

# Comparative Advantage and the Changing Composition of U. S. Output, Exports, and Imports

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In 1971, the United States experienced a merchandise trade deficit for the first time in this century, greatly intensifying concern over the deterioration in the merchandise trade position. This concern stems from widespread belief that the United States needs a large merchandise trade surplus to achieve balance of payments equilibrium.

Economists and policymakers have pointed to the U. S. inflationary surge since 1965 and the overvaluation of the dollar as major culprits in the disappearance of the trade surplus. But recently, some economists have begun to suspect that structural changes in the economy have also contributed to this situation. Some adherents of this view have even begun to question the need for a large, permanent U. S. merchandise trade surplus.<sup>1</sup>

In citing structural changes, they note that the share of national output originating in goods-producing sectors—agriculture, mining, and manufacturing—has been shrinking, but the share of service activities has been expanding. From this they hypothesize that the U. S. may be losing its comparative advantage in goods but gaining one in services. Consequently, one would expect the merchandise trade balance, over the long run, to trend from surplus to deficit and the surplus on services trade to expand unless inflationary pressures or controls on trade and capital distort these long-run tendencies.

The idea that services may provide a growing trade surplus may surprise those who think of barber shops and laundries as typical service industries. But the share of such labor-intensive services in national output has been declining.<sup>2</sup> Instead, services' share of total output has expanded because of the growth of private and governmental services heavily dependent upon educators, scientists, administrators, and other highly skilled and educated persons. It is the growth of these services, which provide major sources of new knowledge and technology for increasing productivity, that some economists have begun to associate with the possibility of an expanding surplus on services trade.

Yet goods whose production is heavily dependent upon technology and highly skilled personnel have also increased their output share even as the share of total goods output has shrunk. Such goods have maintained a

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substantial trade surplus despite deterioration in the overall merchandise trade position.<sup>3</sup> Therefore, broad structural shifts from goods to services within output and trade cloak complex structural changes in many smaller components of goods and services.

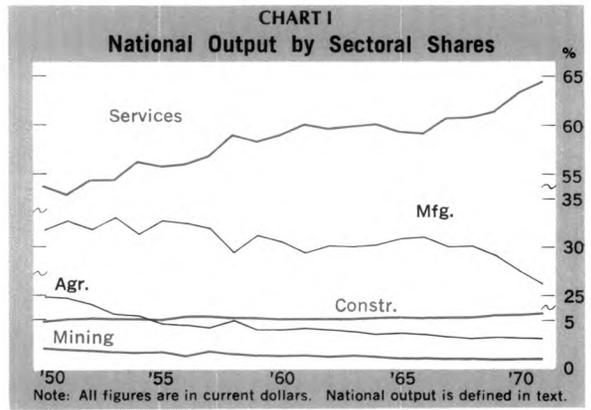
To appraise the hypothesis of changing comparative advantage, this article examines the structural changes in U. S. exports and imports of goods and services and their inter-relationship with structural changes in U. S. output between 1958 and 1971. This time frame permits a comparison of trends during the relatively noninflationary 1958-1964 environment with 1965-1971, marked by strong inflationary pressures and increasing overvaluation of the dollar. The article first analyzes broad structural changes, highlighting the role of services in output and trade. It then proposes a hypothetical framework combining elements of comparative advantage and economic development theories to explain structural changes and linkages between output and trade. Finally, the article analyzes detailed sectoral trends within the context of this framework to uncover some major influences underlying the structural changes in U. S. output and trade.

**Structural Trends**

Services' share in national output rose from approximately 54 percent in 1950 to 64 percent in 1971.<sup>4</sup> In contrast, output shares originating in manufacturing, agriculture, and mining have trended downward, and that of construction has remained stable (Chart I).<sup>5</sup>

Services account for approximately one-third of total imports and exports.<sup>6</sup> Moreover, between 1958 and 1965, the net balance on service trade moved steadily from a deficit equal to .15 percent of national output to a surplus equal to .43 percent. Thus, in 1965, services constituted nearly one-third of the total surplus on goods and services (Chart II). In contrast, the surplus on merchandise trade (agricultural, mineral, and manufactured goods) followed no discernible trend during this period. After 1965, however, the balances of both merchandise and service trade dropped off sharply relative to output.

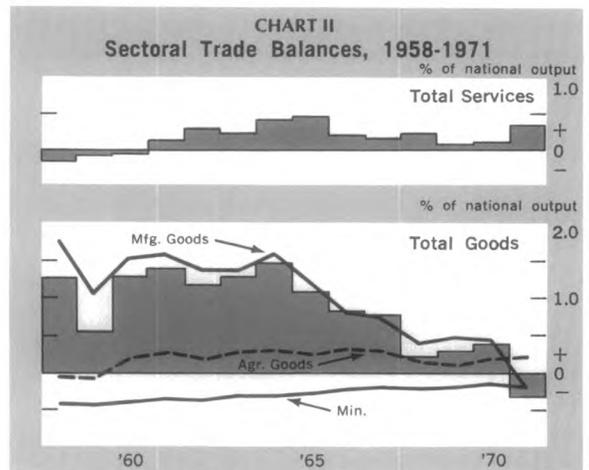
These comparisons suggest that the traditional focus on merchandise trade alone has been too narrow to adequately interpret the forces underlying U. S. trading strength. Furthermore, the upsurge in net service exports through 1965, in contrast to the erratic trend of net merchandise exports, supports the hypothesis that the U. S. trade balance is becoming more service-oriented. The sharp declines in both merchandise and service trade positions after 1965, as imports surged, suggest that inflationary pressures and overvaluation of the dollar severely distorted these long-run trends.



