Location, Clusters, and the "New" Microeconomics of Competition

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Source: *Business Economics*, January 1998, Vol. 33, No. 1 (January 1998), pp. 7-13

Published by: Palgrave Macmillan Journals

Stable URL: https://www.jstor.org/stable/23487685

The Adam Smith Address: Location, Clusters, and the "New" Microeconomics of Competition

By Michael E. Porter*

The "new" microeconomics of competition is contained in frameworks that structure the complexity of competition and inform managers of the choices they must make. This address focuses on the role of location, which has shifted from factor endowments and size to productivity and productivity growth; factor inputs are abundant and accessed via globalization. To increase productivity, factor inputs must improve in efficiency, quality and ultimately specialization to particular cluster areas. A cluster is a critical mass of companies in a particular location (a country, state, region or even a city). Governments have significant roles in creating an environment to support rising productivity, and companies have a different agenda than just building offices or factories. The article concludes with the impacts of this approach on contemporary policy issues, especially the environment and inequality.

ADAM SMITH, so many years ago, laid the foundations of economics around the notions of specialization within enterprises, specialization across countries, and the power of unencumbered competition. His pin factory legitimized the place of business and profitmaking in society. In spite of being a discipline founded on an essay about business, however, it is probably fair to say that economics has had its greatest influence outside of the firm. It has guided fiscal, monetary, and international trade policy, and informed public policies in a variety of other areas. More recently, economics has provided powerful tools for practitioners in the capital markets. Other interesting work is beginning to gather steam around internal incentive problems within firms.

In the area of business competition, however, most company leaders would not turn to economics for guiding insights. The role of business economists reflects this state of affairs. Although there are exceptions, business economists by and large concern themselves with general economic conditions, supply and demand forecasting, regulatory issues, and capital market analysis rather than competitive strategy.

The Adam Smith Address itself is an important case in point. Most past addresses were delivered by macroeconomists, and the others focused exclusively on government. In fifteen years, only one address referred to business, much less business competition. The economist was Milton Friedman, and his title was "The Suicidal Impulse of the Business Community."

Why the disconnect? As one who has dedicated an entire career to bridging economics and business, I have found that the barriers lie in a number of areas:

1. Business leaders are interested in answers to the important questions they are facing, not the questions that necessarily advance scholarly literatures.
2. Theories or models that require restrictive assumptions are untenable, because managers cannot hold everything else equal. Standard economic models of firms and product markets have captured little of the complexity and dynamism of actual competition. Managers are looking for ways of addressing important competitive questions that capture the complexities, rather than abstract from them.

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3. Economists begin with the presumption that firms are governed by markets, and economic models leave little or no latitude to managers. Managers know that firms have considerable latitude to create buyer value and shape markets.
4. Concerns of businesses go well beyond issues that can be addressed with the preferred tools of the profession.
5. Finally, economists have rarely seen their roles as guiding competitive strategy or, for that matter, helping companies push profits up. Instead, most of us have been trained to take society's perspective, and the bulk of work on competition is policy-oriented and designed to hold profits down.

Fortunately, a growing number of economists, many working in industry and in business schools, are beginning to change this state of affairs. We are now beginning to sketch the dimensions of a "new" microeconomics of competition that is informing the choices of actual firms. I put the word new in quotation marks because, while some dimensions of competition are truly new in the sense of reflecting new conditions in the economy, many elements of competition captured in the new thinking have been present for decades and even centuries but have been undiscovered *or*, more often, unappreciated. The ideas that are actually influencing business practice sometimes come packaged in the form of mathematical models that have been the bread and butter of the profession. Most, however, are contained in frameworks that structure the complexity of competition and inform the choices managers must make.

There are several strands of the new literature on competition and competitive strategy. Here I would like to focus on one strand that is beginning to influence thinking and practice both in companies and in governments: the role of location in national and international competition.

