

**THE OFFSHORE OUTSOURCING OF  
INFORMATION TECHNOLOGY JOBS  
IN NEW YORK STATE**

**A REPORT TO DAVID A. PATERSON, GOVERNOR  
AND THE LEGISLATURE OF THE  
STATE OF NEW YORK**

**September 2010**

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## I. Executive Summary

With the growth of a globally-interconnected economy, U.S. companies are increasingly able to move domestic business operations abroad, especially to developing countries with lower labor costs. This “offshore outsourcing” trend cuts across all industries and occupations, ranging from lower-skilled manufacturing jobs to those requiring higher levels of skill and education, including those in the information technology (IT) sector.

On August 1, 2007, New York State legislative bill A. 8284/S. 2317 was signed into law (Chapter 435). This new law “directs the Commissioner of Labor to issue or cause to be issued a report on issues relating to offshore outsourcing of information technology jobs and the future of New York State’s job market.” In response, this report was prepared by staff at the New York State Department of Labor (NYSDOL) and Empire State Development (ESD), and builds on earlier research conducted by the two agencies.

This report examines various facets of the offshore outsourcing debate including: 1) the major drivers affecting the offshore outsourcing of IT jobs; 2) estimates of how many IT jobs in the U.S. might be potentially affected by offshore outsourcing, based on our extensive literature review; 3) a comprehensive review of New York State’s IT sector, including rough estimates of how many IT jobs in the state might be potentially affected by offshore outsourcing; 4) the major benefits and risks associated with offshore outsourcing; 5) a review of state and federal legislation regarding this practice; and, 6) a review of potential policy recommendations for enhancing the competitiveness of this state and the nation in the global marketplace.

Several broad, recurring themes emerge throughout this report:

- The offshore outsourcing of IT jobs from the United States has been enabled by a powerful confluence of global economic, demographic, and technological forces. Many IT companies were initially drawn to offshoring outsourcing because of the need for programmers to fix the Y2K problem in the late 1990s. The tight deadline involved and the shortage of U.S. programmers forced companies to seek out all available skilled workers. Other factors driving this phenomenon include the wage gap between the U.S. and developing countries (e.g. China and India), advances in technology, labor availability, expanding foreign markets, and foreign government incentives. Some suggest that the aging of the overall American population and the declining U.S. labor force participation rate may reduce the domestic labor supply, resulting in the need to send more work offshore in the future.
- Most studies suggest that the magnitude of U.S. jobs (not just IT jobs) being offshored now or in the next few years is relatively small. One of the most often cited studies (and among the most conservative) was prepared by Forrester Research, which predicted that by 2015, 3.3 million U.S. service sector jobs (including 542,000 computer jobs) will have moved offshore. This estimated job loss is about 2 percent of total forecasted U.S. employment in 2015, and is less than

one percent of all jobs lost due to churning in the U.S. labor market in 2006 (on an annual average basis). Churning is a set of underlying labor market dynamics: hiring and separations of all types. Workers retire and are replaced, people quit and are replaced and sometimes new jobs are created.

- Nonetheless, a substantial number of U.S. jobs are *potentially* at risk of being offshored beyond the next few years, because they are in industries particularly susceptible to this phenomenon. Princeton economist Alan Blinder estimates 42 million-56 million jobs are *potentially at risk* of being offshored over the next 10-20 years – this is the equivalent of roughly 30-40 percent of all current U.S. jobs.
- A University of California-Berkeley study by Bardhan and Kroll suggests that 14 million total jobs in the U.S. may be potentially affected by offshoring. The authors note this estimate is the “outer limit” of jobs potentially at risk to offshoring over the long term (they do not cite a specific number of years). They identified IT and manufacturing industries that could be affected by offshoring. (Note: Bardhan and Kroll only studied those occupations where at least some offshoring has already occurred or is being planned.) New York State has total employment of more than 350,000 in these industries, which amounted to 6.0 percent of the nation’s employment in these industries in 2006.
- Given the large number of jobs that *could* move offshore in the future, there is the potential for rapid escalation in the number of jobs *actually* moving to other countries. This, in turn, would negatively affect U.S. employment and economic growth over time. The effects of offshoring will be more pronounced in specific industries, occupations, and geographic areas.
- Offshoring activity has greatly increased in recent years. A study from the Center for Urban Economic Development found that U.S. imports of business, professional and technical services associated with offshore outsourcing grew rapidly (77 percent) between 1997 and 2002.
- Many companies have strong financial incentives to offshore jobs. According to the FDIC, financial institutions can achieve significant cost savings (39 percent) by moving non-core functions (including IT) offshore. They are expected to move 15 percent of their cost base (\$356 billion) overseas over the next five years, with IT accounting for 70 percent of offshore job activity. In addition to reduced labor costs, U.S. companies may also be drawn to developing nations by less stringent environmental, and safety and health regulations.
- One of the principal reasons why estimates of U.S. jobs sent offshore are so wide-ranging is the dearth of reliable official government data. Much of this stems from the fact that the data collection system used by the federal government for measuring service industry jobs (including most IT jobs) has severe limitations. A work group at MIT found the most significant data gaps were employment numbers in trade in existing services and occupational employment estimates over time.

These limitations, according to the work group, impede the development of appropriate policy responses to services offshoring.

- Employers are not currently required under Federal law to report the number of jobs outsourced to other countries. Thus, it is not possible to track reductions in the U.S. due to this activity as compared to increased productivity or a general reduction in U.S. employee staffing levels.
- Comparable state-specific estimates of offshored jobs are subject to even more uncertainty. State attempts to capture more accurate data on the relocation of jobs abroad via the Mass Layoff Statistics program have been largely unsuccessful due, in part, to lack of business cooperation. This suggests that additional government legislation may be required to collect these data.
- The absence of reliable official data on past offshoring job losses combined with the fact that many economic forces influence company location decisions precludes the development of detailed estimates in this report of the future number of IT-related jobs moving offshore from the U.S. or New York. Instead, this report presents New York State employment data for IT industries and occupations that have been identified as *potentially susceptible* to offshoring.
- New York State has total employment in IT-related occupations (which can be in any industry) of just under 390,000 jobs, of which 250,000 are in job titles that tend to be outsourced offshore (based on definitions in the University of California-Berkeley study by Bardhan and Kroll). The average salary for New York's IT workers is 40 percent higher than the average for all workers. New York had 6.7 percent of the nation's employment in "at-risk" IT-related job titles.
- Research by Alan Blinder found no connection between an occupation's skill level or educational requirement and its potential risk of being offshored. The differing conclusions of the Bardhan/Kroll and Blinder studies highlight the wide range of assumptions underlying offshoring studies. While many occupations with lower skill requirements are most likely to be offshored (e.g., production), IT presents a different picture. Most of the employment in New York in IT occupations that tend to be outsourced offshore is in higher-skilled positions. Of the approximately 250,000 jobs in at-risk titles, 74 percent are *High* skill, 9 percent are *Moderate* skill, and 17 percent are *Low* skill, based on definitions from a 2003 report from the U.S. Commerce Department.
- When analyzing the offshoring of IT occupational employment, it is important to look beyond the Information sector. More than 85 percent of workers in IT-related occupations in New York State are employed in industries outside of this sector. In fact, one out of five professional and business services workers are IT workers.

The spread of the offshoring phenomenon from low-skill manufacturing to high-wage white collar, service industry jobs reduces the country's overall human capital

levels. To many offshoring critics, it represents the end of upward mobility for many U.S. workers who saw post-secondary education as the route to a higher standard of living.

- State legislatures continue to remain active in promoting anti-offshoring legislation, although less so than several years ago. Legislation has been introduced to cut off state perks, including financial assistance and tax incentives, for companies that send work off-shore or out of state. It should be noted, however, that none of these state bills actually prohibit offshore outsourcing. Rather, they attempt to establish disincentives to the offshoring of jobs by U.S. companies. In 2010, New York State enacted legislation that prohibits closure or relocation of a call center to another area of New York or outside the State without notice and hearing before the State Public Service Commission.

## **II. Introduction**

On August 1, 2007, New York State legislative bill A. 8284/S. 2317 was signed into law (Chapter 435). This new law “directs the Commissioner of Labor to issue or cause to be issued a report on issues relating to offshore outsourcing of information technology jobs and the future of New York State’s job market.” In response, this report was prepared by staff at the New York State Department of Labor (NYSDOL) and Empire State Development (ESD), and builds on earlier research conducted by the two agencies.

The offshore outsourcing of manufacturing and service jobs from the U.S. to lower-cost foreign nations became a national issue in a very short time. The impact of offshore outsourcing on the information technology (IT) sector merits close analysis, given the potential loss of millions of jobs at all wage levels and the critical contribution of the IT sector to U.S. productivity growth. Since 1995, and especially following the 2001 recession, the resurgence in U.S. productivity growth has been attributed to both the technological advances in industries producing IT equipment and software, and to firms in a range of industries (e.g., PC/computer, cell phones/wired communication, consumer digital products, automotive) undergoing transition as they purchase and utilize highly productive and cost effective IT equipment and services.

Offshoring needs to be understood in the context of the global economy. Companies operate in an environment within which national borders are increasingly less of an issue. Decisions about the locations of manufacturing or service facilities reflect myriad market forces. Key factors include: the size of local markets; capital availability and costs; labor availability; skill levels and costs; logistics issues; reliability of infrastructure; and, in IT in particular, relationships with research institutions.

One of the biggest challenges in surveying the offshoring landscape is the paucity of reliable data on jobs already relocated to foreign countries. This lack of data, which stems in part from measurement issues, other methodological problems and a U.S. data collection system that is ill-equipped to capture detailed information about trade in services. This creates significant uncertainty surrounding forecasts of future jobs moving offshore from the U.S. State-specific forecasts of jobs moving abroad are subject to even more uncertainty, so no estimates of jobs going offshore from New York are offered in this Report.

Federal and state attempts to capture more accurate data on the relocation of jobs abroad via the Mass Layoff Statistics program have been largely unsuccessful due, in part, to the unwillingness of businesses to reveal the fact that jobs have been outsourced offshore. Between 2001 and 2003, factors such as the terrorist attacks on the World Trade Center and the slowdown on Wall Street combined with the slowdown in economic activity that took place at the national and state levels resulted in significant job losses over this period. More recently, the nation’s housing, credit and financial markets have been roiled by a great deal of uncertainty and volatility, resulting in the bankruptcy or forced merger of three of the five largest investment banks on Wall Street (Bear Stearns, Lehman

Brothers, and Merrill Lynch) and an unprecedented \$700 billion bailout of troubled financial institutions by the U.S. government. This turmoil also resulted in lost jobs.

While a small portion of recent employment losses were the result of offshoring, these other factors likely played much more significant roles. Also complicating our ability to understand these changes (the contribution of offshoring to job losses in the IT sector) are the great productivity increases that have taken place in that sector. The changes brought about by the development of modern production, information, and communications technologies have made it possible to manufacture goods and provide services with fewer workers.

Various consultants have attempted to forecast the future number of U.S. jobs (not just IT jobs) moving offshore. These forecasts vary widely. At the low end, Forrester Research predicted that by 2015, 3.3 million U.S. service sector jobs (including 542,000 computer jobs) will have moved offshore. (The service sector includes transportation, communication, public utilities, wholesale and retail trade, finance, insurance, real estate, other personal and business services, and government.)

At the high end, economist Alan Blinder believes 42 million-56 million U.S. jobs, including 14 million jobs in manufacturing and 28 million-42 million jobs in non-manufacturing sectors, are “potentially offshorable” during the next 10-20 years. This represents roughly 30-40 percent of all current U.S. jobs. He notes, however, that these are not “estimate(s) of how many jobs will actually be offshored.” University of California-Berkeley researchers Ashok Bardhan and Cynthia Kroll estimated in a 2003 study that 14 million total jobs in the U.S. may be potentially affected by offshoring in the “long term.”

Many reports have drawn national attention to the issue of offshoring and the fact that its scope now includes high-paying services jobs. A combination of factors -- economic (e.g., unprecedented pressures on U.S. companies to boost profitability by lowering costs), demographic (e.g., the availability of many younger English-speaking workers in less-developed countries with low labor costs), and technological (e.g., plummeting telecommunication costs) -- have enabled this trend.

IT manufacturing jobs (e.g., semiconductors) have been offshored for at least the last 30 years, with countries such as China and Taiwan the main destinations. This issue is of particular concern for New York, given its considerable investment in the infrastructure supporting development of the next generation of semiconductors as well as ongoing research and development activities in nanotechnology. More recently, relatively high-skilled, high-wage information technology jobs, such as programming and software development, have been the focus of offshoring efforts, with India a prime beneficiary.

In this report, Section III summarizes major trends and issues in the area of offshore outsourcing. Next, Section IV reviews estimates from various organizations of the number of U.S. jobs that have already been moved offshore, or may possibly leave in the future.

This is followed by a detailed examination in Section V of New York State's information technology sector from two perspectives: IT-producing industries and IT-related occupations, which are found in all industries in the economy. Also included are estimates on the number of IT-related jobs in New York State that *may* be potentially affected by offshore outsourcing in the future.

Section VI of this report focuses on the benefits and risks of offshore outsourcing of jobs -- many specific to information technology -- which were developed from an extensive literature review. Next, the current status of proposed and enacted offshoring legislation at the state and federal levels is examined in Section VII, which is followed in Section VIII by a discussion of policy recommendations.

Section IX summarizes the major issues related to the offshore outsourcing of information technology jobs, while Section X contains a detailed list of the research methods utilized in preparing this Report. The report concludes with an Appendix that presents a detailed list of state laws enacted on offshore outsourcing between 2003 and 2007.

### **III. Background on Offshoring**

#### **A. Introduction**

Since the end of World War II, trade agreements such as the General Agreement on Tariffs and Trade (GATT) and later the World Trade Organization (WTO) have promoted free trade by lowering and abolishing trade barriers between member countries, including the United States. One result of these agreements is that international trade today plays a much larger role in the American economy than it did just 20 years ago.

