The Defense Sector: A Source of Strength for Philadelphia's Economy

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Can Services Sustain a Regional Economy?
This issue of the BUSINESS REVIEW contains articles by three Philadelphia Fed representatives to the Economic Development Task Force of the Philadelphia Past, Present, and Future project.

The first article spotlights the turnaround in Federal spending on national security programs. It attempts to present a coherent picture of how the Philadelphia region might incorporate defense industry considerations into its overall economic development planning. The second article takes on the broad theoretical question, which applies to any region, of the role that services can play in fostering and sustaining local economic vitality. Then, focusing on Philadelphia, it shows how employment has changed by sector in the city and the region, and it analyzes the local impact of growth in the service sector.

The aim of both articles is to improve the information available to policymakers and the public and to suggest courses of action for the upcoming period of industrial transition in the region.—J.J.M.

The Defense Sector: A Source of Strength for Philadelphia’s Economy

By John J. Mulhern*

To judge from the press coverage and the remarks by local officials, September 30, 1980—the day that the USS Saratoga sailed up the Delaware River and into the Naval Shipyard at the foot of Broad Street—was a great day for Philadelphia and its economy. And indeed it was. The Saratoga, and the two giant aircraft carriers that are scheduled to follow her into overhaul in 1983 and 1985, should give the local economy a perceptible boost.

But the carriers, for all their imposing size, may be less important as a direct source of employment and revenue than as a reminder of where defense industry overall fits into the regional economy. For Department of Defense outlays are an important part of the Federal presence in the region, and a part that could show considerable growth in the current decade. In fact, based on the Administration’s plans, they might represent the only areas of significant increase in Federal spending here over the next few years.

How much growth there will be in Defense outlays depends in part on how well the region’s Congressional delegation makes its case for jobs and contracts. It depends even more, however, on what the region has to offer and on how well the offering is marketed by industry and local government. In an era when defense is reemerging as a growth sector, the region that addresses it as an industrial development issue will be in position to reap the greatest economic benefits.

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DEFENSE ACTIVITY IN PERSPECTIVE

The Philadelphia area has a long history of defense business, dating back to colonial times. As the largest city in North America in the eighteenth century, second in size only to London in the English-speaking world, Philadelphia was a dominant commercial site. When the War for American Independence broke out, she came forward as not only the political hub but also the military-industrial center of a fledgling nation.

Philadelphia shipwrights built or converted several of the Continental Navy’s first ships, Philadelphia chandlers outfitted these ships, and Philadelphia sailors and marines manned these ships. Local arsenals cast their guns and shot, and their gunpowder was produced in factories along the Delaware. Livestock and produce for provisions were brought in from the area’s rich farmland, and cloth for uniforms and bandages was supplied by local mills. Philadelphia bankers helped finance these efforts.

The presence of industries that could support an army and a navy had a measurable influence on the course of that war and other American wars, and America’s struggles provided markets and growth for some of the region’s principal industries—shipbuilding, munitions, clothing and textiles, heavy equipment, and finance. The traces of this influence can be discerned throughout the history of the regional economy.  

In more recent times, Philadelphia was a major industrial supporter of American efforts during World War II and the Korean War. Records indicate that both of these conflicts generated heavy demand for the products of Philadelphia industry. After each period of industrial mobilization, however, demand for war material would fall off, the number of civilian and military personnel employed directly by the Federal government in defense jobs would shrink, and suppliers would have to retrench.

The Vietnam standoff also was followed by large manpower and spending cutbacks; but however serious their impact on the defense establishment overall, they left Philadelphia’s defense-industry infrastructure largely intact. And it appears that many of the region’s recently displaced defense-related jobs and incomes could be recouped during the present decade, giving a much-needed lift to the regional economy.

THE DEFENSE SECTOR: HOW LARGE HAS IT BEEN?

By most indicators, the defense sector has been in decline nationwide since the end of the 1960s, with national defense purchases falling to around five percent of gross national product from over nine percent in 1968. But even so, defense has remained an important part of Philadelphia’s regional economy.

One way to get a grip on the size of the defense sector in the region is to look at total Department of Defense outlays in Philadelphia and the seven surrounding counties that with it make up the Standard Metropolitan Statistical Area. These outlays include direct military payroll expenditures for members of the Armed Services, payroll for civilians who work for the individual Services or DOD, and contracts issued to area businesses. In 1980, DOD outlays in the region stood (in nominal dollars) at over $3.1 billion.

The direct payroll portion of DOD outlays amounted to over $1 billion. Part of this payroll went to personnel currently employed at area activities, of whom the majority are civilians; part of it was compensation for


2Federal outlay information is taken from publications or tapes provided by the Community Services Administration of the U.S. Department of Commerce and the Washington Headquarters Services of the Department of Defense.
retired, reserve, and national guard personnel. Payroll appears to make up a fairly stable Defense outlay core. Even after showing some weakness during the 1970s, DOD salaries made up more than half of all Federal salary and expense outlays in the region in 1980, or about 3.4 percent of the region’s total nonagricultural payroll.³

The closing of the Frankford Arsenal in 1977 occasioned a loss of around 3,000 jobs. But despite these and some other sizable losses, the Philadelphia city total stood at almost 26,000 overall in 1980, making it still one of the largest concentrations of Defense employment in the nation (see PHILADELPHIA RANKS NINTH . . .). Meanwhile, DOD activities in the other counties of the region were holding their own or adding people, reflecting a national trend.⁴ The part of the SMSA outside Philadelphia counted a total of 23,000 DOD employees at the end of the period.⁵ Thus DOD total employment


⁴"Two Urban Initiatives: A Report Card," summaries published by the Northeast-Midwest Institute, March 1979, states: "Federal civilian employment dropped by 41,419 in central cities while it increased by 26,559 in Standard Metropolitan Statistical Areas (SMSAs)—strong evidence of flight from central cities to the surrounding suburbs.”

