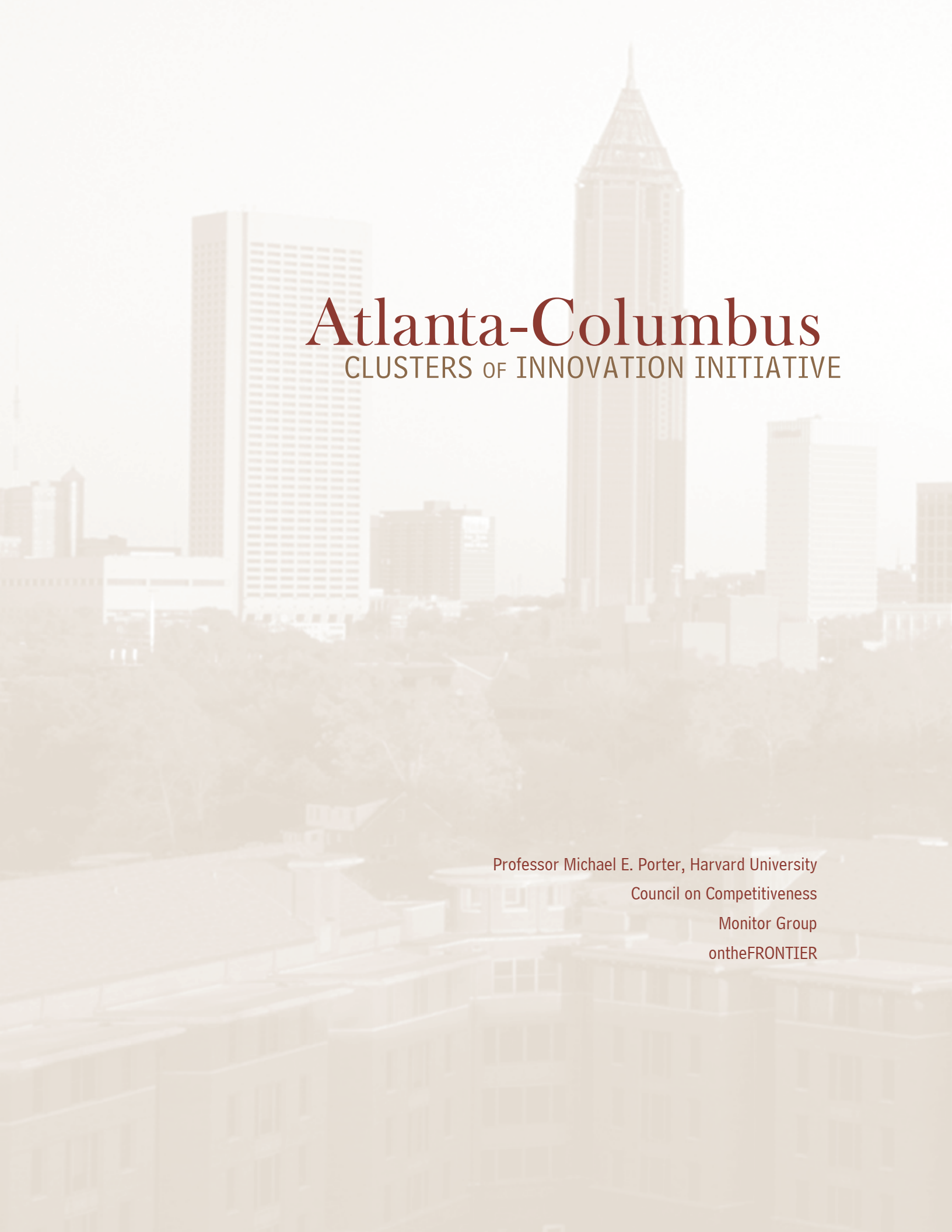
Professor Michael E. Porter, Harvard University
Council on Competitiveness
Monitor Group
ontheFRONTIER

Atlanta-Columbus

CLUSTERS OF INNOVATION INITIATIVE

- ATLANTA-COLUMBUS
- PITTSBURGH
- RESEARCH TRIANGLE
- SAN DIEGO
- WICHITA



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CLUSTERS OF INNOVATION INITIATIVE: REGIONAL FOUNDATIONS OF U.S. COMPETITIVENESS

CONTENTS

Foreword by the Co-Chairs of the Clusters of Innovation Initiative

Since its founding nearly two decades ago, the Council on Competitiveness has addressed a wide range of economic issues affecting the nation, including trade policy, technology policy, the federal budget, and workforce skills. Competitiveness has tended to be seen primarily from a federal perspective, and national policies and circumstances surely affect the prosperity of our economy. However, the Clusters of Innovation Initiative was undertaken with the realization that the real work of raising productivity and innovative capacity usually occurs not in our nation's capital, but in the cities and regions where firms are based and competition actually takes place.

Regional economies are the building blocks of United States competitiveness. The nation's ability to produce high-value products and services depends on the creation and strengthening of regional clusters of industries that become hubs of innovation. Understanding is growing about how these clusters enhance productivity and spur innovation by bringing together technology, information, specialized talent, competing companies, academic institutions, and other organizations. Close proximity and the accompanying tight linkages yield better market insights, more refined research agendas, larger pools of specialized talent, and faster deployment of new knowledge.

Utilizing a unique database developed at the Institute for Strategy and Competitiveness at the Harvard Business School, we are now able to systematically measure the relative strength of regional economies and their clusters and track their economic and innovation performance over time. In addition, a team consisting of individuals at Monitor Group, ontheFRONTIER, the Council on Competitiveness, and the Institute have conducted surveys, in-depth interviews, and strategic analyses in order to assess the strengths and challenges of the region.

This regional report examines the composition and performance of the Atlanta regional economy, how industry clusters developed and innovation arose, how clusters affected the region's economic future, and how the region can establish a strategy and action program to drive its economy and clusters forward. The framework employed and the lessons learned apply to many regions of the country.

We wish to acknowledge the support we received from the national steering committee, advisors in the Atlanta-Columbus region, the many individuals who gave their valuable time to be surveyed and interviewed, and the many project sponsors. All of you have helped us to create a unique knowledge base and a process for catalyzing action. Your thoughts and insights are embedded in this report, and will, we hope, benefit not only the five regions that participated in the study but other parts of the country as well.

F. Duane Ackerman
Co-Chair, Clusters of Innovation Initiative
Chairman & CEO, BellSouth Corporation

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ACKNOWLEDGEMENTS

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Professor Porter provided theoretical and methodological framework for the Initiative and led the research and writing of this report.

Randall Kempner, ontheFRONTIER, and Kurt Dassel, Monitor Group, are the report's principal authors. Mark Fuller and Jeff Grogan of the Monitor Group provided overall project direction and editorial advice.

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Lily Rappoli, Alyson Lee, and Julie Sherman at the DesignStudio at Monitor Group illustrated, designed, and created the layout of the regional reports and this report.

Almost 300 business and government leaders contributed to this project in some way by providing background information, submitting to interviews, completing surveys, and offering their views. While this report aims to reflect the consensus of those interviewed and surveyed, it cannot do justice to all their contributions. Any errors, omissions, or inconsistencies are the responsibility of the report writers and not any one individual or institution.

For additional information on this research, contact Randall Kempner at ontheFRONTIER (e-mail: Rkempner@onthefrontier.com), Kurt Dassel at Monitor Group (e-mail: Kurt_Dassel@Monitor.com) or Michelle Lennihan at the Council on Competitiveness (e-mail: Lennihan@compete.org).

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HIGHLIGHTS

Regional Competitiveness and Innovative Capacity

- The economic goal for Atlanta should be a high and rising standard of living.
- Achieving this goal depends upon creating a high quality business environment that fosters innovation and rising productivity.
- Efficiency is important, but the fundamental driver of long-term prosperity is innovation.
- Strong and competitive clusters are a critical component of a good business environment and are the driving force behind innovation and rising productivity in a region.
- All levels of government can influence the business environment and the productivity of clusters.
- Universities and specialized research centers are a driving force behind innovation.
- While government and universities can help foster a favorable business environment, companies and industries must ultimately achieve and sustain competitive advantage.
- Formal and informal institutions for collaboration, such as regional economic development organizations and alumni of large influential companies, are important contributors to economic development in advanced economies.

Atlanta's Successes Over the Past Decade

- Atlanta added more than 600,000 new jobs, the most of any major U.S. metro area.
- Unemployment in Atlanta has been below the Georgia and U.S. average throughout the 1990s.
- The number of establishments in the Atlanta region grew four times faster than the U.S. average. The number of fast-growth firms also well exceeded the U.S. average.
- Atlanta transitioned from a major U.S. business hub into an internationally recognized business center.
- Although wages have grown at an average of 4.5% a year over the decade, the cost of living in the region has increased faster than wages.

