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Furniture manufacturing and marketing in the 'American Economic Transition

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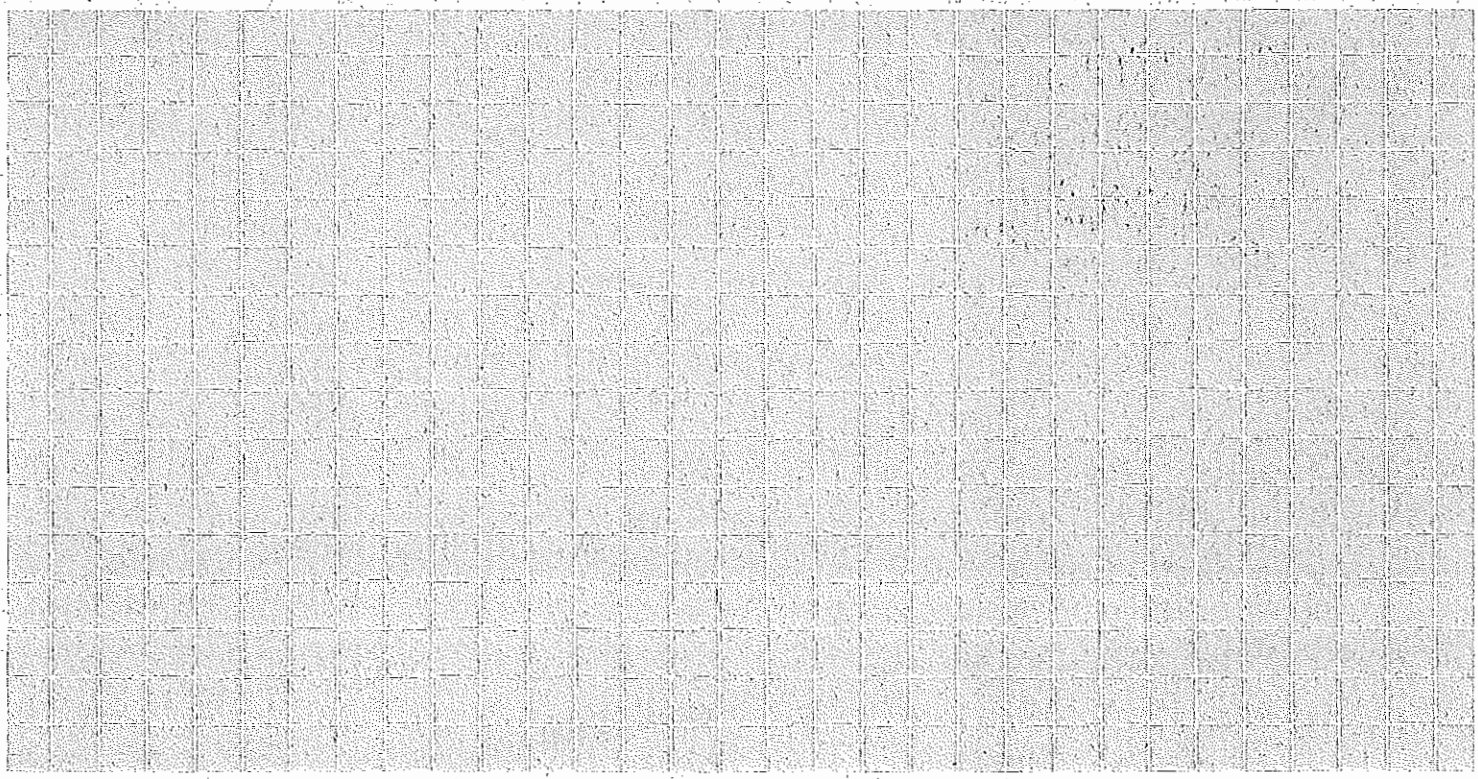

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Preface

Many changes have occurred in U.S. society and the U.S. economy in recent years—changes in the importance of imports, for example, and in the relative importance of education, technical innovations, and manufacturing and service industries. This report is an effort to describe many of the general changes that have recently occurred and that are expected to occur in coming years, as well as changes and expectations that are specific to the U.S. household furniture industry. In this effort, the report first presents an overview of a recent Office of Technology Assessment report. The overview summarizes concepts from the OTA report and includes many quotations and references to the document; principal OTA phrases—*American Economic Transition* and *Choices for the Future*—comprise two of the three major sections of the present paper, while the Furniture Manufacturing and Marketing section includes information and conclusions from many primary and secondary sources.

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Executive Summary

The Office of Technology Assessment recently prepared a 500-page report titled *Technology and the American Economic Transition, Choices for the Future.* OTA sees four major factors that are resulting in "economic transition"—factors that will continue to transform the U.S. economy during the next 20 years: new technologies, new challenges from abroad, new resource constraints, and new values and tastes in U.S. consumer and labor markets.

New technologies, particularly in collecting and handling information, are expected to have long-term, pervasive economic and social impacts comparable to past U.S. economic transformations from major technologies such as automobiles and railroads. New technologies have also contributed to the second factor creating "transition," new challenges from abroad, by creating access for foreign producers to many product markets in the U.S. These forces, as well as resource factors and new values and tastes, have already had profound impacts on U.S. industries, yet there are many possible courses of development for U.S. industries and the U.S. economy during the next 20 years. *Choices for the Future* will determine to a great extent those industries and companies that prosper and those that decline, as well as, in a much broader context, whether or not U.S. productivity and standards of living decline or advance compared to other countries.

How will the U.S. furniture industry be affected by the *American Economic Transition*? Several conclusions and expectations are evident from information in the OTA report and other sources:

The Economic Importance of Furniture Manufacturing is Increasing

Furniture manufacturing is a basic manufacturing industry, and as service-sector employment and industries expand, the economic importance of furniture and other manufacturing increases. Manufacturing employment and productivity improvements are essential for an expanding service-sector. Furniture manufacturing jobs therefore support increasing numbers of non-manufacturing jobs, and production lost to imports or recession has an increasing multiplier or ripple effect throughout the U.S. economy.

Consolidation Continues, but Small Firms are Thriving

Mergers and acquisitions have increased the size of many furniture companies in the U.S. Mergers have increased in the furniture industry because of foreign competition and other production and marketing factors. Smaller firms, however, have also been able to compete and prosper in recent years because of limits to economies of scale in furniture production and marketing, and because of new information technologies, expanding business services, and recent trends in the relative costs of capital and labor. The future of smaller furniture companies, however, is closely tied to their ability to identify and penetrate specialized market segments; larger firms should be able to operate on narrower margins during economic recession.