⁵Manpower figures are taken from Department of Defense, Distribution of Personnel by State, by Selected Locations, 1980. Much of DOD’s employment strength

<table>
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<tr>
<th>Installation/City</th>
<th>Military</th>
<th>Civilian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego</td>
<td>40,021</td>
<td>18,694</td>
<td>58,715</td>
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<tr>
<td>Arlington</td>
<td>16,863</td>
<td>27,283</td>
<td>44,146</td>
</tr>
<tr>
<td>Fort Bragg</td>
<td>40,237</td>
<td>3,853</td>
<td>44,090</td>
</tr>
<tr>
<td>Fort Hood</td>
<td>39,253</td>
<td>3,353</td>
<td>42,606</td>
</tr>
<tr>
<td>Washington</td>
<td>15,402</td>
<td>16,204</td>
<td>31,606</td>
</tr>
<tr>
<td>Norfolk</td>
<td>15,565</td>
<td>14,671</td>
<td>30,236</td>
</tr>
<tr>
<td>Camp Pendleton</td>
<td>25,218</td>
<td>2,215</td>
<td>27,433</td>
</tr>
<tr>
<td>Camp Lejeune</td>
<td>24,323</td>
<td>2,684</td>
<td>27,007</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>3,103</td>
<td>22,591</td>
<td>25,694</td>
</tr>
<tr>
<td>Fort Stewart</td>
<td>22,865</td>
<td>1,878</td>
<td>24,743</td>
</tr>
</tbody>
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added up to 2.6 percent of the region’s nonagricultural jobs in 1980.

More difficult to trace than direct hires are the jobs that result from contracts issued by DOD activities to private-sector firms, even though figures for prime contract awards ($2.1 billion in the region in 1980) are published with the other Federal outlay numbers. Philadelphia’s large defense-industry contractors are mainly regional offices or subsidiaries of conglomerates headquartered elsewhere, whose records aren’t easy to get. Further, because many defense prime contractors subcontract their work to firms some distance away and because both primes and subs depend upon a far-flung network of suppliers, it is very costly to assemble a clear and complete picture of where contract jobs and dollars finally end up.7

in the region appears to have been in commercial/industrial-type jobs—those that are similar to jobs in the private sector rather than being uniquely military. In 1972, for example, 12,800 DOD employees were working in commercial/industrial jobs in Philadelphia alone, with the largest concentrations in the Naval Base complex at the foot of Broad Street, the Defense Personnel Support Center compound at Twentieth and Oregon Avenues, the Defense Industrial Supply Center reservation on Tabor Avenue in the Northeast, and the Frankford Arsenal. (See Department of Defense, Commercial/Industrial Type Activity Inventory, 1972-79.) To the north and west of the city were 500 more employees at the Willow Grove Naval Air Station and the Naval Air Development Center in Warminster. And about 1,900 more were on the payrolls at McGuire Air Force Base and Fort Dix in New Jersey’s Burlington County. The commercial/industrial employment total actually had risen slightly to about 12,900 in 1979, the last year for which numbers are available.

Some idea of employment at contractors, however, can be gleaned from Bureau of the Census surveys of shipments by defense-oriented industries. The 1974 survey, for example, shows 17,400 employees engaged in DOD-related work at reporting plants in the Philadelphia SMSA.8 The 1978 survey shows 13,700 such employees at reporting plants.9 Assuming that employment in defense-products industries in the region runs roughly parallel to defense-industry employment nationwide, 1978 probably was the bottoming-out year, and the next survey should show more employees than the last. The fact that Defense contract outlays in the region have been trending upward with the Philadelphia consumer price index since the mid-1970s also suggests stability in defense-industry employment in the area (see DEFENSE CONTRACTS IN THE REGION MOVE WITH THE CPI).

Thus whether measured by total outlays, direct DOD employment, or contract dollars, the defense sector appears to have been a sizable contributor to the regional economy through the 1970s.

WHERE THE IMPACT IS FELT

The Defense outlays that come into the region have an obvious direct effect on
people who are hired to work in DOD activities as well as on firms that sell their products to the Armed Services and DOD agencies. They have effects also on workers in supporting industries through the jobs they elicit and on local government through the tax payments they engender.

Who Works for DOD? The Department of Defense is not only a large employer but also a diversified one. Philadelphia has a wide variety of jobs in its DOD activities, ranging over manufacturing and services.

Although several kinds of in-house manufacturing are found in Philadelphia, including such exotic species as official flag making for clients ranging from military units to cabinet officers, by far the largest DOD manufacturing operation in Philadelphia is the Naval Shipyard. At the end of 1980 the Shipyard employed about 10,000 people. About four out of five shipyard jobs are blue-collar jobs, and that percentage is likely to rise as more people are hired to meet the increased workload.

Naval shipyard jobs tend to be very stable, with low turnover rates. In fact, these jobs are so stable that until recently many of them were filled by employees who had signed on in World War II. Since the mid-1970s, however, the average age of workers at the Philadelphia Naval Shipyard has fallen to under 40 years. And average age could drop further as new workers are brought on.

Of the service-providing activities, some are in the technical business, such as the Naval Ship Engineering Station adjacent to the Shipyard, but most are assigned mainly to some phase of the logistics cycle—letting contracts, administering contracts, or managing inventories. Employees at these activities are mainly white-collar workers, and their jobs range from clerical to senior executive.

As at the Shipyard, employment at these activities is sensitive to volume. The number of jobs at a contracting activity does not vary directly with the number of contracts written, of course. Because of budgetary and administrative constraints, personnel adjustments occur only with a lag. Productivity improvements in contract management and inventory management also tend to restrain employment from growing apace with volume. But overall, more defense contracts and more inventory will show up in more white-collar jobs at the logistics activities.

Many of these pockets of direct-hire DOD employment buy housekeeping services, security, and the like from local suppliers. In this way they inject some money and some jobs directly into the private economy. And they are the source of private-sector jobs in less direct ways as well.

Defense Jobs Generate Other Jobs. When the Department of Defense is directed to overhaul a ship or to procure a production run of aircraft or tracked vehicles, its planners must consider more than just the selec-
tion of a shipyard or a prime contractor to do the work. They must try to take into account also the subcontractors that may be involved and the suppliers that may furnish materials. The reason is that most DOD programs are supported or supplied by workers outside the Department of Defense, so that the effect of each DOD hire or prime contract award is multiplied through the rest of the economy. Economists sometimes use factors that they call employment multipliers when they try—with greater or less success—to forecast the number of related jobs that will flow from hires of a certain kind (see EMPLOYMENT MULTIPLIERS: NOT EASY TO CALCULATE).