Strengths

- Atlanta has very strong air transportation and communications infrastructure.
- Atlanta's location, cultural amenities, and climate have attracted talented workers and made an important contribution to the region's standard of living.
- Atlanta is home to numerous well-regarded higher education institutions, especially in engineering, medicine, and communications.
- Atlanta has benefited greatly from a large pool of scientists, engineers, and skilled technicians.
- Strong workforce development programs have helped firms develop skilled workers and the region to retain firms.
- The state government has a long and ongoing tradition of funding science-based economic development initiatives.
- The sense of regional pride and self-confidence inspires leaders to attempt major economic development efforts and draws regional residents to work together.

Challenges

- Economic Performance
  - There is an increasing gap between regional wages and regional cost of living.
  - Many groups, particularly low income workers, did not benefit significantly from the prosperity created in the recent period of growth.
- Infrastructure Strains
  - Rapid economic and population growth have put a strain on the region's transportation infrastructure, which degrades business efficiency and the regional quality of life.
  - Air pollution remains a major issue.
  - Basic services like water and sewer are also in danger of being overwhelmed.
- Human Assets
  - The regional economy faces current or imminent shortages in the supply of marketing and management professionals, scientists, engineers, and skilled labor.
  - Increases in cost of living threaten to decrease Atlanta's ability to attract additional skilled labor.
  - Uneven K-12 education threatens to exclude major portions of the regional population from access to its higher education institutions and higher-paying jobs.
- Innovation
  - Despite growth, patenting performance by regional firms still significantly trails firms from competitive regions.
  - The process of transferring technology from the universities has been described as slow and cumbersome.
- Collaboration
  - Regional government collaboration is weak.
  - Atlanta has a strong overall regional collaborative institution; however, cluster-specific institutions for collaboration are lacking.

The Need for New Directions

- Atlanta's new challenge is to focus not just on growth, but on the prosperity of all its citizens.
- The region needs to move from an efficient low cost manufacturing and service center to a locus of high value-added products and innovation.
- Atlanta's success in building strong higher education institutions needs to be extended to all levels of the educational system.
- Atlanta needs to develop great institutions, not just great leaders.
- Rather than focus on building great projects, Atlanta's leaders need to develop ongoing economic development processes.
- Instead of relying on disparate organizations, Atlanta must develop stronger, ongoing regional collaboration among institutions.

Opportunities

- Unlock the commercial potential in universities:
  - Improve knowledge transfer
  - Create facilities to foster networking
- Attract additional non-university research institutions.
- Focus on technology in addressing the environmental, traffic management, and logistics issues—key areas that challenge quality of life.
- Develop stronger university ties to emerging and established clusters.
- Identify and pursue additional opportunities at the intersection of clusters (e.g., Internet banking; logistics software).
- Continue to develop international ties, with special focus on opportunities in Latin America.

KEY CHALLENGES AND OPPORTUNITIES FOR COLUMBUS, GA

Challenges

- Developing greater recognition for Columbus as a business location nationally and internationally
- Moving from a town with some big companies to a region with strong industry clusters
- Leveraging links to Atlanta without losing local identity

Opportunities

- Develop an explicit economic development strategy to build the region's financial services cluster around existing anchor firms.
- Expand efforts to support entrepreneurial start-ups in the region; promote location of spin-outs of anchor firms in the region.

EXECUTIVE SUMMARY

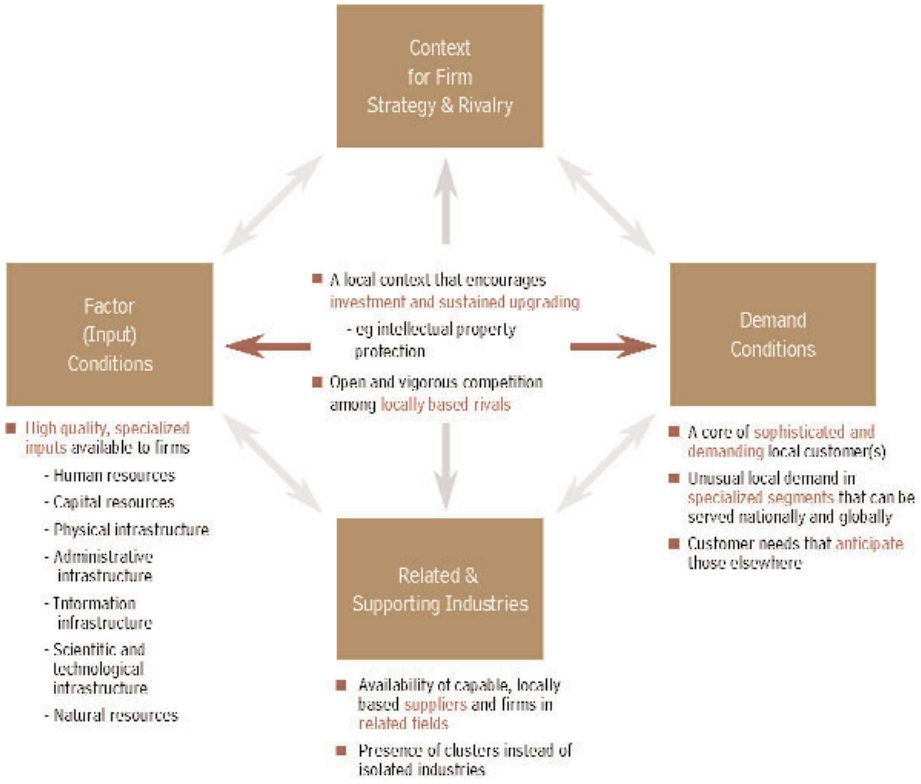
REGIONAL FOUNDATIONS OF U.S. COMPETITIVENESS

The Determinants of Regional Competitiveness and Innovative Capacity

The central economic goal for Atlanta should be to attain and sustain a high and rising **standard of living** for its citizens. The ability to earn a high and rising standard of living depends on increasing **productivity,** which, in turn, depends on innovation. The central challenge then in enhancing prosperity is to create the conditions for sustained innovation output.

A critical driver of innovation output is the quality of the regional **business environment** in which firms operate. This environment is embodied in four broad areas that affect the productivity that can be achieved as well as the rate of innovation (see Exhibit 1).

Exhibit 1: Determinants of Regional Productivity



- **Factor conditions.** Achieving high levels of innovation and productivity growth depends on the presence of high quality and specialized pools of human resources, basic research, applied technology, infrastructure, and sources of capital that are tailored to the needs of particular industries.
- **Demand conditions.** The quality of demand at home has a strong influence on the process of creating and improving products and services. Sophisticated customers in the region press firms to improve and offer insights into existing and future customer needs.

- **Context for firm strategy and rivalry.** The rules, incentives, and pressures governing the type and intensity of local rivalry have a fundamental influence on productivity policies that encourage investment, protect intellectual property, and foster productivity growth.
- **Related and supporting industries.** Local sourcing from capable suppliers based in the region can enhance productivity and improve the capacity for innovation through allowing quicker and less costly communication, fostering the flow of ideas, and enhancing flexibility through outsourcing.

These four areas of the diamond shown above are self-reinforcing and act as a system. Regional rivalry, for example, stimulates the development of unique pools of specialized skills and the formation or attraction of specialized suppliers. Active local rivalry also upgrades regional demand by creating more demanding customers.

Clusters and Productivity

The workings of these attributes lead to the formation of **clusters**, or geographically proximate groups of interconnected companies and associated institutions in a particular field, linked by customer, supplier, or other relationships.

Once a cluster forms, the industries that constitute it become mutually reinforcing. Information flows freely, and innovation spreads rapidly through the relationships among customers and suppliers. Institutions such as colleges and universities adapt to cluster needs. Rivalry in one industry spreads to other industries in the cluster through spin-offs or related diversification.

Through a cumulative process that often occurs over several decades, the region becomes a repository of specialized expertise, technology, and institutions for competing in a given field.

Clusters innovate faster because they draw on local networks that link technology, resources, information, and talent. Strong competitive local pressures increase incentives for a cluster participant to innovate. Clusters build the basis for **specialized** skills and capabilities and enable competitive advantage in world markets.

The Role of Government on Competitiveness

Government at all levels has an influence on the business environment and the innovative potential of clusters. Government's proper role is to improve the business environment rather than to intervene directly in the competitive process.

- Government has four fundamental roles in the economy:
- Improve the quality of basic inputs that firms draw upon, such as human resources, physical and technological infrastructure, and capital;
- Create rules, regulations, and incentives that encourage innovation and upgrading. Through regulations, tax policy, and antitrust enforcement, government policies influence the climate in which firms compete;
- Build upon and reinforce the formation of local clusters; and
- Encourage local firms and citizens to choose to compete, by educating them about the imperative of international competition and articulating an overarching economic strategy.

The Role of the Private Sector in the Business Environment

While government can help to create a favorable climate for competition, it is companies and industries that must ultimately achieve and sustain competitive advantage. To do so means they must recognize the central role of innovation. This means selling to the most demanding of buyers; seeking out buyers with the most difficult needs; establishing norms that exceed tough regulatory hurdles or product standards; and fostering a work environment of continuously upgrading skills and productivity.

Institutions for Collaboration

Institutions for collaboration are formal and informal organizations and networks that (1) facilitate the exchange of information and technology; and (2) foster various kinds of coordination and collaboration that can improve the business environment in a cluster or in the overall economy (see Exhibit 2). They are effective tools through which companies can upgrade the innovative capacity of their cluster and regional economy.

