number of prospective investment projects can pay off at the new, higher interest rate. The Hayekian triangle, and the production structure it illustrates, becomes more steeply sloped as the base shortens. Resources are shifted from early to late stages of production, reflecting consumers' new desire for more consumption and less saving.

When interest rates fall, the structure of production becomes more roundabout, redistributing marginal resources toward productive activities with lower rates of return. The Hayekian triangle becomes flatter as the base lengthens and the slope of the hypotenuse decreases. Generally, more final output can be produced because more use is made of physical capital in the more roundabout, and more time-consuming, production process.

Business Cycles

Austrian capital theory, however, distinguishes two kinds of interest-rate changes: preference-induced and policy-induced. Preference-induced changes in interest rates occur infrequently, and probably only gradually. Comparative advantage accrues to firms which recognize these changes and position themselves accordingly. Policy-induced interest-rate changes are only temporary and fool firms into allocating resources as if interest rates had changed permanently. Firms that take the bait find they have invested in inappropriate and unprofitable production projects when interest rates return to natural levels. Comparative advantage here accrues to firms which accurately discern temporary, policy-induced interest rate changes and avoid allocating resources based on those misleading interest rates, while taking full advantage of temporarily low loan rates.

Bischoff's (1970) "putty-clay" model of investment emphasizes the distinction between highly liquid, uninvested financial capital and highly illiquid, installed capital equipment. A policy-induced, unnaturally and temporarily low interest rate entices firms to transform more of their liquid savings or "putty" capital into illiquid "clay" capital. The transformation is asymmetric because it is easy to exchange cash for capital equipment when the interest rate and the return on marginal equipment is low, but once the interest rate increases, it becomes difficult to reverse the process by exchanging low-yielding equipment for cash.

Policy-induced interest-rate changes lead to the business cycle (Hayek 1967, pp. 136-39; Garrison 1986, p. 440; 1988; 2001, pp. 71-73). The boom is caused by lower than natural interest rates that lead to employment of lower-yielding and less competitive resources, including land, labor, and capital. Presumably this applies equally well to entrepreneurial talent, because even the least-talented individuals may succeed as entrepreneurs during a boom. Recession occurs because the excessively drawn-out production process cannot supply consumers indefinitely. Given low yields on marginal capital, both resource employment and consumption fall. As interest rates fall in response to central bank injections of new money, the artificially low interest rate drives a wedge between saving and investment. The interest rate can be described as artificially low because it is lower than consumers' time preference. Increased saving entails an initial contraction of consumer-good industries. In contrast, however, credit expansion lowers interest rates, simultaneously reducing the attractiveness of saving and causing potential savers to spend more of their income on consumer goods. During the boom caused by a policy-induced credit expansion, the curvilinear triangle does not reflect consumers' true time preferences. The interest rates prevailing in, and discounting inputs from outputs of, each stage—lower in early stages and higher in late stages—no longer reflect the natural rate of interest. This applies to both real and nominal interest rates, and the credit-induced curvilinear production structure is never sustainable. The structure of production ultimately responds to unsustainably low interest rates by simultaneously attempting to

deliver more consumer goods in the late stages and more producer goods in the earlier stages—an impossible task.

The Hayekian Theory of Production Structure

Firm-level decision makers actually perform time discounting with prevailing market nominal interest rates representing their opportunity cost, rather than subjective rates of time preference. These objectively observable interest rates are more likely to reflect actual, subjective time preferences if they are not being manipulated by the central bank. Austrian business cycle theory posits that central bank credit expansion causes business cycles. Decision makers are free to adjust production plans, and do so in response to technological advances, disappointed expectations about resource availability and cost, or about output demand and price, and changes in interest rates.

The concept of stages of production is subjective (Garrison 1985, p. 167; 2001, p. 46), thus specific industries often operate simultaneously in several different stages, and any empirical classification of industrial sectors can only be of which stage predominates. For example, in a maritime conglomerate, dry bulk shipping is an early-stage activity if the freight is used in a manufacturing process, but late-stage if unprocessed freight is delivered directly to consumers. Crude petroleum shipping is always an earlier-stage productive activity compared to shipping refined petroleum products, but because petroleum refining requires little time, crude petroleum shipping can often be late-stage compared with much dry bulk shipping. Containerized shipping is predominantly of final manufactured output and thus constitutes a late stage of production, but exceptions are inevitable. Furthermore, many resources, including producer goods, are nonspecific to a particular stage of production. Because each firm can use many resources in multiple processes, firms often operate simultaneously in different stages of production. This is especially true for maritime conglomerates.