A study prepared for the Federal Reserve Bank of Philadelphia in 1966 uses a regional multiplier of 1.64 for government enterprise overall—a multiplier which is among the lowest on the list. Using this multiplier for DOD direct employment in Philadelphia in 1980 gives a total impact of over 42,000 jobs. The total for the SMSA is about 80,000 jobs.

Recent discussion of the employment multipliers for defense industry in Philadelphia has focused on the number of secondary jobs that would flow from the Service Life Extension Program (SLEP) for aircraft carriers. Wharton Econometric Forecasting Associates, for example, developed multipliers which suggest that, on average, each SLEP job eventually would generate 1.4 other jobs in the region, for a total impact of 2.4 times the number of direct jobs. Assuming that SLEP required the Philadelphia Naval Shipyard to bring in about 5,100 additional civilian and military employees, the Philadelphia Metropolitan Area, research report prepared for the Federal Reserve Bank of Philadelphia, October 1966, p. 4.

EMPLOYMENT MULTIPLIERS: NOT EASY TO CALCULATE

Employment multipliers are notoriously difficult to calculate on a national level, where interregional exports and imports do not need to be distinguished explicitly since they are included in the totals. They are even more difficult to calculate on a regional level for industries that belong to a national market, since almost any portion of the multiplier effect may be felt only outside the region.

Further, employment multipliers differ from industry to industry at any given time, and they change at different rates over time. These differences in rates of change have to do with changing production techniques which result in higher worker output. Improvements in metallurgical methods, for example, can increase the output per hour of production workers in bearing factories. If demand for bearings remains constant, fewer workers will be required to meet that demand and the pertinent multiplier will have to be adjusted downward. At the same time, it may be necessary to adjust a multiplier upward in another industry—say for firms that manufacture supplies and equipment for metallurgical research.

Despite the difficulties with employment multipliers, and although they cannot be assessed with a high measure of accuracy until after the fact if at all, policymakers can’t afford simply to ignore them. Multipliers must be used at the Federal level in targeted employment-support programs if these programs are to be kept from missing the mark: using too high a multiplier will cause policymakers to overestimate the effect, for example, of allocating a certain contract to a labor surplus area, while using too low a multiplier will produce the opposite result.

At the state and local level, officials who work in industrial development need to have some idea about the total effect on employment of acquiring a firm of a given kind. If Firm A will bring in 1,000 direct jobs and 500 indirect ones, while Firm B brings in the same number of direct jobs but 1,000 indirect ones, it may be to the point to concentrate one’s resources on acquiring Firm B.
the increase in secondary jobs would be about 7,100, raising the total to over 12,000 additional jobs by the end of the program. This figure would more than offset the loss of the entire current-year contribution (3,400 jobs) of the Comprehensive Employment and Training Act program in Philadelphia.\textsuperscript{12}

Complete unanimity on multipliers is hard to come by. But the consensus seems to be that, on average, each direct DOD hire will add at least one and at most two indirect jobs to the regional economy. And since workers in DOD and defense contractor jobs, along with the workers in supporting industries,

\textsuperscript{12}Mayor's Office, City of Philadelphia, "Proposed Federal FY 1982 Budget: Projected Impact on the City of Philadelphia," April 1981, p. 2-B. The 3,400 number represents slots (equivalent to labor years) under Title II-D and Title VI. Since more than one individual can occupy the same slot in a given year, it is estimated that the number of people reached by the program in a given year could be as high as double the number of slots.

The Naval Sea Systems Command—the Navy bureau that manages ship and boat construction and repair—cites studies that show an all-regions multiplier for total shipyard employment, not just the SLEP increment:

Unlike other labor-intensive industries, shipbuilding and ship repair employs large numbers of highly-skilled, relatively highly-paid craftsmen. The payroll of a shipyard, whether Government-owned and -operated or privately-owned and -operated, is thus a significant economic factor for the community in which it is located. Various analyses of the economic-multiplier effects of shipbuilding and ship-repair activity have produced estimates that each dollar spent on shipwork increases the gross national product by $3.30 and each person employed in shipwork generates employment for seven others in supporting manufacturing and services. (Letter to the author from John F. Elwyn, Executive Director for Industrial and Facility Management, Naval Sea Systems Command, 17 April 1981.)

Assuming that the Yard were staffed to its current ceiling of 9,650 jobs, the total effect of yard employment would be to keep over 77,000 people on various military and civilian payrolls, using the Navy multiplier of eight (seven indirect or induced jobs plus the direct job).

pay taxes just as other people do, adding these workers to the employment rolls helps to broaden the tax base.

Taxes are raised in different ways in the different parts of the Philadelphia region. In Philadelphia itself, the main source of revenue is the wage tax, which since 1977 has been levied at a rate of 4.3125 percent on earnings received in the city. DOD civilian direct employment reported by four of several DOD accounting activities generated $14.4 million in wage-tax revenue in 1980, or about 3 percent of the city wage tax. The total wage-tax take from direct and indirect jobs is difficult to estimate but must be considerably larger.

Thus, through the effect of multipliers and the contribution of both direct and indirect employment to the tax base, Defense outlays have an appreciable impact on the regional economy. And that impact could increase over the next four years.

MORE DOLLARS FOR DEFENSE

The defense sector appears to be on the verge of a sizable increase in funding. While the Philadelphia region, especially the city, is likely to see its Federal grant income fail to grow or even decline in the next four years, its core of Defense employment outlays should get by unscathed. Contract awards to defense contractors in the region also can be expected to increase.

A Shift in Outlays. After having dropped to less than a quarter of total Federal budget outlays in the late 1970s, Defense now is estimated to rise to one-third of the total budget by 1984.\textsuperscript{13} Based on this estimate, Defense will be increasing its share of GNP by about two-tenths of a percent a year on average, while nondefense outlays will be losing ground by about one percent of GNP each year.

The Congressional Budget Office describes the year-to-year growth of defense spending in this way:

Defense spending would grow by an average of 17.1 percent annually between 1980 and 1984 (under the Administration plan), while non-defense spending would be held to an increase of about one percent a year after 1981. In real terms, adjusting for inflation, defense spending would grow by an average of over 8 percent per year between 1980 and 1984, but non-defense spending would fall to a level 15-percent lower in 1984 than in 1980.14

Where are the nondefense reductions likely to occur? Pretty much across the board. And they will cut into the region's Federal grant income.