Imports are Affecting the Industry's Structure and Orientation

Many factors have caused the loss of U.S. preeminence in international markets. The most important factors influencing furniture markets have been wage rate differences, the strength of the U.S. dollar, and new transportation efficiencies from container shipping of ready-to-assemble products. Imports are causing the industry to become more oriented toward upholstered products and higher-priced wood household furniture. The U.S. industry also has become more concentrated in larger companies and in specific geographic areas. The most significant impact of foreign competition in the furniture industry in the next 20 years may occur in the next economic recession, however, as major foreign producers may be much more inclined to cut prices rather than production.

Environmental Issues are Affecting Competitiveness and Geographic Location

The furniture industry's recent problems with atmospheric emissions from wood finishing and with wood dust levels inside plants are affecting competitiveness with foreign firms; they also encourage recently observed trends toward consolidation and reorientation away from lower-priced wood household furniture. While other regulatory issues may be redirected during the next 20 years, furniture manufacturers should expect more, rather than less, regulation to protect the environment and the health and safety of consumers and workers.

Furniture Markets and Marketing Methods are also in Transition

Furniture consumption in the U.S. is closely related to GNP (gross national product), a measure of general economic activity. For this reason, the absolute size of future markets is closely tied to economic and demographic trends. Other factors affecting furniture markets include the characteristics and attitudes of "baby-boomers," new emphasis on consumer financing of furniture and other items, and the uncertain impacts of

technology in developing and marketing both complementary and competing consumer products.

New information technologies, increased foreign competition, new resource constraints, and new consumer and labor attributes will change production and consumption in the U.S. economy in many ways. Significant *Choices for the Future*, however, are outlined in the OTA report. Education, for example, is an extremely important endeavor. Strategic choices in education will directly impact future productivity. Education is perhaps the most critical part of the social infrastructure necessary to benefit from the technologies and other factors causing economic transformation in the U.S. Along with research and innovation, education must increasingly be viewed as an investment rather than a current consumption expenditure. Other important *Choices for the Future* include government regulation, where regulations have effectively nndermined U.S. competitiveness in some areas, and in taxation where, for example, serious proposals are being developed and evaluated to completely eliminate corporate income taxes.

Public and private policies in education, regulation, and taxation will have direct and indirect impacts on the future competitiveness and prosperity of the furniture industry. Research and innovation are another important area of choice that will have profound impacts on the industry in general and on specific companies within the industry. Furniture manufacturers must be increasingly capable of absorbing the products of research. Successful firms will recognize the increased importance of adaptability and flexibility in production and marketing.

In many respects, comparative advantage in furniture production during the next 20 years will become much less related to raw materials and labor costs, and much more related to the quality of technology, management, and labor, and to state and federal government activities that establish the general economic environment including the terms of international trade.

Furniture Manufacturing and Marketing in the *American Economic Transition*

By Steven H. Bullard

Introduction

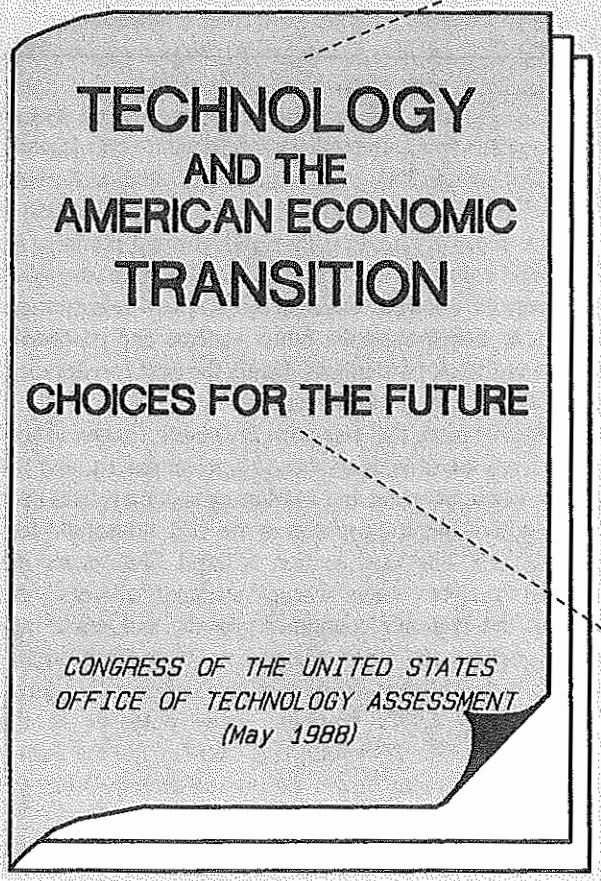
During the next 20 years, technology and other forces will cause a "major transformation" in the U.S. economy. The transformation will be similar in extent and significance to the "introduction of steam power, railroads, and mass production equipment at the beginning of the 19th century," and to the "development of electric power, inexpensive steel, automobiles, and telephones at the beginning of the 20th century." In fact, during the next 20 years, new technologies and other forces are likely to "reshape virtually every product, every service, and every job in the United States;" they are likely to "shake the foundations of the most secure American businesses."

These conclusions were recently reported by the Congressional Office of Technology Assessment (OTA) in a 500-page report titled *Technology and the American Economic Transition, Choices for the Future* (Figure 1)[1]. The report summarizes how and why technology, global economic challenges, and other factors are likely to "transform" the U.S. economy in the next two decades; as indicated by the report's title, the agency also outlined policy alternatives to enhance future U.S. economic growth.

OTA did not assess how new technologies and other major factors would affect all U.S. industries and sub-industries. Its objective was "to take a broad look at the combined impact of new technologies on American society." Structural changes in the Nation's economy will affect various industries differently, however, and this report relates OTA's conclusions and information from other sources to furniture manufacturing and marketing. The success or failure of specific U.S. industries and of individual companies within industries depends to a great extent on the foresight and planning of industry and company leaders. Public and private responses to the "strategic choices" outlined by OTA will be extremely important in determining the future success and prosperity of entire industries, particularly during the next two decades, the period of "major transformation."

In this publication, the *American Economic Transition* section describes the OTA analysis and general results, and the Furniture Manufacturing and Marketing section relates production and consumption results to the U.S. household furniture industry. The final section is titled *Choices for the Future*; it describes areas where "strategic choices" are critical to the Nation's economic growth, and where appropriate, relates the policy alternatives to production and marketing in the U.S. household furniture industry. For clarity in summarizing OTA's findings, many passages in the *American Economic Transition* and *Choices for the Future* sections of the present report are quoted directly from the agency's final report to Congress.

[1] *Throughout the present paper, words and sentences in quotation marks that are not otherwise referenced are from the OTA report.*



Major transformation during the next twenty years ...