Exhibit 2: Select Institutions for Collaboration in Atlanta-Columbus

Private Sector	Joint Private/Public
■ Metro Atlanta Chamber of Commerce ■ Technology Association of Georgia ■ Central Atlanta Progress ■ Columbus Chamber of Commerce ■ Georgia Chamber of Commerce	■ Georgia Research Alliance (GRA) ■ Georgia Center for Advanced Telecommunications Technologies (GCATT) ■ Advanced Technology Development Center (ATDC) ■ Intellectual Capital Partnership Program (ICAPP) ■ Atlanta Regional Consortium for Higher Education (ARCHE)
Informal Networks	**Public Sector**
■ Georgia Tech Alumni Association ■ Other University Alumni Associations	■ Yamacraw Mission ■ Research Atlanta (Georgia State University) ■ Atlanta Regional Commission

The Composition of Regional Economies

Regional economies are composed of three main types of activities:

- **Local clusters.** These clusters are found in every region and produce goods and services which are needed by the local population (e.g., retail trade).
- **Traded clusters.** Traded clusters produce products and services that are in competition with other regions and nations. They trade across the nation or the globe (e.g., the automotive or medical devices clusters). These clusters tend to be concentrated in a small number of regions.
- **Natural resource clusters.** Natural resource clusters are found in locations where a particular natural resource is abundant.

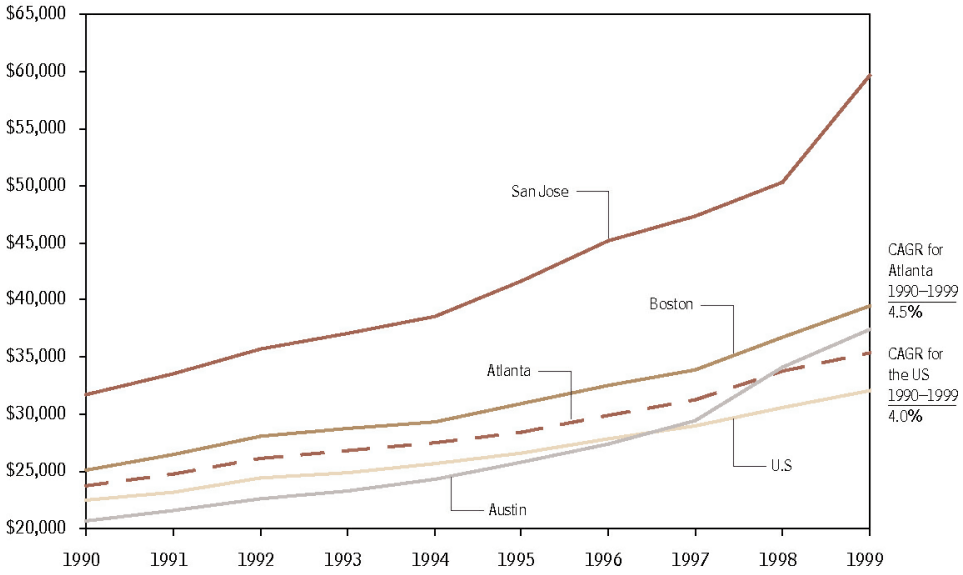
Traded clusters drive regional prosperity. While local clusters account for roughly two-thirds of employment in an average region, traded clusters have the greater influence on the prosperity and economic growth of a region. Average wages in traded clusters are roughly $13,000 a year higher than wages in local clusters. This is because traded cluster firms are typically the source of sustained innovation that drives regional and national economic growth. Traded cluster growth is also less constrained by the size of the local markets, and their success creates much of the demand for local clusters. Increases in wages paid by firms in traded clusters are strongly correlated with increases in local cluster wage levels.

THE ATLANTA-COLUMBUS REGIONAL ECONOMY

Overall Economic Performance Indicators

- **Employment.** Along with the region's population growth, the Atlanta economy enjoyed impressive job creation over the last decade, creating more than 600,000 new civilian jobs over the period and doubling the national growth rate. Employment in Atlanta was 2.3 million in 2000, up from 1.7 million in 1990.
- **Unemployment.** In 2000, the Atlanta unemployment rate stood at 2.8%, well below the 6.2% rate the region posted in 1992, its worst year in the 1990s. Though the recent economic downturn has increased the unemployment rate, Atlanta is still well below U.S. and Georgia averages.
- **Wages.** In 1999, average wages in Atlanta were $35,380, above the national average of $32,100 and well above the Georgia average of $30,870. Average wages in 1999 for select benchmark regions, however, were $37,475 for Austin, $39,455 for Boston, and $59,650 for San Jose (see Exhibit 3).

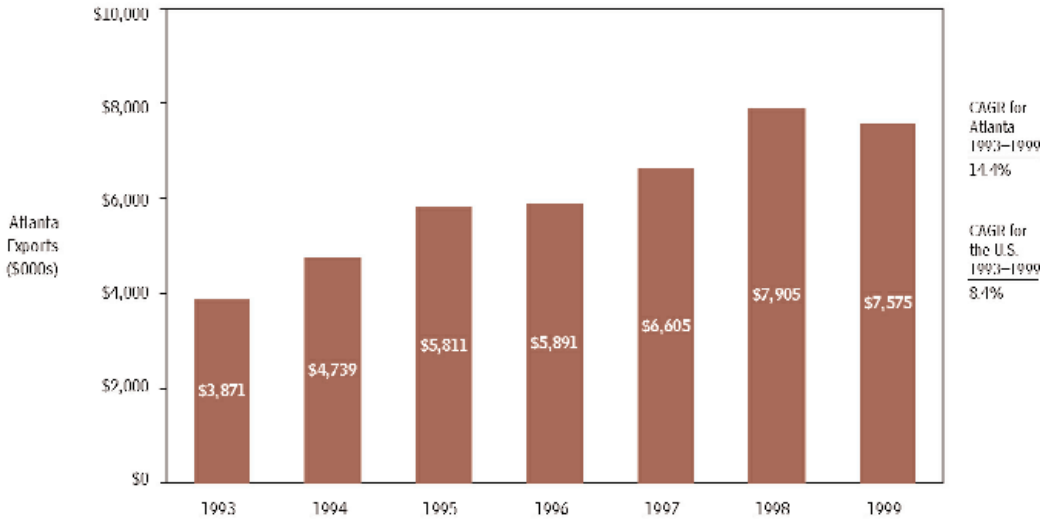
Exhibit 3: Average Wages in Select Geographic Areas



Note: Average wages are nominal
Source: Cluster Mapping Project, Institute for Strategy & Competitiveness, Harvard Business School

- **Cost of living.** The cost of living in Atlanta is an estimated 10 to 20% higher than the national average. In 2000, executive housing near downtown cost an estimated 65% higher than the national average.
- **Exports.** From 1993 to 1999, the Atlanta region doubled its exports from $3.8 to $7.6 billion (see Exhibit 4). However, Atlanta's $3,432 exports per worker in 1999 trails the national average of $5,212 per worker, as well as benchmark regions like Austin ($6,969), Boston ($5,734), and San Jose ($29,347).

Exhibit 4: Atlanta Regional Export Growth, 1993-1999



Source: U.S. Department of Commerce, International Trade Administration

Innovative Capacity Indicators

- **Patents.** Atlanta's rate of 4.7 patents per 10,000 workers is below the national rate of 6.3 per 10,000 workers, and well below competitor regions like Boston (20.9 per 10,000) and Austin (22.2 per 10,000). Atlanta's annual patent growth of 9.5% from 1993 to1999, however, was well above the national average, and was eighth fastest among the nation's 20 largest metro areas.
- **Venture capital investments.** In 2000, venture capital funding per worker in Atlanta ($695/employee) was close to 2.5 times the national average. However, many competing technology regions received higher funding on a per capita basis.
- **Establishments.** Establishments in traded clusters grew at 9.0% annually between 1990 and 1999, a rate four times faster than the national average. These strong numbers are somewhat skewed by the rapid population growth, which also drives up establishment creation.
- **Fast growth firms.** Over the past decade, Atlanta has consistently outperformed other regions in placing firms on Inc. Magazine's list of the 500 fastest growing companies in the nation. According to the National Council on Entrepreneurship's Growth Company Index, Atlanta was fourth in the nation in terms of its concentration of high employment growth firms.
- **Initial public offerings.** Fifty Atlanta regional companies went public from 1996 to 1999, more than their competition in Austin, but behind leading regions like Boston, which had 106 IPOs, and Washington, D.C. , which had 64.

