

A Report by a Panel of the

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

for the U.S. Congress and the Bureau of Economic Analysis

OFF-SHORING:

*New Challenges and Opportunities in
an Expanding Global Economy*



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**OFF-SHORING:
NEW CHALLENGES AND OPPORTUNITIES
IN AN EXPANDING GLOBAL ECONOMY**

Panel

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OFF-SHORING: AN ELUSIVE PHENOMENON

The impact of shifting U.S. business operations to foreign countries on the nation's workforce and economy is not a new or unstudied issue. For decades, it has been central to the debate about the benefits and costs of economic growth and trade expansion. However, this debate has not produced consensus on the magnitude and significance of off-shoring, which occurs when companies contract out activities abroad, either to their own affiliates or to other firms.

The disparity of viewpoints stems from many factors, including the varied reliability and use of data, as well as the difficulty in directly measuring off-shoring and estimating its impacts. Federal agencies and others have tried to expand the range of data, but collection remains fragmentary and hampered by a lack of consensus about what needs to be measured.

The employment effects of off-shoring, especially job shifts within local labor markets, are critically important. The adverse impacts of these adjustments can be significant, and sometimes devastating, for the affected individuals, industries and communities. But it is unclear how much services off-shoring contributes to the seven to eight million jobs created or eliminated in the U.S. economy each quarter.

What distinguishes current concerns from past ones are perceptions that the services sector—particularly white collar, high-technology jobs—is at risk after years of being considered less vulnerable to off-shoring than the manufacturing sector. Beyond the immediate impact on current workers, extensive services off-shoring could weaken the United States' long-standing leadership role in scientific innovation and technological advances by siphoning off high-skilled science and engineering workers from the United States to emerging foreign competitors.

Simply put, shifting business operations to off-shore locations is an elusive and exceedingly complex phenomenon that is difficult to measure and estimate. Yet the need for a better understanding of this phenomenon is greater than ever. In 2005, Congress asked the National Academy of Public Administration to undertake a wide-ranging study of off-shoring and its impacts.

An Academy Panel, led by Academy Fellow and former U.S. Commissioner of Labor Statistics Janet Norwood, directed the study, which included key recommendations aimed at enhancing the U.S. position in a global economy and strengthening the data used to assess off-shoring, particularly in the services sector. The Panel's work resulted in three major reports released between January 2006 and February 2007:

- *Off-Shoring: An Elusive Phenomenon*
- *Off-Shoring: How Big Is It?*
- *Off-Shoring: What Are Its Effects?*

These reports can be accessed on the Academy's website at www.napawash.org.

This document highlights the results of all three reports. Appendix A contains the complete set of findings and recommendations issued as a result of the Academy Panel's work.





HOW MUCH OFF-SHORING OCCURS?

The Panel reviewed four industries that play increasingly vital roles in the American economy: pharmaceutical and medicine manufacturing; architectural and engineering services; computer systems design services; and business support services. These industries were selected because they continue to be a major source of U.S. employment growth and a spawning ground for innovation, efficiency and productivity. The Panel reviewed both industry and firm-level data from 1999 to 2003.