Despite parallel shifts from goods to services in both output and trade, trends in trade have not paralleled trends in output shares. For instance, the balance of agricultural trade moved from deficit to surplus and the minerals trade deficit narrowed, relative to national output, between 1958 and 1971, although the output shares of both sectors declined. These diverse trends suggest that linkages between output and trade are too complex to be derived from comparing trends in broad sectors of output and trade. Hence, forces underlying structural changes in both output and trade must be analyzed before the hypothesis that the U. S. trade position is becoming more service-oriented can be fully evaluated.

**Relationships Between Production and Trade**

Economists have traditionally linked output and trade through the theory of comparative advantage. According to this theory, each area or nation tends to specialize in the production of those goods and services that it can create with greatest efficiency



(i.e., in which it has a comparative advantage). In the modern version of the theory, differences in comparative advantage stem from differences between regions or nations in their mix of productive inputs. For example, if a nation possesses a higher capital to labor ratio than other countries, it (1) tends to specialize in producing capital-intensive goods and services and (2) exports these products for labor-intensive imports.

In recent years, economists have attempted to expand the traditional categories of capital and labor to include physical capital (e.g., machinery), unskilled labor, human capital (investment in education and training in specialized skills), technology (i.e., application of new knowledge to create new products or to produce old goods and services more efficiently), economies of scale,<sup>7</sup> and natural resources.

Demand patterns also play an essential role in determining the equilibrium mix of production, exports, and imports among nations. In fact, large differences in demand patterns, more typically present between nations of widely differing per capita income levels, may occasion trade patterns opposite to those predicted by comparative advantage.<sup>8</sup>

Over time, national economies experience continuous and broadly similar shifts in the structure of output that are related to changes in both demand patterns and the mix of productive inputs.<sup>9</sup> These changes, in turn, bring about changes in a nation's trade pattern.<sup>10</sup> (Differences among nations in timing and pace make specialization and trade possible.)

Thus, nations at early stages of economic development are strongly oriented toward agriculture, manufacture of simple consumption goods, and retail trade, which satisfy basic demands for food, shelter, and clothing. These first two activities depend heavily upon natural resources, and all three use relatively unskilled labor. As countries develop, trade becomes more extensive and more roundabout production methods emerge. Consequently, mining, transportation, and industries processing raw materials for other industries begin to expand their share of output. These sectors typically require heavy investment in physical capital and experience increasing economies of scale.

At more advanced levels of development, consumers—finding it easier to satisfy basic needs in terms of food, shelter, and clothing—demand a wider variety of more sophisticated goods and services. Producing sectors also search for increasing efficiency through more modern equipment and improved organization. Thus, business and professional services and manufacturing industries producing new, highly sophisticated goods contribute an increasing proportion to total output. These sectors use highly skilled and

educated workers and technology and produce these inputs for other sectors of the economy.

In sum, changes in the mix of productive inputs play a significant role in changing the structure of output. Thus, national economies typically move from production using raw materials and unskilled labor toward production characterized by economies of scale and intensive use of physical capital and, finally, toward activities that use human capital and technology intensively and produce them for other sectors. Changes in the composition of demand as per capita incomes rise also interact with changes in the mix of productive inputs to produce changes in the structure of output. However, the importance of demand shifts versus input shifts in bringing about structural output changes are not well understood. Even less appreciated is the role demand shifts play in bringing about changes in the mix of productive inputs themselves (e.g., changes in the saving rate on capital formation, changes in the demand for education on the development of human capital and technology, and changes in the demand for leisure on the supply of labor).

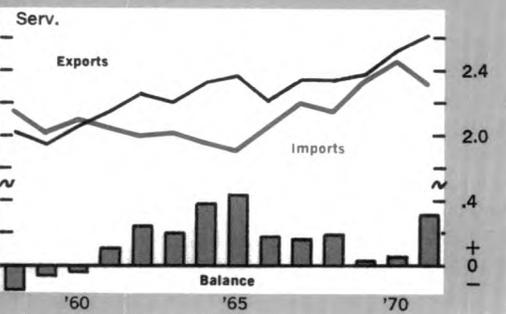
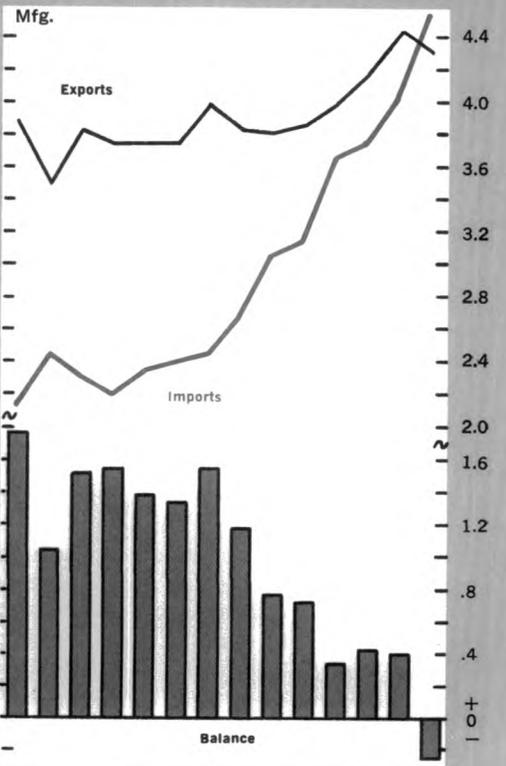
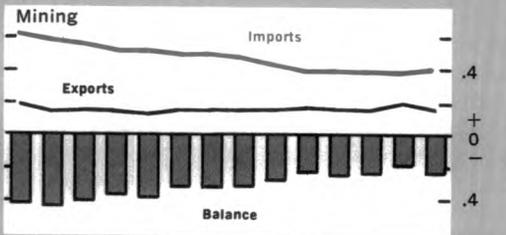
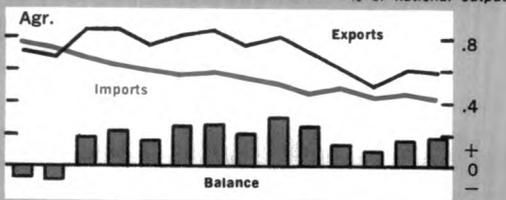
This framework suggests that the highly developed U. S. economy should be increasingly oriented toward the production and export of business and professional services and toward sophisticated consumer goods and capital equipment produced by technology-intensive manufacturing industries. Similarly, goods and services heavily dependent upon natural resources or unskilled labor should decline in *relative importance* within output and exports. But imports may also become more service- and less goods-oriented because of shifts in the composition of demand. Hence, while the theory of comparative advantage implies that sectors increasing their output shares should trend toward a trade surplus and contracting sectors should trend toward deficit, the uneven pace of shifts in the composition of demand may contradict this expectation for some sectors. Change in the mix of productive inputs and composition of demand in U. S. trading partners may also strongly influence trends in U. S. trading patterns.