LOCATION AND COMPETITION

There is a long history of research in economics in which geography was far more central, in which Adam Smith himself participated. Marshall's *Principles of Economics* contained a fascinating chapter on the externalities of specialized industrial locations. Economic geography was an important topic in the first five decades of the twentieth century, although dominated by models of spatial cost minimization. In recent decades, however, location has been all but absent from economic models. The growing global movement of goods, information, capital, and technology in recent decades has led to a tendency to see geography as diminishing in importance to competition.

Thinking in recent decades about the influence of location on competition has been based on relatively simple views of how companies compete. The dominant view in the post-World War II period rested on endowments of generic factors of production (e.g., natural resources, capital, labor). In this thinking, competition is driven by cost, and cost depends on the cost of inputs. The prescriptions are to accumulate factors and compete where the nation had a comparative advantage.

Factor endowments continue to play a role in locational competition, but factors *per se* have become less valuable as the opening of more countries to the global economy expands their supply, as national and international markets for factors become more efficient, and as the factor intensity of competition diminishes. Factor endowments continue to influence the location of resource extraction and labor-intensive activities but play a diminishing role in determining wages and standard of living.

More recently, a view of competition resting on increasing returns to scale has gained currency. In this thinking, having a large home market is valuable. Governments should invest in scale-sensitive activities such as R&D and intervene to limit "wasteful" internal competition. Nurturing "infant industries" to allow them to achieve critical mass is also important. In this type of competition, government intervention aims to tilt competition and win market share in particular industries (so-called industrial policy).

While economies of scale are certainly present in competition, the influence of scale *per se* seems to be diminishing. Modern, flexible technologies are often less scale sensitive than in previous generations. Outsourcing coupled with close relationships with suppliers have mitigated the need for in-house volume. Globalization has opened up early access to huge foreign markets and diminished the important of size *per se* in local markets.

Most importantly, however, the significance of both factor endowments and increasing returns to scale rest on a static, cost-minimization view of competition. Actual competition is far different. Competition is dynamic and rests on innovation and the search for strategic differences. Close linkages with buyers, suppliers, and other institutions are important not only to efficiency but to the rate of progress. While extensive vertical integration (e.g., parts, services, training) may have been the norm, a more dynamic environment runs the risk of making vertical integration inefficient, ineffective, and inflexible.

In this broader and more dynamic view of competition, location affects competitive advantage through its influence on *productivity and especially on productivity growth*. Productivity is the value created per day of work and unit of capital and physical resource employed. Factor inputs themselves are abundant and readily accessed via globalization. Prosperity depends on the productivity with which factors are used and upgraded in a particular location.

The productivity and prosperity of a location rest

not on what industries its firms compete in, but *how* they compete. Firms can be productive in any industry if they employ sophisticated methods, use advanced technology, and offer unique products and services, whether the industry is shoes, agriculture, or semiconductors. Conversely, mere presence alone in any industry does not guarantee prosperity if firms are unproductive. Traditional distinctions between high tech and low tech, manufacturing and services, and others have little relevance *per se*. Improving the productivity of *all* industries enhances prosperity both directly and through the influence one industry has on the productivity of others.

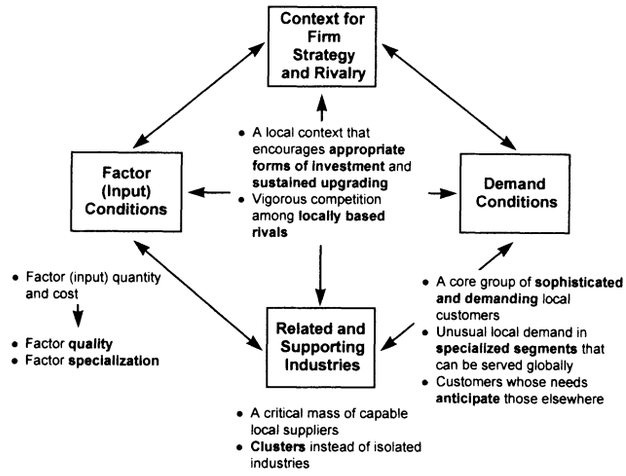
The prosperity of a location depends, then, on the productivity of what firms choose to do there. This sets the wages that can be sustained and the profits that can be earned. Both domestic and foreign firms contribute to the prosperity of a location based on the productivity of the activities they perform there. The presence of sophisticated foreign firms often enhances the productivity of domestic firms, and vice versa.

