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Timo J. Hämäläinen

Kansallinen kilpailukyky ja teollinen tulevaisuus

The Competitive Advantage of Finland

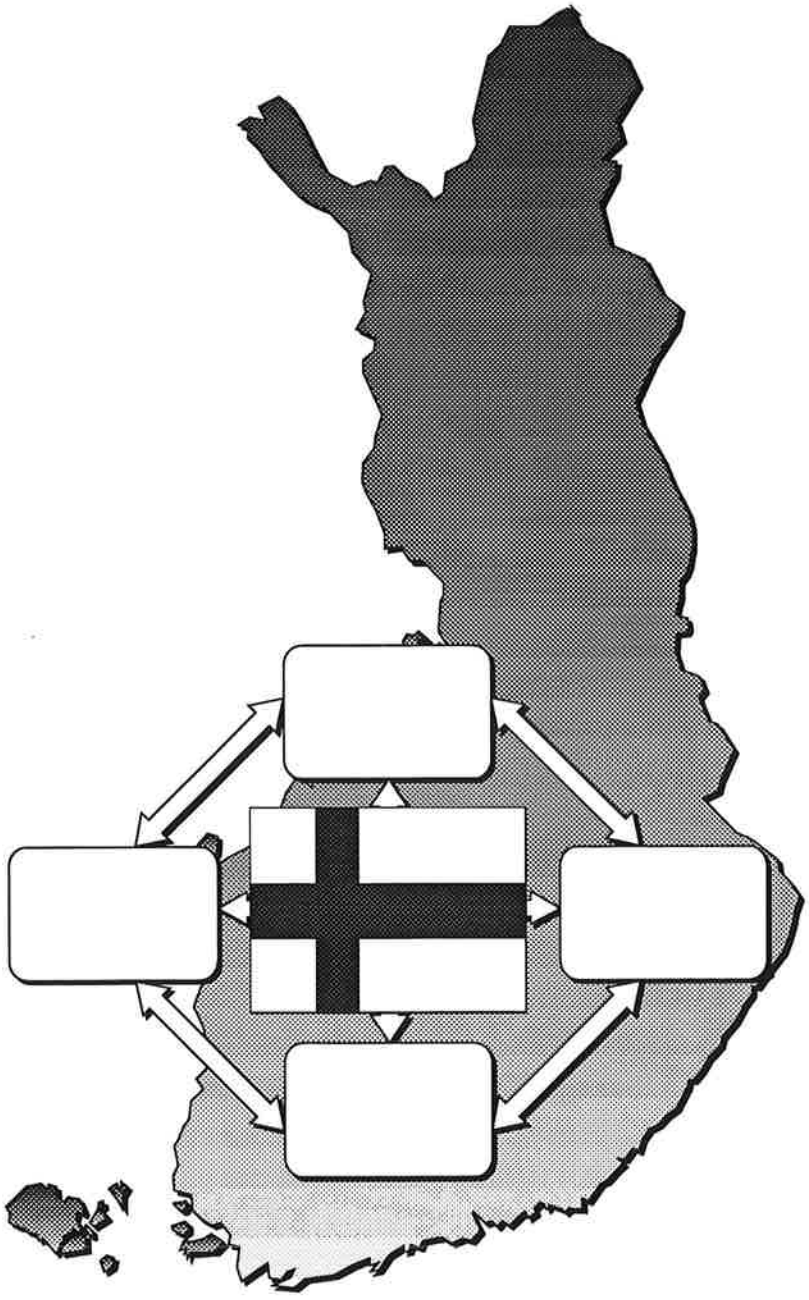
RESOURCES, ORGANIZATIONAL EFFICIENCY AND INTERNATIONAL COMPETITIVENESS: A SYSTEMIC FRAMEWORK

Kansallinen kilpailukyky ja teollinen tulevaisuus -projektissa tutkitaan, millaista teollista toimintaa voidaan harjoittaa Suomessa menestyksekkäimmin. Siinä tutkitaan menestyneitä vientiyrityksiämme ja pohditaan, miten niiden toimintaympäristöä tulisi kehittää, jotta ne pystyisivät saavuttamaan kilpailuetuja kansainvälisiin kilpailijoihin verrattuna.

Projektin päärahoittajina ovat Suomen itsenäisyyden juhlarahasto (SITRA), Elinkeinoelämän Tutkimuslaitos (ETLA), kauppa- ja teollisuusministeriö (KTM) sekä eri alojen tärkeimmät yritykset.

"The Competitive Advantage of Finland" research project evaluates the competitiveness of Finnish export industries and crucial elements behind their performance. The project focuses on what kind of industrial activities have we best possibilities to be successful in Finland.

The project is organised by Etlatieto Ltd and financed mainly by the Finnish national Fund for Research and Development (SITRA), The Research Institute of the Finnish Economy (ETLA), Ministry of Trade and Industry (KTM) as well as major companies in various fields.



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TIIVISTELMÄ: Nykyinen kansainvälistä kilpailukykyä käsittelevä tutkimus on kapea-alaista ja hajanaista -- tutkijat keskittyvät eri analyysitasoihin (yritys, toimiala, sektori, kansantalous) ja kilpailuprosessin eri osiin (resurssit, organisatorinen tehokkuus, tulokset). Kapea-alainen ja hajanainen tutkimus hidastaa teorian kehitystä ja vaikeuttaa talouspoliittisten johtopäätösten tekemistä. Tämä tutkimus soveltaa kokonaisvaltaisempaa lähestymistapaa, joka käsitää monta analyysitasoa ja koko kilpailuprosessin. Tutkimuksessa esitelty viitekehikko määrittää yritysten kansainvälisen kilpailukyvyn kahden päätekijän funktiona, joita ovat (a) käytettävissä olevat resurssit sekä (b) niiden käytön makro-organisatorinen tehokkuus. Makro-organisatorinen tehokkuus jaetaan edelleen allokatiiviseen, X-, koordinatiiviseen, ja dynaamiseen tehokkuuteen. Talouden resurssien ja makro-organisatorisen tehokkuuden kautta kansainväliseen kilpailukykyyn vaikuttaa lisäksi institutionaalinen ympäristö (mm. sopimuslainsäädäntö ja sosiaaliset käyttäytymisnormit), hallituksen poliittiset päätökset sekä ulkomainen liiketoiminta (suorat sijoitukset, kansainvälinen kauppa, allianssit, jne.). Kaikkia em. kilpailukykytekijöitä analysoidaan erikseen. Lopuksi tutkimuksessa esitettyä viitekehikkoa verrataan Michael Porter'in "timanttiteoriaan", jolle se antaa talousteoreettisen perustan. Tämä vertailu paljastaa tärkeitä heikkouksia Porter'in teoriassa.

AVAINSANAT: kansainvälinen kilpailukyky, kansantalouden resurssit, makro-organisatorinen tehokkuus, instituutiot, talouspolitiikka, kansainvälinen liiketoiminta.

ABSTRACT: Current literature on international competitiveness is narrowly focused and fragmented -- researchers study different levels of analysis (firm, industry, sector, nation) and focus on different stages of the competitive process (resources, organizational efficiency, results). The focused and fragmented research slows down theoretical progress in the field and confuses policy makers. This study takes a more holistic approach and builds a systemic framework which incorporates multiple levels of analysis and the whole competitive process. The study argues that the international competitiveness of firms is determined by (a) the availability of resources in the economic system and (b) the macro-organizational efficiency of their organization. The macro-organizational efficiency, in turn, is sub-divided into allocative, X-, coordinative, and dynamic efficiencies. Furthermore, the resource creation processes and macro-organizational efficiency are influenced by the institutional framework (e.g. property rights and behavioral norms), government policies and international business activities (foreign direct investment, international trade, alliances, etc.). Each of the above determinants of international competitiveness are analyzed in turn. Finally, the study compares Michael Porter's "diamond" theory with the framework presented in this paper. The paper gives Porter's theory a theoretical foundation and reveals some of its theoretical weaknesses.

KEY WORDS: international competitiveness, economic resources, macro-organizatiorial efficiency, institutions, government policies, international business activities.

YHTEENVETO

Kiristynyt kansainvälinen kilpailu sekä markkinoiden paremmuutta korostaneen talouspolitiikan haaksirikko USA:ssa ja Isossa Britanniassa on nostanut kansallisen kilpailukyvyn kehittämisen keskeiseen asemaan läntisten markkinatalousmaiden hallitusten ohjelmissa. Paras esimerkki tästä on USA:n uuden presidentin, Bill Clinton'in, ajama talouspolitiikka, joka nostaa valtion aktiiviseen rooliin uusien resurssien luojana sekä markkinoiden tehokkuuden parantajana. Tällaista talouspolitiikkaa on vuosikymmenien ajan menestyksekkäästi toteutettu Japanissa sekä Aasian ns. NIC-maissa (Taiwan, Singapore, Etelä-Korea, Hong-Kong).

Vaikka kansainvälisestä kilpailukyvystä on julkaistu satoja artikkeleita ja kirjoja, eivät taloustutkijat ole kyenneet vastaamaan talouspoliittisten päättäjien lisääntyvään kiinnostukseen sitä kohtaan. Tutkijat ovat kehittäneet ja soveltaneet kapea-alaisia teorioita, jotka mahdollistavat matemaattisen mallittamisen ja kehittyneiden tilastollisten menetelmien käytön, mutta samalla unohtavat kansainväliseen kilpailukykyyn vaikuttavien tekijöiden suuren määrän sekä niiden monimutkaiset vuorovaikutukset. Lisäksi tutkijat ovat keskittyneet eri kilpailukykytekijöihin, käyttäneet toisistaan poikkeavia kilpailukyvyn mittareita, sekä valinneet eri analyysitasoja (tuote, yritys, toimiala, sektori, kansakunta). Yleisesti hyväksytyn laaja-alaisen kilpailukykyteorian puuttuessa talousteoreettinen tutkimus ei ole kyennyt kumuloimaan riittävästi tietoa talouspoliittisten päätöksentekijöiden tarpeisiin. Tämän tutkimuksen tarkoituksena on kehitellä laaja-alaisempi viitekehikko, joka pohjautuu vakiintuneisiin taloudellisiin teorioihin ja ottaa huomioon kansainvälisen kilpailukyvyn moni-ilmeisyyden.

Esitetyn viitekehikon perusväittämä on yksinkertainen: kansallisen kilpailukyvyn määräävät (a) yritysten käytettävissä olevat resurssit (luonnonvarat, työvoima, ja pääoma, plus ns. "luodut" resurssit kuten henkinen pääoma, talouden infrastruktuuri, kansanterveys, jne.), sekä (b) niiden käytön (ja luomisen) organisatorinen tehokkuus. Lyhyesti, mitä parempia resursseja yrityksillä on käytössään, ja mitä tehokkaammin ne on organisoitu, sitä kilpailukykyisempiä ne ovat kansainvälisillä markkinoilla. Resursseista ovat em. "luodut" tai "kehittyneet" resurssit, jotka sisältävät paljon inhimillistä pääomaa ja osaamista, tulleet tärkeämmiksi kehittyneiden markkinatalouksien kilpailukyvylle kuin "perusresurssit" kuten halpa työvoima tai luonnonvarat. Talouden organisatorista tehokkuutta taas voidaan analysoida jakamalla se neljään alakategoriaan: (a) allokatiivinen, (b) X-, (c) koordinatiivinen ja (d) dynaaminen tehokkuus. Allokatiivinen tehokkuus vastaa kysymykseen: Miten tehokkasti talouden resurssit on jaettu eri tuotanto- ja kulutusvaihtoehtojen kesken, jotta yhteiskunnan hyvinvointi maksimoituisi? X-

tehokkuus mittaa tehokkuutta, jolla talouden eri organisaatiot käyttävät niille allokoituja resursseja. Koordinatiivinen tehokkuus mittaa tehokkuutta, jolla talouden toisistaan riippuvat organisaatiot ja niiden osat pystyvät saavuttamaan optimituloksen koko taloussysteemin kannalta. Dynaaminen tehokkuus mittaa tehokkuutta millä talouden resursseja ja em. kolmea (staattista) tehokkuutta parannetaan ajan kuluessa.

Käytettävissä olevien resurssien määrään ja laatuun sekä niiden käytön organisatoriseen tehokkuuteen vaikuttaa lisäksi talouden institutionaalinen rakenne, poliittiset päätökset sekä yritysten ulkomaiset liiketoimet. Talouden institutionaalinen rakenne käsittää yritysten ja ihmisten käyttäytymiseen vaikuttavat lait, asetukset, hallinnolliset määräykset sekä yhteiskunnan sosiaaliset normit. Poliittinen systeemi vaikuttaa kansainväliseen kilpailukykyyn lähinnä muokkaamalla näitä instituutionaalisia käyttäytymisrajoitteita. Yritysten ulkomaisiin liiketoimiin kuuluu suorat sijoitukset (ulos ja sisään), kansainvälinen kauppa (vienti ja tuonti) sekä maan rajojen yli solmitut yhteistyösopimukset (allianssit, yhteisyritykset, lisenssisopimukset, jne.). Näiden liiketoimien vaikutus on erityisen suuri pienten avoimien kansantalouksien kilpailukyvylle.

Tämä tutkimus johtaa yllä hahmotellun viitekehikon vakiintuneiden talousteorioiden pohjalta. Näin tietystä viitekehikon osa-alueesta kiinnostuneet tutkijat löytävät helposti teoreettisen lähtökohdan lisätutkimuksille. Lisäksi tutkimus vertaa esitettyä viitekehikkoa Michael Porter'in "timanttiteoriaan", joka on johdettu enemmän induktiiviseen tutkimusmenetelmään pohjautuen. Porter'in kymmeneen maatutkimukseen perustuva teoria on täysin yhdenmukainen esitetyn viitekehikon kanssa, mutta vertailu paljastaa siinä tärkeitä teoreettisia puuteita. Porter'in teorian tärkein saavutus lieneekin sen systeeminen lähestymistapa, joka antaa kansainväliseen kilpailukykyyn vaikuttavista tekijöistä kokonaisvaltaisemman kuvan kuin aiemmat tutkimukset. Tämä tutkimus soveltaa systeemistä lähestymistapaa uuden kilpailukykyteorian rakentamiseen, mutta aiempia tutkimustuloksia kunnioittaen ja niiden päälle rakentaen.

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1. INTRODUCTION

International competitiveness has become an important issue for business and national leaders around the world during the past decade. Their interest was aroused by the economic decline of many once formidable Western firms and nations; the concurrent rise of new economic challengers from Asia, notably Japan and the NIC's; and the globalization of many industries that exposed firms and nations to increasing international competition. Dozens of books and articles have been published on competitiveness, each taking a somewhat different approach to defining, measuring, and explaining it. These studies have analyzed competitiveness at different levels -- primarly those of product, firm, industry, industry cluster, and nation[1].

Despite all the discussion and research, there is still no comprehensive theoretical framework for analyzing competitiveness. The fragmented approaches of researchers remind us about the story the blind men and the elephant (John Godfrey Saxe [1816-1887] in Mintzberg 1990). The "blind" researchers seem to be "touching" different parts of the "competitiveness elephant" and developing partial explanations without seeing the whole "beast". Each of their approaches illuminates some important aspects of the issue but usually neglects others (Buckley et al. 1988; Francis 1989; Alavi 1990; Nelson 1992). The lack of a generally accepted paradigm of competitiveness creates practical and theoretical problems. Besides puzzling policy makers and strategists, the fragmented theories and measures of competitiveness put a serious doubt on the rapidly increasing empirical research in the area. A more comprehensive framework is called for.

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[1] For reviews of recent literature on competitiveness, see Buckley, Pass & Prescott (1988), Fagerberg (1988), Francis (1989), Alavi (1990), Bellak (1992), and Nelson (1992).

An important reason for the differing approaches is the interdisciplinary nature of the competitiveness concept which attracts scholars from different disciplines, such as economics, strategy, marketing, and organizational theory. These scholars differ in their research interests and approaches, and thus emphasize different measures and explanations of competitiveness. For example, Nelson (1991) has recently noted that strategy scholars emphasize managerial choice in explaining the competitive success, whereas economists largely neglect the firm-level variables and concentrate on industry- or national-level explanations, such as national savings, investment rates, investments in education, ect.. These different perspectives suggest the different explanations of competitiveness may be complementary, parts of a more systemic framework (Nelson 1992).

The focus of this paper will be on the international competitiveness of an open national economic system. We define competitiveness as the capability of an economic system to increase the standard of living of its citizens over time by participating in the international division of labor. The standard of living includes not only the economic well-being, but also the non-monetary preferences of individuals such as clean environment, low crime rates, modern infrastructure, long-standing social relationships, and so forth (Abramovitz 1959; Olson 1990). We emphasize the international division of labor in order to stress the importance of foreign business involvement and international competition for open economic systems.

In social sciences, the need for more systemic research approaches has long been recognized, and some economists and organizational theorists have already embraced it (Koopman & Montias 1971; Carson 1973; Gottlieb 1984; Dunning 1988; Porter 1990; Miller 1978; Ashmos & Huber 1987). The **ESP**-paradigm developed by Koopmans and Montias (1971) is a particularly interesting antecedent of this paper. The national level resources (**E** = environment) , institutional framework (**S** = systems), and policies (**P**) of

the ESP-paradigm will also be central to our framework. However, Koopmans and Montias focused only on the national level and had very little to say about the organizational efficiency, another core element of the framework presented in this paper.

Dunning (1988) emphasized the firm and national levels in his Eclectic paradigm of international production. He also studied one important organizational issue, the question of optimal organizational mode. However, although the Eclectic paradigm offers many insights into the interplay of firm and national level resources in the firms' international activities, it was not developed to explain the international competitiveness per se. Porter's (1990) research on national competitiveness used a multi-level approach (firm, industry, industry "cluster", nation); and he included factor conditions, some determinants of organizational efficiency (strategy, structure, rivalry, demand conditions), and government policies into his framework. However, Porter treated the institutional framework very superficially and unnecessarily played down the importance of the classical theories of comparative advantage (Gray 1991). Moreover, Porter's framework neglected the importance of firms' international operations to national competitiveness (Dunning 1992).

The aim of this paper is to propose a new framework for analyzing the competitiveness of an open economic system. The economic system is viewed from the perspective of participating firms, and its building blocks are the different economic units in the system which provide the firms with valuable external resources[1]. Koopmans and Montias (1971:52) called these economic units as custodial entities because "in most modern systems almost any resource, means of production, or good in process is at any time in the

[1] The concept of resources is used in a general sense in this paper. It includes all endowments, factors, and assets (be they natural or created, advanced or generic) which are transformed in, or support, the production process of the firm. Many researchers also treat organizational capabilities as resources, inputs to the production process. In this case, it is important to distinquish between the organizational and organizatory capabilities. The former refers to the human resources as an input to the production process, the latter to the managerial capabilities of organizing this production process. As we will see, the organizatory capabilities, which determine the organizational efficiency of resource usage, are a major determinant of competitiveness.

custody of some entity". The custodial entities include business firms (suppliers, competitors, customers, alliance partners, ect.), research organizations, industry associations, universities, government agencies, and so forth. The firms may also acquire resources from foreign custodial entities via FDI, imports, and strategic alliances (Dunning 1988; Shan 1992).

The resources available to a firm may lie at several levels of analysis: the product market (e.g. trade mark, reputation, market and competitor knowledge), firm and corporation (patents, proprietary technologies, organizational culture), industry and sector (shared knowledge, innovations, and activities), nation (education system, infrastructure, natural resources), and even a region (regional R & D cooperation, tariff barriers, monetary stability). The economic systems are defined by high levels of interaction, interdependence, and resource flows between their custodians of resources, and low levels of interaction across the economic systems (Eckstein 1971; Kast & Rosenzweig 1992). Thus, for example, the concept of "Triad" suggests the existence of three regional economic systems (Ohmae 1985). However, depending on the density of interactions, the economic systems may also be confined to nations (Eckstein 1971), regions within them, or even cities[1] (Porter 1990).

Each of the above levels of analysis may provide a competitive resource advantage for national firms, provided comparable resources are not easily available to foreign competitors. But even firms with superior resources may fail if they do not organize them efficiently. Thus, it is the availability of competitive resources and the efficiency with which they are organized that determines the firms' competitiveness. The organizational efficiency refers not only to the organization of firms, but to that of the whole system. This

[1] This definition may become problematic if the density of business interactions and resource flows is evenly distributed across several geographical regions.

systemic organizational efficiency can be sub-divided into four categories: allocative, X-, coordinative, and dynamic efficiences. The allocative efficiency addresses the question of how efficiently are the system's resources allocated between the different productive and consumption alternatives in order to maximize the society's welfare. The X-efficiency addresses the efficiency of resource usage within organizations at different levels of the system, which, inter alia, influences the quality, quantity, and cost of external resources available to firms[1]. For example, the knowledge and skills of graduates from the national education system are not only dependent on the amount of funds invested into education but also on the organizational efficiency of schools and the school administration.

Even though resources were competitive, and allocative and X-efficiencies at maximum levels, the system may still fail to become competitive if a lack of coordination between the different custodians of resources results in sub-optimization of the system's organization. The joint-optimization of the system's competitiveness requires trust and cooperation from the interdepedent custodians of resources because they facilitate rich information flows and prevent opportunistic behavior (Veblen 1927; Casson 1990; Simon 1991). The prime example of high coordinative efficiency is the Japanese economic system where different sources of resources (government, bureaucracy, unions, suppliers, banks, keiretsus, ect.) are jointly-optimized to achieve the maximum competitiveness of national firms (Thurow 1986; Sasaki 1990; Williamson 1991a). The American economic system offers a contrary example where the interfaces between different custodians of resources are often non-cooperative, or even adversary (goverment vs. firms, universities vs. government, labor unions vs. firms, suppliers vs. firms, consumers vs. firms, ect.). This adversity prevents the efficient coordination and joint-optimization of interdependent activities in the U.S.

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[1] See, Leibenstein (1966, 1978) for a comprehensive treatment of X-efficiency.

economic system, and results in a competitive disadvantage for American firms (Dertouzos, Lester & Solow 1990: Ch. 7, 8)[1].

At any point in time, it is the available resources and the efficiency with which they are organized that determines the international competitiveness of firms, and by aggregation, the competitiveness of the economic system. Over time, the increasing competition, innovations, macro-economic shocks, and other dynamic developments force firms and nations to upgrade their resources and improve the allocative, technical, and coordinative efficiences. The capability of the economic system to achieve these dynamic improvements is measured by the dynamic efficiency.