### Input Mix, Demand Composition, and Structural Change

Let us now analyze trends of U. S. output and trade in individual sectors within the context of changes in mix of productive inputs and in composition of demand. (All trends are expressed relative to output in order to abstract from the influence of the total economy's growth. For example, although a sector's imports may be growing in absolute terms, these imports will exhibit a declining trend relative to national output if the rate of growth is less than that of total domestic output.)

**CHART III**

**Sectoral Trends in Exports, Imports, and Trade Balances** % of national output



**Agriculture**

Agriculture's share of total output has declined largely because consumers spend a shrinking proportion of their incomes on food as their incomes rise. The downtrend in agricultural imports also reflects this behavior, although U. S. barriers against imports of certain agricultural products (e.g., beef and tomatoes), may have contributed. But the shrinking importance of noncompetitive commodities (especially coffee and cocoa) within total agricultural imports suggests that demand shifts outweighed trade barriers in determining this trend.

The growing relative scarcity of the traditional agricultural inputs, labor and land, within the mix of U. S. productive inputs has also contributed to agriculture's declining share in total output and has undoubtedly dampened agricultural exports. (Significantly, the United States has agricultural deficits with Latin America, Australia and New Zealand, and Africa, areas with a relatively greater abundance of land and/or labor.) Moreover, land and labor used in agriculture have been attracted to other sectors paying higher returns on their use. U. S. farmers have adopted new production methods that substitute technologically advanced equipment and techniques, improved management, and large scale operations for labor and land.<sup>11</sup> These changes have slowed the relative downtrend in agricultural exports and, helped by sales of agricultural products under various governmental programs (e.g., PL 480 sales to less-developed nations), eventually permitted a surplus in agricultural trade to emerge.<sup>12</sup>

**Minerals**

The depletion of many mineral deposits during economic growth and, in recent years, environmental concerns have raised costs and restrained U. S. mineral production. Yet mineral export growth has kept up with growth in total output because of the very large U. S. share in global deposits of copper, phosphate rock, sulfur, and coal. These four commodities account for the bulk of U. S. mineral exports.

Mining of these commodities, especially coal and sulfur, is technology-intensive. In recent years, coal has also benefited from increasing economies of scale. Nevertheless, mineral exports have consistently fallen short of mineral imports because of the depletion of other U. S. natural resources and the large domestic demand for petroleum and natural gas, which dominate total U. S. mineral production.

Import quotas, particularly on petroleum, have undoubtedly suppressed mineral imports, although recent and prospective changes in U. S. energy policies may reverse this

trend. Yet shifts in the composition of demand may have also dampened mineral imports and production. Thus, sophisticated goods and services, the most rapidly growing output sectors, rely less heavily upon raw materials in creating value added than some of the older goods sectors. Moreover, energy consumption, which is heavily dependent upon mineral fuels, has trended downward relative to GNP since 1947.<sup>13</sup> The decline in output shares of utilities and transportation services, accounting for about one-half of gross energy consumption,<sup>14</sup> also implies that demand for mineral fuels has been declining relative to total demand.

## Manufacturing

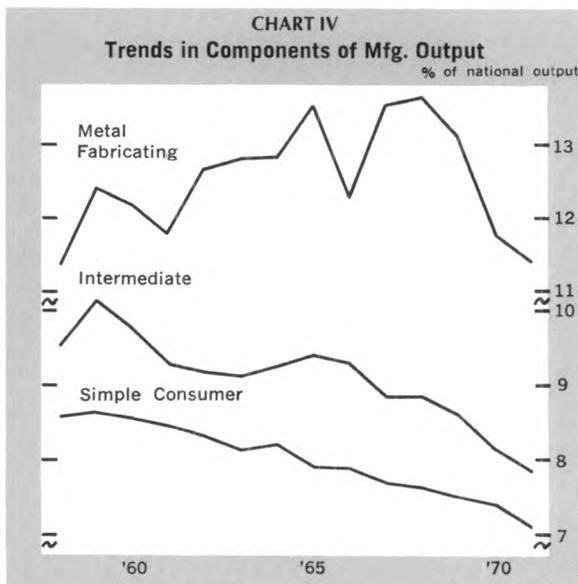
Trends in manufacturing can be better understood by grouping together manufactured goods of similar production and demand characteristics—simple consumer goods, intermediate goods, and fabricated metal goods. Simple consumer goods<sup>15</sup> industries process raw materials satisfying basic consumer needs of food, clothing, and shelter. Their output normally depends heavily upon low-skilled labor but only to a limited extent upon economies of scale or new technology.<sup>16</sup> Intermediate industries also process raw materials but sell the bulk of their output to other producers. They typically require heavy investments in plant and equipment (physical capital) and tend to benefit from substantial internal economies of scale. Metal-fabricating industries produce sophisticated goods that satisfy rapidly rising demands for recreation, travel, education, and leisure or provide capital inputs to other industries. The manufacture of these

goods requires large inputs of human capital and technology and relies less on physical capital and economies of scale than intermediate industries.