Findings

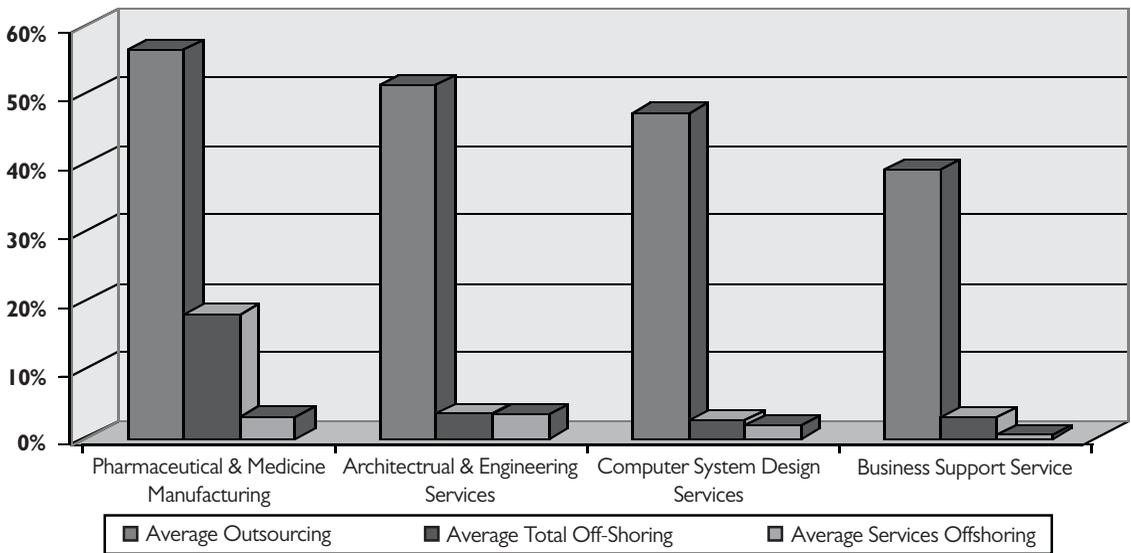
- **Services off-shoring has been much smaller than many popular perceptions suggest.** Off-shoring due to business restructuring—which occurs when firms replace domestically supplied services with imported services—is highly concentrated in a few firms, primarily multi-national corporations with business entities and operations in the United States and other foreign countries. Further, only a small number of multi-national parent corporations actually imported services—less than 20 percent of the approximately 3,600 multi-national corporations.

- **Off-shoring due to global expansion was more widespread than off-shoring due to business restructuring.** Global expansion off-shoring occurs when a multi-national corporation decides to expand services at foreign affiliates to meet foreign needs. From 1999 to 2003, the majority of multi-national corporations in the four industries studied expanded overseas operations faster than their domestic operations, while less than 20 percent imported any services.

- **U.S. businesses were 3 to 38 times more likely to outsource services to other firms than off-shore them.** This finding is important because it highlights the fact that *off-shoring* and *outsourcing* are vastly different, even though the terms are often used interchangeably. Outsourcing is a much more extensive phenomenon that occurs when firms contract out activities to other domestic firms.

Chart I shows that average outsourcing as a percent of inputs used far exceeds average off-shoring over the five-year period in each of the industries studied.

Chart I: Average Outsourcing and Off-Shoring for Multinational Corporations, 1999-2003



Source: Bureau of Economic Analysis

- **No consistent growth trends in off-shoring due to business restructuring have emerged.** From 1999 to 2003, rates of change varied substantially by industry, ranging from 35.4 percent to -9.5 percent, with a median rate of 4.6 percent for all U.S. industries. Manufacturing industries tended to have higher services off-shoring growth rates than services industries. Further, several services industries experienced a decline, including broadcasting and telecommunications, administrative and support services, and information and data processing.
- **Off-shoring has the potential to grow.** That potential stems from:

 1. the substantial amount of service activity currently outsourced to other domestic firms which could be off-shored in the future
 2. increased opportunities for off-shoring due to an increasingly integrated global economy



Numerous data gaps and quality issues impeded the Panel's ability to fully assess the extent of services off-shoring and its economic effects. As a result, services off-shoring may be underestimated, but not to the extent that it would reverse the Panel's findings or change its recommendations.

Recommendations

To better understand off-shoring and its effects, the Panel recommended steps to strengthen data quality and fill data gaps. The recommendations focus on three core areas:

- 1. Collect and publish more consistent and detailed Bureau of Economic Analysis data on the types of services imported.**
- 2. Restructure the current Bureau of Labor Statistics survey to estimate occupational changes over time.**
- 3. Develop consistent business identifiers to link information collected from different business organization levels by the Bureau of Economic Analysis, Bureau of Labor Statistics and Census Bureau.**

These recommendations were reinforced by a recent report by a working group of the Industrial Performance Center at the Massachusetts Institute of Technology. That group recommended that federal statistical agencies collect more detailed information on international trade in services, publish time series data on employment by occupation, and provide more access to micro-level data.

Appendix A lists additional steps recommended by the Panel to address data issues. The Panel strongly believes that immediate investments to improve the data are needed so that the extent and impact of off-shoring can be better understood before it becomes more widespread.





WHAT ARE THE EFFECTS OF OFF-SHORING?