"*During the next two decades, new technologies, rapid increases in foreign trade, and the tastes and values of a new generation of Americans are likely to reshape virtually every product, every service, and every job in the United States.*" (p.3)

Four major forces are expected to cause economic transformation ...

New Technologies

" *-primarily those built around microelectronics;* "

New Challenges From Abroad

" *-the loss of U.S. preeminence in international markets;* "

New Resource Constroints

" *-the possibility that the price of energy and other resources may increase sharply by the turn of the century; and*"

New Volues and Tastes

" *-changes in consumer and labor markets and a new attitude toward public regulation of economic activity, resulting-at least in part-from new values and tastes.*" *(p.15)*

Policy alternatives are ossessed ...

"OTA was asked to identify areas where existing policy might block attractive avenues of growth and where new policies could facilitate growth. The report highlights strategic choices available to Americans as we negotiate a period of major transformation. " (p.iii)

The document is not a forecast ...

" *forecasting implies that choice plays a minor role. Instead, the analysis attempts to provide the clearest possible description of the available choices and their implications.*" (p.4)

Examples discussed in the present paper are education, government regulation, taxation, and research and innovation.

Figure 1. ***Technology and the American Economic Transition, Choices for the Future***, explains why a major transformation is expected in the U.S. economy during the next 20 years and outlines policy options to enhance economic growth.

American Economic Transition

As highlighted in Figure 1, four major forces are expected to result in basic, structural change in the American economy and society during the next 20 years: *New Technologies*, *New Challenges From Abroad*, *New Resource Constraints*, and *New Values and Tastes* in U.S. consumer and labor markets.

New Technologies

Technology can change entire societies and ways of life over relatively short periods of time. Examples of technologies cited earlier, which revolutionized society in the past, are the early 19th-century developments in steam power, railroads, and mass production equipment; and early 20th-century technologies in electric power, steel production, automobiles, and telephones. Such "clusters of technologies" did more than improve the way things were done previously. OTA concludes that such developments had "effects going far beyond the markets for which specific inventions were originally developed. Each cluster of technologies led to rapid growth in wealth, standards of living, and employment. The texture of everyday life was transformed."

One of the specific examples cited by OTA was the development of weaving machines. These moved household work to towns and factories, and inexpensive cloth improved comfort and sanitation, and revolutionized fashion. New techniques in producing textiles and apparel "turned villages into cities, changed the terms of international trade, and helped make England a world power."

An example of technology-induced economic and social change, which may be more familiar to most Americans, has been the development of affordable automobiles. "Affordable cars reshaped everything from the design of cities and suburbs to styles of courtship. They generated noise, pollution, accidents, poetry, and an unimagined range of personal mobility. A curiosity at the beginning of the century, auto production dominated U.S. industry by the 1950's."

These examples dramatically illustrate the extent of change that can result from technology. They clearly show why the U.S. Congress created an agency to continually assess technology and its potential impacts on society. OTA's basic function is to help Congressional leaders anticipate and plan for the consequences of technological change. An important current concern of the agency is the question of whether or not technologies now entering the economy have the potential to "so transform society that their impact can be considered revolutionary." The agency **did** identify one such area—new technologies for "collecting, storing, manipulating, and communicating information" have the potential to "change the performance of the economic system itself;" information technology is therefore deemed likely to revolutionize the structure and performance of the Nation's economy.[2]

Although the economic impact of new information technologies has "proven to be exasperating" to measure, OTA did discuss three important areas where basic, structural change is occurring.

New information technologies can:

1. "*. . . increase the productivity of operations where real productivity changes once seemed so remote that they may never have been considered seriously.*" One example is the "movement and organization of information"—"paper shuffling" tasks such as "clerical or quasi-clerical data entry, processing, communication, or manipulation," occupations that now represent more than 16 percent of the U.S. work force. Another example where real productivity gains ouce seemed "remote" is education. Eight percent of the nation's work force is engaged in teaching, and technology is expanding the number of people and subjects that can be taught, as well as broadening the times and locations where teaching can take place.
2. "*. . . link production systems together in ways that improve the performance of entire networks.*" New information technologies make it possible to serve large numbers of highly specialized markets. "They make it possible to tie together complex networks of producers around the Nation or around the world by forging tighter links between retail, wholesale, transportation, and manufacturing operations." Production can therefore become much more concentrated in areas of the Nation or the world where labor skills, wages, or business and living conditions are most favorable.
3. "*. . . change the ways business performance and financial information are gauged, and can increase the rate at which markets respond to business conditions.*" Accurate information that is relatively inexpensive and easy to access "can obviously have a deep, though subtle, effect on the efficiency of a free economy." It can affect producers and how they organize production, and it can affect consumers and how they "decide to spend their money." OTA cites the October 1987 stock market "crash" as an example of the potential impacts of information technology on market responses to business conditions.

[2] *Although national media have spotlighted recent advances in bio-engineering methods and new materials developments, such technologies are* **not** *expected to produce revolutionary change in the American economy and society. OTA concluded that such developments were more likely to help "do something familiar in a better way—at least during the next two decades."*

New Challenges from Abroad

Since the early 1950's, U.S. trade with other nations has expanded in virtually all important areas of production and consumption. Since 1950, exports increased from 5 to 11 percent of U.S. GNP, in real terms, while imports increased from less than 5 to about 15 percent of GNP. U.S. trade with foreign countries, both exports and imports, has increased dramatically in the last 35-40 years. More importantly, however, imports have increased much more rapidly than exports and the current trade deficit is about 4 percent of the Nation's GNP. The U.S. has lost economic leadership "in one key industry after another" (Choate and Linger, 1988).

Many factors have contributed to increased international trade and "the loss of U.S. preeminence in international markets." Information and production technologies, for example, have been extremely important in providing access to U.S. markets; they have established the potential for U.S. and foreign companies to create production and marketing linkages—ties and contacts that lead to further contacts, and that eventually lead to further increases in imports. As discussed in the previous section, new technologies are allowing production to be divided into relatively small establishments. Such establishments can be located across the country or across the world, making it possible to tie foreign producers to U.S. production and marketing networks. ". . .Once confidence is developed in foreign suppliers, it is easier for U.S. firms to expand operations abroad; once foreign producers establish a reputation for quality, they can build on this reputation. The process is cumulative, and barring catastrophic events, irreversible."

Technology has created access to U.S. markets, but other factors have also been important in allowing foreign producers to take advantage of the access. OTA states that "the growth in trade over recent decades has resulted largely from the economic recovery of Japan and Western Europe following World War II." The recovery was a primary goal of U.S. foreign policy for four decades. Another important factor, however, has been production from Korea, Taiwan, Hong Kong, Singapore, and other Pacific Rim areas, where growth in production has been rapid, "in large part because of their ability to offer competent workers with a sound basic education at low wages."