Exhibit 5: Summary of Economic Performance and Innovation Output in Atlanta

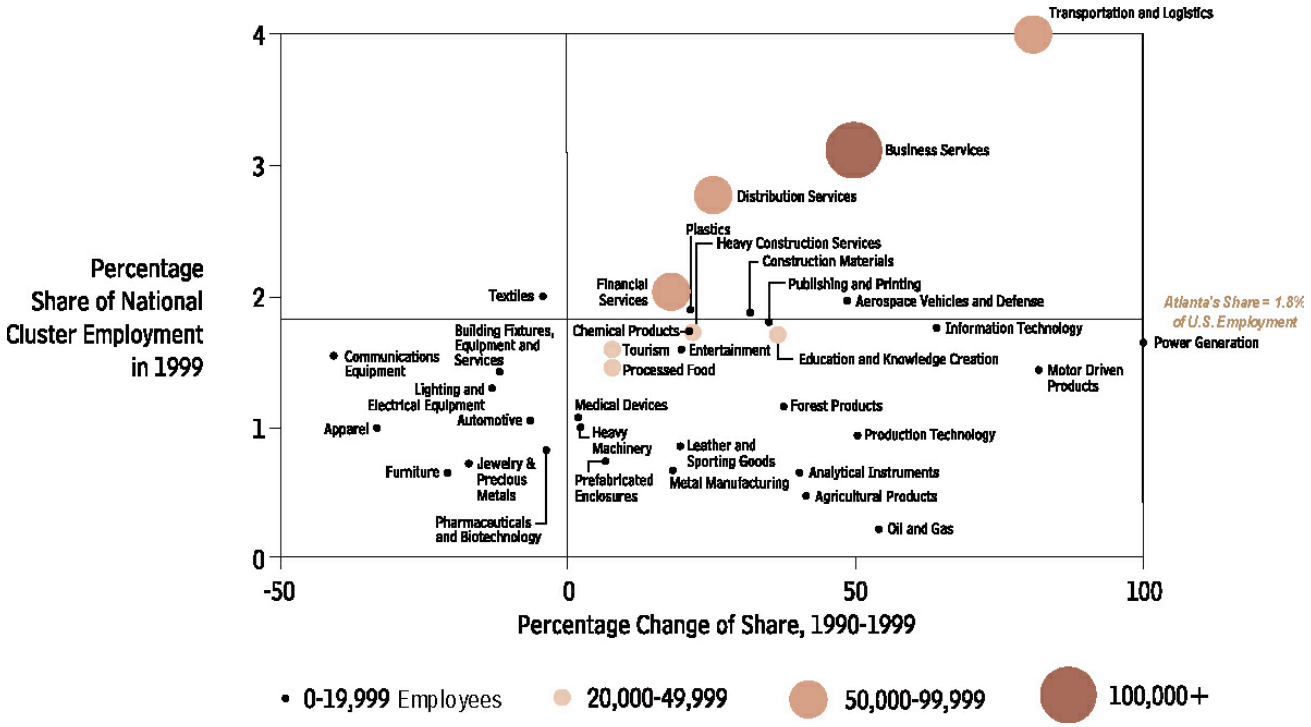
Source: Bureau of Labor Statistics, Bureau of Economic Analysis; International Trade Administration; U.S. Patent and Trademark Office; Price Waterhouse Cooper Money Tree; Hoover's IPO Central; Inc. Magazine; Fast Forward, Inc., Baker Thompson Associates

Composition of the Atlanta Regional Economy

- **Traded industry versus local industry employment.** In 1999, 32.0 % of Atlanta regional employment was in traded clusters such as communications, education and knowledge creation, and information technology, while 67.4 % of Atlanta's employment was in local clusters such as personal services, local construction, and real estate development. These levels are equivalent to the national average.

  As traded clusters generally pay higher wages, it is important to track changes in the percentage of people employed in traded clusters over time. Employment in traded clusters as a percentage of total employment declined slightly during the early to mid 1990s during the economic downturn, but recovered by 1998 to reach 1990 levels.
- **Strong positions in numerous clusters.** Atlanta enjoys strong positions in numerous clusters including transportation and logistics, business services, distribution services, financial services, information technology, education and knowledge creation, publishing and printing, and heavy construction. Fifty-two percent of Atlanta's traded-cluster employment is in clusters relatively stronger and growing more rapidly than the U.S. average. These clusters are identified in the upper right quadrant of Exhibit 6 on the next page.

Exhibit 6: Atlanta's Traded Cluster Share of National Employment and Employment Growth



Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

Assessment of Overall Competitiveness and Innovative Capacity

- **Strong air transportation and communications infrastructure.** Hartsfield Airport in Atlanta is one of the world's largest, and is an economic engine that directly supports airlines, cargo carriers, and logistics firms. It is also a significant asset in attracting a broad range of international companies to the region. The region's communications infrastructure, recently updated for the 1996 Olympics, provides a strong base for telecommunications, Internet, and all firms that rely upon fast and reliable data transfer.
- **Attractive quality of life**. Atlanta's location near the recreational assets of the eastern seaboard, but far enough south to provide warm weather year-round, makes the region attractive to many families. The metro area offers a wide variety of neighborhoods, nearby outdoor activities, and national-quality cultural amenities that attract professionals and highly skilled labor to the region.
- **Strong higher educational system.** Atlanta is home to two leading national universities, Georgia Tech and Emory, as well as a number of highly respected smaller institutions like Morehouse College, Spellman College, and Georgia State University. In addition, the state-lottery funded Hope Scholarship program provides strong financial incentives for talented Georgia students to attend college in the state.

- **Highly skilled work force.** These Atlanta institutions attract a large pool of talented professors, students, and skilled labor to the region. The state has also developed the Intellectual Capital Partnership Program (ICAPP) that focuses on creating specialized training programs aimed at ensuring that Georgia-based firms have access to a skilled workforce in their industry.
- **Strong state government support for technology development.** The State of Georgia has a long history of supporting university-based science and technology development. In 1960, the state created the Industrial Extension Service to promote industrial technology transfer. In 1980, the state-supported business incubator, the Advanced Technology Development Center, was established at Georgia Tech. Both programs have since grown and others have been implemented. Every governor since Governor Griffin in 1956 has made science-based development a significant component of the state's economic development plan.[1]
- **Deep university-business-government collaboration.** In recent years, public and private sector leaders have worked together to create innovative collaborative programs like the Georgia Research Alliance and the Yamacraw Project. These initiatives are funded by government and business, implemented through universities, and directed by board members from all three sectors.
- **Strong regional chamber of commerce.** The Metro Atlanta Chamber of Commerce has played an important and successful role in attracting companies to the region. It has invested significant efforts in developing the international image of the region and fostering collaboration on major regional economic development initiatives.
- **Openness to newcomers and diversity.** The Atlanta business environment accepts newcomers into its ranks of leaders based on contributions, not family ties, social status or race. Atlanta is among the few American cities with a large and established black middle class. New ideas are welcome from all quarters.
- **Sense of regional pride and self-confidence.** In Atlanta, most business and government leaders maintain a belief that the region can succeed in any effort, so long as they try hard enough. In both social challenges like race relations and international competitions like that to host the Olympics, Atlanta leaders always believe that they can find a winning solution. This regional sense of confidence extends to business development as well.

Challenges

While fundamentally strong and now more diverse than ever, the Atlanta economy faces some difficult challenges, many of which are the consequence of this success. Some of these challenges, like poor air quality, constitute immediate threats to further development. Throughout the regional economy, a recent pattern of high employment growth, moderate wage growth, and low patenting has emerged. Over the long term, continued low patenting may stunt employment growth and the opportunity to spur faster increases in wages.

- **Strain on the physical infrastructure.** Rapid economic and population growth has put a strain on the region's physical infrastructure. Traffic jams in Atlanta have earned national renown—and contribute to air pollution that has already led the federal government to suspend federal highway funds once. In some areas of the region, notably the Buckhead area in North Atlanta, new commercial construction often faces delays due to inadequate sewer capacity. These infrastructure weaknesses raise citizens' cost of doing business relative to the wages paid.
- **Rising cost of living.** Atlanta has traditionally used its low cost of labor and living expenses as a business attraction tool. The success of the region has driven up local costs, creating challenges for lower income residents and forcing Atlanta to compete based on non-financial advantages to attract and maintain firms.
- **Uneven K-12 educational system.** Young Atlantans can receive an excellent primary and secondary school education. However, many do not because of the uneven quality of K-12 education. Like the transportation infrastructure, the educational infrastructure of the region has not been able to keep up with the population growth.
- **Concerns about the future supply of scientists, engineers, and skilled labor.** The rapid growth of the Atlanta economy over the past decade is leading to the possibility that the region will be unable to replenish its pool of scientists, engineers, and skilled technicians. Only 34% of the regional leaders we surveyed felt that the region had a pool of trained workers sufficient to meet growth needs.
- **Weak patenting performance.** Although Atlanta innovators have been increasing their patenting performance, Atlanta still trails leading regions in its innovation output. The development and commercialization of unique and proprietary technology will provide a stronger foundation for future growth.
- **Need for improved technology transfer from universities.** Despite the development of numerous patented discoveries at local universities, the process of transferring technology from the universities has been described as slow and cumbersome.
- **Poor regional government coordination.** In addition to the City of Atlanta and scores of other towns, the Metro Atlanta area has 20 counties, each with its own county government. While there is a regional government council, the Atlanta Regional Commission, the county governments still exert great independence in decisions around construction, zoning, and taxation. The traffic congestion and air pollution problems have arisen in part because of the lack of coordinated regional action.