How well has the U.S. labor market met the need for high-skilled labor? How has the market been affected by services off-shoring and expanding economic globalization? What are the major challenges and opportunities of a more globalized labor market? What are the implications for future services off-shoring? These are the questions that the Panel considered when looking at the U.S. position in the cutting-edge high-technology, science and engineering arena.

Employment changes are the most sensitive effects of off-shoring. These include both direct effects (the loss of jobs that are shifted off-shore) and indirect effects (subsequent job changes and losses that occur in other businesses and sectors as a result of the initial shift in operations). Current off-shoring levels may be small, but there can be significant adverse effects on the sectors, geographic regions and individuals directly impacted. Given the growth potential for services off-shoring, these adverse impacts could become more substantial over time.

Understanding the effects of off-shoring on the U.S. services sector is critical, as it represents a major source of innovation and technological advances that foster productivity improvements, economic growth and greater prosperity. Although this sector has been less susceptible to international competition and overseas migration, its position has been eroded.

Findings

- **Services off-shoring has had little economic impact on the nation's science and engineering labor market.** That market has been resilient in overcoming several severe economic shocks recently (e.g. the Y2K crisis, the dot.com boom bust, the 2001 recession) while still meeting the economy's increased demands for these high-skilled workers. In addition, the Panel found minimal employment effects for corporations that off-shored services. Net employment for all multi-national corporations fell by 7 percent over the period studied. While the decline was even greater (10.1 percent) for those that off-shored services, this result varied by industry and not all of the difference was due to off-shoring. In addition, the average rate of job creation and elimination (job volatility) was lower for those corporations that off-shored services. Highly skilled temporary foreign workers have also helped to meet the growing domestic demand for science and engineering labor, but data limitations preclude identifying how many are actually employed in the U.S. in any year.



- **The American educational system is producing skilled science and engineering graduates at a rate that meets current U.S. needs.** However, the long-term picture is mixed. The proportion of U.S. undergraduate enrollments and degrees awarded in these increasingly competitive fields has remained constant over the last two decades, while degrees awarded by foreign universities in these fields have surged, especially in Asian countries. Although the proportion of U.S. undergraduate science and engineering degrees awarded to foreign students has declined, the reverse is true at the graduate level. The United States has become increasingly dependent upon foreign graduate students in many of these disciplines and the intensified world competition for these students presents new challenges.
- **Economic globalization—the emergence of individual national economies into a more highly integrated network—is likely to increase both services off-shoring and the competition for high-skilled workers.** Against the backdrop of economic globalization is a declining U.S. share of scientific knowledge and technical expertise. The ability of the United States to respond, especially by leveraging new knowledge and transforming it into innovative and marketable products and services, will determine not only future services off-shoring activities but also prospects for economic growth and continued prosperity. High-skilled temporary foreign workers have helped meet the demand for science and engineering labor in the United States and reduce the need to off-shore high-technology services. But increased competition from economic globalization will challenge that role in the future.

Recommendations

To remain competitive, the United States must attract, educate and retain the best and brightest science and engineering workers and students from both domestic and foreign sources. The Panel made several recommendations to do so.

- **The United States should remove legislative and administrative barriers to the flow of high-skilled science and engineering workers into the country, and take steps to ensure that the workers have the opportunity to continue to work here.**
- **U.S. schools and universities should strengthen their capacity to produce science and engineering graduates who can compete in the global labor market.** More effective preparation in mathematic and quantitative skills and scientific reasoning can encourage more students to study in these fields and enable greater achievements, as well. **In addition, the United States should reexamine policies that limit or impose barriers on foreign students who seek a science and engineering education in the United States, and who wish to remain in the country once their education is completed.** Eliminating these barriers would help the United States improve its position in the global labor market.



FINAL THOUGHTS

Expanding economic globalization creates challenges for the United States to retain its preeminent position as a world leader in scientific and technological innovation. Yet these challenges, substantial as they are, also present opportunities. To effectively capitalize on these opportunities, the nation must:

- Effectively use its structural, institutional and economic advantages to foster entrepreneurial activity and reward innovation.
- Sustain open and flexible product and labor markets.
- Ensure access to competitive capital markets with substantial venture financing.
- Strengthen support for an educational system with even better links between new science and technology graduates and businesses that need their skills.
- Improve its adjustment assistance, unemployment insurance, and retraining programs for displaced workers, including service workers, to respond to the challenges presented by continued economic globalization.