OTA also summarized some "obvious reasons why followers gain on the leaders" in productivity, labor costs, income, and standards of living: "Imitation is much easier once the basic paths have been revealed. Ideas flow rapidly—increasingly so, if some recent studies are to be believed—across international borders. Expanding economies are more likely to take risks with state-of-the-art production systems than established firms with large investments in existing equipment."

In some industries, foreign firms have now taken the lead in developing and exploiting new technologies, particularly in certain areas of microelectronics. Foreign producers are able to "finance the next generation of technology with income earned from sales of the current generation. U.S. producers are left trying to leapfrog competitors without such a revenue source." In one area, consumer electronics, U.S. producers "appear to have all but abandoned the effort."

There are, of course, positive factors in the U.S. outlook for trade over the next 20 years. OTA states, for example, that "Domestic ingenuity can be substituted for foreign supplies of energy and materials," and "It is entirely possible that the advantages of quick access to domestic markets and production links will offset any advantages of foreign production." The report addresses these factors repeatedly under *New Challenges From Abroad*, but concludes that "Certainly, it is now possible that the United States will find its living standards in decline with respect to its competitors, and discover its role as an economic and military leader of the free world called into question during the next 20 years." Such realities underscore the need for serious appraisal of important *Choices for the Future*—choices in important policy areas such as taxes, education, and research and innovation.

New Resource Constraints

The third "major force" that OTA identified as important in the U.S. "economic transformation" was the "possibility that the price of energy and other resources can increase sharply by the turn of the century" (Figure 1). Although new technologies and production methods are reducing dependence on energy and other resources, two issues were identified that "will continue to demand attention: the availability of petroleum and the limits of the environment's ability to absorb waste." Resource constraints are not new, of course, but they are changing in relative importance. As industries shift to "light, high-value products" from "heavy, cheap ones," far fewer firms are constrained by lack of resources. **New** resource issues are thus the **relative** importance of petroleum availability and the **increasing** awareness of environmental limits.

Although energy use in the U.S. fell 25 percent per dollar of GNP from 1973 to 1986, there is still a "comparatively heavy energy dependence" in U.S. lifestyles, and U.S. products and production processes are still inefficient in energy use compared to Europe and Japan. Energy and environmental policies in the U.S. are therefore considered especially critical to economic progress in the next 20 years. As petroleum and other resources become more constraining, the relative environmental and economic advantages of their efficient use will be magnified.

New Values and Tastes

The fourth "major force" in the *American Economic Transition* was identified as new values and tastes in consumer

markets, labor markets, and public spending—"changes in values having little to do with economic forces" (Figure 2). In consumer and labor markets, values and tastes have been changing for several years—"there has clearly been a change in the behavior that Americans find acceptable." Changes in "acceptable behavior" continue to occur, and they are occurring at a time when there is an "underlying pattern of demographic change of no small consequence." Demographic changes include "baby-boom" impacts on consumer and labor markets, changing patterns of age and household structure, rapid increases in the participation of women in the work force, trends toward earlier retirement, and patterns of immigration and minority composition of the work force (Figure 2).

New values and tastes are also affecting public spending priorities, and changes are occurring in "public and private regulations and incentives." The "logic of using principles of 'natural monopolies' to regulate broad areas of the economy," for example, has been "undermined" by technologies that have promoted competition in such industries as energy generation, and personal and business applications of telephone and television/broadcasting systems. Regulation is increasing in necessity, however, in areas that help ensure the "health, safety, and privacy of individuals."

Furniture Manufacturing and Marketing

The factors creating structural change or "transition" in the U.S. during the next 20 years will affect various industries differently. The subheadings in this section indicate important conclusions that relate to manufacturing and marketing household furniture in the U.S. during the next 20 years. The conclusions are based on OTA's analysis as well as information from other sources. Each of the following topics is related to the four "major forces" described in the *American Economic Transition* section , but since they typically involve issues from more than one of the "forces," they are not referenced or indexed specifically to one or more of the four areas.

Economic Importance of Furniture Manufacturing is Increasing

The U.S. economy has recently been shifting from manufacturing to service industries. Motels and restaurants, software development, transportation, power generation, and many, many other services now account for more than 68 percent of U.S. GNP and 71 percent of employment (Quinn and Gagnon, 1986). Manufacturing, meanwhile, accounts for only 20 percent of the Nation's employment, down from 50 percent in 1950 (Cohen and Zysman, 1987). By the year 2000, manufacturing may account for only 15 percent of all employment in the U.S. (Blumenthal, 1988)[3]. A superficial review of such employment figures might lead to the conclusion that manufacturing furniture and other goods has been declining and will continue to decline in importance in the U.S.—such is not the case, however.

Although service industries have grown dramatically in the U.S. in recent years, their growth has **increased** the importance of furniture and other product manufacturing. OTA states, for example, that growth in services results in little growth outside "transactional" businesses. The health of transactional service businesses, however, "may depend heavily on a healthy manufacturing sector." As many as 60 million U.S. jobs, most of which are service related, depend directly on manufacturing (Cohen and Zysman, 1987). Examples of the types of service employment that depend entirely on manufacturing are design and engineering services, payroll, inventory and accounting, repair and maintenance, finance and insurance, training, recruiting and personnel services, testing and laboratory services, etc., as well as the accounting, transportation, payroll, and other services provided for the firms that design and service production equipment and facilities.

[3] *As noted by Drucker (1986), Wallis (1988), OTA and other researchers and government agencies, the percentage of employment in manufacturing has decreased and should continue to decrease in relative importance in the U.S. for reasons not associated with decreased manufacturing production—as labor productivity increases, for example, as business services formerly counted as manufacturing employment increasingly become independent firms, and as production increases in knowledge-based industries where software and design services account for higher percentages of the value of delivered products. In contrast to employment, U.S. manufacturing* **production** *has not decreased significantly in real terms (Carlino, 1989).*

NEW VALUES AND TASTES
in U.S.
Consumer Markets, Labor Markets, and Public Spending

Consumer Markets

"Baby Boom" Impacts — *"Those born during the baby boom recently left the Nation's educational system. They are now at an age to make major consumption decisions - decisions that often reflect changes in values from the generation they have replaced."*

Age and Household Structure — *"This process is paralleled by a growing population of elderly people and a radical transformation in the size and structure of households. Divorces, late marriages, and growing acceptance of previously unacceptable living arrangements, such as single-parent households, have led to a rapid growth in comparatively small households."*

Labor Markets

Women in the Work Force — *In addition to the "entry of the baby boom into the work force," there has been significant growth in "female participation in the work force." Also, "women are now much less likely to leave the work force even when they have young children. Many are forced to work since they are the sole source of support for their families."*

Early Retirement — *"The increase in female participation has been offset by a sharp trend toward early retirement, resulting in part from more generous retirement programs and in part from a troubling trend toward the disposal of older workers for whom retraining is not judged to be profitable."*

Immigrants and Racial Composition — *"A new wave of immigrants" has also "changed the 'supply' of skills and experience in the work force. There has also been a change in the racial composition of the work force. An absolute majority of people joining the work force between 1985 and 2000 will be minorities, many of whom will enter with comparatively poor educations."*

Public Spending

Examples of New Values and Tastes — *"...the growth of the environmental protection industry," and "strenuous objections to nuclear power in the United States."*

Figure 2. Many of the basic changes in economic activity discussed in the OTA report are resulting from changes having "little to do with economic forces" . . . they represent new values and tastes (quotations are from pages 19-35 of the OTA report).

