

Charles D. Weller, Esq.

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**HMG REVIEW --COMMENT, Project No. P092900**

These comments are respectfully submitted both as to the Horizontal Merger Guidelines ("HMG") generally, and also to questions 1-10., 12-15. They show that as a litigation matter the current HMG must be replaced because they are dependent on the *PNB* presumption, which will be overruled under the Supreme Court's *GTE Sylvania* and later presumption cases, and that new merger guidelines (and antitrust analysis generally) should be based on productivity and the Supreme Court's *Cracking Oil* opinion and recent cases.

A productivity based antitrust analysis and productivity based economic theory developed by Harvard Business School Prof. Michael Porter is discussed, and attached:

1. MICHAEL PORTER, *Competition and Antitrust: A Productivity-Based Approach*, Chap 6, in MICHAEL PORTER, PETER STAUDHAMMER & CHARLES WELLER, *UNIQUE VALUE* (2005)(hereafter *UNIQUE VALUE*).

2. MICHAEL PORTER *et al.*, *Moving To A New Global Competitiveness Index*, Chap. 1.2, WORLD ECONOMIC FORUM, *THE GLOBAL COMPETITIVENESS REPORT 2008-2009* (2008).

As background, I have been an antitrust lawyer for 37 years, and recently was antitrust trial counsel in a criminal case in Cleveland where two individuals and their company were acquitted in a three week jury trial on a total of 12 charges in June 2009 (see Appendix).

**I. AS A LITIGATION MATTER, THE SUPREME COURT'S GTE SYLVANIA AND LATER OPINIONS MAKE CLEAR THE PNB PRESUMPTION WILL BE OVERRULED AND THUS THE HMG MUST BE REPLACED**

The *Philadelphia National Bank* ("PNB") merger presumption underlies the current merger guidelines. Thus the HMG rise, or falls in litigation with the *PNB* presumption. Starting with *GTE Sylvania* in 1977, the Supreme Court has issued 12 decisions eliminating or rejecting the use of antitrust presumptions:

1. Continental T.V., Inc. v. GTE Sylvania, Inc., 433 U.S. 36 (1977)
2. U. S. Steel Corp. v. Fortner, 429 U.S. 610 (1977)
3. Broadcast Music, Inc. v. CBS, 441 U.S. 1 (1979)
4. Jefferson Parish Hospital Dist. No. 2 v. Hyde, 466 U.S. 2 (1984)
5. NCAA v. University of Oklahoma, 468 U.S. 85 (1984)
6. Business Electronics Corp. v. Sharp Electronics Corp., 485 U.S. 717 (1988)

7. State Oil v. Khan, 523 U.S. 3 (1997)
8. NYNEX Corp. v. Discon, Inc., 525 U.S. 128 (1998)
9. California Dental Assn. v. FTC, 526 U.S. 756 (1999)
10. Texaco Inc. v. Dagher, 547 U.S. 1 (2006)
11. Illinois Tool Works, Inc. v. Independent Ink, Inc., 547 U.S. 28 (2006)
12. Leegin Creative Leather Products, Inc. v. PSKS, Inc., 127 S. Ct. 2705 (2007)

The Court has made clear that it will reconsider "its decisions construing the Sherman Act when the theoretical underpinnings of those decisions are called into serious question,"<sup>1</sup> as *Leegin* and *Illinois Tool* recently demonstrate. All 12 decisions implement the basic policy the Court announced in *GTE Sylvania*: any "departure from the Rule of Reason standard must be based upon demonstrable economic effect," rather than upon "formalistic line drawing."<sup>2</sup> This *GTE Sylvania* language incisively summarizes the Court's three decades of decisions that have fundamentally changed antitrust presumption law, as well as antitrust analysis itself, from verbal formalisms that have dominated antitrust since Justice Douglas' *Socony-Vacuum Oil*<sup>3</sup> price fixing opinion in 1940 to now requiring evidence of competitive effects on markets.

Applied to the *PNB* presumption, its factual and theoretical underpinnings are as weak as those in the cases from *GTE Sylvania* to *Leegin* that have overruled and eliminated various antitrust presumptions. For example:

- Judge Posner explained that in the 1960's he "accepted the oligopoly theory of economists Joe Bain and Edward Chamberlin" in *Von's Grocery*,<sup>4</sup> but subsequent "empirical studies" have undermined concentration theory.<sup>5</sup>
- Judges Easterbrook and Posner have written that "new studies call into question the position which underlies much of antitrust law that increasing concentration creates a significant risk of cartels (or cartel-like oligopolistic interdependence)."<sup>6</sup>
- Professors Scherer and Ross in their well-known text similarly report that later analysis of Joe Bain's work at the foundation of the *PNB* presumption

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<sup>1</sup> State Oil Co. v. Khan, 522 U.S. 3, 20 (1997).

<sup>2</sup> Continental T.V., Inc. v. GTE Sylvania, Inc., 433 U.S. 36, 58-59 (1977).

<sup>3</sup> United States v. Socony-Vacuum Oil Co., 310 U.S. 150, 223 n. 59 (1940). Footnote 59 is used in jury instructions and otherwise to define *per se* price-fixing to this day: a "combination formed for the purpose and with the effect of raising, depressing, fixing, pegging, or stabilizing ... price" is "illegal *per se*." See, e.g., ABA, *MODEL JURY INSTRUCTIONS IN CIVIL ANTITRUST CASES 2005 EDITION* (2005); at B-19 to B-21; ABA, *SAMPLE JURY INSTRUCTIONS IN CIVIL CASES* B-16 (1999).

<sup>4</sup> United States v. Von's Grocery Co., 384 U.S. 270 (1966).

<sup>5</sup> From Von's to Schwinn to the Chicago School: Interview with Judge Richard Posner, Seventh Circuit Court of Appeals, *ANTITRUST*, Spring, 1992, at 4, 5.

<sup>6</sup> RICHARD POSNER & FRANK EASTERBROOK, *ANTITRUST CASES, ECONOMIC NOTES AND OTHER MATERIALS* 41-43 (2d ed. Supp. 1984).

“demonstrated that most, if not all, of the correlation between profitability and concentration found by Bain and his descendants ... was almost surely spurious.”<sup>7</sup>

Thus as a litigation matter applying the Supreme Court's opinions eliminating antitrust presumptions from *GTE Sylvania* to *Leegin*, as well as the Court's four *Daubert* opinions on trial experts, it seems clear that the *PNB* presumption will be overruled and will not survive.

Accordingly, as litigation matter the current HMG must be replaced, or enforcement will suffer the same fate as *Oracle* and other similar cases<sup>8</sup> -- the government will lose in litigation.

In addition, the HMG also must be replaced because they are a major policy failure, demonstrated next.

## **II. THE HORIZONTAL MERGER GUIDELINES AND THE STATIC ECONOMIC THEORY UNDERLYING THEM ARE MAJOR PUBLIC POLICY FAILURES**

The HMG and the static microeconomic theory underlying them since 1982 are major policy and litigation failures in at least four critical respects.

1. Hospital Mergers and Health Care. In the 1980s-1990s, federal and state antitrust agencies lost virtually all of the hospital merger cases they litigated.<sup>9</sup> The result of this failure of merger enforcement is that many hospitals have merged all across the country. Predictably, the hospitals have raised hospital prices substantially, year after year. Recently, hospitals have begun to extend the same bargaining power strategy to physicians by employing physicians.<sup>10</sup>

The impact of this failure of antitrust merger enforcement is stunning. Peter Orszag, the Director of the Congressional Budget Office (CBO), stated recently that “our

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<sup>7</sup> FREDERICK SCHERER & DAVID ROSS, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* 411 (3d ed. 1990).

<sup>8</sup> See, e.g., *United States v. Oracle Corp.*, 331 F. Supp. 2d 1098 (N.D. Cal. 2004); *United States v. SunGard Data Sys.*, 172 F. Supp. (D.D.C. 2001). For more detail, see Charles Weller, *Winning Antitrust Litigation*, Chap. 7, *Unique Value* at 210-18.

<sup>9</sup> The cases the government lost include *United States v. Carilion Health System*, 707 F. Supp. 840 (W.D. Va.), *aff'd per curiam*, 892 F. 2d 1042 (4th Cir. 1989); *In re Adventist Health Sys.*, 117 F.T.C. 224 (1994); *FTC v. Freeman Hosp.*, 911 F. Supp. 1213 (W.D. Mo.), *aff'd*, 69 F.3d 260 (8th Cir. 1995); *FTC v. Butterworth Health Corp.*, 946 F. Supp. 1285, 1300-1301 (W.D. Mich. 1996), *aff'd*, 1997-2 Trade Cas. (CCH) ¶71,863, 71,867-68 (6th Cir. 1997); *United States v. Mercy Health Services*, 902 F. Supp. 968 (N.D. Iowa 1995), *vacated as moot*, 107 F.3d 632 (8th Cir. 1997); *United States v. Long Island Jewish Med. Ctr.*, 983 F. Supp. 121 (E.D.N.Y. 1997); *FTC v. Tenet Healthcare Corp.*, 17 F. Supp. 2d 937 (E.D. Mo. 1998), *rev'd* 186 F.3d 1045 (8th Cir. 1999); *California v. Sutter Health Sys.*, 84 F. Supp. 2d 1057 (N.D. Cal.), *aff'd mem.*, 2000-1 Trade Cas. (CCH) ¶ 87,665 (9th Cir. 2000), *revised*, 130 F. Supp. 2d 1109 (N.D. Cal. 2001).

<sup>10</sup> See, e.g., Carreyrou, *Nonprofit Hospitals Flex Pricing Power*, *WALL ST. J.* A1 (Aug. 28, 2008).

country's financial health will in fact be determined primarily by the growth rate of per capita health care costs."<sup>11</sup>

2. Hostile Takeover Mergers. "There can be absolutely no doubt" that hostile mergers "are exceedingly bad for the economy" and have been "a major factor in the erosion of American competitive and technological leadership," Peter Drucker advised, as hostile merger raiders "have no aim except to enrich the raider:"

To achieve this end, he offers the stockholders more money for their shares than they would get on the market, which is to say, he bribes them. And to be able to pay the bribe he loads a heavy debt on the company that is being taken over, which by itself severely impairs the company's potential for economic performance.<sup>12</sup>

Hostile takeover mergers "force management into operating short term" so that "more and more of our businesses are forced to concentrate on results in the next three months."<sup>13</sup> The HMG and their economic theories did nothing because they did not include critical facts about hostile mergers within their scope.

3. Many Other Bad Mergers. Moreover, HMG merger and economic, theory have failed to see, let alone prevent, many other mergers that have done great damage to the U.S. economy, again because the theories did not consider key economic facts within their scope.<sup>14</sup>

4. Current Economic Crisis: Most Economic Theories Missed Warnings. Current micro and macro economic theories did not adequately see the factual warning signals seen by others for years leading to the current financial and economic crisis, such as:

- ♦ Warren Buffet warned that derivatives are "financial weapons of mass destruction" in 2003.<sup>15</sup>

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<sup>11</sup> Peter Orszag, *The Challenge of Rising Health Care Costs – A View from the Congressional Budget Office*, *NEW ENGLAND J. MEDICINE* 1793 (Nov. 1, 2007); *The Biggest Budget Buster*, *WALL ST. J.* (Dec. 12, 2007).

<sup>12</sup> PETER DRUCKER, *THE FRONTIERS OF MANAGEMENT* 231, 243-44 (1986), & Leigh Trevor, *Hostile Takeovers--The Killing Field of Corporate America*, quoted in Charles Weller, *Antitrust Economics as Science After Daubert*, 42 *ANTITRUST BULL.* 871 (1998) & Leigh Trevor, *Hostile Takeovers*, in DAVID MCKEE ed., *HOSTILE TAKEOVERS* 16 (1989).

<sup>13</sup> DRUCKER, id. at 243.

<sup>14</sup> See, e.g., Frederick Scherer, *Some Principles for Post-Chicago Antitrust Analysis*, 52 *CWRU LAW REV.* 5, 11-12 (2002); Frank & Sidel, *Firms That Lived by the Deal Are Now Sinking by the Dozens*, *WALL ST. J.* A1 (June 6, 2002); Michael Porter, *From Competitive Advantage to Corporate Strategy*, *HARVARD BUS. REV.* 43 (1987)(over 50% of the mergers studied dating back to World War II were liquidated or divested); Gretchen Morgenson, *What Are Mergers Good For?*, *N.Y. TIMES SUNDAY MAGAZINE* 56 (June 5, 2005).

<sup>15</sup> Goodman, *Taking Hard New Look at a Greenspan Legacy*, *N.Y. TIMES* A1 (Oct. 9, 2008).

- ◆ John Bogle warned that the "traditional focus on the wisdom of long-term investing" has been replaced by "the folly of short term speculation," that the financial services sector has increased its share of the total profits of all U.S. companies from 6% in 1982 to over 30% in 2003, that mutual fund managers will be paid "more than three-quarters of the future cumulative financial wealth produced by stocks over an investment lifetime," with investors receiving less than 25%, and of "the grotesquely excessive compensation paid to chief executives."<sup>16</sup>
- ◆ accounting numbers that use "accrued earnings" and "mark to market" financial metrics that substitute quarterly mathematical computation and manipulation for long term cash flow and value. (See n. 36-37 below and accompanying text).

5. Efficiency Theory Limited to "Miniscule" Increases in Wealth. Judge Easterbrook has stated that an "antitrust policy that reduced prices by 5 percent today at the expense of reducing by 1 percent the annual rate at which innovation lowers the cost of production would be a calamity."<sup>17</sup>

Yet, as Brookings economist Dr. Charles Schultz makes clear, antitrust policy since the 1980s has been based on an economic theory like Judge Easterbrook referred to. Dr. Schultze explains that efficiency economics, the current basis of antitrust policy, is a "formal economic theory of the market" but it is limited to a market's "static-efficiency characteristics," that is, "its ability to get the most out of existing resources and technology," and, as a result, efficiency theory can only lead to "miniscule" increases in the standard of living:

Had the triumph of the market meant only a more efficient use of the technologies and resources then available, the gains in living standards would have been minuscule by comparison.<sup>18</sup>

Similarly, Peter Drucker observes that "we are usually told, especially by economists" to "focus on costs" and "efficiency," but "no amount of efficiency would have enabled the manufacturer of buggy whips to survive."<sup>19</sup>

Indeed, Drucker cites the "antitrust laws" as "probably ... responsible more than any single factor for turning American industry away from building on a technological, science-oriented base" toward "financially based" companies, where "investment in long-range research and in the application of scientific knowledge to economic production becomes difficult," and for a fundamental change "from the

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<sup>16</sup> JOHN BOGLE, *THE BATTLE FOR THE SOUL OF CAPITALISM* xx-xxii, 226 (2005); *ENOUGH* (2008).

<sup>17</sup> FRANK EASTERBROOK, *Ignorance and Antitrust*, in *ANTITRUST, INNOVATION, AND COMPETITIVENESS* 119, 122-23 (T. JORDE & D. TEECE, EDS. 1992).

<sup>18</sup> SCHULTZE, *THE PUBLIC USE OF PRIVATE INTEREST* 65 (1977)(emphasis added).

<sup>19</sup> PETER DRUCKER, *MANAGEMENT* 45 (1973).

scientific and technological toward the financial and from the long term toward the short term."<sup>20</sup>

Since the 1980s, the HMG and antitrust economic policy generally has been based on static efficiency theory. Obviously “miniscule” increases in the American standard of living are obviously inadequate, and, indeed, would be a “calamity.” Thus the HMG, antitrust, and the country urgently needs, first, an economic theory that goes beyond static efficiency theory to avoid the “calamity” of “minuscule” increases in our standard of living, and second, a new legal basis for it.

Fortunately, there are both, covered next.

### **III. FOUNDATIONS FOR NEW HORIZONTAL MERGER GUIDELINES**

#### **1. There is Now A Major Advance In Economic Theory Beyond Static Microeconomics and Any Other Well Known Economic Theory**

Fortunately, and serendipitously, there is a new economic theory, obviously little known that has been developed and empirically tested over three decades by Ph. D economist and Harvard Business School Prof. Michael Porter.<sup>21</sup>

Thomas Piraino, Jr., General Counsel of Parker-Hannifin Corp. in Cleveland, wrote: "Michael Porter's economic analysis can revolutionize the way we think about markets and competition."<sup>22</sup> Under this new “Dynamic Productivity Economic Theory” (my term):

- U.S. #1 in The World -- The US is second to none in terms of innovation and an innovative environment, and commercialization.
- Unlimited Wealth – The potential for wealth is limitless because wealth is based on ideas and insights, not fixed because of scarce resources.
- High Wages -- It is not abundant, low-paying labor that attracts innovative companies, but highly talented, specialized, and often expensive labor.
- "Win-Win" Global Economics – Global competition is not over a fixed pie you fight over because the pie can expand.

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<sup>20</sup> PETER DRUCKER, *Science and Industry: Challenges of Antagonistic Interdependence*, SCIENCE 806, 807 (May 25, 1979).

<sup>21</sup> Two 2008 articles detail Prof. Porter's new economic theory and its three analytical tools: Michael Porter, Mercedes Delgado, Christian Ketels & Scott Stern, *Moving To A New Global Competitiveness Index*, Chap. 1.2, WORLD ECONOMIC FORUM, THE GLOBAL COMPETITIVENESS REPORT 2008-2009 (2008), and Michael Porter, *The Five Competitive Forces That Shape Strategy*, HARVARD BUS. REV. 79 (Jan. 2008)(these two articles are cited below as *Porter 2008 GCR* and *Five Forces HBR 2008*, respectively). Prof. Porter's website is also a rich source of detail, as is YouTube. See <http://www.isc.hbs.edu/>

Finally, there are five chapters by Prof. Porter on his new theory, including his attached chapter 6 on a productivity-based antitrust law from *Unique Value*.

<sup>22</sup> *Unique Value*, at iv

- Celebration, Not A Clash, of Civilizations -- Cultural differences can provide the special advantages so important to improving the prosperity of people and nations in the global economy.
- Customer-Value Pricing provides a major breakthrough from the Cost-Plus Pricing that dominates thinking today, since the latter implies the future prosperity of Americans is doomed in a low wage world.
- There is a new way of *Eradicating Poverty Through Profits*, and *Enabling Dignity and Choice Through Markets*, the subtitles of C.K. Prahalad's *The Fortune at the Bottom of the Pyramid*, consistent with Prof. Porter's advance in economic theory:

Four billion poor can be the engine of the next round of global trade and prosperity [if] we stop thinking of the poor as victims or as a burden and start recognizing them as resilient and creative entrepreneurs and value-conscious consumers.<sup>23</sup>

**a. Basic tenets of Prof. Porter's new theory**

- ◆ "The dependent variable used ... is the level of GDP per capita, adjusted for purchasing power parity (PPP). \*\*\* GDP [Gross Domestic Product] per capita adjusted for purchasing power [is] the best overall measure of prosperity.
- ◆ "[U]sing a clearly defined dependent variable is the only way to allow a rigorous development of the model, in contrast to arbitrary specification of indicators, data groupings, and weights that characterize most other index efforts.
- "Prosperity is determined by the productivity of an economy ....
- "High wages, if they are justified by high productivity, mean that a country represents an excellent value as a business location.
- "The world economy is not a zero-sum game. Many nations can improve their prosperity if they can improve productivity."<sup>24</sup>

**b. Three Analytical Tools**

Three tools comprise the new theory's analytical pillars. (See Fig. 1). The first tool focuses on each company and its options to generate cash flow. The other two tools support, or undermine, the first.

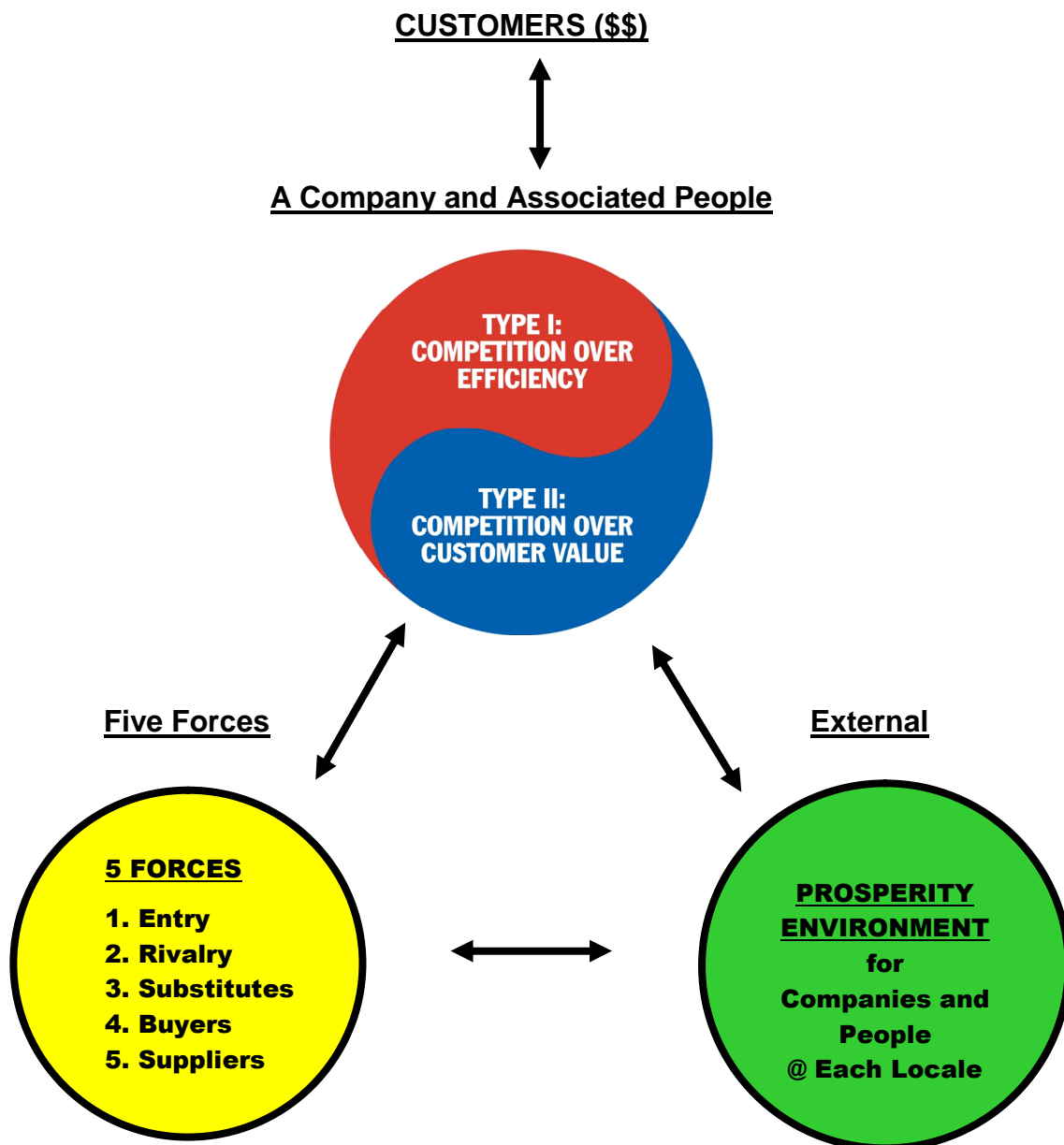
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<sup>23</sup> C.K. PRAHALAD, *THE FORTUNE AT THE BOTTOM OF THE PYRAMID* 1 (2004).

<sup>24</sup> Porter 2008 GCR at 44-45, 58.

Figure 1  
THREE TOOLS  
FOR ANALYZING COMPETITION  
IN THE GLOBAL KNOWLEDGE AND  
ENTREPRENEURIAL ECONOMY

*Based on Michael Porter's  
New Global Business Competitiveness Index and Five Forces*



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Tool #1:      Company Sophistication as to “operations and strategy.”

How does an employer, its employees and associates choose to make good money in the global economy? This tool can be adapted to actions that an employer, employees and associates can take at the company level to make more money. For example, rather than focusing on cost cutting to make money, focusing on delivering customer value that avoids commoditization and supports higher prices, that is, pricing on the basis of customer value, not cost-plus.<sup>25</sup>

Tool #2:      Prosperity Environment, at each location companies and the people earning their livings and benefits and paying taxes are located.

This tool focuses on actions that can be taken at each geographic level to improve the environment for employers, employees and associates, and thus their communities to prosper in the global economy, what Porter terms the “Business Environment Diamond.” Relevant factors include government regulation, taxes on individuals as well as employers, workforce availability, the education system, and the legal system, at each level they can affect -- local, state and national.

Tool #3:      “Five Forces” that impact the company's products and services in the markets it competes in, broadly construed as explained further below.

There are Five Forces that determine the intensity of competition and profitability, with the strongest force or forces governing how much money and profits an employer, its employees and associates and the industries they are in can make and retain. Porter's Five Forces are well known in the business community and have been used since 1980 worldwide. His five competitive forces are (1) entry, (2) threat of substitution, (3) bargaining power of buyers, (4) bargaining power of suppliers, and (5) rivalry among current competitors. They reflect the reality that competition in an industry goes well beyond the established players.

For example, even a company with a very strong market position in an industry where potential entrants are no threat will earn low returns if it faces a superior, lower-cost substitute. Even with no substitutes and blocked entry, intense rivalry among existing competitors will limit potential returns....Different forces take on prominence, of course, in shaping competition in each industry. In the ocean-going tanker industry the key force is probably the buyers (the major oil companies), whereas in tires it is powerful original equipment (OEM) buyers coupled with tough competitors. In the steel industry the key forces are foreign competitors and substitute materials.<sup>26</sup>

Fortunately for antitrust and market economic policy, and the standard of living in the U.S. as well as worldwide, these three tools provide a new theory of economics and government that has been built in the cauldron of empirical reality focused on incomes per person. It is a new theory that goes beyond the limitation to “miniscule” increases in the standard of living of efficiency theory in the words of the Brookings Institution economist Dr. Schultze.

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<sup>25</sup> Peter Drucker called this idea "cost-led pricing" and "price-led costing" in 1995. PETER DRUCKER, *CLASSIC DRUCKER* 105 (2006)

<sup>26</sup> MICHAEL PORTER, *COMPETITIVE STRATEGY* 6 (1980).

Further, the theory has been tested empirically for years. Specifically, when applied to explain the difference in income per capita in more than 100 countries, the theory explains more than 80% of the differences between countries and points to actions to take to increase prosperity.<sup>27</sup>

Finally, the three tools are understandable and usable by a variety of policy makers, including company executives and the people who earn their livings at the companies, retirees depending on companies to generate cash to pay their benefits or to pay the taxes so that governments can provide services and to pay, for example, unfunded retiree benefits, community leaders, politicians, government officials, the media and the ultimate policy makers in a democracy, ordinary citizens of all ages.

### **c. Illustrative Applications of the Three Tools**

#### **TOOL #1. COMPANY LEVEL**

##### **1. Pricing by Customer-Value, Not Cost-Plus**

One action by itself is enough to revolutionize conventional thinking about prosperity and making money in the global economy in the U.S. and other wealthy countries, as well as in China, India and other countries. Conventional thinking assumes wealth is fixed and that cutting costs, wages and benefits is the only way to make money. Obviously if it is assumed that prices are determined only by costs, the future for Americans, America and many other developed countries is bleak in a global economy where both people and material can be sourced at low cost.

Cost-plus pricing is still widely used by many companies. It also is widely assumed by the public, the media, government officials and many others to be a law of nature.

Fortunately, the assumption that prices are always determined by costs is false, especially in a knowledge and entrepreneurial economy. Two Cleveland manufacturing examples are illustrative, Parker-Hannifin Corp. and Nordson Corp.

Parker-Hannifin is a \$10+ billion company that manufactures over 800,000 products. Parker applies knowledge to manufactured products that its customers value. For nearly a century Parker had priced its products on a cost-plus basis.

In 2001 Parker-Hannifin's CEO Don Washkewicz re-examined the cost-plus pricing assumption, threw it out and replaced it with customer-value pricing for all 800,000 products, worldwide. As a result, Parker was able to raise prices, sometimes as much as 60%, for nearly 30% of its 800,000 products. One representative of customer Ingersoll-Rand Co. explained:

He first objected when one of Parker's new hydraulic fan motors [for its Bobcat line] cost much more than he expected. But when Bobcat's purchasing people sat down with Parker's sales team, Bobcat learned that the new motor replaced 11 separate parts in the company's existing machines. Moreover, the new design reduced leakage by eliminating hydraulic connections, was easier to install at

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<sup>27</sup> See Prof. Porter's chapters in the WORLD ECONOMIC FORUM, THE GLOBAL COMPETITIVENESS REPORT for the years 1998-2008; and chapters 3-5 in *Unique Value*.

Bobcat's factories, and opened up space inside the machines -- all of which saves Bobcat money.<sup>28</sup>

Another example of how customer-value pricing works well in manufacturing is Nordson Corp., which makes machines that apply adhesives and paints to auto parts, watches, soft drink and soup cans, etc. In 2007, its sales were over \$1 billion, of which two-thirds were overseas. However, the majority of its employees are in the U.S.

How does Nordson manufacture so much in America and stay competitive globally? CEO Ed Campbell explained the key, the difference between cost-plus pricing v. customer-value pricing:

It's critical that leaders of a manufacturing organization listen very carefully to what is important to your customers and find a way to add value that will increase the likelihood of your customer being successful. It's very difficult for a U.S. manufacturer to be successful in global markets on the basis of being the lowest-cost producer. There needs to be some other means of adding value to your customer's commercial activities, other than simply low costs, whether it be in improving yields, better service, or adding proprietary features to your customer's products through what you offer them.<sup>29</sup>

Cost-plus pricing is used by the majority of companies in the U.S. It is also the theory the media regularly uses, for example, "XYZ Company must cut costs, including wages, to compete with China and India." A shift in thinking and acting by business, the public, government and others from cost-plus pricing that dominates thinking today to customer-value pricing is one of the central elements of Prof. Porter's new economic theory.

At the company level, it means the company and the people who earn their living there can choose how they make money and their pricing strategy, depending on the customers: cost plus pricing? or customer value pricing? Or both.

For all other policy makers, in the community, state or nationally, customer-value pricing can often provide a new path to prosperity, control and hope. Thus, contrary to the many prophets of doom for manufacturing, the global knowledge and entrepreneurial economy offers major opportunities for those who understand and take advantage of it.