For example, between 1990 and 2008, the real dollar value (adjusted for inflation and expressed in 2000 dollar terms) of total U.S. trade (imports and exports) almost tripled, increasing from \$1.16 trillion to \$3.40 trillion. By way of comparison, real U.S. Gross Domestic Product (also adjusted for inflation and expressed in 2000 dollar terms), which measures the value of all goods and services produced in the nation, also increased over this time span, but at a significantly slower rate (62 percent). From 1990 to 2007, the total value of exports and imports of goods and services in the U.S. as a share of U.S. Gross Domestic Product jumped from 16 percent to 29 percent. In 2008, many American manufacturers have benefitted from surging U.S. exports due to the weak dollar, which makes our exports less expensive for foreign customers.

International trade is also an important component of the New York State economy. For example, a 2008 report from the AeA, a Washington, D.C.-based technology trade association, found that New York State's tech sector exported \$8.9 billion in merchandise in 2007. This makes New York the fourth largest tech exporter, behind California, Texas and Florida. The state's high-tech exports account for 13 percent of all New York exports and supported 30,700 jobs in 2007. New York's leading tech export destinations are: Canada (\$1.6 billion); Japan (\$874 million); and Hong Kong (\$509 million).

However, recessionary conditions in the US and abroad have posed challenges for global trade and for US exporters in 2009. The contraction of world markets led to a nearly 19% fall in the value of U.S. merchandise exports last year. New York State merchandise exports in 2009, at \$57.3 billion, showed a 28% decline, but maintained the State's third place ranking among U.S. states.

Global competition and aggressive export-driven growth policies adopted by other countries have had negative impacts on the U.S. and New York State economies. A 2008 study from the Economic Policy Institute and the Alliance for American Manufacturing, for example, found that between 2001 and 2007 the U.S. and New York lost 2.3 million and 127,000 jobs, respectively, due to competition from China. Over this time span, New York lost the third highest number of jobs of any state because of competition from China, with only California (325,800) and Texas (202,900) losing more. The report singles out job losses in New York's computer and electronic products (23,018) and apparel (22,785) industries over the 2001-2007 period.

With trade liberalization increasing the economic interdependence among nations, many multi-national corporations have established operations on nearly every continent. One consequence of this increased “globalization” has been increased relocation of jobs and production from the U.S. (and other developed nations) to lower-cost, often less-developed foreign countries. In many cases, companies move operations closer to rapidly-expanding consumer markets and more abundant supplies of professional and technical workers (e.g., China and India).

*Offshoring*, a term often used to describe this practice, has rapidly become a critical national issue. The term *offshoring* is one of the most widely cited economic concepts in common usage, but is often used interchangeably with the term *outsourcing*. The meanings behind these terms, however, are quite different.

- ***Outsourcing*** refers to the movement of jobs and tasks from within a firm to a supplier firm, without regard to their location.
- ***Offshoring*** refers to the movement of jobs and tasks from one country to another. The offshoring of business operations can take various forms, which are outlined in Table 1.

The important distinction between the terms is that with *outsourcing*, jobs or production do not necessarily relocate to another country. For example, if a U. S. manufacturer, which formerly had an in-house cleaning staff, decides to replace them with a domestic janitorial services company, the firm is engaged in *outsourcing*. With *offshoring*, work is shifted abroad from the U.S. with the same functions performed by international affiliates of U.S. firms or by third-party contractors (the two have similar employment impacts on the U.S.).

**Table 1: Examples of Offshoring Business Activities (GAO, 2004)**

**Business Activity**

1. A U.S.-based company stops producing its accounting, payroll, and call center services in-house, and instead purchases them from a foreign-based company.
2. A U.S.-based company moves its accounting, payroll, and call center services from its domestic operations to a new foreign-based affiliate set up to produce these services.
3. A U.S.-based company expands production by opening a new affiliate overseas, but maintains its existing production in the United States.
4. A U.S.-based company that sells domestically and exports to foreign markets moves its production to an offshore location.
5. A U.S.-based company reorganizes its global production operations by concentrating its computer programming in a foreign affiliate in one country, its customer services operations in a foreign affiliate in another country, and splitting its production operations between the United States and its foreign affiliate in yet another country. The final products are produced in both the United States and abroad and sold globally.
6. A state government agency contracts out software programming to a foreign-based company.

## B. Recent History

There have been two distinct waves of *offshoring* activity in the United States. The first wave, which commenced as early as the 1960s in some industries (e.g., semiconductors) and started in the 1970s and 1980s in other industries, involved U.S. manufacturing firms moving production work to foreign countries in a bid to reduce production costs and increase efficiency. The positions lost in the U.S. at that time were predominantly lower-wage, lower-skilled jobs involved in making goods whose production had become “commoditized” (i.e., where production has accordingly migrated to the lower-cost countries). Analysts at Goldman Sachs in 2003 estimated that relocation by U.S. multinational companies had resulted in the transfer of at least 100,000 U.S. manufacturing jobs per year, a figure that climbs higher when production shifted to foreign third-party contractors is included.

Based on a Federal Reserve Bank analysis, the types of manufacturing jobs that left New York State differed from those that left the nation from 1983 to 2002. During that period, New York was one of the few states to lose high-skilled manufacturing jobs. This reflects changes in the composition of the manufacturing sector in New York State and the need to develop and attract those industries which now employ highly-skilled workers (e.g., to replace the jobs that have been lost).

The second wave of offshoring, which started in the early 1990s, differed from the earlier wave in that it primarily involved the movement of white-collar service industry jobs rather than blue-collar positions. Initially, the service jobs moved offshore were in relatively low-skilled, low-wage, back-office work, such as call centers, which were considered natural operations to send offshore because they were separate business processes.

However, “Y2K” concerns (i.e., computer programs could stop working or produce erroneous results because the year 2000 would be interpreted by software as the year 1900) led to the offshore movement of relatively high-skilled, high-wage information technology jobs, such as programming and software development. India was a primary beneficiary of Y2K concerns as it had the available programmers knowledgeable in the appropriate programming languages. A 2006 report from the Government Accountability Office found that “in the 2000s, firms further expanded their offshoring operations, based on the low-cost and high-quality work from the off-shored services undertaken in the late 1990s.”

A confluence of many factors has also contributed to the second wave of offshoring in the information technology field including:

- Advances in high-speed communication technologies. These were enabled by the unprecedented creation of fiber optic cable infrastructure around the globe fueled by the dot-com investment boom. When coupled with cheap telecommunications costs, companies could leverage lower foreign labor costs with once-distant service workers to compete in real-time from almost anywhere in the world.

- Deregulation of domestic service industries in many countries (e.g., rules barring foreign ownership of utilities such as telephone companies have been relaxed).
- Rising education levels in many less-developed countries, particularly those with much lower labor costs and a large English-speaking population.
- The entry of about 1.5 billion "new" workers into the world economy, living in relatively low-wage locations such as China, India, and the former Soviet bloc, who now compete with workers in the United States and other more developed countries.
- Unprecedented demands on corporations to lower costs, especially since the dot-com collapse and the 2001 recession.
- The desire of many U.S. companies to serve global markets from operations based abroad rather than from the U.S. is driven by a variety of factors including closer access to markets, more generous government incentives, and costs of supplies and labor.
- The need of many U.S. companies to get programmers (wherever they lived) to fix the Y2K problem in the late 1990s.
- According to some economists, the expansion in recent years of the H-1B high-skill guest worker visa program has promoted offshoring activity. This program, which was designed to stem the systematic shortage of high-skill workers in the U.S., arguably does just the opposite. Ron Hira of the Rochester Institute of Technology points out that offshoring firms are among the biggest users of H-1B visas, and they use the program to bring in foreign workers, who train at U.S. operations, and then rotate back to their home country. The jobs of U.S. workers are ultimately moved overseas.

It is clear that offshore outsourcing activity in the IT field is rapidly expanding in a variety of fields.

- For example, the FDIC found that financial institutions can achieve significant cost savings (39 percent) by moving non-core functions (including IT) offshore; typically, financial institutions offshore non-core job functions, such as IT (specifically, software development and maintenance), administration, human resources, contact centers, call centers, and telemarketing. They are expected to move 15 percent of their cost base (\$356 billion) overseas over the next five years, with IT accounting for 70 percent of this offshore movement.
- Moreover, a study from the Center for Urban Economic Development found that the corporate outsourcing of various IT functions abroad have grown rapidly, with corporate outsourcing growing by 77 percent to \$37.5 billion from 1997 to 2002.

- The many statutory provisions providing safety and health and labor standards protections in the U.S. are not necessarily found in other countries.

While most of the current literature focuses on the financial or employment impacts of offshoring, the Center for Education and Communication and Jobs with Justice examined the differences in working conditions for U.S. and Indian call center employees. The average U.S. call center worker is 30 years old, has 1.5 years of post-secondary education, and earns a relatively-low annual income of \$30,447. Such workers are frequently monitored and are under pressure to meet efficiency and low-cost goals.

According to the study, Indian call center workers average 24 years of age, have 3-5 years of college education, and earn an average monthly salary of 14,370 rupees (equivalent to \$3,800 per year in 2006), which is considered high given the age and experience of the average worker. An Indian call center employee makes about 1/6 as much as a U.S. call center employee, but is paid the equivalent of 75 percent of the U.S. salary when purchasing power parity is considered. Call center work in India is seen as a viable career with potential for advancement instead of just a stop-gap work situation. However, there is high pressure to perform, long hours and shift work (many work “graveyard” shift hours to coordinate with the time difference from North America), and over 20 percent of workers have severe health problems.

### **C. Factors Determining the Susceptibility of Occupations to Offshoring**

The global competition for white-collar service work has spawned a wide-ranging debate among politicians, business groups, labor unions, think tanks, and various consulting groups about the likely impacts and implications of offshore outsourcing of jobs, especially high-wage information technology positions, from the United States (and other developed countries). Recently, offshore outsourcing has also been cited as one factor behind the recent “jobless recovery” in the US, which began with the end of the national recession in November 2001 and ended in mid-2003, when the nation began adding jobs.

All of this debate begs the question: in light of current trends in offshoring, which job types are most likely to be affected by offshoring, and conversely, which job types are likely to remain here in the United States? This issue has been examined in a number of recent studies. Blinder (2007) argues that it is critical to distinguish between two types of services: “personal” and “impersonal.” Examples of “personal” services occupations include janitors, child care workers, and surgeons. Some “impersonal” services occupations are call center operator and scientist. Blinder believes we should not focus on the occupation’s skill level or educational requirements. Rather, the key is whether service “can be delivered [to its end user] electronically over long distances with little or no degradation in quality.” Basically, “impersonal” services can be offshored, while “personal” services cannot.

Bardhan and Kroll (2003) identified the attributes of service sector jobs vulnerable to offshore outsourcing. Vulnerable jobs all have high-information content and lack face-to-face contact with customers. Thus, computers can transmit all necessary information between countries, thereby allowing companies to place operations in almost any part of the world. Moreover, they involve high wage differentials between the U.S. and similar occupations in the destination (foreign) country, and have low set-up costs. For example, according to Bardhan and Kroll, computer programmers in the U.S. earn an average salary of \$60,000-\$80,000, about 10 times the \$5,880-\$11,000 average salary of programmers in India.

Bardhan and Kroll note that in the “most positive (future) scenario,” the U.S. economy will continue to generate new, higher value-added jobs and outsource those jobs that involve routine activities.” They also say that workers in job titles suitable for offshoring may be subject to pressure to reduce wages, if they remain in the U.S. In the “worst-case” scenario, they estimate that some 14 million jobs nationwide – including office support, business and financial support, computer and math professionals, paralegals and legal assistants, diagnostic support services, and medical transcriptionists – may be potentially affected by offshoring over the “long term.”

According to Garner (2004), jobs vulnerable to being sent abroad share one or more of the following characteristics: they are labor-intensive; information-based; codifiable; and highly transparent. Note that the level of employee training is not necessarily an issue; highly-skilled jobs such as computer programming often meet all four of Garner’s characteristics. More detailed information is presented in Table 2 below.

Levy and Murnane (2004) found that the jobs most vulnerable to being shipped overseas are those which can be “routinized,” or broken down into a series of repeatable steps. They list two types of occupations likely to weather the offshoring trend. The first type requires personal contact, such as dental assistants and child care workers. The second type of job is high-end occupations requiring specialized knowledge, complex pattern recognition, or complex communication skills. For example, the preparation of routine tax returns, which follow basic rules, is vulnerable to either offshoring to lower-cost nations or replacement by technology (e.g., tax software such as *TurboTax*). However, the processing of more complex tax returns, which requires expert human judgment, is far less likely to be delegated to either a computer or another country.

The transfer of the production of high-tech products such as semiconductors to offshore locations is also rapidly becoming an important issue. For example, according to the Semiconductor Industry Association (SIA), approximately 80 percent of new facilities producing the latest generation of 300mm semiconductor chips are located outside the U.S. About two-thirds will be located in Asia, based on estimates from the SIA. This trend towards offshoring in the capital-intensive semiconductor manufacturing industry is taking place despite the fact that labor is a very small portion of the cost of operating a semiconductor chip-producing facility.

**Table 2: Characteristics of Vulnerable Jobs (Garner, 2004)**

<u>Job Characteristic</u>	<u>Explanation</u>
Labor-intensive	Cheaper foreign labor costs mean that jobs are more likely to be offshored if labor makes up a large share of production costs. Labor is a relatively large part of the costs in a telephone call center or legal transcription service.
Information-based	Jobs that collect, manipulate, or organize information are more likely to be offshored because recent technological advances are reducing the cost and increasing the feasibility of producing information services at a remote location. Most business process jobs such as accounting, billing, and payroll, are information-based.
Codifiable	Jobs that can be reduced to a routine set of instructions can be conducted more easily at a remote location and may require less experience or training. Answering routine customer inquiries can often be reduced to a simple set of instructions.
Highly transparent	Services can be performed more easily at a remote location when the information to be exchanged between the customer and the service provider is easy to measure and to verify. Analyzing a company's financial ratios can be offshored more easily than assessing its management skills.