The nation's success also will depend on its ability to attract, train and retain high skilled science and engineering workers from all sources—both foreign and domestic. The United States should eliminate unnecessary barriers to entry for those workers and students with the skills needed to support its continued leadership role in a more integrated global economy.







APPENDIX A PANEL FINDINGS AND RECOMMENDATIONS

REPORT 1: *Off-shoring: An Elusive Phenomenon*

Findings

- Services off-shoring remains a complex and poorly understood phenomenon reflecting the diverse reasons businesses choose to do it and the different economic effects services off-shoring can produce.
- Employment effects are particularly difficult to estimate and must include both direct and indirect impacts.
- Previous studies provide no consensus on the extent and impact of services off-shoring in part because there is no commonly accepted definition of services off-shoring.
- Assessing the effects of specific firm decisions requires analyzing micro-level data, but most previous studies used industry-level data and none attempted to link micro-level BEA trade data with BLS employment data.
- Adopting a broad definition of off-shoring should avoid ambiguities created by the narrower definitions in many previous studies and becoming outmoded as conditions change over time.

Recommendations

- To simplify the discussion, the Panel recommended using three basic terms defined as follows:
 - ◆ Outsourcing—firms contracting out service and manufacturing activities to unaffiliated firms located either domestically or in foreign countries
 - ◆ Off-shoring—U.S. firms shifting service and manufacturing activities abroad to unaffiliated firms or their own affiliates
 - ◆ Off-shore outsourcing—a subset of both outsourcing and off-shoring in that it refers only to those service and manufacturing activities of U.S. companies performed in unaffiliated firms located abroad



REPORT 2: *Off-shoring: How Big Is It?*

Findings

Services Off-shoring from Business Restructuring

- The level of services off-shoring due to business restructuring among Multinational Corporation (MNC) parents in the industries reviewed has been quite small during the 1999 to 2003 period. The same is true at the aggregate level for comparable industry groups from 1998 to 2004.
- Services outsourcing to domestic firms has been substantially larger than services off-shoring for the industry groups examined and services off-shoring levels have remained quite small for most industry sectors during the 1998 to 2004 period.
- Outsourcing and total off-shoring have been substantially larger than services off-shoring for the MNC parents examined during the 1999 to 2003 period.
- The extent of outsourcing and services off-shoring varies substantially among the MNC parents and industries examined over the respective 1999 to 2003 and 1998 to 2004 time periods.
- There is little evidence of consistent growth in services off-shoring from business restructuring among MNC parents in the industries examined from 1999 to 2003. The same is true at the aggregate level for comparable industry groups from 1998 to 2004.
- MNC parents off-shoring services appear to be larger, account for disproportionate amounts of total sales and net income, and have higher sales per employee than MNC parents not off-shoring services in the same industries and sub-groups.

Services Off-shoring from Global Expansion

- Services off-shoring due to global expansion was more prevalent among MNC parents in the four industries examined during than services off-shoring due to business restructuring from 1999 to 2003.

Recommendations

Recommendations for Bureau of Economic Analysis

- BEA should implement its proposal to collect consistent levels of detail for affiliated and unaffiliated services imports and periodically review the collection to ensure that it is comprehensive and compatible with details on services contained in other economic data.
- BEA should assess the effectiveness and impact of the additional COS question and continue to seek ways to improve its survey of services importers.
- BEA should explore other available data, such as the economic census or benchmark I-O industry estimates, and estimation techniques to help allocate MNC sales and value added between services and other activities.



- BEA staff should work to remove affiliated imports from the “non-comparable” imports component within its I-O tables and link them more closely with the same type of unaffiliated services.
- BEA should reallocate priorities and, if necessary resources, to accelerate the processing of MNC data for those MNCs importing services.
- BEA should consider limited sampling of MNC service importers to test their ability to distinguish particular types of services imports for their own use rather than for sale to others.

Recommendation for the Statistical System

- BEA, BLS and Census should work together to develop and maintain a consistent set of identifiers for each level of organization within every consolidated business entity in the United States. This would include shared location data for various entities and consistent methodology for assigning industrial classifications to them.