Capital equipment—for example, ships, dock facilities, rolling stock, and ancillary infrastructure—may substitute or complement other items of capital equipment. Furthermore, this is a general property of all resources. For any equipment item, labor may be either a substitute or a complement; different kinds of labor may be substitutes or complements for a given equipment item, or for given other kinds of labor. Different productive resources also have various degrees of substitutability and complementarity (Garrison 1985, p. 168; 2001, p. 49). Inputs are combined at each stage of production. Stages of production are not instantaneous; thus, time preference assures that outputs from each stage have greater expected value than the sum of inputs (Mises 1966, pp. 483-88; Rothbard 1970, pp. 323-32; Garrison 1985, p. 169; 2001, p. 46). Coordination performed by firm-level decision makers produces surplus value and is essential for production to take place. In the Austrian view, the increase of value in production over time is due exclusively to:

- (1) the time span required for each stage of the production process;
- (2) the fact of time preference, which discounts the inputs into each stage, compared to the expected output from each stage;
- (3) the economic value consumers confer on the final output which they use to satisfy their wants; and
- (4) the coordination provided by the authors of the production plan, often described as entrepreneurship or managerial services. This is the mechanism through which firms minimize transaction costs (Coase 1988a, pp. 38-40).

Entrepreneurs compete to satisfy consumer wants with the shortest possible delay, thus earning the highest return. The interest rate is the rate of time discount implicit in the pattern of prices of productive resources, including capital equipment. Garrison (1985, pp. 169-70; 2001, p. 50) cautions this is not necessarily the same as the loan rate determined in the loanable funds market, though he also acknowledges the market process eventually adjusts the loan rate to the broader market rate of interest. In the Austrian view, determinants of the broader market interest rate are not exhausted by the determinants of the loan rate in the loanable fund market (Rothbard 1970, pp. 321-23), although the slope of the hypotenuse of the Hayekian triangle reflects the interest rate determined in the loanable funds market (Garrison 2001, p. 50).

The earlier the stage of production, the greater the period of time separating existing capital or producer goods from the prospective consumer goods, and the greater the difference in value due to time discounting between producer and consumer goods. Thus, the value of capital equipment used exclusively in early stages of production is more sensitive to interest-rate changes (Garrison 1985, p. 179; 2001, p. 72).

Changes in time preference are particularly punishing to the maritime industry, which depends on an especially long-lived capital stock. Government intervention to support the maritime industry may be justified in at least two ways:

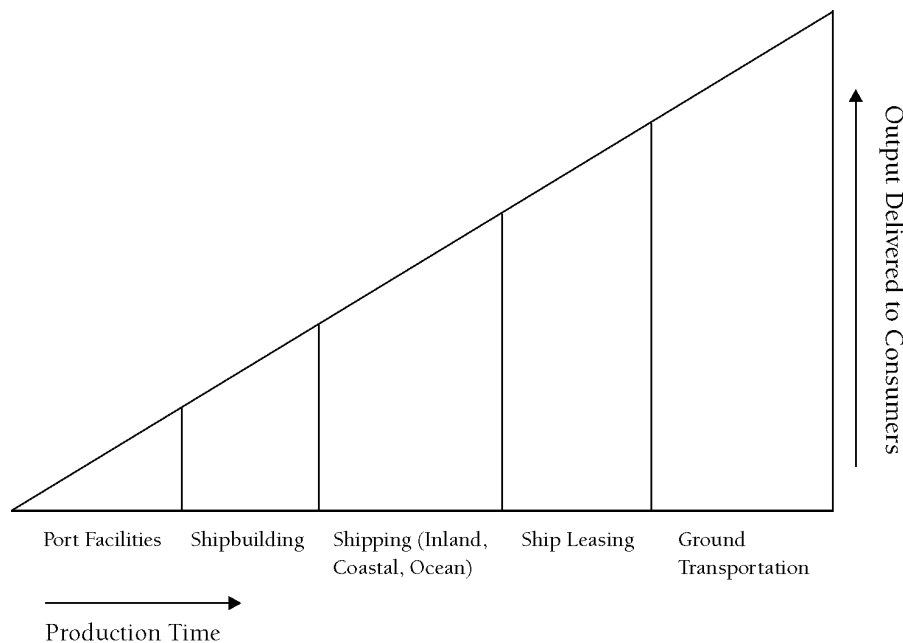
- (1) national security considerations; and
- (2) most changes in interest rates, specifically those not directly caused by an overall change in time preference, are engineered by the central bank.