#### **D. Insourcing and Backshoring Trends in International Investment Attraction**

*Insourcing* refers to foreign direct investment (FDI) when foreign-headquartered multinational companies make direct investment in the U.S. and hire workers in this country. Foreign companies play an important role in New York State's economy. Direct investment (gross property, plant, and equipment) at majority-owned, non-bank U.S. affiliates of foreign companies in New York State totaled \$82.6 billion as of 2007 (latest year for which data are available), according to the Bureau of Economic Analysis (BEA). This level of foreign direct investment ranked the Empire State third in the nation behind Texas's \$119.3 billion and California's \$110.2 billion.

Foreign direct investment benefits New York in terms of job creation both through investment in new businesses and through job retention and creation in existing businesses. BEA data show that in 2007 New York State ranked second in the U.S. in the number of employees at majority-owned, non-bank affiliates of foreign companies. Such “insourced” employment rose to 433,600 in 2007, only exceeded by the level of FDI employment in California of 605,600.

Insourced employment levels due to FDI in New York State show that the United Kingdom continues to rank first among countries, with 91,900 jobs in 2007. Other leading countries investing in New York State, ranked by employment, include Germany (55,200), France (53,400), Canada (45,200), Switzerland (40,600), the Netherlands (30,200), and Japan (26,200).

Manufacturing employment from FDI in New York State totaled 54,100 in 2007. (Note: The BEA does not publish more detailed data, so it is impossible to measure the number of insourced jobs by specific manufacturing industry.) The leading country in terms of FDI manufacturing employment was Canada (13,900), followed by France and the UK (6,500 each), Germany (4,700), Japan (4,300), Switzerland (3,400) and the Netherlands (1,800).

In addition to the attraction of FDI, another encouraging counter-trend to offshoring is the rise of “backshoring” – the increasing tendency to bring strategic, higher-skilled back office jobs back to the United States. In the past two years, Comcast, Dell Computers, Delta Airlines, and Monster.com, among others, have completed backshoring projects in various locations across the country.

Backshoring is driven by the narrowing cost differential between offshore and US-based back office operations, as labor costs have escalated in offshoring countries. Although offshore locations still generally have lower hourly wages than the U.S., other labor-related costs such as monitoring, training time and staff turnover are considerably higher offshore, leading companies to reconsider past offshoring decisions, especially for facilities with higher-skilled operating requirements.

The importance of FDI to the U.S. economy is indicated by the increasingly active “Invest in America” initiative, launched by the U.S. Department of Commerce’s International Trade Administration in 2007. Invest in America is the primary U.S. government mechanism to manage FDI promotion; it focuses its efforts on facilitating investor inquiries, conducting outreach to foreign investors, supporting state and local governments’ investment promotion efforts, and acting as ombudsman for the international investment community.

It is important to note, however, that the net effects of “insourcing” on the New York State economy may be overstated due to the acquisition of firms and their employees operating in the state by foreign companies. Further study would be required to determine the actual impact of such activity.

## **IV. How Many U.S. Jobs Could Be Outsourced Offshore?**

### **A. Introduction**

Currently, there are no official sources of reliable comprehensive statistics on the number of jobs outsourced offshore by U.S. businesses. There are no publicly or privately funded national surveys that systematically collect information on the number of jobs that are moved offshore. Reports of offshore outsourcing by the media are incomplete since many firms avoid disclosing their reasons for closure or transfer of specific operations. In addition, small or incremental relocations of jobs offshore may go unnoticed by the media. Finally, expansions of business operations overseas rather than domestically are frequently overlooked by the media because they do not involve the displacement of existing workers.

Therefore, in the absence of data that accurately reflect the magnitude of offshore outsourcing activity, several analysts and research organizations have developed estimates of the total number of jobs moved offshore to date and projections of the number that will be outsourced overseas in the future. This “data gap” suggests that additional government legislation may be required in order to collect the necessary statistics. A work group at MIT led by Timothy Sturgeon proposes three broad solutions to this problem:

- More and better data on services trade should be collected.
- More information should be extracted and published from existing data resources.
- Quantitative research methods should be combined with qualitative methods to provide a better view of the context and character of services offshoring.

### **B. Background**

In November 2002, the consulting firm Forrester Research published a report proclaiming that offshore outsourcing, as a business strategy in the United States, was rapidly gaining momentum. While the practice of shifting manufacturing production, first from the Northern U.S. to the Sun Belt region and then to overseas locations, has a long history, Forrester may have been the first to publish estimates of the numbers of jobs from information technology (IT), back office, customer service, and sales operations that will be shifted to sites outside of the U.S. Forrester predicted that by 2015, 3.3 million U.S. service sector (including IT) jobs will have moved offshore. This is a conservative estimate of the number of jobs going offshore, especially when compared with the *potentially affected* estimate of 14 million total jobs, based on Bardhan and Kroll’s 2003

study, and the *potentially affected* estimate of 42 million-56 million jobs from Alan Blinder at Princeton University.

The Forrester report grouped service sector jobs into nine broad job categories. According to Forrester, nearly half of the jobs that could be located offshore by 2015 will be in the “office” job category. Another 500,000 of the offshored positions will be from the “computer” jobs classification and “business” occupations will account for more than 350,000 jobs moved offshore. Table 3 summarizes Forrester’s estimates of the numbers of U.S. jobs that could be outsourced to overseas locations by job category through 2000, 2005, 2010, and 2015.

By most accounts, projected offshoring losses based on the Forrester report are small relative to the usual annual churning in the dynamic U.S. economy. Forrester predicts that approximately 200,000 jobs per year will move offshore over the 2000-2015 period (note: this includes *all* jobs moving offshore, not just IT jobs). By way of comparison, data from the Business Employment Dynamics (BED) program of the U.S. Bureau of Labor Statistics estimate that 29.5 million private sector jobs were eliminated in the nation in 2007, while 30.3 million private jobs were created that year. Comparable BED data for New York State indicate that gross job losses were 1.80 million in 2007, while gross job gains were 1.90 million that year.

Job losses and gains are not available by industry at the state level from the BED program. However, the Local Employment Dynamics (LED) program of the U.S. Census Bureau provides net job flows by industry at the state level. In 2007, LED data for New York State showed that the Retail Trade industry and Health Care and Social Assistance industry expanded the most in terms of net job flows, while the Manufacturing industry contracted the most.

**Table 3: Projected Cumulative Number of U.S. Jobs Outsourced Offshore, by Job Category, 2000, 2005, 2010, and 2015 (McCarthy)**

<b><u>Job Category</u></b>	<b><u>2000</u></b>	<b><u>2005</u></b>	<b><u>2010</u></b>	<b><u>2015</u></b>
Management	0	34,000	106,000	259,000
Business	10,787	91,000	176,000	356,000
Computer	27,171	181,000	322,000	542,000
Architecture	3,498	46,000	93,000	191,000
Life Sciences	0	4,000	16,000	39,000
Legal	1,793	20,000	39,000	79,000
Art, Design	818	8,000	15,000	30,000
Sales	4,619	38,000	97,000	218,000
Office	<u>53,987</u>	<u>410,000</u>	<u>815,000</u>	<u>1,600,000</u>
<b>Total</b>	<b>102,673</b>	<b>832,000</b>	<b>1,679,000</b>	<b>3,314,000</b>

Another way to put projected offshoring job losses in context is to compare them with total initial claimant data from the U.S. Bureau of Labor Statistics' Mass Layoff Statistics (MLS) program, which collects reports on mass layoff actions that result in workers being separated from their jobs. Monthly MLS numbers reflect establishments which have at least 50 initial claims for unemployment insurance filed against them during a 5-week period.

Over the 1999-2008 period, total initial claims for unemployment insurance in the United States resulting from mass layoffs (including any losses due to offshoring) averaged over 1.87 million per year. In New York State, the comparable figure was 71,112 claimants per year over this time span. Thus, Forrester Research's projected annual offshoring loss of 200,000 jobs in the U.S. is approximately 11 percent of recent total initial claimants per year associated with mass layoff activity.

While there are many important concerns, projected offshoring losses are small in number when compared to the overall size of the U.S. labor market. The U.S. Bureau of Labor Statistics projects that the nation will have approximately 165 million jobs in 2015. Forrester's estimate of all U.S. job losses going offshore (all job types) through the 2015 period is 3.3 million jobs (two percent of the projected labor force for that date).

While offshoring will continue as a business practice, it is difficult to precisely predict future job losses associated with offshoring due to the fact that many economic forces influence company location decisions. Also other factors that influence employment trends may mask the impact of offshoring. For example, between 2001 and 2003, factors such as the terrorist attacks on the World Trade Center and the slowdown on Wall Street negatively impacted New York State's job count. In addition, the slowdown in economic activity that took place at the national and state levels was a significant cause of job losses over that period.

Similarly, the current crisis in the nation's housing, credit and financial markets makes it difficult to disentangle the job losses associated with the overall national economic slowdown with those connected to offshoring of U.S. jobs.

Also complicating our ability to fully understand the contribution of offshoring to job losses in the IT sector are the great productivity increases that have taken place in that sector. Changes brought about by the development of modern production, information, and communications technologies have made it possible to manufacture goods and provide services with fewer workers.

### **C. Other Published Estimates of Future Offshore Outsourcing of U.S. Jobs**

While Forrester is the most commonly cited estimate of the number of jobs that have been or could be outsourced to offshore locations, many other organizations and researchers have developed their own estimates. Some of these estimates are presented below in Table 4, and demonstrate the lack of consensus among researchers as to the potential impact of offshoring on US employment over the coming years.

Proponents of offshoring argue that the economic benefits derived by companies moving jobs offshore will stimulate the larger U.S. economy and actually result in the net creation of jobs in the U.S. Table 5 summarizes the projected net numbers of jobs that Global Insight (USA), Inc. estimates may be created as a result of the increased economic activity generated by the offshore outsourcing of jobs.

The Forrester and Global Insight (GI) studies (among others) have been criticized by opponents of offshoring. For example, Forrester's estimates of the jobs lost to offshoring have been criticized as too conservative. In addition, L. Josh Bivens of the Economic Policy Institute deemed Global Insight's projected job creation figures due to offshoring as far too optimistic. In particular, Bivens faults GI's assumption that "declining costs for IT inputs (due to offshoring) will result in ... truly enormous cost savings ... (which) are passed through to consumers." He believes rather that these cost reductions will result in increased profits for IT firms, and that benefits ascribed to offshoring "are only the result of very large cost savings in IT software, however realized."

The research of Alan Blinder is cited extensively by critics of offshoring. In a 2007 research paper, he ranked over 800 occupations on their potential for being offshored (Table 5 below shows U.S. data for the top ten at-risk occupations). He found that computer programmers and data entry keyers are the most at risk occupations, while architects, health and safety engineers, and postal service employees are the least at risk.

One of Blinder's most interesting findings was that there was no connection between an occupation's skill level or educational requirement and its potential risk of being offshored. This finding runs counter to past offshoring studies, which suggested that low-skill, low-wage jobs were most at risk to going offshore, while high-skill, high-wage jobs (which typically have advanced educational requirements) were thought to be relatively immune from leaving the U.S. Blinder estimated 42 million–56 million U.S. jobs were at risk of being offshored over the next two decades. This figure is at the high end of most estimates, and differs markedly from most others researchers.

**Table 4: Published Estimates of U.S. IT Jobs That Have Moved, Will Move Offshore, or Will be Created Due to the Offshore Outsourcing of IT Jobs**

<b>Author/Organization</b>	<b>Estimates of Jobs Already Outsourced Offshore</b>	<b>Projections of Future Jobs Outsourced Offshore</b>	<b>Estimates of Jobs Already Created</b>	<b>Estimates of Jobs That Will be Created</b>
Forrester Research	103,000 jobs by 2000	3.3 million jobs by 2015		
Datamonitor		One in 15 U.S. call center agent jobs will be moved offshore by 2008.		
Alan Blinder, Princeton University		42 million-56 million U.S. jobs are <i>potentially offshorable</i> , including scientists, mathematicians and editors on the high end and telephone operators, clerks and typists on the low end.		
Charles L. Schultze, Brookings Institution	Estimated total job loss resulting from outsourcing of business, professional, and technical services ranged from 155,000 to 215,000 between 2000 and 2003.			
The Gartner Group		Ten percent of U.S. technology jobs will have been moved offshore by 2005 and 25 percent of IT jobs will be relocated to developing countries by 2010.		

Deloitte Consulting		Two million financial services industry jobs will relocate overseas during the next few years.		
Ashok Bardhan and Cynthia Kroll, UC - Berkeley		14 million U.S. jobs are <i>potentially offshorable</i> .		
Global Insight (USA), Inc.			<p>The incremental increase in economic activity derived from global sourcing of IT jobs generated a net gain of 90,000 U.S. jobs in 2003, of which, almost 5,000 were new core IT software and service jobs. This partially offset the 104,000 IT software and service jobs that Global Insight estimates were displaced in 2003.</p> <p>Estimated net new jobs in NYS resulting from offshoring by 2003: 5,058</p>	<p>Worldwide sourcing of IT services and software will result in a total increase of 589,000 jobs. Some of these jobs, however, will be created or moved overseas resulting in a net increase of 317,000 jobs in the United States by 2008.</p> <p>In the software and services area, the nation's economic engine will create 516,000 new jobs in an environment that encourages offshore outsourcing of IT jobs, but 272,000 will be moved offshore, leaving a net gain of 244,000 new IT/services jobs in the U.S. In the absence of global IT sourcing, 490,000 IT jobs would be created in the US. Therefore, offshore outsourcing of IT jobs slows domestic IT job growth while accelerating growth in the total number of jobs in the U.S. economy.</p> <p>Projected net new jobs in NYS resulting from offshoring by 2008: 18,239</p>

**Table 5: Top 10 Occupations  
Most Vulnerable to Offshoring (Blinder, 2007)**

Rank	Occupation	United States		New York State	
		Annual mean wage	Number employed	Annual mean wage	Number employed
1	Computer programmers	\$72,010	394,710	\$75,850	35,730
2	Data entry keyers	\$26,350	286,540	\$28,230	20,760
3	Electrical and electronics drafters	\$51,710	32,350	\$61,140	2,190
4	Mechanical drafters	\$46,690	74,260	\$51,370	3,010
5	Computer and information scientists, research	\$100,640	28,720	\$112,820	1,940
6	Actuaries	\$95,420	18,030	\$101,580	1,760
7	Mathematicians	\$90,930	3,160	\$89,950	n/a
8	Statisticians	\$72,150	20,270	\$69,700	670
9	Mathematical science occupations (all other)	\$61,100	6,930	\$71,890	n/a
10	Film and video editors	\$61,180	17,410	\$65,700	2,700

## V. New York's Information Technology Sector: Two Perspectives

### A. Introduction

This section examines New York State's information technology (IT) sector from two different employment perspectives:

- IT-producing *industries*
- IT-related *occupations*

Both perspectives are based on definitions presented in the "Digital Economy 2003" report. This report, prepared by the U.S. Department of Commerce's Economics and Statistics Administration, details conditions in U.S. information technology industries and the effects of IT on national economic performance.