The steadily declining trend in simple consumer goods' share of national output (Chart IV) and their persistent trade deficit (Chart V) suggest a comparative disadvantage stemming from relatively intensive use of raw materials and unskilled labor. The tendency for consumers to spend less of their budget on simple consumer goods as incomes rise has undoubtedly dampened output growth and accounted for a stable trend in simple consumer goods imports until the outbreak of inflation in 1965. Thereafter, such imports accelerated in response to excess domestic demand, substantially widening the trade deficit for these goods.

The share of intermediate goods in output has also declined, though more irregularly than simple consumer goods. Imports and exports from 1958 to 1964 fluctuated around a flat trend and were roughly in balance. This pattern suggests a slowly emerging comparative disadvantage stemming from a rising scarcity of domestic raw materials partially offset by economies of scale and intensive use of physical capital. In addition, the stable level of imports until 1965 and the slowly declining share of output suggest that demand for intermediate goods has grown moderately less than total demand. The sharp rise in imports and equally sharp decline in output share after 1965 reflect an increasing substitution of imports for domestic production in response to surging excess demand in the economy.

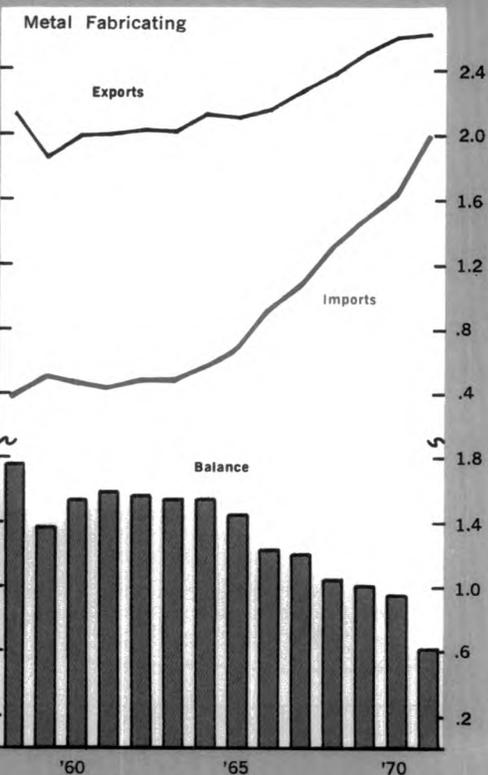
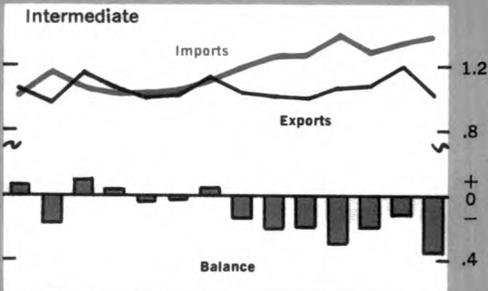
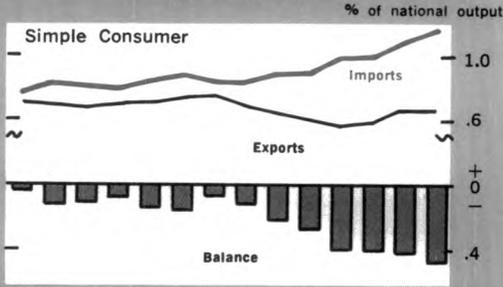
The trade surplus and rising trends for exports and output shares (except during recessions) for metal-fabricated products suggest a strong U. S. comparative advantage in these goods, whose productive processes depend heavily upon human capital and technology. The rising trends for imports and output also imply above-average growth of demand for these products. But accelerating imports after 1965 resulted in a decline in the trade balance of fabricated metal products. Moreover, accelerating imports, by substituting for domestic production, may have contributed to the sharp downturn in this sector's share of domestic output after 1968.



## Services

Evaluating the forces underlying trends in service output and trade present numerous difficulties. Problems of measuring output are compounded by substantial differences between service output and service trade classification schemes. Nevertheless, we have attempted a breakout and comparison of service components which, though crude, suggest that service output and trade patterns change in response to common supply and demand influences much like goods-producing sectors.