Recommendations for Bureau of Labor Statistics

- BLS should develop additional sampling panels for its OES program to provide representation for multi-establishment firms at a national level and to support longitudinal analysis for single and multi-establishment firms.
- BLS should develop additional survey criteria to target firms or establishments likely to be off-shoring or outsourcing services in a supplement to its MLS program in 2007 and future years.
- BLS should provide OES data at a 3-digit level on its website, in addition to the 2- and 6-digit SOC levels already provided.



REPORT 3: *Off-shoring: What Are Its Effects?*

WHAT IS THE EFFECT OF SERVICES OFF-SHORING ON THE S&E LABOR MARKET?

Findings

- The U.S. S&E labor market weathered economic shocks during the early years of this decade, and continued to meet the growing demand for high skilled S&E workers, demonstrating its resilience and adaptability to change. This will become increasingly important in meeting challenges and opportunities in the globalized S&E labor market. Resilience and adaptability must not be taken for granted.
- Increased globalization of the S&E labor force appears irreversible. The U.S. must find ways to get out in front of these trends to maintain its competitiveness. Building, sustaining and growing S&E labor force capacity is key.
- To compete in the global S&E labor market, the U.S. must attract or produce the best and brightest high skilled workers wherever they may be—domestic or foreign. And, the U.S. must link with labor abroad to promote mutual economic opportunities (e.g., American-educated technicians working in foreign markets provide numerous economic opportunities for partnerships and cooperation).
- In the end, U.S. competitiveness depends on expanding an open economy that promotes innovation, entrepreneurship and productivity, necessary to employ the S&E workforce.

Recommendations

To improve our ability to respond to these new challenges and opportunities from expanding economic globalization, the Panel recommends that the President and Congress:

- Reduce legislative and administrative barriers to the flow of high skilled S&E workers to the United States.
- Reassess the effectiveness and applicability of current worker support programs relative to the challenges presented by the global economy.

WHAT IS THE EFFECT OF TEMPORARY FOREIGN WORKERS ON SERVICES OFF-SHORING?

Findings

- Current data deficiencies preclude identifying the number of H-1B and L-1 temporary workers actually employed in the United States in any given year and this basic information is critical to assessing the impact of these programs on the S&E labor market and the need for U.S. firms to off-shore services.



- The H-1B and L-1 visa programs clearly increase the domestic S&E labor force, and appear to have reduced the need to off-shore high tech services to meet specific skill needs, even though current data limitations preclude identifying the number of these workers actually employed in the U.S. at any given time.
- The administrative databases were not designed to provide reliable analytical information on S&E labor markets, and do not provide a firm basis for estimating the impact of these programs on the current S&E market.
- These administrative data do provide some proximate information on the general demographic characteristics of these beneficiaries.
 - ◆ The primary beneficiaries of H-1B and L-1 visa programs are workers from India and China, but many other countries contribute as well.
 - ◆ Most are younger than the domestic S&E workforce.
 - ◆ Contrary to popular belief, most do not hold PhDs or even graduate degrees for that matter.
 - ◆ A substantial majority of H-1B beneficiaries were already in the U.S. when they obtained their visa, either as a foreign student, a foreign temporary worker obtaining an extension for an expired visa, or in some other status.
 - ◆ They are not primarily computer programmers, but they do work in a variety of computer-related fields, as the programs intended.
- The average salaries for these workers appear to be less than those of white American males in the same occupation, but these differences may reflect differences in age, work experience, and the type of employer between these temporary and other workers.

Recommendations

Since these temporary high skilled foreign worker programs appear to have increased the supply of high-skilled workers in the U.S., obviating the need to off-shore high tech services, and this will become increasingly important as competition for these workers intensifies in a more globally integrated economy, the Panel recommends that:

- The President and Congress remove barriers to accepting high-skilled work in the United States and remaining in the United States to continue that work.
- The Department of Homeland Security improve its data systems to provide a more accurate accounting of the number of H-1B and L-1 temporary foreign workers actually employed in the U.S and address other unanswered key questions about them.



ARE U.S. UNIVERSITIES KEEPING PACE WITH THE DEMAND FOR S&E WORKERS?