This section presents data on the overall number of IT jobs in New York, based on both employment perspectives and the nature of offshoring in IT manufacturing, with specific reference to the semiconductor industry. In addition, this section presents estimates of the number of jobs in the state *potentially at risk* of offshore outsourcing. The analysis is based on industry and job titles presented in a widely-cited 2003 report -- "The Next Wave of Outsourcing" -- by Ashok Bardhan and Cynthia Kroll of the University of California-Berkeley. The report focuses on occupations where at least some offshore activity has already occurred or is being planned.

Table 6 below summarizes recent employment changes in those information technology industries which, in the opinion of Bardhan and Kroll, "have been most often noted as outsourcing to India and East Asia".

<b>Industry Name (2007 NAICS Code)</b>	<b>USA 2003</b>	<b>USA 2007</b>	<b>% Change</b>	<b>NYS 2003</b>	<b>NYS 2007</b>	<b>% Change</b>
Software Publishers (5112)	237.3	252.3	6.3%	3.6	4.2	16.7%
Telecommunications (517)	1,188.9	1,030.1	-13.4%	66.3	56.5	-14.8%
Data Processing & Related Services (518)	281.0	270.9	-3.6%	21.7	15.7	-27.6%
Internet Pub. & Web Search Portals (51913)	41.0	71.8	75.1%	4.1	6	46.3%
Accounting, Bookkeeping, Payroll (5412)	830.6	928.0	11.7%	70.1	86	22.7%
Computer Systems Design & Related (5415)	1,107.8	1,367.1	23.4%	59.3	73.8	24.5%
Business Support Services (5614)	739.5	809.7	9.5%	39.3	45.2	15.0%
Telephone Answering Services (561421)	50.2	43.5	-13.3%	1.6	1.6	0.0%
Telemarketing Bureaus (561422)	302.5	358.6	18.5%	9.2	8.6	-6.5%
Computer & Electronic Products (334)	1,354.0	1,270.0	-6.2%	75.8	72.6	-4.2%
Semiconductors & Rel. Devices (334413)	225.4	216.3	-4.0%	9.5	9.6	1.1%
<b>Subtotal: Potentially Affected Industries</b>	<b>6358.2</b>	<b>6618.3</b>	<b>4.1%</b>	<b>360.5</b>	<b>379.8</b>	<b>5.4%</b>

Source: 2003 and 2007 State and national QCEW

## **B. IT-Producing Industries**

There are 41 IT-producing industries (based on the North American Industry Classification System (NAICS)) spread across four principal groups: computer hardware; communications equipment; software and computer services; and, communications services. The industry list originated in the “Digital Economy 2003” report, issued by the U.S. Department of Commerce’s Economics and Statistics Administration, and has been updated to reflect the 2007 NAICS. The report indicates that workers in these industries “develop, design, manufacture, operate, repair and maintain the IT infrastructure that supports e-commerce, the Internet or network-related activities, and IT-enabled processes throughout businesses and organizations.” See Table 7 for a complete list of IT-producing industries.

In New York State, like the nation, employment in IT-producing industries has been much more volatile than overall employment over the past decade. (Note: Workers in IT-producing industries cover a broad range of occupational titles, such as management and office and administrative support, in addition to IT-related titles.) From 1996 to 2000, employment in the state’s IT-producing sector grew 28 percent, or more than three times as fast as the 8.7 percent change in overall employment (1996-99 employment figures for IT-producing industries are estimated, based on unpublished data from the Quarterly Census of Employment and Wages).

However, between 2000 and 2003 (a period which includes the World Trade Center disaster, the bursting of the dot-com bubble, the national recession of 2001, and the subsequent jobless recovery which persisted in both the U.S. and New York State until the summer of 2003), the trend reversed itself. Over the 2000-2003 period, IT-producing industry employment in the state fell almost 23 percent, compared with a drop of just 3 percent for overall employment.

Employment growth in New York State’s IT-producing industries has lagged overall industry growth in recent years. From 2003 (the beginning of New York State’s most recent economic recovery) through 2007 (the latest full year of available QCEW data), IT-producing industry employment in the state declined by 1.8 percent. In contrast, overall employment increased by 4.0 percent over the same period.

Conclusions about future employment trends in the IT industry should not be drawn from either the frenetic 1990s or from the subsequent decline from 2000 to 2003. Future growth will likely fall somewhere between these two extremes. During the 2000-2003 period, the strong American dollar worked to increase the advantage of overseas production, while reduced domestic demand caused a substantial employment downturn in the IT industry.

In 2007, New York State’s IT-producing industries involved more than 15,500 firms, employment of more than 230,000 jobs, and total wages of more than \$20 billion. Table 8 below provides more detailed information on New York State’s IT-producing industries by major sector. Most of the state’s IT-producing employment in 2006 was in software and

computer services (103,500). This sector was followed by computer hardware (62,400), communication services (58,000), and communications equipment (7,100). Over the 2003-2007 period, software and computer services was the only sector to add jobs (+11.9 percent). Sectors losing jobs between 2003 and 2007 included: communication services (-14.5 percent); computer hardware (-7.3 percent); and communications equipment (-6.6 percent).

**Table 7: Information Technology-Producing Industries**

<b>NAICS Code</b>	<b>Industry Title</b>
<b><u>Computer Hardware</u></b>	
334111	Electronic Computers
334112	Computer Storage Devices
334113	Computer Terminals
334119	Other Computer Peripheral Equipment
423430	Computer & Software Wholesalers (part: 95%)
443120	Computer & Software Stores (part: 88%)
334411	Electron Tubes
334412	Bare Printed Circuit Boards
334413	Semiconductor & Related Devices
334414	Electronic Capacitors
334417	Electronic Connectors
334418	Printed Circuit Assembly
334415,6,9	Miscellaneous Electronic Components
334513	Industrial Process Control Instruments
334515	Electricity Measuring & Testing Equipment
334516	Analytical Laboratory Instruments
333295	Semiconductor Machinery
333313	Office Machinery Manufacturing
<b><u>Communications Equipment</u></b>	
334210	Telephone Apparatus
334220	Broadcast & Wireless Communications Equipment
334310	Audio & Video Equipment
335921	Fiber Optic Cables
334611	Software Reproducing
334613	Magnetic & Optical Recording Media
<b><u>Software &amp; Computer Services</u></b>	
511210	Software Publishers
518210	Data Processing, Hosting & Related Services
519130	Internet Publishing & Broadcasting & Web Search Portals
423430	Computer & Software Wholesalers (part: 5%)
443120	Computer & Software Stores (part: 12%)
541511	Custom Computer Programming
541512	Computer Systems Design
541513	Computer Facilities Management
541519	Other Computer Related Services
532420	Office Machinery & Equipment Rental & Leasing
811212	Computer & Office Machine Repair & Maintenance
<b><u>Communications Services</u></b>	
517110	Wired Telecommunications Carriers
517210	Wireless Telecommunications Carriers (except Satellite)
517410	Satellite Telecommunications
517911	Telecommunications Resellers
517919	All Other Telecommunications
811213	Communications Equipment Repair & Maintenance

**Table 8: Employment and Wages in IT-Producing Industries, by Sector,  
New York State, 2003 and 2007**

<b>IT Sector</b>	<b>Employment</b> (in 1000s)			<b>Total Wages</b> (in \$ millions)		
	<b>2003</b>	<b>2007</b>	<b>% Change</b>	<b>2003</b>	<b>2007</b>	<b>% Change</b>
Computer Hardware	62.4	67.3	-7.3%	5,589	5,007	11.6%
Communications Equipment	7.1	7.6	-6.6%	465	405	14.9%
Software and Computer Services	103.5	92.5	11.9%	10,057	6,945	44.8%
Communications Services	58.0	67.8	-14.5%	4,710	4,971	-5.2%
<b>Total, IT-Producing Industries</b>	<b>231.0</b>	<b>235.2</b>	<b>-1.8%</b>	<b>20,822</b>	<b>17,328</b>	<b>20.2%</b>

International trade in the information technology sector is a significant indicator of the global competitiveness of the IT industries in the U.S. and New York State. Export results for selected IT sectors (at the broad 3-digit NAICS industry level) are outlined below in Table 9 (from the World Institute for Strategic Economic Research database). They indicate that such IT exports reached \$376 billion nationally, and were \$16.6 billion in New York State in 2008. This export volume represented a significant portion of overall exports in 2008; 29 percent of total U.S. exports of \$1.3 trillion, and 20.8 percent of New York State exports of \$79.5 billion.

**Table 9: Exports by Selected IT Industries, U.S. and New York State, 2008**

<b>Industry Name (NAICS Code)</b>	<b>Exports (in \$ billions)</b>	
	<b>USA</b>	<b>NYS</b>
Machinery, except electrical (333)	\$144.0	\$7.21
Computer and Electronic Products (334)	\$192.1	\$7.75
Elect. Equip., Appliances & Compnts. (335)	\$39.8	\$1.57
Prepackaged Software (511)	\$0.8	\$0.03
<b>Subtotal: Selected IT Industries</b>	<b>\$376.7</b>	<b>\$16.55</b>

### C. IT-Related Occupations

Workers in IT-related *occupations*, which are found in *industries* throughout the economy, “develop, design, manufacture, operate, maintain, and repair IT products and provide related services across all industries, including IT-producing industries,” according to the “Digital Economy 2003” report. That report utilizes a broader definition of IT workers than some other studies because it includes “workers in occupations that build, maintain, and repair the IT infrastructure such as telecommunications and computer equipment operators, repairers, and installers.” Other studies have tended to focus on fewer, but more traditional, IT-related occupational titles, such as computer programmer and systems analyst.

According to New York State’s Occupational Employment Statistics survey, the Empire State had almost 400,000 workers in IT-related occupations in 2007. The overall average annual wage for all workers in IT occupations was \$67,700 or more than 40 percent higher than the average for all workers in the state (\$47,600) that year.

The “Digital Economy” report stratifies IT job titles into three broad skill levels - *High*, *Moderate*, and *Low* – based on their most common education and training requirements (see Table 10 below for a complete list of IT-related occupations). Occupations in the *High* category require an associate degree or higher. In New York State, the average annual wage for all jobs in this category was \$83,600. *Moderate* skill occupations, which require long-term on-the-job training or post-secondary vocational training, had an average annual salary of \$43,000. The average salary for titles in the *Low* skill category, which require short- to moderate-term on-the-job training, was \$33,000.

Table 11 shows the total number of IT-related workers by skill level for each broad industry sector in New York State. Almost two-thirds of jobs in IT-related occupations in New York are in the *High* skill category. About 22 percent of IT jobs are in the *Moderate* skill category and 13 percent are in the *Low* skill category. It is interesting to note that the distribution of IT jobs by education and training level (i.e., a majority of IT jobs are *High* skill) is the reverse of the situation found with all occupations, where the majority of jobs are often low-skill.

It is clear from the data in Table 11 that IT workers are found in industries throughout the state’s economy. In fact, more than 85 percent of IT workers are employed in industries outside of the information sector. The professional and technical services sector has, by far, the most total IT-related employment with 83,100 jobs, or more than one in five IT jobs in New York State. This industry group also has the most workers in the *High* skill category because it includes the computer systems design and related services industry, which employs a significant number of IT-related workers in *High* skill titles. The following industry groups also employed at least 50,000 workers in IT-related job titles: information, 54,300 IT workers; financial activities, 53,800; and, manufacturing, 53,600.

**Table 10: IT-Related Occupations**

<b><u>Skill Level: High</u></b>	<b><u>Skill Level: Moderate</u></b>
Computer and information systems managers	Data entry keyers*
Engineering managers	Computer, automated teller, and office machine repairers
Computer and information scientists, research*	Telecommunications equipment installers and repairers, exc. line installers
Computer programmers*	Electrical and electronics repairers, commercial and industrial equipment
Computer software engineers, applications*	Electrical power-line installers and repairers
Computer software engineers, systems software*	Telecommunications line installers and repairers
Computer support specialists*	Electrical and electronic equipment assemblers
Computer systems analysts*	Electromechanical equipment assemblers
Database administrators*	Semiconductor processors
Network and computer systems administrators*	<b><u>Skill Level: Low</u></b>
Network systems and data communications analysts*	Communications equipment operators*
Computer hardware engineers	Billing and posting clerks and machine operators*
Electrical engineers	Computer operators*
Electronics engineers, except computer	Other office machine operators, exc. computer
Electrical and electronic engineering technicians	

\*Occupations *potentially affected* by offshore outsourcing (Bardhan and Kroll, 2003).