## 2. Cooperative Labor-Management Relations for Mutual Prosperity

The U.S. ranks 22d in the world as to "Cooperation in Labor-Employer Relations."<sup>30</sup> This means there is a major opportunity to make labor-employer relations more cooperative and less confrontational to make more money in the new global

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<sup>28</sup> Aeppel, *Seeking Perfect Prices, CEO Tears Up The Rules*, WALL ST. J. A1 (March 27, 2007).

<sup>29</sup> Gerdel, *Nordson Corp. at 50: Picture of Global Health*, CLEVELAND PLAIN DEALER B1 (Oct. 8, 2004).

<sup>30</sup> WORLD ECONOMIC FORUM, GLOBAL COMPETITIVENESS REPORT 2007-08, at 456.

knowledge and entrepreneurial economy. Creating and providing unique customer value is maximized with a cooperative worker-management relationship.

David Cole, chairman of the Center for Automotive Research in Ann Arbor, Michigan, recently reported what could be one of the most important labor-management breakthroughs in half a century. "What we are witnessing is the transformation from a confrontational way of working to one of collaboration, which is absolutely necessary;" Mr. Ron Gettelfinger, President of the UAW, also recently stated: "The kind of challenges we face aren't the kind that can be ridden out. They're structural challenges and they require new and farsighted solutions."<sup>31</sup> Hopefully it is not too late.

The key opportunity is to focus on customer-value pricing and the question of how to make money within a company, community, state and nation, by executives, workers, union leaders, the media, etc. And for labor-management relations to switch from confrontation to cooperation to be able to create unique customer value.

### 3. Unlimited Wealth.

The global knowledge and entrepreneurial economy presents historic opportunities for the U.S., and for people around the world, because knowledge is an increasing source of wealth. Specific examples include the Tenth Birthday of Google in September 2008. Google started on September 7, 1998 with four computers, in two college dorm rooms and \$100,000. This year its revenues will be \$20 billion, and it has a market capitalization of \$150 billion.<sup>32</sup> Similarly, Apple's iPod/iTunes did not exist 5 years ago. Today they generate \$10 billion in revenue and have helped Apple's stock grow from a market capitalization of \$1 billion in 2003 to \$150 billion in 2008.<sup>33</sup> In manufacturing, Parker-Hannifin and Nordson are discussed above.

"The potential for wealth is limitless" because wealth "is based on ideas and insights, not fixed because of scarce resources," Prof. Porter explains, and "it is not abundant, low-paying labor that attracts innovative companies, but highly talented, specialized, and often expensive labor," and further, "we must think of competitiveness not as a fixed pie that you're trying to fight over, but really a pie that expands."<sup>34</sup> He also has elaborated as follows:

When overall demand grows, the industry's quality level rises, intrinsic costs are reduced, or waste is eliminated, the pie expands. The total pool of value available to competitors, suppliers, and buyers grows. The total profit pool expands, for example, when channels become more competitive or when an industry discovers latent buyers for its product that are not currently being served. When soft-drink producers rationalized their independent bottler networks to make them more efficient and effective, both the soft-drink companies and the bottlers benefited. Overall value can also expand when firms work collaboratively with suppliers to

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<sup>31</sup> Merx & Higgins, *UAW's New Role: Shareholder*, CLEVELAND PLAIN DEALER (Nov. 17, 2007) at C1; Spector, McCracken & Stoll, *How Less Pay, More Risk Sells Itself*, WALL ST. J. B1 (Oct 10, 2007).

<sup>32</sup> Liedtke, *Google Turns 10 Years Old*, CLEVELAND PLAIN DEALER (Sept. 7, 2008).

<sup>33</sup> Mark Johnson, Clayton Christensen & Henning Kagermann, *Reinventing Your Business Model*, HARVARD BUS. REV. 51 (Dec. 2008).

<sup>34</sup> See MICHAEL PORTER, Chap. 2, *Unique Value*, at 8, 31, 35.

improve coordination and limit unnecessary costs incurred in the supply chain. This lowers the inherent cost structure of the industry, allowing higher profit, greater demand through lower prices, or both. Or, agreeing on quality standards can bring up industry-wide quality and service levels, and hence prices, benefiting rivals, suppliers, and customers.

Expanding the overall profit pool creates win-win opportunities for multiple industry participants.<sup>35</sup>

## **TOOL #2. PROSPERITY ENVIRONMENT**

1. Accounting: Replace Accrued Earnings and "Mark to Market" with Long Term Cash Flow. As the current economic crisis makes painfully clear, accounting is much too important to be omitted from economic theory. Prof. Alfred Rappaport has extensively developed an alternative to accrued earnings and "mark to market" accounting based on Long Term Cash Flow.<sup>36</sup> He proposes a three part financial statement that separates realized cash flows from forward-looking accruals.

(1) Operating Cash Flows. This part tracks only operating cash flows. It does not replace the traditional cash flow statement because it excludes cash flows from financing activities – new issues of stocks, stock buybacks, new borrowing, repayment of previous borrowing, and interest payments. It excludes noncash charges, such as depreciation, amortization, deferred taxes, and asset and liability revaluations.

(2) Revenue and Expense Accruals. A second part presents revenue and expense accruals, which estimate future cash receipts and payments triggered by current sales and purchase transactions. Management estimates three scenarios – most likely, optimistic, and pessimistic – for accruals of varying levels of uncertainty characterized by long cash-conversion cycles and wide ranges of plausible outcomes.

(3) Management Discussion and Analysis. In a third section, management presents the company's business model, key performance indicators (both financial and nonfinancial), and the critical assumptions supporting each accrual estimate.<sup>37</sup>

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<sup>35</sup> Porter Five Forces HBR 2008, at 92.

<sup>36</sup> Alfred Rappaport has developed this idea in great detail. See, e.g., ALFRED RAPPAPORT, CREATING SHAREHOLDER VALUE (1986); *The Economics of Short-Term Performance Obsession*, 61:3 FINANCIAL ANALYSTS J. (May 2005); *10 Ways to Create Shareholder Value*, HARVARD BUSINESS REV. 66 (Sept. 2006); *Beyond Quarterly Earnings: How to Improve Financial Reporting*, WALL ST. J. (March 8, 2004); *Show Me the Cash Flow*, FORTUNE (Sept. 16, 2002); *How to Avoid the P/E Trap*, WALL ST. J. (March 10, 2003). See also the author's January 17, 2008 comment to the SEC (available on request). On the defects of "Mark to Market," see FedEx CEO Fred Smith's comments in Moore, *Weekend Interview with Fred Smith*, WALL. ST. J. A11 (Oct.25, 2008).

<sup>37</sup> Alfred Rappaport, *10 Ways to Create Shareholder Value*, HARVARD BUSINESS REV. 66, 75 (Sept. 2006).

Prof. Rappaport's proposal consists of two basic ideas that can be understood and used by a wide variety of people, not just accountants, actuaries and Wall Street analysts:

Cash Flow, Not Accruals. Cash flow is something everybody can and does understand since it is basically the method of accounting they live with, day in and day out. They may not call it accounting, but more importantly, they live it.

Long Term Cash Flow. Having separated accruals from cash flow, the financial issue profoundly changes from the largely unfathomable mathematics used by the few today to action metrics usable by many, focused on how a company and the people who earn their livings and benefits with it generate cash flow over the short and long term.

Changing to Prof. Rappaport's Long Term Cash Flow-based accounting would help solve a remarkable number of problems:

- ◆ It changes fundamentally the focus of company finances from quarterly exercises in mathematics too often divorced from business substance, to what matters, the long term cash flow prospects and strategy for the business.
- ◆ It allows most people, including employees, employers, unions, government officials, policy analysts, politicians and ordinary people to understand and act in ways to maintain and to improve their own, their employers and their communities' standard of living.
- ◆ It helps generate actions that lead to the cash needed to pay unfunded public and private retiree benefits under FASB and GASB. States and local governments are in the midst of a stunning surprise caused by a change in their accounting rules. Under GASB 45, states and local governments now must report an accrual estimate for their retiree medical liabilities, similar to FASB 106 for private companies. The numbers are staggering: over \$2 trillion, most of which is unfunded.<sup>38</sup> Where will the cash needed to pay retired teachers, fireman, policeman and others possibly come from, next year, and for decades to come?
- ◆ It eliminates the root cause of the Enron and other accounting scandals that led to the passage of the Sarbanes-Oxley Act, and thus would reduce the need for unnecessary burdens on companies and workers under the Sarbanes-Oxley Act, while, at the same time, increasing investor protection.
- ◆ And in ways most importantly, it involves a major power shift from Wall Street and other accrual mathematical experts to everybody else, as cash and business thinking like Michael Porter's can be understood and used by many, including the new majority in the U.S. (160 million) – what the author terms the Interactive Generation.

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<sup>38</sup> See, e.g., Mincer, *Retiree Health Costs to Hit Government Employers*, WALL ST. J. (Nov. 9, 2006); McMahon, *Accounting, Texas-Style*, WALL ST. J. (May 29, 2007); Walsh, *Auditing Rule is Put at Risk by Texas Bill*, N.Y. TIMES C-1 (May 18, 2007).

Further, Prof. Porter's new economic theory has included accounting for a long time in earlier versions. For example, he warned of the dangers of an accounting system that rewards short-term rather than long term value and results in 1992: "The American system of allocating investment capital is threatening the competitiveness of American firms and the long-term growth of the national economy," and we need to "give management a set of signals that are more aligned with the long-term health of companies instead of the current stock price."<sup>39</sup>

Similarly, in January 2008, he stated:

If both executives and investors looked at competition this way, capital markets would be a far more effective force for company success and economic prosperity. Executives and investors would both be focused on the same fundamentals that drive sustained profitability. The conversation between investors and executives would focus on the structural, not the transient. Imagine the improvement in company performance — and in the economy as a whole — if all the energy expended in "pleasing the Street" were redirected toward the factors that create true economic value.<sup>40</sup>

As to antitrust in particular, his new economic theory led him to identify the following accounting issues as "additional U.S. antitrust issues" in his antitrust chapter in the book I published with him:

- ◆ eliminate "pooling-of-interests accounting obscures the financial consequences of a merger, and allows companies to report post-merger profit improvements that are misleading."
- ◆ impose "stricter rules on merger write-offs and restructuring charges would also limit uneconomic mergers. If the purchase price of a merger can be partly written off, the ongoing reported ROI can be artificially high. Since companies must invest the full purchase price to acquire a company, the full purchase price should appear as an investment on the books. Restructuring charges and write-offs are artificial adjustments that do not make the amount of the investment any different."
- ◆ require "ongoing disclosure of total equity investment before write-offs would produce a better understanding of true return on shareholder investment. A company that generates improving returns by writing off a substantial part of its investment will be recognized for what it is, a company that has not used shareholder capital very well."
- ◆ establish "a comprehensive data set on mergers and their longevity and outcomes would be useful and potentially revealing. In a 1987 paper, I examined the merger history of a sample of companies back to World War II, and calculated the share of mergers that were liquidated or divested. This proportion turned out to be well over 50 percent of all transactions. Data such as this would sensitize managers and investors alike of the risks of these transactions."

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<sup>39</sup> Michael Porter, CAPITAL CHOICES 20 (Council on Competitiveness 1992), Lohr, Fixing Corporate America's Short-Term Mind-Set, N. Y. TIMES (Sept. 2, 1992).

<sup>40</sup> Porter, Five Forces HBR 2008, at 93.

- ◆ “Today, an unhealthy situation has been created in which distorted reporting leads shareholders to believe that bad mergers are good. This then leads managers to pursue mergers with no real productivity benefits, and sets up a contest with antitrust officials to get such transactions approved.”<sup>41</sup>

All of which from an antitrust and competitive policy point of view underscores the need for competitive policy and economics to include accounting standards within their scope, poignantly underscored by the current economic crisis.

## 2. Government “Command and Control” Regulation Disease -- and Cure

Dr. Charles Schultze of the Brookings Institution diagnosed a recurrent problem - and cure – for the recurrent failure of much government regulation in *The Public Use of Private Interest*. “Our political system almost always chooses the command-and-control response,” and “we usually tend to see only one way of intervening,” which is to “specify in minute detail the particular actions” desired and to “then command their performance.”<sup>42</sup> “Instead of creating incentives so that public goals become private interests, private interests are left unchanged and obedience to the public goals is commanded.”<sup>43</sup>

Unfortunately time and time again “command and control” government regulation fails, “bogged down in Rube Goldberg regulations,” for example, “government attempts to deal with rapidly escalating health costs” of the Medicare and Medicaid programs “have produced only burgeoning volumes of regulations and no results.”<sup>44</sup>

Peter Drucker similarly describes the “invisible cost of government” as a “dangerous and insidious disease” worldwide, inflicting a “real cost in money and, even more, in capable people, their time, and their efforts.”<sup>45</sup>

The lost opportunity for wealth creation is real with government regulation that is ineffective and burdensome. Consider, for example, a recent global survey of venture capitalists in 26 countries that found that they considered U.S. technology in five areas the best in the world. It also found that they considered doing business in the U.S. much more challenging than comparable countries.<sup>46</sup>

Fortunately, Dr. Schultze also provides a breakthrough “cure” for government regulation, and thus an opportunity for Federal, state and local governments, and voters. His new approach to government regulation is, rather than more “command and control” regulation, for government to use what he describes as “perhaps the most important social invention mankind has yet achieved,” which is to “modify the structure of private incentives” in order to “harness[] the ‘base’ motive of material self-interest to promote the common good.”<sup>47</sup> Thus government regulation can take a new road,

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<sup>41</sup> Porter, *Competition and Antitrust: A Productivity-Based Approach*, *Unique Value* at 185. (Footnote omitted).

<sup>42</sup> SCHULTZE, *supra*, at 13, 6, 65.

<sup>43</sup> *Id.* at 6.

<sup>44</sup> *Id.* at 4.

<sup>45</sup> DRUCKER, *supra*, at 262.

<sup>46</sup> Velta, *The Moneyman Vote*, *BUSINESS WEEK* 68 (Dec. 1, 2008).

<sup>47</sup> SCHULTZE *supra*, at 18.



modifying private incentives to serve public purposes, to greatly enhance the environment for prosperity.

### 3. Individual and Corporate Taxes

The U.S. corporate tax rate is 40%, the second highest in the world behind Japan, including both state and Federal taxes (not including Social Security, Medicare and other employer taxes).<sup>48</sup> Individual taxes, including property and income taxes, vary significantly by location. Obviously in a global knowledge economy driven by people rather than plants and equipment, high taxes drive people and companies away, lower taxes attract them.

### 4. Cooperative Labor-Management Relations for Mutual Prosperity

The same analysis presented above at the company level also applies to the community level.

## **TOOL # 3. FIVE FORCES**

Mr. Porter had the same problem that antitrust practitioners and courts have had with the "relevant market" for decades. The "boundary of an industry is often imprecise, because distinctions between an industry's product and substitutes, incumbents and potential entrants, and incumbents and suppliers or buyers are often arbitrary," boundaries are "frequently in flux," "[p]roduct lines are rarely static," "[f]irms can create new product varieties that perform new functions, combine functions in new ways, or split off particular functions into separate products," "new buyers can become part of an industry, existing buyers can drop out, or buyers may alter their purchasing behavior," and the "current array of products and buyers" does not necessarily reflect "the products and buyers that an industry could potentially encompass."<sup>49</sup>

Mr. Porter solved his "relevant market" problem by linking "relevant market" analysis to his competitive analysis. Analytically, rather than sequentially first defining the single "relevant market" and then analyzing competition, as current antitrust analysis does, his Five Forces and other tools provide a method to analyze competition directly and robustly. By focusing on the competitive effects, rather than the definition of relevant market, the same competitive conclusions often apply to whatever definition of the relevant market is used.

The three tools can be applied in many other specific ways. These are just a few examples.

### 3. The Supreme Court's *De Facto* New Rule of Reason

The Supreme Court since 1977 has turned antitrust analysis 180° from an internal focus on the firms involved to an outward focus on demonstrable economic effects on markets, and has abandoned formalistic line drawing. In substance, the Court's new analysis is similar to Justice Brandeis' *Cracking Oil*<sup>50</sup> Rule of Reason

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<sup>48</sup> Corporate Tax Rates Are Falling, THE ECONOMIST 5 (Oct. 22, 2008).

<sup>49</sup> MICHAEL PORTER, COMPETITIVE ADVANTAGE 175, 233-34 (1985).

<sup>50</sup> Standard Oil of Indiana v. United States, 283 U.S. 163 (1931).

analysis, a major advance in analysis from what he described 3 years earlier in *Chicago Board*.<sup>51</sup>

Justice Brandeis' *Cracking Oil* Rule of Reason analysis Prof. Milton Handler explained uses "concentric circles," where the "inner circle" is the "combination" of firms acting jointly and at issue.<sup>52</sup> The "outer circles" are any of the markets allegedly affected. Under Brandeis' analysis, the "fact that a combination eliminates competition *inter sese* is not controlling," as the key issue was whether or not "the quality of competition in the market as a whole remains unimpaired."<sup>53</sup> The term "combination" is an analytically simple yet powerful term that includes all legal forms. Legal form was irrelevant, because what matters under Brandeis' analysis is the "combination's" effect on markets – on the "outer" circles.

Just as the Supreme Court since 1977 has rejected "formalistic line drawing," Prof. Handler emphasized that Justice Brandeis' "precise mind recoiled" from "elusive and question-begging epithets" and required instead, in Justice Brandeis' words, "a definite factual showing of illegality."<sup>54</sup>

*Cracking Oil*, specifically, was a government case against four major oil companies for fixing uniform royalties on sublicenses of pooled patents regarding the new method of making gasoline called the "cracking" process. The government won below. The Supreme Court reversed, with Justice Brandeis holding that the horizontal price agreement on royalties for pooled patent sublicenses was lawful under his more advanced Rule of Reason. Under his new Rule of Reason analysis, the focus was on the "outer circles," the markets, and was not distracted by labels like "horizontal price agreement," even though the case involved a horizontal price agreement by four major oil companies.

Justice Brandeis analyzed the effect of the "combination" on four "outer circles," four markets: (1) the production of "ordinary gasoline," (2) the production of "cracked gasoline," (3) the sale of gasoline, and (4) the licensing of patented cracking process technology. He found that there was no Rule of Reason violation in any of the four markets, even though at the "inner circle" level the major oil companies had agreed on prices. He focused outward on the four "outer circle" markets to analyze competitive impact. He found that no "definite factual showing of illegality" had been proven in any of the four markets.<sup>55</sup>

How to determine whether "the quality of competition in the market as a whole remains unimpaired"? Fortunately, there is a new economic theory that provides a rigorous and practical method for analyzing competition in various markets, something

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<sup>51</sup> *Chicago Bd. of Trade v. United States*, 246 U.S. 231, 238 (1918). In *Chicago Board*, the Supreme Court held the horizontal price restraint involving grain in transit to Chicago imposed by a joint venture of competitors in the form of an organized exchange was lawful because there was uninhibited competition between the grain and grain which had already been or subsequently would be shipped to the city.

<sup>52</sup> Milton Handler, *The Judicial Architects of the Rule of Reason*, TWENTY FIVE YEARS OF ANTITRUST 1, 30-31 (1973).

<sup>53</sup> *Id.* at 30.

<sup>54</sup> *Id.* at 29 (quoting *Cracking Oil*, 283 U.S. at 179)(footnotes omitted).

<sup>55</sup> 283 U.S. at 179.

antitrust has never had in over 100 years. Unlike any other known economic theory or idea, it is a theory that measures its success or failure by its ability to predict and explain hard data on personal income. It also fits the de facto new Rule of Reason like a glove.

#### **4. Application to HMG and Antitrust**

Prof. Porter's paper "*Competition and Antitrust: A Productivity-Based Approach*" is attached and provides a new foundation for antitrust policy based on productivity, rather than efficiency. Together, this advance in economic theory, combined with *Cracking Oil* and the Supreme Court antitrust related precedent since 1977's present major opportunities new merger guidelines and for antitrust generally. Antitrust analysis for the first time in over 100 years has a robust set of tools to analyze competition itself. Rotating the analytical focus 180° to the ultimate issue, demonstrable economic effects on markets turns on its head the current "first define the relevant market, then analyze competitive effects."

Instead of spending enormous resources defining the "relevant market," under this new antitrust analysis, the latter – actual competitive effects -- drives the former – the market studied. That is, by focusing on competition with the three tools, the ultimate issue of the competitive effects on markets is always the focus and a variety of markets can be analyzed. Question 1's five step analytical process starting with the relevant market is eliminated, as are the relevant market and concentration questions 2-10., 12-15

At the same time, Prof. Porter in the attached paper states, "Mergers Should Be of Particular Concern for Antitrust" when "productivity growth is the central goal of antitrust, it becomes clear that mergers should be treated with special caution compared to other corporate growth strategies" for five reasons:

First, mergers raise almost inevitable issues for the health of competition by removing independent competitors from the market. The question is not whether there is a risk to competition, but how much. This risk stems from the potential lessening of competitive pressure among firms in the industry, the potential reduction in product choice and variety, and the reduction in the number of different approaches being pursued to product/process development and hence the likelihood of innovation.

Second, a merger requires no "skill, foresight, and industry," only financial resources. It demands no new strategy, and yields no automatic productivity improvements. By contrast, introducing a new product, changing a distribution model, or building a new plant are far more likely to boost productivity. Society, then, should be biased in favor of independent company actions over mergers.

Third, the empirical evidence is striking that mergers have a low success rate. A wide range of studies finds that most mergers do not meet expectations, and most of the profits are captured by the seller, not the buyer.

Fourth, the strategy literature suggests that smaller, focused acquisitions are more likely to improve productivity than mergers among leaders. When a large company buys a small company and integrates it into its strategy, major productivity gains are possible. Mergers among large companies appear to rarely yield such benefits, though they may produce reduction in joint overhead and eliminate major competitors from a market.

Fifth, there are strong financial market pressures favoring mergers over other growth strategies. These arise at least in part from agency problems afflicting both investment managers compensated based on near term stock price appreciation, and company executives given incentives with stock options.

Finally, accounting rules make merger a vehicle for distorted performance measurement, creating artificial pressures for companies to merge.

The resulting merger analysis is illustrated as follows:

Example: Merger of The Only Two Ultra Deepwater Oil Drilling Companies.

Assume there are only two deepwater offshore drilling companies and they propose to merge. The two firms operate highly capital-intensive drilling units that cost up to \$500 million apiece. The merger of the two companies would create a monopoly if the market is defined as ultra deepwater offshore drilling, and thus the merger, if allowed, would create an HHI of 10,000.

However the market is defined -- narrowly as ultra deepwater offshore drilling in Houston or broadly, say, oil drilling on land and sea worldwide -- the same competitive analysis and conclusion is reached. In particular, Five Forces analysis shows that the only customers in the industry are the major oil companies. They can put new rivals into business through long-term contracts that support the financing needed to build new drilling units. Assets can be easily moved from one geographic market to another. The rigs are essentially undifferentiated, have high fixed costs and low marginal costs.

As a result, the business is prone to deep price discounting. Thus although it seems at first glance that high costs create formidable barriers to entry, actual entry barriers are modest. Thus the merger poses no real threat to competition. Moreover, debating or litigating what is or is not the "relevant market" is largely eliminated, and the focus of antitrust and competitive analysis has rotated 180° to where it should be, on competition itself, in each of the possible relevant markets defined interactively.

#### **IV. CONCLUSION**

Antitrust lawyers and the antitrust agencies can play a special role in revising the HMG and in so doing antitrust policy generally because lawyers have a special asset relevant here. Legal thinking in key respects is the same as scientific thinking, which, as Nobel Laureate physicist Leon Lederman explained, "often involves the killing of an exquisite theory by an ugly fact."<sup>56</sup> Einstein's rejection of Newtonian physics in 1905 is a classic example. Lawyers are similarly trained and experienced at rejecting theories that do not fit the facts and Supreme Court law, like the current HMG.

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<sup>56</sup> L. LEDERMAN, *THE GOD PARTICLE* 256 (1993).

CHARLES D. WELLER, ESQ.

Education

B.A. Yale University Mathematics 1966  
J. D. Case Western Reserve University 1973

Experience

Next Generation Healthcare Solutions, LLC (current)

Lawyer (current), 36 years legal experience in antitrust, health care and health benefit law in private law firms (Jones Day; Baker & Hostetler) and the Antitrust Division of the Ohio Attorney General's Office, including representation of General Motors, Wal-Mart, EDS, Newport News Shipbuilding, Eaton Corporation, Cleveland Clinic, University Hospitals of Cleveland, Case Western Reserve Medical School, Medical Mutual of Ohio, American Medical Association.

Peace Corps Volunteer, Math and Physics Teacher, Malaysia, 1966-68;  
Deputy Director Peace Corps Southern Region Recruiting, 1969-70

Selected Publications

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U.S. Supreme Court *Amicus Brief* in *Texaco v. Dagher* for Northwest Ohio Specialists Cooperative, LLC with Fritz Beyers (Sept. 2005).

"The Roberts Court and the Supreme Court's New Antitrust Law for the Global Knowledge Economy in a 'Perfect Storm' of Danger -- and Opportunity," 54:1 *Antitrust Bulletin* 157-231 (2009).

"Free Choice as a Restraint of Trade in American Health Care Delivery and Insurance," 69 *Iowa L. Rev.* 1351 (1984) (Alain Enthoven: "a searchlight that illuminates 50 years of history of the health care economy," "I felt as if I was discovering Beethoven's Fifth Symphony").

Excerpt -- Chap. 6

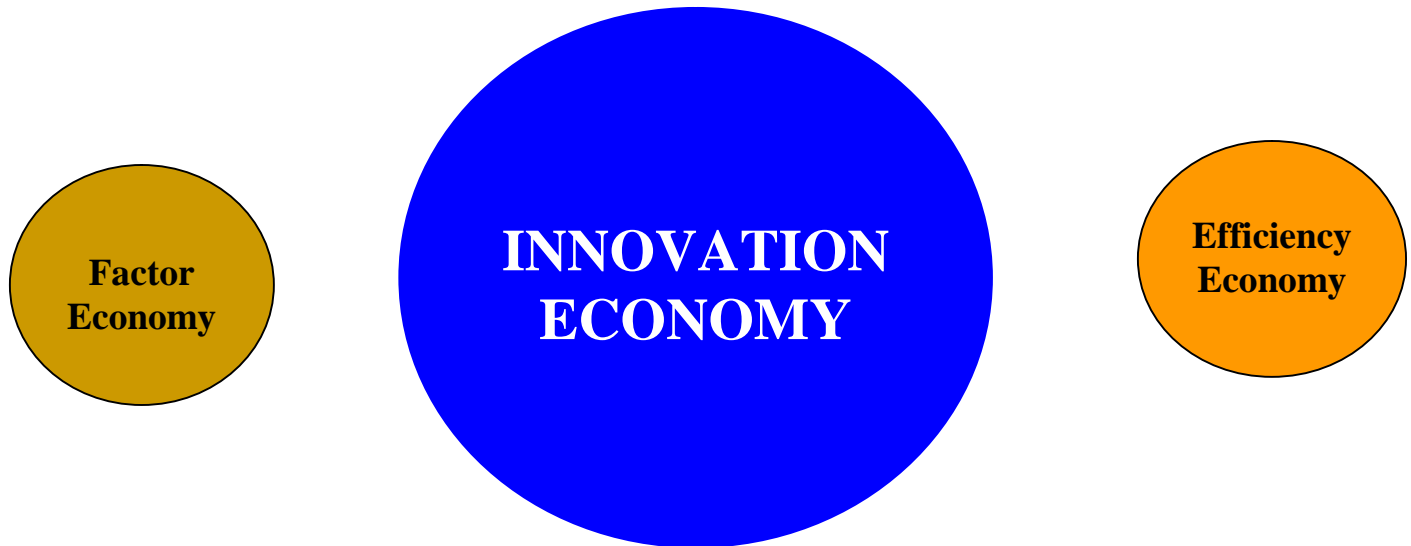
**Competition and Antitrust:  
A Productivity-Based Approach**

*Michael E. Porter*

# **UNIQUE VALUE**

**Competition Based on Innovation Creating Unique Value**

**for Antitrust, the Economy, Healthcare,  
Education and Beyond**



**Charles D. Weller, Ed.**

**Michael E. Porter  
Institute for Strategy and Competitiveness  
Harvard Business School**

**Peter Staudhammer  
Chief Technology Officer (retired)  
TRW Inc.**

**Scott Stern  
Northwestern University  
National Bureau of Economic Research**

## Table of Contents

### **PART 1 -- NEW FOUNDATIONS:**

#### **PRODUCTIVITY, INNOVATION AND UNIQUE VALUE**

Chap. 1: Connections .....	2
<i>Charles D. Weller</i>	
Chap. 2: Overview .....	24
<i>Michael E. Porter</i>	
Chap 3: Microeconomics of Productivity and Innovation .....	35
<i>Michael E. Porter</i>	
Chap 4: Building the Microeconomic Foundations of Prosperity: Findings from the Business Competitiveness Index 2004 .....	58
<i>Michael E. Porter</i>	
Chap 5: Ranking National Innovative Capacity: Findings from the National Innovative Capacity Index 2004 .....	109
<i>Michael E. Porter</i>	
<i>Scott Stern</i>	

### **PART 2 -- COMPETITION AND ANTITRUST**

Chap. 6: Competition and Antitrust: A Productivity-Based Approach .....	154
<i>Michael E. Porter</i>	
Chap. 7: Winning Antitrust Litigation for Defendants and Advancing Antitrust Beyond Static Economic Theory Unconventionally .....	187
<i>Charles D. Weller</i>	

### **PART 3 -- MATH-SCIENCE AND "META" EDUCATION**

Chap. 8: "Meta" Education for Productivity, Innovation and Employment .....	225
<i>Peter Staudhammer</i>	
<i>Charles D. Weller</i>	

### **PART 4 -- HEALTH CARE**

Chap. 9: Science Teams by Disease When Ill .....	274
<i>Charles D. Weller</i>	

Bibliography .....	323
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## REVIEWS

**Thomas A. Piraino, Jr., Vice President, General Counsel and Secretary, Parker-Hannifin Corporation**

“Michael Porter's economic analysis can revolutionize the way we think about markets and competition. Business executives, antitrust practitioners and anyone who cares about the economic organization of our society can gain valuable insights from Charles Weller's collection of some of Michael Porter's most original thinking. Mr. Weller's summaries and commentaries will be an invaluable aid to any interested reader.”