The sophistication of how companies compete in a location is strongly influenced by the quality of the business environment. For example, firms cannot use advanced logistical approaches unless there is high-quality transportation infrastructure. Firms cannot compete with high-service strategies unless they can access well-educated people. If regulatory red tape is onerous, time must be devoted to endless dialog with government, or if the court system does not resolve disputes quickly and fairly, firms waste money and management time without contributing to customer value.

Capturing the nature of the business environment in a location is challenging, given the myriad of locational influences on productivity. In *The Competitive Advantage of Nations*, I modeled the effect of location on competition via four interrelated influences (see Figure 1).[1] A few areas deserve highlighting.

Factor conditions refer to the basic inputs that allow competition to take place. They range from tangible things, such as physical infrastructure to information, the legal system and university research institutes that all firms draw upon in competition. Basic inputs and inputs that are generic across many industries can be a source of competitive disadvantage, but are diminishing as a source of advantage because many locations have them. To increase productivity, factor inputs must improve in efficiency, quality, and, ultimately, specialization to particular cluster areas. Specialized factors, especially those integral to innovation, are not only necessary for high levels of productivity but tend to be less tradable.

Figure 1
The National (State, City) Business Environment



The context for firm strategy and rivalry refers to the rules, incentives, and norms governing the type and intensity of local rivalry. Economies with low productivity are characterized by little local rivalry. Rivalry, if it occurs at all, involves imitation. Moving to an advanced economy requires that vigorous local rivalry develops and shift from cost alone to include differentiation. While the character of rivalry is strongly influenced by other aspects of the business environment (e.g., the available factors, local demand conditions), the investment climate and policies toward competition set the context. The investment climate is broadly defined and includes macroeconomic and political stability, the tax system, labor market policies affecting the incentives for workforce development, and intellectual property rules and their enforcement. All these contribute to the willingness of companies to invest in upgrading capital equipment, skills, and technology. Antitrust policy, government ownership and licensing rules, and policy toward trade and foreign investment have a vital role in setting the intensity of local rivalry.

Demand conditions at home have much to do with whether firms can and will move from imitative, low-quality products and services to competing on differentiation. Sophisticated and demanding customers at home press firms to improve. They offer insights into existing and future customer needs that are hard to gain in foreign markets. Local demand also reveals segments of the market where firms can differentiate themselves. Government has an array of policy levers to upgrade home demand that are rarely utilized, such as setting challenging but flexible quality, safety, and environmental standards, the use of government procurement to stimulate product improvement and innovation, policies governing buyer information and recourse to products or services of poor quality, and

[1] See footnotes at end of text.

policies that encourage early adoption of new products and services. Related and supporting industries refer to the local pressure or absence of suppliers of materials, components, machinery and services, as well as the existence of related industries. Productivity and productivity growth is highest where there is a *cluster*, not isolated firms or industries.