**Table 11: Information Technology Occupational Employment by Industry Sector and Skill Level, New York State, 2007**

Sector	Skill Level			Grand Total
	High	Moderate	Low	
Professional & Technical Services	67,300	7,300	8,500	83,100
Information	28,100	23,400	2,800	54,300
Financial Activities	46,900	2,600	4,300	53,800
Manufacturing	29,900	21,500	2,200	53,600
Management of Companies & Administrative Services	24,900	9,700	9,200	43,800
Trade, Transportation & Utilities	21,900	11,000	7,400	40,300
Educational & Health Services	18,000	2,700	14,800	35,500
Public Administration	13,300	2,000	1,800	17,100
Leisure, Hospitality & Other Services	4,500	2,800	1,900	9,200
Construction	900	6,200	300	7,400
<b>Grand Total</b>	<b>255,700</b>	<b>89,200</b>	<b>53,200</b>	<b>398,100</b>

Statewide occupational employment projections, prepared by the New York State Department of Labor, show that, like the nation as a whole, projected rates of growth for IT titles through 2016 in the state are expected to vary significantly by skill level. For the ten-year period ending in 2016, the overall IT-related job counts in New York State and the nation are expected to increase by 6.4 percent and 13.0 percent, respectively.

Looking at individual groups by skill level, the New York State Department of Labor expects *High* skill titles to grow 14.6 percent in New York State (U.S., 21.4 percent) over the 2006-2016 period. Like long-term occupational employment projections for the U.S., total employment in both *Moderate* and *Low* skill titles in the state is projected to decline; *Moderate* by 7.3 percent (U.S., 3.8 percent) and *Low* by 8.5 percent (U.S., 1.4 percent). Many of the job titles in the *Moderate* and *Low* categories may be eliminated due to technological advances. The “Digital Economy” report suggests, for example, that recognition technology and online telephone directories will reduce telephone operator employment, while billing and sales tracking software will eliminate some functions performed by billing and posting clerks.

#### **D. Offshore Outsourcing of IT-related Jobs**

Bardhan and Kroll (2003) identified a variety of specific job titles, including a number of IT-related occupations that have the characteristics best suited for offshore outsourcing. These titles are marked with an asterisk in Table 10. Although some analysts have suggested that this study should be treated as a worst-case scenario, it is used here because it has the most detailed list of potentially affected IT-related occupations available in a

published study and because it uses job titles from the Standard Occupational Classification (SOC) system used by government agencies. Other studies, such as the Forrester report discussed above, use occupational groupings that do not correspond with any official classification system.

In 2007 total IT occupational employment in New York State is just under 400,000, of which 290,000 is in IT job titles identified by Bardhan and Kroll as having characteristics *potentially* suitable for offshoring (see Table 11). These 290,000 jobs constitute 6.8 percent of the nation's employment in IT-related titles potentially affected by offshoring, slightly more than New York State's share of national employment (6.3 percent). They make up 3.4 percent of total state employment.

It is unknown how many of these jobs will actually move offshore, although it is likely that displacements that do occur will take place over a number of years. Looking just at employment levels in IT job titles potentially affected by offshoring, 70 percent are in the *High* skill category, 14 percent in *Moderate* skill, and 16 percent in *Low* skill.

Projections of the number of IT-related jobs in the U.S. actually moving offshore in the future are subject to considerable uncertainty. Similar projections for individual states are subject to even greater uncertainty. Thus, no estimates of the number of IT-related jobs in New York State potentially affected by offshoring are offered here. Much of the difficulty involved in forecasting the number of jobs being outsourced offshore is due to a dearth of official statistical data on the subject. The U.S. Department of Labor and the New York State Department of Labor have attempted in the past to collect relevant data via the Mass Layoff Statistics program, but have found many employers reluctant or unable to share details of jobs relocated out of the country.

## **E. Outsourcing of Information Technology Manufacturing Jobs**

Considerable attention devoted to offshore outsourcing has pertained to U.S.-based information technology services jobs. Although the movement of services jobs abroad is an important trend, as reflected in its extensive treatment in this report, another critical offshoring issue is in the manufacturing of information technology products. In particular, the global semiconductor industry spotlights the highly competitive nature of U.S. versus offshore competition in technology manufacturing.

Semiconductors are often characterized as the key “enabling technology” that leads to advances in many products (e.g., computers, cell phones, motor vehicles, etc.), often at faster speed, with improved quality and at a lower price. Academic research on semiconductors and three related industries – computers, communications equipment, and software – finds that these four industries have accounted for about 25 percent of American economic growth in recent years.

A 2006 study from the Government Accountability Office (GAO) summarized offshoring trends in this field as follows: “The U.S. semiconductor industry began offshoring labor-intensive manufacturing operations in the 1960s, followed in the 1970s and 1980s by increasingly complex operations, including wafer fabrication and

some research and development (R&D) and design work. Semiconductor assembly and testing was the first to move to Asia, followed by fabrication and, more recently, by some design operations.” The GAO found that the “U.S. semiconductor industry has foreign operations in several locations, notably in Taiwan and China.” This is due largely to government policies there that “created favorable investment conditions for U.S. semiconductor firms.”

In recent years, New York State has established a significant presence in the field of nanotechnology, which is the science of managing and manipulating matter at the atomic level. More specifically, the state is a leader in research on the knowledge base for the next generation, “300 millimeter” semiconductors. This emerging field has huge commercial potential. In April 2001, the IBM Corporation pledged \$100 million in support of the creation of the Center of Excellence in Nanoelectronics at Albany NanoTech, University at Albany. IBM also began development of the world's most advanced computer chip fabrication facility, a 300 mm chip-fab in East Fishkill. About one year later, International SEMATECH CEO Robert Helms announced that International SEMATECH - a consortium of the ten major computer chip manufacturers in the world - would site its next generation 300mm semiconductor wafer research and development center, to be called International SEMATECH North, at Albany Nanotech. Most recently, Albany Nanotech joined with IBM, Advanced Micro Devices (AMD), and other leading companies to form the International Venture for Nanolithography (INVENT), a consortium that will invest \$580 million in an effort to develop microchips with smaller features, as well as work on developing a future workforce for the industry.

The College of Nanoscale Science and Engineering (CNSE) of the University at Albany is the first college in the world dedicated to research, development, education, and deployment in the emerging disciplines of nanoscience, nanoengineering, nanobioscience, and nanoeconomics. CNSE's Albany NanoTech Complex -- a \$4.5 billion megaplex -- is the most advanced research complex at any university in the world. Carl Hayden, Chairman of the SUNY Board of Trustees, announced that as of October 2008 the CNSE had generated 3,000 new high-tech jobs, including 1,000 researchers from over 250 global corporate partners.

In October 2008, it was also announced that Advanced Micro Devices (AMD) would spin off its manufacturing operations. As part of this deal, a chip fabrication manufacturing plant is being built in Saratoga County. Construction began in mid-2009 and will take 18 to 24 months to complete. It has been hailed as the largest industrial investment ever in the history of New York State. The new \$4.6 billion factory is expected to employ 1,465 with an annual payroll of \$88 million. Published reports estimate an additional 5,050 jobs will be created in the local economy to support and serve the chip fabrication plant. The collective payrolls would top \$200 million. During the two-year construction phase, the project is projected to create 4,300 construction jobs with an annual payroll of \$210 million.

New York State has been recognized as a leader in nanotechnology. The July/August 2007 issue of *Small Times* magazine ranked New York as the fourth leading state in the

nation in the development of nanotechnology. Similarly, the May/June 2007 issue of that magazine compiled a guide to the top universities in nanotechnology, and two universities in New York State -- the University at Albany and Cornell University -- ranked first and second, respectively.

Irrespective of these accomplishments in New York, or elsewhere in the United States, wafer fabrication is becoming an increasingly offshore activity. The nation's share of the world's wafer fabrication capacity fell from 26 percent in 1994 to just over 20 percent in 2004. This decline is expected to continue based on trends in 300mm manufacturing. According to the Semiconductor Industry Association, approximately 80 percent of all new 300-mm capacity now under construction is outside the United States, mostly in Asia (33 percent in Taiwan, 11 percent in Japan, 9 percent in Southeast Asia, 8 percent in South Korea, and 5 percent in China) with 14 percent in Europe.

What leads to the offshoring of information technology manufacturing jobs? The answer is cost differentials: it costs manufacturers roughly \$1 billion more to build a wafer fabrication facility in the United States (\$6.7 billion to \$6.8 billion) than in a foreign location (\$5.6 billion to \$6.1 billion). However, unlike information technology services, in which labor cost is the critical location driver, labor is a secondary cost issue for semiconductor manufacturers, accounting for only 10 percent of this \$1 billion cost differential. The costs of operations, materials, and capital related to semiconductor manufacturing are similar in the United States to those in other locations. According to data from the Semiconductor Industry Association, 70 percent of the cost differential between the U.S. and other countries is attributable to tax benefits and another 20 percent is due to capital grants. Both of these incentives are typically more generous offshore.

For example, Israel offers the semiconductor industry a capital grant of up to 20 percent and a 10 percent tax rate with a two-year tax holiday. China allows a five-year tax holiday, and levies only half the normal tax rate for years six through ten. Ireland has a 12.5 percent corporate tax rate. The most aggressive nation is arguably Malaysia, with a ten-year tax holiday. The United States' 35 percent federal corporate tax rate, although somewhat softened by various state-level incentives, is not competitive with these offshore incentives.

The United States semiconductor industry, which invests 17 cents of every dollar of sales in research and development, also criticizes the failure of Congress to make permanent the federal R&D tax credit. Noting that R&D planning demands a long-term view, the industry argues that short-term extensions and lapses in coverage dilute the value of this credit as an economic incentive.

Some semiconductor observers have argued that the higher level of foreign incentives is a plus for the United States, since it allows American companies to focus on design, with the highly capital-intensive production being subsidized by another country. The semiconductor industry disagrees, arguing that physical proximity of "labs and fabs" is even more important as chip manufacturing companies work through the complexities of nanoscale engineering.

## **VI. Benefits and Risks of Offshore Outsourcing of IT Jobs**

### **A. Introduction**

Staff in the New York State Department of Labor’s Division of Research and Statistics reviewed more than 370 reports and articles on the topic of offshore outsourcing. Of these, roughly 75 discussed benefits and/or risks of offshore outsourcing of IT jobs. A brief summary of the benefits and risks cited by the authors of those reports follows. *This section summarizes the ideas of those authors and does not reflect the position of the New York State Department of Labor or Empire State Development.*

The benefits and risks cited below are divided into two groups – those that primarily affect individual firms or employees and those that affect the entire economy.

### **B. Benefits of Offshoring IT Jobs**

The following benefits primarily accrue to firms that offshore:

- Offshoring may potentially reduce the costs of American firms doing business, allowing them to compete more successfully with foreign companies. Firms may perhaps save on labor costs, both salaries and benefits, and incur reduced regulatory costs.
- Offshoring has the potential to make U.S. firms more productive and competitive. Gains from offshoring may perhaps be put back into research and development.
- Offshoring may allow firms to access low-cost pools of talent worldwide.
- Offshoring allows firms access to foreign markets. It can make it easier for U.S. firms to get into and compete in foreign markets if they have a presence in that new market. Hiring native-born employees can help a firm adjust to the customs and traditions of the new market.
- Offshoring allows 24-hour functionality and error correction by enabling work around the clock. Production in all global time zones can be coordinated to phase work schedules.

The following benefits primarily accrue to the overall U.S. economy:

- Offshoring may potentially constrain inflation by allowing Americans to buy lower-cost goods and services produced abroad, thus contributing to a higher standard of living among U.S. citizens.
- Offshoring is seen by some as expanding the size of the American economic pie. For example, the McKinsey Global Institute estimated that spending \$1 on offshoring generates \$1.12 in direct and indirect income for the U.S.

- By allowing U. S. firms to purchase goods and services from abroad, the U.S. government can gain leverage in efforts to get foreign governments to allow their firms to buy goods and services from U.S. companies.
- Offshoring work to foreign countries will strengthen their economies and enable them to buy more U. S.-made products, provided adequate wage, safety and health standards are raised abroad.
- The unconstrained ebb and flow of capital, goods, and services should serve to benefit the American economy because the U.S. will remain the center of innovation. Not only are U. S. firms often innovators in the technology field, but also in the area of business models. The U.S. is primed for innovation because of its combination of IT background, its tradition of entrepreneurship, its capital markets, and its laws that protect intellectual property.

### **C. Risks of Offshoring IT Jobs**

The following risks affect firms that offshore jobs:

- Manufacturing jobs lost in IT-producing fields are likely to be replaced by jobs in service-providing industries that often offer lower pay and benefits, thus harming displaced workers.
- The offshore outsourcing of U.S. jobs reduces overall human capital levels in this country, and threatens the end of upward mobility for many U.S. workers, who saw post-secondary education as the route to a higher standard of living. In turn, if offshoring reduces employment opportunities in technical occupations, it may depress university enrollments in certain fields (e.g. engineering) affected by offshoring, further reducing the nation's human capital levels.
- It is widely agreed that offshoring of lower-level IT-related jobs will cause disruption for individual U. S. workers. The result will be a mismatch between workers' skills and the demands of businesses. Additional training for displaced workers will be needed to keep up with new technologies.
- Offshoring poses the possibility that U.S. workers' wages will stagnate and benefits will be cut as firms strive to remain cost competitive. Laid off workers may find jobs, but at lower wage levels.
- Lower wages and benefits along with increased unemployment in occupations that are susceptible to offshoring may be expected to place more demands on the safety net and social programs in the U.S.
- Data security issues are of critical concern, especially in medical and financial fields. Other nations' legal systems (especially in developing countries such as

India) require reform to match that of the U.S., with respect to privacy and computer security.

- Offshoring can complicate the ability of public and private sector management to exercise control and adequate supervision of its own work.
- Communicating with foreign managers may cause difficulties, inefficiencies, and reduced cost savings due to language barriers and inadequate cross cultural understanding.
- The costs of moving work offshore can initially be higher than doing the work here. Any new venture involves one-time activities that will boost the initial cost of doing business.
- Because of unfamiliarity with foreign vendors it can be difficult to choose good partners. As a result, firms may choose bad partners, that will cost more to work with or they may have to start the offshoring process all over with another partner(s) – an expensive proposition.
- Once a company decides to move work offshore, there are a number of factors (potential pitfalls) which should be considered in choosing a country, a city, or an office site. Among these are cultural compatibility (how business is done in that country), political and military stability, and legal protections for intellectual property. If any of these factors or any of the other important considerations are ignored or decided wrongly, the offshoring effort may be doomed to failure. Such a failure could be quite expensive.