In a recent press release, the Philadelphia city administration has focused on four programs which could suffer losses under current Federal proposals. These include CETA, the Economic Development Administration, Medicaid, and public transit. The projected loss for 1981 from these four programs amounts to $48.4 million. Philadelphia might be able to offset these losses, however, with revenues from elsewhere.

While the ultimate shape of the Federal budget is hard to forecast in detail, the shift toward more growth in spending for national defense and less for other things may give Philadelphia certain advantages that other urban centers do not enjoy. Philadelphia already has one of the nation's largest DOD labor forces. It also has the kinds of installations that will be affected most by a step-up in defense procurements.15 But Philadelphia is not likely to benefit to the fullest unless it makes an active effort to retain its present defense jobs and to go after new ones.

The Defense Outlook. Many defense analysts anticipate a sharp upswing in DOD purchases over the next four or five years, continuing a trend that became visible in 1979 (see DEFENSE PURCHASES TO TAKE SHARP UPWARD TURN). This increase


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15 Walter Isard and Thomas W. Langford, Regional Input-Output Study: Recollections, Reflections, and
will be reflected in direct civilian hires. The DOD budget calls for increasing civilian direct hires by 55,000 over 1980 levels by the end of fiscal 1982. Some of these hires could be in Philadelphia.

Defense-related industry, which supplies both hardware and services, also makes for jobs, and here the numbers are spectacular: DOD budgeters anticipate an increase of some 445,000 workers over current levels by the end of fiscal 1983—nearly half a million new jobs. Philadelphia could have some of these jobs also.

This defense market will be targeted by many areas of the country. And so Philadelphia must be prepared to compete for defense-industry jobs if it hopes to keep what it has and to get more. The competition for defense work is political in some measure, since statute and regulation can require the Federal government to pay some attention to local economic conditions in allocating work or awarding contracts (see REPEALING THE MAYBANK AMENDMENT). Also political is the give-and-take in the legislative and executive branches that influences the flow of work and dollars. But part of the competition is just heads-up industrial development effort, which consists in finding out what the customers want and seeing that it's made available.

What do Defense customers want? At this stage in their history, the Armed Services and the DOD agencies want cost-effective performance and adherence to schedule, and they want them across the board. These desiderata put pressure on in-house manu-

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16 News Release, Office of the Assistant Secretary of Defense (Public Affairs), No. 77-81, March 4, 1981, Figure 10.

### REPEALING THE MAYBANK AMENDMENT: WOULD IT BRING CONTRACTS TO PHILADELPHIA?

Unlike other executive departments, the Department of Defense is required in most cases to buy goods and services at the lowest cost. Exceptions are made, however, to channel funds to small and minority-owned businesses. And an effort has been renewed recently to use DOD contracts to target aid to what are known as labor surplus areas—jurisdictions with populations of 50,000 or more whose unemployment rate for the prior two years has exceeded the national average by 20 percent. The Maybank Amendment, which has been a part of every Defense appropriation bill since 1953, exempts DOD from having to target procurements to labor surplus areas.

Rescinding the Maybank Amendment might bring more Defense contracts into labor surplus areas, and Philadelphia is a labor surplus area (along with Bristol Township, Chester City, Montgomery County less Abington Township and Lower Merion Township, Camden City, and Gloucester County in this SMSA). But it doesn’t follow that Philadelphia or any other Northeast or Midwest jurisdiction would gain very much: as of February 1981 there were nearly 1,100 other labor surplus areas in the country, and more than half of them were in the South and West.* Philadelphia would have to compete against those other LSAs. Also, rescinding the Maybank Amendment might harm parts of the SMSA outside the city which are not labor surplus areas and which have seen their share of Defense contracts growing. Burlington County, for example, received over $360 million in Defense contract outlays in 1980. In Pennsylvania, Delaware County led the way with about $300 million in 1980, reflecting real growth of 16 percent since 1972. Montgomery County, although a labor surplus area, followed with $173 million and a startling 44-percent real growth for the nine years.

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*"Why the Maybank Amendment Should Be Repealed," material circulated by the Northeast-Midwest Congressional Coalition, p. 5.
facturing activities such as the Philadelphia Naval Shipyard, because the Yard has to compete with other naval shipyards and with private shipyards. If it can’t be responsive, it won’t get the work. Cost-effective performance has become the main driver in allocation decisions for in-house DOD work. And in the extreme case, work that could be done in house will be farmed out to private industry if industry can produce more cost-effectively.\(^\text{17}\)

The pressure on DOD to accomplish in-house work cost-effectively comes from both the Administration’s budgeters and the Congress. It is transmitted to managers in the field, both civilian and military, in a number of ways, including through performance measures that translate into dollars. Under the merit pay system of the Office of Personnel Management, which replaced the U.S. Civil Service Commission, civilian managers are beginning to compete for shares of what corresponds to a bonus plan in private industry, and the competitors are being evaluated by quantitative productivity measures on an annual basis. For military people the monetary rewards come less swiftly—but they do come, in the form of selection for fast-track career opportunities and eventual promotion to senior positions.

In some instances, of course, as with contracting, contract administration, and inventory management, all the work is done in house and there is virtually no competition. Under the supply system of the Defense Logistics Agency, for example, which procures items used in common by all the Services, each commodity group is assigned to one activity, and that activity buys for the whole country. The Defense Industrial Supply Center, for example, handles common-use nuts, bolts, rods, and sheet metal for all the Services everywhere. And the Defense Personnel Support Center fills the same role for food, clothing, and medical supplies. Short of a major base realignment, these Philadelphia installations have no competition to fear.

In this respect the logistics activities are in a very different position from the firms with which they do business. Many of those firms find themselves in a highly competitive position, since the Defense Acquisition Regulations make cost the overriding consideration in contract award. All other things being equal, the low-cost bidder gets the job. Thus firms in this region must keep their costs in line—energy costs, labor costs, and the rest—if they are to compete successfully with companies in other parts of the country.