There are two important factors which affect the availability of resources in the economic system and the efficiency with which they are organized. The first is the institutional framework and government policies that constrain the behavior of economic agents. The institutional framework and government policies shape the incentive and constraint structure of the society, and thus the resource creation and organization processes. The second involves international business activities of firms which expose the economic system to international competition, foreign cultures, new resources, and other foreign influences. The international business activities fall under outward or inward foreign direct investment (FDI), exports and imports, and cooperative ventures with foreign partners. Finally, these two factors also influence each other; institutional framework and government policies shape the international business activities, and vice versa. The framework of the study is depicted in Figure 1.

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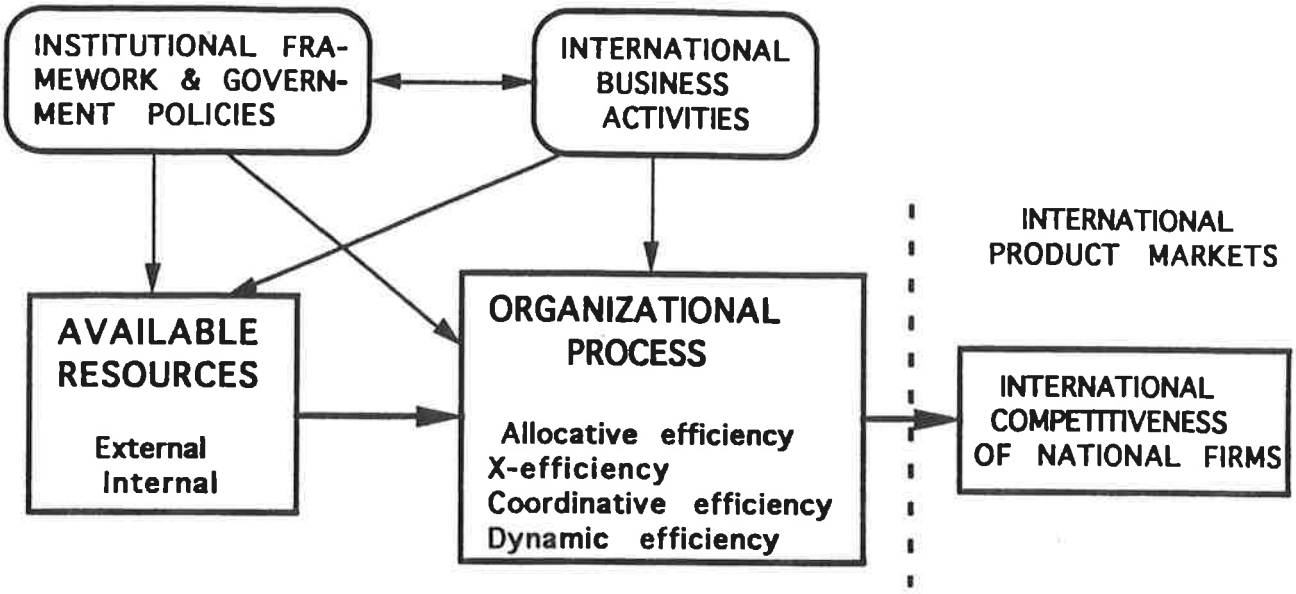
[1] We do not suggest here that a hierarchial organization, or "administrative guidance" such as in Japan, would be a superior way of economic organization. Whether the institutional structure of the economic system is based on markets, hierachial planning (public or private), some other mechanism such as "clan" or "solidarity" (Ouchi 1980; Hegner 1991), or a combination of them, is a context and time-specific question. We only stress the importance of optimizing interdependent activities at the systemic level.

FIGURE 1. The competitive process



The competitiveness of firms (and economic systems) is be based on superior resources and organization. In one extreme, a firm with superior organizatory capabilities may be able to organize freely available resources in unique and synergistic ways which provide it with a sustained competitive advantage. Quinn (1992: 54) provides an example of an industry where competition is largely based on the organizatory capabilities: "Publishers..outsource virtually the whole process of book creation to independent: authors, copy editors, art work groups, compositors, printers, binders, advertising agencies, distributors, retailers, and so on anywhere in the world." The success of Japan and the NICs suggests that organizational arrangements may also provide a decisive competitive advantage at the systemic level; these countries built their international competitiveness with few indigenous resources (see, Kogut 1991; Kogut 1992). In the other extreme, a firm or a system with superior resources but only average organizatory capabilities may also achieve international competitiveness. The (initial) success of firms with major technological innovations and the prosperity of some countries with plentiful natural resources exemplify this.

In increasing international competition, firms and economic systems are likely to need both superior resources and organizational efficiency to become and stay competitive. The recent emphasis on "created" and "advanced" factors implies that many basic resources are becoming increasingly well available from global markets and the complex and non-tradable knowledge-intensive resources and the efficiency of organization are becoming relatively more important as sources of sustainable competitive advantage (Scott 1985; Porter 1990; Dunning 1992; Quinn 1992). The knowledge-intensive resources and the organizational mechanisms share many of the valuable characteristics that are needed for a sustainable competitive advantage such as scarcity, inimitability, unsubstitutability, market failure, and unseparability (Peteraf 1992).

Finally, as we see in Figure 1, the competitiveness of firms is ultimately determined through competition in international product markets. The resources and organizational solutions of firms and larger economic systems are competitive only with regard to particular product markets. Only the knowledge of specific international demand patterns, competition, and institutional constraints can successfully direct the resource creation and organizational strategies of organizations. The more knowledgeable the policy makers (both at firm and national levels) are about foreign product markets, the more effectively can they focus organizational efforts on the most promising markets, most productive resources, and the most efficient organizational arrangements. Thus, gaining and sustaining international competitiveness requires a dynamic fit between the system's resources and organizational capabilities, and the foreign market opportunities. No matter how superior are the firms' resources, or how efficiently are they organized, it is the effectiveness of firm- and national-level strategies that ultimately determines the system's international competitiveness.

The next section of the paper will analyze the immediate determinants of product market competitiveness; these are (a) the consumer preferences, (b) competition, and (c) the institutional constraints of the market place. It will also discuss the increased informational demands that international business places on on policy makers.

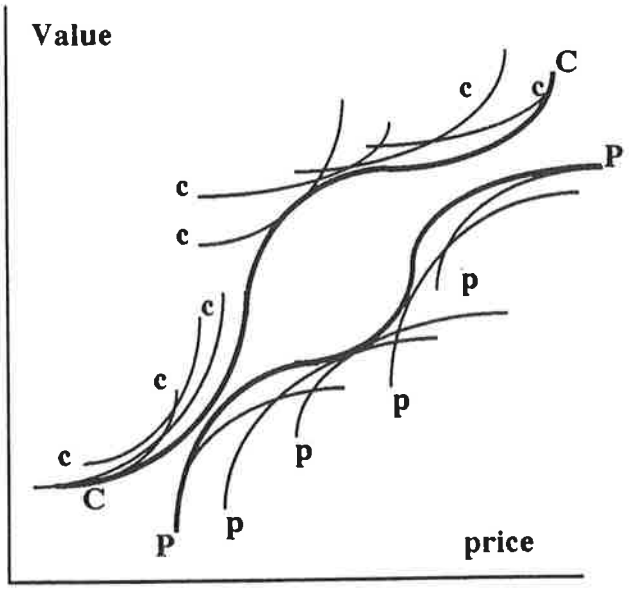
2. COMPETITIVENESS IN INTERNATIONAL PRODUCT MARKETS

Porter has argued that the basic unit of analysis for understanding international competition is a "strategically distinct industry" (Porter 1990: 33). It is useful to analyze the product market competition in a stylized industry before turning to the supply-side determinants of systemic competitiveness. We will use the strategic frontier framework of Hämäläinen and Spender (1992) for this purpose. This framework is based on the works of Lancaster (1966), Hirschman (1970:141), and Galbraith (1952), and it depicts the interaction of consumer preferences and firms' product offerings in differentiated product markets.

2.1 Strategic frontiers in a stylized product market

Since the seminal work of Lancaster (1966), economists and marketing scholars studying consumer behavior have recognized that consumers want a product to satisfy a bundle of desires. For example, in purchasing an automobile, they do not only consider their transportation needs, but also look at different sizes, design options, colors, service facilities, delivery time, and financing terms (Itami 1987). These product attributes provide consumers with the value which they trade off against the price of the product. In maximizing their utility, consumers search for the optimal value/price combination in the market. Firms must be able to offer the best value/price combination for (at least) some consumers in order to become competitive.

FIGURE 2. Strategic Frontiers

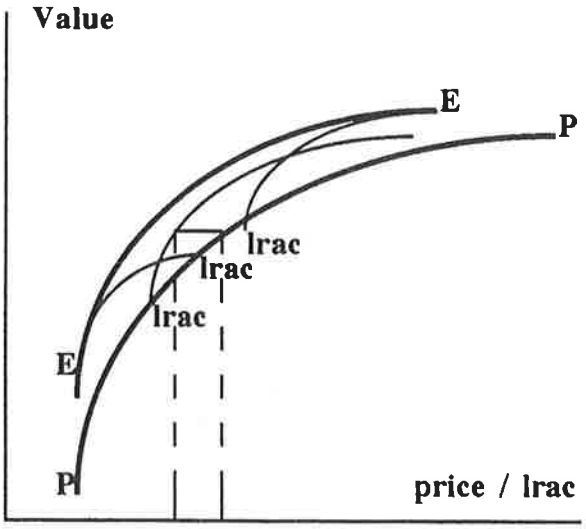


Source: Hämäläinen & Spender (1992)

Figure 2 depicts a stylized product market situation where the total value of products (from all attributes) is depicted on the vertical axis and the price on the horizontal axis. Producers are represented by their individual product offering curves (product lines) **p**, the best of which, collectively, form a strategic frontier **P**. Consumers are represented by their indifference curves **c** and a corresponding frontier **C**. Increasing price is negative for consumers and positive for producers, while increasing value is positive for consumers but negative for producers, because it is more costly to produce (Hirschman 1970; Porter 1985). The offerings of producers and consumers are typically at some distance from each other. A transaction occurs only when the offerings of producers meet those of consumers. This is depicted as a tangency of producer and consumer frontiers **P** and **C**.

The competitiveness of a firm is determined by the location of its producer frontier **p** (product offerings) and its long run average cost curve **lrac** relative to the other strategic frontiers in the product market (Figure 3). The further the firm can move its offering(s) towards consumers, i.e. the lower its price(s) and/or the more consumer value it offers, the more competitive it becomes. The firms ability to advance, in turn, is constrained by the bounded rationality of managers, available resources, the efficiency with which they are organized, and the institutional factors of the product market (laws, regulation, customs, conventions, etc.). The "sticky" and path-dependent nature of the firm's resources and organizational capabilities provides some protection against competition, but it also constrains the firm's ability to produce different sets of products (Porter 1991: 108).

FIGURE 3. Strategic windows and product market competitiveness



Source: Hämäläinen & Spender (1992)

The commercially viable strategic options of the firm can be separated from the rest of its production possibilities with the concept of average costs. The firm's average cost curve **lrac**, which is a function of the firm's resources and organizational efficiency, restrict its strategic options to certain parts of the product market. For a commercially viable strategic option, the average cost curve will have to lie beyond (to the left of) the producer frontier **P** which determines the market price. As depicted in Figure 3, the horizontal difference between the producer frontier and the firm's average cost curve (**pr1-ac1**) determines the unit profit. Combined with the volume of transactions, this margin determines the profitability of each strategic option.

In the long term (and without cross-subsidation), the average cost curve of the firm will limit its strategic options to those strategic windows (Abell 1978) in the product market where no competitor offers a product that lies beyond the firm's average cost curve. The strategic window is the area between **P** and **lrac**. If a competitor's offering is located beyond (to the left of) the firm's cost curve in a particular segment of the product market, the firm can only offer its products at a loss for that segment. Moreover, the size or width of the whole product market is constrained by the envelope **E** of the most efficient firms' average cost curves. This envelope is the efficient strategic frontier for the firms. Analogous to the "efficient frontier" of the modern portfolio theory in finance, this frontier defines the best product possibilities (from the consumers' point of view) which the producers could offer while still covering their total costs.

2.2 Six constraining industry forces

There are six specific forces that influence the size of the strategic windows, and hence the attractiveness of each strategic option. Michael Porter applied five of these forces to analyze the structural attractiveness of industries (Porter 1980). However, as noted by Wernefelt

(1984) and Porter (1991) himself, these forces may equally well be employed at the firm level. Three of the forces (rivalry, threat of entry, threat of substitutes) involve competition which "pushes" the producer frontier **P** out towards the cost envelope **E**, and thus decreases the firms' margins and the size of their strategic windows. The bargaining power of consumers moves the producer frontier in the same direction, but now due to the countervailing power of sophisticated and demanding consumers (Galbraith 1952; Hirschman 1970; Porter 1990). The bargaining power of suppliers, in turn, moves the average cost curves of firms towards their strategic frontier **P**. In general, an increase in any of these five forces reduces the size of the firms' strategic windows and the "attractiveness" of an industry as an investment target (Porter 1980).

The strength and evolution of the five forces in different industries in relation to the firms' resources and capabilities has important policy implications for corporate and national policy makers who aim at industries where the available resources would earn the best return. Although the average profitability of an industry does not reveal the profitability of the most successful firms, the stronger the above five forces are, the more difficult it is for any firm to become profitable.

The sixth force involves the institutional framework which constrains the market behavior of consumers and producers (North 1990a). These factors were largely neglected in Porter's original model (Porter 1980), but have an important effect on the international competitiveness of firms. First, institutional mechanisms may rule out certain parts of the product market. Consumer liability and environmental legislation are good examples; few firms want to produce potentially hazardous or environmentally damaging products. Second, evolving institutional incentives may change the preferences of consumers and thus reposition them in the product market. Finally, foreign markets differ in their institutional frameworks which makes the "rules of the game" different in each market. The

international srategy literature argues that firms neglect these differences only at their peril (Prahalad & Doz 1987; Bartlett & Ghoshal 1989).

2.3 Dynamics of product market competition

The strategic frontier framework provides a simple tool for analyzing Schumpeterian dynamic competition which has proved to be problematic for economists used to the precision, completeness, and formality of the classical equilibrium models (Nelson & Winter 1978; Jacobson 1992). Over time, the movement of producers' and consumers' individual strategic frontiers (**p** and **c**) shifts the aggregate producer and consumer frontiers (**P** and **C**) to higher levels of consumer satisfaction, i.e. towards higher value and/or lower price. This dynamicsof the product market competition opens up new strategic windows for alert producers and closes some old ones. As Jacobson (1992: 802) noted, "there are only limited periods (i.e. a strategic window) during which the fit between the key requirements of a market and the particular competencies of a firm competing in that market is at an optimum."

Contrary to Jacobson (1992:802), who argues that firms' investment activities should "coincide with periods in which such a strategic window is open", we agree with Ghemawat (1991) who emphasizes the importance of future sustainability and flexibility of the firms' commitments. This view recognizes that decision makers, constrained by bounded rationality, will have to make irreversable commitments to expected strategic windows if they plan to stay competitive in the future. As Edith Penrose once put it (1959: 41): "Although the 'objective' productive opportunity of a firm is limited by what the firm is able to accomplish, the 'subjective' productive opportunity is a question of what it thinks it can accomplish. 'Expectations' and not 'objective facts' are the immediate determinants of a firm's behavior."

Thus, for example, the Japanese computer chip manufacturers entering the U.S. market priced their products below their short term production costs to gain market share and reap the consequent learning and scale economies. This strategy proved successful in the long term.

2.4 Linking international demand patterns to firms' supply capabilities

The strategic frontier framework can be applied in the analysis of both uni-national and international product markets. Since international markets are more heterogenous, their analysis requires much more information about the differing consumer preferences, competitor resources and capabilities, and institutional constraints in each market. The policy makers will have to compare their firm's or nation's resources with those of important foreign competitors and demand patterns in several geographical and product markets. They will also have to predict the future changes in the latter two. In consequence, pursuing ineffective strategies, i.e. directing the firms' efforts towards sub-optimal goals, is a much greater threat in international markets than in the domestic one, where firms intimately know their consumers, competitors, and institutional constraints.

Porter (1990) has gone so far as to imply that it is only the home market demand that can guide national firms to success in international markets:

> "It might seem that home demand would be rendered less significant by the globalization of competition, but this is not the case..Nations gain competitive advantage in industries where home demand gives local firms a clearer or earlier picture of buyer needs than foreign rivals can have..The home market usually has a disproportionate impact on a firm's ability to perceive and interpret buyer needs..

> Attention to nearby needs is the most sensitive, and understanding them is the least costly..Firms are better able to perceive, understand, and act on buyer needs in their home market and tend to be more confident in doing so. Understanding needs requires access to buyers, open communication between them and a firm's top technical and managerial personnel, and an intuitive grasp of buyers' circumstances. This is hard enough with home buyers. It is extremely difficult to achieve, in practice, with foreign buyers because of the distance from headquarters and because the firm is not truly an insider with full acceptance and access" (Porter 1990: 86).

As a result, Porter concludes that firms need anticipatory buyer needs in the home markets in order to become competitive in foreign markets. The anticipatory needs will provide an "early warning indicator" of buyer needs that will become important in international markets. If the home demand patterns are idiosyncratic to the nation, Porter argues, they will undermine the competitive advantage of local firms (Porter 1990).

Porter is correct in emphasizing the importance of intimately knowing the consumers' preferences. However, he is underestimating the firms' and governments' need and ability to analyze the demands of different foreign markets. His argument discounts the possibility that firms and nations could systematically study the opportunities of foreign markets to gain a better understanding of their strategic opportunities. Thus foreign market research and competitor intelligence are redundant activities in Porter's framework. This narrow view of market information effectively ties the firms' fortunes with the ability of home consumers to be anticipatory of future world market demands.

Porter's argument does not hold in logical or empirical scrutiny. First, how do firms and nations know if the domestic demand patterns are anticipatory or idiosycratic? The only

way to foresee this is to analyze the development of foreign demand patterns. Without such an analysis, Porter's argument is tantamount to proposing that firms' international product offerings are purely determined by the domestic consumer preferences! Clearly, this is not plausible.

Porter (1990) conveniently disregarded the importance of foreign market knowledge in his book. For example, in explaining the Japanese competitiveness, he strongly emphasized the patterns of home demand. However, other scholars tell a different story of why the Japanese products have been successful in the Western markets. Kotler, Fahey, and Jatusripitak (1985) argue that Japanese firms and government agencies put a major effort into understanding the cultures, institutions, and consumer preferences in foreign countries. They have established a worldwide market intelligence system that produces and distributes vast amounts of information for the policy makers. Besides the firms' own information sources and the global network of general trading companies, this intelligence system benefits from the activities of JETRO, a semi-autonomous organization under the supervision of governmental authorities (Kotler et al. 1985: 81):

> "[JETRO]..functions as a national center of market information for Japanese business firms. Its main function is largely informational and includes such activities as publishing periodicals and monographs on foreign trade, collecting international market intelligence, collecting and disseminating current worlwide market data, sponsoring market research, and organizing trade fairs and seminars. Perhaps most significant of all is the fact that at the request of business firms or trade organizations, JETRO helps pay the cost of market research. Such a policy of underwriting research costs is extremely beneficial to smaller-sized firms that otherwise cannot afford the cost of information activities. The breath of information gathered by JETRO ranges from general data and trends on individual countries to

custom-tailored market studies. Detailed market information, competitors' activities, political and legal condtions, and suggestions on product strategy are indicative of help provided to JETRO clients."

In summary, this section has emphasized that international competitiveness is ultimately determined in foreign product markets, the knowledge of which is a crucial input to the firm- and national-level policy formulation processes. Firms and nations seek to employ their scarce resources in those international markets where they can achieve competitive advantage over the foreign competitors. This requires intimate knowledge of the needs of foreign consumers, the resources and capabilities of foreign competitors, and the constraints and opportunities provided by the local institutional framework. Without such information, not even superior resources and high organizational efficiency will produce international competitivess. However, good market knowledge without sufficient resources and organization will not suffice either. Therefore, the remainder of this paper will focus on the supply-side determinants of systemic competitiveness.

3. RESOURCES IN THE ECONOMIC SYSTEM

Kast and Rosenzweig (1992: 90) argue that flows of material, energy, and information are parts of every system and sub-system. We have earlier suggested that these flows take place between different custodians of resources in the economic system, and provide firms with external resources from other levels of the system. In this section, we will first review three economic theories that discuss valuable resources at different levels of the economic system. We submit that a systemic framework of competitiveness must draw on all of these theories to develop a holistic perspective. Second, we will consider the characteristics of competitive resource configurations as suggested by the resource based theory of the

firm[1]. Third, we will analyze the origins of valuable resource configurations. Finally, we will introduce the resource pyramid and define the different channels through which resources may in the economic system.

3.1 Resources in three economic theories

Over time researchers have focused on different levels of analysis in their explanations of international business. First, classical and neo-classical trade theorists such as Ricardo, Heckser, and Ohlin focused on the country-specific technological and factor advantages in explaining the comparative trading advantage of nations. Ricardo (1817) focused on the technological differences between countries, while Heckscher (1950) and Ohlin (1967) emphasized differences in capital and labor endowments. Both theories assumed that factors of production were mobile nationally but immobile internationally (Hood & Young 1979). This suggests that all national firms were supposed to have access to the same resources, which lay at the national level. The followers of Ricardo in the neo-technology stream introduced firm- and (national) industry-specific advantages in technology. For example, Posner's (1961) technology gap theory argued that trade will take place during the time lag while the rest of the world imitated the innovation of a firm or industry in a particular country (Hood & Young 1979: 140). These contributions brought the trade theorist very close to the separately developing theories of foreign direct investment (Dunning 1988: 15; Hood & Young 1979: 142).

The scholars of foreign direct investment (FDI) and international production have also greatly contributed to our understanding of the interaction between different levels of resources and their organization. Beginning with the seminal work of Vernon (1966), they

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[1] A combination of firm's resources and their organization will be termed a resource configuration in this paper.

started to draw together the different theories of trade and investment. The early works of Dunning (1973, 1976) and Hirsch (1976) combined the firm- and national- level factors to arrive at a more comprehensive model of foreign operations. This work has culminated in the Eclectic paradigm of international production which combines the firm-specific ownership advantages, national-level locational advantages, and internalization advantages stemming from the common governance of value added activities across national borders to explain the behavior of multinational corporations (Dunning 1988). Thus the neo-technology theories of international trade and the theories of international production shared a common interest in multiple levels of resources that interacted to produce internationally competitive firms.