The following offshoring risks affect the overall U. S. economy:

- Offshoring has diverted employment growth from the U.S. to India and other overseas locations. For example, financial firms have established offices and hired research analysts in India. These include Deloitte Consulting which has about 1,000 workers in India, most doing research and 123jump.com, a Miami Beach provider of investment advice, that employs 32 analysts living in India, Bulgaria, and Argentina. Most have MBAs and speak fluent English. Similarly, Citigroup, Fidelity, Goldman Sachs, JPMorgan Chase, Lehman Brothers, Morgan Stanley, and UBS are increasingly turning to financial analysts in India for research on global companies. All firms have opened offices in India since 2002. The total combined India-based job count (including computer and back-office staff) at these firms plus five Indian firms (Amba Research, Copal Partners, Evalueserve, Irevna, and Pipal Research) that perform research for U.S. firms tops 23,000. This trend is likely to continue since these firms can hire analysts in India for one-third or one-quarter of the salaries they would have to pay in the United States.

- The continued loss of IT jobs would mean schools will turn out fewer IT workers to be employed in the domestic IT industry. If there are few IT jobs for graduates, fewer will study IT fields and eventually colleges will limit the classes they offer.
- The U.S. is offshoring basic technical skills. This is eroding our leadership in technical fields. As offshoring becomes more common, foreign firms and workers are becoming more sophisticated. The loss of domestic technical capabilities and dependence of foreign sources can pose a security risk for the United States.
- Offshoring forces firms in industries where offshoring is prevalent to adopt the practice in order to remain competitive. Domestic companies that supply firms that offshore work will be hurt, because of the loss of market for their products or services.
- If enough offshoring takes place, a glut of office space may develop, especially in cities with heavy concentrations of IT industries most susceptible to offshoring.

The Federal Deposit Insurance Corporation (FDIC) has outlined five categories of risk associated with offshoring activity as it relates to financial companies. These are:

- *Country risk* – political or socio-economic factors.
- *Operations risk* – weak controls affecting consumer privacy.
- *Compliance risk* – offshore vendors having inadequate privacy regulations.
- *Strategic risk* – laws not protecting “trade secrets” or processes.
- *Credit risk* – a vendor not fulfilling a contract due to financial losses.

The FDIC also points out that the degree of risk in offshoring by financial companies depends on the form(s) of offshoring the company employs. The various forms of offshoring identified by the FDIC and the associated risk for each include:

- *Captive direct* – firm using its in-house low cost offshore location. Requires large investment and has the least risk.
- *Joint venture* – partnership between domestic institution and a foreign vendor which could be risky if the domestic institution doesn’t have majority ownership.
- *Direct third party* – outsourcing to a third party vendor abroad where the domestic firm has no ownership and can only control what is contractually agreed upon.
- *Indirect third party* – outsourcing to a domestic vendor who then subcontracts the work to another vendor offshore. This is by far the riskiest form of offshore outsourcing.

## **VII. Federal and State Legislation Regarding Offshore Outsourcing**

### **A. Introduction**

Forrester Research's release of their first report on offshore outsourcing in 2002 predicted that 3.3 million service jobs would be moved offshore over the next 15 years and sparked nationwide debate among federal and state lawmakers. Prior to the Forrester report, the growing offshore outsourcing trend had been largely unnoticed by most legislators. However, subsequent to the report's release, there was a rush to propose federal and state legislation that addressed the perceived threat to the national economy and the jobs of Americans working in United States. In 2004 and 2005, there were more than 100 federal and state bills introduced each year addressing offshore outsourcing. Since then, the numbers of federal and state proposals related to offshore outsourcing has waned. During 2009 several bills were introduced at the federal and state levels, although none directly related to New York State were enacted.

Most recent federal and state legislative proposals related to offshore outsourcing have centered on government procurement, regulation, and economic development incentives, in an attempt to use government purchasing and regulatory power to influence private sector business behavior. These efforts are unlikely to slow the growth of the already pervasive practice of global sourcing of products and services. Few manufactured goods are produced entirely in the United States, while services are increasingly sourced on a global basis. Many businesses in the U.S. and overseas have been operating with international affiliates and subsidiaries for decades, and, given market realities, will continue to do so. The federal bills introduced during 2009 generally fall into three categories: 1) requiring call centers to identify their location; 2) restricting the transfer of personal information for processing outside the U.S.; and 3) limiting government funds for entities that offshore some or all of their services. The legislative trend seems to be to restrict the way firms can operate should they choose to offshore jobs rather than to prohibit the offshoring of jobs.

### **B. Federal Offshore Outsourcing Legislation**

To date, the most common anti-offshoring bills prohibit companies with state and federal contracts from sending their work overseas. On January 23, 2004, the Omnibus Appropriations Bill was signed into law, which included the Thomas-Voinovich amendment (cosponsored by Senators Craig Thomas (R-WY) and George Voinovich (R-OH)), which restricts companies with federal contracts from outsourcing that work overseas.

The introduction of federal legislation aimed at offshore outsourcing has waned since the flurry of legislation introduced in 2004 and 2005. Several bills were introduced, however, in the 2007 Congress. These included H.R. 1776, the "Call Center Consumer's Right to Know Act," and H.R. 2759, "Fighting for American Jobs Act of 2007".

The "Call Center Consumer's Right to Know Act", introduced by Representative Jason Altmire, D-PA, would require each employee of a call center to identify the location of the

center to individuals located in the United States who have called or received a call from the center. The "Fighting for American Jobs Act of 2007", which was sponsored by Representative Peter J. Visclosky, D-IN, would prohibit businesses that lay off a greater percentage of their U.S. workers than workers in other countries from receiving any federal assistance. In particular, the bill included provisions requiring businesses to report annually to any federal department or agency from which it receives financial assistance. None of these bills was enacted.

In January 2009, a bill (H.R. 427) was introduced that would prohibit a business from transferring personally identifiable information of a U.S. citizen to any affiliate or subcontractor in another country without such citizen with written notification. Also in January 2009, H.R. 384, an amendment to one of the financial rescue bills, would have prohibited entities who received bailout funds from outsourcing new customer service or call center jobs to foreign companies. In September 2009, a bill (H.R. 3621) was introduced that would require employees at a call center who either initiate or receive calls to disclose their location. Neither of these bills became law.

### **C. State Offshore Outsourcing Legislation**

**New York Activities** In January 2007, there was a flurry of activity in the New York State Legislature, with members introducing an array of offshore outsourcing related bills. Two bills, A. 993 and A. 3321, would have required legislative consent before the governor could bind the state to international trade agreements; both bills would also have established an office of trade enforcement that would analyze pending trade agreements for the Governor and Legislature and hold public hearings regarding its findings.

Another set of bills would have impacted companies that receive state financial incentives or benefits. A. 2980 would have eliminated developmental aid for businesses that reduce their "employment base level" (i.e., the number of employees at the time a company is granted developmental aid) due to the offshoring of jobs. Similarly, A. 1022 would have prohibited any business entity that moves jobs offshore from receiving state financial assistance or tax benefits, or require the return of benefits already received.

Other legislation, however, would have sought to impose greater restrictions on offshore outsourcing. For example, a bill known as the "New York Consumer and Worker Protection Act," would have: (1) required employers to provide notice of the offshore outsourcing of jobs prior to such outsourcing; (2) prohibited any governmental agency from engaging in the practice of offshore outsourcing of jobs; and (3) required that consumers be made aware and provide consent if such consumers' nonpublic personal information is disclosed to nonaffiliated third parties by any corporation or other business entity.

In 2008, Gov. David Paterson vetoed a bill (A. 606/S. 2007) which would have required utilities to operate their call centers in New York State and their service area. The bill offered three justifications. The governor disagreed with all three. First, the bill argued that local call center workers would better understand local conditions. The governor

noted that such service areas are very large and workers would not be familiar with conditions areawide. Second, the bill asserted that Center employees in an area would be more responsive. The Governor countered that there was no evidence to support that claim and that there are already in place standards for customer service. Thirdly, the bill said that call center jobs will be saved. The governor disagreed, stating that a utility that faced with the burden of complying with this bill might opt for a highly automated call center, such as one using voice-activated response units, instead of live workers. In 2009, Governor Paterson also vetoed A.251A/S.2289A which would have created a regional commercialization technology fund in the NYS Foundation for Science, Technology and Innovation. He was primarily concerned with the cost of the fund. He pointed out initiatives already underway in NYS:

The Technology Transfer Incentive Program (TTIP), one of NYSTAR's major economic development programs, awards funds to institutions of higher education which work with industry to accelerate commercialization efforts.

Earlier in 2009, Governor Paterson appointed the Task Force on Industry-Higher Education Partnerships under the leadership of David Skorton, the President of Cornell University. One of the matters the Skorton Commission is investigating is the most effective means of "bridging the gap" from innovation to commercialization.

In February 2009, the State Financial Incentive Protection Act (A.4250) was introduced. It would have prevented state financial incentives from going to companies that outsource jobs outside the state. This bill was not enacted.

In August 2010, the Governor signed into law as Chapter 330 of the Laws of 2010 a bill that would require every gas and electric corporation furnishing utility service to provide call center service assistance to customers to address inquiries regarding customer financial responsibility, initiation or termination of service, requests for emergency services, required deposits or billing rate, receipt of meter and service orders, and company rates, regulations, policies, procedures, and practices. The bill would also prohibit closure or relocation of a call center to another area of New York or outside the State without notice and hearing before the State Public Service Commission.

A summary of state legislation restricting offshore outsourcing enacted from 2004 through 2010 may be found in the Appendix of this report.

### **Other States' Activities**

Like federal activity, the height of the anti-outsourcing legislative movement occurred at the state level during 2004 and 2005. During that time, numerous bills restricting outsourcing were introduced in state legislatures. Although most did not become law, a handful of them did, among the most notable being, New Jersey's S. 494.

The New Jersey law, which then-acting-Governor Richard J. Codey signed into law in July 2005, is considered to be one of the toughest anti-offshore outsourcing laws in the country. Essentially, S. 494, which applies to both the Executive and Legislative branches of government and independent state authorities (but excludes county, municipal and school district contracts), prohibits state service contracts from being performed abroad. Exemptions can be granted when it is certified that the services cannot be performed within the United States, or if application of the law would violate the terms of any grant, funding or financial assistance from the federal government.

Other states that have enacted anti-outsourcing legislation take a less comprehensive approach than New Jersey. For example, in some states such as Alabama, North Carolina and Tennessee, a "preference" approach has been applied. Alabama, for example, does not restrict or mandate state procurement decisions while Tennessee permits the Commissioner of Finance and Administration to create rules for giving a preference when awarding state data entry or call center services contracts for companies that use U.S. citizens or residents or persons authorized to work in the United States. North Carolina law now requires bid vendors to disclose where contracted work will be performed.

Today, state legislators continue to remain active in promoting anti-outsourcing legislation, although less so than several years ago. In 2007, pending legislation in an estimated 30 states addressed a number of outsourcing areas, including legislative authority over government contracting and grant programs, state involvement in international commitments, and privacy rights of state residents.

Regulation of outsourcing at the state level has not been limited to the legislative process. Since 2003, executive directives or orders were adopted in at least nine states. These restrictions range from mandates that establish a process for evaluating outsourcing proposals to various prohibitions on offshore performance of work.

## **VIII. Policy Recommendations**

### **A. Introduction**

The recommendations outlined below are for discussion purposes, and can serve as an agenda around which directions for action may be framed. The continued vitality of the information technology sector in the U.S. and New York State is crucial to economic growth, and is especially susceptible to developments surrounding offshoring trends and policies. The future of the increasingly global and intensely competitive IT industry rests on some difficult-to-predict factors, including: the evolution of semiconductor technology; the pace of adoption of new technologies; global demographics; changes in market conditions; and, patterns of international and domestic investment. Some of the factors impacting IT investment and IT industries that could increase offshore outsourcing are clearly uncontrollable by government action alone. Still, it is clear that strategic federal and state government policies can be influential in attracting both domestic and international IT investment, spurring innovative and world-class R&D, and preparing our workforce for the future. Such policies can serve to retain and invigorate globally competitive IT industries and workers, and forestall IT offshore outsourcing.

An important distinction must be made between the forces influencing location decisions of IT manufacturers and IT service providers. IT manufacturers are relatively unconstrained by language barriers, or the need for face-to-face interaction. However, because major IT manufacturing industries, such as the semiconductor industry, are highly capital intensive, but not labor intensive, labor cost advantages enjoyed by low-wage countries are relatively less significant. At the same time, because these firms depend on intensive research to remain competitive, initiatives such as New York's major investment in Centers of Excellence focusing on information technology-related research provide an important location advantage to the state.

Decisions to locate IT service businesses are more influenced by labor costs because these costs represent a larger share of total operating costs for these companies. However, the need for effective language skills or face-to-face interaction can outweigh the labor cost savings available at some offshore locations.

The 2006 GAO study cited earlier in this report summarized the keys for the United States to successfully compete in the global information technology manufacturing (semiconductors) and services (software) sectors. It noted: "The ability of the United States to compete depends on research and development investment, innovative academic environments attracting top quality students, and a competitive business environment. It will be important for U.S. businesses and policymakers to keep alert to technological changes and competitor countries' strategies while enhancing the elements of the innovation environment in the United States."