**CHART V**  
Trends in Exports, Imports, and Trade Balances for Mfg. Components

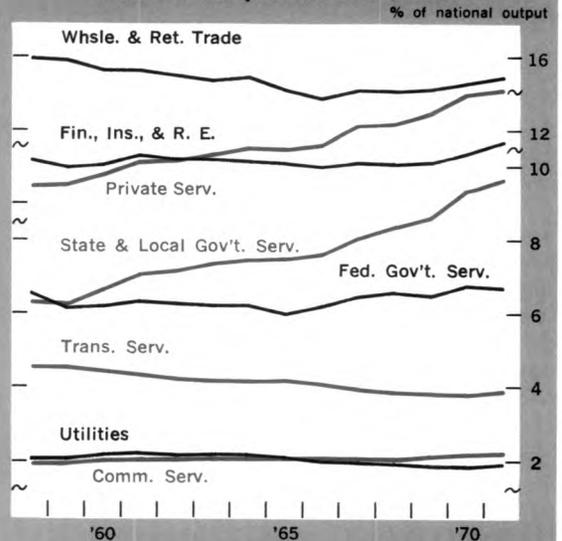


The expansion in services' domestic output share from 1958 onward stems from growth in both private and state and local services, plus an upsurge in Federal services after 1965 (Chart VI). The expansion in private services derives entirely from professional and technical services (i.e., educational, legal, miscellaneous professional, miscellaneous business, medical and health, and nonprofit organizations). Output shares of other private services (i.e., repair, personal, private household, lodging, and entertainment services) remained stable or declined. These latter are very labor-intensive but utilize relatively little human capital.<sup>17</sup>

Educational services account for approximately two-thirds of the expansion in state and local output<sup>18</sup> and, currently, for more than 40 percent of state and local expenditures. General government, civilian safety, welfare administration, and health and medical services make up most of the remaining expansion in that sector. In sum, the expansion of both private and state and local governments' services stems from services that use human capital and/or technology intensively in their production processes and provide the main source for adding to the stock of these inputs.

A growing body of opinion, supported by limited evidence, holds that fees and royalties and direct investment earnings in trade accounts include payments for a wide variety of services similar to professional and technical services which swell the services' output share.<sup>19</sup> (Some service exports only incorporate indirectly domestically produced services. For example, educational

**CHART VI**  
Trends in Components of Services



services provide the human capital and technology essential for generating fees and royalties and returns on direct investment, but educational services directly exported are probably quite small.) The large and growing surplus on these services (classified here as technical services) was responsible for the bulk of the overall surplus on services trade from 1960 onward (Chart VII).

Hence, the contribution of technical services to the growth of service output and exports and the large trade surplus for this sector strongly support the hypothesis that the United States has a significant and growing comparative advantage in services utilizing large proportions of human capital and technology in their mix of productive inputs.

Governmental restraints on foreign direct investment of U. S. corporations may have dampened this comparative advantage. Thus, technical services exports flattened out during the mid-Sixties when such controls were first imposed. The renewed uptrend of these exports in the early Seventies is consistent with some relaxation of restraints.

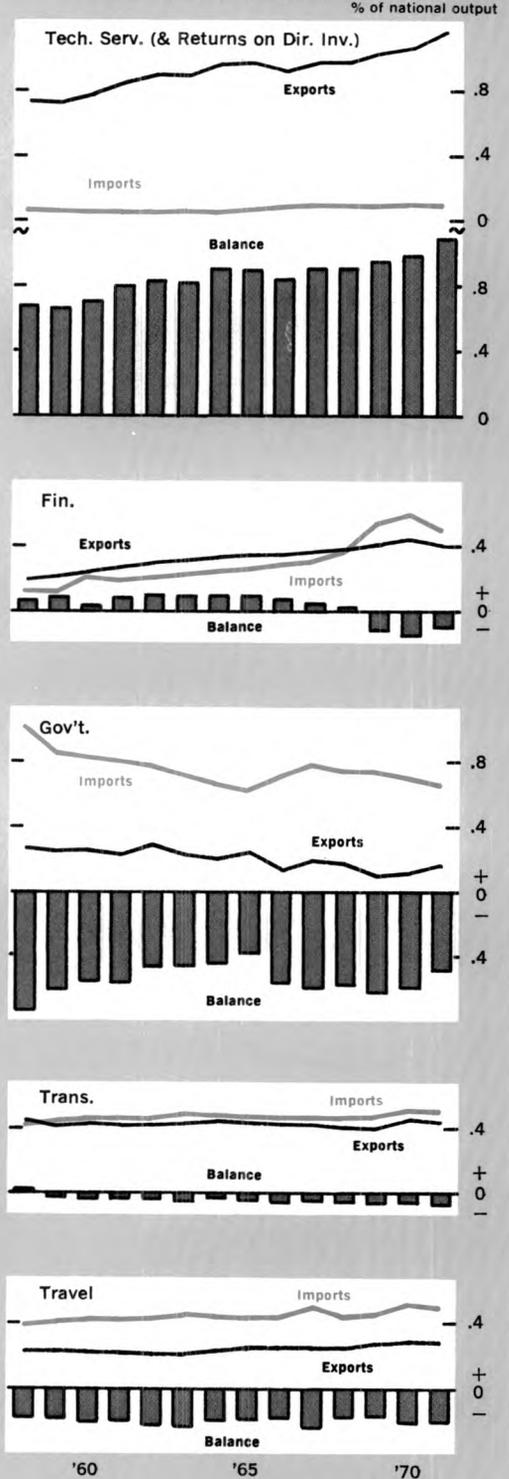
The pattern of Federal services in output and trade overwhelmingly reflects the vagaries in the demand for military services (i.e., these trends are relatively independent of the mix of productive inputs used to produce military services). Military expenditures declined relative to output from 1958 to 1965 as "cold war" hostilities abated but began rising after 1965 in response to the Vietnam conflict. The Federal Government's share of output moved correspondingly. Military expenditures have ranged from 80 to 85 percent of Federal expenditures on goods and services and dominate exports and imports of governmental services as well. The proportion of Federal nonmilitary expenditures to domestic output has remained stable, although their composition has changed.