Manufacturing will become more and more important to economic stability and growth in the U.S. during the next 20 years. Information and other technologies are increasing the opportunities for interindustry linkages, and when demand for furniture and other manufactured goods increases, output in other areas of the economy also increases—output multipliers are **increasing** for furniture and other manufacturing industries. Economic downturn or loss of production to imported furniture and other manufactured goods therefore has an increasing ripple or multiplier effect throughout the U.S. economy.

Furniture manufacturing in particular is becoming more and more critical to the local and regional economies where U.S. production continues to concentrate. Over half of the employment in the U.S. upholstered furniture industry in 1982, for example, was in North Carolina, Tennessee, and Mississippi (USDC Bureau of the Census, 1985). While technology and other factors may disperse production in many areas of U.S. manufacturing, furniture production is relatively labor intensive and should continue to concentrate in areas with locational and "agglomeration" advantages[4]. As discussed in following sections, however, there may be areas of the U.S. in which furniture production will decrease in the future—primarily due to the differential impacts of environmental concerns and foreign competition.

Consolidation Continues, but Small Firms are Thriving

Recent evidence suggests that companies in the U.S. household furniture industry are becoming larger through consolidation, and trends toward consolidation and vertical integration are expected to continue. Reasons for mergers and acquisitions include those discussed in recent issues of Standard & Poor's *Industry Surveys* on Textiles, Apparel & Home Furnishings (Standard & Poor's 1988). Furniture companies have in some cases merged to take advantage of economies of scale—by lowering per-unit costs of production, companies can be profitable on "narrower margins" within specific furniture product types and market niches. Also, corporate strategies to acquire furniture market niches, and to broaden distribution and marketing channels can be accomplished efficiently through acquisitions. Most U.S. furniture companies, meanwhile, have been managed conservatively—their strong balance sheets and relatively low debt have made them attractive for takeover.

Recent *Industry Surveys* also describe the need for an "adequate capital base" for companies to invest in state-of-the-art manufacturing equipment, particularly in case goods where significant developments have occurred in computer-controlled production. Finally, as stated in the "Basic Analysis" for the "Home Furnishings" industry (Standard & Poor's, 1988), "in all these ways and more, consolidation has helped domestic manufacturers compete against imports more effectively."

Mergers have resulted in a much more concentrated household furniture industry in the U.S. The 10 largest companies accounted for 33 percent of domestic industry shipments in 1987, up from 21 percent in 1978[5]. According to the 1987 Standard & Poor's *Industry Survey*, the 2,200 smallest producers of furniture in the U.S. currently account for less than 20 percent of domestic markets, while the 400 largest manufacturers account for more than 80 percent. Consolidation and integration trends, however, have not entirely offset the rapid emergence and growth of small furniture companies—those with fewer than 500 employees. Small manufacturers in the U.S. actually increased their share of total furniture industry employment by 2.5 percent from 1976 to 1984 (Starr 1988).

Why are the small firms in the U.S. furniture industry continuing to prosper in the face of consolidation and increasingly larger competitors? A broad but important reason was stressed in OTA's *American Economic Transition* report. As information and other technologies grow, manufacturing production can become more and more fragmented and specialized, with smaller manufacturing plants, greater potential for related production to be physically separated, and with corresponding, important implications for organizing and locating plants in the U.S. and abroad. Reasons other than new information technologies, however, have also been important in the prosperity of small manufacturing firms in the Nation's furniture industry; additional reasons include limits to current technological economies of scale in the industry, trends in relative labor and capital costs, rapid growth of independent business service firms, and improved access to capital for small manufacturers.

The furniture industry in general is labor intensive rather than capital intensive. Technological economies of scale in most lines of furniture production are not as great as in other manufacturing industries, particularly other durable goods such as appliances and automobiles. Furniture manufacturers in the U.S. are becoming less and less labor intensive, of course, as new methods and devices for saving labor are developed and installed. The labor intensity of furniture production is still increasing, however, relative to other U.S. manufacturing. From 1972 to 1981, for example, the percentage of value-added in furniture manufacturing accounted for by wages of production workers decreased from 42 to 38 percent, but the decrease in labor intensity did not keep pace with labor saving advances in other U.S. manufacturing in-

[4] *While some states are "deindustrializing," others are gaining in the percentage of real output originating in manufacturing. From 1967 to 1987, all of the major furniture-producing states increased their percentage of constant-dollar output related to manufacturing; Mississippi led the Nation with an 11.1 percent increase (Carlino, 1989).*

[5] *Standard & Poor's (1988)* ***Industry Survey****—in a statement attributed to a recent survey by* ***Furniture Today*** *magazine.*

dustries (USDC International Trade Administration, 1985). Relatively small, relatively labor-intensive furniture producers have continued to compete effectively in U.S. markets.

In addition to comparatively low technological economies of scale, small manufacturers have benefitted from new tax laws and from recent trends in the comparative costs of labor and capital. Tax law changes have helped smaller manufacturers remain competitive by lowering the maximum corporate tax rate to 34 percent, while reducing or eliminating various capital-related credits and deductions—provisions that were generally more beneficial to larger firms, and to other, more capital-intensive industries. Capital has also increased in cost compared to labor in furniture manufacturing, and is increasingly accessible to smaller manufacturers. Capital costs have increased in real terms, while wages in furniture manufacturing in the U.S. have not increased above inflation (Figure 3). In this respect, the furniture industry has paralleled the general trend for all U.S. manufacturing (Starr, 1988).