**Terry Calvani, Former Commissioner, U.S. Federal Trade Commission, Member & Director of Cartel Division, The Competition Authority of Ireland**

"[T]he work of Michael Porter" is an “antidote to the conventional welfare economics that has served as the foundation for modern competition policy for the last thirty years.”

**Ky Ewing, Chair, American Bar Association Antitrust Section 2000-2001; former Deputy Assistant Attorney General, U.S. Department of Justice, Antitrust Division:**

“UNIQUE VALUE: COMPETITION BASED ON INNOVATION CREATING UNIQUE VALUE ...is a book to be relished by thoughtful people who want to explore new dimensions of the competitive process, the very nature of which is changing as the ‘knowledge economy’ innovatively expands.”

**Alain C. Enthoven, Mariner S. Eccles Professor of Public and Private Management Graduate School of Business, Stanford University**

“With ‘Science Teams By Disease When Ill,’ Chuck Weller is truly propounding a Copernican revolution for health care. This new model has doctors, hospital personnel and others in the care process working together to improve quality and efficiency across institutional and professional boundaries. It is new and obviously raises many new questions, but it makes possible clear accountability of teams for quality and outcomes, something that doesn’t exist or barely exists today.”

“This is very important and greatly needed.”

**Miles J. Zaremski, Esq., Immediate Past President, American College of Legal Medicine, Partner, Kamensky & Rubinstein, Chicago, Illinois:**

“Charles Weller has done a masterful job in bringing together innovative and proactive thought in economic and legal terms. ... ‘Science Teams By Disease When Ill’ is a real and workable alternative to managed care, a real catalyst to those readers who wish to find pragmatic solutions to the dilemma in health care by making them seriously “think out of the box.”

**Maxwell Mehlman, Professor of Law and Bioethics, Director of the Law-Medicine Center, Case Western Reserve University**

“Weller’s bold new approach on how to pay for and deliver health care services is as creative as it is timely. This is exactly the kind of ingenuity that we need to get ahead of the growing crises in cost and coverage.”



**PART 1:**

**NEW FOUNDATIONS:**  
**PRODUCTIVITY, INNOVATION AND UNIQUE VALUE**

# Stages of Competitive Development



## **Chapter 6:**

### **COMPETITION AND ANTITRUST: A PRODUCTIVITY-BASED APPROACH**

**Michael E. Porter**

#### **I. INTRODUCTION**

#### **II. COMPETITION, COMPETITIVENESS, AND STANDARD OF LIVING: THE ROLE OF ANTITRUST**

- 2.1 Competition, Productivity Growth, and Standard Of Living**
- 2.2 Importance of Industry Competition: Empirical Evidence**
- 2.3 Importance of Local Competition: Externalities, Cluster Theory, and the Link Between Clusters and Innovation**

#### **III. THE GOALS AND TOOLS OF ANTITRUST POLICY**

- 3.1 New Standard for Antitrust: Productivity Growth**
- 3.2 Analysis of Competition**
  - a. Measuring the Health of Industry Competition:  
Five Forces and Forms of Competition**
  - b. Measuring the Health of Local Competition:  
The Diamond Framework**

#### **IV. EVALUATING MERGERS AND JOINT VENTURES**

- 4.1 Why Mergers Should Be of Particular Concern for Antitrust**
- 4.2 Towards A New Merger Evaluation Process**
  - a. Significance and Baseline Productivity Growth Analysis**
  - b. Assessing the Health of Competition**
    - **Five Forces Analysis**
    - **Diamond Analysis**
  - c. Direct Productivity Growth Offsets**
    - **Justifications Based on Network Effects and Schumpeterian Competition**
- 4.3 The Process Summarized**

#### **V. MERGER CASE STUDY**

#### **VI. ADDITIONAL U.S. ANTITRUST ISSUES**

#### **VII. CONCLUSION**

**Figures**

Fig. 6-1	Competition and Prosperity: Findings From <i>The Global Competitiveness Report</i>
Fig. 6-2	Competition and International Competitiveness: Evidence From Japanese Industry
Fig. 6-3	Selected Regional Clusters of Competitive U.S. Industries
Fig. 6-4	The California Wine Cluster
Fig. 6-5	Goals of Antitrust Policy
Fig. 6-6	Assessing the Health of Competition: The Five Forces Framework
Fig. 6-7	Productivity Growth and Types of Rivalry
Fig. 6-8	The Externalities of Rivalry: Locational Determinants of Productivity and Productivity Growth
Fig. 6-9	Merger Effect on the Health of Industry Competition: Five Forces Analysis
Fig. 6-10	Merger Effect on the Health of Local Competition: Diamond Analysis
Fig. 6-11	Hierarchy of Productivity Enhancement
Fig. 6-12	Merger Approval Process
Fig. 6-13	Case Study: Offshore Drilling

AUTHOR'S NOTE: This essay has benefited greatly from research by Elisabeth de Fontenay and from comments by Einer R. Elhauge, Abbott B. Lipsky, Jr., and Charles D. Weller. It also incorporates comments from participants at the American Bar Association's Antitrust Section Task Force on Fundamental Theory (Washington, D.C., January 11, 2001); the "Canadian Competition Policy: *Preparing for the Future*" conference jointly sponsored by Canada's Competition Bureau, Industry Canada, and the Ivey School of Business (Toronto, June 19-20, 2001); and the Conference Board's "2002 Antitrust Conference: *Antitrust Issues in Today's Economy*" (New York, March 7-8, 2002).

## I. INTRODUCTION

This chapter seeks to contribute thinking on how the intellectual foundations of antitrust might be updated, based on a large body of theoretical and empirical research on company strategy, competition, and economic development. The aim is to outline a new direction for antitrust that can be incorporated into government policy and legal practice and pursued in litigation and legislation, both in the United States and internationally. This new thinking sets forth productivity growth as the basic goal of antitrust policy, and employs tools like industry structure analysis and locational analysis to evaluate potential impacts on competition. While there appears to be broad consensus on how to deal with much anticompetitive behavior such as deceptive practices and cartel formation, the current fault line in antitrust is the treatment of mergers. This chapter therefore focuses on the evaluation of mergers, though the same framework can be applied to evaluating joint ventures, other combinations, and other competitive practices. Finally, it should be noted that this chapter is concerned principally with the content of antitrust, not the many important issues involved in structuring antitrust agencies and designing processes of enforcement.

Section II argues that the true benefits of healthy competition are not fully articulated in much antitrust analysis. By linking competition to a nation's standard of living through productivity growth, it becomes apparent that far more is at stake in protecting competition than short-term consumer welfare defined by price-cost margins. Empirical evidence is provided to highlight the importance of protecting the vitality of competition. Furthermore, it is argued that *local* competition within a nation is particularly crucial for competitiveness, even in the era of globalization.

Section III proposes that productivity growth become the new standard for antitrust, and reassesses the hierarchy of antitrust goals accordingly. Since healthy competition will foster productivity growth, antitrust must be equipped with adequate tools and frameworks for evaluating the health of competition. Yet frameworks broader than current practices resting in relevant market definitions and ability to elevate price above cost are required. So called "five forces" analysis is offered as a broader tool for evaluating overall industry competition, while the diamond framework for locational competitiveness is offered for evaluating the health of *local* competition.

In Section IV, we turn to the analysis of mergers, outlining a three-level merger evaluation process that incorporates the productivity growth standard and the tools for evaluating the health of competition mentioned above. Section V offers a short case study of a merger evaluation, using the new procedure. Finally, Section VI addresses some recent issues more specific to U.S. antitrust policy.

The essential role of competition and antitrust policy in competitiveness is evident in recent research on industry competition and economic development. My conviction from working both with companies and public policymakers in many countries is that open competition, stimulated by strict antitrust enforcement, is essential not only to national prosperity, but to the health of companies themselves. Yet antitrust seems to be drifting. Antitrust policy is being challenged by skeptics who are mounting attacks on the need for antitrust under the guise of globalization or the requirements of the "new economy." Also, the

theoretical and empirical literature on competition has moved beyond seller concentration, price-cost margins, and other ideas central to current enforcement.<sup>1</sup>

It is an important moment to reinvigorate antitrust. Not to say that antitrust enforcement has been lax, nor that skilled practitioners have not been able to apply the law with great sophistication. However, recent court rulings and public debate suggest that the foundations of antitrust theory and practice are wearing thin. The goals of antitrust and its link to society's goals are often not convincingly articulated. The benefits of competition that underpin antitrust have not been made clear, and the tools for measuring impacts on competition are frequently controversial. Too often the discussion between business and government in antitrust proceedings concerns arcane matters such as HHI that erodes the legitimacy of antitrust with the private sector. By relying too heavily on narrowly conceived consumer welfare theory, antitrust analysis may be overlooking some of the most important benefits of competition for society. Antitrust is not living up to its full promise in deterring behavior that is not in society's interest.

My aim here is not to offer a comprehensive treatise, settle all of the issues raised, nor do justice to the scholarly or practitioner literature. Instead, the intention is to stimulate further dialogue and analysis.

## **II. COMPETITION, COMPETITIVENESS, AND STANDARD OF LIVING: THE ROLE OF ANTITRUST**

### **2.1 Competition, Productivity Growth, and Standard Of Living**

The stated role of antitrust policy is to promote and protect competition in the name of consumer welfare. Yet the rationale is frequently unclear, misunderstood, or too narrow in scope. While protecting short-run consumer welfare measured by price-cost margins is undeniably important, the benefits of healthy competition are in fact broader and more essential to consumers and to society. The fundamental benefit of competition is to drive productivity growth through innovation, where innovation is defined broadly to include not only products, but also processes and methods of management. Productivity growth is central because it is the single most important determinant of long-term consumer welfare and a nation's standard of living.

The underpinnings of economic prosperity are becoming better understood as a result of continuing research. While sound macroeconomic policies and stable political and legal institutions represent important preconditions for prosperity and competitiveness, they are necessary but not sufficient conditions for a prosperous economy. Prosperity is actually generated at the *microeconomic* level – in the ability of firms to create valuable goods and services productively that will support high wages and high returns to capital.<sup>2</sup>

The goal of economic development is to achieve long term, sustainable improvement in a nation's standard of living, which can be approximated by per capita national income (GDP per capita).<sup>3</sup> Per capita income is determined by the productivity of a nation's economy, where productivity is defined as the total value of the goods and services (products) produced per unit

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<sup>1</sup> See Sections II and III.

<sup>2</sup> M.E. Porter, "The Microeconomic Foundations of Economic Development," in *The Global Competitiveness Report 1998*, 38 (Geneva: World Economic Forum, 1998). See also M.E. Porter, "Attitudes, Values, Beliefs, and the Microeconomics of Prosperity," in *Culture Matters: How Values Shape Human Progress* (L.E. Harrison & S.P. Huntington eds., 2000).

<sup>3</sup> While income is the best available measure, other things contribute to national standard of living besides wages and returns to capital, such as the quality of health care, the absence of extreme income inequality, and environmental quality.

of the nation's human, capital and physical resources. A nation's overall productivity is composed of the productivity of its firms, both those involved in traded industries and those involved in purely local commerce. The crucial issue, then, is how to create the conditions for rapid and sustained productivity growth in a nation's firms.

Since the seminal contributions of Schumpeter (1943), Solow (1956) and Abramovitz (1956), it is widely understood that the only means of achieving sustained productivity growth in an economy is through innovation.<sup>1</sup> Innovation provides products and services of ever-increasing consumer value, as well as ways of producing products more efficiently, both of which contribute directly to productivity.

Innovation, in this broad sense, is driven by competition. While technological innovation is the result of a variety of factors, there is no doubt that healthy competition is an essential part. One need only review the dismal innovation record of countries lacking strong competition to be convinced of this fact. Vigorous competition in a supportive business environment is the only path to sustained productivity growth, and therefore to long term economic vitality.

Productivity growth, then, is the missing, unstated link between competition and national standard of living. This provides the soundest explanation for why antitrust must protect competition: it is the key to a nation's economic prosperity. Productivity growth thinking also makes it clear that the focus of antitrust thinking should be on the long-term trajectory of product value and price, not just current consumer welfare measured by short-run prices. The following sections outline how the central role of productivity in development and societal welfare can be applied to antitrust and competition policy.

## **2.2. Importance of Industry Competition: Empirical Evidence**

Recent empirical findings verify the importance of competition to raising and maintaining standard of living. This evidence squares well with my own experience. Competition really matters, in the new economy and the old economy, and in all types of countries.

One body of empirical evidence comes from *The Global Competitiveness Report 2000*, an annual study of competitiveness in 58 countries including all the OECD countries as well as many developing countries.<sup>2</sup> Data from the report are drawn from a survey of more than 4,000 corporate and other leaders, including a representative sample from each country. The survey is qualitative, but represents a large body of expert opinion on important dimensions of economic policy, for which there are no quantitative measures.

Figure 6-1 reproduces some of the statistical findings from the Report. For all three years in which this analysis has been conducted, the effectiveness of antitrust policy<sup>3</sup> proves to be one of the variables with the strongest positive association with the variation in GDP per capita across countries. This holds even in the subsample of developing economies, an indication that antitrust is also important for poor countries, rather than just a luxury needed only in wealthy

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<sup>1</sup> J. Schumpeter, *Capitalism, Socialism, and Democracy* (2d ed. 1943); R. Solow, "Technical Change and the Aggregate Production Function," 39 *Review of Economics and Statistics* 312 (1957); R. Solow, "A Contribution to the Theory of Economic Growth," 70 *Quarterly Journal of Economics* 65 (1956); M. Abramowitz, "Resource and Output Trends in the United States since 1870," 46 *American Economic Review* 5 (1956).

<sup>2</sup> M.E. Porter, "The Current Competitiveness Index: Measuring the Economic Foundations of Prosperity," in *The Global Competitiveness Report 2000* (Geneva: World Economic Forum, 2000).

<sup>3</sup> In *id.* at 312, the effectiveness of antitrust policy was measured in a survey by responses to question 10.14, "The anti-monopoly policy effectively promotes competition," using a scale from 1-7, "strongly disagree" to "strongly agree."

ones. The report also includes a survey question about the intensity of local competition. While the question is imperfect because of possible ambiguities in its interpretation by respondents, it also has a highly significant positive association with GDP per capita.

**Figure 6-1**

**Competition and Prosperity: Findings from *The Global Competitiveness Report***

Regression			Regression		
Dependent Variable: 1999 GDP per capita			Dependent Variable: 1994 - 99 GDP per capita growth		
Measure of National Business Environment	Significance at 95% level	Adj R2	Measure of National Business Environment	Significance at 95% level	Adj R2
Effectiveness of antitrust policy	at 95% level	.700	Intensity of local competition	at 95% level	.255
Intensity of local competition	at 95% level	.320	Effectiveness of Antitrust policy	at 95% level	.117

***“...countries where the intensity of competition is rising showed by far the greatest improvement in GDP per capita.”***

Source: M.E. Porter, “The Current Competitiveness Index: Measuring the Microeconomic Foundations of Prosperity”, in *The Global Competitiveness Report 2000* (Geneva: World Economic Forum, 2000).

Turning to analysis of the rate of *growth* in GDP per capita, the effectiveness of antitrust policy and the intensity of competition are again highly significant variables and contribute substantially to explained variance. Note that the proportion of variance in GDP per capita growth rate that can be explained is inherently less than for the level of GDP, because growth in GDP is more sensitive to a wide variety of shocks and short-term macroeconomic influences. We find that the competition/antitrust policy measures are as or more associated with prosperity as transportation infrastructure, telecom infrastructure, IT readiness, and the like. In a first difference analysis, countries where the intensity of competition is rising showed registered the greatest improvement in GDP per capita. All these findings are consistent: competition and a vigorous antitrust policy are strongly associated with national prosperity.

This research provides some positive evidence of the importance of strong antitrust for prosperity. There is also ample negative evidence to be cited. For example, Japan is a country with a history of weak antitrust enforcement, legal cartels, and extensive government-sponsored collaborative research projects among companies. During the height of the Japanese economic miracle, the case of Japan was a principal argument advanced in the United States for weakening antitrust law – for example, in allowing potentially anticompetitive collaborative activity.<sup>1</sup>

<sup>1</sup> M.E. Porter, H. Takeuchi & M. Sakakibara, *Can Japan Compete?* (2000).

Yet one of the major findings of a recent book is the steep price that Japan has paid for a lax antitrust policy.<sup>1</sup> Our research revealed that weak antitrust enforcement did not explain Japanese competitiveness, but was in fact an explanation for why certain industries in Japan were uncompetitive. Industries where competition was limited by Japanese government policy were uncompetitive. We also collected data on all the legal cartels in post-World War II Japan, and found that the industries in which cartels occurred were, with few exceptions, uncompetitive. We also collected data on all government-sponsored cooperative research projects, which involved several if not most industry competitors. We found that those industries in which cooperative research projects occurred were no more likely than the average industry to be competitive, and many cooperative research projects actually worked against industry competitiveness. There have been many collaborative projects in the West involving multiple industry competitors growing out of the efforts to emulate the Japanese case, such as the electric vehicle project. With few if any exceptions, these have proven disappointing. The notion that Japan was competitive because of weak antitrust is resoundingly rejected.

Figure 6-2 highlights some additional data drawn from our study of Japan. We explored the relationship between the intensity of domestic competition and world export share in a broad sample of Japanese industries. All of the industries considered were global in scope. Industries able to command a high world export share were decreed to be highly productive.

Instead of relying on market structure measures such as seller concentration to proxy the intensity of competition, we used the extent of fluctuations in domestic market share among leading firms over an 18-year period. The fluctuation in market share among leading competitors – controlling for outside shocks – provides a direct and far more compelling indication of the intensity of competition.<sup>2</sup> We found that domestic market share variability was by far the most powerful influence on Japanese world export share, dominating conventional measures of comparative advantage such as skilled labor intensity and capital intensity. The intensity of competition at home, then, was the strongest influence on Japanese competitiveness abroad. These statistical findings are consistent with hundreds of industry case studies that have been conducted on the determinants of competitiveness at the country level, as well as research on national and regional economic development.<sup>3</sup>

Interestingly, we found that seller concentration had no significant relationship with Japanese world export share.<sup>4</sup> Nor was it significantly correlated with the extent of domestic market share fluctuations. These results are consistent with other research which raises doubts about the use of seller concentration as a proxy for the vitality of competition.<sup>5</sup>

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<sup>1</sup> *Id.* See also M. Sakakibara & M.E. Porter, “Competing at Home to Win Abroad: Evidence from Japanese Industry,” 83 *Review of Economics and Statistics* 310 (2001).

<sup>2</sup> See generally R. Caves & M. Porter, “Market Structure, Oligopoly, and Stability of Market Shares,” 26 *Journal of Industrial Economics* 289 (1978). For a detailed application to Japan, including definitions, sources of data, cause and effect issues, see Sakakibara & Porter (2001).

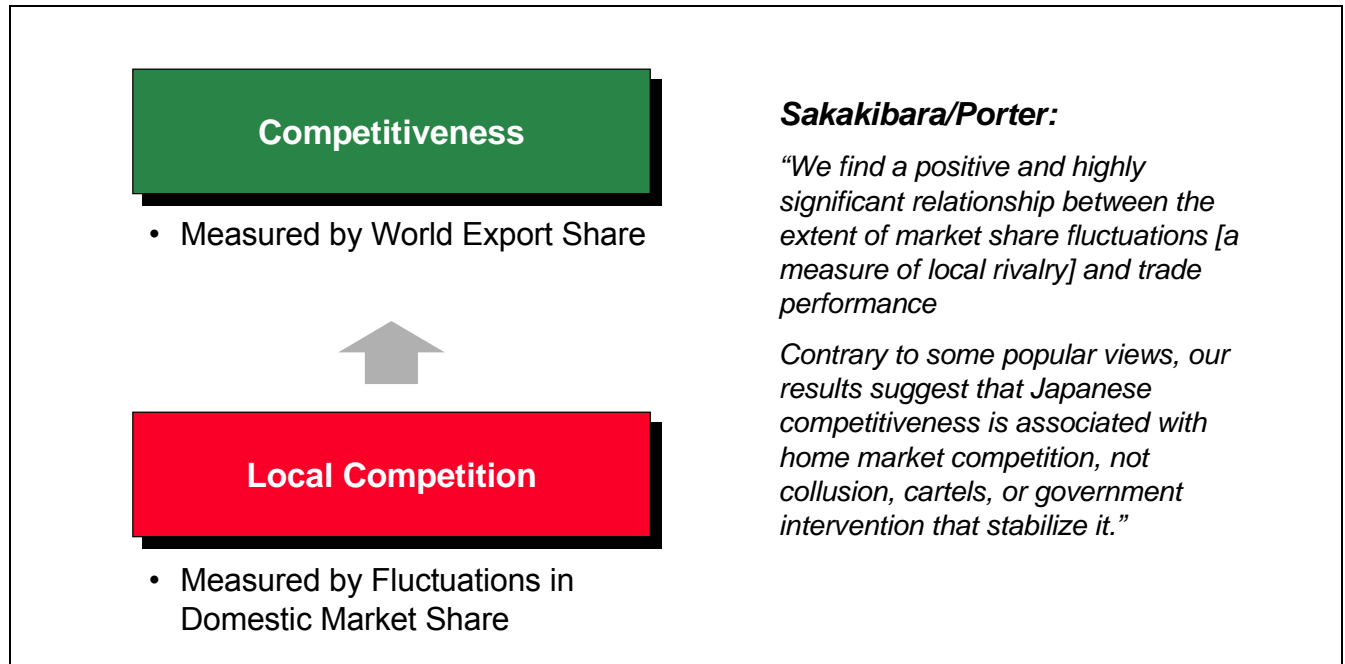
<sup>3</sup> See, e.g., “Clusters and Competition: New agendas for Companies, Governments, and Institutions” in M.E. Porter, *On Competition* (1998), which contains an extensive bibliography.

<sup>4</sup> Sakakibara & Porter (2001).

<sup>5</sup> See, e.g., K. Ewing, “The Soft Underbelly of Antitrust,” *Antitrust Report*, Sept. 1999 at 2; B. Harris & D. Smith, “The Merger Guidelines v. Economics: A Survey of Economic Studies,” *Antitrust Report*, Sept. 1999 at 23; C. Weller, “An Evolution of the Merger-JV Guidelines: The Productivity Paradigm As A Positive Antitrust Policy for Competitiveness and Prosperity,” *American Bar Association, Perspectives of the Task Force on Fundamental Theory* 215 (2001).



**Figure 6-2**  
**Competition and International Competitiveness:**  
**Evidence from Japanese Industry**



Source: M. Sakakibara & M.E. Porter, “Competing at Home to Win Abroad: Evidence from Japanese Industry”, 83 *Review of Economics and Statistics* 310, 318, 319 (May 2001).

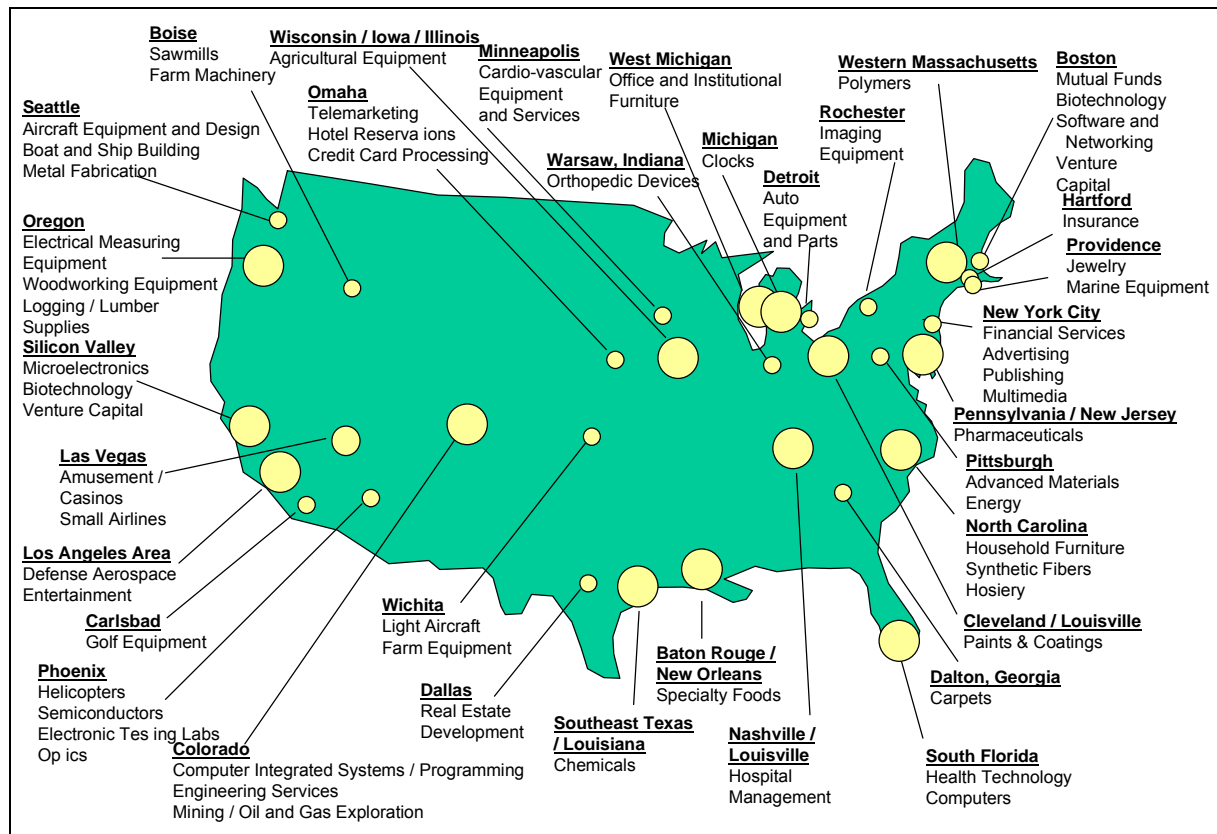
### **2.3. Importance of Local Competition:** **Externalities, Cluster Theory, and the Link Between Clusters and Innovation**

The Japanese research and other evidence suggest that, contrary to popular belief, *local*<sup>1</sup> competition matters in global industries. Even where firms compete across borders, the configuration of locally based competitors and the vitality of competition in the local market are crucial to productivity and competitiveness. Local competition creates numerous positive externalities for industries and industry clusters, thus explaining its significant impact on firm competitiveness.

Many industries can be considered global in competitive scope, which is often taken to imply that a firm’s location is of no importance to the health of competition. Yet the actual distribution of firms belies this view. We observe a strong tendency for successful firms in a particular industry to cluster in particular countries, often along with firms in related industries. The schematic map of the U.S. clusters in Figure 6-3 shows that geographic clustering can occur even in sub-national regions within countries. This ubiquitous phenomenon reveals powerful insights into the role of location in healthy competition.

<sup>1</sup> It should be noted that the term local can apply to geographic areas ranging from a small county to a group of neighboring countries. The relevant economic area depends on geographic distance and the scope of local externalities.

**Figure 6-3**  
**Selected Regional Clusters of**  
**Competitive U.S. Industries**



Firms cluster in particular locations not because of traditional comparative advantages stemming from natural resources or pools of cheap labor. Rather, they obtain *competitive* advantages by locating in areas benefiting from the strong presence of other firms in the industry, firms in related industries, and the presence of specialized inputs, information, and institutions. The explanation for geographic clustering is that local competition provides an exceptional stimulus to productivity growth that is extremely valuable to firms. The two major contributions of local competition are:

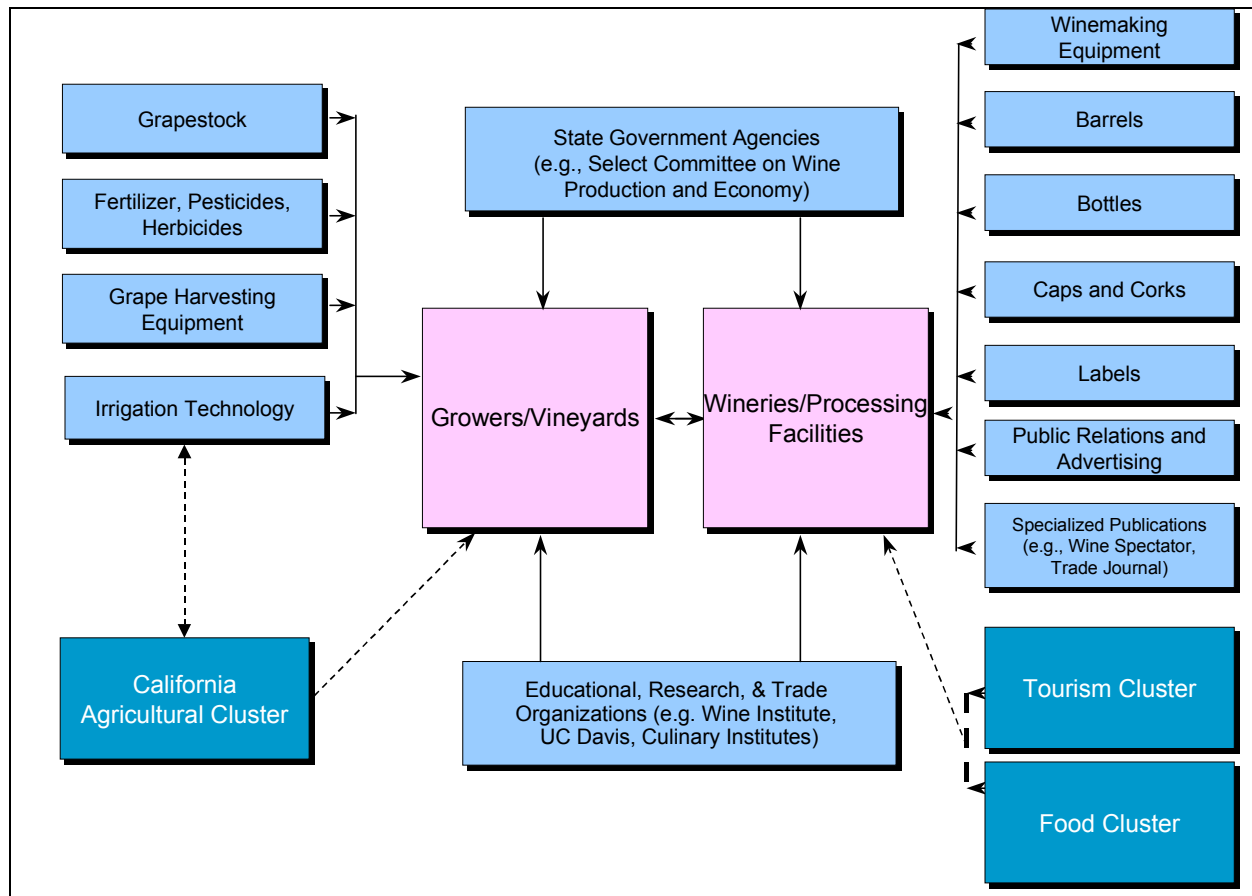
1. *Incentive and Informational Benefits:* The immediate presence of a rival stimulates greater comparison, improvement, and upgrading versus competing with a firm in a foreign country. Companies that compete at home are better prepared to compete with foreign rivals abroad.
2. *Positive Externalities:* Geographic proximity of rivals generates otherwise unattainable positive externalities, such as specialized labor pools, knowledge spillovers, specialized supplier formation, etc. discussed below.

