"I wish you wouldn't squeeze so," said the Dormouse, who was sitting next to her. "I can hardly breathe."

"I can't help it," said Alice very meekly, "I'm growing.

"You've no right to grow here," said the Dormouse.

"Don't talk nonsense," said Alice more boldly, "you know you're growing too."

"Yes, but I grow at a reasonable pace," said the Dormouse, "not in that ridiculous fashion."

―Alice's Adventures in Wonderland

Alice and the Dormouse in Lewis Carroll's classic story offer a lesson about human nature that can be applied to our economy.

Change often produces uncertainty and anxiety. When the economic environment changes, our anxieties are frequently reflected in political and legislative action.

So it is with the emerging service economy. Over a long period of time, the U.S. economy has become increasingly oriented towards the production and employment of services, while moving away from more traditional goods-producing industries. As the transition continues, legislative policies designed to protect goods producers have become more popular.

This Economic Commentary examines the expanding service economy and suggests that its emergence is not something to be feared. Rather, service sector growth reflects a natural—and inevitable—response to rising wealth.

I Wish You Wouldn't Squeeze So

Since 1945, our economy has undergone some dramatic changes; total employment has nearly doubled and real output has increased almost threefold. While there have been increases in both output and employment in all three major sectors of the economy (manufacturing, nonmanufacturing goods, and services), the largest gains occurred in the service sector (charts 1-2).

In 1950, total employment in the U.S. was 48.5 million workers. By 1984, it had almost doubled to 91.1 million. Virtually all of the increase (90 percent) was in the service-producing industries. The majority of the remaining employment gains occurred in manufacturing, with only slight gains in nonmanufactured goods employment (agriculture, mining, and construction).

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Changes in the types of goods the economy produces have also increased the demand for intermediate goods and services. Increased incomes and expanding markets have resulted in more product differentiation; that is, in turn, has increased the importance of services in the design, production, advertising, and distribution of these goods. Because of the gains from specialization and economies of scale in the provision of these services, proportionately more of these services are being provided by specialized service-sector firms rather than being provided in-house by firms in the goods-producing sector. While increases in the demand for intermediate services have contributed to the increased service-sector activity, they have not been as significant a contribution to the overall growth of the service sector as are not available. Based on an analysis of 1947-1977 employment data, we estimate that only about 15 to 25 percent of the overall growth of the service sector during this period can be attributed to an increase in intermediate services. While this represents a significant increase, other factors, namely changes in the economy, have probably more important implications for the growth of the service sector. As a result, the average income of goods has been increasing, rising from 29 percent in 1947 to 37 percent in 1977. In almost the same way, the relative growth of the manufacturing sector for the period was partially the result of shifting the provision of farm inputs from farmers to manufacturing firms. When the market for specialized business services was small, these services were provided in-house by firms or not at all. Growth of the U.S. economy expanded the business and professional services market and encouraged the development of firms specializing in these services.

For example, at one time the majority of accounting services were provided in-house by firms for their own use. The growth of the manufacturing sector, however, encouraged the growth of firms specializing in the provision of these services. Similarly, the growth of the goods-producing sector, with little or no service sector, has been at the expense of the non-manufacturing sector. Growth of firms specializing in these activities. Over time, the value of intermediate services as a percentage of GDP has increased, rising from 37 percent in 1947 to 57 percent in 1977. In almost the same way, the relative growth of the manufacturing sector for the period was partially the result of shifting the provision of farm inputs from farmers to manufacturing firms. When the market for specialized business services was small, these services were provided in-house by firms or not at all. Growth of the U.S. economy expanded the business and professional services market and encouraged the development of firms specializing in these services. Similarly, the growth of the goods-producing sector, with little or no service sector, has been at the expense of the non-manufacturing sector. Growth of firms specializing in these activities. Over time, the value of intermediate services as a percentage of GDP has increased, rising from 37 percent in 1947 to 57 percent in 1977. In almost the same way, the relative growth of the manufacturing sector for the period was partially the result of shifting the provision of farm inputs from farmers to manufacturing firms. When the market for specialized business services was small, these services were provided in-house by firms or not at all. Growth of the U.S. economy expanded the business and professional services market and encouraged the development of firms specializing in these services. Similarly, the growth of the goods-producing sector, with little or no service sector, has been at the expense of the non-manufacturing sector. Growth of firms specializing in these activities. Over time, the value of intermediate services as a percentage of GDP has increased, rising from 37 percent in 1947 to 57 percent in 1977.
However, the distribution of national output remained relatively constant between 1950 and 1960. Only after 1960 did service-sector production significantly increase its share (chart 3). Further, the post-1960 service sector emergence has come primarily at the expense of the nonmanufactured goods sector, as the share of national output represented by manufacturing remained largely unaffected.