Will smaller manufacturers remain competitive in the U.S. furniture industry during the next 20 years? Some of the positive developments for such firms have been summarized, but what are the important areas of uncertainty? U.S. furniture manufacturers, big and small, are highly sensitive to wage and worker-related issues—wages and labor are the most important factors on the production side of the industry. Current wage differences account for most of the dramatic increases in furniture imports in recent years, particularly from Pacific Rim countries. Several recent bills before Congress have been opposed by the furniture industry as being anticompetitive and particularly harmful to small producers. The bills have included provisions for increasing the minimum wage, mandatory parental leave benefits, mandatory health insurance, early notification of plant closings, and a new program for occupational hazard notification (USDC International Trade Administration, 1988). Policy makers, industry leaders, and investors should be aware that although economies of scale in furniture production are not as great as in most manufacturing industries, smaller firms may not fare as well as larger firms during an economic downturn. As cited previously, larger companies can in most cases be profitable on "narrower margins." The long-term success of individual, relatively small manufacturers of furniture in the U.S. may therefore be very closely tied to their success in identifying and penetrating specialized market segments.

Imports are Affecting the Industry's Structure and Orientation

One of the four "major forces" identified by OTA as creating a "major transformation" in the U.S. economy was the "loss of U.S. preeminence in international markets." OTA discussed why global trade has increased, and why such trade will increase during the next 20 years. Technology has allowed access to many U.S. product markets by allowing dispersed production, and foreign producers have been able to take advantage of the access as a result of long-term U.S. foreign policy goals. Also, in areas such as the Pacific Rim, foreign producers have gained because of their workers' relative competence and education, and relatively low wages.

There are other important reasons for the increasing gap

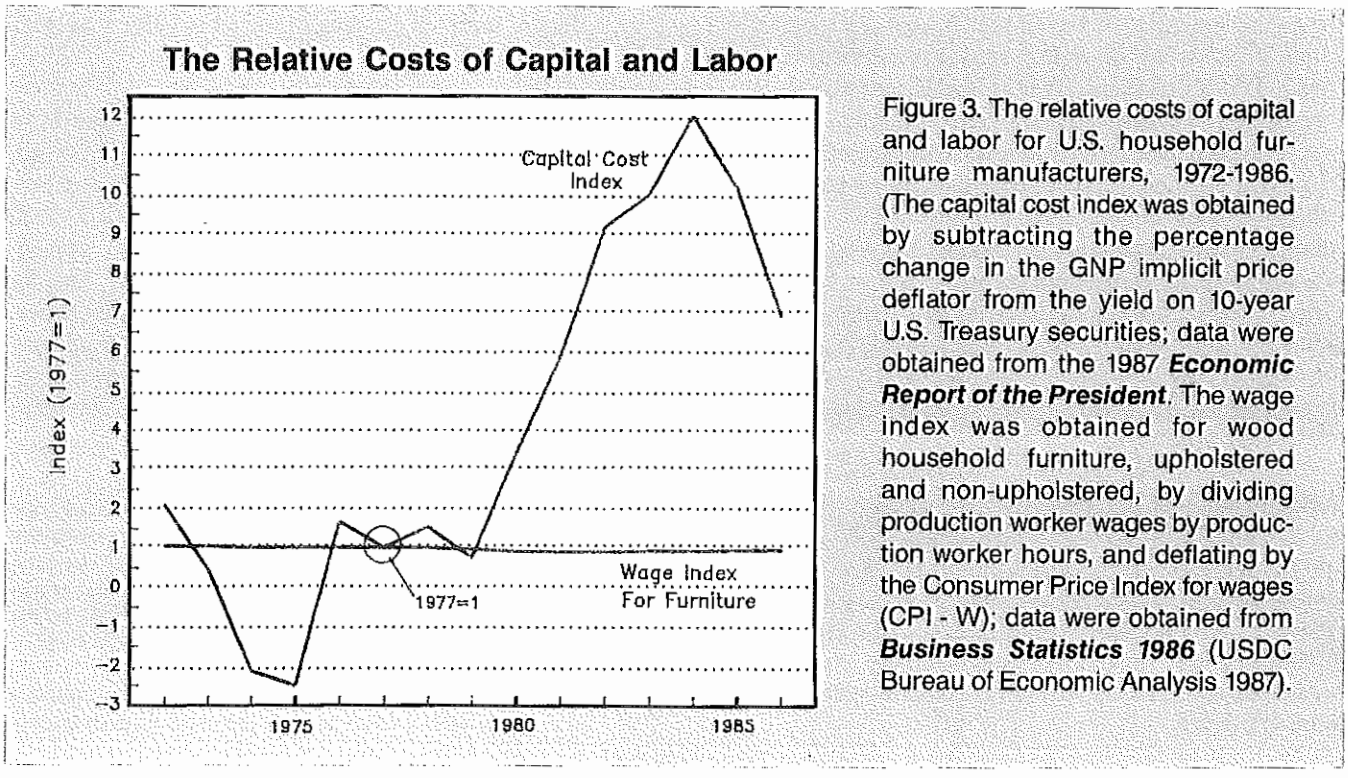


Figure 3. The relative costs of capital and labor for U.S. household furniture manufacturers, 1972-1986. (The capital cost index was obtained by subtracting the percentage change in the GNP implicit price deflator from the yield on 10-year U.S. Treasury securities; data were obtained from the 1987 ***Economic Report of the President***. The wage index was obtained for wood household furniture, upholstered and non-upholstered, by dividing production worker wages by production worker hours, and deflating by the Consumer Price Index for wages (CPI - W); data were obtained from ***Business Statistics 1986*** (USDC Bureau of Economic Analysis 1987).