*The Positive Externalities of Local Rivalry.* Competition creates positive externalities for the local business environment that boost productivity for the entire industry, and often for

related and supporting industries in the same location as well. A group of competing local rivals tends to spawn a base of local suppliers and providers of specialized support services. This boosts productivity by reducing transactions costs, facilitating the exchange of information, increasing flexibility, and speeding innovation. Local rivalry also works to increase the local availability of specialized skills, infrastructure, scientific and technical resources, and other assets and institutions that boost productivity and raise the rate of productivity growth. As these externalities deepen, they can foster new entry and spinoffs, coming full circle to reinforce local rivalry. Such externalities are what give rise to what I term clusters, or geographic concentrations of interconnected companies and institutions in a particular field.

California wine provides a good example of a cluster (see Figure 6-4). There are hundreds of wineries in California, but also thousands of independent growers of grapes. All the inputs, production equipment, and services required to grow grapes and produce wine are available locally. Local universities and other institutions provide ample skilled labor and technological information. As a result, the productivity of California as a wine-producing region in terms of yield per acre appears to be the highest in the world, and firms command high prices per bottle for their premium-quality products. The rate of productivity growth has been rapid, as California wine companies upgraded from jug wine to super premium segments.

**Figure 6-4**  
**The California Wine Cluster**



Source: M.E. Porter, *On Competition* (1998), at ch. 7.

Other well-known examples of U.S. clusters include the Silicon Valley IT cluster, the Houston oil and gas cluster, and the Boston area biopharmaceuticals and mutual fund clusters.

*The Global Competitiveness Report* includes measures of the quality and quantity of local suppliers and, in the 2000 and later *Reports* the extent of clusters in a national economy. All three variables have a strong positive association with GDP per capita.

Taking into account the essential benefits of local competition leads to the conclusion that antitrust analysis should weigh not just the generalized benefits of rivalry for productivity growth but also the systemic benefits of *local* rivalry. When local rivalry is muted, a nation pays a double price. Not only will companies face less pressure to be productive, but the business environment for all local companies in the industry, their suppliers, and firms in related industries will become less productive. This demonstrates in particular the danger in arguments about the creation of “national champions” in an industry in the home country in order to gain the scale to compete internationally. Unless a firm is forced to compete at home, it will usually quickly lose its competitiveness abroad. Local competition matters for productivity and productivity growth, even in industries whose geographic scope is global.<sup>1</sup>

<sup>1</sup> See, e.g., *The Global Competitiveness Report 1998* (various authors) (Geneva: World Economic Forum, 1998); *The Global Competitiveness Report 1999* (various authors) (Geneva: World Economic Forum, 1999); *The Global Competitiveness*

Note that no mention has been made of the ownership of the locally based firms. This is because ownership has much less importance for externalities than the nature of the activities undertaken in a given location. All firms in a given location must be considered part of the cluster, not merely the domestic ones. Special weight for competition derives from locally based entities that have significant development, production, and other activities located in a nation. These offer far greater potential for externalities than does competition from imports. Trade is not a full substitute for local competition.

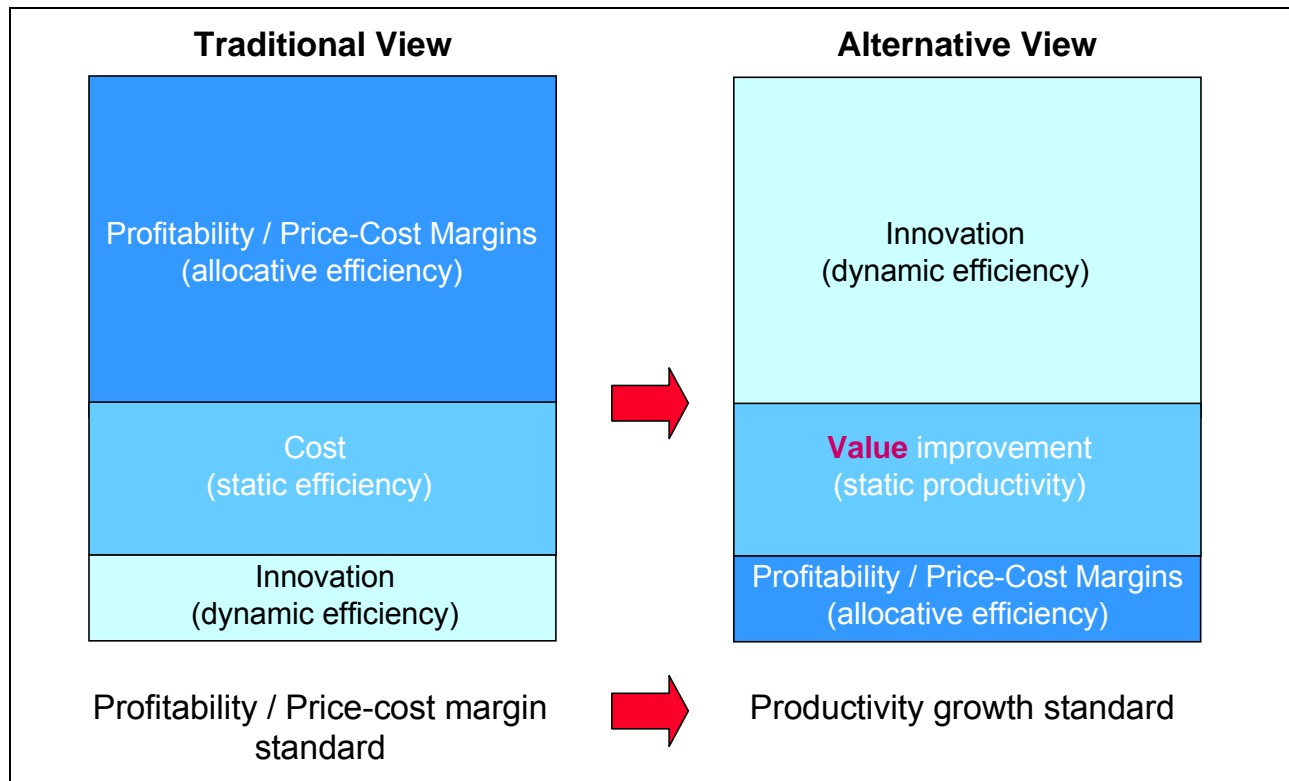
### **III. THE GOALS AND TOOLS OF ANTITRUST POLICY**

#### **3.1. New Standard for Antitrust: Productivity Growth**

Since the role of competition is to increase a nation's standard of living and long-term consumer welfare via rising productivity growth, *the new standard for antitrust should be productivity growth*, rather than price/cost margins or profitability. All combinations or practices scrutinized in antitrust should be subjected to the following question: how will they affect productivity growth? If a merger, joint venture, or other arrangement will significantly enhance productivity growth, it is probably good for society and for consumers (as well as the firms involved). Transactions with dubious benefits for productivity growth, or those that offer only a one-time productivity benefit, are likely to be net negatives for society if they pose any risk to the overall health of competition. This is because competition is a primary determinant of future long-term productivity growth.

How would the productivity growth standard affect antitrust? The current explicit and implicit goals of U.S. antitrust policy fall roughly into the following hierarchy (see Figure 6-5). Drawing on Welfare theory, the primary focus in U.S. antitrust for the last twenty years has been on limiting price/cost margins or firm profitability (*allocative inefficiency*) as the most important outcome for consumers. Market power is seen as giving firms the ability to elevate prices and sustain high margins. Hence, limiting market power is the major focus of attention.

**Figure 6-5**  
**Goals of Antitrust Policy**



Second in importance in antitrust evaluations has been cost or *technical efficiency*. The efficiency justification can be used to offset a finding of market power to elevate margins. At the bottom of the current hierarchy is innovativeness, or the rate of dynamic improvement. The effect of mergers or competitive practices on the overall rate of innovation is usually only paid lip service.

If these three goals are tested against the productivity growth standard, it becomes clear that the traditional hierarchy of goals should be reversed.

Because of its direct effect on productivity growth, the most important goal for society is a healthy process of dynamic improvement, which requires innovations in products, processes, or ways of managing. If the rate of dynamic improvement is healthy, over time this dominates static technical and allocative efficiency concerns. For example, a faster rate of innovation in new approaches overwhelms static economies of scale in existing approaches, particularly in an age where knowledge-based competition is the rule.

A productivity growth standard suggests that technical (static) efficiency should be the second most important goal, but that it must be assessed with more subtlety. While antitrust analysis tends to focus on cost justifications, equal attention should be paid to product or service *value*. Roughly speaking, productivity is price times quantity divided by the quantity of labor or capital involved. It can be divided into two distinct components: the prices that products command in the marketplace (which reflect *value*) and the efficiency with which a unit of product can be produced. Thus, productivity is enhanced not just by efficiency improvements,

but also by improvements in product quality, features, and services. Product variety is also an essential component of value, giving customers more choices to better meet their particular needs.

High-value products provide the consumer with superior performance and features, and therefore justify higher prices. With a focus on price/cost margins, however, high prices are often seen as inherently undesirable for consumers. Higher prices should be a danger sign in antitrust analysis only if they are not justified by rising customer value.

Limiting short-term price/cost margins or profitability is a dubious goal for antitrust. Firm profitability is a good thing if it reflects truly superior products or significant advantages in process technology or operating efficiency. It is a bad thing if it occurs in the absence of a healthy rate of dynamic improvement. In a typical industry, average price-cost margins and profitability will vary significantly among competitors, reflecting varying levels of fundamental competitiveness.

Short-term consumer welfare measured by price, then, is a dubious goal on two levels. First, it fails to measure true consumer welfare by ignoring product value. Second, we care much more about the long-term trajectory of value, prices, and costs than we do about consumer welfare in the short run or immediately after a merger. Moreover, a productivity growth standard is entirely consistent with the language of the main antitrust laws.

*Benefits of a Productivity Growth Standard.* Why is the productivity growth standard different and important for antitrust? First, it is a *positive* standard that relates directly to competitiveness, a nation's standard of living, and long-term consumer value, while price/cost margins and technical efficiency are theoretically suspect. Productivity growth is also more understandable and palatable to managers. Imagine how much more constructive it would be for corporations and their attorneys to debate whether a merger will boost productivity growth rather than continuing to debate the size of HHI.

Second, a productivity growth standard would shift antitrust away from a narrow focus on static, short-term consumer welfare to a dynamic and more all-encompassing view of competition and its benefits to consumers, firms, and society as whole. Defining the goal of antitrust in terms of price/cost margins and profitability creates a zero-sum game between firms and consumers. If consumers are to benefit from lower prices, firms must earn lower profits. In contrast, a productivity growth standard raises no inevitable trade-off. If productivity is growing, consumers can enjoy better products and/or lower prices, companies can earn attractive returns on capital, and workers can enjoy rising wages. A productivity growth standard, then, unites the perspectives of consumers, workers, and companies. It embodies a positive sum rather than a zero-sum view of competition. An approach to competition based on productivity growth will lead to outcomes that benefit consumers far more than a shortsighted concern with static profitability.

Finally, productivity growth addresses the reality of high-technology industries and the so-called new economy by highlighting the fundamental importance of innovation. While there are few true conceptual differences between the "new" and "old" economies, the apparent mismatch between the static focus of antitrust and the rapid change in technology-intensive industries has undermined antitrust's legitimacy. Since innovation is the basic driver of productivity growth, promoting and protecting it should be central.

### 3.2. Analysis of Competition

How would the productivity standard be applied in practice? The best way to attain maximal productivity growth in an industry is to ensure that industry competition is healthy, since competition determines long-term productivity growth. It is possible to measure past productivity growth in various ways, and we advocate that this become part of antitrust analysis. However, predicting *future* productivity growth is more difficult. Hence, there is a need for tools to assess the likely future health of competition, since this will be the single most important factor in whether future gains in productivity will reach their potential.

#### a. **Measuring the Health of Industry Competition: Five Forces and Forms of Competition**

To measure the health of competition in practice, we agree with those who believe that seller concentration, the number of firms in a market, and profitability are not very good indicators.<sup>1</sup> They capture only part of a complex phenomenon and divert analyses of competition to much less productive debates over where to draw relevant market boundaries. Instead, a broader approach is necessary. One such approach with acceptance in business practice is the “five forces” analysis of the intensity of competition.

*The Five Forces Model.*<sup>2</sup> The five forces model is a dynamic approach to analyzing industry structure, based on five competitive forces acting in an industry or sub-industry: threat of entry, threat of substitution, bargaining power of buyers, bargaining power of suppliers, and rivalry among current competitors.<sup>3</sup>

This approach, with roots in industrial economics but moving beyond its narrower interpretations, posits that competition in an industry is broader than price, and includes product features, services, and processes. Competition is also seen as driven by many influences. The five forces framework seeks to encompass all the important dimensions of competition (see Figure 6-6). It embodies the notion that competition is much broader than just rivalry, where seller concentration (HHI) analysis is focused. Any of the five forces can be significant in determining the health of competition, depending on the particular industry. For example, the power of customers to push down price or pressure improvements in service can be just as important to productivity growth as the number and size distribution of competitors in the market.<sup>4</sup>

Five forces theory also argues that for any one of the competitive forces, the causes of competitive intensity are multidimensional. In assessing the intensity of rivalry, for example, seller concentration does have a role, although our interpretation would focus more on the *balance* of competitors (the more balanced, the more rivalry). But the intensity of rivalry also depends on a series of other dimensions, including, for example, the industry cost structure.

<sup>1</sup> See, e.g., Ewing (1999); Harris & Smith (1999); Weller (2001).

<sup>2</sup> There is an extensive literature on five forces analysis that is beyond the scope of this article to summarize here. The early references are M.E. Porter, *Interbrand Choice, Strategy, and Bilateral Market Power* (1976); M.E. Porter, *Competitive Strategy: Techniques for Analyzing Industries and Competitors* (1980).

<sup>3</sup> Brandenburger and Nalebuff have appropriately stressed the role of complementary products in competition, and some have suggested complementary products as a sixth force (A. Brandenburger & B. Nalebuff, *Co-opetition*, (1996)). However, complementary products do not directly influence the health of competition, but affect it indirectly through the influence of complements on the five forces. The presence of a complementary product is neither good nor bad for competition per se. It depends on how the complement influences, for example, barriers to entry or the power of the customer.

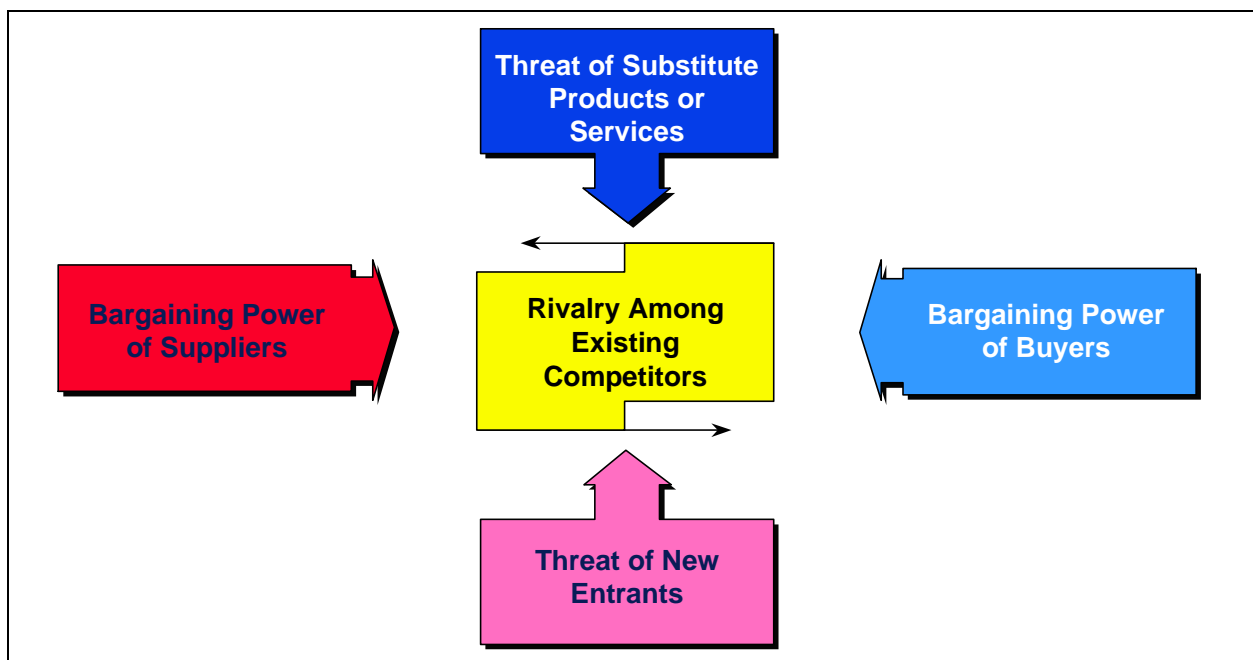
<sup>4</sup> There is substantial empirical support for the importance of this broader set of industry attributes for competition.



Where variable costs are low, strong pressures are created to cut price in order to contribute to fixed cost. With such a cost structure, even a concentrated industry can exhibit strong rivalry. Switching costs are another important influence on rivalry. Where it is easy for customers to shift from one supplier to another, the effect of concentration is mitigated.

The five forces methodology involves analysis on an industry-by-industry basis, and does not rest on the determination of *the* relevant market. Every industry is different, both in terms of the relative influence of the forces and the array of drivers of each force. This approach, which squares with actual industry competition, has been well accepted in corporate practice and in management consulting firms to assess the nature of industry competition.

**Figure 6-6**  
**Assessing the Health of Competition:**  
**Five Forces Framework**



Source: M.E. Porter, Competitive Strategy: Techniques for Analyzing Industries and Competitors (1980).

Many of the elements of the five forces approach have been known to or used in economics for a long time. Also, many of the considerations raised in the five forces model appear somewhere in current merger analysis. Five forces analysis is different in how, when and why the model is applied. Current antitrust analysis first determines the relevant geographic and product market, then uses its tools to analyze competitive effects. Current analysis starts with seller concentration as the principal metric. Other considerations are brought in, both only later and secondarily. Five forces analysis, on the other hand, avoids the first step by going straight to analyzing competitive effects in any and all submarkets deemed relevant by customers and competitors. It views seller concentration as only one and not the most important determinant of rivalry. It brings in all five forces as equally important. Finally, it does not rely heavily on price and quantity as the principal indicators of welfare.

By assessing competition beyond existing rivals, the need is reduced for debates on where to draw industry boundaries, or the relevant market in antitrust terms. Any definition of a market is essentially a choice of where to draw the line between established competitors and substitute products, between existing firms and potential entrants, and between existing firms and suppliers and buyers. If these influences on competition are all recognized, and their relative impact assessed, as they are in five forces analysis, then where the lines are actually drawn becomes more or less irrelevant to strategy formulation and, I suggest, the antitrust analysis of competition. Latent sources of competition will not be overlooked, nor will key dimensions of competition. The need to determine the relevant market is eliminated.

While there is a systematic approach to market definition defined in the Merger Guidelines, it begins with the questionable premise that a single market definition is a meaningful concept. Moreover, the approach to market definition relies heavily on price effects which are an incomplete measure of social benefit, not to mention a largely short-term and static one.

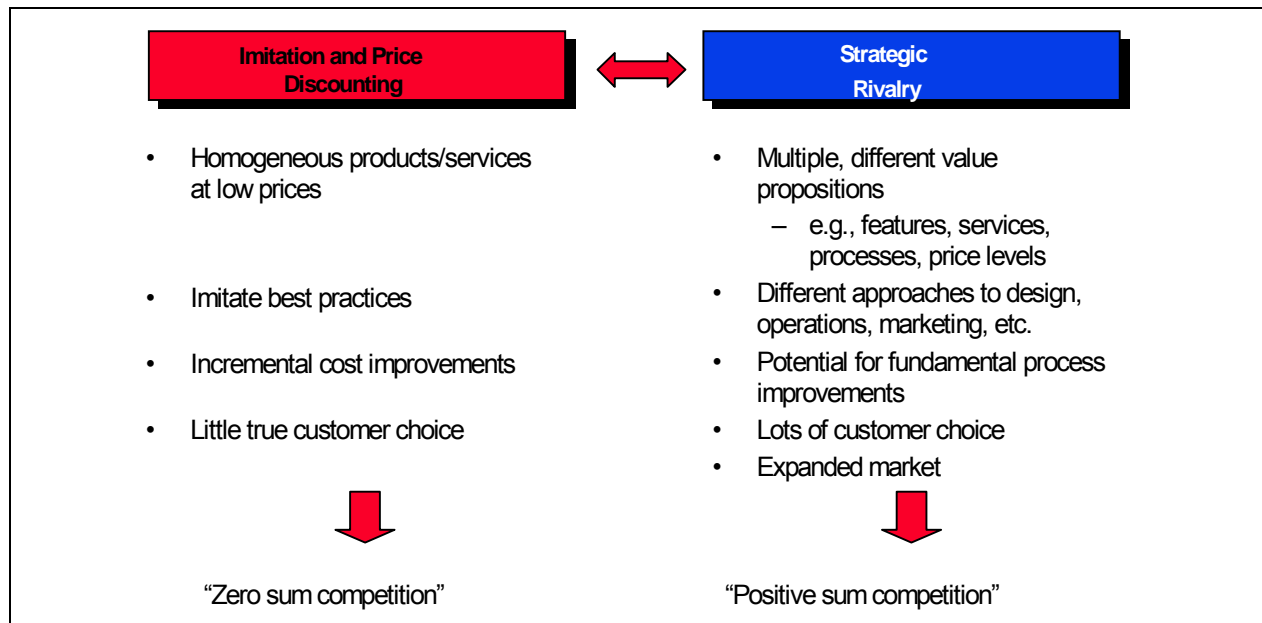
*Forms of Competition.* The multidimensional nature of rivalry is important for understanding the link between rivalry and productivity. Some forms of rivalry are more productivity-enhancing than others, and thus are more valued socially.

For example, one can array types of rivalry along a spectrum including the following (see also Figure 6-7):

1. Competition based on imitation/price discounting
2. Competition based on strategic positioning.

The first type of competition is on operational effectiveness, or the extent to which companies approach best practices in areas such as production processes, technologies, marketing methods, and management techniques. The second, and more fundamental to success in an advanced economy, is competition to create different value propositions for customers, a function of the degree to which companies have distinctive strategies.

**Figure 6-7**  
**Rivalry and Productivity Growth**



Assessing the two according to the productivity growth standard gives very different results. Imitation-based competition leads to similar products among rivals and strong pressures for price discounting. Strategic competition occurs when rivals pursue different value propositions: some firms offer low prices producing stripped down products, others have higher prices but provide better service, while still others concentrate on various segments of the market, tailoring their products and value chains accordingly.

If price/cost margins are used as the metric of social benefit, then imitation and price discounting seem ideal. Customers get the benefit of low prices, and the ability to play one company against others. From a productivity growth standpoint, however, this form of competition may lead to slower dynamic improvement. Competition on strategic positioning can foster increased variety and greater choices for customers in terms of the product that best meets their needs, not to mention more innovation in products and processes. In strategic competition, markets often expand as new needs are met and new customers are drawn into the market. It is important to note that internationally competitive, advanced nations have more innovation- and differentiation-based competition, while less competitive nations tend to compete on imitation and price.<sup>1</sup>

This analysis leads to the controversial conclusion that holding down profitability is the wrong issue for society. Profitability has a contingent relationship with productivity growth. The American software industry is far more profitable than the software industries in other countries, but it is also far more productive and internationally competitive. High profits are

<sup>1</sup> For supporting statistical findings, see M. Porter, “The Current Competitiveness Index: Measuring the Economic Foundations of Prosperity,” in *The Global Competitiveness Report 2000* (Geneva: World Economic Forum, 2000). Results are similar in each year’s reports from 1998-2002. See the full *The Global Competitiveness Reports* for 1998, 1999, 2000 & 2001-2002; and Porter, Takeuchi & Sakakibara (2001)

fine, provided competition is healthy and there are strong pressures for dynamic improvement. The productivity growth standard, then, casts new light on how we assess competition. It reveals the importance of understanding the kind of competition a nation should really be looking for.

**b. Measuring the Health of Local Competition:  
The Diamond Framework**

As has been argued, it is not sufficient to consider only industry competition generally. We must also have a means of gauging the health of *local* competition. Here, one such approach to assessing the potential productivity of a local business environment is embodied in the so-called diamond framework.<sup>1</sup>

The productivity of a national business environment can be modeled using four interacting components that can be depicted as a diamond (see Figure 6-8). These are:

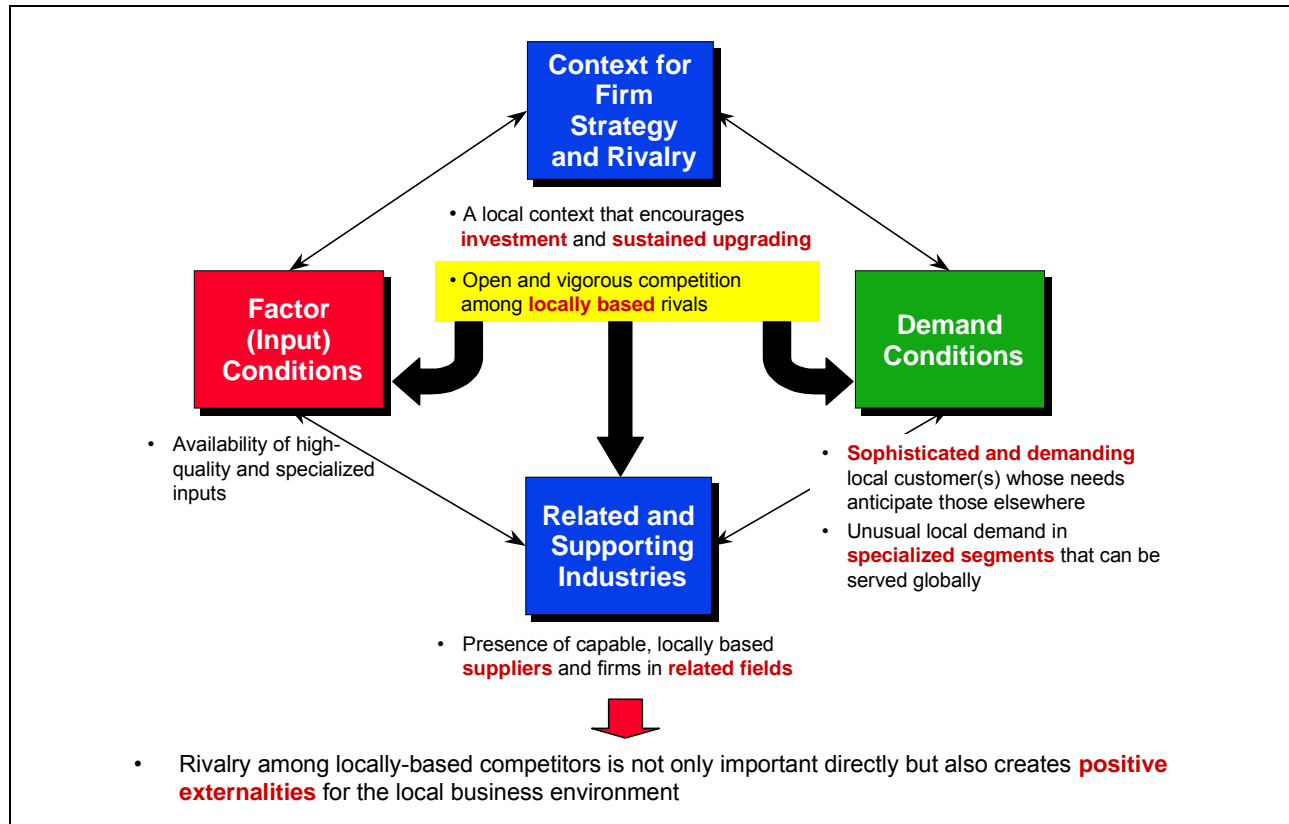
1. Context for firm strategy and rivalry
2. Factor (input) conditions
3. Demand conditions
4. Related and supporting industries

Like the five forces, this framework aims to capture the many influences on the productivity of the local business environment in an industry or overall. Rivalry among locally based competitors is not only important to productivity growth directly but also creates positive externalities for the local business environment. A group of competing local rivals helps customers become more knowledgeable and competitive, encourages more specialized suppliers to develop, and enhances the local supply of high-quality, specialized inputs. This gives rise to a series of new questions that must be addressed in analyzing the impact on competition of a merger or other competitive practice, which will be discussed below.

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<sup>1</sup> M.E. Porter, *The Competitive Advantage of Nations* (1990). For the empirical application of Diamond theory to 75 countries, see *The Global Competitiveness Report 2001-2002* and for its application to 59 75 countries the year before, see *The Global Competitiveness Report 2000*, at 40-58, 101-221, including data definitions and sources at 223-333. For 1998 and 1999, see *The Global Competitiveness Report* for those years. For an extensive empirical application of Diamond theory to Japan, see Porter, Takeuchi & Sakakibara (2000).