During the past decade an increasing number of strategy theorists became disappointed with the neglect of firm-specific issues by the dominant industrial organization (IO) approach in their field. Stemming from the works of Penrose (1959), Andrews (1971), Rumelt (1984) and Wernerfelt (1984), these scholars developed a resource based theory of the firm (RBT) that looks at firms in terms of their unique firm-specific bundle of resources. In the words of Rumelt (1984: 557), "a firm's competitive position is defined by a bundle of unique resources and relationships and the task of general management is to adjust and renew these resources and relationships as time, competition, and change erode their value" (emphasis added) [1]. As we have seen above, the focus on unique firm-specific resources is not new to economic thinking, although the RBT has gained momentum among strategy scholars only during the last decade. Thus economists familiar with the theories of international trade and production may be sceptical about the value-added of this research, particularly, when its sole focus is on the firm-level resources, which suggests a gross negligence of the

[1] It is important to note that Rumelt focused on both resources and their relationships. The later authors in this research stream have neglected the importance of the efficient organization of resources (i.e. the "relationships") that is central to our framework.

"higher-level" resources of the classical economic theories. Even though this criticism is valid, the RBT has made two notable contributions to the resource based discussion of competitiveness.

The first contribution of the RBT is its careful definition of the characteristics the firms' resource configurations must have in order to provide a sustainable competitive advantage. The determinants of the sustainability of comparative or competitive advantage have not received adequate attention in the theories of international trade and production[1]. The second contribution of the RBT is its focus on the process by which valuable configurations of resources are created. We will discuss these contributions in the next two sections. In defining the characteristics of valuable resource configurations, we will draw examples from the domains of international trade and production.

3.2. **Characteristics of valuable resource configurations**

Drawing on the RBT, we can define the criteria a firm's resource configuration will have to meet in order to yield a sustained competitive advantage[2]. The configuration must be (Teece, Pisano & Shuen 1990; Peteraf 1992):

1) superior in satisfying consumer wants,
2) scarce (inimitable or "uncertainly imitable"),
3) free from substitution,
4) traded or developed in conditions of imperfect competition,
5) unseparable from the firm.

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[1] The neo-technology theories of trade are an exception in one respect. These theories recognized that *imitation* erodes a technological advantage over time (Hood & Young 1979: 140). Imitation is one of the five characteristics of resource configurations that determine the sustainability of competitive advantage. We will discuss these characteristics next.

[2] Barney (1991) has defined the sustained competitive advantage as one which "will not be competed away through duplication efforts of other firms".

The first characteristic refers to the differences in competitive value of heterogenous resource configurations. Some configurations enable the firm to produce better products (or) with lower cost than its competitors (Peteraf 1992). This observation was first made by David Ricardo who noted that owners of the more fertile land earned "rents" when demand was sufficient to make it economic to grow corn even on the less fertile land (Rumelt 1987: 142). For Ricardo, the difference in the productivity of land was the decisive characteristic of a valuable resource configuration. The key factor to the existence of Ricardian rents is the presence of a scarce and valuable resource (configuration). If the resource configuration were not scarce competitors would start using it and drive down the rents (Rumelt 1987). Indeed, the resource configurations are often only quasi-fixed in the sence that their supply cannot be extended rapidly (Peteraf 1992). These resource configurations can naturally yield only quasi-rents.

It is important to note that the (neo-)classical trade theories also assumed the existence of scarce resources in their explaination of the comparative advantage of a group of firms operating from the same country. This advantage was not based on scarce firm-specific resource configurations rather than a common nation-specific configuration. These resources were "public goods" locally but scarce globally. It paradoxical that the strategy researchers pursuing the resource based approach have noticed the close connections of their theory with the traditional SWOT (strenghts, weaknesses, opporturnities, threats) strategy framework, organizational economics, and industrial organization economics (Teece et al. 1990; Peteraf 1992; Mahoney & Pandian 1992); but have failed to recognize the complementarity of their theory with the theories of international trade and production. As we will argue in this paper, considering these three theories together provides a more comprehensive view of the relevant resources and organizational patterns from which the firms' international competitiveness stems.

The valuable resource configurations may be in limited supply because they have strictly inimitable elements, such as some valuable locations in the trade and FDI theories, or uncertainly imitable characteristics as described by Lippman and Rumelt (1982). In the latter case, causal ambiquity may prevent one from knowing with certainty exactly which configuration of resources is generating the rents. Or even if this is known, its replication may be an inherently difficult or uncertain endeavor (Peteraf 1992). Resource configurations with a strong tacit dimension which have elements that are intangible, socially complex, or path-dependent (in the sense of arising from unique historical circumstances) are most likely to be uncertainly imitable (Barney 1989). Barney cites the example of organizational culture which may be well understood to be the source of the firm's rents, and yet, its reproduction by competitors may be an extremely difficult and risky undertaking (Barney 1986; Peteraf 1992).

Uncertainly imitable resources can also be found at the higher levels of analysis. The institutional structure of a society may provide local firms with an industry- or nation-specific comparative advantage[1]. The close cooperation in Japan between suppliers and producers, or between the government and the business community, are oft-cited examples of valuable but uncertainly imitable resources at these higher levels. The national culture is another. Franke, Hofstede and Bond (1991) found that cultural indices explained more than 50 percent of the international differences in economic growth in their samples of 18 and 20 countries. In a later section of this paper, we will argue that the inimitable institutional context plays a particularly important role in shaping the resources and organizational efficiency of the economic system over time.

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[1] It may also become a comparative disadvantage. An oft-cited example is the American legal system (see, Lamm 1988).

Beyond inimitability, valuable resource configurations must be free from substitution by other equivalent configurations (Diericks & Cool 1989; Peteraf 1992). The more perfect and the more freely available the substitutable configurations are, the more they will compete away the rents earned by the original resource configuration (Barney 1989; Peteraf 1992). With regard to the increasing rivalry between countries for inward FDI, it is important to note that the lack of substitutes is also a necessary condition for the national-level resources to yield rents. If the competitor firms have equally supportive operating environments, the competitive advantage of firms will fall on the other components of the resource configuration. This is recognized by the scholars of intra-industry trade and investment who emphasize the firm-specific advantages (Greenaway & Milner 1986; Dunning 1988; Gray 1988) [1].

Peteraf (1992) reminds us that the above conditions of scarcity and lack of substitution are necessary but not sufficient for the firm to earn super-normal rents from its resource configuration. The resource inputs must also be traded or developed in conditions of subdued competition. Otherwise their prices would be bid up and rents competed away. The lack of competition may be a result of initial endowment, good fortune in acquiring the resources, asymmetric information, or entrepreneurial discovery (Rumelt 1987; Peteraf 1992; Mahoney & Pandian 1992). We will return to this issue when we analyze the origins of valuable resource configurations.

Dierickx and Cool (1989) have noted that the requirement of subdued competition may also be extended to non-tradeable resources (Peteraf 1992):

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[1] Even if not sufficient, these location-specific resources may still be necessary for the firms' competitive advantage. They may be necessary as complementary resources without which firms are unable to leverage their core resources (Teece 1987). Core and complementary resources will be discussed later in this section.

> "Even when resources cannot be bought and sold in factor markets, firms compete to develop them internally. Just as market competition drives up factor prices, so competition of this form drives up investment costs to the point that rents are competed away..The general principle is that the enjoyment of rents depends upon a lack of competition in either acquiring or developing resources."

This argument can be extended to national industries, industry sectors, and nations. For example, it is usual for national policy makers to be concerned about the "price" paid for inward FDI. The more competition there is between countries in improving their attractiveness as an investment site (in terms of tax holidays and other favorable treatment of MNEs), the less social rents the winner of the bidding contest can appropriate from the inward investments (not to mention the losers!). In general, this suggests the policy makers are well-advised to make a careful cost-benefit analysis of the different resource acquisition and generation alternatives.

A related issue to the factor market imperfections is the separability of the resources from the firm (Grant 1991; Peteraf 1992). If a particular resource can command a higher value outside of the firm (and if it is tied to the firm by a contract), nothing may stop it from leaving the firm. For example, a brilliant CEO may decide to leave the firm if his productivity and remuneration would be higher in an other firm. If the resource is owned by the firm, but there is a more productive employment for it outside of the firm, the firm may attempt to sell the resource. Only when the resources are bound to the firm in the sense that their full value cannot be realized in other contexts, can they contribute to a sustainable competitive advantage. Peteraf (1992) argues that to retain their contracted resources, the firms need to pay only a fraction more than the rent they would earn elsewhere.

The separability argument can also be generalized to other levels of analysis. For example, the separability of resources from a nation can be an important determinant of national competitive advantage. The diminishing imperfections in global factor markets allow many resources that used to be internationally immobile to seek better returns from abroad. This reduces the importance of the Ricardian comparative advantage in relation to the Smithian absolute advantage because nations with an absolute advantage in valuable immobile resources may attract the needed mobile resources from other nations. Over time, this trend may accumulate the mobile resources into certain locations well-endowed with valuable immobile assets, and deprive the locations with no absolute advantage.

In developed countries, the investment capital and technology are relatively easily separable resources, as is the human capital in industrialized Western countries. This separability of human capital in the West is likely to be institutionally-determined. Western organizations and education systems develop functional specialists who are experts in their special fields but usually have little organization-specific knowledge (Dertouzos et al. 1990; Itami 1986). This makes the extra-organizational labor markets relatively efficient in and across the Western countries (see, Itami 1986). In Japan, on the other hand, much of the education and training is firm- and culture- specific and cannot easily be taken out to other contexts (Itami 1986; Porter 1990; Aoki 1990). This systemic nature of the human capital gives Japan and the Japanese firms an advantage in appropriating the rents of this scarce system-bound resource.

Teece (1987) has given another useful perspective into the characteristics of resources by categorizing them into core and complementary. In short, the complementary resources are needed successfully to commercialize the core resources. Thus, an access to complementary resources can be a necessary but not a sufficient base for competitive advantage; while an access to core resources can be both. As with the core resources

(discussed above), some of the complementary resources can be found at other than firm-level of analysis. For example, Grant (1991: 127) argues that just-in-time manufacturing and quality circles are more appropriate organizational mechanisms in Japan than in the U.S. and Europe due to the cultural differences. Similarly, Lamm (1988) has noted the uncompetitive institutional structure of the U.S. economic system. Thus, some systems may provide their firms with better higher-level complementary resources, organizational patterns, or institutions than others.

Moreover, the availability of these higher-level complementary resources is often influenced by the government policies, and fall into the general category of "infrastructure". These resources influence the general efficiency of doing business in a particular country, and are an important determinant of the MNEs' locational choices (Dunning & Norman 1987). The MNEs may not only take advantage of the different location-specific complementary resources but they also have a large pool of internal complementary resources to draw on. Firms that do not have such internal complementary resources often revert to strategic alliances to gain access to them (Hamel, Doz & Prahalad 1989; Hamel 1991; Gugler 1992).

3.3 **Origins of resources**

The valuable resource configurations originate from two main sources: (a) initial endowments (physical assets, favorable location, natural resources, etc.), or (b) internal discovery and development (innovations, superior infrastructure, education) (Rumelt 1987). The main difference between these two origins involves expectations. Endowments are resources that were acquired or created without an expectation of the later demand that made them more valuable. These resources are inherited from the past, where they were created for other purposes, or developed as a result of other activities (institutional

framework, multinational network of operations, organizational routines, ect.). Internal discovery or development, on the other hand, involves a purposive attempt by individuals, firms, governments, or other organizations to create resources that would be valuable in the future (Porter 1990: 80). This attempt is based on the expectation of future demand for the created resource (for example, technological innovation, educated work force, etc.). Since expectations may prove right or wrong, internal discovery and development involves uncertainty (Rumelt 1987: 144). This uncertainty may be compensated by the higher expected rents from the created resources in the future.

Scott (1985), Porter (1990), and Dunning (1992) argue that the importance of generic endowment type of resources, particularly that of natural resources and unskilled labor, is declining as a source of competitive advantage, while the importance of advanced or created resources is increasing. They submit that improved factor markets allow firms to source generic factors more easily at market prices. On the other hand, the importance of complex and non-tradable human-capital-intensive resources -- such as organizational routines, skills and work-effort of the labor force, and firm-specific technologies -- is increasing in terms of their contribution to the value and cost of the end products. Many of these resources influence competitiveness through improved organizational efficiency.

Viewed from the demand side of resources, it could be argued that industrialized countries have reached such a high level of well-being that demand for basic goods, the production of which requires large amounts of generic resources, form a decreasing share of their total demand. Moreover, raw material saving technological innovations reduce further the demand for generic resources. More sophisticated wants, the satisfaction of which requires large amounts of created factors, seem to dominate the dominate the demand patterns in wealthy countries (Baker 1988). As a result, the generic resources are becoming relatively less scarce and cannot form a basis for a sustainable competitive advantage.

Barney (1986) has made an interesting observation about the endowment type of resources. He noted that most of the firm's resources for implementing strategies must be acquired from the environment at some point in the firm's history. If these resources subsequently turn out to be more valuable than the cost of acquiring them, the firm is either "lucky", or has better information than the other participants in the factor market [1]. To the extent that firms and nations do not grow and prosper because of good fortune alone, these resources can also be put into the "discovery" category. They have just been discovered or created in earlier time periods. Thus, the complex knowledge-intensive assets and organizatory capabilities are likely to play a greater role in determining the competitiveness of firms and nations than would first appear.

Our argument that nations can create difficult-to-imitate resources that yield a sustainable comparative advantage goes against the classical theory of comparative advantage. Scott argues that Japan and the NIC countries are pursuing such a dynamic theory of comparative advantage (1985: 93):

> "The Japanese appear to have been the first to recognize that advantages could be created through the mobilization of technology, capital, and skilled labor..[in].. the whole industrial sector toward areas of growth and opportunity in the world market. Furthermore, government could create policies and institutions that accelerated the attack of new sectors on the one hand and the abandonment of declining and threatened sectors on the other. In so doing, the Japanese discovered or created a strategy of dynamic comparative advantage at the national level which

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[1] Barney's (1986) introduction of "luck" to explain firm success parallels that of Porter's (1990) "chance" to explain some variation in the competitiveness of national industry or economy.

in many ways parallels the strategy of a diversified firm as it shifts resources from less promising to more promising areas."

This national strategy puts enormous cognitive pressures on the national decision makers who need correctly to anticipate the future demand for resources. Some countries have refused to "pick the winners" in the face of these informational constraints, and have clung to the static comparative advantage, i.e. their old industrial structure. However, the government "manages" a wide range of higher level resources and institutions in the economy that influence the competitiveness of all national firms. In this respect, the status quo is also a decision, only one that neglects the information available about the development of world markets. The fact that the economies of countries following the dynamic strategy have performed extremely well for a relatively long period of time suggests that the informational constraints are not insurmountable, at least when the economic system is not highly diversified.

3.4 **Resource Pyramid**

As implied in the beginning of this paper, competitiveness can be analyzed at different levels of analysis: (a) product, (b) firm and corporation, (c) national industry and sector, (d) nation, and even (e) regional trading bloc such as the EC or NAFTA. Much of the competitiveness literature suggests that these levels of analysis are interrelated (e.g., Lamm 1988; Davidson 1989; Dertouzos et al. 1990; Porter 1990). However, there have been very few attempts in the economic and organizational management literature to theorize about the systemic interactions across the different levels of analysis (some exceptions are, Dunning 1988, 1993; Porter 1990, 1991; Gray 1992). We will next discuss the ways in which the different custodians of resources at different levels of the economic system interact.

Michael Porter (1985) has introduced the theory of value chain and value system into the mainstream strategy literature. A value chain disaggregates the firm's production process into its strategically relevant activities. These activities and their interaction determine the value and costs of the firm's products. According to Porter, the firm's value chain is embedded in a larger stream of activities that affect the value and costs of the end product: suppliers produce inputs in their value chains, and distributors and related industries add value in theirs. These vertically and horizontally related value chains form a value system. Porter concludes that gaining and sustaining a competitive advantage depends not only on the firm's value chain but also on how the firm fits into the overall value system[1](Porter 1985: 34). Unfortunately, Porter has failed to extend his value chain theory towards the "higher-level" custodians of resources (universities, education system, the government, ect.) in his subsequent analyses that involved the industry, sector, and national levels of analysis (Porter 1990, 1991). The framework proposed in this paper takes this systemic approach.

Pavel Pelikan (1987) provides us with the beginnings of a systemic framework. He defines the organizational structure of an economy with three parameters: 1) the collection of economic units (custodians of resources), such as households, firms, and government agencies, etc., 2) their behavior, as constrained by the preferences, types of rationality, and institutions, and 3) the network of exchange channels by which the economic units are interrelated, indicating the directions and varieties of permissible interactions. Consistent with Porter's (1985) theory of value chain and value system, Pelikan (1987) acknowledges the importance of both intra- and inter-unit coordination for the system's performance. Moreover, each of the units in his system is assumed to consist of subunits with their own behavior and network of exchange channels (e.g. firms' internal structure and interactions).

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[1] This is consistent with the current discussion of the competition between networks of interdependent firms (see, Dunning 1988: ch.13; Nohria & Carcia-Point 1991; Gugler 1992).

Pelikan differentiates between the associative actions through which the units (subunits) form, modify, or interrupt exchange channels connecting them to other units; and the transactions of resources and information along the established channels.

The behavior of the organizational units is constrained by the institutional framework within which they are embedded (North 1990a). This institutional framework may also be analyzed at different levels of analysis (Pelikan 1987). Organizational routines (Nelson & Winter 1982), industry "recipes" (Spender 1989), and national culture and legislation (North 1990a) are examples of institutional constraints at different levels of analysis[1]. Thus the economic units that form the system are embedded in an institutional framework at all levels of the system.

Porter's and Pelikan's ideas provide us with the building blocks for the systemic framework presented in Figure 4. In this pyramid of resources, the custodians of resources at different levels of the economic system combine input resources to produce some output resources. Through exchange channels, the output resources influence the production processes of the other custodians. For example, at the industry level, firms may cooperate to improve their organizational efficiency, or to create valuable resources. This cooperation may involve anything from joint-marketing operations and R & D projects to price collusion, and it requires resources and organizational effort. These joint-activities result in output resources for the participating firms. Moreover, the cooperation may generate positive or negative externalities that influence the other parts of the resource pyramid. Porter (1990) recently discussed such positive externalities in his treatment of industry "clusters". Finally, the government's production of public goods by definition influences all of the lower level custodians in the system.

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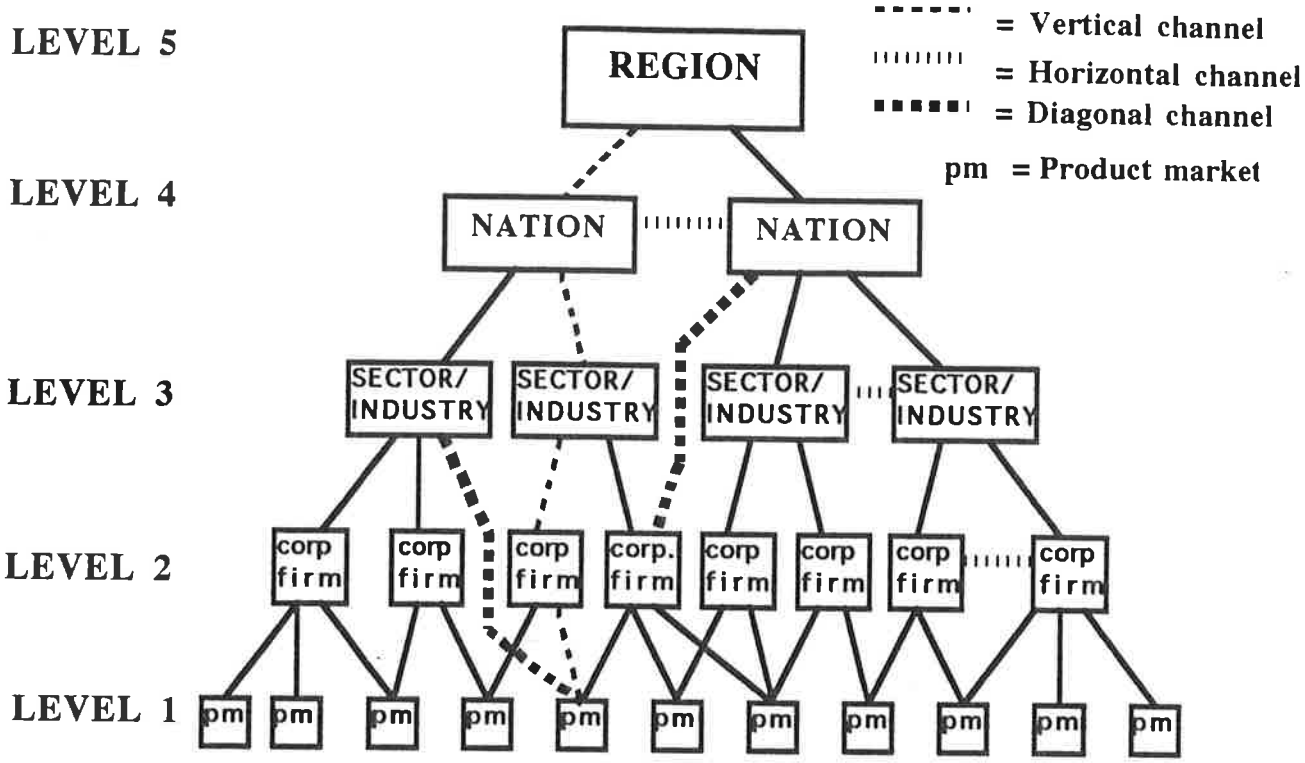
[1] We will return to discuss the institutional framework more extensively in a later section.

FIGURE 4. The pyramid of resources



Since the economic system consists of separate units, we need to analyze how they interact, particularly how the resources are transferred within the pyramid. There are three kinds channels through which the resources may flow in the pyramid: (1) vertical, (2) horizontal, and (3) diagonal. The first involves a vertical flow of resources between different levels of the pyramid (see, Figure 2). For example, besides the internally generated resources, the firm (at level 2) may benefit from a well-known trade mark (level 1), or it may tap into resources created by the parent corporation (level 2), industry association (level 3), related and supporting firms in the same sector (level 3), government and other national level institutions (level 4), and regional research cooperation (level 5) (e.g., within the EC).