ASSESSMENT OF SELECT CLUSTERS

Like the overall regional economy, the clusters we studied in Atlanta tend to have enjoyed strong employment growth, but moderate wages and relatively low patenting rates. This raises concerns about future prosperity. Sustaining high levels of innovation is necessary for long-term gains in productivity and competitiveness. Improving the innovative capacity of clusters should be a prime focus of future economic development strategies.

THE FINANCIAL SERVICES CLUSTER

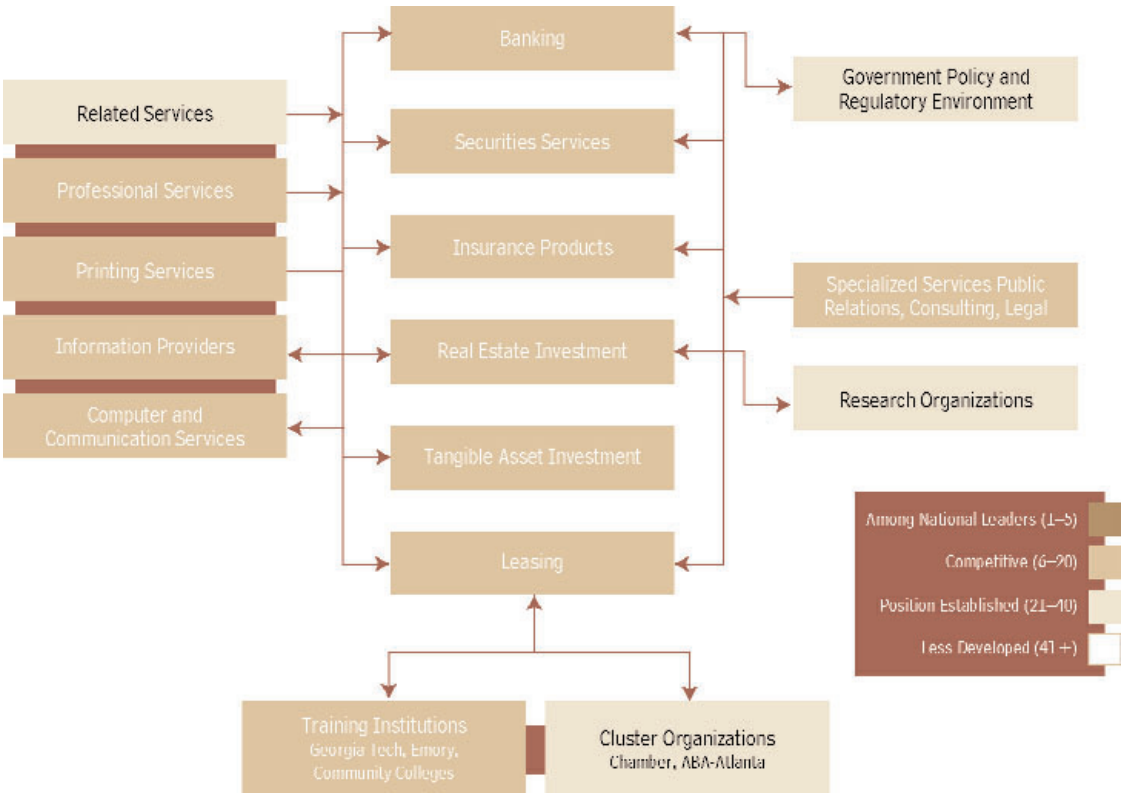
Economic Performance

- **Employment.** In 1999, the Atlanta metropolitan statistical area (MSA) had the eighth largest financial services cluster in the country, and the second fastest growing out of the 20 largest clusters in the United States. More than 8,000 new financial services jobs were added over the decade.
- **Wages.** Average wages paid in the Atlanta cluster rank 15th among the largest 20 clusters, and have been increasing at more than 7% a year in the 1990s. This growth has helped Atlanta's financial service workers gain on their counterparts in most other regions, though the average wage of $63,300 is significantly below leaders like New York and San Francisco where average salaries top $110,000.
- **Patent registration.** Out of the 20 largest financial services clusters in the country, Atlanta ranks 15th in patents per employee, and fourth in annual growth of patenting.

Composition

- The Atlanta financial services cluster is well represented across the various subclusters; all of the core subclusters have employment greater than the Atlanta average share of national employment (see Exhibit 7). However, in some specialized industry segments like investment banking and venture capital firms, the region lacks a major presence.
- Once the home of many bank headquarters, Atlanta no longer is headquarters for a leading national bank. However, the cluster has continued to grow through the establishment of major regional bank operations and strong development of real estate, insurance, and financial planning services. It is also home to the Southeast Regional Federal Reserve Bank.
- Atlanta firms have been leaders in developing Internet banking services and financial clearing operations.

Exhibit 7: The Atlanta Financial Services Cluster



Source: Clusters of Innovation Initiative Regional Survey™; Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School and in-person Interviews

Competitiveness and Innovative Capacity

- Strengths
  - Leading real estate developers and lenders
  - Regional operations of many major U.S. and international banks
  - Strong rivalry among local financial institutions
  - Strong local presence in most subclusters
  - Strong "back-office" infrastructure in nearby Columbus
  - Growing venture capital and angel investor community
  - Increasingly sophisticated local demand for banking products and services
- Challenges
  - Lack of major national bank corporate offices
  - Little presence in sophisticated and high wage financial service segments like investment banking and asset management
  - Reputation for financial innovation limited to a few sectors: web-banking and ATM adoption
  - Sporadic cooperation among local firms on technology development and cluster improvement.

THE TRANSPORTATION AND LOGISTICS CLUSTER

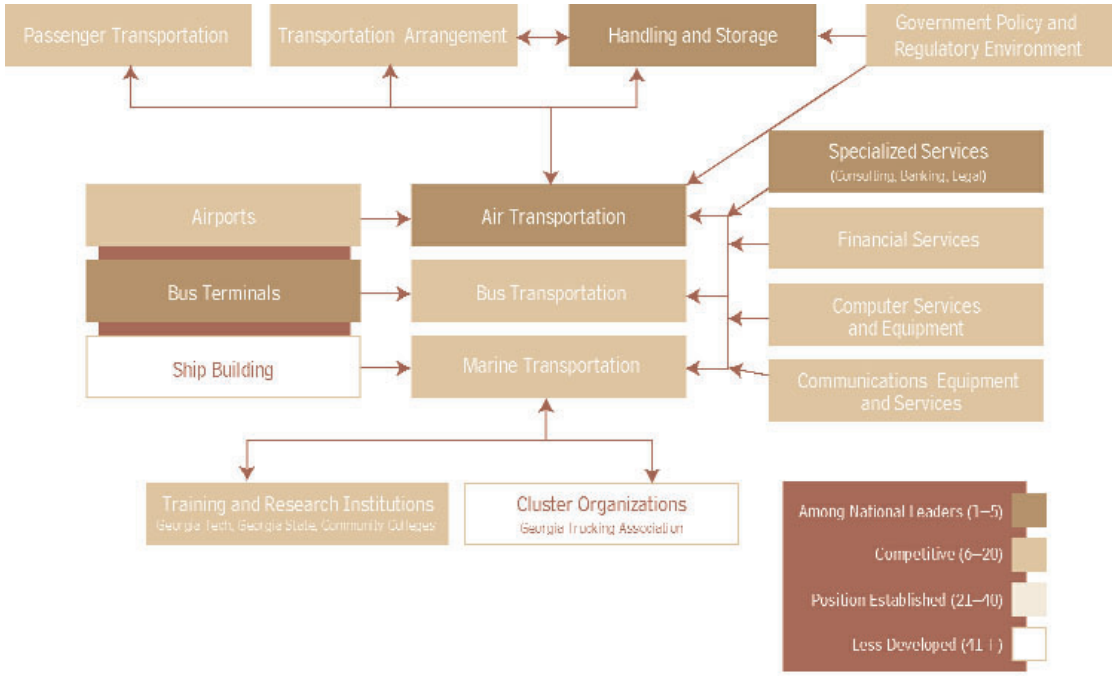
Economic Performance

- **Employment.** In 1999, the Atlanta MSA had the fifth largest transportation and logistics cluster in the country, and the second fastest growing out of the 20 largest clusters in the United States. Close to 50,000 new transportation and logistics jobs were added in the region between 1990 and 1999.
- **Wages.** Atlanta transportation and logistics firms paid the seventh highest average wage of the largest 20 national clusters, better than the relative position of Atlanta's financial services cluster. Wages have been increasing at more than seven percent a year in the 1990s and averaged nearly $57,000 in 1999. This rate placed the cluster seventh among the largest 20 regional clusters.
- **Patent Registration.** Out of the 20 largest transportation and logistics clusters in the country, however, Atlanta ranks 18th in patents per employee.

Composition

- The Atlanta transportation and logistics cluster has its hub at Hartsfield Airport, where Delta Air Lines is the main tenant. Air transportation is the largest employer in the cluster.
- Building on its historical roots, Atlanta continues to have a strong warehousing and distribution sector that has grown significantly with the growth of the Southeast.
- Atlanta offers a strong set of support services for transportation and logistics firms—including specialized consulting, software, and legal services. The Logistics Institute at Georgia Tech is a nationally recognized research center (see Exhibit 8).