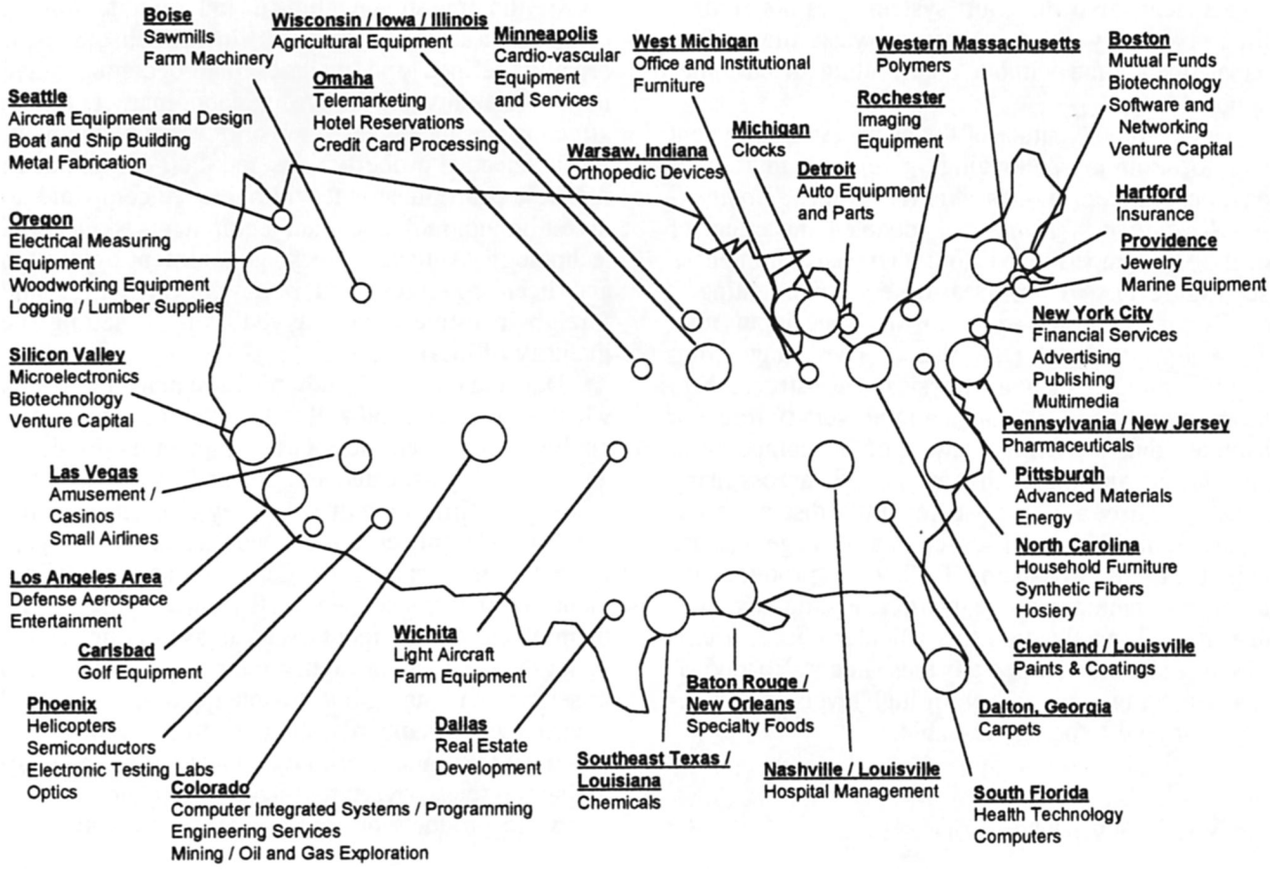
Clusters

A cluster is a critical mass of companies in a particular field in a particular location, whether it is a country, a state or region, or even a city. Clusters take varying forms depending on their depth and sophistication, but most include a group of companies, suppliers of specialized inputs, components, machinery, and services, and firms in related industries. Clusters also often include firms in downstream (e.g., channel, customer) industries, producers of complementary products, specialized infrastructure providers and other institutions that provide specialized training, education, information, research, and technical support, such as universities, think tanks, vocational training providers, and standards-setting agencies. Finally, many clusters include trade associations and other collective bodies covering cluster members.

The geographic distribution of clusters in one advanced economy is illustrated by the partial cluster map of the United States shown in Figure 2. The map illustrates just a few of the geographically concentrated clusters that are present, ranging from familiar ones such as Hollywood, Wall Street, and High Point to less familiar clusters, such as golf equipment in Carlsbad, California and optics in Arizona. In identifying clusters, it is important to distinguish between "exporting" industries and those that primarily serve the local market.