Also, they must be able to produce the goods that will be most in demand. A recent presentation by Robert Gough of Data Resources, Inc., the Massachusetts econometric forecasting firm, lists the ten industries that DRI expects to see the largest volume increases over the next five years, based on real military spending growth from six percent to nine percent (see THESE INDUSTRIES MAY GROW). Some of these, such as tanks and tank accessories, clearly are not the old Philadelphia defense industries. But others, such as munitions and shipbuilding, clearly are. If Philadelphia’s shipbuilding industry were to grow by as large a percentage as the industry nationwide, it would be

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\(^{17}\)While concern for cost-effectiveness is not new to DOD, it seems to receive more emphasis each year as automated management information systems provide more and better data in better formats to people at the policy level. Further, DOD currently operates a well developed defense management education and training establishment which teaches its managerial personnel to use these systems. As defense budgets bottomed out in the 1970s and as field operations came to be scrutinized ever more closely, more exacting management procedures became institutionalized. The evolution of defense management techniques provides the background for recent statements by the Secretary of Defense such as the following: "We believe we have identified significant savings from efficiencies and reforms in current operations. The money saved in this way can then be applied to enhancing our military capability." Statement before the House Armed Services Committee, March 10, 1981.
adding about 1,735 direct jobs by 1986 over and above those envisaged by the Wharton study. Based on the Wharton multiplier, over 2,500 further indirect jobs would be forthcoming, for a total of 4,164 new jobs in the region.

Further, Philadelphia firms need not limit themselves strictly to their traditional defense emphases. In the modern era of tiered subcontractors and suppliers, firms find themselves participating in contract awards in many different ways. A manufacturer, for example, may make a repair part for a piece of mechanical or electrical equipment used by the Air Force even though it has had no history of dealing directly with the aviation industry. DOD contracting officers are encouraged to seek alternative sources for many of the items they purchase. The appearance of new sources of supply would be welcome to them.

But whether firms in this region will come forward as new or bigger defense-industry participants may depend on the information and the assistance they receive from local industrial development groups. Identifying firms that might begin supplying defense requirements or might increase their share of the market is not an insuperable task, nor is providing them with the program information they will need to compete effectively. Much of this information on both firms and programs is available in the public domain. Some firms might require tax inducements...
and other kinds of creative financing assistance to enter this field, of course, especially small business firms. But the payback could dwarf other industrial development efforts.

Further, in order to compete successfully for new defense business, a region must offer certain advantages. It must have a reliable source of workers in its school systems—at least as reliable as other regions. It must have adequate highway and rail access. A former Pennsylvania Secretary of Commerce has listed “transportation, taxes, adequacy of sites, safety, and labor availability” as the items of chief interest in corporate deliberations over where to locate new facilities. These items apply to the private sector in an obvious way. Because of the dependence of Defense installations on private-sector sources, they apply to the public sector as well.

In short, the upturn in the volume and pace of Defense procurement offers a remarkable opportunity to the Philadelphia region as to others. Certain of the DOD activities in the region will grow even without much local effort, and Philadelphia’s industrial capacity almost surely will have to be called upon to help attain the goals of a more ambitious program of naval ship construction and repair. But the region probably won’t realize all the economic benefits that it could without a program to identify requirements and sources, match them to one another, and assist with financing.

TO SUM UP . . .

Defense business is nothing new to Philadelphia. DOD maintained its presence in the region throughout the 1970s, even though it was eclipsed by growth in other forms of Federal involvement.

With the new Administration’s adjustment of programs and spending plans, Defense outlays show more growth than any other Federal outlays over the next few years. DOD activities should be seeing more people and larger payrolls. And contractors in private industry should detect a sharp upward move in new orders for defense products. All of these changes would tend to boost employment and local government revenue.

Other regions almost surely will be competing aggressively for this increased DOD business. Philadelphia is well positioned to compete and could realize sizable economic benefits. The opportunity is there.

the ship-construction business. Shipbuilding industry work nationwide occupied about 80,000 workers (equivalent production workers) in 1980. If current trends were to continue, the number would fall to under 20,000 in 1987. The new Navy ship construction program would be large enough to restore employment to current levels by 1987, but only after a three-year trough; and in that three-year period, many of the most marketable ship-construction workers could move into other industries. The result could be a delay in Navy ship construction, cost overruns, and difficulty in performing to specification, since new workers would have to be hired and trained—a multiyear process—at the end of the trough.


19 Provided, that is, that the capacity is maintained. A case in point is Sun Ship in Chester, Pennsylvania, which has the ability to construct both naval and merchant ships but which recently has withdrawn from
Can Services Sustain a Regional Economy?

By John M. L. Gruenstein and Sally Guerra*

Over the last hundred years, the United States has seen more and more employment shift from manufacturing to service industries. Today well over half the nation's workers are employed in service industries, and the percentage still is rising. This trend has gone farthest in metropolitan areas, and some policymakers are concerned that the shift toward services may not be the healthiest direction for cities and their suburbs over time.

Such concern reflects a long-standing view about how cities grow and prosper. Cities are assumed to grow by exporting manufactured goods to outside customers who provide a steady inflow of revenue in return, and services are regarded as a spin-off from this manufacturing export activity. On this view, the income that city residents earn from export goods is spent in service establishments of all kinds, ranging from barber shops to restaurants, until it eventually leaks out through purchases of imports. Thus the total size of the service sector is limited by the volume of manufacturing exports. When service employment reaches a certain multiple of manufacturing employment, one local service firm can grow only at the expense of another.

This view—the export-base theory—is appealing because it focuses correctly on the importance of exports for urban prosperity.

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But it overlooks the fact that services can be exported as well as goods and independently of goods—an important fact for economic development planning. This view also overlooks the importance of revenue flows such as Federal transfer payments which have helped fuel part of the growth of local services. To the extent that export demand can grow and perhaps even take the place of some loss of transfers, going with the flow by shifting economic development efforts toward promotion of services could be more cost-effective than trying to stem the loss of manufacturing.

THE SURGING SERVICES

Like most other advanced countries, the United States has been increasing its service-sector share of total national employment for several decades while the goods-producing share—agriculture, extraction, construction, and manufacturing—has been falling.