The trend in military spending abroad (imports) and consequently the deficit for this sector closely paralleled the pattern of the Government's share in total output (i.e., declining from 1958 through 1965, then rising in response to the acceleration of Vietnam hostilities).

In this article, we have assumed that returns on foreign financial assets and payments on financial liabilities to foreigners implicitly include a substantial component of payments for financial services and, therefore, respond to the same demand and supply forces influencing domestic output of such services. (Governmental receipts and payments on foreign assets and liabilities are included in these services.)

Financial services are relatively labor-intensive and use relatively less physical capital (excluding real estate) and human capital than manufacturing. However, the U. S. reputation for possessing one of the largest, most efficient financial systems

**CHART VII**  
**Trends in Exports, Imports, and Trade Balances for Service Components**



in the world implies substantial external economies of scale.

The net surplus of financial services until the late Sixties suggests a U. S. comparative advantage, perhaps based on external economies of scale. The sudden contraction of this surplus after 1965 and the appearance of a deficit in 1969 largely reflect the inflationary boom after 1965 which swelled U. S. credit demands and induced substantial capital inflows from abroad. As a result of payments to foreigners for use of these funds, financial service imports surged dramatically. Recycling of U. S. domestic funds via the Eurodollar market because of Regulation Q interest ceilings added to payments to foreigners. In essence, Regulation Q frustrated the domestic production of financial intermediation services and further expanded domestic demand for such services from abroad.<sup>20</sup>

By constraining exports, governmental regulations may have also contributed to the deterioration of the balance of financial services. Thus, coinciding with the imposition of the Interest Equalization Tax on U. S. purchases of foreign securities and the Voluntary Foreign Credit Restraint Program, which constrained the increase of U. S. commercial bank financial claims on foreigners in the mid-Sixties, the growth rate of returns on foreign portfolio investments (exports) slowed.

Transportation services claim a small and shrinking share of domestic output. Exports have maintained a flat trend relative to output, but a slowly rising import level has opened up a small deficit suggesting a slowly emerging U. S. comparative disadvantage in transportation services. The sector is characterized by heavy investments in physical capital, economies of scale, and an indirect dependence on mineral resources via fuel consumption. The contraction in share of total output and the limited rise of imports also imply that domestic demand for transportation services has grown relatively slowly.

The rising level of travel imports reflects growing American expenditures on travel abroad as incomes rise. The nearly equal rise in travel exports indicates that foreign demand for travel in the United States has also grown more rapidly than domestic output. Nevertheless, the deficit in this component in relation to the overall level of trade implies a strong U. S. comparative disadvantage rooted in the labor intensity of travel-related services. The contraction of the output share of travel-related services—hotels, retail trade, and personal services—tends to bear out this inference.<sup>21</sup>

### Conclusions and Implications

Taking into account distortions introduced by cumulative inflation and overvaluation of the dollar

from the mid-Sixties onward, the analysis of patterns of change in the structure of U. S. output and trade in this study supports the hypothesis of a long-run shift in U. S. comparative advantage from goods to services. Nevertheless, this conclusion by itself is misleading since it overlooks the complex set of changes in patterns of output and trade that have resulted from a changing mix of productive factors and, to a lesser extent, shifts in the composition of total demand.

Thus, services that utilize and reproduce human capital and technology account for the growing surplus in service trade and the expansion of services within domestic output. Goods relying heavily upon the use of human capital and technology, mainly metal-using manufactured goods, have also increased their share of domestic output and maintained a strong trade surplus.

In contrast, goods and services relying heavily upon inputs of raw materials or labor have tended to dwindle in relative importance within domestic output and to register trade deficits. Minerals, simple manufactured consumption goods, wholesale and retail trade, and some private services fall into this group. Sectors characterized by heavy investments in physical capital and economies of scale, especially intermediate manufactured goods and transportation services, have declined somewhat more slowly in relative importance within domestic output and have tended to develop small trade deficits.<sup>22</sup>

On the other hand, demand for military services rather than comparative advantage has determined trends in the share of Federal Government services in total output and the trade deficit in government services. Moreover, after 1965, the acceleration in U. S. demand for military services simultaneously exaggerated the expansion of output and imports of services, thereby distorting the longer-run positive relationship between the expansion of service output and of the trade surplus in services.

Trends in agricultural output and trade meanwhile have reflected shifts in both demand and comparative advantage. Changes in demand away from raw agricultural products have resulted in the declining relative importance of agricultural output and imports. But a substitution of physical capital, technology, and economies of scale for traditional inputs of land and labor has slowed the relative decline of agricultural exports and resulted in a persistent surplus position in the Sixties for the first time since the early Twentieth Century.

However, serious distortions in these long-run trends after 1965 resulted in a deterioration in the overall trade balance, affecting primarily the balances for manufacturing and services. First, the acceleration in Vietnam-related military expenditures swelled service imports dramatically. Second, inflationary credit demands generated in

the U. S. by the sudden expansion of military expenditures and retention of Regulation Q further expanded service imports through an ensuing rise of interest payments to foreigners. Finally, U. S. exchange controls dampened the export growth of financial, technical, and professional service exports. The diminishing surplus on manufacturing trade, reflecting a sharp deterioration in the trade balance for all three components, apparently stemmed from the cumulative impact of inflationary pressures after 1965 and the overvaluation of the dollar.

Realignments of exchange rates in the past three years and the prospective termination of U. S. restrictions on capital outflows should help reduce these distortions and permit long-run trends to

reassert themselves. However, since economic adjustments from these realignments are far from complete, several years must pass before the explanatory hypothesis put forth in this article can be fully tested.