## **B. Considerations for State Action**

The State of New York should consider taking steps to build on these strengths. Some of the most critical include:

Education and Workforce Training Policies:

- Expand awareness of employers about available workforce training resources in order to enable them to capitalize on resources that can strengthen the human capital of their present and potential workforce. This will in turn make them more competitive in intra- and international recruitment efforts.
- Continue improvement of the K-12 education system with increased emphasis on and investment in science, technology, engineering and math (STEM) education at all grade levels.
- Encourage development of additional information technology-related research and education initiatives at universities in the State, including SUNY and private university science and engineering programs. Examples are New York's commitments to semiconductor research at the University at Albany, the State's support of the SUNY system, and private university participation in the Semiconductor Focus Center Research Program, which is co-sponsored by the Defense Department and industry.
- Support initiatives like Tech Valley High, the innovative mathematics, science, and technology oriented public high school which opened in 2007 in the Capital Region. It is unique in several respects: it is not under a single local school board but is a consortium governed by all boards in the area; it employs a project-based learning curriculum, and is closely integrated with the businesses that form the core of technology development in the area. This model school has received assistance from the New Technology Foundation, supported by Microsoft founder Bill Gates.
- Encourage collaboration between IT companies and educational institutions to ensure that students are trained in technology skills currently in demand and those likely to be in demand in the future.
- Inculcate IT professionals with appropriate "soft skills" to complement their technology skills.

For its part, NYSDOL should identify needed data that can be collected and shared among state agencies and entities to enhance the information that can support the development of IT industries and occupations in the state. A data sharing consortium among all state partners should be established for this purpose. In interactions with its federal partners, the Department should utilize the legislatively mandated Workforce Information Council and other associations (e.g., National Association of State Workforce Agencies, National Employment Law Program, labor unions, professional

associations, business organizations and advocacy groups) to identify and promote the collection of data, information and research that can foster this end.

#### Tax and Economic Development Policies:

- Pursue beneficial tax policies to bolster New York's businesses' global competitiveness that reflect the cost and capital intensity of the Information Technology industry.
- Actively engage in efforts to attract targeted domestic and international investment in key high technology sectors such as IT, and build on insourcing and backshoring trends.
- Ensure meaningful economic development by adopting only those policies and programs that are effective, accountable and transparent vehicles for job creation and retention and that provide a positive return on the state's investment.
- Examples of such policies might include:

Favorable tax treatment (accelerated depreciation and expensing, sales tax exemptions, and property tax relief) for machinery and equipment used in IT manufacturing and plant development/expansion;

State Research and Development (R&D) tax credits to parallel federal credits;

Expedited permitting processes for IT manufacturing projects to reflect the rapid product development and production cycles of this industry; and

Subsidies for the creation of quality IT jobs that support families and local economies and for incumbent worker training in new technologies.

### **C. Considerations for Federal Action**

While New York State should continue its innovative economic and workforce development efforts to attract and retain IT investment and employment, the State also needs to advocate for essential federal action to improve the nation's global competitiveness and leadership in IT. Some of the specific steps that should be taken at the federal level to build a coordinated approach to attracting and retaining high technology manufacturing in the U.S. include:

#### Tax Policy -- Expanding a Permanent R&D Tax Credit, Incentivizing Manufacturing and Other Changes for IT:

- Congressional action to expand and make permanent the R&D tax credit and enact federal tax policies relevant to IT sectors would advance national leadership in industrial and technological innovation. Technology industry experts, such as the Semiconductor Industry Association (SIA), have urged that legislation be enacted to enhance and make permanent the R&D tax credit, especially since the existing credit was set to expire at the end of 2007. The existing temporary R&D tax credit

in the U.S., first enacted in 1981 and extended 13 times since then, is insufficient and unreliable for IT investment planning purposes, particularly in light of the intensely competitive investment incentives offered by other nations. Investment in R&D represents a significant portion of business costs for IT firms. Such R&D is critical to commercializing new technologies for a range of industrial, defense and consumer applications.

- Federal tax policy must also address the global context for comparative taxes and incentives if IT manufacturing is to remain in the U.S. According to the SIA, it costs \$1 billion more to build and operate a chip factory in the U.S. than in other countries. The corporate tax rate of 35 percent in the U.S. compares most unfavorably to the generous 5-10 year tax holidays, grants, and incentives currently offered to chip fabricating firms by Ireland, Israel, Malaysia, and India. In addition to rate reduction, this cost gap could be addressed by full expensing of chip factory costs in year one by enacting provisions providing accelerated depreciation for industry investments, and by investment tax credits and other measures listed below.
- Provide incentives for expanding broadband resources.

Government Research -- Investing in R&D by universities and national labs:

- Ongoing government support for IT research is crucial for creating the technological advances and new applications that bolster global competitiveness and productivity gains. Federal funding support for such academic research should continue to encourage close collaboration with IT manufacturers and public universities through federal-private match funding, increasing National Science Foundation resources, and support for nanomanufacturing.

Trade Development -- Continuing to expand global market opportunities through balanced and fair trade policies that attract international investment and expand domestic industries and jobs while raising living standards and working conditions abroad:

- Demand for IT products and services are growing appreciably in markets outside of the U.S. Global IT markets are highly competitive, and increasingly interdependent and integrated. Given this context, opening markets to U.S. goods and services will be vital to the IT manufacturing and services sectors. Yet at the same time effective safeguards must be provided to ensure that such globalization does not work to the detriment of American workers nor reinforce unfair labor competition due to inadequate wages and working conditions that may exist in some other nations.
- While IT industry leaders generally support the trade liberalization agenda fostered by the World Trade Organization (WTO) in the Doha Development Agenda, they also support maintaining adequate responses to unfair market practices on the part

of other nations. Attention is warranted in the areas of intellectual property protection, labor conditions, and environmental standards.

Workforce, Education and Immigration Policies -- Training and attracting the best and brightest to maintain and enhance excellence in this nation's IT industry and its occupations:

- Education and training of New York's and the nation's present and emerging workforce are essential to the continuing development of a viable information technology industry. Global leadership in IT research, development, manufacturing and services requires that a coordinated education, economic development and workforce development strategy be employed to ensure that such leadership is a reality in the twenty-first century environment. This strategy must be multi-faceted, focusing on both short-term needs and long term development.
- Expansion of Trade Adjustment Assistance funding was an essential part of the American Recovery and Reinvestment Act of 2009, and such efforts should continue to be enhanced beyond the federal stimulus. Ensuring adjustment assistance for workers, firms and communities is vital when global competition moves jobs overseas, leaving workers, firms and communities negatively affected by such dislocations. Funding and training opportunities need to support strategic realignment for employees, firms and communities. This will ensure relevance to market and employment opportunities and address the needs of firms and displaced workers. NYSDOL has identified high-wage, high-demand occupations and industries in each of the state's labor market areas: many are IT related. These should provide the foci for regional training and placement efforts by local Workforce Investment Boards, post-secondary education entities, and regional economic development and training consortia.
- Coordinate the K-12 educational system with the needs for the twenty-first century workforce, with an intensified focus on science and math. Articulate educational policy with workforce policy by integrating career education within the curriculum, and capitalizing on such initiatives as NYSDOL's "Educator Academy" for teachers and the CareerZone online tool for youth which contains a STEM (Science, Engineering, Technical and Math) component.
- Provide encouragement and incentives for the expanding pool of military, "second career" workers and retirees with the requisite skills to remain in the labor force. Utilize resources such as NYSDOL's skills transferability assessment tools (e.g., O\*Net, JobZone) to identify displaced workers with the capacity to readily move into IT careers.

Data Collection Policies – The Industrial Performance Center work group at the Massachusetts Institute of Technology found that existing federal data “for characterizing and measuring services offshoring have severe limitations.” They made the following recommendations regarding improvements in data collection:

- Collect more detail on international import and export trade in services. The U.S. Bureau of Economic Analysis (BEA) should collect more detail on services that are traded internationally.
- Collect more detail on domestic trade in services. The U.S. Census Bureau should accelerate its efforts to collect more detailed statistics on services traded within the U. S.
- Collect more detail and publish time series data on employment by occupation. The Bureau of Labor Statistics should publish consistent time series on employment by occupation from the Occupational Employment Statistics (OES) program. If possible, these data should be published by industry, at the national, state, and metropolitan levels. Time series data will allow policy-makers to track employment trends in the occupations most vulnerable to job loss from services offshoring. In addition, the BEA should collect data on more occupational categories in its surveys on the activities of U.S.-based multinational firms.
- Archive and provide access to more micro-data resources. Steps should be taken to extract as much information as possible from the data that is currently collected by government programs.
- Accelerate research that combines quantitative and qualitative research methods. An interdisciplinary, collaborative approach is needed to combine insights from data collected by government programs with insights from researcher-generated surveys and field interviews.

In addition to the above policy prescriptions, we recommend:

- Employers should be required to report on offshoring activity to the Federal government.
- For its part, NYSDOL should identify needed data that can be collected and shared among state agencies and entities to enhance the information that can support the development of IT industries and occupations in the state. A data sharing consortium among all state partners should be established for this purpose. In interactions with its federal partners, the Department should utilize the legislatively mandated Workforce Information Council and other associations (e.g., National Association of State Workforce Agencies, National Employment Law Program, labor unions, professional associations, business organizations and advocacy groups) to identify and promote the collection of data, information and research that can foster this end.

- Expanded information should be gathered about Foreign Direct Investment (FDI) at the state level, including greater detail by industry sector, with information on employment, country of origin for FDI, and dollar value.
- Unlike the present, there are times when the labor supply for IT occupations is extremely tight. In such cases, and as a last resort, the H-1B Visa high skill guest worker program could be relied upon to fill urgent needs for workers on a limited basis. According to Ron Hira of the Rochester Institute of Technology, three principal flaws characterize the program at present: no labor market test, no prevailing wage requirements, and deficient oversight. He recommends policy changes to ensure:
  - U.S. workers must not be displaced by H-1B workers,
  - Wages paid to H-1B workers are fair,
  - Adequate safeguards exist in the workplaces of H1-B workers to protect them against injury and illness.

Various options for federal Comprehensive Immigration Reform (CIR) are being considered, including suggestions for H-1B visas and investor visas. Some CIR proposals include provisions on the U.S. economy and workforce that pertain to economic development objectives, such as attraction of additional FDI through permanent reauthorization and expansion of EB-5 investor visas, and recruitment of specialized international job-producing professionals through a new category of visa for venture capitalists seeking a founder's visa. Some proposals include reforming and tightening provisions for H1-B visas for international workers and professionals with specialized skills.

## **D. Summary of Policy Options from the Literature**

A review of more than 370 articles and reports discussing the various facets of the offshore outsourcing of information technology jobs yielded a range of possible policy options for consideration. Many of these were already addressed earlier in this section. Approximately one-third of the recommendations suggested legislation aimed at preventing state and federal funds from going to companies doing work overseas, either directly or through subcontractors. Articles referenced more than 40 states with proposed legislation (see Section VII on legislation and the appendix for legislative background). These proposals could be categorized into three broad groups:

- The largest group included a variety of suggestions to strengthen the competitiveness of the U.S. IT industry and its workforce in general and to encourage new research and development in the IT sector.
- The second group includes suggestions to minimize the economic loss for workers whose jobs were moved offshore.
- The third group focused on suggestions that were intended to protect industry and workers in this country by preventing offshoring of work.

Products and services developed in the United States, over time, mature and become standardized. At this point, they can be replicated or carried out using workers in lower wage countries. To strengthen the competitiveness of the nation's IT sector, analysts often argued that in an ever-changing world economy, our best bet for survival rests upon continuously creating new IT products and services. There was a general consensus that this country's competitive advantage rests in the higher-end functions of development and initial creation. New jobs would be concentrated in this research and development industry and the entrepreneurship that comes with innovation, including associated manufacturing jobs and related service occupations.

To bolster the nation's competitiveness, various sources consulted identified the need to:

- Increase Federal spending on university research and development in the IT sector. Some recommendations were as high as an additional \$10 billion per year. Usually these recommendations included changing or expanding the R&D tax credit.
- Expand efforts to attract international and domestic investment in the IT sector and to take advantage of insourcing and backshoring trends on the part of multinational corporations. Targeting would focus on projects with the greatest potential for job creation, R&D innovation and global competitiveness. The nanotechnology cluster hub at UAlbany and the Global Foundries project in Saratoga are two notable successes in this arena.

- Encourage and incentivize the nation’s higher education system to attract, develop and nurture students, at both undergraduate and graduate levels, so that they can fully participate, direct and lead the development of our information technology industry in the coming years. This is particularly feasible in New York State, where a strong higher education system—both public and private—provides the infrastructure for this to occur. Scholarship and grant support, coupled with cooperative business and educational research endeavors, can attract and retain the talent essential for the state’s IT industry to flourish. The state must be prepared to be a magnet for top talent in this field, and to do so must encourage the “creative economy” Richard Florida and others have identified as a prerequisite for recruiting the educational, cultural, intellectual resources for this to occur. New York is a net exporter of its higher education product: while students are attracted from both state and nation, as well as internationally, many leave following their formal education for other regions deemed more innovative. Reversing this talent hemorrhage is essential if New York is to assume its place as an IT leader in the global economy.
- Emphasize science and math in our K-12 education system and its application to career planning and preparation for lifelong learning for the decades ahead.
- Develop a national information technology strategy to accelerate the transformation to a digital economy including the deployment of broadband or high-speed Internet service nationwide. New York has energetically moved in this direction with the recent strategy developed by the New York State Council for Universal Broadband Movement convened by Governor David Paterson. The goal of this initiative is a holistic approach to “develop a comprehensive and balanced mix of broadband infrastructure expansion and effective community outreach programs to stimulate demand, promote digital literacy, and educate disadvantaged, disenfranchised and uninformed populations for sustained adoption.” Aided by the use of stimulus funding from the ARRA, this effort promises to provide one of the bases necessary to sustain IT industry and occupational growth in our state.

Some parties advocate for measures to encourage businesses to maintain their domestic workforce levels and to discourage the growth of offshoring. Among these suggestions are changing legislation to remove incentives for business’ relocation of jobs overseas such as reducing tax benefits for overseas operations of multi-national corporations (e.g., requiring firms which offshore work to pay a tax equal to the tax that would have been due if the work had been done domestically, such as is in effect in countries like India and Taiwan; provisions similar to those in effect in the European Union which prohibit the transfer of personal information out of the European Union; and laws preventing the importing of foreign IT workers at substantially less money to replace American workers in the same jobs). Other suggested approaches include:

- Pursuing policies that promote America’s business competitiveness including reducing the costs of doing business in the United States and promoting open trade policy.