Most of this shift in employment can be attributed to differences in labor productivity. Victor Fuchs has calculated that, from 1948 to 1978, employment in the services-producing sector grew at an average annual rate of over two percent, while employment in industry (here defined to include transportation, communications, and public utilities along with manufacturing, construction, and mining) was growing at less than one percent a year and employment in agriculture was declining by more than two percent a year. Because the sectors differ much less in terms of growth in the value of their products than in numbers employed, Fuchs concludes that about 75 percent of the difference in employment growth stemmed from substantially higher labor productivity growth rates in agriculture and industry than in services.1

National demographic and income trends also have stimulated growth in demand for services. The increase in the percentage of women working and the decrease in the percentage of families with children probably are raising the value of services demanded. Services that used to be provided by family members, such as food preparation and child care, increasingly are purchased outside the home. The increase in the over-65 share of the population also may have increased the demand for services, especially health services. It's probably true also (but less certain) that as per capita income grows the demand for service output grows at a somewhat faster rate than the demand for manufacturing output, so that the ratio of service employment to manufacturing employment tends to rise even further.

The shift to services is far more advanced in metropolitan areas than in rural areas. In 1970 over 66 percent of the jobs in metropolitan areas could be found in the service sector, compared to just about 56 percent of nonmetropolitan employment (see METROPOLITAN AREAS SPECIALIZE IN SERVICES). Between 1970 and 1977, employment in both sectors grew faster in nonmetropolitan areas than in others, but the differential between metropolitan and nonmetropolitan growth for goods production was much higher than for services production. By the end of the period, over 70 percent of metropolitan jobs were in services compared to 60 percent of rural jobs.2

The strong service orientation of urban areas can be seen most vividly by looking at central cities located in the cores of metropolitan areas. In a report for the U.S. Department of Housing and Urban Development, Seymour Sachs examined growth in four


### METROPOLITAN AREAS SPECIALIZE IN SERVICES

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sectors—manufacturing, retail trade, wholesale trade, and selected services (a defined subset of services)—for 14 growing and 14 declining cities over the period 1967-72. In the growing cities, the trade and selected service sectors accounted for 83 percent of the growth. In the declining cities, manufacturing accounted for almost 80 percent of the net loss.

What is most striking about the declining cities is that although employment in retail and wholesale trade also declined, the selected service sector actually increased significantly, offsetting about 12 percent of the loss in the other sectors. And this rise did not count health and educational services, which are not included in selected services but which also grew substantially over the period. These widespread urban trends are exemplified quite clearly in the case of Philadelphia.

### SERVICE GROWTH IN PHILADELPHIA

Between 1970 and 1980, according to the
U.S. Bureau of Labor Statistics, the nation at large saw increases in both manufacturing and service employment, of 5.1 percent and 36.5 percent respectively. In Philadelphia, by contrast, manufacturing employment fell by 19.9 percent while nonmanufacturing jobs increased by 18.2 percent.4


A breakdown of employment change by sector for the SMSA and the nation can give some clues to the factors that might be responsible for the shift out of manufacturing (see SERVICES GAIN, MANUFACTURING LOSES IN PHILADELPHIA).

The numbers show that even though most kinds of services registered strong growth in the region, the growth rate at the national level was higher in every case. Growth was fairly close to the national level, however, in

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### SERVICES GAIN, MANUFACTURING LOSES IN PHILADELPHIA


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*The 1970 data are not strictly comparable to 1980 date in some industries because of redefinition. These distortions should be small in most cases.
‡Index of Relative Performance for employment category divided by corresponding index for population.

two sectors (Services and Mining, and State and Local Government), and relative to population the region outperformed the U.S. in employment growth in these sectors.

The fastest growing subsector of employment in services, both for the SMSA and nationally, was legal services (see LEGAL SERVICES SHOW LARGEST GROWTH). For the country as a whole a number of reasons can be advanced for the rise, including increased litigation (partly occasioned by the increased number and complexity of government regulations), procedural reforms which increased the number of hearings and the length of time before trial for many defendants, and the funding of community legal service organizations by the Federal government. In addition, the 1970s likely saw a larger than usual percentage of students decide to pursue careers in the law as a way of furthering social reform. Philadelphia's large increase in legal services employment probably was, by and large, participation in this national trend.

Business services employment rose by almost as large a percentage as legal services, and here the increase was large both in the number of jobs—about 33,000—and in comparison to the nation overall. Providing business services is a traditional role of urban areas, and improved communications

### LEGAL SERVICES SHOW LARGEST GROWTH

**Services Growth: Philadelphia SMSA and the United States, 1970-1978**

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*The 1970 data are not strictly comparable to 1978 data for some industries because of redefinition. These distortions should be small in most cases. Services listed belong to the Services and Mining sector shown in SERVICES GAIN, MANUFACTURING LOSES . . . but data shown here are not strictly comparable to data shown there because of differences in collection methods.

and transportation enhanced the growth of the public relations, direct mail, management consulting, testing, data processing, and other firms that make up this subsector. It is possible also that changes in organizational structure for firms in the area, which led to purchases of services from outside firms rather than in-house provision, could have caused some growth in this field.

Educational services, especially those provided by colleges and universities, were other big gainers. They grew appreciably faster in Philadelphia than in the nation at large. At the national level an increased demand for higher education was caused by the maturing of the postwar baby boom—a trend which has run its course. Probably the most important factor influencing the local rise was the presence of many established institutions of higher learning in the SMSA, especially in the city. The percentage rise for educational services employment was even higher for the city than for the SMSA (see Appendix).

Health services employment also increased substantially. Although the raw percentage rise was smaller than nationally, when adjusted for Philadelphia's population decline the percentage change was greater. The growth of in-kind income for health services, both from private health plans and public sources, principally Medicare and Medicaid, strongly stimulated medical services employment nationally over the period, and the Philadelphia area may have gained more than proportionally from these sources. The SMSA also had a larger percentage increase in the over-55 population than did the nation—another likely factor in stimulating a greater demand for medical services in the area.

In short, Philadelphia showed considerable strength in services even as its manufacturing employment was ebbing away. These facts are not compatible with the manufacturing version of the export-base theory, but they can be accommodated by a restructured version.

RETOOLING THE EXPORT THEORY

The export-base theory was developed to deal with manufacturing economies. But it can be applied to service-oriented economies if external sources of demand for services can be identified and if associated revenue flows can be detected.

The Shape of the Theory. The main premise of the export-base theory is that the growth of cities is determined by what they sell elsewhere. Thus the theory divides the economy of a city into two sectors—export and local. Firms in the export sector sell their wares mainly to customers outside the city, both in the immediately surrounding area and in other cities. Detroit's automobile industry and Pittsburgh's steel plants are prime examples of export sectors. The local sector, however, produces mostly for city customers. Places like beauty salons, auto repair shops, and pizza parlors belong to the local sector.