**Figure 6-8**  
**The Externalities of Rivalry:**  
**Locational Determinants of**  
**Productivity and Productivity Growth**



Source: M.E. Porter, *The Competitive Advantage of Nations* 133 (1990).

#### **IV. EVALUATING MERGERS AND JOINT VENTURES**

##### **4.1 Why Mergers Should Be of Particular Concern for Antitrust**

Where productivity growth is the central goal of antitrust, it becomes clear that mergers should be treated with special caution compared to other corporate growth strategies. This is true for five reasons:

First, mergers raise almost inevitable issues for the health of competition by removing independent competitors from the market. The question is not whether there is a risk to competition, but how much. This risk stems from the potential lessening of competitive pressure among firms in the industry, the potential reduction in product choice and variety, and the reduction in the number of different approaches being pursued to product/process development and hence the likelihood of innovation.

Second, a merger requires no “skill, foresight, and industry,”<sup>1</sup> only financial resources. It demands no new strategy, and yields no automatic productivity improvements. By contrast, introducing a new product, changing a distribution model, or building a new plant are far more likely to boost productivity. Society, then, should be biased in favor of independent company actions over mergers.

Third, the empirical evidence is striking that mergers have a low success rate. A wide range of studies finds that most mergers do not meet expectations, and most of the profits are captured by the seller, not the buyer.

Fourth, the strategy literature suggests that smaller, focused acquisitions are more likely to improve productivity than mergers among leaders. When a large company buys a small company and integrates it into its strategy, major productivity gains are possible. Mergers among large companies appear to rarely yield such benefits, though they may produce reduction in joint overhead and eliminate major competitors from a market.

Fifth, there are strong financial market pressures favoring mergers over other growth strategies. These arise at least in part from agency problems afflicting both investment managers compensated based on near term stock price appreciation, and company executives given incentives with stock options.

Finally, accounting rules make merger a vehicle for distorted performance measurement, creating artificial pressures for companies to merge.

We cannot assume that a merger will be efficient and profitable just because companies propose it. Companies make mistakes. Every merger needs to be weighed against the productivity growth standard. Indeed, a positive antitrust policy based on productivity growth might actually enhance both the performance of companies and consumer welfare, which would be even better for society.

#### **4.2. Towards a New Merger Evaluation Process**

In dealing with a proposed merger, the primary concern for antitrust should be how the merger, if allowed, would affect productivity growth. We must consider both likely future productivity growth in the industry, as well as the near term productivity impact on the merged firms. The effect of the merger on the health of competition will be central to its likely productivity impact, net of any direct positive productivity growth impacts that can be convincingly demonstrated.

**Three Levels of Analysis.** In analyzing a merger or joint venture then, the three basic levels of analysis needed are:

1. Merger significance and baseline productivity growth analysis.
2. The effect of the transaction on the *health of competition* using the five forces and the diamond framework in *all* significant markets and submarkets that are relevant based on industry and customer practice.
3. A risk/reward analysis of the merger, where its effect on the health of competition is weighed against proposed direct benefits using the productivity growth standard.

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<sup>1</sup> U.S. v. Aluminum Co. of America, 148 F.2d 416, 430 (2d Cir. 1945) (Hand, J.).

**a. Significance and Baseline Productivity Growth Analysis**

This analysis can be broken up into three principal tasks: (1) identifying the set of relevant markets and submarkets and the relevant geographic area; (2) determining whether or not the firm meets a predetermined combined market share cutoff in the relevant markets and submarkets; and if so, (3) establishing the baseline productivity performance of the industry and the firms party to the transaction.

**Step 1.** Rather than going through the lengthy and controversial exercise of trying to define *the* market affected by a merger, this new merger evaluation process is applied to *all* relevant markets and submarkets. There are usually a number of economically relevant market definitions, and each of these is considered. In determining plausible markets or submarkets, three practical criteria can be helpful:

1. How the industry itself defines submarkets
2. How consumers segment the market
3. Whether there is a competitor focused on the submarket (i.e., a focused company dedicated only to serving the submarket, which suggests that it is a viable array of products, varieties, and customers with distinct needs)

Once all plausible markets and submarkets have been identified, the geographic area over which local externalities apply is determined. Note that the relevant geographic area is not based on the geography of sales, but on the externalities in production. The starting assumption is that the geographic unit is the national economy. In some industries, the relevant geographic area can be smaller than a nation. Clusters occur within a region or metropolitan area. In some cases, externalities can cross national borders of immediate neighboring countries.

**Step 2.** To invest the resources required to investigate a particular merger or joint venture, some significance threshold is inevitable. We advocate a relatively low minimum market share threshold of, say, 25 percent combined share in any submarket (discussed below). Such a threshold will conserve resources and screen out transactions where the probability of material impact on competition is small.

There is no contradiction between this cut-off level and our rejection of seller concentration as a measure of market power. We use concentration solely as a significance indicator. A merger involving a small portion of any submarket is unlikely to raise important antitrust issues. Above this threshold, we do not treat higher share mergers differently than ones with somewhat lower shares.

**Step 3.** This step establishes the baseline, historical industry and company performance in terms of productivity growth and robustness of rivalry. For this we look at direct measures of productivity, such as revenue per hour of labor, value added per unit of capital, etc. In order to test the vitality of rivalry in the industry, the fluctuation of market shares in all relevant markets and submarkets are examined. Needed data would be requested in the premerger notification process.

If the affected industry has registered weak productivity growth in the past relative to the economy-wide or industry averages, or if the industry has exhibited limited rivalry historically, this should raise the level of scrutiny by antitrust authorities. If the firms involved in the merger have registered weak or average productivity growth performance relative to the industry, this would raise the level of scrutiny. If substantial past market share fluctuations have involved the

party firms, this would raise the level of scrutiny as well because the merger may be an attempt to stabilize competition. The baseline performance step is a retrospective analysis, providing grounding for the prospective analyses described below.

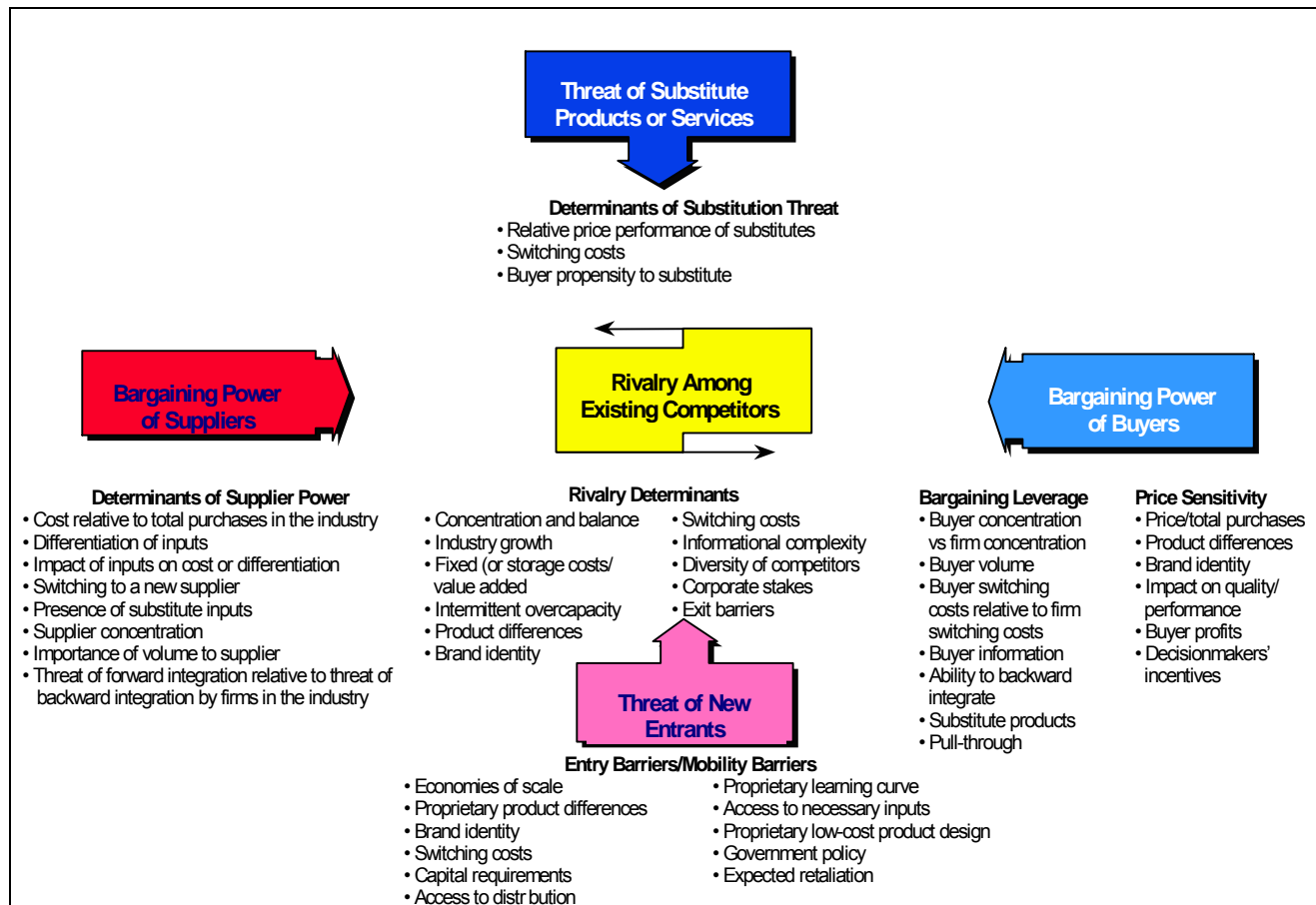
**b. Assessing the Health of Competition**

The next level of analysis is to predict the effects of the merger on long term productivity growth by determining its effects on the health of competition. Five forces analysis is used to measure the health of industry competition in all relevant markets and submarkets, while the diamond framework is used to measure its likely effect on the health of local competition. If both lead to the conclusion that there is no material negative effect on competition, the merger or joint venture would be approved. If either analysis raises questions, the process would move to the next stage.

**Five Forces Analysis.** Here the effect of the merger or joint venture on barriers to entry, rivalry, customer power, substitution, and the power of the suppliers would be explored. The analysis should be conducted for *all* relevant segments and submarkets.



**Figure 6-9**  
**Merger Effect on the**  
**Health of Industry Competition: Five Forces Analysis**



Each of the five forces is affected by a series of drivers (see Figure 6-9). Every one of these factors must be assessed in turn. The starting point is to establish the level of each driver and the direction in which it is moving (i.e. increasing, decreasing, or stable) before the merger, then determine whether and how the merger will affect these. Often the effect of the merger on a particular driver can be quantified precisely. At the very least it is possible to ascertain whether the effect is positive, negative, or neutral, and whether the effect is likely to be significant or modest. A particular merger, for example, might have a strong tendency to raise barriers to entry. One is normally able to estimate the increase in minimum scale. The size of the increase would be weighed against shifts in other forces. If all other things remain equal, the merger's effect would be judged negative. If buyer power or the substitution threat was rising, however, the analyst would assess whether the magnitude of the effect was offsetting.

The role of "Concentration and Balance" in rivalry may appear similar to market share analysis. However, even here there are substantial differences. First, seller concentration is only one of the many determinants of rivalry. Second, we are mostly interested in the balance between competitors and how this affects rivalry, not shares per se. Third, we are less interested in market shares than in the *fluctuation* of market shares. Finally, the types of rivalry prevalent

currently and likely in the future are considered with their differing effects on the growth in productivity.

The five forces approach offers several advantages in evaluating merger or joint venture transactions in contrast to using seller concentration and HHI analysis. First, the broader analysis is more intuitively appealing as a representation of competition. Seller concentration and HHI analysis is arcane and can be arbitrary. It is prone to attempts at manipulation and gaming.

Second, five forces analysis is based on a rich conception of competition, which is multidimensional and not based only on price. Managers know that seller concentration is not the dominant influence on competition. As has been discussed, price competition may not be the most beneficial form of rivalry for productivity growth.

Third, the five forces framework can and should be readily applied to any and all market definitions. It can be applied to the industry as a whole, and to any segment (a segment can be a particular customer group, subset of product varieties, or combination of the two). Barriers to entry into a segment, for example, may be higher or lower than barriers to entering other segments; and substitute products often vary by segment as well. The definition of the industry can be expanded to include substitutes, customers who are partially backward integrated, or some potential entrants. With five forces methodology, it matters less where industry boundaries are drawn because the framework encompasses all the important influences on competition.

Fourth, five forces analysis is very fact-intensive, and its conclusions depend on the particular fact pattern in an industry rather than generalizations embodied in HHI or seller concentration cutoffs. Every industry is unique, and requires analysis of its own particular characteristics. The five forces framework can be seen as an expert system; it takes the facts of a particular case and translates them into the implications for competition.

Finally, the five forces framework also allows an assessment of both near-term and long-term effects on competition. In industry competition, it is rare that the first move is the end state. When a merger takes place, for example, it can trigger mergers by others. A good analysis considers what could happen next, and weighs its consequences for industry structure. Concentration analysis, in contrast, tends to be short term and static.

It might be argued that many of the considerations revealed in five forces analysis are considered in the existing merger evaluation process by skilled practitioners. This is certainly true, but this proves rather than argues against its usefulness. Existing merger analysis is hamstrung by an unclear and questionable central goal (limiting short-term price-cost margins), and the process is built on HHI, a questionable measure of competition. Other considerations come in only later, and as adjustments and balancing arguments. This indirect approach seems less reliable in weighing the issues than a frontal approach. Moreover, since these additional considerations are not clearly stated in the Merger Guidelines, they are not transparent to companies and make the entire process appear arbitrary.

Current merger evaluation is also compromised by its reliance on short-term price and quantity analysis. The result is a sort of false precision, in which tools like merger simulation seem to be exact but assume a stylized model of competition based solely on price and quantity and say little about what will occur in the long run.

Performing five forces analysis requires significant effort in terms of data collection and analysis, which some argue would pose challenges to antitrust authorities with limited resources. However, a skilled practitioner can reach informed judgements based on a modest number of

industry interviews and secondary sources, and the approach allows effort to be quickly focused on the most important issues. Moreover, the current merger evaluation process involves enormous effort in determining and litigating relevant market and concentration. The proposed merger evaluation process may in fact prove less burdensome for antitrust authorities than current practice and the effort involved more fruitful in terms of understanding the true competition issues facing the affected industry.

**Diamond Analysis.** We apply the diamond analysis to determine the effect of the merger on the productivity of the local business environment.

**Figure 6-10**  
**Merger Effect on the Health of Local Competition: Diamond Analysis**

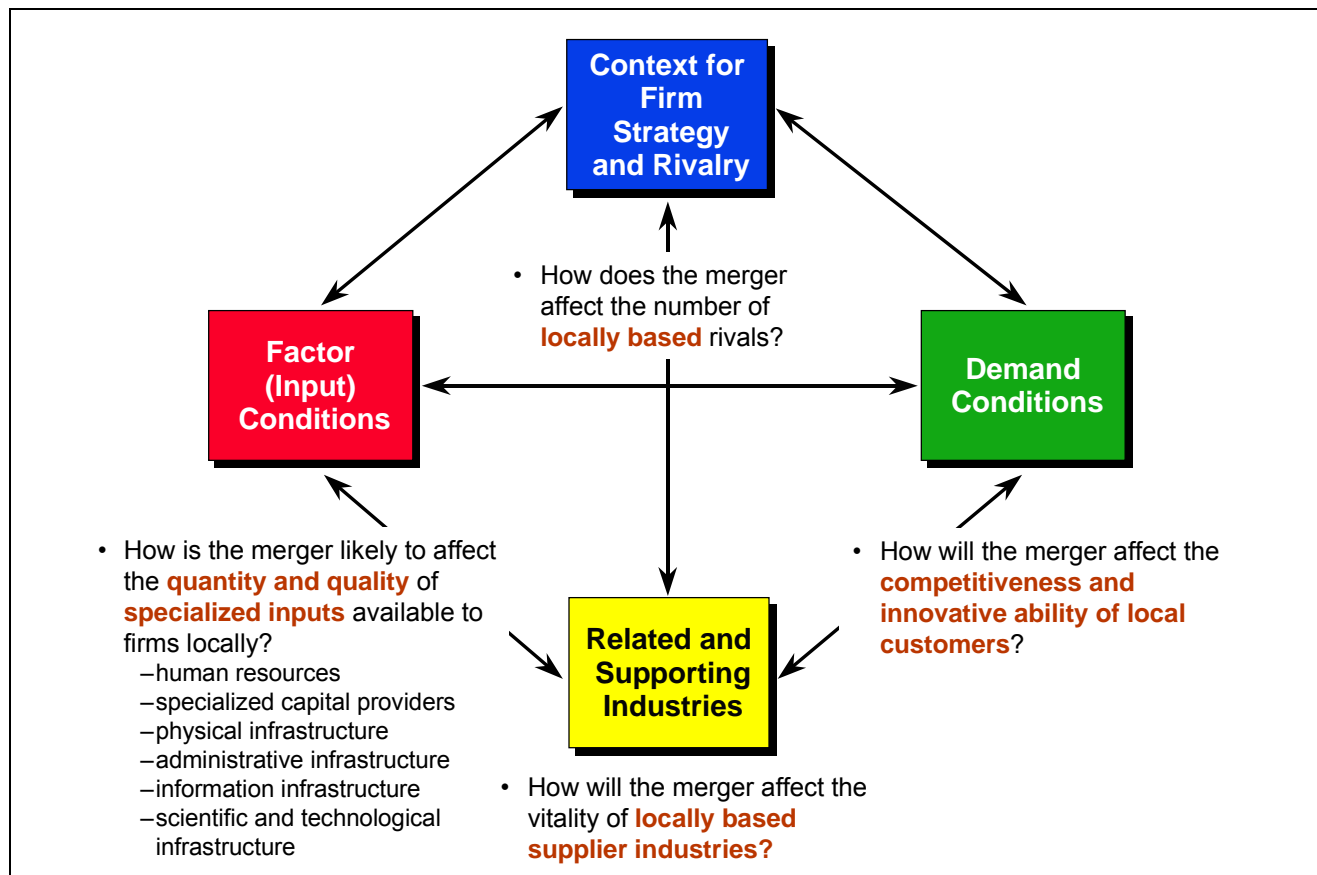


Figure 6-10 highlights the questions to be considered. For example, a reduction of local competition due to a merger can hurt competition and productivity in customer industries. Cut off from close relationships with independent, locally based vendors, customers can become less productive and or their ability to innovate can decline.

Diamond analysis points again to how misleading a focus on seller concentration can be compared to a focus on productivity growth. Global industry definition is invariably invoked to minimize the concentration effects of mergers. However, if competition is diminished in the local market, the adverse consequences for productivity can be substantial. While there can be static efficiency benefits of a merger between large national rivals that are often emphasized, these tend to be one-shot benefits that are less significant than the consequences of the merger for productivity growth.

Taking into account externalities in local competition leads one to be particularly wary of a merger between a leading international company and a leading domestic company, especially when the domestic company will be integrated and important activities will be moved to other locations, thereby diminishing potential local externalities. International companies seeking to acquire a local company should be encouraged to acquire a smaller competitor. This would reduce the risk of diminishing local rivalry, and may actually increase it.

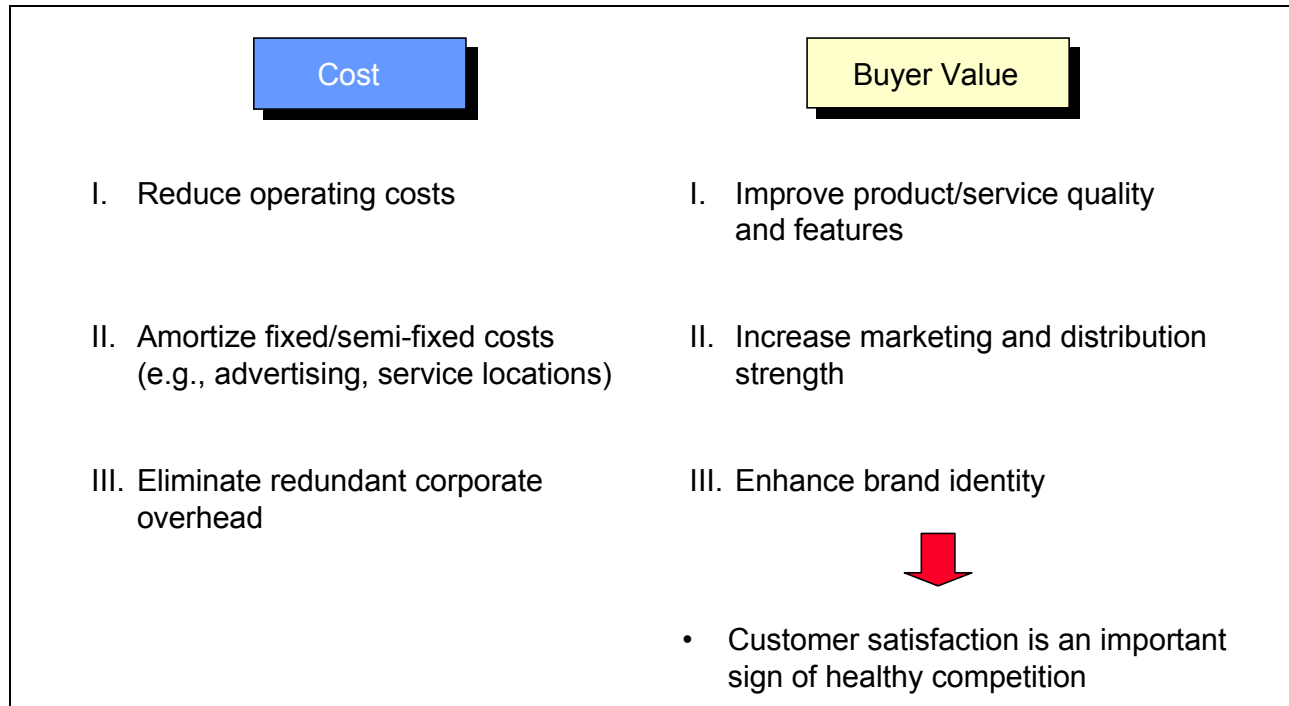
**c. Direct Productivity Growth Offsets**

If it is determined that there is a significant potential adverse effect on the health of competition in the short or long term in *either* industry competition or local competition, the direct effect of the merger (or joint venture) on productivity growth would be assessed. Key questions would include the following: Are there clear and significant productivity growth benefits that can be demonstrated? Are these productivity gains ongoing or one time? How likely are they to occur? Here, the parties would be expected to demonstrate fundamental and lasting productivity growth benefits along the lines discussed below. A risk/reward analysis would then determine whether the merger or joint venture is approved by the government, or lawful under the antitrust laws. Clear productivity growth benefits from the merger or joint venture would be necessary to outweigh the threat to competition that the merger entailed.

Potential direct productivity benefits should be evaluated according to the hierarchy depicted in Figure 6-11. Productivity enhancement consists of both product value (which is usually reflected in price), and efficiency (or cost). Both are important, and priority must be given to dynamic improvements over static ones.

Companies often tout the fact that mergers reduce costs, but what they really mean in many cases is that the merger will allow elimination of redundant corporate overhead. This form of cost reduction is marginal for productivity growth because it is a one-time benefit and does not affect the inherent operating cost of producing and delivering a product or service. A merger that leads to ongoing savings in the actual operating costs of the business is much more attractive in meeting the productivity growth standard. A merger that creates greater scale over which to amortize largely fixed costs such as media advertising falls somewhere in between. The productivity growth standard therefore casts new light on the efficiency justification for mergers and other practices.

**Figure 6-11**  
**Hierarchy of Productivity Enhancement**



In addition, post-merger reductions in operating costs that involve a rationalization of product lines may actually involve a reduction in product variety. The improvement on the cost side results in deterioration on the value side, which must be considered in the overall assessment.

On the value side, mergers with clear and demonstrable benefits for the quality and features of the actual product or service should be favored. These are likely to be far more meaningful to productivity and productivity growth than those that only improve marketing or strengthen distribution. The latter benefits usually come at the price of higher barriers to entry and reductions in productivity growth over time.

Productivity growth analysis focuses on the long-term *trajectory* of product value and cost, not only on perturbations to current productivity. One-shot benefits to productivity are overwhelmed if a merger or other arrangement risks lowering the rate of productivity growth.

The threshold for offsetting direct productivity benefits would be higher if:

1. The merger produced a dominant firm;
2. Past productivity performance of the industry or party firms was weak;
3. The party firms have been direct and vigorous rivals.

**Justifications Based on Network Effects and Schumpeterian Competition.** Opponents of strong antitrust enforcement frequently argue that pervasive network effects dominate the so-called new economy, making large, dominant firms unavoidable in many “high-tech” industries. This argument is sometimes used to defend mergers that create a dominant firm, since consumers are expected to benefit from dealing with a larger network.

Network effects exist when an industry is marked by economies of scale in consumption, that is, when a product or service is more valuable to an individual customer the more total customers there are. Examples include telephone service, fax machines, e-mail, etc. Network effects can and should be analyzed in context of the five forces, for instance when discussing barriers to entry, or the nature of rivalry.

Network effects are not new, and there is little systematic evidence that they are more pervasive in high-tech industries than traditional ones. Furthermore, network effects are often not proprietary to individual firms, and are self-limiting to the extent that customer needs vary within the industry. Substantial network effects large enough to support a dominant position appear to occur only in a very small subset of industries. There is no need for mergers as a growth strategy if there are true proprietary network effects. Firms should be required to grow internally instead. In the rare case of proprietary network effects leading to a dominant firm that is able to block entry, antitrust policy should require interoperability or an open standard, unless a compelling case can be made that keeping the standard proprietary leads to faster growth in productivity.

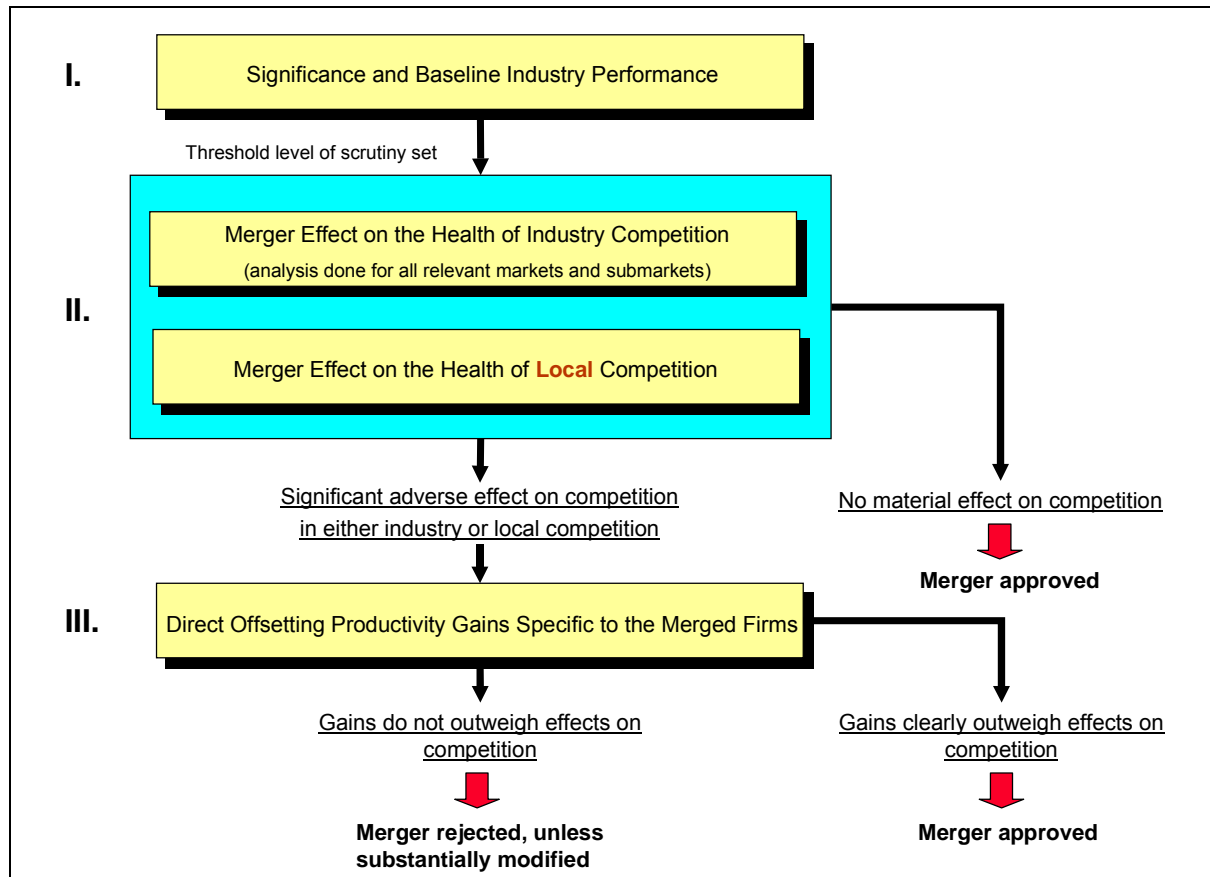
In parallel to the discussion of network effects, the claim is often made that these same high-tech industries are characterized by Schumpeterian competition, in which frequent drastic innovations disrupt the market, creating new winner-take-all races. The presumed high frequency of these innovations is asserted to prevent currently dominant companies from establishing long term monopoly positions. Therefore, it is argued, antitrust should not intervene in high tech industries with large dominant firms, since corrective forces will work to overturn them naturally.

A Schumpeterian focus on innovation is essential, and highly supportive of a move to productivity growth as an antitrust standard. However, using Schumpeter as a justification for ignoring anticompetitive behavior or for allowing mergers among leading competitors dramatically underestimates the time between market-disrupting occurrences, even in high tech industries. In truth, drastic innovations in industries occur only once every few decades, so that dominant positions create substantial costs to productivity growth and to society. It should also be noted that mergers are anti-Schumpeterian. Far from reflecting true innovations, they tend to entrench established companies and temper the rate of innovation occurring in an industry. Therefore, the above argument is spurious in attempting to justify mergers.