The rationale of subsidizing or otherwise compensating a highly capital-intensive industry to offset the impact of central bank policy clearly demonstrates how government interventions tend to proliferate. An enlightened monetary policy should focus on price and interest-rate stability, and would then provide little justification for government support.

IMPLICATIONS FOR MARITIME CONGLOMERATES

Maritime firms have to respond to environmental constraints including the term structure of interest rates prevailing at any point in time. Long-run comparative advantage accrues to firms that successfully distinguish between permanent changes in time preference and transitory interest rate fluctuations arising from monetary policy. Firms allocate resources in response to expected consumer demand for consumable output and expected opportunity cost. In the subjectivist theory of a capital-using economy, decision-making planners act as the subjects of productive activity, creating consumable output as the object (Garrison 1985, pp. 164-68; 2001, p. 15). Consumers confer value on consumable output because they desire it to satisfy their wants. The value of producer goods is derived from the consumable output they are expected to yield and expected consumer demand for the output. The earlier firms intervene in productive activity, the greater the opportunity to increase the final yield of consumable output. Thus, the final output should be greater in value the more roundabout the production process, or in other words, the longer the duration of the production process. This intuition is supported by the general observation that the more roundabout the production process, the greater the scope for employment of capital equipment.

Figure 4
A Generic Maritime Conglomerate: Production and Capital Structure



Source: Developed by authors based on Roger W. Garrison, *Time and Money: The Macroeconomics of Capital Structure* (London: Routledge, 2001), p. 47.

If time preference was sufficiently high, no shipping could take place, and impatient consumers would be necessarily limited to immediate consumption of locally obtained raw materials. Interest rates facilitate intertemporal coordination of resource allocation in production plans by clearing the loanable funds market (Garrison 1986, p. 440; 2001, p. 39). In this regard, disequilibrium interest rates play the same role as market prices in signaling opportunities for entrepreneurial discovery by decision makers (Kirzner 1984a, p. 146; 1984b, pp. 160-61; 1997), and firms respond by adjusting the production structure.

Conglomerate maritime businesses are simultaneously engaged in several business sectors. Most nonpetroleum bulk shipping constitutes an early stage of production. Most petroleum shipping and containerized shipping constitute late stages. The resource allocation process is crucial to continued organizational success. Maritime firms do not produce consumable output but provide transportation services, moving final output to consumers. Maritime firms also transport intermediate goods-in-process from earlier to later stages of production. Productive activities maritime firms engage in include port facility construction and operation, shipbuilding, cargo shipping, ship leasing, and overland transportation. A maritime firm constitutes a conglomerate if it engages simultaneously in two or more different activities. Conglomerate organization offers additional scope for minimizing transaction costs (Coase 1988a, p. 45).

Port facilities must be available before the conglomerate can potentially contemplate shipping operations. Because port facility planning and construction requires the longest lead-time, the port is the capital equipment item which constitutes the earliest stage of production for a maritime conglomerate. Port facility operation is more flexible and must occur as a stage of production in between any other two stages, but operations can be curtailed without liquidating the capital equipment, as dockworkers can be hired and laid off as needed.

Shipbuilding is the next stage of production for a maritime conglomerate. Though less expensive than corresponding port facilities, and thus requiring less time and effort to organize their financing, ships are expensive, and extremely long-lived, capital equipment items. Few industries are as capital intensive, or employ such a long-lived capital stock.

Shipping is certainly the main activity of any maritime firm. The more specialized a firm's fleet, the more likely shipping operations will fall into specific early, middle, or late stages of production, as discussed earlier. However, because different kinds of shipping—for example, ocean, coastal, or inland—can fill either earlier or later stages, which vary dramatically across maritime firms depending primarily on their clients, we treat this whole, admittedly diverse, process as primarily a late stage of production. Two justifications for this classification are (1) the greater value of more nearly final output, as opposed to unprocessed raw materials, and (2) the increasingly prevalent

practice of shipping clients to locate manufacturing operations close to raw materials and labor.

Ship leasing is a class of activity almost unique to the maritime industry, and was created in response to the low flexibility imposed by long equipment lives and high finance costs. When shipping demand or the interest-rate climate are such that a maritime firm would otherwise let its ships be idle, it can lease the ships to other operators.