Accordingly, we can define the horizontal channels as those which create access to resources at the same level of analysis in the pyramid. Thus, for example, a firm's strategic alliance with a competitor is a horizontal channel of resources (level 2); as is a joint R & D project between two industry associations (level 3); or a bilateral trade agreement between two countries (level 4). Finally, the diagonal channels link custodians of resources from different levels of analysis in different vertical channels. For example, an American corporation could set up a joint venture with the Russian government to develop software programs (levels 2 and 4), or an industry association could do market research to find out the valuable product attributes of another industry's products in order to find out possible synergies (levels 1 and 3). This knowledge may then be distributed through a vertical channel to the member firms.

The MNEs play an important role in creating channels between different economic systems (Kogut 1992). The MNEs' international networks of operations may tap into resources of several countries and regional trading blocs, which they may then combine in new synergistic ways (Shan 1992; Bartlett & Ghoshal 1989; Sölvell et al. 1991). This not only improves the MNEs' competitive position vis-a-vis firms operating only within a single economic system, but it also overcomes market failures that prevent efficient global allocation of resources (Dunning 1988). As a result, the MNEs reduce the resource differences across economic systems.

Porter and associates have argued that it is difficult for foreign firms to acquire resources from other economic systems (Porter 1990; Sölvell et al. 1991). For example, Kogut (1991) argues that knowledge spills more rapidly across boundaries of firms in the same nation than across the borders of countries. These difficulties stem from the foreign firms' need to have the knowledge about "the particular circumstances of time and place" (Hayek 1945: 521) before the complex and institutionally-embedded resources become accessible

to them. However, the "localization", "multi-domestic" and "national responsiveness" strategies of MNEs suggest that these difficulties are not insurmountable (Doz 1986; Porter 1986; Prahalad & Doz 1987; Bartlett & Ghoshal 1989). In fact, the empirical research by Shan (1992) confirms that MNEs tap into the system-specific technological resources of foreign countries through FDI.

The resources produced by the different custodians of resources change over time. A firm's current stock of available resources is a function of the custodians' (with which the firm interacts) resources in time (t-1), and the way in which these resources were organized (by the custodians) over the time period (t-1)-->(t). The way custodians organize the resources over this period may increase or decrease the amount and quality of resources available to firms in the next period.

4. ORGANIZATIONAL EFFICIENCY OF THE SYSTEM

The competitiveness of firms and economic systems is determined by two factors: the available resources and the efficiency with which they are organized. Ozawa and Phillips (1991) and Kogut (1991, 1992) have recently emphasized the unique national "organizing principles" in their explanations of the long-lasting international competitiveness of the Japanese and American firms and economic systems in different historical periods[1]. Although these researchers focus mainly on the organization of firms and networks of firms, we propose that the organizational efficiency of the whole economic system is important to the international competitiveness of national firms. This wider systemic perspective incorporates the organization of the higher-level resources discussed above.

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[1] Ozawa and Phillips (1991) explain the industrial rise of Japan from the beginning of this century until its current international leadership in many high-technology sectors. Kogut (1991) touches on the uniqueness and inimitability of the Japanese organizing principles, but gives a more detailed explanation of the dominance of the American organizing principles in the first half of this century (Kogut 1992).

Hence, the following analysis of the system's overall organizational efficiency addresses both micro- and macro-level organizational issues, and the interaction between them.

An analysis of the economic system's overall organizational efficiency can be sub-divided into four categories that address different questions. The categories and the respective questions are the following:

1. ALLOCATIVE EFFICIENCY. Where, in the system, are the different resources used?

2. X-EFFICIENCY. How efficiently are they used there by the organizations?

3. COORDINATIVE EFFICIENCY. How efficiently are the interdependent activities of organizations coordinated to jointly-optimize the system's competitiveness?

4. DYNAMIC EFFICIENCY. How efficiently are the system's resources and the three static efficiencies above (allocative, technical, and coordinative) improved over time?

The allocative efficiency works at the macro-level, X-efficiency at the micro-level (although, the organizations, such as the government agencies, may deal with macro-level issues), and the coordinative efficiency between the different organizations. We will now analyze each of the four efficiencies in turn.

4.1 **Allocative Efficiency**

The allocative efficiency is the domain of welfare economics. Welfare economics is grounded in the Paretian framework that attempts to find socially optimal allocations for the system's scarce resources. The Pareto optimal resource allocation is achieved when no

reallocation of resources can improve one participant's welfare without reducing that of another. Perfectly competitive markets are able to reach the Pareto optimality through individual agents' self-interested behavior that leads to a general equilibrium (Bohm 1987).

However, market failures are pervasive and (approximate) market efficiency is reached only under exceptional circumstances (Stiglitz 1989). Dunning (1992) categorizes the market failures into structural and endemic (or intrinsic). The structural market failures refer to the anti-competitive strategies of one or more market participants, or government intervention in the market to pursue its social, political, cultural, and other objectives. These "created" market failures are the concern of traditional IO economics (Bain 1956). According to Dunning (1992), the endemic market failures stem from (at least) six main sources (see also, Bohm 1987):

(1) Uncertainty (uninsurable risk) of supply or demand.

(2) Externalities that differentiate private and social benefits and costs of transactions.

(3) Economies of scale that lead to market power.

(4) Public good properties (extremely high set up costs, very low marginal costs).

(5) Adjustment rigidities (to be discussed with the growth efficiency).

(6) Bounded rationality and opportunism (Williamson 1985).

Firms may reduce their transaction costs by internalizing the markets (Williamson 1985). Internalization or quasi-internalization by firms shifts some of the allocative process from the market into private hierarchies and cooperative organizations. Public policy makers may also want to intervene in the resource allocation process to achieve a Pareto improvement (Bohm 1987; Stiglitz 1989). This government intervention may take the form of internalization, or it may lead to new regulation and legislation. Both private internalization and public intervention are likely to change the allocation of resources in the system.

Whether or not this change leads to a Pareto improvement, or an improvement in the system's economic competitiveness (which is not the same), depends on the attendant bureaucratic and cooperative failures of hierarchies and cooperative ventures, respectively[1] (see, Williamson 1985:149; Stiglitz 1989:45). Thus the allocative efficiency of a mixed economic system is a function of the relative importance of market, hierarchical, and hybrid allocation; and their respective failures.

Whatever the nature of the system's resource allocation mechanism, the policy makers can be assumed to aim at improving the allocative efficiency of the system. In modern international competition, the policy makers can seek the Pareto improvements in a global economy of exceedingly refined division of labor. In comparison to a model of a closed economic system, this increases the opportunities to achieve a Pareto improvement. Figure 5 below depicts a simple open economy with only one export and one import product. The system produces both products but the majority of resources are used to produce the export product. The distance between indifference curves **1** and **2** represents the welfare gain from international trade. Thus, the international specialization and trade increases the wealth and consumption possibilities of the system, which reaches a higher level of welfare (Hernesniemi 1992).

In an open economic system, the pursuit of Pareto efficiency requires not only production to meet some domestic demand, but also production to meet some foreign demand which, indirectly, facilitates a better satisfaction of domestic needs. This increases considerably the information and knowledge needs of policy makers who will now have to consider the demands of the global markets besides the domestic one. The government emphasis on

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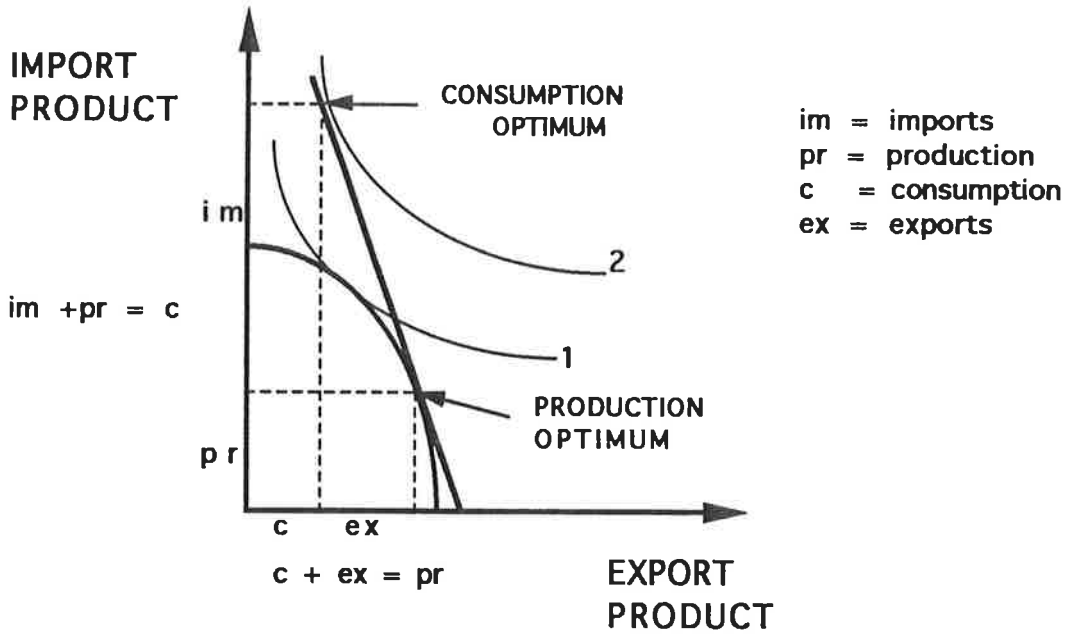
[1] The systemic cooperative failures usually relate to the institutional framework (anti-trust legislation, degree of trust among people, importance of reputation ect.) (Casson 1990; Dertouzos et al. 1990; Teece 1992). These issues will be discussed with the coordinative efficiency.

either direct (domestic) or indirect (foreign) routes to Pareto improvement leads to import substitution or export-growth strategies, respectively. India and many African countries have pursued the former, and Japan and the NICs the latter. The differential economic success of these countries suggests that free international trade favors the export-growth strategy and the indirect Pareto improvement.

FIGURE 5. Resource allocation and international trade



Source: Hernesniemi (1992: 6).

Besides neglecting market failures, the standard neo-classical analyses assume that all of the system's resources are more or less productively employed (Leibenstein 1966). However, unemployment, empty real estate, idle inventories, and other types of unemployed resources are an integral part of any economic system. Particularly during recessions, the share of unemployed resources in the economy tends to increase when organizations increase the efficiency of their resource usage. Many resources are sold or discarded. If the freed resources can find a more productive employment elsewhere in the

economy the overall economic growth and welfare is increased. However, structural adaptation problems may render some resources useless and drop the overall capacity usage rate in the economy. These idle resources are not only unproductive but also tie up a lot of other resources in the form of increased unemployment benefits, real estate maintenance costs, health care expenditures, etc. Hence, the static allocative efficiency is inextricably linked with the dynamic efficiency which, inter alia, measures the structural flexibility of the system to re-employ the idle resources.

4.2 X-Efficiency

Contrary to the assumptions of standard neo-classical analysis, firms do not usually operate with maximum technical efficiency. In this section, we will apply Harvey Leibenstein's theory of X-efficiency to explain this phenomenon (Leibenstein 1966, 1978). The X-efficiency theory was motivated by Leibenstein's empirical data revealing that firms in similar conditions employing roughly similar inputs were producing significantly different outputs. Since the source of this non-allocative inefficiency was originally unknown Leibenstein termed it X-inefficiency (Leibenstein 1966; Frantz 1988). By now, the research has proposed (at least) four different causes for the X-inefficiency (Leibenstein 1978: Frantz 1988; Ozawa & Phillips 1991):

1) Due to bounded rationality, the production process is not completely specified or known for the decision makers. This introduces the possibility of misallocation of resources within organizations.

2) Incomplete labor contracts leave room for individual discretion, which makes work-effort dependent on individual motivations.

3) Due to lack of effort or bounded rationality, the firm's different value activities may not be coordinated and jointly-optimized.

4) Due to lack of effort or bounded rationality, decision makers may have inadequate knowledge of all market opportunities available.

Bounded rationality or lack of individual work-effort lie behind all four determinants of X-inefficiency. The notion of bounded rationality was introduced by Herbert Simon who argued that organizations can never be perfectly rational because their members have limited information processing abilities. Morgan (1986: 81) elaborates:

> "Arguing that people (a) usually have to act on the basis of incomplete information about possible courses of action and their consequences, (b) are able to explore only a limited number of alternatives relating to any given decision, and (c) are unable to attach accurate values to outcomes, Simon suggested that at best they can achieve only limited forms of rationality. In contrast to the assuptions made in economics about the optimizing behavior of individuals, he concluded that individuals and organizations settle for a 'bounded rationality' of 'good enough' decisions based on simple rules of thumb and limited search of informations".

The lack of individual work effort is in the core of Harvey Leibenstein's theory of X-efficiency. Leibenstein defined the work effort with following four categories (1978: 28): (a) the actual activities performed, and (b) the pace, (c) quality, and (d) temporal sequence with which they are carried out[1]. He argued that individuals choose their effort levels from

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[1] Note that the components of work effort have both cost and value consequences for the output. The technical efficiency has often been addressed only in terms of costs. Thus increasing effort throughout the economic system may improve the firms' competitiveness both through value and cost improvements.

all possible combinations of these four dimensions according to their utilities. The utilities of these combinations, or "effort points", are assumed to have a functional relationship with the level of effort put forth (Figure 6). At low levels of effort, the marginal utility of effort is positive but decreasing. Beyond some point, as effort increases, the marginal utility of effort becomes negative and total utility starts to decline. Leibenstein argued that the utility function has a "flat top" which reflects the idea that around the optimum effort-level individuals are likely to be fairly flexible with respect to putting forth a little more or a little less effort (Leibenstein 1978:30). This area is between effort levels **A** and **B** in Figure 6.

The shape and position of the individuals' effort-utility functions have important competitiveness consequences for firms and economic systems. The higher the level of effort at which the individuals reach their optimum point, the more productive they are [1]. The shape and location of the effort-utility function, and hence the motivation and work-effort of individuals, is determined by the positive and negative incentives they face. Leibenstein (1978) refers to the negative incentives as internal or external "pressure". The internal pressure may originate from management control, peer pressure, and organizational culture. The pressure may also come from the organization's environment; competition, substitute products, demanding consumers and suppliers, and institutional demands are the most usual external sources of pressure (Galbraith 1952; Hirschman 1970; Porter 1990; North 1990a). However, the lack of raw materials, expensive labor, harsh climate, destructive war, economic depression, long distribution routes to main markets, and other special circumstances may also provide the needed pressure to raise the level of work effort (Porter 1990).

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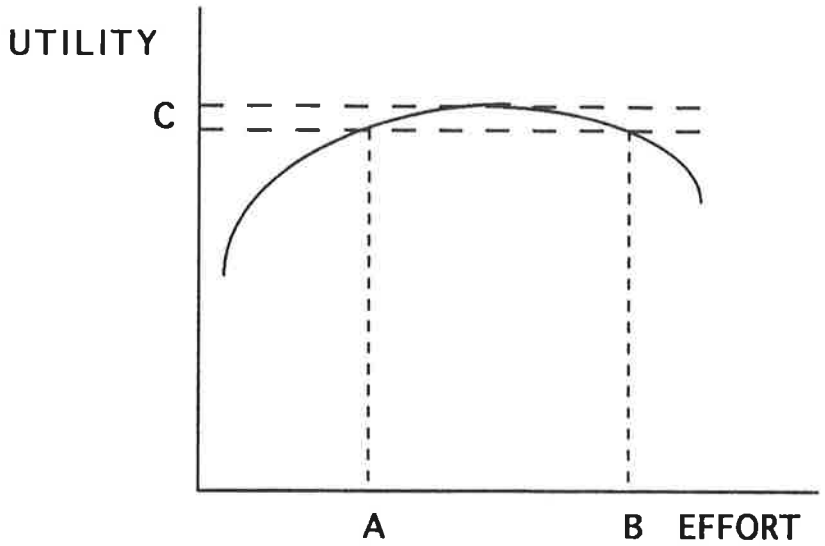
[1] Although some authors have questioned the relationship between effort and productivity (Williamson 1991a:78), it is useful for analytical purposes to presume that effort is positively related to productivity (Leibenstein 1978: 29).

FIGURE 6. Utility and work effort



Source; Leibenstein (1978: 31)

Similarly, the positive work incentives may originate from internal or external sources: salary incentives, promotion potential, and organizational status are examples of the former; respect of competitors, social status, reputation and a patriotic contribution to national competitiveness represent the latter. Simon (1991) illustrates:

> "Identification with the 'we', which may be family, a company, a city, a nation, or the local baseball team, allows individuals to experience satisfactions (to gain utility) from successes of the unit thus selected. Thus, organizational identification becomes a motivation for employees to work actively for organizational goals. Of course, identification is not an exclusive source of motivation; it exists side by side with material rewards and enforcement mechanisms that are part of the employment contract".

The marginal utility of the internal pecuniary incentives, which are particularly important in Western societies, is likely to decline when the overall welfare of people increases. This is acknowledged in micro-economics by the backward-bending labor supply curve as a fuction of wages. It is also consistent with Maslow's (1943) hierarchy of needs which suggests that individuals' turn to satisfy "higher-level" needs of esteem and self-actualization when the basic security and survival needs are satisfied (Rodriguez 1988). Thus it is increasingly difficult to motivate the work force of wealthy nations with pecuniary incentives. If the internal and external pressures are also attenuated, the work effort will decline and waste and other bureaucratic failures increase (Leibenstein 1978; Williamson 1985).

Porter (1990) has paid particular attention to the positive effects of pressure on innovation and upgrading of the firms' competitive advantages. The sources of pressure he discussed involved selective resource disadvantages, intensive rivalry, and demanding consumers. In passing, Porter also acknowledged that too much of pressure (from the selective resource disadvantages) could be harmful for the firms' competitiveness[1] (Porter 1990: 83). A similar observation was made by Lawrence (1987: 102) with regard to competitive pressures:

> "[A]n industry needs to experience vigorous competition if it is to be economically strong, either too little or too much competitive pressure can lead an industry to predictably weak economic performance characterized by its becoming inefficient and/or non-innovative."

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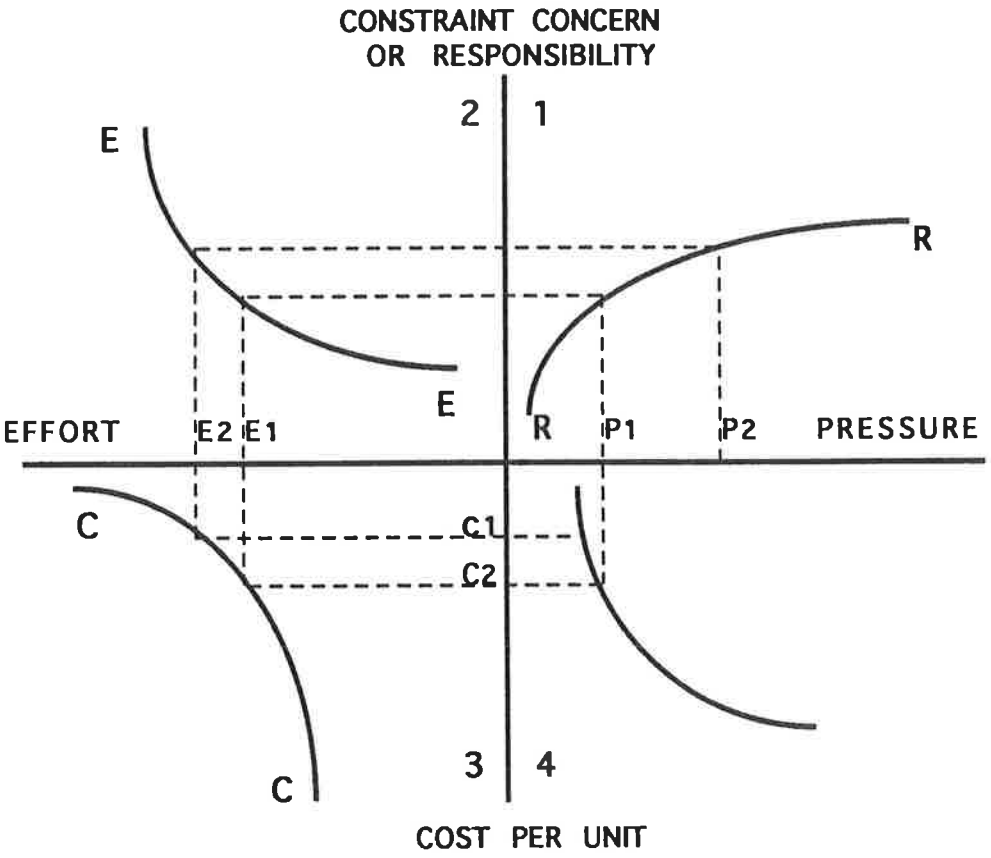
[1] In general, Porter (1990) emphasized the importance of competitive and consumer pressure without giving due attention to the possibility that too much pressure could become unproductive.

Thus, the pressures become unproductive after a certain threshold. This threshold could be reached when the individuals' marginal utility from increased work-effort turns negative and their performance starts to decline; or when a strong rivalry in an industry depresses the firms' profits so much that they cannot anymore invest into new equipment, R & D, training, etc., which are required for continuous productivity improvements.

FIGURE 7. Pressure and work-effort



Source: Leibenstein (1978: 166).

Figure 7 summarizes the determinants of technical efficiency. We start from the first two quadrants (1 and 2) which depict the relationship between the amount of individual's

internal and external pressure and his/her work effort. Leibenstein (1978) argues that individuals are not totally irresponsible (they have "constraint concern") and thus respond to increasing pressure (**P1->P2**) by working harder (**E1->E2**). Increasing effort, in turn, leads to lower costs per unit (**C2 -> C1**) (quadrant 3). (Naturally, the increasing effort may also lead to a higher value of the output). Finally, in quadrant 4, the unit costs (or value) influence the level of pressures on the individual. As depicted in Figure 7, the system may achieve an "equilibrium" level of pressure, effort, and costs (value) (**P1**, **E1**, **C2**) after some iterations around the graph.

The equilibrium effort conditions are likely to prevail until new pressures have passed a certain threshold level where the utility gained by shifting the effort level surpasses the utility cost ("inertial cost") of not doing so (Leibenstein 1978: 34). If the inertial costs are high and the pressures do not pass the "reaction point", the effort level may stay unchanged for a long period of time. The inertial costs are likely to be high if the prevailing effort levels have proved succesful in the past and have become institutionalized. The success also accumulates wealth which buffers the individuals (firms, nations, systems) from the immediate financial pressure. Without a sudden crisis [1] (large losses, war, depression, etc.), the performance may be left to wither for a long time until the competitiveness problems become so severe as to trigger a change in the effort-level. Even then, the change in effort is difficult due to institutional inertia.