### 4.3. The Process Summarized

Figure 6-12 provides a summary of this merger evaluation process.

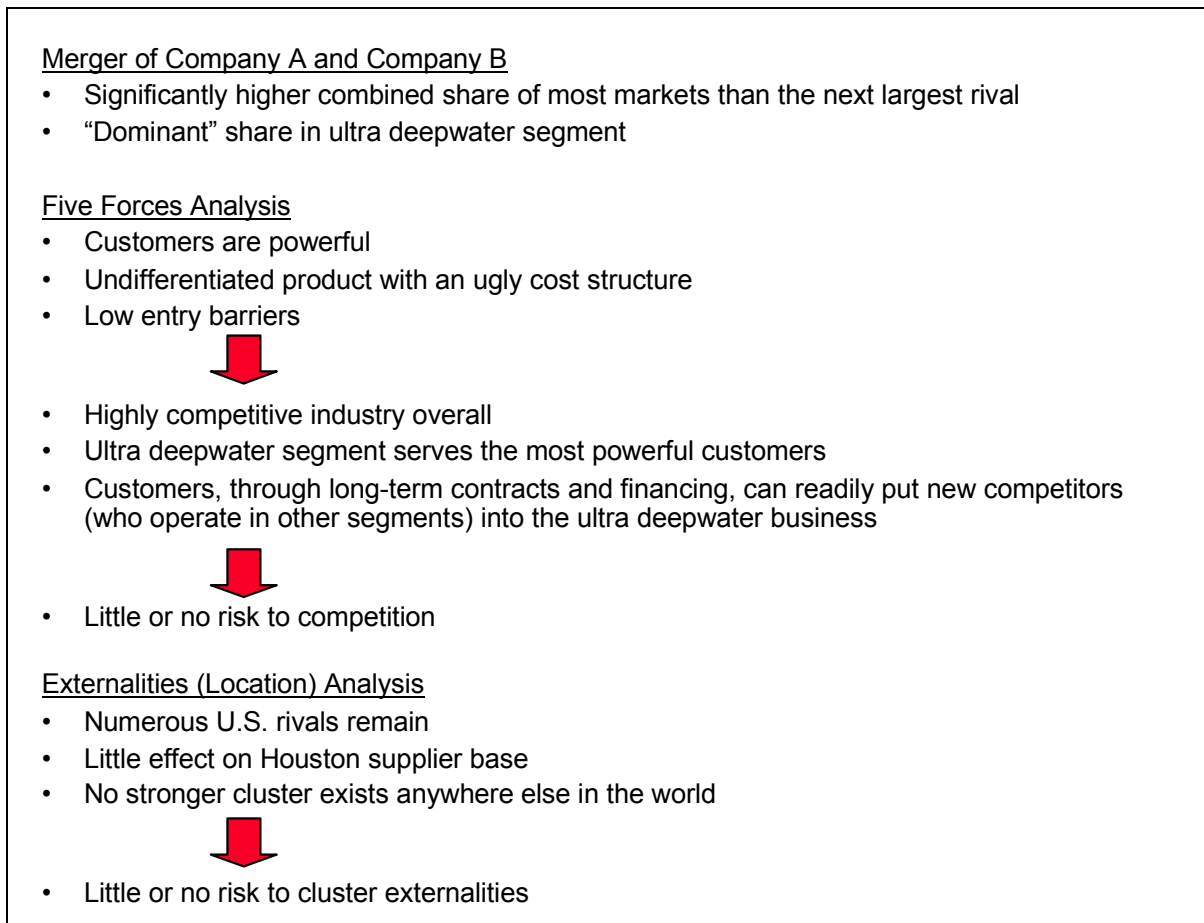
**Figure 6-12**  
**Merger Approval Process**



## V. MERGER CASE STUDY

Figure 6-13 offers a brief case study of this analytical process, based on a merger between two offshore drilling companies. In this industry, firms operate highly capital-intensive drilling units that cost up to \$500 million apiece. The merger of companies A and B would create a combined company with the highest overall share of the industry, and a dominant share in one large, important segment. On the surface, the merger looks troubling. Using the standard approach of defining submarkets and calculating HHI, it fails.

**Figure 6-13**  
**Case Study: Offshore Drilling**



Five forces analysis reveals, however, that customers in the industry are very powerful, major oil companies. They can put new rivals into business and, through long-term contracts, can also cause new drilling units to be constructed. Rigs are essentially undifferentiated and have high fixed costs. Low marginal costs make the business prone to deep price discounting. Assets can be easily moved from one geographic market to another. Although it would seem that the high asset costs create formidable barriers to entry, since powerful customers can use long-term contracts to put companies into new segments and rig technology is widely available, actual entry barriers are modest. The segment in which the merger would yield a dominant share also proves to be the segment with the most powerful customers.

The merger also raises few concerns for locational externalities. Post-merger, numerous U.S.-based offshore drillers would still be present. New entry remains feasible. There is little likely effect on suppliers or other Houston-based institutions. Moreover, there is no other location in the world with a close to comparable critical mass of rivals, suppliers, and other institutions.

An analysis beginning with HHI could certainly reach the same conclusion. However, there can be much wasted effort and unproductive discussion. Also, antitrust lawyers are drawn



to concentrate on the HHI analysis because it is highly specific and comes first in the process, with other subsequent “considerations” far less transparent.

To implement the five forces and locational approaches, a body of examples and guidelines for quantification and weighing various factors will be needed. This can be developed in subsequent papers, drawing on the large body of experience in corporate and economic development practice.

## **VI. ADDITIONAL U.S. ANTITRUST ISSUES**

In the United States, the role of antitrust in limiting anticompetitive mergers and joint ventures that threaten industry productivity growth could be reinforced by a number of other public policy changes. One is eliminating pooling of interest, a policy which is currently being implemented. Pooling-of-interests accounting obscures the financial consequences of a merger, and allows companies to report post-merger profit improvements that are misleading.

Stricter rules on merger write-offs and restructuring charges would also limit uneconomic mergers. If the purchase price of a merger can be partly written off, the ongoing reported ROI can be artificially high. Since companies must invest the full purchase price to acquire a company, the full purchase price should appear as an investment on the books. Restructuring charges and write-offs are artificial adjustments that do not make the amount of the investment any different.

Third, new reporting requirements that mandated ongoing disclosure of total equity investment before write-offs would produce a better understanding of true return on shareholder investment. A company that generates improving returns by writing off a substantial part of its investment will be recognized for what it is, a company that has not used shareholder capital very well.

Finally, a comprehensive data set on mergers and their longevity and outcomes would be useful and potentially revealing. In a 1987 paper, I examined the merger history of a sample of companies back to World War II, and calculated the share of mergers that were liquidated or divested.<sup>1</sup> This proportion turned out to be well over 50 percent of all transactions. Data such as this would sensitize managers and investors alike of the risks of these transactions.

Today, an unhealthy situation has been created in which distorted reporting leads shareholders to believe that bad mergers are good. This then leads managers to pursue mergers with no real productivity benefits, and sets up a contest with antitrust officials to get such transactions approved.

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<sup>1</sup> M.E. Porter, “From Competitive Advantage to Corporate Strategy,” *Harvard Business Review*, May-June 1987, at 43. See also Scherer, “Some Principles for Post-Chicago Antitrust Analysis,” 52 *CWRU Law Rev.* 5, 11-12 (2002) (“study after study” has shown that the acquiring company’s stock price “decline[d] by impressive and statistically significant magnitudes in the one to three years” after the merger; see also Frank & Sidel, “Firms That Lived by the Deal Are Now Sinking by the Dozens,” *Wall St. J.* A1 (June 6, 2002).

## **VII. CONCLUSION**

The current approach to antitrust rests on questionable and often unclear foundations, giving its numerous critics reason to condemn it as unnecessary or, at worse, harmful. However, antitrust is more crucial than ever in an economy characterized by dynamic competition. By adopting a productivity growth standard, antitrust would better link the health of competition to not only consumer welfare but to competitiveness and national policy, making the rationale for vigorous competition much more convincing.

The productivity growth approach aims to define an explicit hierarchy of goals for antitrust law and policy, and a framework that leads companies contemplating mergers to confront the issues that are important for society, firms, and their shareholders, as well as for consumers. The pressing need is that corporate discussions with government and the bases for litigation be focused on the right issues. We should not be debating the size of the company, the market definition, nor what the “correct” HHI should be. We should be debating the merger or joint venture’s impact on productivity growth and on the health of competition, using tools that capture the richness of competition and match with the reality faced by firms.

This new approach would better align the interests of consumers, companies, workers, and the overall economy, as sustained productivity growth is the desired outcome for all parties. Today’s antitrust is too often a contest between firms and the government; a broader, richer analysis of competition based on productivity growth standard could change that. Indeed, the productivity growth standard demonstrates the surprising underlying symmetry between companies’ interests, consumers’ interests, and society’s interests. A strong antitrust policy that correctly articulated this symmetry would encounter far less resistance than current policy. Even if all aspects of the new approach are not adopted, there is an urgent need to move toward reversing the current hierarchy of goals in antitrust and adopting a productivity growth focus.

## CHAPTER 1.2

# Moving to a New Global Competitiveness Index

**MICHAEL E. PORTER**, Harvard University

**MERCEDES DELGADO**, Institute for Strategy and Competitiveness,  
Harvard Business School, and Fox School of Business, Temple  
University

**CHRISTIAN KETELS**, Institute for Strategy and Competitiveness,  
Harvard Business School

**SCOTT STERN**, Kellogg School of Management, Northwestern  
University

*The Global Competitiveness Report* (GCR) has long been a globally recognized ranking of country competitiveness and a tool for benchmarking country strengths and weaknesses. In an effort to continually introduce the best available methodology in preparing the rankings, there has been a series of improvements in the methodology over the years. An important milestone was reached in 2000, when Professor Jeffrey Sachs introduced the Growth Competitiveness Index, based on a stronger academic foundation in economic growth theory. Professor Michael Porter joined the effort in 2000, introducing a companion Business Competitiveness Index (BCI) focused on the microeconomic drivers of prosperity. In 2004, Professor Xavier Sala-i-Martin created a Global Competitiveness Index (GCI), which included both macroeconomic and microeconomic factors of competitiveness. Since 2004, the GCI has been published in the GCR alongside the BCI.

This year, the World Economic Forum and Professor Porter have embarked on another important stage in the development of the GCR. Under Professor Porter's leadership, the aim is another step-change improvement in both the Index methodology and the quality of the Executive Opinion Survey (the Survey), which provides many proprietary data used in preparing the *Report*. This chapter previews the upcoming changes in the Index, while Chapter 2.1 discusses the considerable improvements that have already been implemented in the Survey process.

The aim of the New Global Competitiveness Index (New GCI) is to create a single, fully integrated index to replace the two indexes published in recent years. The New GCI will be based on a single model that is firmly grounded in the latest academic research while designed to extend research and yield practical insights for policy-makers. The New GCI will also create a stable methodological platform for the years to come.

The New GCI will concentrate on the determinants of the productivity level that a national economy can sustain, which is the ultimate driver of national prosperity. Data will continue to be drawn from a mix of public sources and the unique and proprietary annual Survey of many thousands of business executives from around the world. The majority of the individual indicators used in the previous indexes will be incorporated into the new index.

While many of the elements stay the same, the New GCI incorporates them in a new and more robust conceptual structure. It will also employ a new and more rigorous statistical methodology.

To develop the new index, Professor Porter assembled a team of scholars including Professor Scott Stern

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of Northwestern University, Professor Antonio Ciccone of Universitat Pompeu Fabra, Professor Mercedes Delgado of Temple University, and Dr. Christian Ketels of the Institute for Strategy and Competitiveness at Harvard Business School. The New Index is largely developed, and will be rigorously tested over the coming year. An advisory group of outside experts will review the New Index and make recommendations for improvements. The official launch of the New GCI will coincide with the 2009 *Global Competitiveness Report*.

Assessing a country's competitiveness is a challenging task because of the sheer number and variety of influences on national productivity. Correlation among many of the indicators makes disentangling the impact of individual indicators complex from a statistical standpoint. It is precisely because of these challenges, as well as the fact that most studies highlight a subset of influences rather than seek a comprehensive model, that the academic literature has not achieved consensus on the causes of productivity. Different datasets and alternative econometric approaches have led to different and often conflicting claims about the specific drivers of competitiveness.<sup>1</sup> The aim of the New GCI is to deal with these challenges in a way that is rigorous, pragmatic, and designed to inform policymakers at a detailed level.

This chapter provides an overview of the New Index, its structure and methodology, and some of its overall findings. While the details will evolve, we wanted to provide a preview to inform scholars and practitioners of the new approach and invite dialog about the proposed methodology and its implications.

### The foundation of competitiveness

Prosperity is determined by the productivity of an economy, which is measured by the value of goods and services produced per unit of the nation's human, capital, and natural resources. Productivity depends both on the value of a nation's products and services, measured by the prices they can command in open markets, and the efficiency with which these products can be produced. Productivity supports high wages, a strong currency, and attractive returns to capital—and with them a high standard of living.<sup>2</sup> Competitiveness, then, is measured by productivity.

The world economy is not a zero-sum game. Many nations can improve their prosperity if they can improve productivity. Improving productivity will raise the value of goods produced and improve local incomes, expanding the global pool of demand to be met. Globalization has increased the returns to productivity by opening up large new markets for competitive countries. Globalization has also raised the costs of low productivity, by reducing the ability to sustain low-productivity companies or provide high-paying jobs for less-skilled employees. The central challenge for any economy is to create the con-

ditions in which companies and employees throughout the economy can upgrade their productivity.

Identifying the drivers of productivity (and ultimately prosperity) across countries is one of the oldest occupations of economic research. Theoretical models initially concentrated on the role of capital accumulation in economic growth.<sup>3</sup> Over the last decades, they have focused increasingly on the role of knowledge.<sup>4</sup>

Empirical research, enabled by new datasets covering an ever increasing range of indicators, has tested the impact of a wide range of these possible productivity drivers. Important categories of productivity drivers highlighted have included the role of institutions, openness to trade and investment, geographic location, and the quality of the business environment. While there is broad agreement on some general findings, no consensus model has yet emerged on the specific drivers of productivity and their relative importance. Results tend to be highly dependent on the specifics of the sample of countries chosen and the actual measures used.<sup>5</sup> These findings have led to debate about policy implications.<sup>6</sup>

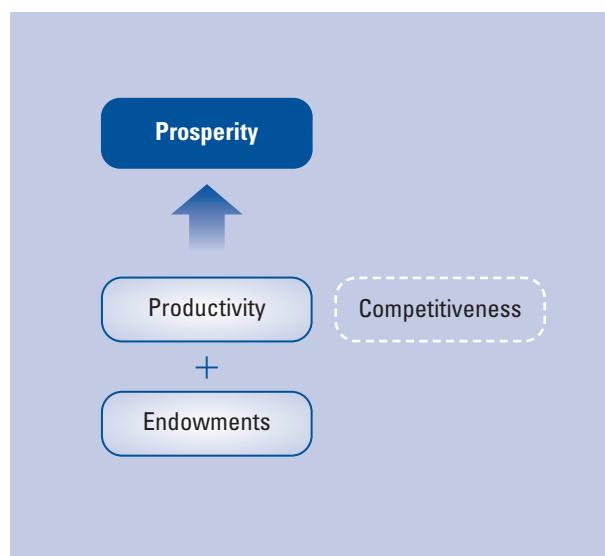
The New GCI framework is grounded in this literature, but aims to provide an integrative overall framework while capturing detailed local circumstances at the country level that are actionable by policymakers. Much academic work focuses on a minimum set of root causes that statistically explain the differences in current prosperity levels across countries, such as a nation's colonial past. The New GCI aims to identify the proximate drivers of current prosperity at a level that can be addressed by policy, even if these drivers may have been influenced by history.

Theory and empirical evidence suggest that many things matter for competitiveness. The New GCI framework incorporates a comprehensive set of these factors, rather than isolating a few factors that are econometrically most efficient in predicting prosperity levels. Our aim is to capture the rich set of influences on productivity that will allow policymakers to understand country strengths and weaknesses and craft a policy agenda.

Some national conditions, such as the quality of public institutions, are general conditions that create opportunities for higher productivity across the economy that may or may not be realized. Other factors, such as the average skill level of the labor force, directly affect productivity. Differences in the mechanism of influence often coincide with the policy process that governs them: general conditions affecting productivity tend to be under the control of national governments, while many direct productivity drivers are often the result of involvement by many parts of government, the private sector, academia, and other institutions.

Within broad categories, such as physical infrastructure or financial market sophistication, we find that there is a high degree of correlation between individual factors. Thus, improving a country's position is a matter of improving groups of interrelated factors, not just

Figure 1: Defining competitiveness



influencing one or two isolated weaknesses. The New GCI framework deals with this issue through an econometric approach that reveals the common movements of related factors instead of imposing weights that treat factors as separate.

### Elements of the New GCI framework

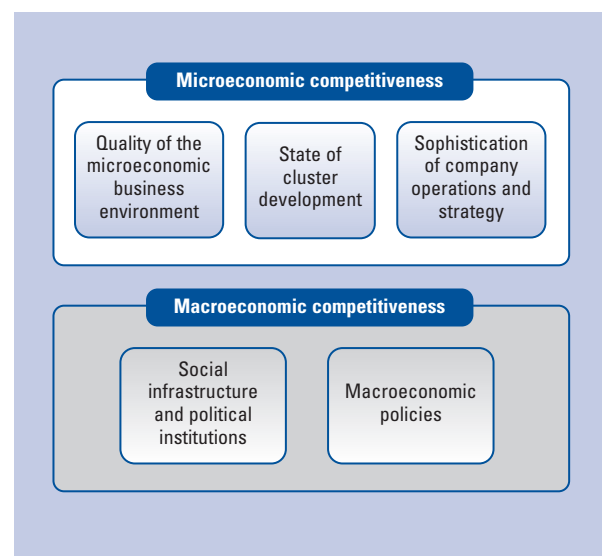
The aim of the New GCI is to reveal the underlying causes of productivity. There are three overall building blocks of the framework: endowments, macroeconomic competitiveness, and microeconomic competitiveness. Endowment affects prosperity directly through inherited natural resources, geographic location, or a large home market. Endowment is a control variable in explaining prosperity.

Competitiveness is what determines the productivity with which a nation's endowments are used to create goods and services. Competitiveness arises from both macroeconomic and microeconomic factors. These are captured in detail in the New GCI.

### Productivity

The dependent variable used in estimating the New GCI model is the level of GDP per capita, adjusted for purchasing power parity (PPP). GDP per capita is the broadest measure of national productivity and is strongly linked over time to a nation's standard of living. It is the single best summary measure of country performance available across all countries. It provides continuity with the BCI model of previous years. The focus on productivity reflects our goal of identifying the determinants of sustainable prosperity, whether they operate through inputs such as skills and capital or through the efficiency with which these inputs are employed. Focusing on

Figure 2: Foundations of productivity



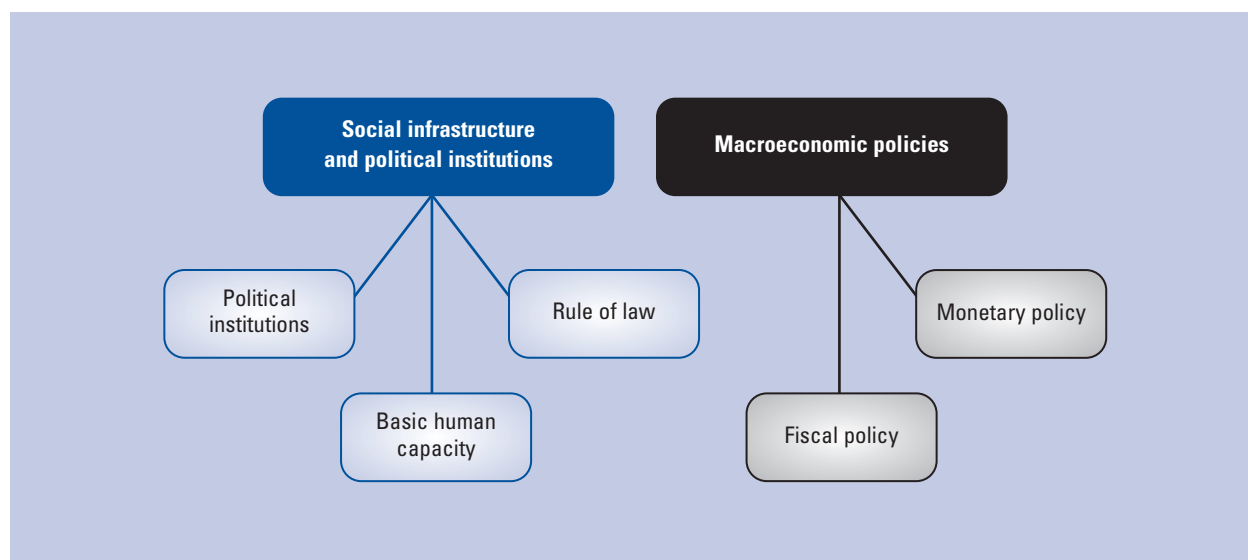
inputs and efficiency separately is problematic because of conceptual as well as practical issues. Conceptually, they are not determined independently.<sup>7</sup> Practically, the calculation of inputs and efficiency levels is subject to significant data limitations.

### Endowments

The New Index explains productivity rather than becoming co-mingled with resource abundance. Controlling for endowments allows the New GCI to distinguish between prosperity and productivity. Inherited prosperity from, for example, oil resources, is captured in the control. The competitiveness indicators then explain the created wealth from productive economic activity that adds value to available labor and natural assets.

The empirical growth literature has generally revealed a negative influence of natural resource abundance on prosperity levels, summarizing the evidence using the term *resource curse*.<sup>8</sup> The traditional justification for this counterintuitive finding—access to valuable resources seemingly should have a positive effect on prosperity—has been the Dutch Disease. Here, revenues from natural resource exports lead to an appreciation of the real exchange rate that, in turn, drives factors of production into local activities such as retailing that have lower long-term potential for productivity growth. An additional justification for the resource curse is the role of institutions: natural resource wealth has a negative effect on the quality of political institutions and economic policy, eroding competitiveness over time.<sup>9</sup>

A country's geographic location is another endowment that has been discussed as a possible external factor influencing wealth. Location can affect the ease with which countries can engage in trade, for example, because of having a long coastline,<sup>10</sup> or because of distance from

**Figure 3: Macroeconomic competitiveness**

large markets.<sup>11</sup> Another locational dimension of endowments is the proximity to the equator and climatic conditions that expose a country to tropical diseases and might lead to lower agricultural productivity.<sup>12</sup>

Finally, there is a widespread view that another type of endowment, country size and population, affects prosperity. While there is little empirical evidence on direct effects of country size on growth, there is evidence of some effects such as the greater effect of openness to trade on prosperity for small countries than for large countries.<sup>13</sup> Some evidence suggests that the level of agglomeration is related to prosperity for poor countries, but the findings are not yet very robust.<sup>14</sup>

### Macroeconomic competitiveness

Macroeconomic factors operate indirectly to affect the productivity of firms in an economy. They are necessary, but not sufficient, for higher productivity.

The New GCI framework distinguishes two broad areas of macroeconomic competitiveness: macroeconomic policy (MP) and social infrastructure and political institutions (SIPI). These areas reflect two key strands in the macroeconomic growth and prosperity literature. Macroeconomic policy has dominated the debate for a long time,<sup>15</sup> while recent literature has put more emphasis on institutions.<sup>16</sup> There is an emerging consensus that institutions have a strong effect on productivity, especially when accounting for their endogenous effects on other economic and social policies.

Macroeconomic factors are heavily the province of central governments. In most areas of macroeconomic competitiveness, there is broad consensus on best practices in managing the policy levers available. Achieving high levels of macroeconomic competitiveness is thus largely a matter of achieving these best practices and

sustaining them over time, often in the face of political opposition by interest groups hoping to benefit from different policies.

*Macroeconomic policy* has been the central focus of the economic policy debate in most countries.<sup>17</sup> Fiscal and monetary policy, each a separate area of academic research, are included in the New GCI framework. Although many countries achieve similar levels of performance on fiscal and monetary policies, differences exist and can sometimes persist.<sup>18</sup>

Fiscal policy—that is, government spending and financing decisions—is primarily discussed in terms of its impact on short-term fluctuations of economic activity. In terms of its impact on long-term differences in productivity across locations, researchers have distinguished between the role of the absolute size of the government and the growth of government spending, and the patterns of raising government revenues over time. More prosperous countries tend to have a larger share of government spending in GDP, a relationship first noted by German economist Adolph Wagner in the 19th century.<sup>19</sup> This is true because the demand for public goods such as infrastructure and social security systems increases with overall prosperity. However, there is significant variance of government budgets among countries at similar stages of development. Recent analysis has focused more on the nature of financing, notably the impact of different patterns of taxation on overall prosperity.<sup>20</sup> The literature suggests that, within normal parameters, the overall size of government (and implicitly the level of taxes) is less important than the way government spends money (government efficiency) and the way taxation is structured (distortiveness and bureaucratic burden of taxes).

The sustainability of government financing over time is another factor with potential impact on productivity levels. High debt levels ultimately have to be financed by increasing taxation or reducing spending. Or, if governments have the power to do so, they can use monetary policy to induce inflation as a way to reduce their debt burden. Expectations in these directions, triggered by high government debt burdens or excessive deficit financing of budgets, can distort investment decisions and thus lower the potential for higher productivity. The impact of fiscal policy on the business cycle could also have an impact on productivity: more cyclicity can increase the periods of time in which companies with financing constraints are unable to finance otherwise-profitable long-term investments. Overall, however, the empirical literature suggests that the impact of fiscal policy on long-term productivity differences is weak, especially after controlling for the quality of political institutions.<sup>21</sup>

Monetary policy, especially the level of the money supply, is also normally treated primarily in the context of short-term fluctuations in economic activity. But monetary policy can also have longer-term effects: high and volatile inflation can, for example, render price signals hard to interpret and thus distort decisions away from investments that lead to higher productivity. While the empirical literature tends to support this view for very high rates of inflation, there is less conclusive evidence of the impact of moderate levels of inflation on long-term productivity growth.<sup>22</sup> Nevertheless, there is a broad policy consensus on the need for monetary policy to support low inflation.<sup>23</sup>

Social infrastructure and political institutions (SIPI) have become the focus of much academic analysis and policy attention in the last two decades.<sup>24</sup> New datasets have been created to compare policies and institutions across countries and test systematically for their impact on prosperity levels.<sup>25</sup> Given this literature, the policy debate shifted toward an “augmented” Washington consensus, combining solid macroeconomic policy with a stronger focus on social infrastructure and political institutions.<sup>26</sup>

The new GCI captures three dimensions of SIPI, each of which has been the focus of different types of research: basic human capacity, political institutions, and rule of law. Countries tend to achieve similar levels of performance along these different dimensions, but deviations exist and can sometimes continue for extended periods of time.

Basic human capacity, such as basic education, health care, and a clean environment, is necessary to enable individuals to effectively engage in economic activity.<sup>27</sup> The presence of malaria or an HIV/AIDS epidemic, for example, means that large segments of society must concentrate on sustaining their basic health, which lowers productivity.<sup>28</sup> If large parts of the population

have no basic reading and writing skills, their ability to achieve higher productivity is also severely limited.

The nature of political institutions is important because it affects the content and the predictability of the rules and regulations that set the overall context of the economy. The empirical literature finds no simple relationship between specific political systems and economic outcomes,<sup>29</sup> and whether democratic reforms are more sustainable before or after economic reforms is equally contested.<sup>30</sup> Generally accepted is that all (or almost all) economies with high levels of prosperity are democracies.

The rule of law, especially the existence of property rights and the ability to protect legal rights against private and public interests, has an important influence on the incentives to engage in economic activity, especially transactions with others.<sup>31</sup> If property rights are weak, assets cannot be brought to their best economic use and productivity suffers.<sup>32</sup> But even when property rights do exist, corruption can reduce their economic value by making it harder to establish them in a court of law or allowing harmful economic policies.<sup>33</sup> The rule of law can also be threatened by military conflicts or high levels of crime. War, especially civil war, substitutes the use of power for the market.<sup>34</sup> If the population is engaged in fighting or must devote resources to protecting their livelihood, the opportunities for higher productivity are naturally limited. Crime raises the costs of doing business and reduces the incentives to make investments that enable higher levels of productivity. Empirical support of the relationship of security and productivity, however, is limited.<sup>35</sup>

The empirical growth literature has found SIPI to have a strong impact on prosperity levels. In fact, much research identifies SIPI as the most important (if not the only) factor that matters for long-term differences in prosperity.<sup>36</sup> But differentiating the impact of institutions from other factors econometrically, especially geographic location, is complex because of high levels of correlation. There are still many skeptics about the interpretation of findings.<sup>37</sup>

### Microeconomic competitiveness

Microeconomic factors operate directly on firms in affecting productivity. These factors are influenced by multiple discrete stakeholders. Government is an important player, but many different agencies and administrative units at several levels of geography with differing degrees of autonomy, not just the central government, are involved in decision making and policy action. Companies, academic institutions, and many business associations and other mixed groups organized to facilitate collaborative action, are essential in defining the microeconomic environment in which business takes place.

Microeconomic factors are so numerous and multifaceted that simultaneous progress across all of them is



rarely feasible. Each country will have its own unique strengths and weaknesses. In any given country at a particular point in time, a subset of microeconomic conditions will represent the most pressing barriers to reaching higher levels of productivity.<sup>38</sup> At specific transitions, countries need to make many simultaneous changes across a broad number of policy areas to enter a new stage of economic development. Unless these evolving constraints to productivity are addressed, productivity growth will not occur. This logic reveals the mistake of competitiveness policies based on political ideology—for example, the “right” always arguing for lower taxes and more privatization, the “left” always arguing for more investments in skills and infrastructure. It also calls into question any theory that suggests generic answers to economic development rather than those tailored heavily by country. Because the constraints change over time, governments need to review and update priorities in intervals that might not coincide with the political cycle.