The reason for the behavior of these share shifts, it would seem, has to do with the offsetting substitution effects. Between 1950 and 1960, the nonmanufactured goods industry enjoyed a very large relative increase in productivity, about 5.0 percent per year, on average (chart 5). This was almost twice the average business productivity gain of 2.7 percent. A strong substitution effect in this decade may have allowed the nonmanufacturing sector to completely offset the depressing influence of the income effects over the decade.

After 1960, however, productivity growth for nonmanufactured goods industries began to slow. The offsetting influence of the substitution effect was considerably less during the 1960-1985 period than in the 1950's. Consequently, the relative importance of nonmanufactured goods industries plummeted over the past 25-year period, from 19.6 percent of total real GNP in 1960 to only 10.7 percent in 1984.

The experience of the manufacturing economy has been somewhat different, probably because the growth in manufacturing productivity, and hence the substitution effects, have helped this sector maintain its share of national output. Between 1960 and 1985, productivity in manufacturing industries rose at an average annual rate of 2.7 percent, compared to only 2.0 percent for nonmanufactured goods industries and only 1.7 percent for service industries.

Where resources are directed, depends upon where the growth in output is occurring relative to the productivity of resources in those industries. For example, because output in manufacturing has tended to maintain a stable share of national output in the postwar period, but productivity in manufacturing has exceeded that of the average U.S. industry, we would expect that manufacturing industries would employ a decreasing share of the work force. This has indeed been the experience of manufacturing workers, who have represented a smaller proportion of total employment virtually throughout the past 35-year period (chart 4).

The nonmanufactured goods industry has also assumed a less important role as an employer, as relatively falling output and about-average productivity growth indicate relatively fewer workers are necessary in these industries. Finally, the service sector has become a more important source of employment, as the relatively high rate of this industry's output growth and relatively low rates of productivity growth require these industries to absorb an increasing share of the national work force.

The issue of the relocation of employment and other productive resources is complicated by demographic changes occurring in the labor force since 1950. Namely, the emergence of women and secondary family workers in the labor market has probably contributed to the relative growth of the service economy in terms of output and employment. If the growth in the labor force has occurred primarily among laborers with a comparative advantage in the production of service output, this would have a depressing influence on service industry wages and prices, and would further encourage the growth of the service economy.

Critics voicing popular fears claim that the emerging service economy cannot support itself, that relative declines in goods output is a consequence of foreign competition, that the growth in the service economy implies a slowdown in the growth of national wealth, and that redistributions of wealth may eliminate America's middle class.

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6. Disproportionately large increases of service workers into the labor market may also account for some of the relatively slow rates of productivity increase in these industries.
virtually all of the increase has been related to rising petroleum imports (chart 6). Net U.S. exports of real non-petroleum goods actually favored U.S. goods producers at an increasing rate between 1967-1980.6 Only after 1980, did dramatic increases in the value of the dollar result in a decline in net non-petroleum goods export, and a non-petroleum goods trade deficit since 1983. However, even the rather dramatic turnaround in real net U.S. non-petroleum goods exports in recent years has not been associated with a decline in the share of U.S. goods production which remain fairly constant during the 1980s (chart 3). Moreover, real net service exports have been increasing since 1970, yet the magnitude of real trade service gains have been negligible relative to the general growth of the U.S. service industry.

Overall, while international trade flows have been important factors in the relative decline of some goods industries during the postwar period, the relative decline of the aggregate goods-producing sector appears largely unrelated to international trade considerations.

It is often assumed that since some high paid manufacturing workers are forced to accept lower paying service sector positions, there has been a general lowering of the standard of living for Americans. To be sure, the standard of living for some displaced manufactur-
ing workers is reduced. But the average standard of living in the U.S. must be greater, since it is an increase in aggre-
gate wealth that has primarily brought about the growth of the service economy.

The problems of displaced workers are important ones that public policy may wish to address. But policies aimed at discouraging the service trans-

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7. Real petroleum trade data are not readily

8. For example, see Denison (1979); Kutscher and

9. AFL-CIO pamphlet “Deindustrialization

10. The fears such beliefs arouse have, at times,

References
1. Clark, Collin. The Conditions of Economic Pro-
2. Denison, Edward. Accounting for Economic

7. Real petroleum trade data are not readily

8. For example, see Denison (1979); Kutscher and Mark (1983); and Fuchs (1976).
10. The fears such beliefs arouse have, at times, provided very misguided (but predictable) policy prescriptions. U.S. Economic Review, 1961-1986, pp. 11-23. A number of studies, however, have examined the extent to which growing service industry employment has con-

11. Supposedly, based on the popular theories of English radicals, called Luddites, set out to destroy the rising relative to real goods exports most of the postwar period, a closer examination of the trade flows reveals that