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[1] Individuals are likely to be more sensitive to large changes in pressure than to its absolute level. Changes in pressure are more likely to focus individuals' attention and effort on the pressing problems (Porter 1990: 84). Thus, a gradual decline in performance may have to accumulate a much larger "absolute" pressure before it can achieve the same change in effort as a sudden crisis would. People can better accomodate many small changes in pressure over time than a sudden large change.

4.3 Coordinative efficiency

If the X-efficiency has received relatively little attention in the neo-classical economic literature, what we will term as coordinative efficiency has received almost none (Ozawa & Phillips 1991). The coordinative efficiency presumes that the system may not be maximizing its (static) organizational efficiency even though the allocative and technical efficiences were at their theoretical maximum. This is possible if the different parts of the system do not coordinate and jointly-optimize their activities towards a common goal[1].

The need for coordination and joint-optimization stems from the interdependence of the different value-adding activities in the system. The benefits of coordinating interdependent activities at the macro- level has recently been recognized by scholars comparing the Japanese industrial success against the Western free market economies (Dertouzos et al. 1990; Ozawa & Phillips 1991; Teece 1992). Moreover, the strategy scholars have emphasized the interdependence of the firms' value activities at the micro-level[2]. However, it was probably Thorstein Veblen who first stressed the importance of "interstitial coordination" in his 1927 The Theory of Business Enterprise:

> "Evidently the prevalent standardization of industrial means, methods, and products greatly increases the reach of [the] concatenation of industries, at the same time that it reinforces a close conformity in point of time, volume, and character of the product, whether the product is goods or services...By virtue of this concatenation of processes the modern industrial system at large bears the character of a comprehensive, balanced mechanical process. In order to guarantee an efficient working of this industrial process at large, the various constituent sub-processes

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1 The idea of coordination and joint-optimization is derived from Porter (1985: 48).

2 See especially Porter's (1985) theories of value chain and value system.

> must work in due coordination throughout the whole. Any degree of maladjustment in the interstitial coordinations of this industrial process at large in some degree hinders its working. Similarly, any given detail process or any industrial plant will do its work to full advantage only when due adjustment is had between its work and the work done by the rest. The higher the degree of development reached by a given industrial community, the more comprehensive and urgent becomes this requirement of interstitial adjustment" (p. 15-16).

Thus, Veblen proposed already in 1927 that increasing specialization and division of labor in industrialized economies is associated with a growing need for coordinative efficiency. More recently, Ozawa and Phillips (1991) noted that modern industrial technology is biased toward making production processes increasingly sequential, multi-staged, and interdependent between value-adding units. They argued that this leads to a growing importance of hierarchial and cooperative modes of organization in relation to arm's-length transactions. The hierarchies and cooperation can better handle the large information flows that characterize the coordination of highly specialized and interdependent processes (Richardson 1972; Simon 1991).

Dunning (1992) has proposed that the increasing globalization and the growing importance of created (over natural) resources in advanced industries has led to an increase in the relative significance of transaction to production costs in their value-adding processes. In Williamson's (1991) transaction cost framework, the created assets would be characterized by high asset specificity. As Williamson has argued, the increased asset specificity shifts the organizational optimum from the arm's-length contracting towards the cooperative and hierarchial modes of governance (Williamson 1985). The increased asset specificity of production and transactions in modern industries require "coordinated responses, lest the individual parts operate at cross-purposes or otherwise sub-optimize" (Williamson 1991).

Finally, the higher-level resources produced by governments, universities, public agencies, industry associations, etc., cannot usually be traded in free markets or internalized by firms. The only way to coordinate their activities with those of firms is cooperation. The increasing importance of these higher-level resources for the firms' international competitiveness emphasizes the role of cooperation and "interstitial" coordination in advanced economic systems.

Since cooperation and coordination is so important in modern industrial processes, it is useful to explore the determinants of their success. These determinants include (at least) the following four: trust, collective pressure, information, and leadership. First, several researchers have emphasized the importance of trust for the success of cooperative relationships and the performance of the economic system at large (Casson 1990; Ozawa & Phillips 1991; Gugler 1992). Ozawa and Phillips argue that trust works as an "intangible economic resource" that can substitute for a formal governance method. It facilitates continuous, long-term transactions were benefits and costs are usually shared only over time (Ozawa & Phillips 1991). This allows for better organizational joint-optimization than achievable in the arm's-length situation where costs and benefits have to be matched simultaneously. Casson (1990) and Ozawa and Phillips (1991) argue that the Japanese and American economic systems are good examples of how a high degree of trust reduces transaction costs and improves coordinative efficiency, and vice versa (Ozawa & Phillips 1991):

> " Legal contracting and litigious proceedings (when contracts are not fulfilled) are the major governing mechanisms that enforce transactional promises between economic agents in the Western market economies. By comparison, economic transactions and exchanges in Japan are less legally specified and governed; instead they more strongly involve personal commitments, trust, duties and obligations --

> in other words, [they are] treated as social exchanges rather than as pure economic exchanges. Hence Japanese-style transactions.. tend to be "internalized" in long-term, enduring relationships between the sellers and buyers of commodities, services, and assets..Thus,..the Japanese economy can rely more on -- and benefit more from -- the efficiency of implicit contracts in external markets (thereby saving transaction costs), while the U.S., with a low degree of trust and cooperation, is compelled to depend more on internal markets and suffers from the high transaction costs" (see also, Dertouzos et al. 1990, Ch. 7 & 8).

In the absence of trust, the emergence of cooperation and coordination in Western cultures usually requires a collective pressure on the system's participants. Hegner (1991: 423) cites Weber to argue that "solidaristic coordination" works only "as long as all members feel threatened by similar risks or can be induced, by force or obligation, to behave as if they were". Some examples of these collective pressures are wars, economic depressions, and natural disasters. These crises are deep enough to overcome the natural individualistic tendencies of Western societies and make people cooperate for the common good. However, as soon as he collective pressure dissipates, the culture-bound individualistic motivations are likely to re-emerge.

Besides the will to cooperate, the coordinative efficiency also requires large information flows between the different parts of the economic system and its environment (Porter 1985: 50; Ozawa & Phillips 1991; Simon 1991). The systemic coordination requires that the dispersed external information about consumer needs, competitor moves, and relevant institutional changes, and the internally-generated (R & D, learning by doing, etc.) knowledge in different parts of the system, are widely shared throughout the system. This sharing is easier in culturally homogenous societies where reciprocity, trust and long-term relationships are valued. As Aoki (1990), Boyd (1987), and Ozawa and Phillips (1991)

have noted, the Japanese system of economic organization is particularly supportive of these knowledge flows. It not only maximizes the intra-firm and inter-firm information and knowledge flows, but also those between the higher-level custodians of resources (government agencies, industry associations, keiretsus, ect.) and firms. In contrast, the long history of independence between economic institutions, and particularly the anti-trust legislation, works against the systemic information exchange in the United States. This reduces the possibilities for cooperation and coordination, and thus decreases the organizational efficiency of the U.S. economic system (Jorde & Teece 1992; Dertouzos at al. 1990).

Finally, the cooperative effort of the system needs a direction, or systemic goals, in order for the participants to be able to coordinate and jointly-optimize. Depending on the nature of the economic system, this direction may be provided by a strong firm (e.g. in the Japanese keiretsus and MNE networks), strong owners (Rockefellers, Wallenbergs), or the government (Japanese MITI, French government). These institutions provide the overall vision and goals from which all of the system's participants can derive their individual objectives. Without this direction, conflicting goals of participants will lead to sub-optimal behavior and wasted resources. Teece (1992) has used the terms strategic and operational coordination to differentiate between the macro-level leadership and micro-level coordination (between two organizations), respectively. The need for strategic coordination has recently motivated some scholars and policy makers to argue for national competitiveness strategies or industrial policies which could provide the overall direction and coordination needed for the systemic organizational efficiency (Porter 1990; Dunning 1992; Nelson 1992).

4.4. **Dynamic efficiency**

Until now, our discusion has been couched entirely in static terms, without much consideration about the system's capability to change and improve its resources and organizational efficiency over time. Hayek (1945:523) was one of the first to recognize the importance of the dynamic characteristics of economic systems when he argued that "economic problems arise always and only in consequence of change..[and]..the economic problem of society is mainly one of rapid adaptation in the particular circumstances of time and place". What we will term as the dynamic efficiency addresses these dynamic issues. It measures the system's ability to improve its resources and the allocative, technical, and coordinative efficiencies over time.

As we noted earlier, the continuous upgrading of resources and improvement of organizational efficiency is in the core of the dynamic strategies of comparative advantage (Scott 1985), and it received considerable attention in Porter's (1990) treatment of national competitive advantage. Most modern industries are characterized by Schumpeterian competition where resource configurations and competitive positions are quickly imitated by competitors. The only way to sustain a competitive advantage in these industries is to develop continuously new resources and better organizational solutions. However, there is often a trade off between the dynamic efficiency and the three static efficiencies in the short term because uncertain investments into upgrading and innovation reduce the amount of resources available to current activities. Moreover, as North (1990a: 82) has noted, the existing interest groups often use their bargaining power to prevent adaptive institutional change that could destroy their power base.

Pavel Pelikan (1987) has emphasized the importance of decentralized entrepreneurship for the adaptive efficiency in an uncertain environment. He argues that, in such an

environment, the economic system may best improve its organizational efficiency through the efforts of independent entrepreneurs who maximize the number of organizational "trials" and, through competition, eliminate the organizational "errors". As Pelikan (1987) notes, the importance of trials and errors has been recognized by evolutionary economists such as Schumpeter and Nelson and Winter, who used concepts such as "innovation" and "destruction", and "mutation" and "selection", respectively (Schumpeter 1942; Nelson & Winter 1982).

The importance of entrepreneurship and competition in Pelikan's argument does not imply that there is no role for the government in the adaptive process. He only argues that the "centralized entrepreneurship" by public hierarchies is an inefficient organizational solution for sustaining the flow of new innovations and the elimination of inefficient production processes. Thus the role of government is to support, not to replace, the entrepreneurial adaptation process.

The structural adjustment in most developed industrial economies in recent years has taken the form of a reallocation of resources towards the higher value-added technology-, human capital-, and information-intensive sectors (Dunning 1985:28). Dunning suggests that these adjustments are stimulated by the shifting patterns of comparative advantage between countries, technological advance, changing factor cost ratios, increasing global rivalry and the consequent need for specialization, and shifts in consumer demand for higher income goods. Consequently, the changing requirements of modern industries not only influence the nature of needed resources (natural to created), and increase the importance of coordinative efficiency (increasing interdependence), but also necessitate structural re-adjustment and re-allocation of resources in the economic systems.

The change in technical and coordinative efficiencies can be traced back to changes in their underlying determinants. The technical efficiency changes as a function of individual preferences and the positive and negative work incentives. As we noted earlier, increasing prosperity breeds complacency and reduces the "natural" pressures to hard work. Moreover, it is very difficult for managers to "create" pressures for workers in wealthy nations; the negative incentives are attenuated by the efficient labor markets that can easily reposition disgruntled workers. The positive work incentives are more controllable by the policy makers. With the exception of the wealthiest individuals, these incentives can be manipulated to improve the individual work-effort. If a nation becomes very prosperous, even these incentives start to lose their effectiveness and the marginal utility of work- effort declines. Naturally, an economic decline increases the effectiveness of natural and created work incentives. In a declining economy, the increasing threat of unemployment and the more competitive labor markets (over-supply) increase the individual pressures and work-effort.

The coordinative efficiency changes as a function of trust, collective incentives, information, and leadership. Of these four, the culturally-bound trust is likely to change least over time. However, the evolution of the national culture -- particularly due to the foreign influences such as immigration, global mass media, international business, and travelling -- may gradually change the cultural perceptions of trust. There are different opinions on whether these influences will gradually cause the different ethnic cultures to converge (see, Ozawa & Phillips 1991). The collective incentives for coordination are random events which may temporarily affect the people's willingness to pursue common goals and systemic coordination. Even the people from the most individualistic countries, such as the United States, have been remarkably united behind the war efforts and the

disaster relief operations[1]. The deeper cultural dispositions towards cooperation are likely to prevail in normal circumstances.

The information and leadership are the most malleable of the determinants of succesful cooperation. Although people were rational maximizers of self-interest, they usually cooperate if they know that cooperation can better achieve their individual goals. However, many opportunities for rational self-interested cooperation go unnoticed because of lack of information about the opportunities. Thus improving information and knowledge transfer in the system and strengthening the participants sense of direction through better leadership improves the coordinative efficiency even in the most individualistic of societies.

5. INSTITUTIONAL FRAMEWORK

Organizations develop and organize their resources in an economically and institutionally constrained environment (Meyer & Rowan 1977; DiMaggio & Powell 1983; North 1990a). The economic constraints originate from the product market competition and production technologies (Porter 1985). These industry-specific constraints vary from one industry to another. The institutional constraints are more encompassing. This section will discuss the different types and levels of institutional constraints which influence the efficiency of organizational processes. We will also discuss the institutional evolution over time as shaped by the activities of special interest groups, firms, mass media, education system, and the government. Finally, we will discuss the effects of institutional framework on the created resources and organizational efficiency of the economic system. As a conclusion, we will argue that the institutional framework plays an important role in shaping the international competitiveness of an economic system.

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[1] The Vietnam war is an exception because it did not create a real security threat for the U.S.

5.1 Different types of institutions

Douglass North (1990a) has described institutions as humanly devised constraints that structure political, economic, and social interaction. He categorizes institutions into informal constraints (cultural characteristics such as sanctions, taboos, customs, traditions, codes of conduct), formal rules (constitutions, laws, regulations, property rights, contracts, ect.), and enforcement. North criticizes the standard neoclassical economic analysis for neglecting the institutional framework within which economic transactions and production take place. This neglect is appropriate in a model of pure competition where information is perfect and no uncertainty exists about the characteristics of products or services performed (North 1990a; 1990b). However, when bounded rationality, costs of measuring and policing, and opportunism influence the economic exchange, institutions gain a major role in shaping the created resources, organizational efficiency, and, hence, the performance of the economic system. In this perspective, the institutional constraints and incentives complement the classical economic constraints on the firms' behavior (North 1990a).

The created resources and organizational solutions reflect the institutional constraints and incentives of the society in which they are embedded. The major role of institutions in a society is to reduce uncertainty by establishing a stable structure to human and organizational interaction. (As we will discuss later, this stability does not necessarily imply efficiency.) The institutions reduce the complex information processing needs in modern economies by limiting the potential behavioral alternatives of agents into a comprehensible subset that facilitates their interaction (North 1990a). North describes the function of institutions in a modern economy (1990a: 34):

> " The greater the specialization and the number and variability of valuable [product] attributes [in the economy], the more weight must be put on reliable institutions that allow individuals to engage in complex contracting with a minimum of uncertainty about whether the terms of the contract can be realized. Exchange in modern economies consisting of many variable attributes extending over long periods of time necessitates institutional reliability, which has only gradually emerged in Western economies."

What exactly are these institutional constraints that render such valuable services to the society? We will now turn to discuss the three building blocks of the institutional framework: the informal and formal institutions, and their enforcement.

The culturally-bound traditions, conventions, customs, norms, sanctions, taboos, and codes of conduct form the informal institutional constraints and incentives that shape human and organizational behavior. They provide the human actors with a taken-for-granted mental framework that extends, elaborates, modifies and complements the formal rules (institutions) of the society. The informal institutions also include the non-monetary values that make individuals trade increasing wealth for other (e.g. altruistic, solidaristic) goals that increase their well-being (North 1990a; Hegner 1991; Simon 1991). As we will discuss later, the informal institutional constraints evolve gradually over time with the cultural development, and provide the continuity and path-dependence that connects a society's present to its history and to the future. Thus, the informal institutions are often more durable than the formal ones, which may be replaced overnight by wars, new legislation, etc. (North 1990a). Moreover, since the informal institutions are deeply-embeded in the society's cultural heritage it is difficult to comprehend and internalize them from the outside. This may provide a sustainable competitive advantage for firms

embedded in superior informal institutional framework, and a long-lasting disadvantage for those who are not.

Formal institutions consist of political, judicial, and economic rules that complement and increase the effectiveness of informal institutions. The hierarchy of formal rules extends from constitutions, to statutes and common laws, to government regulation, and finally to individual contracts (North 1990a). The formal institutions can more easily be influenced by the purposive action of economic agents than the informal institutions. This makes it possible for the economic agents to try and manipulate the formal rules in their self-interest. At the margin, rational agents will invest into this rent-seeking activity until its marginal product decreases below the alternative (usually socially more productive) investment opportunities [1].

North (1990a) argues that modern economies, where complex impersonal exchange dominates, require efficient enforcement of contracts in order to achieve the maximum gains from trade and specialization. He notes that institutions will break down if they are not enforced; the violations of institutional constraints need to be detected and punished, and institutionally-sanctioned behavior rewarded. While North (1990a) emphasizes the importance of coercive third-party enforcement (usually by courts or arbitration), the institutional enforcement may also be based on the (long-term) reputation of agents that increases the price of defection and shirking. Casson (1990:112) describes such self- and social-enforcement in a "high-trust" culture:

> " In a society where an athmosphere of complete trust prevails, no one needs to supervise anyone else. Everyone is self-supervising because his moral commitment

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[1] For a good review of the rent-seeking literature, see Buchanan, Tollison and Tullock (1980) and Rowley, Tollison and Tullock (1988).

> obliges him to refrain from cheating. In such a society it is unnecessary to create specialized institutions...purely for supervisory purposes. Assuming that the establishment of [all organizations] involves significant set-up costs, a high-trust society will tend to operate with minimal supervisory organization, and with simple contracts - often implicit - which rely on the goodwill of the parties to make them work satisfactorily."

Casson (1990) argues that the self- and social enforcement leaves firms in "high-trust" cultures with more organizational options and thus allows them to economize in transaction costs. Firms in "low-trust" cultures, such as the American one, are often forced to use the more costly hierarchial organization. In general, both third-party and self- and social-enforcement are important for a well-functioning institutional framework (North 1990b). Like the informal and formal institutions, these two forms of enforcement complement each other; only their relative importance differs across the societies.

The foregoing discussion of institutions took place at the national level. However, institutions permeate the whole economic system from the product market reputation to the regional trade and tariff agreements. We will now briefly discuss some informal institutions at different levels of the system which are less obvious than their formal counterparts (such as product liability legislation, contracts, industry-specific regulation, regional trade agreements, etc.). Our discussion will reveal that the informal institutions often have similar characteristics with the valuable resource configurations analyzed earlier in this paper: they are unique, path-dependent; difficult-to-imitate, inseparale, and so forth. The institutions only precede the scarce resource configurations in the chain of causation explaining international competitiveness (see, Porter 1991).

5.2 Informal institutions at different levels of analysis

In the product market, the behavior of firms and their customers is influenced by the differing reputations of firms. These reputations develop over time in the interaction of firms with their customers and other stakeholders. The organizational images and brand names develop from the information consumers receive about the firm's behavior and its products (Grant 1991). Similarly, suppliers, competitors, and other stakeholders form their opinion about the firm largely by observing its behavior in the market place (Porter 1980; Itami 1987). Moreover, the reputation effects are not only related to specific firms. They may extend over several firms; for example, the "country-of-origin effects" are well-known in the marketing literature (Hanssens & Johansson 1991).

At the firm-level, we have two important informal institutions; the organizational culture and routines. Organizational culture may be defined as an organization-specific system of widely shared assumptions and values that give rise to organizational norms and typical behavior patterns (Schwartz & Davis 1981; Schein 1986). Organizational culture reduces the intra-organizational communication and transaction costs by complementing the formal organizational structure and rules of the organization. Mintzberg (1991) argues that organizational culture represents a force of cooperation, collegiality, and consensus in the organization, and helps it to manage contradiction and adapt to external change. However, organizational culture does not always improve the firm's performance. Many researchers have noted that it may also become a strategic constraint (Schwartz & Davis 1981; Mintzberg 1991; Kotter & Heskett 1992). They argue that organizational culture places cognitive constraints on what the organizational members can perceive.

The ways in which the organizational members fullfill their daily tasks in the organization are guided by organizational routines. The organizational routines are practical non-codified

solutions to emergent work problems (Nelson & Winter 1982; Teece 1990; Grant 1991). They make much of the organizational behavior quasi-automatic, independent, and relatively unresponsive to managerial will (Peters 1984; Winter 1987). As with the organizational culture, the path-dependent nature of the organizational routines may prove to be either a strategic resource or constraint for the firm (Winter 1987).

Industry-specific knowledge diffuses, inter alia, through interlocking directorships, trade associations, and other forums for intra-industry communication. The managers involved in this communication do not only receive new information, they also learn new patterns of beliefs and values, or "industry recipes" (Grinyer & Spender 1979; Spender 1989). The industry recipe is similar to the organizational culture at firm-level. It is a common cognitive framework that guides the behavior of all established industry participants, and shapes the behavior of a firm so that it appears rational to all industry participants (Grinyer & Spender 1979).

The industry recipe also involves behavioral inertia. This inertia may provide a sustained international competitive advantage for firms embedded in a superior national industry recipe. Naturally, a recipe may also make it very difficult for firms to change their established strategies that have become inferior. For example, the U.S. auto manufacturers were victims of their antiquated industry recipe when they failed to perceive the initial entry of the Japanese manufacturers into the low end of the U.S. car market as a threat to their industry dominance. When they finally responded, the Japanese had already secured a strong position in the growing segment of economy cars (Kotler et al. 1985; Hämäläinen & Spender 1992).

5.3 **Institutional change**

Institutional change is a complicated process influenced by both the evolution of formal and informal constraints, and the changes in their enforcement. Institutions usually change incrementally rather than discontinuously because the informal institutions are deeply embedded in the society. Although formal rules may change overnight as a result of political and judicial decisions, informal constraints embodied in customs, traditions, and codes of conduct are much more resistant to deliberate policies (North 1990a). To understand the change in informal constraints we will have to analyze the cultural evolution of societies. As with the formal rules, the informal institutions may be seen as a hierarchy ranging from the product market reputation through the organizational culture and industry recipes to the national culture. As we move up the hierarchy, the informal constraints become increasingly stable and more difficult to change deliberately. We will next discuss the factors influencing the evolution of a national culture which shapes the other informal institutions.