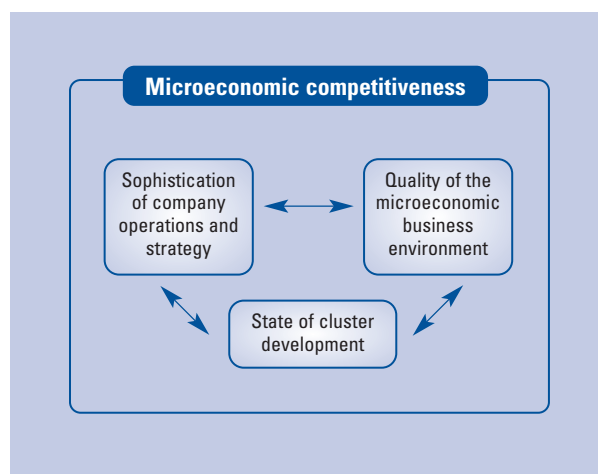
The New GCI framework distinguishes two broad areas of microeconomic competitiveness (Figure 4): the sophistication of company operations and the quality of the business environment. A third category—the state of cluster development (agglomeration economics)—is conceptually distinct, but data limitations preclude independent measurement. Cluster variables are included as part of the business environment. The microeconomic components of the New GCI builds on the foundations laid in the BCI of recent years.

*Company sophistication*, measured by company strategies and operational practices, is an area that has been largely neglected in the traditional literature on economic growth. Yet the productivity of a country is ultimately set by the productivity of its companies. An economy cannot be competitive unless companies operating there are competitive, whether they are domestic firms or subsidiaries of foreign companies. The heterogeneity of firm productivity within countries has a significant impact on overall productivity differences across countries.<sup>39</sup>

The productivity of companies depends in part on the sophistication with which companies compete. Productivity rises as a company improves the operational effectiveness of its activities and assimilates global best practices. Productivity also rises as companies achieve distinctive strategies, involving unique products and innovative means of production and service delivery. Conversely, competing using low factor input costs at low productivity methods does little to contribute to sustainable prosperity.

The productivity of companies is affected by corporate governance structures. The presence of large, highly diversified business groups, common in developing countries, can retard productivity because of lack of focus, monopoly power, and government favoritism. If business groups are instruments of market power or

**Figure 4: Microeconomic competitiveness**



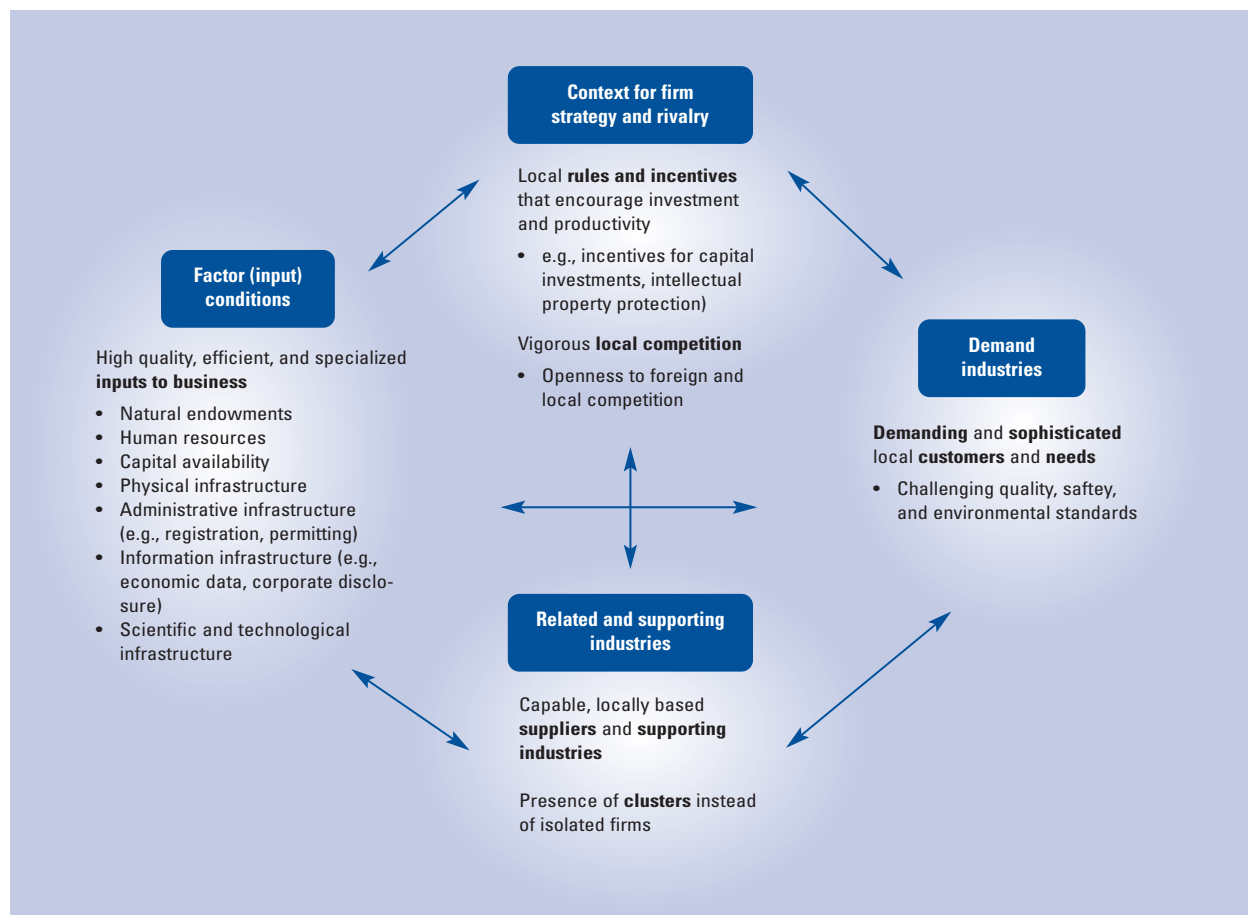
preferential political access, they can generate private profitability but hinder public prosperity.

Differences in the sophistication of company operations and strategy across countries have received scant coverage in the traditional empirical growth analysis. Company factors have been essentially taken as endogenous once business environment and macroeconomic factors were accounted for. Many standard models assume that best practices will be quickly implemented by profit-maximizing companies. But more recent analyses indicate significant differences in operating practices and capabilities, even across countries at similar stages of overall economic development. Researchers, notably those from a management or industrial organization tradition, have started to compare aspects of company sophistication across countries.<sup>40</sup> Yet there are still few datasets with broad country coverage in this area.

*Business environment quality* has a strong impact on the productivity of companies. More productive company strategies and operating practices require more highly skilled people, more efficient administrative infrastructure, improved physical infrastructure, better suppliers, more advanced research institutions, and more intense competitive pressure, and so on. A higher-quality business environment, including the presence of well-developed clusters, significantly affect the capabilities that a company can access, the competitive choices it can make, and the productivity that it can generate using its internal assets.

Moving to more sophisticated ways of competing depends on parallel improvements in the microeconomic business environment. The business environment can be understood in terms of four interrelated dimensions: the quality of factor (input) conditions, the context of rules in which for firm strategy and rivalry take place, the quality of local demand conditions, and the presence of the related and supporting industries, most strongly



**Figure 5: Business environment quality: The diamond**

Source: Porter, 1990.

represented by deep clusters.<sup>41</sup> Because of their graphical representation, the four areas have collectively become referred to as the “diamond” (see Figure 5).

Factor conditions have long been recognized as an important element affecting the productivity of companies. Physical infrastructure plays an important role in productivity, though there remains debate about the size of its effect.<sup>42</sup> Globalization and the resulting increase in trade flows have increased the demands on transportation and communication infrastructure for countries at all levels of development.

Efficient access to capital is important for companies to make long-term investments that raise productivity levels. A large literature has developed that analyzes the impact of financial market development on prosperity.<sup>43</sup> Some researchers focus on the role of equity markets while others address the availability of credit. Although there is no clear evidence that either bank- or equity-based financial systems are preferable, more-developed financial markets are conducive to growth.

Both the quantity of and quality of training and higher education in an economy has been found to have a positive impact on prosperity levels.<sup>44</sup> There is also increasing evidence that globalization has increased skill

premiums in both advanced and developing economies.<sup>45</sup> But at the same time, there is no simple relation between increased spending on education and productivity: some countries have seen the share of people reaching higher education levels rise considerably over the last few decades, while productivity rates remain low.<sup>46</sup>

Science and technology infrastructure is important for productivity growth. In advanced economies, it becomes the source of new ideas that drive the frontier of knowledge outward. In countries further behind, it improves the absorptive capacity needed to draw on the knowledge others have already generated, thus enabling catch-up.<sup>47</sup> But innovative capacity is not only a matter of spending on research and development (R&D); microeconomic competitiveness has to be sufficiently high across many dimensions of business environment quality and company sophistication in order for R&D spending to generate more patenting and other innovative output.<sup>48</sup>

The impact of red tape (or the bureaucratic burden) and the costs associated with administrative practices have recently gained more systematic attention in studies of competitiveness.<sup>49</sup> The time spent dealing with public agencies reduces the overall productivity of companies

by reducing the returns on investment and limiting entry by new companies, often a key driver of productivity growth.

The context of rules and incentives that govern firm strategy and rivalry is an important influence on how companies draw on the factor conditions that they face. High levels of competition on local markets prove to be especially crucial for high performance.<sup>50</sup> Competition drives the entry of new firms, the exit of underperforming firms, and levels of performance differences across existing firms. Because competition is so central, the impact of government—through competition laws, tax incentives and subsidies, and the conditions governing state-owned or -related companies—is essential to productivity. The ownership structure of companies (private or state-owned; conglomerate) is another factor that is important for the type of competitive interaction.<sup>51</sup> Broader measures of the freedom to engage in economic activity are consistent with this view, but tend to mix a large number of different policy dimensions.<sup>52</sup>

A key aspect of context for strategy and rivalry is a country's openness to foreign trade and investment. Openness enables countries to exploit their comparative advantages, a direct boost to economy-wide productivity. It enables access to more advanced ideas and technology from abroad, and exposes local companies to higher levels of competitive pressure. The empirical literature on the impact of openness on long-term differences in productivity and growth, however, provides mixed results. A number of researchers have found a relationship between openness and prosperity growth,<sup>53</sup> or verified the role of trade with advanced economies, as a means to tap into the knowledge stock.<sup>54</sup> Other studies are equivocal and debate the specific data and econometric approach used.<sup>55</sup> Some suggest that it might be the interplay among openness and other factors, such as strong institutions, that creates the positive effects,<sup>56</sup> while others maintain that trade has an independent positive effect.<sup>57</sup>

Demand conditions have also received less consideration in the economics literature. Consumer protection and environmental regulation especially are normally seen as costly from the firm perspective; if more environmentally friendly products would fetch higher prices or lead to lower production costs, companies are assumed to have produced them without the need for regulation. The business literature has for some time argued that this is a simplistic view: with large amounts of uncertainty about future technologies, consumer needs, and regulations, stringent regulation that anticipates future changes in other markets can lead companies to make early investments in profitable technologies. And it is not unusual that these new technologies provide direct productivity benefits that companies had otherwise neglected.<sup>58</sup> In the management literature, there is also an increasing focus on the importance of

demanding lead customers as partners in the innovation process.

*Clusters* provide an intermediate unit of productivity drivers between the general business environment quality and firm level sophistication. Clusters are geographic agglomerations of companies, suppliers, service providers, and associated institutions in a particular field, linked by externalities and complementarities of various types.<sup>59</sup> Clusters, such as consumer electronics in Japan or high-performance cars in Germany, are often concentrated in a particular region within a larger nation, and sometimes in a single town. Clusters are a natural manifestation of the role of specialized knowledge, skills, infrastructure, and supporting industries in enhancing productivity.

Clusters play an increasing role in a global economy where the most competitive firms can serve wider markets unprotected by national borders. As competition has become more global, companies have more freedom to choose the location of their activities based on economic efficiency, not just market access.<sup>60</sup> Perhaps paradoxically, this has increased the importance of clusters as their productivity advantages become more important. National economies tend to specialize in a subset of clusters, in which they develop a particularly favorable business environment. Such clusters often account for a disproportionate share of a nation's traded output. Conversely, lower levels of regional specialization tend to be associated with lower levels of prosperity.<sup>61</sup>

The nature and depth of clusters varies with the state of development of the economy. In developing or emerging economies, clusters are less developed and firms perform relatively less advanced activities in the cluster.<sup>62</sup> Clusters normally lack many supporting industries and institutions. Firms compete primarily based on cheap labor or local natural resources, and depend heavily on imported components, machinery, and technology. Specialized local infrastructure and institutions, such as educational programs and industry associations, are absent or inefficient. In more advanced economies, clusters usually deepen to include suppliers of specialized inputs, components, machinery, and services; specialized infrastructure emerges from public and private investment; and institutions arise that provide specialized training, education, information, research, and technical support.

The role of the business environment in competitiveness has been addressed by an increasing number of empirical assessments over the last two decades. For example, the World Bank's Investment Climate Survey covers about 50 countries.<sup>63</sup> Other assessments cover regulations affecting business.<sup>64</sup> For smaller groups of industrial countries, the OECD has generated rich assessments of the business environment, from investments in R&D to product market regulation.<sup>65</sup> Statistical studies on clusters across regions and countries are emerging.<sup>66</sup>

The limited available data on clusters do not allow us to separate the role of clusters from the more general business environment that affects the economy more broadly. However, we included available cluster measures as parts of the national business environment in the New GCI.

### Stages of economic development

Successful economic development is a process of successive upgrading, in which a nation's business environment evolves to support and encourage increasingly sophisticated and productive ways of competing by firms (including subsidiaries of multinational corporations) located there. Nations at different levels of development face distinctly different competitiveness challenges, where the relative importance of different dimensions of microeconomic and macroeconomic competitiveness for sustainable prosperity is changing.

As nations develop, modes of competing and nature of competitive advantages move through several characteristic stages, though rates of progress and the specific development path will vary by country.<sup>67</sup> In the factor-driven stage, basic factor conditions such as low-cost labor and unprocessed natural resources represent the dominant basis of competitive advantage and sources of exports. Firms produce commodities or relatively simple products or components of products designed in other, more-advanced countries. Technology is assimilated through imports, supply agreements, foreign direct investment, and imitation. In this stage, companies compete on price and normally lack direct access to foreign consumers. Companies have limited roles in the value chain, focusing on assembly, labor-intensive manufacturing, and resource extraction. Factor-driven economies are highly sensitive to world economic cycles, commodity prices, and exchange rate fluctuations, mitigated only in very large countries such as China, which have a large internal market to attract investment independent of export potential.

In the investment-driven stage, a country's advantage comes from producing more advanced products and services highly efficiently. Heavy investment in efficient infrastructure, business-friendly government administration, strong investment incentives, improving skills, and better access to investment capital allow major improvements in productivity. The products and services produced are not globally differentiated, however, with technology and designs still largely coming from abroad. Technology is accessed through licensing, joint ventures, foreign direct investment, and imitation. Nations at this stage normally assimilate foreign technology but also begin to develop the capacity to improve technology themselves. Companies extend capabilities more widely in the value chain, and serve a wider mix of original equipment manufacturer (OEM) customers and end users. An investment-driven economy is concentrated on manufactured goods and outsourced service exports. It

remains susceptible to financial crises and external, sector-specific demand shocks, but competitiveness is more stable than in countries depending on commodity cycles and factor prices.

In the innovation-driven stage, the ability to produce innovative products and services at the global technology frontier using the most advanced methods becomes the dominant source of competitive advantage. The national business environment is characterized by strengths in all parts of the diamond, including sophisticated demand conditions and deep supporting industries. Competitiveness emerges in an array of clusters where knowledge, supporting industries, and specialized inputs are present. Institutions and incentives that enable innovation are well developed. Companies compete with unique strategies that are often global in scope. An innovation-driven economy is characterized by distinctive producers and a high share of services in the economy and is quite resilient to external shocks.

The sequential process of building interdependent microeconomic capabilities, improving incentives, evolving company strategies, and increasing rivalry creates important pitfalls in economic policy. The influence of one part of the business environment depends on the state of another. Lack of improvement in any important area can lead to a plateau in productivity growth and stalled development. Worse yet, key weaknesses in the diamond can undermine the entire economic reform process. For example, when well-trained college graduates cannot find appropriate jobs because companies are still competing based on cheap labor, a backlash against business is created. This analysis also begins to reveal why countries find the transition to a new stage of development so difficult. Such inflection points require wholesale transformation of many interdependent aspects of competition, not just marginal improvements in individual policy areas.

We incorporate stages of development into the New GCI to capture the fact that different determinants of competitiveness will be the binding constraints of countries' progress.

### Ranking competitiveness

The academic literature and previous indexes provide a foundation for the selection of indicators and guidance in developing an overall architecture for organizing them in an integrated framework. We include microeconomic factors because of our access to unique data.

Whether or not individual factors are included in the New GCI, and how strongly they are weighted in measuring competitiveness, is determined by the data. Our approach thus minimizes the role of conceptual priors and subjective assessments.

The robustness of the results of the New GCI to modifications in individual indicators and estimation procedures has been extensively tested. The aim is to

ensure that the New GCI is capturing basic insights about country performance, rather than artifacts of a single econometric approach or subjective weighting scheme. The findings are presented in a way that highlights the implications for decision makers in governments and companies.

### Data

The model draws on a wide range of data from the Executive Opinion Survey (more on the Survey in Chapter 2.1 in this *Report*) as well as extensive hard data and survey indicators from other internationally recognized data sources. The use of survey data in economic analysis is growing despite skepticism among some researchers. Our survey data are timely and offer many unique measures not otherwise available. The survey data used here are based on the *informed judgments of the actual participants* in the economies of the countries examined. These survey responses are important in their own right, because they reflect the attitudes of the decision makers that ultimately determine economic activity.

The data used for the development of the New GCI model cover 130 countries for up to 7 years (2001–07), the longest period possible given the data sources. The academic literature often examines longer time periods, but covers a far narrower set of indicators. In subsequent years, the stability of the model over longer time periods will be examined.

### Dependent variable

The New GCI model is derived from statistical estimations explaining GDP per capita adjusted for purchasing power, the best overall measure of prosperity.<sup>68</sup> Statistical testing using a clearly defined dependent variable is the only way to allow a rigorous development of the model, in contrast to arbitrary specification of indicators, data groupings, and weights that characterize most other index efforts.

GDP per capita is the broadest measure of national productivity and is strongly linked over time to a nation's standard of living. It is the best single, summary measure of competitiveness performance available across all countries.<sup>69</sup>

More direct measures of productivity, such as GDP per labor force, are desirable. However, they are not feasible given unreliable labor force data in many low income countries. Other measures, such as GDP per employee or GDP per hour worked, are useful indicators of productivity but fail to capture the ability of an economy to mobilize the overall workforce. Total Factor Productivity suffers from significant data limitations that compromise its ability to accurately measure capital utilization and skill accumulation across countries in a consistent manner.

### Endowments

GDP per capita will reflect a country's particular endowments (we term this "inherited prosperity"), not only its productivity in using these endowments ("created prosperity"). Controlling for endowments allows the New GCI to distinguish between prosperity and productivity, rather than co-mingling productivity with resource abundance.

Natural endowments can have an indirect impact on competitiveness if they encourage specific policy choices that benefit or harm macroeconomic or microeconomic competitiveness. The New GCI model makes it possible to distinguish the direct (positive) prosperity effect of natural endowments from their indirect (potentially negative) effect on competitiveness.

The New GCI controls for natural resources endowments by using per capita unprocessed natural resource exports. The revenues from natural resource exports constitute a direct source of prosperity. Endowments in terms of geographical location are captured by the percentage of land area within 100 kilometers of ice-free coast or navigable rivers as a control for location. Direct access to maritime transport allows countries to fully engage in global trade without the need for a transit country. The academic literature also examines the impact of being close to the equator as a locational influence, and as a proxy for exposure to tropical diseases. We recognize this potential, but measure instead the effectiveness of the policy responses to them (e.g., health system effectiveness) elsewhere in the model.

The size of a country can also be seen as an endowment. Larger countries might more easily attract investment just because of their local market potential, even if they are not more competitive. Size might also foster economies of scale in areas such as R&D. We include population size as a control, instead of size of GDP. GDP size is the result of competitiveness, not an independent measure.

### Competitiveness indicators

Many things matter for competitiveness, and consequently a wide range of data is incorporated into the model. Because the model is designed to guide specific action priorities for countries, multiple indicators are used even if they are highly correlated in the overall sample. Although indicators may be correlated overall, individual countries often lead or lag in particular policies that are salient for designing development priorities. This inclusion of many variables differentiates the GCI model from many models in the academic literature that aim to identify the minimum number of indicators that explain prosperity.

The selection of indicators is pragmatic. Candidate indicators are identified that capture aspects suggested by theory. The New GCI model requires the availability of recurring annual data for a very large number of

countries, in contrast to a one-time analysis covering a limited number of countries.

Each indicator is then tested for a statistically significant relationship to GDP per capita adjusted by purchasing power (log), controlling for endowments (see Table 1).<sup>70</sup> Some of the indicators that are most strongly correlated with GDP per capita include mobile phone and fixed line penetration, regulatory quality, the quality of electricity supply, and per capita patenting in the United States. Such indicators capture basic or advanced dimensions of the microeconomic business environment. Conversely, indicators of MP exhibit the weakest correlations with prosperity.

In selecting indicators, two areas of policy—taxation and labor market regulations—deserve special discussion because they have no simple linear relationship to prosperity. Taxation levels tend to be higher in countries with stronger institutions and that invest more heavily in public infrastructure and education. This endogenous positive effect of effective spending on competitiveness is econometrically hard to distinguish from the direct negative incentive effect of higher taxation. In the model, we include direct measures of the incentive effect and the administrative burden associated with taxation that are less affected by these problems, rather than the overall level of taxes in GDP.

The challenge with measuring labor market conditions is that labor markets tend to be more regulated in countries with highly developed institutions. Thus there is no simple relationship between the level of regulation and the actual level of labor market flexibility and work practices. Again, we use a direct measure of labor market flexibility, rather than broader institutional characteristics of the labor market.

### Grouping indicators

Because many things matter, countries often get bogged down in their efforts to improve competitiveness by tackling too many individual issues in parallel. The challenge is to identify those areas where action can unlock higher productivity at a given point in time. Priorities are country-specific and change over time.

The New GCI aims to offer a framework to inform overall policy while establishing priorities at the specific policy level. The model groups the numerous influences on competitiveness into categories that capture different mechanisms of influence. These groupings are organized hierarchically so that each part of the model sums to the whole (Figure 6). Other indexes tend to treat numerous variables independently, without an understanding of how they relate to each other.

The **New Global Competitiveness Index (NGCI)** is the overall ranking of country competitiveness, incorporating all factors. The NGCI score is designed to be the best overall predictor of productivity across all countries.

At the second level, rankings are presented on **macroeconomic competitiveness** and **microeconomic competitiveness**. Macroeconomic competitiveness indicators create opportunities for productivity but are not sufficient for high productivity to emerge. Microeconomic competitiveness indicators have a direct impact on company productivity.

At the third level, rankings are presented on four subindexes of macroeconomic and microeconomic competitiveness. In the macroeconomic area, indicators of **macroeconomic policy (MP)** capture economic policies that have a strong impact on short-term fluctuations of economic activity and can have long-term consequences for productivity. **Social infrastructure and political institutions (SIPI)** collects indicators of more general human conditions and institutions. In the microeconomic area, subindexes cover the **sophistication of company operations and strategy (COS)** and the overall **quality of the national business environment (NBE)**.

At the fourth level, rankings are provided for subcategories of the third level. In the MP category, indicators are grouped by **fiscal policy** and **monetary policy**. In the SIPI category, indicators are grouped into **basic human capacity** (basic health and education), **political institutions** (decision making and efficiency of the executive), and the **rule of law** (corruption and efficiency of the legal process). In the NBE category, indicators distinguish the four elements of the diamond framework<sup>71</sup>—that is, **factor conditions**, **context for strategy and rivalry**, **demand conditions**, and **related and supporting industries/clusters**.

At the fifth level, some areas of microeconomic competitiveness are further differentiated into narrower subcategories to better target policy responses. Under factor conditions, indicators are grouped by **logistical infrastructure**, **communications infrastructure**, **administrative infrastructure**, **capital market infrastructure**, and **innovation infrastructure**. Under COS, indicators are grouped by **strategy and operational effectiveness**, **organizational practices**, and **internationalization of firms**.

In most cases, the allocation of individual indicators to categories is clear (see Table 1). For a limited number of indicators, however, the allocation of a particular measure requires a judgment based on the nature of the indicator's primary effect on competitiveness together with its statistical properties.<sup>72</sup> For *education*, primary education is allocated to SIPI (macroeconomic competitiveness) while the quantity and quality of advanced and specialized levels of education are allocated to the NBE (microeconomic competitiveness). We view primary education as a broad indicator of the ability of individuals to participate in society, and a foundation for further education and skill development. For *trade barriers*, all indicators, including the average tariff rate on imports, are allocated to NBE. Trade barriers are primarily an



**Table 1: Relationship of indicators to GDP per capita (log) while controlling for endowments**

Regression on GDP per capita, PPP-adjusted (log)			Regression on GDP per capita, PPP-adjusted (log)		
	Beta	R <sup>2</sup>		Beta	R <sup>2</sup>
Microeconomic competitiveness (MICRO)			Microeconomic competitiveness (MICRO) (cont'd.)		
Company operations and strategy (COS)			Local availability of process machinery .....		
Strategy and operational effectiveness			Local availability of specialized research and training services .....		
Firm-level technology absorption.....	0.558	0.717	State of cluster development.....		
Company spending on R&D.....	0.487	0.729	Extent of collaboration in clusters .....		
Nature of competitive advantage.....	0.440	0.745	Extent of cluster policy.....		
Value chain breadth.....	0.492	0.784	Context for strategy and rivalry		
Capacity for innovation.....	0.512	0.761	Cooperation in labor-employer relations .....		
Production process sophistication .....	0.615	0.817	Pay and productivity.....		
Extent of marketing.....	0.623	0.770	FDI and technology transfer.....		
Degree of customer orientation .....	0.660	0.748	Quality of competition in the ISP sector .....		
Organizational practices			(Low) Impact of taxation on incentives to work and invest .....		
Extent of staff training .....	0.501	0.729	(Low) Distortive effect of taxes and subsidies on competition.....		
Willingness to delegate authority .....	0.450	0.703	Intellectual property protection.....		
Extent of incentive compensation.....	0.538	0.707	Restrictions on capital flows.....		
Reliance on professional management.....	0.341	0.665	Strength of auditing and reporting standards.....		
Internationalization of firms			Prevalence of trade barriers.....		
Prevalence of foreign technology licensing .....	0.474	0.691	Prevalence of foreign ownership.....		
Control of international distribution .....	0.709	0.739	Business impact of rules on FDI.....		
Extent of regional sales.....	0.404	0.710	Intensity of local competition.....		
Breadth of international markets .....	0.484	0.775	Effectiveness of antitrust policy.....		
Factor (input) conditions			(Low) Extent of market dominance (by business groups).....		
Logistical infrastructure			Efficacy of corporate boards .....		
Quality of roads .....	0.371	0.759	Low market disruption from state-owned enterprises .....		
Quality of railroad infrastructure.....	0.306	0.745	Strength of investor protection.....		
Quality of port infrastructure.....	0.351	0.728	(Low) Rigidity of employment.....		
Quality of air transport infrastructure .....	0.421	0.731	Regulatory quality.....		
Quality of electricity supply.....	0.463	0.812	(Low) Tariff rate .....		
Quality of domestic transport network: business.....	0.571	0.791	Social infrastructure and political institutions (SIPI)		
Communications infrastructure			Human capacity		
Quality of telephone infrastructure.....	0.456	0.777	Quality of primary education .....		
Internet access in schools .....	0.471	0.816	Quality of healthcare services.....		
Mobile telephone subscribers per 100 population.....	0.023	0.833	Accessibility of healthcare services .....		
Personal computers per 100 population .....	0.026	0.773	Health expenditure.....		
Internet users per 100 population .....	0.031	0.774	Life expectancy .....		
Telephone lines per 100 population .....	0.036	0.848	(Low) Malaria incidence.....		
Administrative infrastructure			(Low) Tuberculosis incidence.....		
(Low) Burden of customs procedures.....	0.497	0.741	(Low) Infant mortality .....		
(Low) Burden of government regulation.....	0.364	0.659	Primary enrollment.....		
Ease of starting a new business .....	0.317	0.668	Secondary enrollment.....		
(Low) Number of procedures required to start a business.....	0.076	0.660	Political institutions		
(Low) Time required to start a business.....	0.381	0.682	Effectiveness of law-making bodies.....		
Doing Business, Paying Taxes (Low) Payments number (WB) <sup>a</sup> .....	0.016	0.681	Public trust of politicians.....		
Capital market infrastructure			(Low) Wastefulness of government spending .....		
Regulation of securities exchanges .....	0.384	0.729	(Low) Favoritism in decisions of government officials .....		
Financial market sophistication.....	0.424	0.749	Government effectiveness in reducing poverty and inequality.....		
Soundness of banks .....	0.326	0.673	Transparency of government policymaking.....		
Ease of access to loans.....	0.490	0.722	Decentralization of economic policymaking .....		
Venture capital availability.....	0.509	0.732	Freedom of the press.....		
Financing through local equity market.....	0.242	0.664	Voice and Accountability (WB) <sup>d</sup> .....		
Protection of minority shareholders' interests .....	0.287	0.652	Rule of law		
Doing Business, Getting Credit Legal rights index (WB) <sup>b</sup> .....	0.089	0.637	Reliability of police services .....		
Domestic credit to private sector (WB) <sup>c</sup> .....	0.009	0.741	(Low) Business costs of crime and violence .....		
Innovation infrastructure			(Low impact of) Organized crime .....		
Quality of scientific research institutions .....	0.448	0.709	Judicial independence.....		
University-industry research collaboration.....	0.488	0.727	Efficiency of legal framework.....		
Quality of the educational system.....	0.383	0.706	Property rights .....		
Quality of math and science education .....	0.363	0.698	(Low occurrence of) Diversion of public funds .....		
Quality of management schools .....	0.453	0.706	(Low occurrence of) Irregular payments by firms .....		
Availability of scientists and engineers .....	0.469	0.707	(Low) Business costs of corruption .....		
(Low) Brain drain.....	0.469	0.740	Ethical behavior of firms .....		
Tertiary enrollment.....	0.022	0.742	Control of Corruption (WB) <sup>e</sup> .....		
Utility patents per million population .....	0.256	0.825	Rule of Law (WB) <sup>f</sup> .....		
Demand conditions			Macroeconomic policy (MP)		
Government procurement of advanced technology products.....	0.493	0.681	Government surplus/deficit.....		
Government success in ICT promotion .....	0.318	0.659	Government debt.....		
Laws relating to ICT .....	0.532	0.763	Inflation .....		
Buyer sophistication.....	0.540	0.762	Interest rate spread.....		
Presence of demanding regulatory standards .....	0.569	0.784			
Stringency of environmental regulations.....	0.426	0.735			
Supporting and related industries and clusters					
Availability of latest technologies .....	0.485	0.775			
Local supplier quantity.....	0.778	0.756			
Local supplier quality .....	0.685	0.787			

a World Bank 2008b.

b World Bank 2008b

b World Bank, World Development Indicators.

c World Bank governance indicator. See Kaufmann et al. 2008.

d World Bank governance indicator. See Kaufmann et al. 2008.

a World Bank 2008b.

b World Bank 2008b.