Exhibit 8: The Atlanta Transportation and Logistics Cluster



Source: Clusters of Innovation Initiative Regional Survey; Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School and in-person Interviews

Competitiveness and Innovative Capacity

- Strengths
  - Hartsfield Airport facilities
  - Delta Air Lines hub
  - United Parcel Service headquarters
  - Excellent location as transit point to the Southeast and Northeast United States
  - Significant local demand for external goods makes outbound truck/rail service inexpensive
  - Relatively thick labor market for transportation and logistics professionals
  - Georgia Tech Logistics Institute
- Challenges
  - Regional growth has created traffic problems for road-based transportation companies
  - Air traffic delays at Hartsfield create challenges for local passenger and cargo carriers
  - Increased competition (and price) for skilled labor in the region puts many trucking firms at a cost-disadvantage
  - There is a lack of strong regional industry associations, as well as little cooperation between large and small players in the cluster.

THE INFORMATION TECHNOLOGY CLUSTER

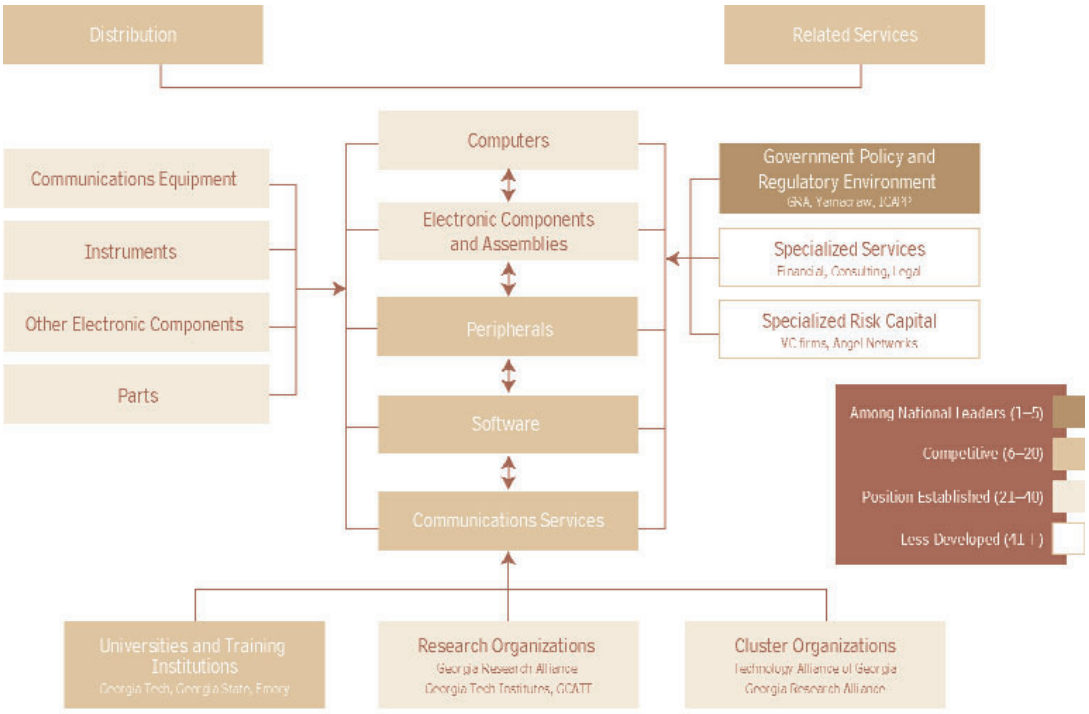
Economic Performance

- **Employment.** The Atlanta information technology (IT) cluster is the ninth largest in the United States, and is the second fastest growing, among the United States' 20 largest clusters. In 1999, it employed more than 60,000 people in the region, compared to only 28,000 in 1990.
- **Wages.** Wages paid in the Atlanta cluster rank tenth among the largest 20 IT clusters, and have been increasing at more than 5% a year in the 1990s. However, other regional information technology clusters have seen significantly higher wage growth, placing Atlanta in a weaker relative position than in 1990.
- **Patent registration.** Despite some improvement over the decade, the Atlanta IT cluster trails the leading U.S. IT regions in patent registration. In 1998, Atlanta ranked 18th of the top 20 regions in patents per employee.

Composition

- The Atlanta cluster has strength in communications services, software development, computer distribution, and related services (see Exhibit 9).

Exhibit 9: Atlanta Information Technology Cluster



Source: Clusters of Innovation Initiative Regional Survey; Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School and in-person Interviews

- The cluster has established national leading firms in the Internet service provision and web development industries as well as a number of leading web vendors in the travel and financial services areas. Established firms like IBM and BellSouth have been leaders in developing and integrating information technology services into their product offerings.
- The Atlanta cluster does relatively little in the way of computer and electronic parts manufacturing and is not known for having particularly innovative support services for the cluster.

Competitiveness and Innovative Capacity

- Strengths
  - Established large technology companies (BellSouth, Cox Communications, IBM, Scientific Atlanta)
  - Georgia Tech Information Technology programs, researchers, and alumni network
  - Relatively large pool of scientists and skilled technicians
  - Technology Alliance of Georgia
  - State government programs that support technology-based economic development at regional universities
  - Good quality of life

- Challenges
  - Lack of patenting
  - Lack of national recognition as an information technology hub
  - Relative weakness in important subclusters like computers and components
  - Recent financial troubles of leading Internet firms and web developers
  - Need for more effective university technology transfer offices

SUSTAINING COMPETITIVE ADVANTAGE: LESSONS, CHALLENGES, AND OPPORTUNITIES

Atlanta's leaders have accomplished much since the city hosted the 1895 International Cotton Exposition. Then an agricultural center and Georgia rail transport hub, the region became the leading business and commerce center in the Southeast by the 1970s. As its population grew and businesses diversified, the region grew into a national center based on established companies like AT&T (BellSouth), Coca Cola, Georgia Power, Georgia Southern, and Norfolk Southern. In the past decade, the region has become an international business center due to the global expansion of its large firms, the attraction of foreign firms, the strong growth of Delta Air Lines and other firms centered around Hartsfield Airport, the emergence of scores of smaller leading-edge technology firms, and major collaborative efforts by university, business, and government leaders. Hosting the Olympics in 1996 put Atlanta on the international map for a wider array of individuals and companies, and also led to the installation of a communications infrastructure that will aid industrial development for years to come.

Lessons

Atlanta's regional economic growth has been shaped by a series of major influences that have persisted for many decades. The process by which the Atlanta community established its competitive strength provides lessons for other regions.

Build from Strength

Atlanta was born of the railroad. Atlanta's leaders recognized the transportation sector's importance and invested heavily to establish the region as the leading gateway to the Southeast. In addition, leaders consciously encouraged related economic sectors — including financial services and warehousing — to develop around the railroad. Community leaders later spearheaded a series of economic development efforts to move Atlanta from a transport center, to a regional manufacturing center, to a home for corporate headquarters. Modern-day Atlanta benefits from a wide economic base, and its traditional clusters like financial services, communications, and transportation and logistics continue to generate development in related fields like software and consulting services.

Drive for an International Position

Since the city's inception, Atlanta's leaders have sought to make the area a world player. From the 1895 International Cotton Exposition to the 1996 Olympics, the desire to internationalize has shaped major economic development programs as well as the business decisions of the region's executives. The internationalization process eventually seeded itself. As Atlanta attracted major U.S. corporate headquarters, their efforts to expand internationally helped the region attract foreign corporations.

Private Sector Innovation and Initiative

Going back to the successful effort to relocate the state capital from Milledgeville to Atlanta, most of the major economic development efforts undertaken in Atlanta have been conceived by private sector leaders who then were able to develop political and community support for them. Recent initiatives like the Yamacraw Project and the Olympics have followed this pattern.

In Atlanta, private-sector-led economic development initiatives that mobilize government action have had a greater chance of long-term success than do government-generated initiatives. Having private sector leadership support up-front typically translates into a greater likelihood of government approval and faster project implementation.

State Government Activism

Georgia governors enjoy a strong set of executive powers. Since the 1970s, the state government, led by activist governors, has been a champion of technology and skill based development. Governors have spearheaded a succession of well-funded initiatives to strengthen the science and technology infrastructure in the Atlanta region. In addition, state funds for higher education institutions and for scholarships for Georgia students have helped increase the quality of post-secondary education. Due to Atlanta's high concentration of higher education institutions, it has gained a large share of state development investment.

Business-Government-University Collaboration

Particularly in recent years, university, public, and private sector leaders have worked together to create innovative collaborative programs like the ICAPP workforce training initiative and the Georgia Research Alliance. A common pattern has emerged in which private sector leaders convince a governor to support technology-based economic development programs that are then implemented through universities. The level of collaboration between and among the three sectors distinguishes Atlanta from many other regions. The willingness of competing public universities (Georgia and Georgia Tech) to join with private institutions in a research alliance is particularly notable.