- Expanding federal programs that support early-stage company financing.
- Enforcing global trade rules protecting intellectual property against product and service piracy.
- Creating a policy to prevent currency manipulation with agreement among G-8 and Asian countries to abide by market-determined exchange rates.
- Ending tax loopholes that encourage companies to reincorporate in offshore tax havens.
- Preventing abuses of skilled worker L-1 and H-1B visa programs.
- Offering tax incentives to keep work onshore.
- Requiring future trade agreements to include labor, environmental, worker safety or other baselines to reduce foreign markets' cost advantages.
- Banning companies from access to government contracts if they have moved operations offshore within a specified number of years.
- Supporting or encouraging unionization of the technology workforce.
- Requiring businesses to notify U.S. consumers before sending personal information overseas.
- Developing policies which prevent or strongly regulate the transmission of financial, medical, or other information covered by domestic privacy protections to offshore entities.

In order to minimize the economic hardship facing workers displaced by outsourcing, policy options were often coupled with an acknowledgement that there are winners and losers as globalization and outsourcing occur. While new jobs are created in some sectors, temporary protection for those negatively impacted would be essential. This is recognized in the significant expansion of Trade Adjustment Assistance for workers, firms and communities in ARRA. Suggestions cited in numerous articles include:

- Retraining initiatives for workers whose jobs will be moved overseas.
- Require companies to provide at least three months advance notice to workers losing their jobs due to offshoring.
- Strengthening the income support programs to provide expanded coverage for workers and their dependents affected by offshoring while they are in training and transition to new occupations.

The suggestions outlined above present a wide-ranging set of policy options which could be, or in the case of TAA expansion, have been, implemented at national or state levels (or both) to minimize the effects of the offshore outsourcing of information technology jobs. Many emphasize efforts to make the current workforce and IT industry more competitive through increasing workforce skills and fostering creativity, and innovation, and improving the business climate for industry. In addition, most proposals include some suggestions for giving workers tools to better cope with economic change and temporary relief for those whose jobs are affected by offshoring. In order to adopt an effective, holistic approach to offshoring and the challenges it creates for the national infrastructure of the IT industry and its workforce, it is clear that a coordinated strategy of national, regional and state/local action is necessary.

## **IX. Summary**

In the past few years, many companies have determined that they can reduce their costs significantly through offshoring—moving IT jobs to lower-wage locations. Plummeting telecommunications costs and the digitization of some paper-based business processes has enabled companies to leverage lower foreign labor costs as many IT-service jobs and back-office functions may now be performed remotely. Data entry, transaction processing, and call-center customer support have been the obvious candidates, but even some high-skill jobs such as software development have migrated to low-wage countries. In the long run, offshoring activity will likely continue to increase.

The general public has only recently focused on the issue of offshore outsourcing and this awareness has sparked intense debate on the benefits and costs of this business practice on the U.S. economy. Public opinion has been polarized with those who favor allowing market forces to determine where business activities take place arguing that offshore outsourcing can be good for businesses and, ultimately, good for the nation – the benefits far outweigh the costs. Opponents contend that high-paying, high-skill jobs are being lost at an alarming rate, reducing the employment opportunities for the U.S. labor force and paving the way for the possibility that the U.S. could lose its position as the most technically advanced and powerful economy in the world.

The policy options on both sides of the issue were culled from an extensive literature review on offshoring. Those favoring policies that allow companies to engage in offshore outsourcing reason that it is necessary and beneficial and that public policy should focus on enhancing the competitiveness of U. S. locations for IT manufacturing, helping the workforce become more competitive, stimulating scientific and technological development, and assisting workers displaced by offshoring in returning to productive employment.

Those opposed suggest regulating businesses and government contracts involved in offshore outsourcing. Some suggest enacting tax incentives for firms that maintain their domestic workforces or prohibiting the awarding of government contracts to firms that move operations offshore. Numerous state legislative proposals introduced over the past few years would restrict state governments from purchasing goods or services from overseas companies or U.S. firms that offshore the work. Thus far, only a handful of states have enacted even modest proposals. Most lawmakers have been appropriately wary of encroaching on private sector decision making related to global business operations, expressing concerns about justification, enforcement feasibility and retaliation risk from international investors. Beyond these arguments, restrictive policies ignore the reality that manufacturers and service providers operate in a global environment today, and that their products and services are provided from locations around the world. Restricting purchases to companies that produce products or provide services from locations entirely in the United States is not feasible.

Intensifying global competition and opportunity are facing New York State's workers, companies, technology researchers, entrepreneurs and students. Given this context, and the State's tremendous assets and attributes, it is critically important that we in New York continually innovate, adapt and excel in order to gain competitive advantage in the irreversibly global economy.

Most observers agree that resorting to protectionist measures would be counterproductive. Instead, designing and implementing initiatives to help workers and firms adapt to the global marketplace is the better path. The policy recommendations for federal and state action address factors essential to creating an innovation economy in New York, one that will build on the State's impressive R&D and higher education resources, generate IT and other technology jobs, and enhance the State's standing as the world class location of choice for creative industries of the future.

## **X. Research Methods**

Staff from NYSDOL and ESD undertook a series of activities to compile this report. More than 370 offshoring-related reports and articles were initially reviewed, the most useful of which are listed in the references section of this report. Reviewers summarized pertinent details of each publication including: basic ideas and conclusions; benefits/drawbacks of offshoring (if any); estimates of jobs already offshored and to what country (if any); predictions of future offshoring (if any); and, policy recommendations (if any). Staff also reviewed proposed offshoring legislation from more than 40 other states and the U.S. Congress.

A conference call was held with John McCarthy, Vice-President at Forrester Research and the author of a major November 2002 report that estimated the number of jobs being moved offshore through 2015. In that session, McCarthy described the following: major assumptions behind Forrester's estimates, its research methodology, how its estimates of outsourced offshore jobs compared with those from other researchers, and the offshoring practice in general.

On January 7, 2005, an offshoring fact-finding forum was held in Kingston, New York. A variety of companies, unions, and business groups were invited to participate in this session, which allowed interested stakeholders an opportunity to provide information on issues relating to the offshore outsourcing of information technology (IT) jobs and its impact on New York State's labor market.

The "Digital Economy 2003" report, prepared by the U.S. Department of Commerce's Economics and Statistics Administration, was consulted to identify specific IT-producing industries and IT-related occupations. A 2003 study from the University of California-Berkeley, which identified industries and job titles potentially affected by offshore outsourcing, was also consulted. These industry and occupational lists were then merged with various data sets from the New York State Department of Labor including the Occupation Employment Statistics survey and the Quarterly Census of Employment and Wages program to prepare estimates of the number of New York State's information technology-related jobs at risk to offshoring.

In addition, a report titled "Summary of States with New/Proposed Laws Restricting Outsourcing" from the National Foundation for American Policy was consulted to develop a list of proposed federal and state legislation. This information is presented in the appendix to this report.

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## APPENDIX

### State Laws Enacted on Offshore Outsourcing – 2003 - 2007

*(Note: The source for all material in this part of the appendix comes from the National Foundation for American Policy. Legislative texts are on the NFAP web site—[www.nfap.net](http://www.nfap.net).)*

#### State Legislation: 2003-2004

When the National Foundation for America Policy released its first study on global sourcing in December 2003, bills had been introduced on this topic in only four states – North Carolina, Indiana, New Jersey and Michigan. By the end of 2004, state legislators had introduced more than 200 such bills in more than 40 states. None of the anti-outsourcing bills introduced in 2003 became law that year. However, five state bills became law in 2004 – in Alabama, Colorado, Indiana, North Carolina and Tennessee:

- Alabama - Senate Joint Resolution 63 (public law 2004-234; introduced April 8, 2004). A resolution that encouraged state and local entities to use Alabama-based professional services but does not restrict or place mandates on procurement decisions;
- Colorado – H.B. 1373 (signed by Governor June 4, 2004). The law provides that agencies can contract for personal services performed outside the United States if it is clearly demonstrated that there will be no reduction in the quality of services offered and contracts contain confidentiality and right to privacy safeguards;
- Indiana – H.B. 1080 (signed by Governor 3/17/04). The law provides price preferences between 1% and 5% for Indiana companies in awarding state contracts;
- North Carolina – H.B. 1414 (signed by Governor July 21, 2004). The law mandates a preference for North Carolina or U.S. products and services within bounds of federal law “provided, however, that in giving such preference no sacrifice or loss in price or quality shall be permitted”;
- Tennessee – S.B. 2344 (signed by Governor 5/10/04). The law requires the commissioner of finance and administration to authorize, through regulation, “a preference in the evaluation of proposals for state contracts requiring the performance of data entry and/or call center services for vendors for whom such services will be solely provided by citizens of the United States who reside within the United States.”

#### State Legislation: 2005

Over the course of the 2005-06 sessions, 190 bills were introduced in state legislatures to restrict or report on global sourcing, according to the Economic Growth and American Jobs Coalition. In 2005, 7 bills that restricted global sourcing in some manner became law, while three more laws were passed that established commissions or studies. The bills were:

- California – A.B. 1741 prohibits voter information from being sent outside the United States. Signed by Governor on July 25, 2005;
- Colorado – H.B. 1307 provides an in-state preference for agricultural products and prohibits Governor from binding state on future trade agreements. Signed by Governor on June 7, 2005;
- Illinois – S. 1723 provides a preference of items manufactured in the United States for procurement purposes. Signed by Governor on August 10, 2005;
- Maine – L.D. 47 requires “the necessity of collecting information on the State’s contracting and outsourcing practices.” Signed by Governor May 12, 2005;
- Maryland – H.B. 514 prohibits the Governor from binding state on future trade agreements. Legislature voted to override Governor’s veto of bill on April 11, 2005;
- New Jersey – S. 494 prohibits state contract work from being performed outside the United States. Signed by Governor on May 5, 2005;
- New Jersey – A.R. 184 The resolution creates the "Outsourcing and Offshoring Commission" to, among other things, “study ways to reduce outsourcing and off-shoring in the State.” Resolution adopted July 6, 2005;
- North Carolina – H.B. 800 requires a vendor submitting a bid to disclose “where services will be performed under the contract,” including performance outside the United States. Signed by Governor July 7, 2005;
- North Dakota – H. 1091 provides an in-state preference on equal bids on state contracts. Signed by Governor on March 30, 2005; and,
- Washington – C.R. 8407 establishes a far-reaching joint task force for the study of offshore outsourcing. Adopted on April 24, 2005.

In 2005, the Governor of Indiana issued an executive order establishing a “Buy Indiana” presumption.

**State Legislation: 2006**

In 2006, only two bills related to offshore outsourcing became law and both focused on state commitments related to international trade agreements:

- Vermont – H.B. 109 established a commission for conducting annual assessments on the impact of international trade pacts;
- Rhode Island - H. 6885/S. 2331 states the General Assembly must enact legislation to explicitly authorize the governor to commit the state’s procurement rules to be bound by a particular international trade agreement; and,

- Colorado - The Governor vetoed legislation (H.B. 1010) similar to the bill that passed in Rhode Island.

### **State Legislation: 2007**

As of April 10, 2007, a total of 41 bills had been introduced at the state level to restrict offshore outsourcing.

States with bills that would have restricted or prohibited government agencies from purchasing goods or services from outside the United States included Arizona (H.B. 2420, H.B. 2421 and H.B. 2614), Colorado (S.B. 228) Connecticut (H.B. 1278, H.B. 5323, H.B. 5441, H.B. 7032 and H.B. 7147), Hawaii (H.B. 32), Illinois (H.B. 568 and S.B. 1255), Michigan (H.B. 4100) Missouri (H.B. 692), Nebraska (L.B. 87), New Hampshire (H.B. 129, H.B. 833), New York (A. 645), Oregon (H.B. 2831 and H.B. 2903), Pennsylvania (H.B. 389, H.B. 390 and H.B. 391), Vermont (H.B. 272) and Virginia (H.B. 1719 and S.B. 861).

States with bills that would have restricted call center operations included Georgia (S.B. 214), Massachusetts (H.B. 3341), Minnesota (H.F. 116 and S.F. 162), Nevada (A.B. 422), North Carolina (S.B. 514), Oklahoma (H.B. 1292 and H.B. 1533), Oregon (H.B. 2836) and West Virginia (H.B. 2296).

States that introduced legislation to restrict state officials or the federal government from binding the state to government procurement rules in an international trade agreement included Alabama (H.B. 454), Arizona (H.B. 2420), Hawaii (H.B. 30 and H.B. 31), Minnesota (H.F. 1199 and S.F. 973), Nevada (A.B. 470), New York (A.B. 3321) and Oregon (H.B. 3340).

States that established various advisory bodies to monitor federal trade activity or express displeasure with the Fast Track Authority or the World Trade Organization: Georgia (S.R. 124), Hawaii (S.C.R. 109), Massachusetts (H.B. 374), Michigan (S.B. 353), Minnesota (S.F. 2060), Nevada (A.J.R. 10), New Hampshire (S.B. 162), New York (A. 993) and Tennessee (H.B. 596).

### **State Legislation: 2008 - 2010**

The New Jersey legislature introduced on December 8 a bill (A.3516) which prohibits businesses that outsource jobs overseas from receiving state contracts or grants and prohibits the investment of state funds in such businesses. A Pennsylvania bill (HB 440) would require that all government contracts for services includes a provision that requires all services performed under the contract, or performed under any subcontract awarded under the contract, to be performed within the United States. Neither of these bills was enacted.

In August 2010, New York Governor David Paterson signed into law a bill amending the Public Service Law to require public utilities to offer certain call center services to customers and provide sufficient notice and hold hearings prior to closing existing call centers or relocating them to another area or outside of the State.

### **Executive Orders and Directives from Governors on Outsourcing**

- Alaska 08-05-04
- Florida: 04-45
- Indiana Executive Order - January 2005
- Indiana Executive Order News Release
- Michigan: 04-2, 04-3
- Minnesota
- Missouri 04-09
- New Jersey 9/9/04
- North Carolina 08-06-03, 06-01-04