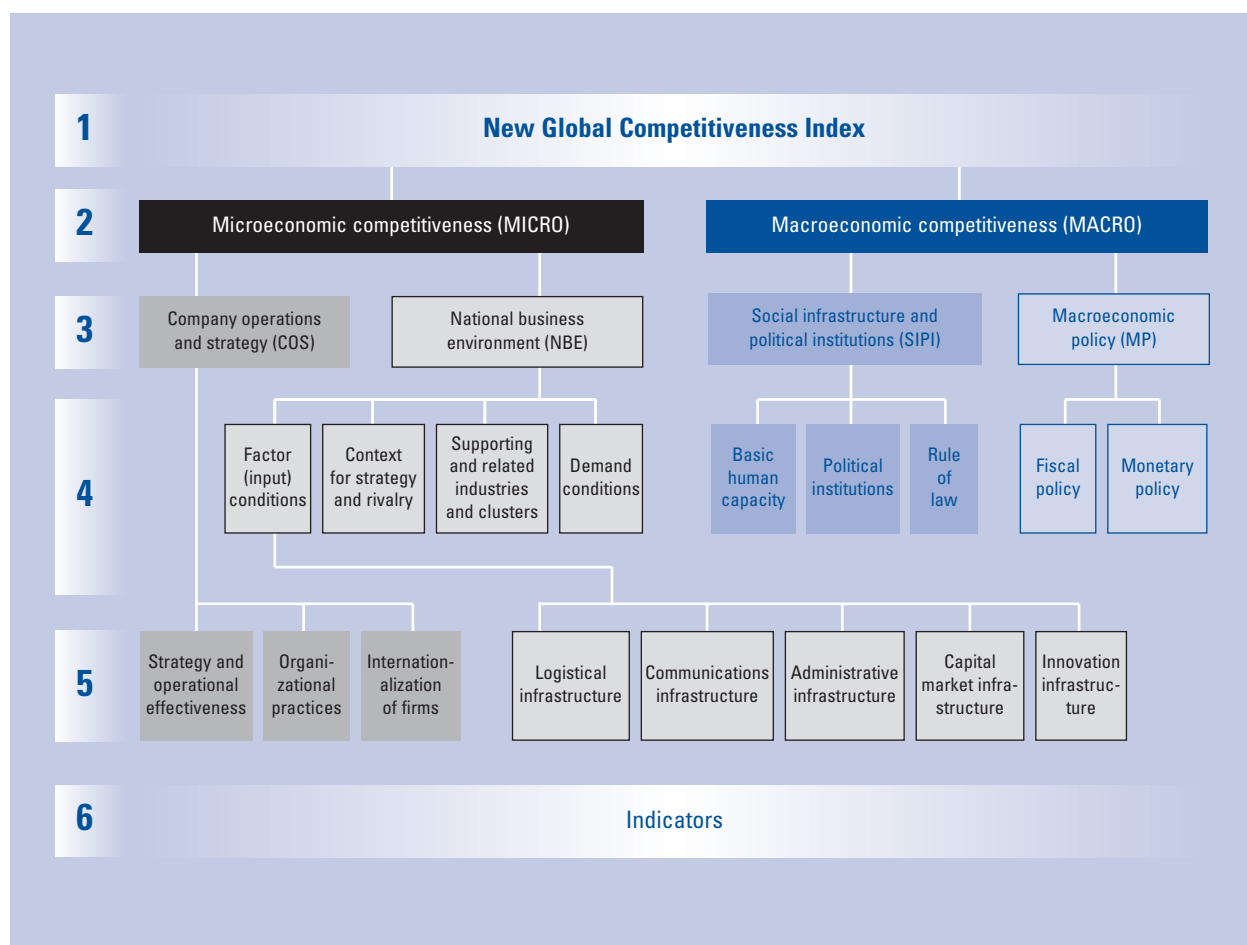
c World Bank, World Development Indicators.

d World Bank governance indicator. See Kaufmann et al. 2008.

e World Bank governance indicator. See Kaufmann et al. 2008.

f World Bank governance indicator. See Kaufmann et al. 2008.

Figure 6: Six levels of measurement



indicator of the competitive pressure from foreign rivals, even though they are also relevant as a measure of general openness of an economy. The direct relationship of tariff rates to productivity of firms is akin to other indicators in the NBE, in contrast to the more general MP indicators. For *taxation*, measures of taxation effectiveness are also allocated to the NBE. Although it has a relation to fiscal policy (MP), effective taxation mechanisms are best seen as an indicator of general administrative infrastructure.

### Stages of development

To reach higher levels of economic development, countries experience systematic changes in the relative importance of different aspects of competitiveness for prosperity. Understanding these broad patterns is important in understanding the challenges faced by policy-makers in a given country.

The New GCI model uses SIPI as a proxy for overall stage of economic development. Countries are ranked by their average SIPI score (using 2001–07 data) as well as by their score for each of the three SIPI components (human capacity, rule of law, and political stabil-

ity). The countries falling into the top tercile for each of the SIPI components as well as the aggregate SIPI measure are assigned to the high stage of development group. Countries that fall into the top tercile for the overall SIPI index or its human capacity component (a group of indicators that is particularly robust to short-term policy changes) but rank lower on other SIPI components are assigned to the middle group. The remaining countries are assigned to the low stage of development group.<sup>73</sup>

A country's SIPI score provides a good indication of the opportunities of companies to compete at more sophisticated levels. More developed social infrastructure and political institutions make it more likely that companies can compete on efficiency or even on innovation. Weaknesses in SIPI, in contrast, often relegate companies to compete on resources or cheap labor.

Other indicators of development stage are possible, but testing reveals that using SIPI is the most revealing statistically. A number of studies have used GDP per capita to identify country groups, but we reject this because defining subgroups using the dependent variable introduces a serious estimation bias.

**Table 2: Countries by stage of development**

HIGH		MIDDLE	LOW		
Australia	Spain	Bahrain	Albania	Georgia	Nigeria
Austria	Sweden	Brunei Darussalam	Algeria	Ghana	Pakistan
Barbados	Switzerland	Chile	Argentina	Guatemala	Panama
Belgium	Taiwan, China	Costa Rica	Armenia	Guyana	Paraguay
Canada	Tunisia	Czech Republic	Azerbaijan	Honduras	Peru
Cyprus	United Kingdom	Hungary	Bangladesh	India	Philippines
Denmark	United States	Jordan	Benin	Indonesia	Poland
Estonia		Korea, Rep.	Bolivia	Jamaica	Romania
Finland		Kuwait	Bosnia and Herzegovina	Kazakhstan	Russian Federation
France		Latvia	Botswana	Kenya	Senegal
Germany		Malaysia	Brazil	Kyrgyz Republic	Serbia
Greece		Mauritius	Bulgaria	Lesotho	South Africa
Hong Kong SAR		Montenegro	Burkina Faso	Libya	Sri Lanka
Iceland		Oman	Burundi	Lithuania	Suriname
Ireland		Puerto Rico	Cambodia	Macedonia, FYR	Syrian Arab Republic
Israel		Saudi Arabia	Cameroon	Madagascar	Tajikistan
Italy		Slovak Republic	Chad	Malawi	Tanzania
Japan		United Arab Emirates	China	Mali	Thailand
Luxembourg		Uruguay	Colombia	Mauritania	Timor-Leste
Malta			Côte d'Ivoire	Mexico	Trinidad and Tobago
Netherlands			Croatia	Moldova	Turkey
New Zealand			Dominican Republic	Mongolia	Uganda
Norway			Ecuador	Morocco	Ukraine
Portugal			Egypt	Mozambique	Venezuela
Qatar			El Salvador	Namibia	Vietnam
Singapore			Ethiopia	Nepal	Zambia
Slovenia			Gambia, The	Nicaragua	Zimbabwe

### Estimating the New GCI model

The appropriate weighting of individual indicators in determining overall competitiveness is a crucial part of any index model.<sup>74</sup> The New GCI model calculates weights based on a regression of the pooled dataset on country GDP per capita. The stability of the model is tested by reallocating individual indicators and assessing the stability of the weights and the overall score. Other similar indexes have almost invariably set weights based on subjective priors based on the literature. Yet differences in opinion in the academic literature leave the door open for different choices that can compromise the resulting rankings.

The New GCI is generated in a two-stage process. First, the weights for aggregating individual indicator scores to an overall country score are obtained using panel data for over 130 countries and up to 7 years (2001–07). The weights obtained from estimating the model are going to be kept constant over time. Additional years of data will be used to check the stability of the model over time. Second, the index score for a particular country in a given year is calculated by summing its weighted indicator values.

The New GCI model uses principal component analysis (PCA) to aggregate individual indicators (or categories of indicators). The premise of the PCA method is that within a “conceptual category,” indicators

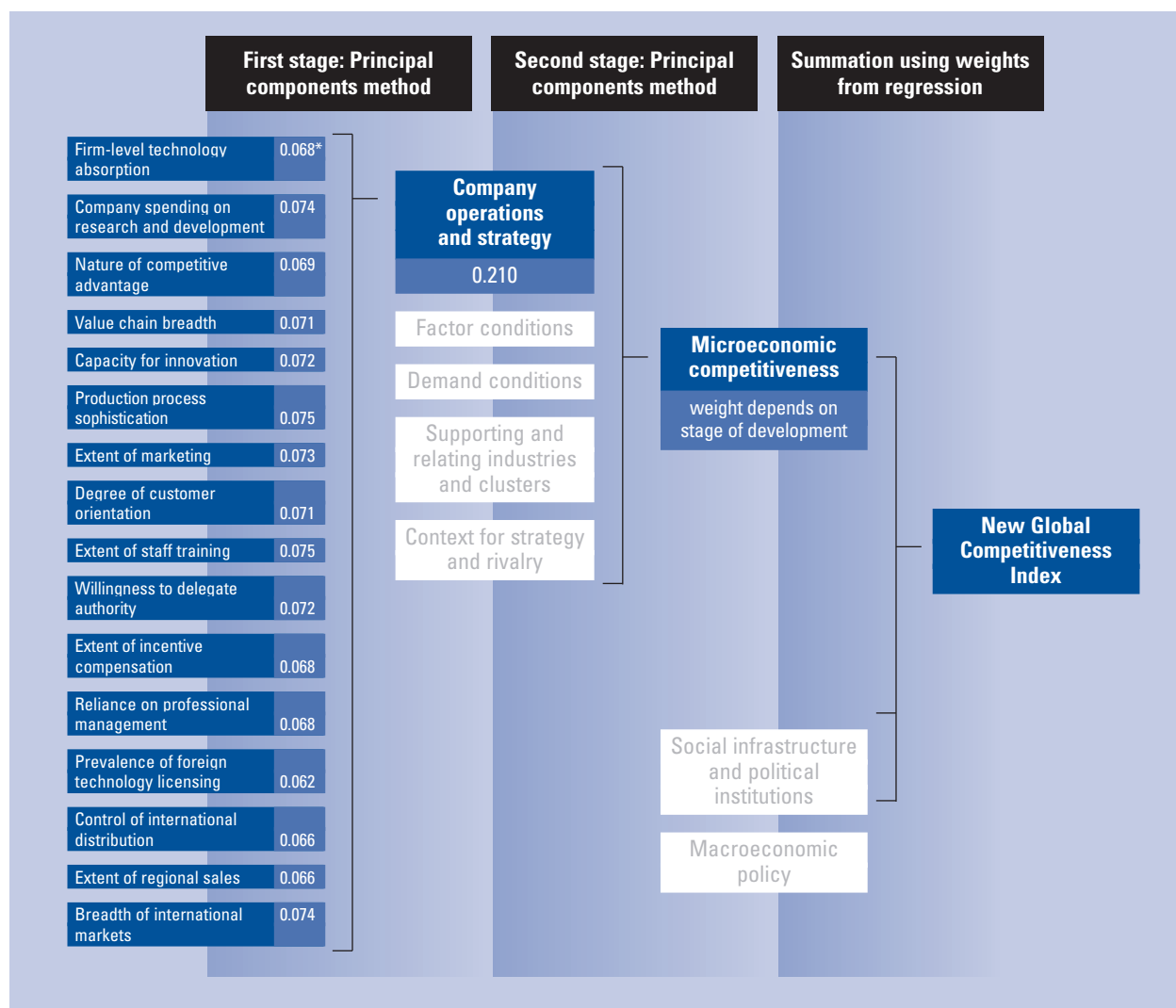
are highly correlated and related to the underlying phenomenon that is being measured. Within the area of microeconomic competitiveness, the degree of correlation between indicators is very high. The New GCI model thus applies a two-step PCA procedure. First, a separate aggregation is computed for COS and for each of the four components of the NBE. Second, these five components are aggregated into an overall score for microeconomic competitiveness.<sup>75</sup> Figure 7 provides a sample calculation, showing the specific scores calculated for the indicators in company operations and strategy using the current specification of the new GCI model.

Within the area of macroeconomic competitiveness, the degree of correlation between indicators is relatively high within SIPI and MP but not across them, because they capture distinct concepts. The new GCI model thus uses PCA to calculate a score for SIPI and a score for MP, but does not use PCA for further aggregation.

The second step in computing the New GCI is to measure the contribution to country competitiveness of MICRO, SIPI, and MP. We specify a comprehensive regression that uses GDP per capita purchasing power adjusted (log) as the dependent variable, with scores for MICRO, SIPI, and MP for each country and year as the main explanatory variables, controlling for with endowments and year effects. The model allows the coefficients to vary by country stages of development by interacting



Figure 7: Calculation of the New GCI: Sample results



\* Numbers shown are weights.

the explanatory variables with a dummy indicating the country's stage (see the section on "Stage of development").<sup>76</sup> The core econometric specification is as follows:

$$\begin{aligned} \log \text{GDPpc}_{c,t} = & \alpha_0 + \delta \text{HIGH-SIPI}_c + \beta_{\text{MICRO}} \text{MICRO}_{c,t-1} \\ & + \delta_{\text{MICRO}} \text{HIGH-SIPI}_c \times \text{MICRO}_{c,t-1} \\ & + \beta_{\text{SIPI}} \text{SIPI}_{c,t-1} + \delta_{\text{SIPI}} \text{HIGH-SIPI}_c \times \text{SIPI}_{c,t-1} \\ & + \beta_{\text{MP}} \text{MP}_{c,t-1} + \delta_{\text{MP}} \text{HIGH-SIPI}_c \times \text{MP}_{c,t-1} \\ & + \alpha_{\text{END}} \text{ENDOWMENTS}_{c,t-1} \\ & + \delta_{\text{END}} \text{HIGH-SIPI}_c \times \text{ENDOWMENTS}_{c,t-1} \\ & + \alpha_t \text{year}_t + \delta_t \text{HIGH-SIPI}_c \times \text{year}_t + \varepsilon_{c,t} \end{aligned}$$

The estimated coefficients are then scaled into weights for microeconomic competitiveness, SIPI, and MP that vary for low-, middle-, and high-SIPI countries. Table 3 reports the weights derived with the current specification of the model.<sup>77</sup>

**Table 3: Subindex weights by countries' stage of development**

Subindex	Stage of development			Linear model (all economies)
	Low (%)	High (%)	Medium (%)	
MICRO	0.21	0.48	0.35	0.31
SIPI	0.49	0.36	0.42	0.41
MP	0.30	0.16	0.23	0.28
	1.00	1.00	1.00	1.00

The New GCI model explains 85 percent of the variation of prosperity across countries, a remarkable result in such a dataset covering a large number of countries at highly varying levels of economic development. It shows, for the first time, that both microeconomic and macroeconomic competitiveness have an independent effect on productivity, even when controlling for the other. Many previous analyses have looked at individual measures without putting them in a broader framework.

The growth literature, in particular, has tended to argue that macroeconomic competitiveness, especially institutional factors (SIPI in the New GCI model), dominate and predict differences not only in prosperity but also in microeconomic competitiveness. Instead, the New GCI results support an independent role for each of them.

The weights of the broad drivers of competitiveness change systematically across stages of development. At lower levels of development, SIPI matter most, followed by MP, followed by microeconomic competitiveness. At higher levels of development, microeconomic competitiveness dominates, followed by SIPI and then MP.

### Calculating and interpreting the Index

For each country, the calibrated weights are applied to the set of indicator values to generate an overall Index score,<sup>78</sup> as well as scores for each broad category, subcategory, and narrow subcategory of competitiveness determinants.

The overall New GCI ranking provides a powerful summary of each country's competitiveness relative to peers. The patterns of strengths and weaknesses across the different categories of competitiveness provide robust information with which to set country-specific action priorities.

Changes in the New GCI ranking and indicator scores provide an important insight into a country's competitiveness trajectory over time. The relationship among the New GCI score, endowment controls, and actual GDP per capita level bear on the sustainability of a country's prosperity. Prosperity levels that are explained neither by competitiveness nor endowments are a cause for concern. Such levels may well be the consequence of short-term growth spurts with, for example, high consumption or investment in areas such as real estate that are not sustainable over time. Prosperity levels that are largely driven by endowments, especially natural resource deposits, suggest specific steps to overcome the negative economic and policy risks associated with inherited wealth in hindering future competitiveness.

The relationship of the New GCI score to other economic performance indicators, such as wages, provides further insights. Competitiveness depends not on costs, but on productivity. The prevailing wages relative to competitiveness will make a country more or less attractive as an investment location. Low wages can be a sign of low competitiveness, instead of a competitive advantage. High wages, if they are justified by high productivity, mean that a country represents an excellent value as a business location. Some countries have wages that are significantly above or below the expected wage level given the country's New GCI value. This can occur for a variety of reasons, ranging from strong unions and inflexible labor markets to recent competitiveness improvements that run ahead of wage increases.

### Comparing the New GCI with the current Index

The New GCI model builds on the foundations in previous years' GCI as well as the BCI.<sup>79</sup> The overall rankings derived in our preliminary application of the New GCI model are broadly similar to the current GCI, underlining the continuity of the methodology. However, differences exist and are revealing in many ways.

The largest single source of rank differences between the New GCI and the current Index is the higher weighting in the New GCI associated with macroeconomic competitiveness. This greater importance is derived from the actual data. For the most advanced economies, macroeconomic competitiveness (SIPI and MP) together account for about 45 percent of the overall New GCI score, compared with 23 percent in the current GCI. For developing economies, the change is even more pronounced, with macroeconomic competitiveness accounting for 83 percent vs. 38 percent in the current model. Macroeconomic factors, especially institutional strength, have been identified in the literature as an important element of long-term prosperity differences and this importance is revealed in our regressions.

Another important difference is the role of market size. Market size, which accounted for between 6 and 8 percent of the overall score in the current GCI, is now included as a control rather than as a dimension of competitiveness. Market size can have an impact on productivity and lead to FDI inflows above the level otherwise expected, especially when the market is very large. But, as previously discussed, the literature on this point has not come to conclusive results. China, Brazil, and India will be ranked lower on competitiveness because they do not get a bonus for country size independent from their fundamental conditions.

The New GCI model also utilizes an improved set of indicators in the MP area compared to the current macroeconomic pillar. The most important change is that the savings rate is no longer included in the model, since the growing globalization of financial markets makes it increasingly less realistic that the local savings rate determines the amount of capital available.<sup>80</sup> These changes have a limited impact on the overall rankings. The United States will rank higher in the new MP area than in the current macroeconomic pillar, for example, largely because it is no longer penalized for its low savings rate.

Finally, the New GCI weights the aspects of microeconomic competitiveness based on the data. For example, the current GCI model gave about 60 percent of the overall business environment weight to measures of factor conditions, largely because there were more indicators available in this area. The New GCI, with no priors about the relative weights, has a lower influence of factor conditions. The impact of the weighting differences on the overall ranking is modest.

## Conclusion

*The Global Competitiveness Report* has long been an important tool for measuring competitiveness across countries. Our decision to develop a new approach for calculating the Global Competitiveness Index reflects our desire for excellence. The ambition to continuously integrate new thinking must be balanced with the need for a framework that has the stability needed for consistent rankings and to earn the trust of policymakers and the wider public. Hence we will introduce the New GCI in 2009, after almost two years of testing and refinement. As we finalize the New GCI, we will seek input from policymakers, business leaders, and scholars to ensure that the New GCI not only meets the highest standards of academic research but also serves the needs of practitioners.

The New GCI promises to reveal important new insights into the causes of competitiveness. It will disentangle the relationships between prosperity, endowments, and competitiveness, giving countries a way to separate the impact of externally given conditions from their own policy choices. It will help countries to identify whether macroeconomic or microeconomic competitiveness, each of which requires a very different policy process, should be at the forefront of policy action.<sup>81</sup> And it will give individual countries better insights into their relative strengths and weaknesses, their position compared with that of their peers, and their trajectory over time. All of these are critical elements for prioritizing policy actions in a way that targets the unique challenges any country faces at a given point in time.

## Notes

- 1 Ciccone and Jarocinski 2008.
- 2 Unit labor costs (wages relative to labor productivity), a measure often used by international financial institutions, is a misleading indicator of competitiveness. It is helpful to understand the capacity for exports, much more so than pure wage costs per se. But it does not have an unambiguous relationship to prosperity and is often used to motivate policies that manage wages rather than raise productivity.
- 3 Solow 1956.
- 4 Romer 1990; Lucas 1988; see also Warsh 2006.
- 5 See, for example, Sala-i-Martin et al. 2004; Levine and Renelt 1992; Easterly 2001; Sala-i-Martin 1997; Mankiw et al. 1992; and Barro 1991.
- 6 Rodrik 2008; World Bank 2008a; Easterly 2008; Rodrik 2007; and World Bank 2005.
- 7 Mankiw et al. 1992.
- 8 Papyrakis and Gerlagh 2004; Sachs and Warner 2001, 1999.
- 9 Arezki and van der Ploeg 2007; Gylfason et al. 1997.
- 10 Gallup et al. 1998.
- 11 OECD 2008a; Boulhol et al. 2008.
- 12 Gallup et al. 1998; Nordhaus 1994.
- 13 Alesina et al. in Aghion and Durlauf 2005.
- 14 Brühlhart and Sbergami 2008.
- 15 Fischer 1993.
- 16 Acemoglu et al. 2001; Hall and Jones 1999.
- 17 Fischer 1993.
- 18 Williamson 1990.
- 19 Mourmouras and Rangazas 2008.
- 20 Johansson et al. 2008.
- 21 Acemoglu et al. 2003.
- 22 Levine and Renelt 1992; Temple 2000; Barro 2002b.
- 23 Goodfriend 2007.
- 24 North 1990.
- 25 Kaufmann et al. 2008.
- 26 Rodrik 2006.
- 27 Sachs 2005.
- 28 Lorentzen et al. 2008; Weil 2007.
- 29 Persson and Tabellini 2007; Persson 2005; Brunetti 2002; Tavares and Wacziarg 2001; Barro 1996.
- 30 Bremmer 2006; Wacziarg and Rodrik 2005; Glaeser et al. 2004.
- 31 La Porta et al. 1998.
- 32 de Soto 2000.
- 33 Pelligrini and Gerlagh 2004; Mauro 1995; Shleifer and Vishny 1991.
- 34 Collier 1999.
- 35 Stone 2006.
- 36 Rodrik et al. 2004; Glaeser et al. 2004; Acemoglu et al. 2001; Hall and Jones 1999; La Porta et al. 1998.
- 37 Auer 2008; Dixit 2007.
- 38 Hausmann et al. 2005.
- 39 Alfaro et al. 2008.
- 40 Bloom and van Reenen 2007; Porter and Ketels 2003.
- 41 Porter 1990.
- 42 Calderon and Servén 2004; Garcia-Milà et al. 1996; Gramlich 1994; Aschauer 1989.
- 43 Ang 2008; Aghion et al. 2007; Levine 2005a; King and Levine 1993; Rajan and Zingales 1998.
- 44 Barro 2002a; Krueger and Lindahl 2001.
- 45 Council on Competitiveness 2007; Goldberg and Pavcnick 2007.
- 46 Easterly 2001.
- 47 Griffith et al. 2004; Jones 1995; Coe and Helpman 1995; Fagerberg 1994; Lichtenberg 1992.
- 48 Furman et al. 2002.
- 49 World Bank 2008b; Ciccone and Papaioannou 2007; Conway et al. 2005; Nicoletti and Scarpatta 2003.
- 50 Carlin et al. 2005; Lewis 2004; Porter and Sakakibara 2004; Nickell 1996.
- 51 Megginson and Netter 2001.
- 52 Heritage Foundation 2008; Gwartney and Lawson 2007; De Haan et al. 2006; Berggren 2003.
- 53 Baldwin 2003; Dollar and Kraay 2002; Frankel and Romer 1999; Sachs and Warner 1995.
- 54 Coe and Helpman 1995.
- 55 Rodrigues and Rodrik 2000.
- 56 Dollar and Kraay 2003.
- 57 Alcalá and Ciccone 2004.
- 58 Porter and van der Linde 1995; Jaffe 1995.
- 59 Porter 1998b; Porter 1990.

- 60 Berger 2006.
- 61 Delgado et al 2007.
- 62 Ketels and Sölve 2006.
- 63 In 29 of these countries in Eastern Europe, Central Asia, and Turkey, the survey was conducted jointly with the EBRD as the EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS).
- 64 World Bank 2008a; Heritage Foundation 2008; Gwartney and Lawson 2007.
- 65 Conway et al. 2005.
- 66 See Institute for Strategy and Competitiveness 2008; Institute for Competitiveness and Prosperity 2008; and Center for Strategy and Competitiveness 2008.
- 67 Porter 1990.
- 68 We used this approach already in developing the BCI.
- 69 In the case of Ireland, we used GNP instead of GDP because of the size of dividend outflows to foreign investors. Ireland's GDP is about 20 percent higher than its GNP.
- 70 All results reported here and later in the chapter are for the current definition of indicators and the current specification of the model. While these specific results might change with further refinements of the model, we want to share the current results to enable a meaningful debate about our approach.
- 71 Porter 1990.
- 72 We have tested these choices statistically and found the overall ranking is highly stable to recategorization of specific indicators.
- 73 Exceptions of countries that come close to these cut-offs and are still assigned to the middle group are Latvia, Mauritius, and Saudi Arabia. In addition, Italy and Greece are assigned to the high group because they are EU members even though they fail the SIPI test. Brunei is assigned to the middle group because of its focus on natural resources; it otherwise meets the high SIPI test.
- 74 Lall 2001.
- 75 In order to measure microeconomic competitiveness, we aggregate COS and the four components of the NBE using PCA. Using the factor analysis, each component gets roughly the same weight. Specifically, the microeconomic competitiveness of country  $c$  in year  $t$  is computed as follows:

$$\begin{aligned} \text{MICRO}_{ct} = & 0.21 \times \text{COS}_{ct} + 0.21 \times \text{NBE-Factor Conditions}_{ct} \\ & + 0.21 \times \text{NBE-Demand}_{ct} \\ & + 0.20 \times \text{NBE-Related Industries}_{ct} \\ & + 0.20 \times \text{NBE-Context}_{ct} \end{aligned}$$

- 76 While a model that takes into account country stages is our goal, a linear model that generates meaningful results is an important test for the stability of the approach. Thus we also estimate the following linear model to have a useful benchmark:

$$\begin{aligned} \log \text{GDP}_{pc,t} = & \alpha_0 + \beta_{\text{MICRO}} \text{MICRO}_{c,t-1} + \beta_{\text{SIPI}} \text{SIPI}_{c,t-1} \\ & + \beta_{\text{MP}} \text{MP}_{c,t-1} + \alpha_{\text{END}} \text{ENDOWMENTS}_{c,t-1} \\ & + \alpha_1 \text{year}_t + \varepsilon_{c,t} \end{aligned}$$

- 77 For the regression, countries in the first tercile of SIPI ranks are assigned to the "high" group and all other countries to the "low" group. The dataset does not generate significant results if we divide countries into three groups. The regression generates coefficients for the "high" and "low" stage of development. For the calculation of the Index, we divide countries into three groups as discussed in the text. For the "high" and "low" group of countries, we use the coefficients derived in the regression. For the "medium" stage of development countries, we compute weights by averaging the estimated weights for the high-SIPI and low-SIPI countries.

- 78 The index for a particular country  $c$  in year  $t$  is calculated by summing its weighted microeconomic and macroeconomic components:

$$\text{GCI}_{c,t} = \omega_{\text{MICRO}}^S * \text{MICRO}_{c,t} + \omega_{\text{SIPI}}^S * \text{SIPI}_{c,t} + \omega_{\text{MP}}^S * \text{MP}_{c,t};$$

S=High, middle, or low stage of development

- 79 See Porter et al. 2007.
- 80 The new model also uses a different scaling approach for some of the other indicators. Instead of scaling linearly with some upper cut-off points, we use the log of the indicator.
- 81 Porter and Ketels (2008) analyze this for the case of Russia where centralization of power has benefited macroeconomic stabilization but made progress on microeconomic competitiveness elusive.

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