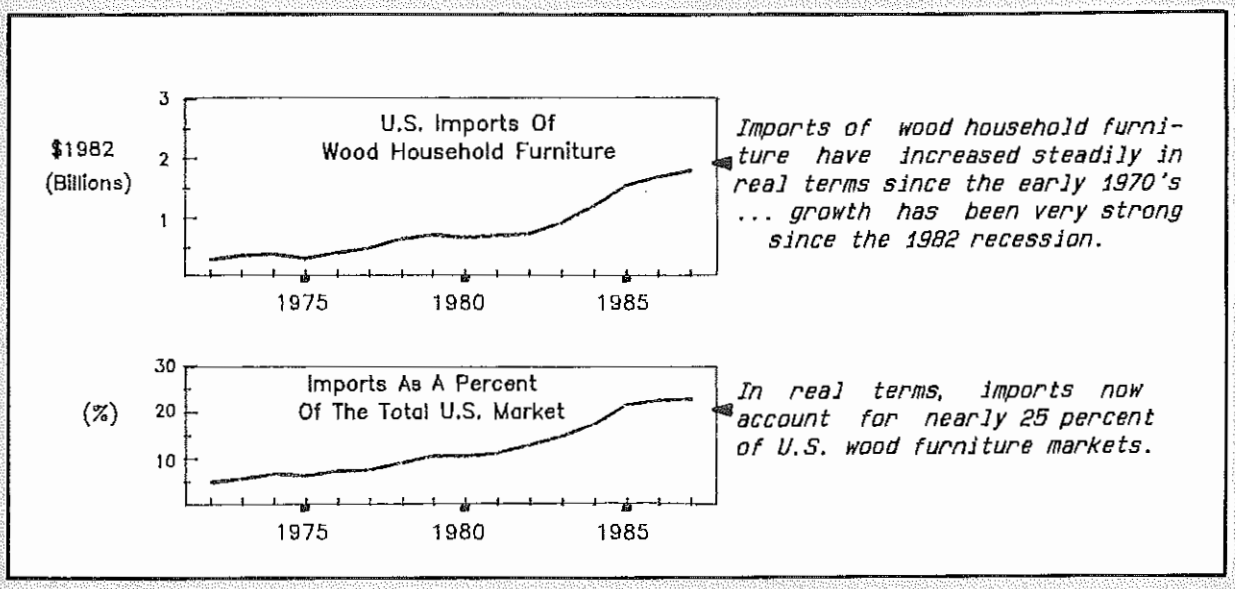


Figure 4. U.S. imports of wood household furniture—in total, and as a percent of the U.S. market for such furniture—in real terms, 1972-1987. Numbers were adapted from summaries by Nolley (1988, Table 7) of USDC reports; they were deflated with the wood furniture price index in the ***U.S. Industrial Outlook***.

between total U.S. imports and exports. *The Trade Gap: Regaining the Competitive Edge* (Domestic Policy Association, 1987), for example, discusses many of the following, often-cited reasons for increased imports of many products and services:

(1) the U.S. budget deficit and the relative value of the dollar;
(2) higher U.S. wage rates and more restrictive environmental and safety regulations;
(3) the size of U.S. markets compared to other world markets;
(4) restricted access to certain foreign markets;
(5) the often adversarial relationships betweeu U.S. industry and government agencies;
(6) the short-term profit outlook of U.S. firms;
(7) the less than optimal allocation of many public and private production resources; and
(8) relatively low personal savings rates in the U.S.

Imports have now become a significant threat to U.S. producers of wood household furniture. Foreign firms produced 25 percent of the wood (non-upholstered) furniture shipped in the U.S. in 1987, a percentage that has increased steadily since the early 1970's (Figure 4). In 1982, U.S. furniture imports reached $1 billion for the first time; in 1987, only 5 years later, imports from Taiwan alone exceeded $1 billion (U.S. Department of Commerce, 1988). Most of the increases in wood household furniture imports have been from Pacific Rim countries, particularly Taiwan. The increases are primarily due to wage rate differences, the relative strength of the U.S. dollar, and the reduced costs of shipping due to efficiencies from container shipping and the development of ready-to-assemble, or knock-down, furniture technologies. Just as smaller producers in the U.S. have been able to compete effectively for domestic markets, however, the lack of capital investment and relatively poor improvements in labor productivity in the U.S. furniture industry have also been important in the increased competitiveness of foreign manufacturers.[6]

These factors and others are discussed in detail in *A Competitive Assessment of the U.S. Wood and Upholstered Furniture Industry* (USDC International Trade Administration, 1985). Epperson (1986), however, presented another important factor in the industry's past development and success in Taiwan and Singapore. U.S. wood furniture manufacturers in many cases "farmed out" furniture parts production to lower-wage foreign countries. Foreign firms were provided the technology and were taught U.S. standards . U.S. firms initially benefitted from the specialization, but foreign manufacturers later used the acquired knowledge, technology,

[6] *There* **are** *examples that are counter to the U.S. furniture industry's recent trends in poor productivity growth. Measured in constant dollar sales per worker, for example, productivity increased 74 percent at an 830-employee Michigan furniture plant between 1983 and 1986 (Hoerr, 1987). The improvements were due to "flexible manufacturing" technology and greater worker involvement in production and design decisions. Under the heading "Collective Entrepreneurialism," Reich (1987) presents many reasons why such organizations of technology, management, and labor will be necessary for U.S. manufacturers to compete effectively with low-wage foreign producers.*

and profits from manufacturing parts to move into full-scale furniture production (Epperson, 1986; Doherty and Bullard, 1989).

In contrast to the wood furniture industry, upholstered furniture manufacturers in the U.S. have been relatively insulated from foreign competition—imported upholstered furniture represents less than 1 percent of the U.S. market (USDC International Trade Administration, 1985). Upholstered furniture is relatively bulky and expensive to transport, fabric destruction is common in long-distance shipping, and upholstered pieces are typically produced on order rather than for inventory, greatly increasing the delivery time for foreign producers. Although knock-down techniques have also been introduced for upholstered furniture (see Plantz, 1988, for example), upholstered products are still relatively bulky, and the added factors of potential fabric destruction and longer delivery times should continue to place foreign suppliers at a disadvantage. Canadian producers are an exception, of course, because of their proximity to major U.S. markets.

Upholstered furniture imports from Canada have not been significant in the past, but the recent free-trade agreement with Canada may cause significant change. Furniture tariffs averaging 15 percent in Canada and 2.5 to 7.5 percent in the U.S. will be completely eliminated by 1993. The agreement is expected to change the organization and structure of the furniture industry in Canada, as producers will be forced to meet the lower prices of U.S. manufacturers. Canadian manufacturers are already adding upholstered furniture production capacity in the U.S. Recent specific examples include a new 150,000-square-foot plaut and acquisition of an existing plant in Mississippi by Canadian firms, as well as acquisition of an upholstered furniture plant in Virginia (James, 1989).

An important adaptation to foreign competition in the household furniture industry has been the recent trend toward consolidation. Mergers have occurred for other reasons, as previously discussed, but import competition and the need to increase efficiency in manufacturing and marketing are dominant industry concerns—particularly in low to mid-priced, non-upholstered wood furniture. Also, because of the relative market insulation, another adaptation to import competition that should continue is redirection of the U.S. industry toward upholstered furniture products. Finally, imports have forced U.S. furniture manufacturers to keep "furniture prices steady in order to remain competitive" (Standard & Poor's, 1986). Comparing producer price indexes for all of the commodities listed in *Business Statistics 1986* (USDC Bureau of Economic Analysis, 1987), for example, only one commodity category has gone up in price less than furniture and household durables since 1967—textile products and apparel, another industry category with significant labor intensity and import competition.