The national culture reflects the shared beliefs and values of the society. Thus it can be shaped by all experiences that affect a large share of the society's population. Abrahamson and Fombrum (1992) argue that a national culture emerges primarly in an unintended fashion from the interplay of four societal sectors: the government, mass media, educational institutions, and the business community. They also acknowledge that in some societies religious institutions play a prominent role in the cultural evolution, though their effect on Western cultures has declined during the last century. These sectors influence the experiences of most members of the society and thus shape the common set of values and beliefs.

Abrahamson and Fombrun (1992) argue that a growing literature supports the view that the media strongly influences the formation and maintenance of collective understandings. The educational sector has a similar effect through its research findings and teaching. Particularly, teaching functions as a means of political socialization; teachers and texts filter information, present consensus values, and suppress controvesy (Meyer, Ramirez, Rubinson & Boli-Bennett 1977). Furthermore, network interactions and common exogenous stimuli in the domestic business environment shape the values and understandings of workers and managers. They may also participate in corporate training and education arranged by the same business schools or consultancies (Abrahamson & Fombrum 1992). Finally, the national culture is influenced by the policies, regulation, legislation, and leadership of the government sector. The government sector may influence the cultural development either directly by public communication of national leaders and setting the formal constraints and incentives; or indirectly through its control over the media, educational system, and the general business environment.

Abrahamson and Fombrun argue that it is the interactions within and between these four social sectors (and possibly the religious institutions) that shape the cultural evolution. For example, firms interact with one another, and with the organizations in the other sectors, "through intricate webs of direct and indirect relationships, be they formal contracts, personnel exchanges, board interlocks, trade associations, or study groups"[1] (Abrahamson & Fombrum 1992:181). They propose the form of the cross-sectoral interactions ranges in a continuum from a centric to a market structure. A centric structure is dominated by the government sector which controls the media and the educational system, and tries to stand apart from the business elite, attempting benevolently to serve the

[1] This theory of cultural evolution is entirely consistent with our discussion about the horizontal, vertical, and diagonal flows of resources in the economic system. It is important to note how the interactions in these channels create "institutional externalities" that shape the informal constraints of the system.

interests of the society as a whole (Lindblom 1977). In the other end of the continuum, a market structure gives a more balanced role for all four (five) sectors in influencing the cultural evolution; democratic process, freedom of press and other media, plurality of ideas in education, and a competitive market economy illustrate this structure. Naturally, in many countries, the cross-sectoral interaction falls somewhere between these extremes; and it is conceivable that any of the four sectors could dominate the system. For example, the American culture, which strongly influences many other Western cultures, is largely dominated by the mass media.

More generally, Abrahamson and Fombrum (1992) propose that it is the combined effect of all the above sectors that shapes the gradual evolution of a national culture. The force with which the different sectors affect the cultural evolution is influenced by the homogenity of the shared beliefs in each of the sectors. The more heterogenous the beliefs in a particular sector are, the less effect the sector is assumed to have in the cultural evolution because the different beliefs cancel each other out (Abrahamson & Fombrum 1992). The multiple forces affecting the cultural evolution also explain why discontinuous cultural change is very rare (North 1990a). Eventhough wars, revolutions, depressions, and natural disasters may make a deep imprint on the national culture in a relatively short period of time, their effect is likely to be transitory because new generations, who have not shared the historical experiences, will not easily internalize the old beliefs and values that originated from them.

North (1990a) emphasizes the role of organizations (political and economic) in shaping the formal institutions. He argues that organizations take advantage of the strategic opportunities defined by the economic and institutional constraints. These opportunities may lie within the institutional framework, or in trying to change it in the organization's interest. Because only the largest organizations can directly affect the political process that creates the formal institutional constraints, the interest groups may form collective

organizations such as labor unions, political action committees, research organizations, and other lobbying groups to realize the potential gains from institutional change. The larger the share of a society's resources influenced by the government decisions (directly or via regulation), the more resources will be directed to these rent-seeking activities (North 1990a). Moreover, the number of special interest groups is likely to increase over time in stable societies, and as it does, it slows down the economic growth[1].

Besides the special interests, formal institutional rules are influenced by the general interests of the citizentry. In the economic policy literature, policy makers are assumed to derive their policies (which define the formal rules) from the general interests of their constituencies (Tinbergen 1972; Gray 1992). These interests reflect the values and beliefs embedded in the national culture. Consistent with this literature, North (1990a) argues that formal and informal institutional constraints and their enforcement tend towards an institutional equilibrium, because an inconsistent set of institutional constraints would hamper the organizational decisions. In a disequilibrium, the enforcement of formal rules may work as a temporary vent for the increased tensions between the formal and informal institutions.

Russia and the East European new democracies are currently experiencing a severe institutional disequilibrium between their established informal institutions stemming from the communist era, and the formal rules brought about by the new market-oriented governments. Schmemann (1992) illustrates the tension between the formal and informal institutions in Russia, and the resulting slack enforcement of formal rules:

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[1] See, Olson (1982) for an excellent treatment of special interest groups' influence on the economic growth and competitiveness.

> "Communism may have been a grand failure, but it is hard to overestimate how deeply its presumptions insinuated themselves into the heart and mind of the nation...And that is where the suspension lies. Freed from its totalitarian shackles, Russia seems to be locked in a fateful race between the collapse of its inherited structures and the growth of new ones, between a nostalgia for the enforced security of its past and the promise of freedoms only vaguely understood...Some of the change is ugly. Speculation, racketeering and corruption abound. Bribery is rampant and 'conflict of interest' is an alien concept to politicians who blithely market their influence. Illegal exports of capital and raw materials flow all but unimpeded through the broken borders."

If the institutional disequilibrium lasts for a longer time, however, it is likely to result in chaos and anarchy which finally forces a new institutional equilibrium. The new equilibrium is likely to preserve some of the old informal institutions due to the path-dependency of cultural evolution (North 1990a). The recent developments in the creation of the European Monetary Union (EMU) are a good example of this process. The ambitious plans of the European policy makers were changing the formal institutional framework in a pace that exceeded the capability of national constituencies to adapt. These constituencies were embedded in the slowly evolving and culture-bound informal institutional fabric which represented the old national circumstances and history. This institutional disequilibrium resulted in a public opposition of the integration plans, a crisis in the financial markets, and a revision of the integration policies towards a less ambitious and more nationally-sensitive process.

5.4 Institutions, competitiveness and economic performance

Firms operate within the economic and institutional constraints of their environment. The institutional constraints may increase or decrease the firms competitiveness vis-a-vis their international competitors by shaping the resource creation and organization processes in the society. We will now link our discussion of institutions back to the determinants of firms' international competitiveness.

Since the policy makers and their wider constituences face considerable informational constraints, changes in the formal rules do not always have the expected positive consequences. The bounded rationality does not only constrain the information processing capability of policy makers, but also make it easier for the special interest groups to influence the policy making process without attracting negative public interest (Olson 1982; North 1990a). Moreover, the gradual evolution of informal institutions often constrains the individuals' flexibility to respond to the rapid changes in the global economy. In consequence, institutions are always a mixed bag of those that induce productivity and competitiveness, and others that do not. The net balance of the positive and negative effects determines the institutional contribution to the international competitiveness and economic growth of the system (North 1990a). How do the institutions then influence the resource creation and organizational processes of the system? We will now analyze the effects of the institutional framework on the system's created resources, and the allocative, X-, coordinative, and dynamic efficiency of their organization.

North (1990a) argues the knowledge and skills people will acquire reflect the incentives imbedded in the institutional framework. The institutional incentives have favored the acquisition of different kinds of knowledge and skills over time and in different societies. For example, they were favorable for improvements in military technology in the medieval

Europe, the pursuit and refinement of religious dogma in Rome during and after Constantine, and the search for an accurate chronometer during the age of exploration (North 1990a: 75). Since the acquired knowledge constrains the individuals' cognitive frames, and hence cultural evolution, it also shapes the long-term path of economic development.

Earlier in this paper, we have emphasized the importance of the created human-capital-intensive resources in modern competition. Since the development of human capital and modern technology is shaped by institutions, they become an important determinant of international competitiveness. If the institutional framework rewards the acquisition of skills and knowledge in areas consistent with the system's long-term competitiveness potential it will enhance economic growth, and vice versa[1]. For example, Porter (1990) argues that the emphasis on humanities and basic research in the English university system has been detrimental to the economic growth of England; on the other hand, Japan has done very well by supporting natural science education and applied research.

The allocative efficiency is also shaped by the institutional framework. An efficient institutional framework encourages resources to move towards the socially most productive sectors in the system. Such a framework supports the flexible structural readjustment by speeding up the witdrawal of resources from uncompetitive and unproductive sectors, and stimulating the investments into new more promising sectors. On the other hand, the institutional framework may also encourage rent-seeking behavior where economic agents focus on redistributive rather than productive activities. If the special interest groups are not encomposive, including most of the society's members, they will have no incentive to contribute to the competitiveness and economic growth of the

[1] The long-term competitiveness potential is a function of the system's resources (including natural), organizational alternatives, and market opportunities in the future.

system. Since the different interest groups do not have a similar capability to organize (e.g. retirees vs. the big business) a rent-seeking society will not achieve a balanced representation of all intrests. Moreover, the distributional coalitions increase the complexity of regulation and bargaining processes in the society, and the role of government sector in the economy (Olson 1982). As a result, the rent-seeking activities increase the market failure and decrease the allocative efficiency of the system.

The work-effort and X-efficiency rest on the pressures and incentives strongly influenced by the society's institutions. Organizational culture, peer pressure, reputational consequences of work effort, and the working ethos in general are influenced by the cultural environment. Moreover, the industry structure and competitive pressures are shaped by formal institutions (anti-trust, tariffs, share of public sector, etc.); although, a long history of cartels and collusive behavior may persist long after the formal institutions have illegitimized them. The X-efficiency of the higher-level custodians of resources is also influenced by the formal institutional framework. The poor performance of the American students in international comparisons is a case in point. The President of American Federation of Teachers, Albert Shanker, explains (Shanker 1992):

> "[The foreign students] are far ahead of their U.S. counterparts because they are assigned more work and more challenging work, and they work harder to get it all done. But why do they work harder?..One of the main reasons is that these other countries have national curriculums..With a national curriculum, everybody knows what is required. If they also have clear and visible stakes -- getting into university or an apprenticeship program -- the pressure is on to make sure youngsters meet the standards. Without national standards and a national curriculum there are no such pressures. That's why students in other countries work hard and do so well -- and why students in our "easy" and undemanding schools do not."

Finally, in a society where the institutional structure encourages the activities of distributive coalitions, the rewards to work-effort are diminished because individuals recognize that their productivity is secondary to the success of the organization, which is largely determined by political struggles and bargaining (Olson 1982).

The coordinative efficiency measures the joint-optimization of the system's performance. We have argued that it is a function of trust, collective pressures, shared information, and leadership. Of these, particularly trust and information sharing in the system are culturally-dependent variables. We have already noted how the Japanese and American cultures differ in these two dimensions. Moreover, the information sharing is also affected by the formal institutional constraints and incentives: the anti-trust legislation prohibiting joint-research in one country, and the government subsidies encouraging it in another is a good example. A culture of traditionally strong leadership can more easily encourage systemic cooperation and coordination. Citizens of individualistic market economies are much more resistant to coordinative leadership, or as the Japanese call it, "administrative guidance" (Wakiyama 1987). Coordination and joint-optimization are made more difficult if the institutional incentives have produced distributive coalitions which increase the conflicting demands in the system. These coalitions usually have little incentive to back coordinative strategies aimed at common goals (Olson 1982).

According to North (1990a: 80), "[dynamic]..efficiency is concerned with the kinds of rules that shape the way an economy evolves over time. It is also concerned with the willingness of a society to acquire knowledge and learning, to induce innovation, to undertake risk and creative activity of all sorts, as well as to resolve problems and bottlenecks of the society through time." North argues that the overall institutional structure plays the key role in the degree the society will encourage the trials, experiments, and

innovations that lead to dynamic efficiency. A society that permits the maximum generation of trials, rewards innovative successes, and eliminates uncompetitive organizations is most likely to adjust efficiently to environmental changes over time (North 1990a: 81).

Naturally, the institutional framework may also discourage the innovative behavior of entrepreneurs, and strengthen the established (possibly uncompetitive) industrial structure and organizational principles. Olson (1982) gives an example of an dynamically inefficient society. There, institutional incentives reward rent-seeking behavior and the formation of distributive coalitions. The slow decision-making processes and crowded agendas of these coalitions reduce the society's capacity to adopt new innovations and to relocate resources in response to changing conditions. The status quo is appreciated more by the coalition members than the unpredictable consequences of innovative processes.

The foregoing discussion of the rent-seeking behavior has focused on its negative impacts on the long-term performance of the economic system. However, rent-seeking also has an important influence on the short-term economic fluctuations. Olson (1982) argues that the slow decision processes of these groups explain the "stickiness" of prices in a rent-seeking society. It takes a long time from the distributive coalitions to negotiate wages and prices, and once they are determined, they are not likely to change quickly even if conditions change in such a way that a different price would be optimal for the coalition (Olson 1982: 203). Inter alia, this explains the "stickiness" of wages in downturns, and thus the origin of prolonged unemployment in the economy.

Olson (1982: 206) argues that in periods of an unexpectedly high inflation the prices the special interest groups have obtained will become lower in relation to other prices than the groups wanted or expected, but the groups will not quickly be able to change the relevant agreements or legislation. Thus the prices will be closer to the market clearing levels, and

the collusive system more productive than normally. In a period of unexpected deflation, or a sudden demand shock, the stickiness of coalition prices is likely to increase the drop in production when the inflexible prices accelerate the decrease in quantity demanded (Olson 1982: 204, 209).

6. GOVERNMENT POLICIES

As indicated in the previous section, government policies are often influenced by special interests, including those of the policy makers themselves (Tinbergen 1967). Despite these practical complications, the economic analysis of government policies usually assumes that policy makers benevolently serve the interests of general public. The electorate is assumed to provide the policy makers with a general interest function that represents their preferences. This function consists of the main policy goals to be achieved in order to improve the general welfare. The degree to which the policy makers feel free to deviate from the the general interests in their policies will depend on the assurance of their tenure in office. The more effective the democratic system, the closer will the policies reflect the general interests. The task of the policy makers is to use the policy tools at their disposal to optimize the achievement of the chosen policy goals, which maximizes the general welfare (Tinbergen 1967; Gray 1992).

6.1 Macro-economic and macro-organizational policies

Besides the electorate's preferences, the general interest function is influenced by the policy makers' understanding, or "general theories", of the relationships between different goals, policy tools, and the structure of the system (Tinbergen 1967). Over time, and in different countries, these theories have ranged from emphasizing the centralized hierarchial control of the economy to a complete trust in the superiority of free market economy. Recent

political, social, and economic reforms in Eastern Europe have reduced the number of policy makers who hold on to the first type of theories. However, the recent experiences of the United Kingdom and United States with the free market policies are no more convincing. In fact, both countries are now turning towards a more active government role in the economy. A comparison of these extreme examples of government involvement with the more competitive economies such as Japan, Germany, and the NICs suggests a more refined role for the government in the economic system.

The theories of policy makers influence the tools they apply to achieve their policy goals. In the realm of economic policy and competitiveness, the two market-oriented theories above (U.K. and U.S. vs. Japan, Germany, NICs) correspond to two different economic strategies. The first strategy derives from the free market approach, and pursues goals which fall within the constraints of the prevailing economic structure and institutions. This macro-economic strategy focuses on quantitave policy tools (taxes, exchange rates, raw material and energy prices, wages, interest rates) which can be manipulated in the short-term to adapt the economy to environmental changes (Tinbergen 1967; Dunning 1992). Although sound macro-economic policies are needed as a basis for economic growth and improving competitiveness, over-emphasizing macro-economic issues may lead the policy makers to neglect the important structural and organizational determinants which shape the system's long-term competitiveness.

Porter (1990) has argued that macro-economic policies aimed at improving the price-competitiveness of national firms do not yield a sustained competitive advantage. This is consistent with our earlier analysis of sustainable competitiveness; the price-oriented strategies fail because there is nothing to stop the competing countries from imitating the same policies. For example, the Nordic countries, which have many competing basic industries, have experienced several "waves" of devaluations that have spread from one

country to another. Policies aimed at creating a sustained competitive advantage for national firms will have to build on more difficult-to-imitate sources of competitive advantage. These sources can often be found from the organizational structure and institutions of the society.

The second "theory" of government role supports a more active government involvement in changing the structural and institutional constraints of economic activity. Rather than affecting the quantitative variables in the short-term, this macro-organizational strategy aims at long-term qualitative changes in the structure of the economy. Besides production costs, it focuses on creating new resources and reducing the transaction and coordination costs of economic organization (Dunning 1992). These factors are becoming increasingly important in modern high-value-added industries where highly specialized and multi-staged production processes increase the market failure and coordination costs (Ozawa & Phillips 1991; Istvan 1992; Dunning 1992). The macro-organizational strategies use a wide selection of policy tools to achieve their goals. These include (at least) the following: technology policy, education and training policy, environmental policy, security policy, regional policy, transportation policy, fiscal policy, property rights regime, and trade and FDI policy.

The macro-organizational policies focus not only on reducing the total costs of production but also on increasing its value. The more value workers add in the production process (i.e. the more productive they are), the higher wages they will earn. The more differentiated products also offer more protection against imitation by foreign low cost producers who do not have the resources and capabilities to respond to the high-value-added strategies. Moreover, foreign governments are less likely to implement protectionist policies against highly priced items.

The different macro-economic and macro-organizational policies need to be coordinated towards the chosen goals. Many scholars have argued that government decision taking is often fragmented and badly coordinated, which results in sub-optimal policies and waste of public resources (Tinbergen 1967; Porter 1990; Dunning 1992). Western governments usually treat their ministries as competitors for the same public resources, and the final resource allocation decisions are taken by the Cabinet. Dunning (1992) argues that this hierarchical decision structure reduces the possibilities for efficient coordination between the governmental departments. He advocates a more heterarchical system of government decision taking where a complex web of lateral and vertical relationships substitute for the hierarchical structure. These relationships facilitate the rich information flows and active cooperation needed for improved policy coordination.

6.2 Macro-organizational policies and the determinants of international competitiveness

Besides early in the development of a nation, the government has only a partial and selective role in shaping the international competitiveness of national firms (Porter 1990). The framework presented in this paper can be used to analyze the appropriate role and macro-organizational policies of the government. This role is not one of replacing the market by direct government intervention; government bureaucrats do not make good businessmen (Porter 1990; Dunning 1992). It is more the role of a coach that motivates the firms to improve their resources, capabilities and organizational efficiency. The government will also have to undertake certain tasks which the firms themselves cannot do, such as correcting for market failures and ensuring a level "playing field" in international markets (Porter 1990; Dunning 1992). We will next discuss with few examples how the macro-organizational policies may influence the different parts of our framework, and hence, the international competitiveness of national firms.

Available resources. Governments play an important role in creating skilled human resources, basic scientific knowledge, modern infrastructure and many other advanced resources crucial to competitive advantage in high value-adding industries. Even though the development of these resources may provide considerable social returns, their private development is often hampered by market failures (see, section 4.1). The government can provide unique factor creation mechanisms (such as education and R & D systems) for dynamic industries where the standards for resources are continuously rising (Porter 1990). It can also develop modern infrastructure (advanced transportation and telecommunication networks, etc.) which is increasingly important for international competitiveness (Dunning 1992). Finally, many sophisticated industries require large investments if firms want to stay at the rapidly advancing technological frontier. If the national firms face capital constraints, the government may need to improve the local capital markets, or temporarily underwrite and finance the firms' R & D efforts so as to prevent them from falling too much behind in the technological race (Milberg & Gray 1992).

Allocative efficiency. Besides restricting the private resource development, market failures also constrain the allocation of resources in the economy. Government can improve the allocative efficiency by increasing the available information for economic agents, reducing structural market failures, and reducing institutional constraints to the resource re-allocation process. First, the bounded rationality of decision takers may prevent them from allocating the firms' resources to the most productive uses. This problem is aggravated when the allocation process involves foreign business opportunities. As noted earlier, the government may support the firms' information acquisition activities by gathering, processing, and disseminating information for firms about important technological trends, government programs, foreign markets (Kotler et al 1985; Porter 1990), and by allowing rich information exchange between non-competitive but related firms (Teece 1992).

Another important domain for government policies concerns the competitive restrictions caused by firms and institutional mechanisms. These impede the functioning of invisible hand by erecting entry barriers and setting up cartels and unnecessary regulatory practices. The government can counteract these re-allocation constraints by vigorous anti-trust policies and encouraging new entry by domestic and foreign firms [1]. Moreover, special interest groups have often managed to institutionalize several competitive constraints into legislation and regulation. A benevolent government may be able to correct some of these institutional biases by influencing the legislative and bureaucratic processes, although gaining public support for such policies may require special circumstances, such as a deep recession and high unemployment, when the public is alert to the waste and inefficiency caused by the rent-seeking activities.

X-efficiency. The government can reduce X-inefficiency by shaping the positive and negative work incentives. Among the positive incentives, the government can pursue tax policies that encourage work effort, guarantee equal opportunity for all talented individuals in education and career advancement, and emphasize the importance of everybody's work effort for the national competitiveness. With regard to negative incentives, the government can increase the competitive pressure on firms by strict anti-trust enforcement and supporting the entry of new rivals, particularly foreign firms that are not as prone to collusive practices. The government may also act as a sophisticated and demanding buyer to establish high-quality standards among producers. Finally, it may set stringent technical, environmental and other standards for local firms (schools, R & D institutions, etc.) which push them to internationally high levels of work and innovatory effort (Porter 1990).

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[1] The anti-trust policies should not, however, prevent the cooperation and coordination of non-rival firms. Such cooperation and coordination is often needed in modern industries where all necessary capabilities cannot be internalized by a single firm (Teece 1992; Dunning 1993).

Coordinative efficiency. Government policies may increase coordinative efficiency by supporting the creation of industry clusters which attenuate opportunism, foster long-term relationships between horizontally and vertically related firms, and increase rich information exchange (see, Porter 1990). These clusters reduce the transaction and coordination costs of interdependent firms, and thus facilitate a better joint-optimization of the value-adding system. The government can also reduce the transaction costs by maintaining a tight property rights regime which attenuates the incentives for opportunistic behavior (Teece 1987). Moreover, it can provide the needed leadership and direction (strategic coordination) for large, complex and highly-interdependent value-systems where mutual adjustment of the immediately related firms is unable to reach a global optimum for the whole system (Teece 1992). The government leadership may also enable firms to better coordinate their activities with the higher-level resources.