Entrepreneurial Environment

Atlanta has developed cultural norms that are supportive of individuals who have big ideas. Thanks to a pro-business regulatory regime and an emerging record of venture success, entrepreneurs find Atlanta to be a fertile ground for major new projects and ideas. In the Southeast, Atlanta is viewed by most business people as the leading center for entrepreneurship. Young college graduates, in particular, are drawn to Atlanta over other major cities in the region.

Civic Pride

Atlantans, and particularly Atlantans in leadership positions, feel a strong compulsion to show their community in the most positive light. Many of Atlanta's most successful leaders have been superb marketers of the region, both internally and externally. The community has developed an attitude that it can do whatever it sets out to achieve. As one interviewee said, "Atlanta has self-fulfilling prosperity." The civic pride encompasses both natives and transplants. In Atlanta, there seems to be an expectation that once one has obtained political or commercial success, one should focus some time and effort on improving regional problems.

Challenges

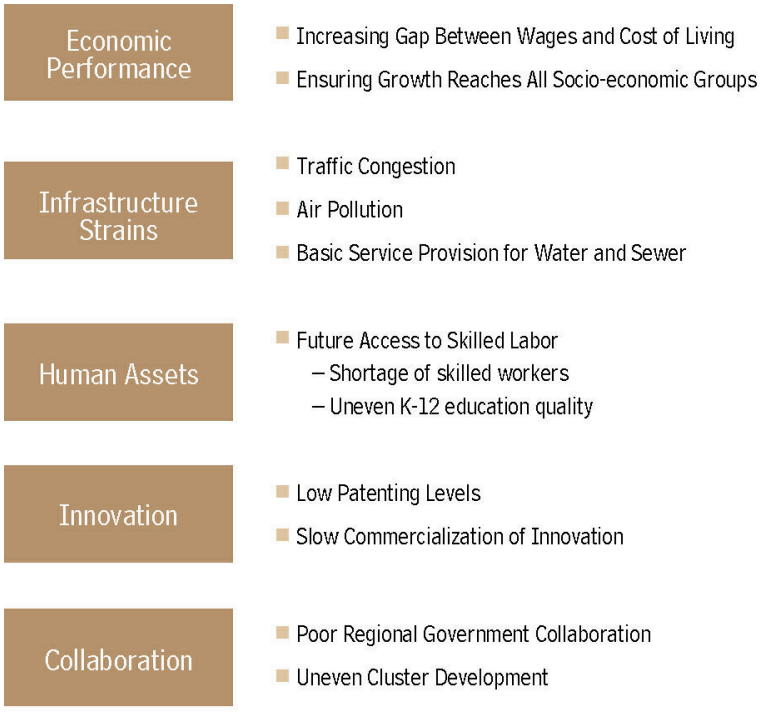
Atlanta has succeeded at buoyant growth, but faces the next challenge of translating this growth into broad-based prosperity relative to other advanced regions (see Exhibit 10). The population and commercial growth of Atlanta has created a variety of interrelated problems that the region must address to maintain its success, much less extend it. The transportation, water, and educational infrastructure are strained. Sprawling, unplanned regional growth has created traffic and land use challenges. A developing shortage of skilled human capital is a limitation to future growth. There is a growing gap between the cost of living and average salary levels. Despite strong success overall, there is still a significant issue around the unequal distribution of that wealth.

To resolve most of these issues, Atlanta will need to extend its strategy and make it a truly regional solution—one that can encompass leaders from all governmental bodies in the metro area. To date, Atlanta's regional institutions and its business culture are not configured to produce coordinated solutions.

Economic Performance

Increasing Gap between Wages and Cost of Living. The cost of living has been increasing faster than wage levels in Atlanta over the past decade. For lower skilled Atlanta workers, average wages in 2000 were close to the national average, but the cost of basic living needs was approximately 20% greater than the national average. For highly skilled workers, the gap between income and cost of living is smaller. Atlanta's traditional recruitment advantage of offering a relatively low cost of living has eroded over the decade.

Exhibit 10: Atlanta's Challenges



Ensuring Growth Reaches All Socio-economic Groups. U.S. Housing and Urban Development data shows poverty increasing slightly in the metropolitan statistical area (MSA) as a whole and in the central city from 1989 to 1997, while U.S. poverty rates stayed stable. Atlanta, like most U.S. regions, faces the challenge of ensuring that all of its residents have the opportunity to share in wealth creation. This challenge is not new, but has been exacerbated by the increasing distance between poor and rich over the last decade.

Infrastructure Strains

Traffic Congestion and Air Pollution. Rapid economic and population growth has put a strain on the region's physical infrastructure. Traffic jams in Atlanta have earned national renown— and contribute to dangerous air pollution levels. While the Georgia Regional Transportation Authority has developed an authorized plan to improve mass transit and reduce pollution, actually implementing the plan across such a large and diverse set of jurisdictions will be difficult.

Basic Service Provision for Water and Sewer. Infrastructure issues go beyond mass transit. Some areas of the region face restrictions in construction due to inadequate sewer capacity. The entire region faces a water shortage if growth continues at present levels. The Metro Chamber, the state, and others led the effort to develop a regional water authority. While this is an important accomplishment, the work to ensure future water supplies is far from complete.

Human Assets

Future Access to Skilled Labor. The rapid growth of the Atlanta economy over the past decade, as well as the degrading quality of life, has led to the possibility that the region will be unable to replenish its pool of scientists, engineers, and skilled technicians. Only 34% of the regional leaders we surveyed felt that the region had a pool of trained workers sufficient to meet growth needs.

Uneven K-12 Educational System. This problem is compounded by the uneven quality of K-12 education in the region. Many executives interviewed expressed general concern about the quality of education and their personal views that they would only send their children to private schools. The future ability of Atlanta to support innovative firms in all sectors is partially dependent upon the region's ability to create a steady supply of capable high school graduates.

Innovation

Low Patenting Levels. Although Atlanta innovators have been increasing patenting output, in most industries, Atlanta still substantially trails leading regions in its innovation output. While patenting is not the only measure of innovation, patents are a tangible representation of new ideas and potential products. The more rapid development and commercialization of unique and proprietary technology will be necessary to provide a foundation for Atlanta's future prosperity.

Slow Commercialization of Innovation. Despite the development of technology at local universities, the process of transferring technology from the academic institutions has been described as slow and cumbersome. Efforts are underway through the Georgia Board of Regents and the Georgia Research Alliance to improve the commercialization of research at universities in the state. However, the Atlanta region will have to mount an overall effort to improve commercialization.

Collaboration

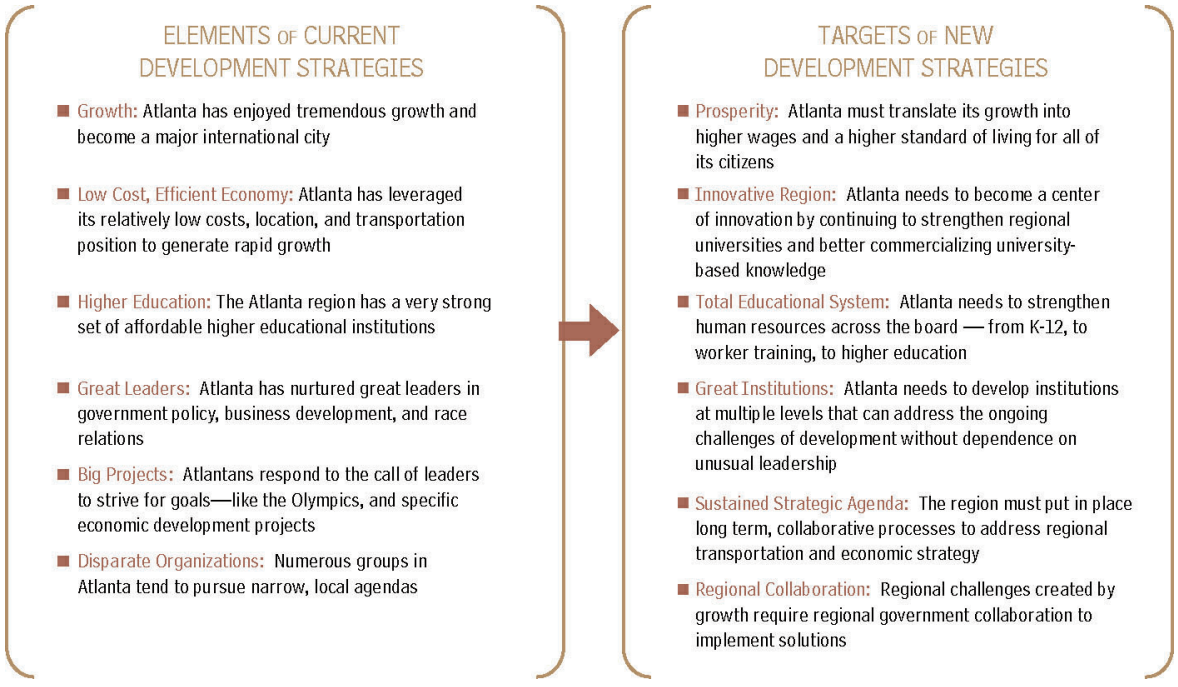
Poor Regional Government Coordination. In addition to the City of Atlanta and dozens of other cities, the Metro Atlanta area has 20 counties, each with its own government leadership. While there is a regional body, the Atlanta Regional Commission, county governments still exert great independence in decisions around construction, zoning, and taxation. The traffic congestion and air pollution problems have arisen in part because of the lack of coordinated regional action. The solutions to these problems, along with the work to improve the overall infrastructure, will absolutely require coordinated regional efforts.