The patterns of output and trade examined here imply that international adjustment involves more than monetary and fiscal policies to control aggregate demand. Economic policies must also accommodate structural adjustments in trade that stem from ongoing shifts in the patterns of demand for goods and services and in the mix of productive factors within domestic economies. Thus, international adjustment cannot be achieved independently of measures that facilitate internal resource adjustment to these shifts. ■

## FOOTNOTES

<sup>1</sup>See Lawrence B. Krause, "Trade Policy for the Seventies," *Columbia Journal of World Business*, January-February 1971; Robert A. Bennett, "Roosa Sees U. S. Economy in Major Shift," *American Banker*, November 18, 1971; and Robert E. Lipsey, "The Current International Competitive Position of the United States," *The Conference Board Record*, April, 1972.

<sup>2</sup>Throughout this article, national output is defined as total national income less the rest of the world component as shown in relevant issues of the U. S. Department of Commerce, *Survey of Current Business*. National income is the value of final goods and services, less capital depreciation, indirect business taxes, and certain other "nonincome" charges. To obtain the contribution to national income from a specific economic sector, we must add what is left after deducting from the total value of sales of each firm in that sector the amount of the above charges, plus purchases of goods and services from other firms. In contrast, exports and imports are classified according to the total value of output actually sold in international commerce by a specific industry. For example, in addition to the value added by the textile firms themselves, the value of textiles exported includes the value of fibers, transportation, etc., purchased by the textile industry in order to produce the exported product.

<sup>3</sup>Peter G. Peterson, *The United States in the Changing World Economy*, Council on International Economic Policy, December 27, 1971, Washington, D. C.

<sup>4</sup>In contrast, services claimed only 42 percent of GNP in final demand terms in 1971. These figures differ because a large portion of net output of service industries becomes input to goods-producing industries and is included in the value of goods reaching final demand.

<sup>5</sup>It should be pointed out that national income and its components deflated by the GNP deflator show that the share of national output originating in manufacturing has increased during the Sixties. Nevertheless, the presumption of underestimation of real product in the services sector, stemming from very difficult methodological and data problems involved in measuring many types of services, raises serious doubts about the validity of using deflated rather than current dollar measures as a better indicator of the trend in manufacturing's share of total output. (See Martin L. Marimont, "Measuring Real Output for Industries Providing Services: OBE Concepts and Methods," in *Production and Productivity in the Service Industries*, Victor R. Fuchs, ed., National Bureau of Economic Research [New York and London, 1969].) Moreover, the increasing proportion of white-collar workers in total manufacturing employment (many of whom perform tasks similar to those performed by workers in the business and professional service industries) suggests that a growing proportion of manufacturing output, whether measured on a deflated or current dollar basis, incorporates indirectly an expanding volume of services.

<sup>6</sup>Commodity exports and imports are classified according to the U. S. Standard Industrial Classification basis as are the detailed industry sectors for national income. Commodity trade figures on this basis are only available from 1958 onward, although

commodity trade on the Standard International Trade Classification goes back for many years. For the years 1958 through 1970, data were taken from the U. S. Department of Commerce, *U. S. Commodity Exports and Imports as Related to Output*, for selected years. Data for 1971 were taken from the U. S. Bureau of the Census *U. S. Exports of Domestic Merchandise, SIC-Based Products and Area*, Report FT 610, 1971 Annual, and *U. S. Imports for Consumption and General Imports, SIC-Based Products and Area*, Report FT 210, 1971 Annual. Service exports and imports are derived from U. S. Department of Commerce balance of payments data in relevant issues of the *Survey of Current Business* and do not conform to the Standard Industrial Classification.

<sup>7</sup>Economies of scale may be of several types. Internal economies result when a plant or firm is able to reduce unit costs of production by expanding output. External economies result when costs are reduced because of an expansion of the industry, the reduction in transport costs associated with the spatial concentration of producers and markets, or the growth of specialized services accompanying local expansion of output. External economies of scale tend to be closely associated with urbanization. Most empirical studies that take into account scalar economies only attempt measurement of internal economies of scale.

<sup>8</sup>See H. Robert Heller, *International Trade: Theory and Empirical Evidence* (Englewood Cliffs, New Jersey; Prentice Hall, Inc., 1968), chapters 4 and 5.

<sup>9</sup>See, for example, the works of Simon Kuznets, especially "Quantitative Aspects of the Economic Growth of Nations," Part II, Part III, and Part VII in selected issues of *Economic Development and Cultural Change* and Hollis B. Chenery, "Patterns of Industrial Growth," *American Economic Review*, September, 1960, pp. 624-654.

<sup>10</sup>Evidence relating changes in goods output to changes in the composition of merchandise trade may be found in Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations: Part X. Level and Structure of Foreign Trade: Long-Term Trends," *Economic Development and Cultural Change*, Vol. 15, No. 2, Part II, January, 1967, and Alfred Maizels, *Industrial Growth and World Trade* (Cambridge, England; The University Press, 1963).

<sup>11</sup>For a description of this complex process in selected regions of the southern United States, see William H. Nicholls, "Industrialization, Factor Markets, and Agricultural Development," *Journal of Political Economy*, Vol. 69 (August, 1961), pp. 319-340, and references cited therein.

<sup>12</sup>The balance on crude foodstuffs began registering persistent deficits in 1909. See John M. Letiche, *Balance of Payments and Economic Growth* (New York, Augustine M. Kelly, 1967). The concept of agricultural trade in this article, while predominantly consisting of crude foodstuffs, also includes nonfood, raw agricultural commodities. By way of comparison, the Department of Commerce end use classification of agricultural trade, which includes some processed food products, shows a mostly negative

tendency from 1923 until 1960, followed by a persistent surplus thereafter. See William H. Branson and Helen B. Junz, "Trends in U. S. Trade and Comparative Advantage," *Brookings Paper on Economic Activity*, No. 2, 1971.