Clusters increase productivity vis-à-vis outsourcing or vertical integration through improving access to specialized inputs and information, facilitating complementarities among cluster participants, and improving incentives and performance measurement. More important, in many cases, is the role of clusters in improving the rate and success of innovation. Finally, clusters lower barriers to new business formation that improve the environment for productivity. While traditional agglomeration economies centered on cost minimization, cluster advantages rest on information, transactions costs, complementarities, and incentives as well as "public" goods that result from both public and private investments.

Figure 2
Selected Regional Clusters of Competitive U.S. Industries



ECONOMIC GEOGRAPHY

Clusters are often concentrated in particular geographic areas, and sometimes in a single city or metropolitan region. Geographic concentration occurs because proximity serves to amplify many of the productivity and innovation benefits of clustering already described. Transactions costs are reduced, the creation and flow of information improves, local institutions are prone to be most responsive to a cluster's specialized needs, and peer pressure and competitive pressure are more keenly felt.

The economic geography of cities, states, and nations is characterized by specialization, which appears to increase as an economy becomes more advanced. A relatively small number of clusters account for a major share of the economy of a geographic area, and an overwhelming share of the economic activity that is "exported" to other locations as well as the fields where there is "foreign" investment by locally based firms.[2]

Clusters competing with other locations based in a geographic area are the primary *long-run* source of economic growth and prosperity in the area. Such clusters can grow far beyond the size of the local market and absorb workers from less productive industries. The demand for local industries, in contrast, is inherently limited. It is derived primarily from the success of exporting industries directly or indirectly.

Economic geography in an era of global competition, then, involves a paradox. In an economy with rapid transportation and communication and accessible global markets, location is fundamental to competition. It has been widely recognized that changes in technology and competition have diminished many of the traditional roles of location. Resources, capital, and other inputs can be efficiently sourced in global markets. Firms can access immobile inputs via corporate networks. It is no longer necessary to locate near large markets.

It is natural, perhaps, that the first response to globalization was to pursue these benefits by shifting activities to low-cost locations. However, anything that can be efficiently sourced from a distance has been essentially *nullified* as a competitive advantage in advanced economies. Global sourcing mitigates disadvantages but does not create advantages. Moreover, global sourcing is normally a second-best solution compared to a cluster.

Paradoxically, then, the enduring competitive advantages in a global economy are often heavily local, arising from concentrations of highly specialized skills and knowledge, institutions, rivals, and sophisticated customers in a particular nation or region. Proximity in geographic, cultural, and institutional terms allows special access, special relationships, better information, powerful incentives, and other opportunities for advantages in productivity and productivity growth that are difficult to tap from a distance. Location matters, then, albeit in different ways at the turn of the twenty-first century than in earlier decades.

THE ROLE OF GOVERNMENT

Governments have a great stake in the influence of location in competition, because it is governments that are directly responsible for improving the well being of citizens in particular geographic areas. Governments all over the world have acutely felt the pressure of competition from other states and nations to attract the investments of international companies. A good deal of effort and public resources are expended in this endeavor, which is often based on very rudimentary thinking about what makes locations competitive.

For government, old distinctions between *laissez-faire* and intervention are simplistic. Government, first and foremost, must strive to create an environment that supports rising productivity. This implies a minimalist government role in some areas (e.g., trade barriers, pricing) and an activist role in others (e.g., ensuring vigorous competition, providing high-quality education and training). Artificial distinctions between social and economic policy must fall away, because the two are inextricably tied in defining the environment for productive competition. These are positive and constructive roles for virtually all of a nation's institutions in competitiveness, whether they are schools, consumer societies, or the judicial system.

The ideas I have outlined have many other important implications for government policy, only a few of which can be sketched here. First, sound macroeconomic policy is necessary but not sufficient for productivity growth. There is consensus about much of macroeconomic policy as it relates to competitiveness, e.g., prudent government finances, policies to encourage savings, reduction of government's role in the economy, and many nations have gone through macroeconomic liberalization and stabilization. Yet this does not ensure a prosperous economy unless the microeconomic foundations of productivity and productivity growth are present.