Uneven Cluster Development. Atlanta has a strong overall regional collaborative institution, such as the Metro Chamber. However, cluster development thinking and cluster-specific institutions for collaboration are lacking. In both the transportation and logistics and financial services clusters, for example, executives believed their institutions could play a more proactive role in spurring collaboration and marketing the cluster.

New Directions

Atlanta has become a highly competitive region, but its very success has created a host of challenges to future prosperity and created the need to move beyond traditional strategies. To remain competitive and address the issues required to maintain an improving regional standard of living, the focus of economic development efforts should be modified and broadened. New strategic directions are needed (see Exhibit 11).

Exhibit 11: Atlanta's Economic Vision: New Directions



From Growth to Prosperity. Atlanta has enjoyed tremendous economic growth over the past century, and particularly over the last decade, creating more jobs than any other major metro area in America. However, its growth has also led to strains– pollution, traffic, and a rising cost of living, to name a few, that pose threats to the prosperity of its residents. Furthermore, all residents have not shared the wealth created over the last decade. The average wage paid in Atlanta has not kept pace with increases in the cost of living. Poverty is still a very real aspect of the Atlanta region that must be addressed.

From Low Cost, Efficient Economy to Innovative Region. Historically, Atlanta has leveraged its relatively low costs, privileged location, and attractive climate to generate economic development. This traditional approach is losing its relevance. With regional costs increasing and the challenge of success increasingly tied to productivity growth, Atlanta needs to become a center of innovation by continuing to strengthen regional universities, better commercializing university-based knowledge, and attracting private sector research efforts. Accomplishing this shift will require a change in the traditional economic development mindset of many regional leaders.

From Higher Education to Total Educational System. Atlanta has a strong set of higher educational institutions, but its secondary school system needs improvement. Too many of Atlanta's youth, the building blocks of future generations of business leaders, scientists, and professors, are not getting the education they need. The challenge is to maintain high standards in higher education while preparing more local young people to meet those standards.

From Great Leaders to Great Institutions. Atlanta has prospered thanks to the direction provided by great leaders. Ivan Allen led the move to develop a southeastern hub for business. Martin Luther King Jr. led Atlanta through the tumultuous desegregation process. Billy Payne brought home the Olympics. In the process of attaining these accomplishments, these leaders mobilized large numbers of people to support their cause. However, their legacy typically did not lead to the institutionalization of these groups into ongoing organizations. The challenge for Atlanta is to develop institutions that can address the ongoing challenges of development without relying upon the unusual gifts of leaders, who will have a difficult time driving progress as the size and diversity of the region grows.

From Major Projects to a Sustained Strategic Agenda. Atlanta has a history of successful projects. These range from building Hartsfield Airport to hosting the Olympics. The local culture and government policies that support business and social entrepreneurship have helped Atlanta grow. However, this explosive and largely unplanned growth has led to serious challenges. Addressing these issues, particularly around infrastructure, will require more than a one-time effort. It will require the development of long term, collaborative processes to address regional transportation, environmental, and other needs.

From Disparate Organizations to Regional Collaboration. Individual government and civic institutions in Atlanta have attempted to craft responses to social and economic problems in the region. However, concerted regional efforts are rare because of the strained relationships between local and regional government institutions. Increased local government collaboration and sustained business involvement are necessary to address long-term infrastructure and educational issues.

Opportunities

Atlanta leaders should consider a new economic development vision. By doing so, the region will be better able to take advantage of the opportunities that exist for increased prosperity. By increasing innovative capacity, assisting both established and emerging clusters, and expanding the geographic scope of development efforts, the region stands to ensure a prosperous future (see Exhibit 12).

Increase Innovative Capacity

Unlock the Commercial Potential in Universities

While the Georgia Research Alliance has done an excellent job in supporting innovative research and the development of strong academic programs, the patenting output of its member institutions has not kept pace with national competitors. There is also a need for increased emphasis on the commercialization of the innovations that do emanate from regional universities. Efforts are underway to improve the communication and processes of tech transfer institutions. They should be fully supported.

Attract Additional Non-university Research Institutions

With its numerous colleges and universities, expertise in many fields of study, and attractive quality of life, Atlanta is a good place for private and non-profit research centers to locate. Few presently exist. Such research centers are not only valuable in their own right as centers of innovation and training, but also address two of Atlanta 's critical needs: idea generation and technology transfer.

Focus on Technology in Addressing the Environmental, Traffic Management, and Logistics Issues - Key Areas that Challenge Quality of Life

Atlanta faces some of the most serious air pollution and traffic problems in the country. However, it is also home to top-notch engineering and scientific research, a transportation and logistics research center, and leading firms in related technology fields. Atlanta has the opportunity to address the challenges of pollution and traffic as the next big community effort.

Exhibit 12: Atlanta's Opportunities

Upgrade and Leverage Existing Clusters

Develop Stronger University Ties to Emerging and Established Clusters

Business and university leaders work to link assets within local universities to companies in emerging and established clusters. Although universities can be a source for the creation of new clusters, this takes many years, and it is difficult to predict what those clusters will be. More immediate benefits can be realized by building on areas of existing strengths, such as identifiable emerging and established sectors like communications, consumer goods, and tourism/entertainment.

Identify and Pursue Additional Cluster Opportunities at the Intersection of Clusters

Atlanta has already seen success where strong clusters come together, notably in financial services and information technology. Opportunities may exist in defense-related information technology and innovative food processing, particularly given the nation's new military requirements. As a region, Atlanta can do more to foster cross-cluster collaboration by hosting networking events designed to foster this kind of interaction.

Expand Geographic Focus

Continue to Develop International Ties, with Special Focus on Opportunities in Latin America

Atlanta has a long history of seeking international commercial relationships and has enjoyed impressive success in attracting both European and Asian firms to locate headquarters in the region. Latin America represents the natural opportunity for expansion of international ties, and some Atlanta leaders have recognized it as the next frontier for the region. Atlanta is well positioned to take advantage of the growing U.S.-Latin American logistics market and to compete for U.S. headquarters of Latin American companies.

Key Challenges and Opportunities for Columbus

The Columbus region has outperformed the national economy over the past decade in job creation and wage growth. Led by major employers like Synovus, American Family Life Assurance Company (AFLAC), and Columbus Regional Healthcare, the economy was able to produce close to 20,000 new jobs over the period.

However, despite the increases over the period, average wages for Columbus in 1999 were only $25,430, or 79% of the national average. This relatively low wage level and the draw of larger communities like Atlanta have made it hard for Columbus to retain its talent pool, despite an attractive climate and relaxed quality of life.

Columbus has benefited greatly from the headquarters of two international financial service companies: Synovus, a financial service holding company which owns a world-leading electronic payment processor, and AFLAC, a leading supplemental insurance company. These two companies employ close to 10% of the total regional private sector workforce and are major contributors to civic and economic development efforts. Along with Fort Benning, a major Army base, these organizations anchor the regional economy.

While Synovus and AFLAC have been individually successful, their success has not yet led to the development of a broad financial services cluster in Columbus with its own national reputation. A few financial service suppliers and complementary businesses, like credit card issuing institutions, have been established in the region, but their numbers are limited. Synovus employees have generated a few spin-offs, but new jobs created for the Columbus region have been modest.

There is an opportunity for the companies and community to make a concerted effort to develop a technology-intensive financial services cluster. To accomplish this will likely require an explicit economic development plan to upgrade local institutions and foster both new start-ups and spin-offs of existing companies.

Columbus is well structured to address its economic development challenges. Its unified city-county government is a model for regional government collaboration within the state. The government has a strong relationship with the Chamber of Commerce and other local civic and educational institutions. These groups have a history of working closely together on past economic development initiatives. What is needed is a new strategy to take the region to the next level.

Key Assets

- Strong set of big financial service companies that anchor the economy – Synovus, AFLAC, Blue-Cross Blue Shield—and contribute to civic development
- Presence of Ft. Benning that drives retail growth and provides skilled workforce
- Presence of large labor pool with experience in computer programming
- Responsive local government that consolidates city/Muskogee County
- A proactive institution for collaboration (Columbus Chamber of Commerce)
- Attractive quality of life

Challenges

- Developing greater recognition for Columbus as a business location nationally and internationally
- Moving from a town with some big companies to a region with strong industry clusters
- Leveraging links to Atlanta without losing local identity

Opportunities

- Develop an explicit economic development strategy to build the region's financial services cluster around existing anchor firms
- Expand efforts to support entrepreneurial start-ups in the region; promote location of spin-outs of anchor firms in the region