Findings

- U.S. universities continue to meet much of U.S. business demands for high-skilled S&E workers. As such, they appear to be helping to reduce any need or incentive to off-shore high-tech services.
- Critical in meeting the demand for S&E labor is the reliance on foreign students attending American universities. Foreign students do not appear to be displacing large numbers of Americans who would otherwise seek S&E careers. And foreign students not remaining in the U.S. after graduation may create economic opportunities for U.S. industry.
- Although visa problems for foreign students after 9/11 appear to have abated, the U.S. cannot afford barriers that impede U.S. universities' ability to attract and train the best S&E students from either foreign or domestic sources in a more globalized S&E market. Student enrollments in S&E programs and subsequent career choices should reflect informed economic choices, not decisions constrained by legal, cultural or other considerations.
- Other economies and their higher education systems—especially India and China—are competing with American universities to supply S&E workforce needs in a more globally integrated market. Maintaining and enhancing qualitative differences for U.S. university S&E graduates relative to these emerging foreign graduates will be critical for sustaining any U.S. competitive advantage, since population size differences will ultimately determine relative quantitative production levels.

Recommendations

To improve the ability of the U.S. university system to respond to the challenges it faces from a more intensely competitive and increasingly globalized S&E labor market, the Panel recommends:

- The President and Congress reexamine policies that limit or impose barriers on foreign students who seek S&E education in the United States, and who wish to remain in the country once their education is completed.
- Universities strengthen their capacity to produce S&E graduates in a more competitive global labor market.
- The Department of Homeland Security modify existing administrative data systems and data elements collected to track the subsequent work and residency choices of graduating foreign students.



WHAT ARE THE EFFECTS OF FOREIGN DIRECT INVESTMENT ON U.S. EMPLOYMENT?

Findings

- U.S. affiliates of foreign MNCs have accounted for a growing number of U.S. jobs and increasing value added in both the manufacturing and services sectors over the last 24 years.
- Recent trends in U.S. affiliated trade in research, development and testing (RDT) services within foreign MNCs indicate a faster growth in net exports than similar affiliated trade between U.S. MNCs and their foreign affiliates, suggesting that these foreign MNCs view the U.S. as a leader in RDT services.

Recommendation

- Policymakers include contributions of “in-shoring” activity to the U.S. economy, specifically U.S. employment levels, in any comprehensive assessment of the economic effects of off-shoring.

ASSESSING THE EMPLOYMENT EFFECTS FROM SERVICES OFF-SHORING USING LINKED MICRO-DATA

Panel Statement

- Analysis of micro-level data and linking data among agencies to fully utilize existing information are essential for identifying occupations and workers both threatened and supported by the prospect of services off-shoring and economic globalization.
- Development of longitudinal micro-level data on detailed occupational employment can provide critical insights into the distributional employment effects of firms off-shoring services.
- The failure to obtain robust linkages with the best micro data available and the full and earnest support of the statistical agencies reinforces the recommendations in the Second Report:
 - ◆ “The Panel recommends that BEA, BLS and Census should work together to develop and maintain a consistent set of identifiers for each level of organization within every consolidated business entity in the United States. This would include shared location data for various entities and consistent methodology for assigning industrial classifications to them....
 - ◆ The Panel recommends that BLS should develop additional sampling panels for its OES program to provide representation for multi-establishment firms at a national level and to support longitudinal analysis for single and multi-establishment firms.”



Findings

- Aggregate net employment for MNC parents declined over the 1999-2003 period, but net employment for MNC parents that off-shored services declined more rapidly than for other MNC parents.
- This result varied by industry. For MNC parents in two of the industries examined, comparable results were obtained; for another, employment in MNCs off-shoring services fell less rapidly.
- In general, the average rates of job creation and job destruction were lower in the establishments of MNCs that off-shored services. This lower job volatility may reflect, in part, the size of the firms that engage in off-shoring.

Recommendation

- BLS and BEA work together to produce useful longitudinal data based on occupational employment and wage data from a redesigned OES survey linked to MNC financial and foreign trade data from BEA surveys. They should improve current administrative procedures, where necessary, to facilitate future work with these data by agency staff and independent researchers.





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