The smaller the city, on this theory, the more important the export sector is likely to be, because export earnings are used to pay for imports. Since smaller places are less self-sufficient—that is, since their residents must buy more kinds of goods and services from elsewhere—their imports are relatively large. So, in general, their exports must be larger, too. But whether large or small, all cities clearly must export something of value to pay for agricultural supplies and other goods and services produced outside their boundaries.

In the export-base theory, city growth is fueled by the rest of the world's demands for the city's products. "Trenton makes, the world takes," as the sign by the railroad says. Growth in exports feeds back into the city's economy, multiplying the initial effect on the exporting industry.

Suppose Detroit's car sales rise. Then workers and others who receive income from auto plants will have more to spend, and much of it will get spent and respent in the local economy. Retail stores, restaurants, and other local service providers will find...
their incomes rising, and they, too, will increase their purchases. Another source of this multiplier effect is purchases of parts and business services from other companies by the auto plants themselves as business expands. Since some of these purchases will be for imports, the process doesn’t continue forever. Gradually, the extra dollars brought in by increased export earnings leak out of the local economy into imports, but not before the initial increase has been multiplied. Together these induced effects (through higher incomes) and indirect effects (higher local business purchases) will result in the re-spending of export dollars again and again in the local economy before they are siphoned away.

The dark side of the theory is the effect of a decline in the demand for exports. Here, too, the effect is multiplied, but now in a downward direction. As auto workers lose overtime and get laid off, and as auto plants stop buying from their suppliers, the initial loss of income is multiplied, drastically worsening the economic situation.

In this form, the theory is simple, elegant, and persuasive, but it focuses on economies that are based on manufacturing rather than on services. And in urban areas, the service sector has been growing even as local employment in manufacturing has been falling off. This growth in the urban service sector can be explained only in part by trends in national productivity, demography, and income. A retooled export-base theory is needed to explain the remainder.5

Exportation of Services. One reason manufacturing often is identified as the export sector and nonmanufacturing as the local sector of an urban economy is that where a product is consumed is confused with where the money comes from to pay for it. Unlike most exported manufactured goods, which are bought and consumed outside the producing city, many exported services are consumed within the city of origin. Tourist services offer a prime example. Although these services may be consumed in Philadelphia or Atlantic City hotel rooms and restaurants, they are as much export items as Detroit’s autos. The key thing is that the money comes from outside.

Another reason for thinking of the export sector as manufacturing is that doing so used to get much closer to the truth. A hundred years ago, transportation technology was oriented more toward moving freight than toward moving people, and communications technology could handle far less information than it can now. As transportation and communications have developed, the possibility of exporting services of all types has increased tremendously.

The growing importance of service exportation from metropolitan areas has been investigated by Richard V. Knight of Cleveland State University. From 1940 to 1960, adjusted median family incomes in metropolitan areas could help explain higher levels of service employment there, but again the trend during the 1970s was in the wrong direction to explain relative services growth: real family incomes fell in metropolitan areas between 1970 and 1977, especially in central cities, while growing in nonmetropolitan areas. Differences in demographic trends also offer little help as an explanation. The percent of the population over 65 and the percent of families without children both were lower in metropolitan than in nonmetropolitan areas during the 1970s. It is true that both categories increased substantially in metropolitan areas, which certainly increased services employment. But these increases relative to the population basically paralleled national trends, and thus they do not provide an explanation for the urban orientation of services growth.

5If productivity, demographic, and income trends had moved farther toward services in metropolitan areas than in nonmetropolitan areas, they might help explain the greater urban specialization in services. In general this does not seem to be the case. Although the level of manufacturing productivity is higher in metropolitan areas, nonmetropolitan areas have been experiencing faster rates of manufacturing productivity growth, especially over the 1970s. This would tend to work against the strong relative performance of metropolitan areas in the services over that period. Higher inflation-
according to his estimates, the services (including trade) increased their share of total metropolitan employment in export activities from 36 percent to 44 percent. The largest components of these export services were business-oriented services such as finance and transportation, which rely on large transfers of information and frequent face-to-face contacts. Most of the trade in services was estimated to occur among metropolitan areas: in 1960 about one-third of metropolitan service requirements were estimated to be imported, and most of that third came from other SMSAs.6

A related source of growth in services is import substitution. If service producers in one area start providing services that residents had been importing from other areas, then the local service sector will grow. In general, import substitution is associated with growing areas. As population thresholds are reached, it becomes economical to provide all kinds of specialized services, ranging from those of full-service hospitals to those of gourmet restaurants, that residents used to get elsewhere. Since the population of nonmetropolitan areas has been growing faster than that of metropolitan areas, import substitution probably has shifted some service employment growth away from the cities. But certain service sectors in certain metropolitan areas probably have grown through this mechanism. The Effect of Transfers. Another source of growth for urban service employment is demand fueled by transfer payments and related income flows into the local economy. The local sector can grow faster than the national economy, even in the absence of export growth and import substitution, if demand is being generated by net transfers of income to local residents. A retirement community, for example, could have virtually no exports but still have a thriving local service sector financed by private and government pension payments, dividends, social security, and transfer income flowing to local residents from elsewhere. Metropolitan areas, and particularly older central cities that have been net recipients of transfers, may have seen higher ratios of service employment to manufacturing employment than other parts of the country. It seems virtually certain that increasing Federal transfer payments helped support some of the growth of local service employment in the most distressed cities even as manufacturing jobs fell off precipitously.7

Thus the exportation of services and net transfers into a region can generate income flows that act like those generated by manufacturing exports: they can be spent and respent in the local economy in the same way as income from manufacturing exports. So flows from service exports and those from transfers have the same local multiplier effect.8 But transfers are radically different

6Richard V. Knight, Employment Expansion and Metropolitan Trade (New York: Praeger, 1973). Knight's calculations assume that income flows into SMSAs from other sources—taxes, transfers, and investments—are zero. Thus if positive net transfers have helped fuel some metropolitan service growth, his export figures would be too high.