Second, government policy must go beyond renouncing negative roles in the economy and pursue its affirmative agenda. Governments around the world today are much better at articulating what they will not do – "We will not subsidize; we will not protect; we will stop owning businesses" – than what they will do. Government has essential roles in ensuring that appropriate factor conditions are present as well as setting a context that encourages upgrading through appropriate policies in areas such as antitrust, intellectual property, taxation, and the regulation of product quality, safety, and environmental impact.

Third, while there are important economywide

(horizontal) roles of government in enhancing general purpose inputs and institutions (e.g., schools, ports, the legal system), there is also an important role for government in facilitating the upgrading of clusters. Clusters are providing a new way of thinking about the economy and of organizing economic development efforts in many states and nations. Clusters extend thinking about many aspects of economic policy, such as export promotion, attraction of foreign direct investment, science and technology policy, technical and vocational training, and infrastructure. Clusters provide a means for bringing together firms and institutions and identifying the impediments and constraints that are holding back productivity.

A cluster orientation is very different than industrial policy. In industrial policy, government targets "desirable" industries and intervenes in competition to tilt market outcomes in a nation's favor. In cluster theory, all clusters can improve productivity and deserve attention. The focus is not on distorting competition but removing obstacles and constraints to productivity growth.

Fourth, cluster theory suggests new levers for government in improving productivity and prosperity. An example is demand side policy. Most treatments of economic policy ignore demand side considerations altogether, or advocate such things as pumping up aggregate demand or expanding the size of the local market. Cluster theory focuses not only the size of local demand but its role in upgrading and innovation, which depends more on the quality or nature of local demand than its size. Regulation or policies that encourage the early development of local markets for new products, or which encourage the purchase of advanced product varieties, can have a far greater impact on competitiveness than supply side policies. Such demand-side policies were among the most positive aspects of Japanese economic policy, which overall has had serious weaknesses. In industries such as robotics and machine tools, users received incentives to purchase the latest generation of products.

Finally, the new thinking about clusters and the role of location in competition provides a way to sort out the appropriate roles of government at the global, regional, national, state, and local level. It is clear that each of these geographic units is relevant to competition in somewhat different ways. One clear implication of the new thinking is a more important role for local and state governments in economic policy than has been typical. Another implication, growing out of some of my recent work, is the productivity benefits of coordination among neighboring countries.

THE AGENDA FOR COMPANIES

The role of location in competition suggests important new agendas for companies. Thinking about competition and competitive strategy has been dominated by what goes on inside companies. If anything, location is seen as diminishing in importance as globalization allows companies to source financial capital, goods, and technology from anywhere and site operations at other locations to access inputs there.

Yet the prominence of clusters suggests that much of competitive advantage lies *outside* companies and even outside their industries, residing in the locations at which their business units are based, i.e., companies have a important stake in the business environment of their business units that goes far beyond local taxes, electricity costs, and wage rates. The health of the cluster is important to the health of the company. Companies may actually benefit from having more local companies in the same field, in spite of the tendency to think that this will create more local competition, drive up input costs, and make it more difficult to retain employees.

While a full treatment is beyond the scope of this essay, a few implications for companies are illustrative. First, global strategy, or more generally competing across locations, must harness the advantages of spreading activities across locations but also capture the innovation advantages of a clear headquarters (or home base as I call it). Increasingly, multinational companies are locating some product line home bases outside of their home nation.

Second, private investments in "public" goods are common and often economically justified. Investments in cluster-specific assets such as university research and training centers, specialized infrastructure, and testing laboratories yield returns even though other firms may also benefit. Investments by individual firms can be tied to special access to such assets, which helps to address free rider problems. The spillover benefits to many firms and industries mean that many firms have an incentive to contribute even if they do not have large market shares.

Third, cluster theory suggests a prominent role for trade associations and other collective bodies, which can be competitive assets rather than merely lobbying and social organizations. Associations, especially if they are organized around clusters rather than individual industries, can take on collective functions and help capture spillovers and linkages.