Overland transportation is an activity that marks a maritime firm as a true conglomerate. Because it generally moves final produced output into a distribution network of wholesalers and retail outlets, it is generally the last step in the production process contributed by the maritime firm.

The resource-allocation process plays out in the context of differing subunit preferences, potentially resulting in tension and periodic conflict that may lead to dysfunctional relationships over time. Absent clearly understood and effective operational rules, the potential for heightened dysfunctional internal relationships will lead a conglomerate organization to have diminished resource bases for achieving future strategic goals. By developing an effective resource-allocation paradigm, the organization can gain market share resulting in increased profitability and continued success in the marketplace. The Hayekian triangle presents an objective measure reflecting environmental shifts by tracking interest-rate changes that affect consumer and production demand. Organizations can gain “first-mover advantages” (Thomas 1985) essential to provide the competitive advantage *vis-à-vis* their rivals while maintaining harmonious relationships among the subunits.

Table 1 illustrates how a representative maritime conglomerate should adopt a rules-based allocation paradigm. Shipbuilding and port construction are the two longest lead-time investment projects, and should receive increased emphasis when interest rates are forecast to decrease for an extended period. Firms should be especially wary against policy-induced and therefore temporary interest-rate decreases; recognizing that policy-induced interest rate cuts are likely to be transitory protects the firm from tying up liquid “putty” capital in uncompetitive, low-yielding “clay” investments for a protracted period. As late stages of production, shipping, leasing, and ground transport should receive increased emphasis when interest rates are forecast to rise for an extended period. As with temporary interest rate cuts, the same caveat applies about guarding against misleading indications from policy-induced interest rate hikes.

One activity maritime conglomerates engage in is government lobbying. It appears the incentive provided by application of this rules-based paradigm is to intensify lobbying efforts whenever the interest-rate environment is expected to change. This seems to support the view that lobbying is an inherently pernicious, self-enforcing activity. In contrast with other behavioral rules provided by this paradigm, there would seem to be an especially

strong incentive to lobby during periods of policy-induced, temporarily high or low interest rates. At these times, firms are well justified in seeking government support to compensate for any disadvantage or expense conferred by economic policy.

Table 1¹
Representative Maritime Conglomerate

Subsidiary	Production Stage		Interest-Rate Forecast	
	<i>Early</i>	<i>Late</i>	<i>Increase</i>	<i>Decrease</i>
Port Facilities	X		Decrease allocation	Invest at higher levels
Shipbuilding	X		Decrease allocation	Invest at higher levels
Shipping - Inland		X	Invest at higher levels	Decrease allocation
Shipping - Coastal		X	Invest at higher levels	Decrease allocation
Shipping - Ocean		X	Invest at higher levels	Decrease allocation
Ship Leasing		X	Invest at higher levels	Decrease allocation
Ground Transportation		X	Invest at higher levels	Decrease allocation
Government Lobbying		X ²	Intensify lobbying initiatives	Intensify lobbying initiatives

¹Developed by authors.

²Though clearly government lobbying is not a productive activity, it aims at obtaining revenue from the government. Thus, it can be viewed as a revenue generating activity, by the firm, if not by taxpayers. We treat lobbying as a late-stage activity because it typically aims at acquiring revenue through subsidies or other government favors as rapidly as possible. Though firms which seek subsidies always seek to prolong them, acquiring and maintaining an ongoing revenue stream requires ongoing lobbying.

CONCLUSION

This article provides a new synthesis between the strategic management literature and Austrian capital theory. The resource allocation process plays out in the context of differing subunit preferences, potentially resulting in tension and periodic conflict that may lead to dysfunctional relationships over time. Absent clearly understood and effective operational rules, the potential for heightened dysfunctional internal relationships will lead a conglomerate organization to have a diminished resource base for achieving its future strategic goals. This article presents a set of resource-allocation rules based on the Hayekian theory of production. By developing an effective resource-allocation paradigm based on economic theory, the organization can gain market share resulting in increased profitability and continued success in the marketplace. The Hayekian triangle offers firms an objective measure reflecting environmental shifts by tracking interest-rate changes that affect consumer and production demand. Organizations can gain “first-mover advantages” essential to provide the competitive advantage *vis-à-vis* their rivals while maintaining harmonious relationships among subunits. Entrepreneurial innovation can also be exercised by “second movers” who imitate the “first movers,” perhaps taking advantage of lessons learned. This kind of innovative imitation may well provide the greatest scope for entrepreneurial activity.

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