Dynamic efficiency. We have emphasized the role of decentralized entrepreneurship for achieving the dynamic efficiency. Government plays an important role in supporting entrepreneurial behavior in the system. First, the government policies affect the availability and cost of capital for new ventures. Subsidies, grants, infant industry protection, and public venture capital can provide the needed seed capital for promising start-up companies. Also, the tax regime can be devised to promote private venture capital investments. Second, the government can develop "science parks" where entrepreneurs from related industries are brought together into a stimulating environment equipped with the latest specialized infratructure. Third, the government can encourage new business formation by universities and public research institutions. Fourth, government may support small firms in finding business partners which complementary resources and capabilities, and common interests. Fifth, the government may support the early foreign expansion of small firms by providing market information, foreign contacts, and export financing and guarantees.

More generally, successful entrepreneurship stems from favorable macro-organizational circumstances in the system (Porter 1990). Thus, government policies which improve the available resources and allocative, X-, and coordinative efficiencies in established industries will also encourage new entrepreneurship in related fields. It is much more difficult for governments to attempt to establish totally new industry sectors by promoting entrepreneurship in unrelated fields (Porter 1990).

7. INTERNATIONAL BUSINESS ACTIVITIES[1]

A growing number of industries is characterized by international competition. This competition is not only restricted to global industries such as automobiles, drugs and semi conductors, but also increasingly affect uninational firms in their domestic markets. The international business activities of firms have linked the national economies into a global network where national competitiveness is increasingly influenced by foreign direct investments (FDI), international trade, and cross-border cooperative agreements. The implications of international business activities for systemic competitiveness can be analyzed with the framework presented in this paper. This final section will analyze the ways in which the different modalities of international business involvement (FDI, trade, cooperative ventures) affect the systemic competitiveness through shaping the available resources and the allocative, X-, coordinative, and dynamic efficiencies.

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[1] This section draws extensively on John H. Dunning's new book Multinational enterprises and the global economy (Addison Wesley, 1993) which includes an extensive analysis of the effects of international business activities on national welfare and competitiveness.

7.1 Interaction of nations, firms and organizational forms

John Dunning (1993) has emphasized that international business activities may have good or bad welfare (and competitiveness) consequences for nation states depending upon (a) the country-, industry-, and firm-specific characteristics of the particular involvement, (b) the mode of involvement, (c) time period under study (short- or long-term), (d) the government policies, and (e) from whose perspective one is trying to assess their impact. For example, the long-term consequences of Finnish direct investment in a Chilean copper mine are likely to be quite different from a Swedish greenfield investment into Finnish furniture business. Similarly, this Swedish investment may have quite different implications for the Finnish furniture industry than the earlier cooperative agreements between the investing firm and the Finnish sub-contractors. Finally, the textile exports from Finland are likely to have different implications for upgrading the local human capital than do the recent acquisitions of Strömberg Oy (electro-mechanical engineering company) by ABB, and Nokia Data (computer manufacturer) by ICL.

Dunning's (1988) eclectic paradigm of international production suggests the impact of international business operations on systemic competitiveness could be analyzed by comparing the ownership-specific (O-) advantages of firms, the locational (L-) advantages of countries, and the internalization (I-) advantages of different organizational forms (hierarchy, cooperative forms, markets). The O-advantages refer to two classes of firm-specific advantages; one arising from the firm's possession of scarce valuable resources (tangible or intangible), and the other from the advantages of common governance, which stem from its international network of operations (economies of scale and scope, international factor market arbitrage, risk diversification, etc.). The L-advantages originate from the location-bound factors discussed in the previous sections: systemic resources, institutional framework, government policies, and the macro-organization of the economic

system. Finally, the I-advantages stem from the organizational forms through which the firms leverage the ownership- and location-specific advantages. These forms result in outward- and inward direct investment, exports and imports, and cooperative ventures.

Since the impacts of international business activities are specific to particular situations, few generalizations are possible. However, it is still useful to discuss the ways in which the different forms of international business involvement could influence the systemic competitiveness. It must be emphasized, however, that practical research and policy problems can only be addressed with an intimate knowledge of the particular situation (Stopford & Strange 1991; Dunning 1993).

7.2 International business activities and the availability of resources

The availability of resources in the national system is most clearly affected by the inward direct investment (IDI). Foreign multinationals must have O-advantages over and above those of the local firms in order to successfully compete in a foreign location (Hymer 1960). As defined above, these stem either from firm-specific resources or the firm's network of international operations. Both types of advantages may contribute to the international competitiveness of the host country system. Moreover, the greater the number and extent of the MNE's O-advantages relative to those of its indigenous competitors, and the more countries in which the MNE operates, the more pronounced its impact (for good or bad) is likely to be on the host economy (Dunning 1993).

The MNEs are disproportionately well represented in the high-value-added technology- and marketing-intensive industries (Hood & Young 1979). Their technological, managerial, and marketing capabilities, combined with the international distribution networks, can upgrade the resource base of national industries in which they invest, and provide valuable

spill-over-effects to local supplying and related industries (Dunning 1993). This resource upgrading may not only result directly from the financial, physical and knowledge resources imported, but also indirectly from the competitive stimulus, working ethos, and organizational innovations the MNEs bring with them. These indirect effects affect the resource creation processes through the other parts of our framework.

However, the positive effects of ODI are not guaranteed. First, the resources the MNEs use may not be appropriate to the host nation's stage of development. Second, the MNEs do not always pursue the high-value-adding activities (R & D, technology- and knowledge-intensive activities, etc.) in their foreign affiliates. Third, if the host country does not have the required complementary assets, it is not able to utilize, let alone improve, these MNE's resources[1].

The outward direct investment (ODI) may also affect the availability of resources for national firms. This effect is particularly important in strategic asset seeking investments where national firms acquire the assets of foreign firms, or locate their foreign operations in areas of dynamic resource creation (e.g. Silicon Valley), in order to promote their long-term international competitiveness (Shan 1992; Dunning 1993). More specifically, these investments are aimed at strengthening the investing firm's global portfolio of resources by the acquisition of complementary O-specific resources. Other types of outward investments may also have an influence on the availability of resources for domestic firms. For example, foreign marketing and distribution investments may improve the investing firms' knowledge of markets and access to consumers. Moreover, the resulting increase in the firms' international competitiveness may indirectly improve the domestic resource creation

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[1] See, Dunning (1993) for a more extensive discussion of these caveats.

processes by attracting talented people, new supplier firms, and the attention of policy makers (Porter 1990).

Finally, like the effects of IDI, the impacts of ODI are not always positive. Due to bounded rationality, the firms may under estimate the home country's long-term locational advantages and make excessive outward investments, which deprive the system from important resources, have negative spill-over-effects on supplying and related industries, and start a "vicious circle" of resource degradation (Dunning 1993). The outward investments may also contribute to the diffusion of nation-specific knowledge resources to foreign countries by locating foreign affiliates into environments where competitors can more easily observe and imitate their operations.

The cooperative ventures (strategic alliances, joint-ventures, franchising agreements, etc.) may also affect the availability of resources for domestic firms. Cooperative ventures are usually motivated by the complementarity of the firms' resources (Teece 1992; Gugler 1992). Ex ante, both parties to a cooperative relationship expect to gain from combining these resources. However, whether or not both parties actually gain from it, ex post, is an other thing. For example, the Japanese firms have often been accused of using cooperative relationships with foreign firms to learn their technologies (Hamel 1991). Some of these Japanese firms have built on the acquired technologies and become formidable competitors to the original technology transferer. The long-term impact on each cooperating firm depends on the time period under study (short- vs. long-term), relative value of the resources committed, learning capabilities of both organizations, and the specific kinds of interaction taking place between the organizations. Thus, cooperative agreements may have both positive and negative consequences for the long-term competitiveness of participating firms, and hence the competitiveness of their home countries.

Finally, international trade may affect the system's resources through exports and imports. As we implied earlier, raw materials, components, and generic technologies are increasingly available in the global factor markets. Except for the most sophisticated new technologies, firms are increasingly willing to leverage their large R & D investments by licencing the next-to-last generation of their technologies, which may still be very sophisticated for the acquiring firms (Porter 1990). Tapping into the international technology markets is especially attractive for firms (and nations) when they are catching up their more advanced competitors but do not, yet, have the capability to compete at the technological frontier. Besides technology transfers, international factor markets may allow firms (nations) to "outsource" more generic inputs and raw materials which are more competitively supplied by other economic systems. This saves scarce domestic resources for those activities and industries in which the home country has a comparative advantage. Finally, as with other forms of foreign involvement, firms and nations may both loose and win in the international factor markets. For example, Japanese firms built their technological capabilities in many industries on technologies licenced from the U.S. (Porter 1990). Now, many of these Japanese firms have become more competitive than their American licensers.

7.3 International business activities and macro-organizational efficiency

The international business activities influence the systemic competitiveness also through their effect on the four macro-organizational efficiencies. In the following section, we will discuss the ways in which foreign direct investments, international trade and cooperative agreements affect the allocative, X-, coordinative and dynamic efficiencies.

Allocative efficiency. A detailed study of several countries has shown that the sectoral distribution of MNEs' value-adding activity, both in their home and host countries, is

different from that of other firms in these countries (Dunning 1985). This study revealed that, in the absence of artificial barriers to trade or other structurally distorting features, MNEs generally have a beneficial effect on the resource allocation of both home and host countries. They tend to invest in high-growth sectors, and those in which the host country has a revealed comparative trading advantage (RCA), or an increasing RCA (Dunning 1993). Dunning (1993: 419) summarizes the allocative effects of MNEs:

> "Most inward direct investment will tend to be directed to sectors in which the O-specific advantages of the investing firms are based upon resources and capabilities in which the investing country has a comparative advantage, but need to be used with resources and capabilities in which the recipient country is comparatively well endowed..Such MNE activity may, then, normally be expected to reallocate resources in the recipient country towards sectors with a higher productivity. At the same time, outbound direct investment will..be directed to those activities which require resources and capabilities in which the home country is comparatively disadvantaged..In this way, resources are allocated from sectors with low productivity to sectors with high productivity."

Dunning (1993) proposes that the greater the structural differences between countries exporting and importing capital, the more pronounced the impact of FDI by the former on the latter is likely to be. This impact is not only restricted to inter-sectoral differences, the MNEs may also influence the intra-sectoral resource allocation between different value-adding activities.

The allocative efficiency may also be influenced by exports, imports, and cooperative ventures. Successful export sectors are likely to draw resources from the less profitable domestic sectors. Besides the monetary incentives, internationally competitive export firms

can offer a prestigious, dynamic and challenging working environment for aspiring young workers. Competitive export sectors also tend to nurture "clusters" of related and supporting industries which are often highly visible and attractive employers (Porter 1990). Import competition may stimulate a "virtuous circle" of resource creation, or a "vicious circle" of resource degradation (Dunning 1993). In the former case, the resources flow into the sectors strengthened by the import challenge, whereas in the latter case, the resources abandon the uncompetitive sectors which become dominated by foreign imports.

The allocative effects of international cooperative ventures are more difficult to discern. Some firms use cooperative relationships to learn the foreign partner's organizational capabilities. They may use this knowledge in an attempt to diversify into related sectors. Other firms use cooperative ventures to support some of their less competitive activities. If such ventures lead to a dependency on the partner's resources, the relationship may end up to a divestment of the non-competitive activities. As with the resource upgrading, the actual impact of cooperative ventures on resource allocation depends on the time period under study (short- vs. long-term), relative importance of the resources committed, learning capabilities of both organizations, and the specific kinds of interaction taking place.

Following Porter (1990) and Dunning (1993), we can conclude that international business activities are likely to make a positive contribution to the allocative efficiency of national economic systems if the other factors of our framework support it; that is, (a) there are sufficient local resources and capabilities for absorbing and building on the O-specific resources provided by the foreign MNEs, (b) there is effective competition among the indigenous firms (X-efficiency), (c) there are closely-related supporting and related industries to provide complemetary resources and coordination (coordinative efficiency), (d) there is enough entrepreneurship to challenge the established industrial structures

(dynamic efficiency), and (d) the government and institutions facilitate the efficient operation of market forces and the restructuring of domestic resources and capabilities.

X-Efficiency. Due to the O-specific advantages that enable them to engage in foreign production, MNEs could be expected to be more X-efficient than their indigenous competitors. However, as Dunning (1993) has noted, this is not necessarily the case. First, as well as possessing certain competitive advantages, MNEs usually face some disadvantages vis-a-vis their local rivals in the host country (Hymer 1960). Second, the MNEs may use their O-advantages to exploit a monopolistic position rather than improve their X-efficiency. Third, the FDI may have been motivated by a desire to acquire strategic or trade-enhancing resources which improve the efficiency of the whole MNE, rather than that of the local affiliate (Dunning 1993).

The empirical evidence on the X-efficiency of MNE affiliates in host countries is mixed. While Dunning (1993) cites several studies showing that MNE affiliates generally have a higher productivity and profitability than their indigenous competitors, he concludes that these differences may be home and host country specific, and possibly a function of the overall and sectoral competitiveness of the investing and recipient nations. The literature on MNEs influence on the home countries is equally mixed. Dunning (1993: 427) summarizes his literature review on the issue:

> "The balance of research suggests that, as a strategic group, MNEs are likely to be only marginally more profitable than their domestically-oriented competitors..[The empirical studies]..found that MNEs earned modestly higher rates of return on sales and for assets than did non-MNEs, but the differences were rarely statistically significant"[1].

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[1] A further caveat is appropriate with regard to this empirical research. Dunning (1993) suggests the productivity and profit measures applied in it may not have been valid indicators of X-efficiency. Transfer

The MNEs may also improve the system's X-efficiency indirectly through their impact on supplying and related industries. Dunning (1993: 456) summarizes the research findings:

> "From the recipient country's viewpoint, the findings of a large number of studies over the past 30 years are virtually unanimous that the presence of foreign-owned firms has helped raise the standards and productivity of many domestic suppliers, and that this has often had beneficial spill-over effects on the rest of their operations. Almost universally, suppliers have acknowledged that their foreign customers have been more demanding in their specifications and tougher in their price negotiations and delivery targets, while being more generous in their assistance and advice."

In general, the effects of international business activities on X-efficiency can be analyzed in terms of their impact on the individuals' work effort and the managers' bounded rationality. Thus, we would expect the X-efficiency of firms to improve as a result of FDI if it increases the competitive pressures faced by domestic firms (either in domestic or foreign markets), raises the standards of demand, or causes the government to pass institutional rules that increase the performance pressures on firms (strict environmental regulation, consumer liability legislation, etc.) [1]. The MNEs may also introduce organizational innovations which spill over to improve the X-efficiency of domestic firms. The spread of the M-form organization and modern accounting practices from the American MNEs to

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price and asset base manipulation; differences in accounting conventions, and intra-affiliate versus intra-MNE benefits of FDI; government discrimination against, or in favor of, foreign affiliates; and strategic group membership are among factors that may bias the productivity and profit measures of X-efficiency.

[1] In rare cases, where domestic pressures are higher than those in the international markets, the reverse is also possible. That is, firms may escape the high domestic pressures by increasing their foreign operations which earn higher returns on investment. For example, Abegglen and Stalk (1985) argue that Honda entered the U.S. markets largely because of the intense domestic rivalry in Japan. In this situation, the foreign involvement may slow down the improvement of X-efficiency among the domestic competitors by reducing the pressures they face.

their European competitors are good examples (Chandler 1979; Kogut 1992). The effects of international trade and cooperative ventures on the X-efficiency of economic systems can also be derived from their impact on the work incentives and bounded rationality. For example, exports and imports may expose the domestic firms to higher levels of competitive, consumer and institutional pressure. Also, cooperative ventures may provide an efficient organizational form for learning about the organizational routines of foreign firms (Hamel 1991).

Coordinative efficiency. The international business activities may influence the coordinative efficiency of economic systems. This effect may stem from the strategic coordination of MNEs, or from the operational coordination of MNEs with their local suppliers, consumers, and higher-level custodians of resources.

The strategic coordination relates to the leadership and direction which MNEs can provide to interdependent value-adding systems. Although MNEs, almost by definition, improve the coordination of interdependent value-activities across national borders, they may also improve the coordinative efficiency within a particular economic system. The private benefits of global coordination are widely recognized by international economists and management scholars (Dunning 1988; Prahalad & Doz 1987; Bartlett & Ghoshal 1989). Moreover, Dunning (1993) suggests that in larger developed economies -- such as the U.K., the U.S., France, Germany, and Japan -- the contribution of MNEs to the formation of inter-firm linkages seems to be positive and, in some cases, substantial. The experiences of small developed and developing countries are more mixed; the number of local linkages established MNEs has not always satisfied the host country governments (Dunning 1993). More generally, maximizing the coordinative efficiency of a particular national system may require different kinds of coordination than that voluntarily provided by the MNEs. This

may lead to government intervention aimed at better aligning the private and public interests.

The operational coordination requires rich information flows between the interdependent activities of the value-system. The exchanged information may involve market characteristics and trends, future investment intentions, host government regulations, foreign suppliers of machinery, parts, materials and components, proprietary product and process specifications, etc. (Dunning 1993). If the nature of the information is complex and specific, hierarchical and cooperative coordination will replace the market mechanism (Richardson 1972; Williamson 1985). Both of these coordination mechanisms require cooperation between the interdependent activities. In the former case, the cooperation is secured by managerial control and fiat; in the latter it requires reciprocity, mutual adjustment and trust. As we noted earlier, cultural differences in these characteristics influence the MNEs' choice of coordination mechanisms. For example, the Japanese MNEs utilize cooperative relationships more extensively than their Ameriacn and European competitors (Dunning 1993).

Finally, the international business activities may indirectly affect the coordinative efficiency through their impact on the formation of industry "clusters" where inter-firm information flows are extensive (Porter 1990). Dunning (1992b) has noted that inward direct investments may improve the agglomeration of supporting and related value-adding activities in the host country if the MNEs choose to make greenfield investments into the proximity of existing domestic clusters. Silicon Valley and London City are examples of regions where foreign firms have contributed to the formation of local industry clusters. The foreign MNEs and their supplier industries may also set up their own clusters in foreign countries by concentrating their investments into the same areas. For example, the

Japanese motor vechile manufacturers have pursued such a strategy in their investments in Europe and the U.S. (Dunning 1992b, 1993).

Dynamic efficiency. Joseph Schumpeter (1934: 66) has categorized entrepreneurial innovations into five groups: (1) product innovations, (2) process innovations, (3) market innovations, (4) supply innovations, and (5) innovations that change the industry structure. These innovations may improve the resources and capabilities with which firms compete, as well as the four organizational efficiencies. Moreover, international business activities can affect each of Schumpeter's innovation categories.

First, in many sophisticated industries (pharmaceuticals, automobiles, computers, etc.) R & D investments are so large that only the biggest firms can afford them in the required scale. This favors large MNEs which have the internal resources and capabilities, cooperative relationships, and global marketing networks to successfully develop and launch new products. Second, MNEs are often in the forefront of new process technologies and organizational innovations; the differentiated foreign needs of foreign manrkets have contributed to the development of flexible manufacturing systems, and global coordination requirements have led to organizational innovations (Bartlett & Ghoshal 1989; Dunning 1993). Third, exports to new geographical markets and market-seeking FDI illustrate market innovations that change the dynamic efficiency of countries involved. The global scanning capabilities of MNEs give them an edge in discovering new foreign markets. Fourth, new resource-seeking and strategic asset acquiring investments, together with cooperative ventures resulting in organizational learning and resource complementaries, fall into the supply innovation category. As above, MNEs have an informational edge in discovering new supply opportunities. Finally, the internationalization, and later globalization, of many industies has changed their industry structures considerably. The pioneers of internationalization and global strategies have

often gained a sustainable competitive advantage over their uninational competitors, and firms that have embarked on the internationalization process in a later stage of industry evolution (Porter 1986).

These examples suggest that international business activities may have an important positive impact on the dynamic efficiency of economic systems. The empirical observations seem to support this conclusion. Dunning (1993) argues that in the 1970s MNEs were generally more successful at protecting themselves against the adverse effects of environmental volatility and market failures. He cites to an OECD (1978) study which found that the European subsidiaries of MNEs responded to the exogenous events more speedily than their indigenous competitors. The MNEs have also been among the first to anticipate and react to the major changes in the technological and economic environment in the 1980's (Dunning 1993: 428):

> "They have been foremost in concluding strategic alliances -- particularly across national boundaries -- and in exploiting the opportunities offered by the completion of the European internal market in 1992. MNEs -- in particular, those of the Japanese origin -- have led in the introduction of lean and flexible manufacturing systems and new organizational structures, as well as in the adoption of the latest informatic equipment and devices. Possibly because of the intensive global competition in the 1980's, they have been among the trailblazers in disinternalizing the less profitable parts of their businesses and focusing on their core competences. Also, they have been particularly active in globalizing their sourcing strategies."

7.4 International business activities and government policies

The impact of international business activities on government policies, and vice versa, culminates in the relationship between the government and the MNEs. Dunning (1993) argues that, in general, this relationship has changed over the past 30 years or so. He identifies three phases in the relationship: (a) the honeymoon phase (from the early 1950's to the mid 1960's), (b) the confrontation phase (from the mid 1960's to the late 1970's), and (c) the reconciliation phase (from the late 1970's to the present). In the honeymoon phase, governments took a very positive approach to inward direct investment by resource rich MNEs which could alleviate their post-war resource scarcities. Thus, the main impact of MNEs came from the resources, capabilities and markets they provided to the recipient countries (Dunning 1993). In the confrontation phase, the influence of MNEs on host country economies became under increasing scrutiny and attack by national governments, particularly those in the less developed world. At that time, MNEs were adopting more centralized organizational strategies which were less well aligned with the differentiated national goals than the earlier host country centered strategies. Finally, in the reconciliation phase, both MNEs and governments have learnt about each others' behaviors, and the relationship has become more mutually rewarding. Now, the governments attempt to improve the competitiveness of their location-bound resources and capabilities in order to attract the high value-added activities of MNEs into their territory. Since most governments want to attract the same scarce resources of MNEs, there is oligopolistic competition between the nation states over inward FDI (Stopford & Strange 1991; Dunning 1993).