Fourth, cluster theory casts a whole new light on the question of corporate location. Globalization and the ease of transportation and communication have led to a predictable surge of outsourcing, with companies relocating many facilities to low wage, taxes, or other input costs. Outsourcing can reduce locational disadvantages, but cluster theory suggests a more complex story. Locations with low wages and low taxes often lack efficient infrastructure, available suppliers, timely maintenance, and other conditions that clusters offer.

Many companies have discovered that these productivity disadvantages can be more than offsetting. Yet the low wages or taxes are easy to measure up front, while productivity costs are hidden and unanticipated.

Locating in an existing or developing cluster, then, often lowers total cost, and increases innovation potential. Home base or headquarters activities should sometimes move to locations outside a company's home country if there is a more vibrant cluster elsewhere. There is the beginning of a shift back toward clusters in locational choices, both in international location (where some outsourced activities are moving back to advanced nations) and locational choices within nations (where remote sunbelt or other sites are giving way to locations near clusters).

Finally, when activities are located in places isolated from other firms in the same field, the challenge is to build a cluster. This involves wooing suppliers, encouraging local institutions to make supporting investments, finding ways to build the local stock of specialized inputs, etc. Corporate location, then, involves far more than building offices or factories.

CLARIFYING CONTEMPORARY POLICY DILEMMAS

The role of location in the "new" microeconomics of competition informs some vexing policy issues that have resisted progress. One is government and corporate practice toward the environment. Standard economic models, with a static, cost minimization framework, make environmental improvement as inevitably costly and hence involving a tradeoff with competitiveness. In the new microeconomics, competitiveness arises from rising productivity in the use of resources. Innovation in products and processes is never ending. Virtually all forms of corporate pollution involve the inefficient use of resources, because raw materials are wasted, processes are not reused, and hard to handle toxic materials are involved. Investments to improve environmental performance through better technology, then, will often improve productivity and partly or fully offset their cost in the long run. This suggests that environmental regulation should be focused on reducing the transactions costs of the regulation itself and facilitating product and process innovation. Corporate practice should focus on viewing environmental performance not as a regulatory matter but an essential component of productivity.

Another troubling problem confronting us today is inequality, which has been rising in the recent decade in parallel with the opening of competition in the world economy. Some see inequality as an inevitable flaw in capitalism. Through the lens of these ideas about competition among locations, however, inequality is more a failure of government policy and institutions than a failure of capitalism. The focus should be on addressing the root causes of inequality, not stopping or distorting the competitive process in the vain hope of achieving equal outcomes.

In a global economy, it is clear that individuals with high skills will prosper because of the widening market for their services, while individuals with low skills will have to "compete" with lower-wage workers in other nations for mobile jobs. At the root of inequality, then, is differences in skills, incentives, and opportunities available to individual citizens. Poor education and training systems are not the fault of capitalism but of public policy. The lack of equal opportunity facing many citizens is not inevitable but a failure of society and government as well.

Inequality is also exacerbated by two other causes, both addressable by appropriate policy. One is limits to competition – collusion, monopoly, and artificial restrictions on entry – that gives business owners too much power to appropriate returns. The other is distortions to capital markets that penalize long-term investment in capital equipment, technology, and workforce development.[3] Capitalism is not the root cause of inequality, then, but rather the particular context for capitalism that has been created in countries such as the United States.

We can also apply this thinking about location and competition to a range of other problems, such as the economic distress of inner cities,[4] the appropriate social roles of business, and the challenges now facing advanced nations such as Japan and Germany. All require that we connect economic concepts and economic thinking to the reality of actual competition and to the concerns of business. I am hopeful that the gap between economics and business will continue to narrow, so that economics can gain the influence in business that Adam Smith's work presaged.

FOOTNOTES

[1] M.E. Porter, Chapters 3 and 4, 1990

[2] I use the term exports to apply to industries that compete outside a geographic area even if they are destined for another state and not a foreign country.

[3] These issues are controversial. For a discussion, see Denham and Porter (1995).

[4] M.E. Porter (February 1997) and M.E. Porter (1995).

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