7Some evidence points to transfers as an important factor. From 1970 to 1977, public assistance income rose from 1 percent to 2 percent of aggregate income in central cities, while in nonmetropolitan areas it went from 0.7 percent to 0.9 percent. But the percentage of income from all sources other than wages, salaries, and self-employment—which would include social security and other public and private transfers along with public assistance—rose faster and to a higher level in nonmetropolitan areas than in either central cities or suburbs.

8The only differences would stem from the differences in income and tastes of the recipients of these various flows and any restrictions on the use of transfers, as for health service payments, leading to different patterns of consumption of local and imported goods and services. Social security recipients, for instance, have different spending patterns from most wage earners. Thus the local income multiplier for a dollar generated by one inflow probably would differ somewhat from the multi-
from exports when viewed from an economic development perspective.

For sectors where export demand might grow at the national rate of population growth rather than at the local rate, prospects could be strong. Business services could fall into this category for the Philadelphia SMSA, given that their growth rate here has been higher than the national rate, as could certain health services. Some local health services employment growth probably has been fueled by exportation, and national demand is likely to continue to grow, given the overall aging of the population and the continuing upsurge of new medical technology. But to the extent that local growth has been fueled by Federal transfer payments, especially Medicaid, proposed cutbacks could make the future distinctly less rosy.

Demographics and a changing Federal thrust will have effects on other fast-growing sectors. Most of the baby-boom population now is beyond college age, so that cutbacks in educational employment seem fairly likely unless a rising share of the population opts for higher education. Continued legal services employment growth could be clouded over the long run by the current thrust toward deregulation, at least to the extent that deregulation is successful in reducing the complexity and scope of government interaction with business. But the recent lifting of the ban on advertising of legal services could continue to open new markets for lawyers and other legal professionals well into the 1980s.

Thus understanding which factors will drive future local services growth is vital to formulating sound regional economic development policies. And application of the export-base theory to services offers a useful tool for achieving this understanding.

LESSONS FOR LOCAL DEVELOPMENT POLICY

What is the message that economic development planners in Philadelphia and elsewhere can derive from applying the export-base theory to services?

The first lesson is that the service sector's share of employment will continue to grow locally and nationally. A resurgence of manufacturing employment large enough to take up any appreciable slack in the local labor market seems almost as unlikely as a massive rise in farm employment, and for much the same reason: stronger productivity growth in manufacturing and agriculture, while benefiting consumers greatly by increasing real purchasing power, eliminates jobs in these sectors. Further, there has been a dramatic shift in the location of manufacturing activity out of this region, which policymakers may decry but probably can't reverse. This is not to say that attempts to stimulate certain kinds of manufacturing jobs should not be made. The New England region has benefited greatly from growth in high-technology industries, for example, and benefits do spill over through the multiplier effects to other sectors. The Middle Atlantic also could gain from hi-tech manufacturing industry.

The second lesson is that the service sector's growth is not merely parasitic on manufacturing but is a dynamic force for economic development in its own right. Firms that generate service exports and replace service imports are as vital to target as any others. Such firms can open their doors and expand locally without decreasing employment at other local firms.

A third lesson is that local service industries which have relied heavily on Federal and state transfer payments as a source of growth may face a rocky future. Continued growth could depend on replacing some transfer revenues with revenues from other sources, particularly export demand. Unfortunately, too little is known about the

plier for a dollar from another inflow. But in general, services exportation and transfers work substantially through the multiplier without changing its overall value very much.

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relative strengths of the various forces driving the several service industries, especially at the regional level. Until better information is available, economic development planners will be flying relatively blind when they try to target development efforts and cope with impending changes in the service sector.

While the export-base theory can be applied to the service sector, it fails to capture certain features unique to that sector. Chief among these is the fact that the service sector is a vital ingredient in an area’s business climate overall. Restaurants, cultural facilities, sports and entertainment, good public services, and a wide variety of business services provide a desirable framework for the growth of new businesses and the attraction of a labor force. The role of the local service sector in attracting and stimulating jobs in export industries long has been recognized as an important factor in long-run urban growth by economists and urbanologists. The complex interconnectedness of the goods and service sectors thus provides another reason for development-minded policymakers to focus on services.9

In short, the manufacturing sector and the service sector both are important contributors to the health of urban economies. Both sectors should be given a careful look by those interested in urban economic development. But like it or not, the bulk of new employment will be in services. Better monitoring of the service sector and a better appreciation of the interlocking nature of the local economy will be required if development efforts are to be targeted in the most cost-effective ways.

Beyond the export issue there are many extremely important questions concerning the services' suitability as a base for urban economic development. Can the new jobs created match the skills of unemployed city residents? Can the service jobs provide an adequate tax base for local governments? Can services anchor neighborhood economic development? Does shifting to services dampen the effect of the business cycle on the local economy?
APPENDIX*

PHILADELPHIA SHOWS STRENGTH IN SERVICES EVEN THOUGH TOTAL EMPLOYMENT AND POPULATION SLIP

From 1970 to 1980, total employment in the city of Philadelphia declined by 15 percent—a loss of almost 140,000 jobs. While this loss contrasts with the overall job gain in the SMSA, the city's

### Employment Change, 1970-1980
Philadelphia City and the United States

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relative pattern of change across sectors was similar to the SMSA's. The largest loss—about 43 percent, representing over 100,000 jobs—was in manufacturing, while the only nongovernment gains were in services. Even the Finance, Insurance, and Real Estate sector, which showed gains in the SMSA at about half the national rate, declined in the city.

Employment gains were concentrated in health services (particularly hospitals), legal services, and educational services. Educational services actually outperformed the nation and the SMSA over this period, with growth in employment at colleges and universities especially strong. But business services jobs grew only about four percent—good from the point of view of the city's overall employment loss, but weak relative to the SMSA's growth rate, which exceeded the national growth rate of almost 60 percent. Since growth in health, educational, and (to some extent) legal services has depended more heavily than that in business services on transfer flows, prospects for continued services growth in the city may be less promising than for the SMSA.

**Services Growth, 1970-1978**

Philadelphia City and the United States

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<tr>
<td>Educational Services</td>
<td>58.9</td>
<td>1.23</td>
</tr>
<tr>
<td>Colleges &amp; Universities</td>
<td>71.6</td>
<td>1.15</td>
</tr>
</tbody>
</table>


*The 1970 data are not strictly comparable to 1978 data for some industries because of redefinition. These distortions should be small in most cases.*