<sup>13</sup>This downtrend is measured by the ratio of gross energy consumption (in thousands of B.T.U.'s) per dollar of 1958 Gross National Product. Actually, this downtrend was interrupted by a sharp increase in energy consumption between 1967 and 1970. However, the ratio dropped again in 1971 and is projected to continue dropping until the year 2000. See Walter G. Dupree, Jr., and James A. West, *United States Energy Through the Year 2000*, U. S. Department of the Interior, December, 1972, pp. 6 and 13.

<sup>14</sup>*Ibid.*, p. 7.

<sup>15</sup>**Simple consumer goods** consist of the two-digit SIC categories of food, tobacco, textiles, apparel, furniture, printing, rubber, and miscellaneous manufacturing. **Intermediate goods** consist of lumber and wood, paper, chemicals, petroleum refining, stone, clay and glass, and rubber and plastics. **Fabricated metal goods** consist of metal fabricating, nonelectrical machinery, electrical machinery and equipment, transportation equipment and ordnance, and instrument industries.

<sup>16</sup>Evidence on the consumer orientation and relative factor intensities with regard to capital, human capital, technology, and internal economies of scale of manufacturing industries for two- and three-digit SIC-based categories of manufacturing may be found in G. C. Hufbauer, "The Impact of National Characteristics & Technology on the Commodity Composition of Trade in Manufactured Goods" and in *The Technology Factor in International Trade*, Raymond Vernon, ed., National Bureau of Economic Research, (New York, 1970), pp. 212-223.

<sup>17</sup>This assertion is based upon the proportion of professional, technical, and kindred workers to total employed workers for these industries. These data may be obtained from the U. S. Bureau of the Census, *Occupation by Industry 1970*, Table 1. In this article, all references to human capital intensity for service industries are based on these data.

<sup>18</sup>National income statistics do not provide a breakout of the different component services that make up either Federal or

state and local governments' shares in national income. However, we have made inferences about the composition of these services from the functional distribution of governmental expenditures on goods and services.

<sup>19</sup>The nature of fees and royalties strongly suggests an intensive use of human capital. Thus, they include payments for sale of intangible property rights (patents, techniques, processes, formulae, designs, trademarks, copyrights, franchises, manufacturing rights, etc.) and professional, administrative, and management services, and rental of tangible property. (This description is from the U. S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, June, 1971, pp. 51-52.) Earnings on direct investments may well include disguised payments for many of these same or related services. Thus, a recent U. S. Tariff Commission study points out that numerous factors may distort a rational allocation of foreign investment related revenues between technical services and earnings on investments. The study also provides evidence of a positive relationship between the rate of growth of foreign direct investment and the technological intensity of U. S. multinational corporations. See U. S. Senate, Committee on Finance, *Implications of Multinational Firms for World Trade and Investment and for U. S. Trade and Labor*, (Washington, 1973), Chapter VI, "Technology, R & D, and the Multinational Firms," pp. 550-604.

<sup>20</sup>Private payments on financial instruments (imports) declined dramatically in 1971 but were partially offset by skyrocketing payments on U. S. Government liabilities to foreigners. This shift basically reflects the movement of dollars from private to central bank hands as speculative pressures against the dollar mounted in foreign exchange markets.

<sup>21</sup>Other private services show a small but rising trade surplus. However, the heterogeneity of services in this component (which includes insurance, communications, and consulting services as well as payments related to diplomatic and other miscellaneous services) precludes any meaningful inferences about underlying demand and supply forces.

<sup>22</sup>Evidence of a negative relationship between net commodity exports and the ratio of physical capital to labor may be found in Branson and Junz, *op. cit.*, p. 328.

## Bank Announcements

August 1, 1973  
**FIRST GEORGIA BANK**  
*Atlanta, Georgia*

**Admitted to membership in the Federal Reserve System** as a merger of the First Georgia Bank, Atlanta, Georgia, and the Bank of Fulton County, East Point, Georgia.

August 1, 1973  
**NORTHWOOD BANK OF WEST PALM BEACH**  
*West Palm Beach, Florida*

Opened for business as a par-remitting nonmember. Officers: C. Robert Stock, president; William A. Lord, vice president; Betty Jean Kidder, cashier. Capital, \$960,000; surplus and other funds, \$484,000.

August 15, 1973  
**BANK OF ST. JOHN AND BRANCHES**  
*Reserve, Louisiana*  
 Began to remit at par.

August 21, 1973  
**CENTRAL BANK OF SOUTH DAYTONA**  
*South Daytona, Florida*

Opened for business as a par-remitting nonmember. Officers: Fred Sinclair, president; Walter D. Compton, vice president and cashier. Capital, \$600,000; surplus and other funds, \$400,000.

August 22, 1973  
**THE GULF NATIONAL BANK**  
*Tallahassee, Florida*

**Opened for business as a member.** Officers: Edward K. Walker, chairman; Jerry L. McDaniel, Jr., president; Michael M. Fields, vice president; Lucy J. Tacot, cashier.

August 22, 1973  
**BROWARD NATIONAL BANK OF PLANTATION**  
*Plantation, Florida*

**Opened for business as a member.** Officers: Robert B. Lochrie, chairman; Terrence E. Reilly, president; Carl W. Cross, cashier. Capital, \$300,000; surplus and other funds, \$300,000.