Dunning (1993) has analyzed the interaction between governments and MNEs by comparing the O-advantages and strategies of MNEs with the L-advantages and policies of home and host countries. If the combination of the firm's O-advantages and the host nation's L-advantages is of economic value to both parties, the division of economic

benefits between the investing companies and the home and host countries must be determined. Dunning argues that this is a particularly important task for the host countries, whose relative bargaining power and negotiation skills determine the ultimate division of benefits from the FDI. The relative bargaining power of the host governments and MNEs is determined by, inter alia: (a) the importance of the country's L-advantages to the investing firm, (b) the importance of the investing firm's O-specific resources for the achievement of national goals, (c) the knowledge of each side about the alternatives available to them and the other side. Moreover, the relative bargaining power evolves over time as the L- and O-advantages change, alternative sources of resources appear, and the goals and policies of the government and MNEs change (Dunning 1993).

More generally, the government policies towards international business activities -- be they inward or outward investment, exports or imports, or cooperative ventures -- can be evaluated with the framework presented in this paper. If the government policies lead international business activities in directions which support the domestic resource creation processes and increase the organizational efficiency of the economic system, they are likely to contribute to the long-term competitiveness of national firms. Finally, if all policy makers from different branches of the government were using the same framework, the policies towards international business activities would become more consistent and mutually supportive. This coordination is an important part of the overall policy coordination discussed in the previous section.

8. PORTER'S DIAMOND THEORY REVISITED

Our analysis would not be complete unless we discussed how our framework relates to Michael Porter's "diamond" framework of national competitive advantage (Porter 1990). Porter explains the national competitiveness with four main sets of attributes which were

derived from ten comprehensive case studies of different industrialized countries (see Figure 8 below):

1. Factor conditions. The nations position in factors of production -- such as skilled labor, infrastructure, and raw materials -- necessary to compete in a given industry.

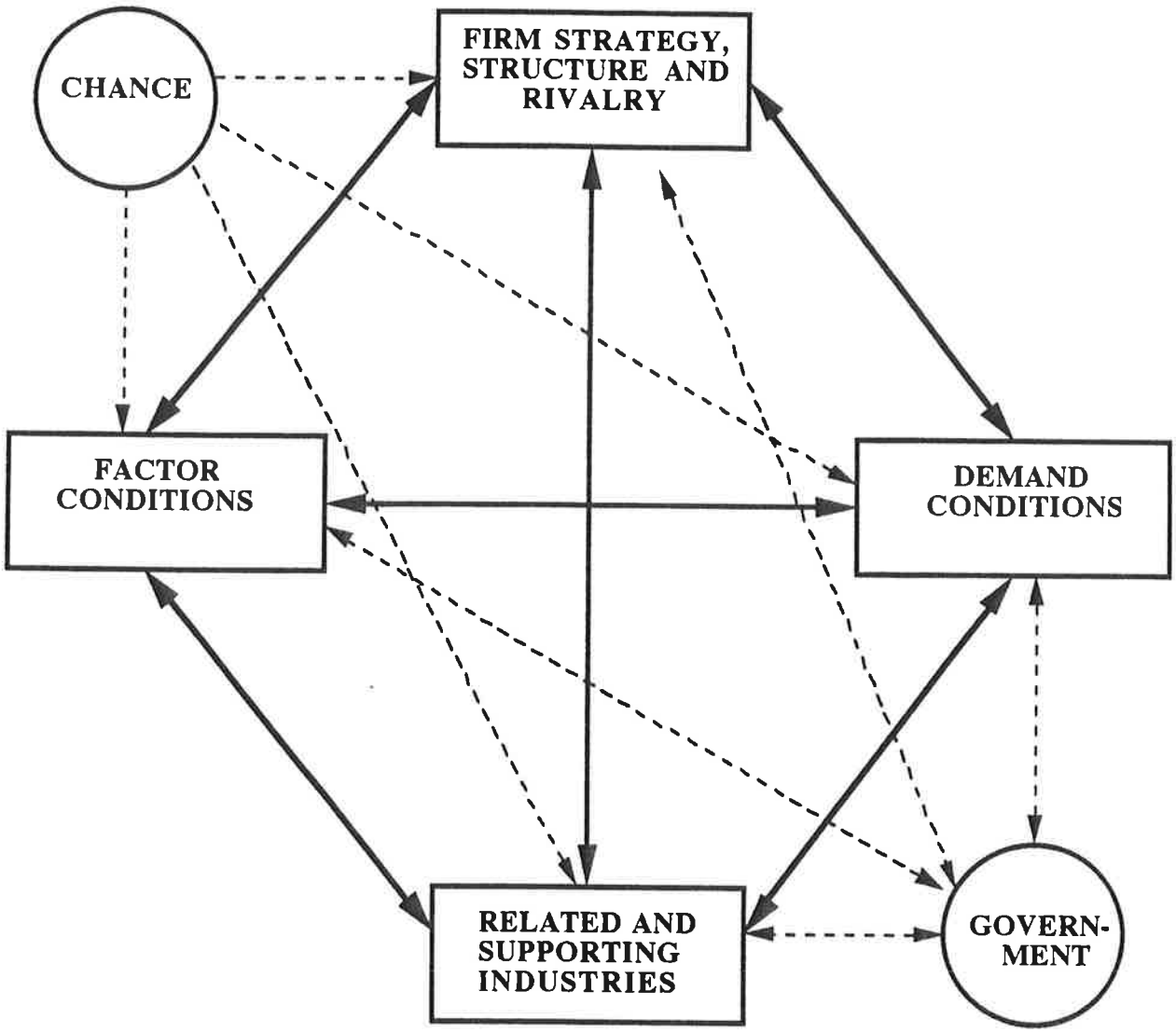
2. Demand conditions. The nature of home market demand for the industry's product or service.

3. Related and supporting industries. The presence or absence in the nation of related and supplying industries that are internationally competitive.

4. Firm strategy, structure, and rivalry. The conditions in the nation governing how companies are created, oranized and managed, and the nature of domestic rivalry.

Porter's study makes several contributions to the current discussion of international competitiveness. The most important of these contributions are the holistic approach of the study (multiple levels of analysis), the emphasis on dynamic competition, and the focus on non-price dimensions of competitiveness (Porter 1990: 18-21). However, although Porter's extensive field research is convincing, we are unconvinced by his inductive theory building which disregards the established theories. More specifically, the four factors in his diamond emerged from the case studies as good correlates of national industry success; even Porter acknowledged that the causalities in his framework were not very clear (Porter 1990: 132). This suggests that the diamond framework could be further refined, particularly towards synthesizing the empirical findings with the established theories of comparative and competitive advantage.

FIGURE 8. Porter's diamond of competitive advantage



Source: Porter (1990: 127).

In this final section, we will argue that Porter's diamond is a derivative of a more comprehensive and theoretically-grounded framework -- the one presented in this paper. All factors in Porter's framework can successfully be traced back to our framework, which includes additional important factors neglected by Porter. In the following, we will revisit

Porter's findings in the light of our framework[1]. Since our framework builds on established research, this section will relate Porter's empirical findings to the underlying economic and strategic theories. Moreover, since Porter's framework is entirely consistent with our framework, his ten in-depth case studies give indirect support for our framework.

8.1 Factor conditions

Porter's discussion of factor conditions is consistent with our emphasis on valuable resources. He notes that the availability and cost of basic factors such as natural resources and low-skilled labor is a major determinant of competitiveness in industries where innovation and technological development do not play a major role. He also argues that created and specialized resources, such as specialized human capital, modern infrastructure, and frontier technologies, are the key to competitive success in sophisticated industries. Porter particularly emphasizes the availability of specialized factors (1990: 79): "Specialized factors require more focused, and often riskier, private and social investment. They depend in many cases on already having a base of generalized factors. Both of these things make them scarcer." This description comes very close to meeting the characteristics of valuable resource configurations discussed earlier in this paper.

Porter (1990: 74) emphasizes throughout his study that the dynamic competition in sophisticated industries requires continuous innovation and upgrading processes: "The stock of factors at any particular time is less important than the rate at which they are created, upgraded, and made more specialized to particular industries". He also argues that one of the forces driving this innovation and upgrading process is the selective factor disadvantages. He observes the following (1990: 82):

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[1] We will not compare the two frameworks with regard to government policies because they are entirely consistent in this respect.

> " In actual competition,..the abundance or low cost of a factor often leads to its inefficient deployment. In contrast, disadvantages in *basic* factors, such as labor shortages, lack of domestic raw materials, or a harsh climate, create pressures to innovate around them. A steady rise in the nation's exchange rate can have the same effect. The result is that the firm's competitive advantage can be upgraded and made more sustainable. What is a disadvantage in a narrow conception of competition can become an advantage in a more dynamic one."

In several parts of Porter's study, pressure and attention play a crucial role in determining the competitive advantage of national industries (selective factor disadvantages, rivalry, demanding buyers). We have analyzed the efficiency implications of pressure with Leibenstein's theory of X-efficiency. This theory provides a sophisticated and well-researched framework for analyzing the influences of different pressures on the systemic competitiveness. Porter also emphasizes the importance of attention as a focusing device which directs the work and innovative effort towards the most pressing needs. He often discusses pressures and attention as working together in stimulating and directing the innovation and upgrading process. In Porter's analysis, pressures give the motivation and direction for the "discovery" processes that we discussed in an earlier section (3.3) of this paper. The pressures are important because they naturally limit and prioritize the decision alternatives of managers who suffer from bounded rationality in the face of an inherently uncertain innovation process.

The strategic frontier framework illustrated how important it is to know the right direction when changing the firm's position in the market place. If the system-specific pressures help to direct the managers' attention to problems that anticipate crucial industry trends, the firm may be able to create a sustainable competitive advantage before the competitors recognize

the need for change. However, Porter has probably over-emphasized what Cyert and March (1963) have coined as "problemistic search" where the activities are problem-stimulated and there is very little proactive planning of future activities. In other words, his approach assumes that firms cannot innovate in ways that do not relate to some of their pressing domestic needs. International market research and competitor intelligence are totally redundant activities in Porter's approach, as are all research and development activities which attempt to capture new opportunities only for their great inherent potential (independent of any particular pressure). Hence, a more balanced approach to the motivations of innovatory processes is called for. We will return to the effects of pressure and attention in the following paragraphs.

Relating to his discussion of factors, Porter acknowledges that it is not only the factors available, but also the efficiency with which they are organized that determines the competitive advantage (1990: 76):

> " Competitive advantage from factors depends on *how efficiently and effectively they are deployed.* This reflects the choices made by the nation's firms about how to mobilize factors as well as the technology (including procedures and routines) used to do so..Not only how but *where* factors are deployed in an economy is crucial, because technological expertice and capable human resources can often be utilized in a variety of industries..Other determinants in the "diamond" will be necessary to explain where factor advantage translates into international success, because these shape the way factors are deployed."

Here, Porter not only emphasizes the importance of X- and allocative efficiencies for achieving international competitiveness, but also suggest that the other parts of diamond

include factors that influence the organizational efficiency with which the resources are used in the system. We will discuss the organizational issues in the following.

8.2 Demand conditions

Porter emphasizes the positive consequences of pressures for international competitiveness also in his discussion of home demand conditions. He argues that demanding domestic buyers challenge the firms to increase their innovative efforts and give direction to these efforts (1990: 86):

> "Nations gain competitive advantage in industries or industry segments where the home demand gives local firms a clearer or earlier picture of buyer needs than foreign rivals can have. Nations also gain advantage if home buyers pressure local firms to innovate faster and achieve more sophisticated competitive advantages compared to foreign rivals".

Porter argues that domestic demand conditions are crucial to the success of innovation processes because firms are more sensitive and better understand the local needs than those of the more distant foreign customers. He notes that firms are likely to gain competitive advantage in industries or segments which represent a large or highly visible share of home demand but account for a less significant share in other nations. In order to improve the firms' competitiveness, these segments need to have sophisticated and demanding buyers who pressure local firms to meet high standards in terms of product quality, features, and service (Porter 1990: 86-96). The stringent demands originate from the buyers' own pressures generated by challenging local circumstances (climate, geography, selective factor disadvantages, formal and informal institutional constraints, competition, early saturation of domestic markets, national passions, ect.). Moreover, the home demand

patterns benefit national competitive advantage only if they anticipate the needs in other countries. If the needs are idiosyncratic to the nation, they will undermine the firms' competitive advantage in foreign markets (Porter 1990: 91).

Porter's approach to innovatory focus and motivations is very ethnocentric and problem-driven. As Dunning has argued (1992b), many MNEs are so international that domestic demand plays only a minor role in their innovation processes. The relevant demand for these MNEs is in the foreign markets where they attempt to "localize" their operations in order to better understand the "particular circumstances of place and time" (Hayek 1945: 523). They also use market research and competitor intelligence to supplement their own foreign experiences (Kotler et al. 1985). These activities are not motivated by domestic problems rather than foreign opportunities. As Porter himself acknowledges, his emphasis on domestic demand conditions is most relevant when "a firm is first getting established and initially creating a competitive advantage" (Porter 1990: 785). For an established international firm, the foreign demand conditions are likely to be as, or even more, important than the domestic ones.

8.3 **Related and supporting industries**

Porter's analysis of related and supporting industries focuses on two benefits they provide for national firms. These benefits are (a) the efficient, early, and sometimes preferential access to superior and cost-effective resources, particularly information and new technologies; and (b) the advantages of coordination between firms and their supplier and related industries. Porter particularly emphasizes the coordination advantages of having the essential activities and senior management of suppliers and related firms nearby. He argues the proximity of managerial and technical personnel, along with cultural similarity,

facilitates free and open information flow, fosters close working relationships, encourages sharing of activities, and reduces transaction costs (Porter 1990: 103).

Both of the above advantages can be found in our framework: superior supplier inputs are an important category of resources for firms; and the benefits of coordination with suppliers, related firms, and other custodians of resources are in the core of the coordinative efficiency. Porter's emphasis on proximity and cultural similarity in facilitating knowledge sharing and innovations is important because innovations, by definition, are created in an uncertain environment where tacit knowledge and face-to-face communication, or "deep interchange" as Porter put it (p.104), are important (Daft & Lengel 1984). Our analysis of the importance of trust for coordinative efficiency supports Porter's observations. The proximity and cultural similarity help building the trust needed for close coordination and free information exchange.

8.4 **Firm strategy, structure, and rivalry**

Porter's discussion of firm strategy, structure, and rivalry can be analyzed in two parts. The first deals with the institutional framework that shapes the firms' goals, strategies, structures, and other organizational determinants. The other analyzes the positive effects of rivalry on work-effort and the innovation process. We will begin with the former.

Porter (1990) notes that goals, strategies, and ways of organizing firms vary widely among nations. He argues that nations will tend to succeed in industries where the management practices and modes of organization favored by the national environment are well suited to the industries' sources of competitive advantage (Porter 1990: 108):

> "Important national differences in management practices and approaches occur in such areas as the training, background, and orientation of leaders, group versus hierarchial style, the strength of individual initiative, the tools for decision making, the nature of relationships with customers, the ability to coordinate across functions, the attitude toward international activities, and the relationship between labor and management. These differences in managerial approaches and organizational skills create advantages and disadvantages in competing in different types of industries."

This suggests that Porter is groping for an institutional explanation for the differing behavior of individuals and firms in different countries. The following citation links his discussion to the institutional analysis presented in this paper (Porter 1990: 109):

> "Many aspects of a nation, too numerous to generalize, influence the ways in which firms are organized and managed. Some of the most important aspects are attitudes toward authority, norms of interpersonal interaction, attitudes of workers toward management and vice versa, social norms of individualistic and group behavior, and professional standards. These in turn grow out of educational system, social and religious history, family structures, and many other often intangible but unique national conditions."

Porter (1990) emphasizes the fact that firms' and individuals' goals are shaped by the national (institutional) environment. The country-specific differences in institutional environments are reflected in ownership structures, motivations of stock and debt holders, nature of corporate governance, and incentive mechanisms and motivations of senior managers. Porter (1990: 112) concludes his review of institutional differences between countries by arguing that "nations will succeed in industries where the goals of owners and

managers match the needs of the industry. A given institutional structure can benefit competitive advantage in some industries and impede it in others".

The competitiveness of firms is also shaped by the the motivations of individual workers and managers. Porter (1990: 113) highlights the determinants of individual skill development and work-effort:

> "One important determinant of individual behavior and effort is the reward systems under which employees operate. An aspect of this is social values which influence attitudes toward work and the extent to which individuals are motivated by financial gain, which vary a great deal across nations. Also significant is the nation's tax structure. In Sweden, marginal tax rates are extremely high. People do not work primarily to enhance income but to contribute to the company and enhance their status..Also important are pay and promotional practices. Bonus compensation based on individual performance and rapid promotion of the most outstanding employees, both typical in America, reinforce competitive advantage in some types of industries but detract from it in others, especially those requiring long accumulation of skills and complex coordination."

The other institutionally-embedded determinants of organizational efficiency that Porter discusses are the attitudes toward wealth, relationships between managers and employees, group-orientation vs. individualism, managers' professional training and areas of interest, geographical living and travel preferences, attitudes toward risk, and nationally prestigious industries and occupations. The final category deserves further elaboration because it illustrates the ways in which institutional mechanisms influence the higher-level (in Maslow's terms) work incentives and the allocation of human resources (Porter 1990: 114):

> "The quality of human resources attracted to particular industries and the motivation of individuals and even shareholders are affected by prestige or national priority. Unusual effort is often the result of such prestige or a sense of broader mission. Where an industry becomes a notable occupation or takes on national importance, competitive advantage often results..When an industry takes on the status of a national priority and/or prestigious place to work, talented people flow into it and demonstrate unusual commitment and effort...Industries become celebrated..for reasons that can be deeply rooted in the history, geographic location, social structure, and many other things."

The above citations show that Porter puts a lot of emphasis on how the institutional incentives and constraints of different countries shape their national competitiveness. Unfortunately, he does not take advantage of any institutional theory which could have synthesized his arguments. The same criticism applies to his treatment of rivalry where he emphasizes the pressures of active domestic rivalty without any reference to the theory of X-efficiency, or any other theory of motivation (Porter 1990: 118-119):

> "Domestic rivalry, like any rivalry, creates pressures on firms to improve and innovate. Local firms push each other to lower costs, improve quality and service, and create new products and processes..Domestic rivalry not only creates pressures to innovate but to innovate in ways that *upgrade* the competitive advantages of a nation's firms. The presence of domestic rivals nullifies the types of advantage that come simply from being in the nation, such as factor costs, access to or preference in the home market, a local supplier base, [etc.]..Toughened by domestic rivalty, the stronger domestic firms are equipped to succeed abroad. It is rare that a company can meet tough foreign rivals when it has faced no significant competition at home."

Porter's emphasis on rivalry suggests that it is probably the single most important determinant of X-efficiency in wealthy industrialized nations. Rivalry can substitute for the attenuated monetary incentives in wealthy societies by stimulating the natural competitive characteristics of individuals and reducing the financial slack of firms. Porter (1990: 119) has argued that the rivalry among local competitors often becomes emotional and even personal: "Active feuds between domestic rivals are common..[when firms]..fight not only for market share but for people, technical breakthroughs, and, more generally, 'bragging rights'." Rivalry also reduces the monopolistic rents and slack resources of firms which improves the work incentives of employees and managers. However, as noted earlier, excessive domestic competition may also prove unproductive if the margins necessary for innovatory investments are competed away (Lawrence 1987; Milberg & Gray 1992)

8.5 **Diamond in perspective**

We are now in the position to link the factors in Porter's diamond back to our framework. It is clear that the two frameworks include many common factors. The available resources and government policies are emphasized by both frameworks. Porter discusses resources in two contexts; mainly with factor conditions but also with supporting and related industries. The institutional mechanisms are also represented in both frameworks, although Porter does not analyze them with any explicit institutional theory.

As we have seen, the rest of Porter's diamond is also consistent with our framework but the linkages are not as simple as those with resources, government policies, and institutions. The remaining linkages work through the concepts of pressure and attention. As we noted earlier, Porter uses these concepts in several parts of the diamond to explain why firms from some nations better are motivated to innovate and upgrade than firms from

other nations. Selective factor disadvantages, demanding buyers, and domestic rivalry generate pressures that motivate firms to innovate in certain areas, and not in others. In terms of our framework, these pressures relate most directly to the motivational underpinnings of X-efficiency and dynamic efficiency. However, with the additional assumptions of limited structural rigidities and bounded rationality, they may also partly explain the allocative and coordinative efficiencies, respectively. In other words, if structural rigidities are low, the industries strengthened by active rivalry can better attract resources from less competitive sectors. Also, in the face of bounded rationality, pressures may give the necessary direction for the system's participants which helps them to better coordinate their interdependent activities. Finally, as we have discussed above, Porter has emphasized the information processing and coordination advantages of industry clusters. These advantages improve the coordinative efficiency in our framework.

A fundamental difference between Porter's diamond and our framework is the role of international business activities. We argue that our framework is more appropriate for firms and nations which actively participate in international division of labor (see also, Dunning 1992b). Such firms and nations are ill-advised to analyze their international competitiveness with a framework that disregards their vital international connections. Moreover, due to his data-driven research approach and aversion to established theories, Porter analyzes the determinants of organizational efficiency somewhat haphazardly. Most importantly, he does not differentiate between the different organizational efficiencies. Had he done so, his framework would probably have gotten a different form. At least, the three pressures identified above would most likely have been analyzed together. Despite this criticism, Porter's empirical findings strongly support our deductively derived framework.

9. CONCLUSION

We began the paper with a metaphor of "blind" researchers studying the different parts of a competitiveness "elephant". This paper has made an attempt to open the blinders of competitiveness research by providing a more comprehensive framework than any currently available. Our framework builds on the established theories in economics and strategy to incorporate the multiple levels of analysis and the different determinants of competitiveness identified in the earlier research. Our holistic approach is aimed at reducing the confusion of researchers and policy makers in the face of the numerous and fragmented approaches that currently dominate international competitiveness research. Although we cannot hope to provide the rigor of some of the partial theories, we believe that systemic competitiveness is too complex a phenomenon to be studied with the narrow approaches. Complex social systems pose insurmountable problems for scholars used to precise mathematical models. The numerous variables involved and their multi-directional causal relationships make rigorous modelling an exercise in futility (see, Porter 1991). We believe that our framework can synthesize the earlier fragmented approaches into a more systemic explanation of international competitiveness. Only a systemic approach can hope to increase our knowledge about the complex and multi-dimensional "elephant" of international competitiveness.

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