Perhaps the most significant impact of foreign competition in U.S. furniture markets will occur in the next economic recession. Apparent consumption of furniture in the U.S. has increased steadily with the Nation's continued economic expansion since the 1982 recession. The expansion cannot continue indefinitely, however, and according to Epperson (1986), a "major bloodletting" is going to occur in the U.S. furniture industry in the next recession. Epperson, Senior Vice President and Research Analyst, Wheat First Securities, Inc., points out that in the U.S. "when business gets slow," production is decreased and workers and production hours are reduced. In Taiwan, however, workers employed by a plant for over a year are "vested" and have to be kept employed. Such plants will continue to operate whether or not there is a strong demand for their products in the U.S. Since reducing their work force is not an option for Taiwanese producers, "the only thing they can do is cut price, and cut price, and cut price, so the major bloodletting is going to occur in the next recession."

When will the next economic recession occur? Forecasts are obviously not certain, but a recent survey of members of the National Association of Business Economists indicates the strength of current, near-term expectations. As cited by Gnuschke (1989), the September 1988 survey revealed that 90 percent of the Nation's "leading business economists expect an economic downturn during the next two years." The *1989 U.S. Industrial Outlook* (USDC International Trade Administration, 1989) also states that "in view of the length of the present economic expansion, now entering its seventh year, a business downturn within a year or two is likely." Although all U.S. furniture manufacturers would be affected by recession, the most severe impacts are expected for smaller companies, particularly those producing low to mid-priced wood furniture where import competition is currently greatest. Meeting the "new challenges from abroad" will be particularly difficult for U.S. producers with wage-intensive costs, and with products that can be manufactured and shipped from abroad at relatively low cost.

Environmental Issues are Affecting Competitiveness and Geographic Location

Environmental issues include many broad concerns. The OTA analysis, for example, emphasized resource constraints and other broad concerns such as generating and using energy, and the growing awareness that the physical environment has a limited ability to absorb waste. These issues are important to all producers and consumers in the U.S. They clearly indicate that resource and environmental concerns will continue to grow in importance. Environmental concerns will also become increasingly important in furniture manufacturing during the next 20 years. Current concerns and industry responses are primarily related to air quality, both the "limited ability" of the environment to absorb atmospheric emissions,

and the air quality of the work environment inside furniture and other wood-using plants.

Atmospheric emissions problems in the furniture industry are currently focused on pollutants released when wood finishes are applied, and, to a more limited extent, on the use of chlorofluorocarbons in manufacturing polyfoam (Evans, 1989). The most acute regulatory problems at present are faced by wood furniture producers in the Los Angeles area. Many wood products producers in that area are planning to move their plants outside California rather than make the extremely costly modifications necessary to comply with new, locally-imposed emissions standards (Herrin, 1989). California may also be losing furniture production to other states and countries, however, due to its higher minimum wage and workman's compensation insurance rates.

Moving plants to states where strict air quality legislation has not yet been passed is not a long-term solution to the emissions problems of wood-based producers. Companies are also shipping greater volumes of unfinished furniture, and are increasing their imports of pre-primed and pre-finished parts. Other partial solutions are water-based finishes, wax treatments, electrostatic finishing, and new spray equipment and application methods (Huffman and Heiden, 1988; Behm, 1989).

Another environmental concern in furniture and wood-related industries is wood dust and air quality within the plant. The Occupational Safety and Health Administration (OSHA) recently published new standards for wood dust that took effect March 1, 1989. From that date, U.S. manufacturers of wood-based products were given 6 months to institute a mix of engineering controls, personal protective gear, and worker practices to reduce worker exposure to 5 milligrams of wood dust per cubic meter of air (McKee, 1989a). Other specific measures being used to reduce wood dust in furniture plants are increased use of planed lumber, improved cutting of lumber parts (through the use of laser systems and thinner saws), and improved sanding machines (Behm, 1989).

Current and expected future trends in air quality and other environmental issues are influencing U.S. furniture manufacturers in several important ways. The trends are temporarily changing the geographic location of the industry within the U.S. In the long-term, however, air quality and other issues are forcing certain types of wood-related production to countries with less restrictive environmental regulations. The environmental problems of wood finishing and wood dust are further encouraging the industry's previously described adaptations to import competition. During the next 20 years they will continue to enhance the trend toward consolidation and larger U.S. companies, and they will continue to accelerate the industry's reorientation toward upholstered products, and away from lower-priced wood furniture. U.S. furniture manufacturers will continue to confront serious environmental and regulatory issues in the future—government regulation will increase in areas that help ensure the long-term availability of resources, quality of the environment, and the "health, safety and privacy of individuals."

Furniture Markets and Marketing Methods are also in Transition

The U.S. furniture industry is heavily oriented toward domestic markets. U.S. exports of household furniture set a record of $264 million in 1988, yet they represented less than 2 percent of the industry's $18.5 billion of household furniture shipments (USDC International Trade Administration 1989). The following discussion, therefore, describes recent trends and expected developments in the transition of U.S. markets and marketing methods.

Many factors will affect the absolute **size** of U.S. markets for household furniture during the next 20 years. "Baby-boom" impacts and other demographic factors such as age and household structure, for example, are extremely important in present and future U.S. markets for all consumer products (Figure 2). Many of the trends and their impacts on market size have been summarized in previous studies and reports; Epperson (1986), for example, described many of the most important economic and demographic factors in U.S. furniture demand. Demographics generally favor the industry and domestic markets are closely tied to general economic activity (Figure 5). Market size for U.S. firms may therefore be most closely related to overall economic conditions and the market share of foreign producers during the next 20 years.

U.S. furniture markets **are** in transition, however, with change occurring in a variety of ways not related to absolute market size. The changes may therefore be less obvious than projected economic and demographic trends. The transition reflects basic changes in the attitudes and attributes of U.S. consumers. As shown by the following examples, furniture marketing strategies are evolving, and will continue to evolve, that reflect their "new values and tastes."

Furniture retailing in the U.S. is changing in several ways to reflect the characteristics and attitudes of baby-boomers—persons born between 1946 and 1964. One-third of the U.S. population was born in this period, and as they get older, the moving age-class bulge has been likened to a "pig passing through a python" (Thompson, 1988). Their impacts have progressed from the Nation's educational system, to the Nation's work force, and currently, the group has progressed to ages 25-44 where major consumption decisions are made. Marketing strategists are well aware of the group's increasing age, affluence, and potential for consumer spending, and manufacturers and retailers have changed many products and advertising and marketing methods. The following trends in furniture marketing are in many respects directly related to the characteristics and growing importance of baby-boomers:

- **Mail-order, home electronic shopping, wholesale clubs, and 800-number discounters are rapidly increasing in importance.** A recent series of articles in *Furniture Today* on 'Alternative Distribution Channels' (Shaver, 1989)

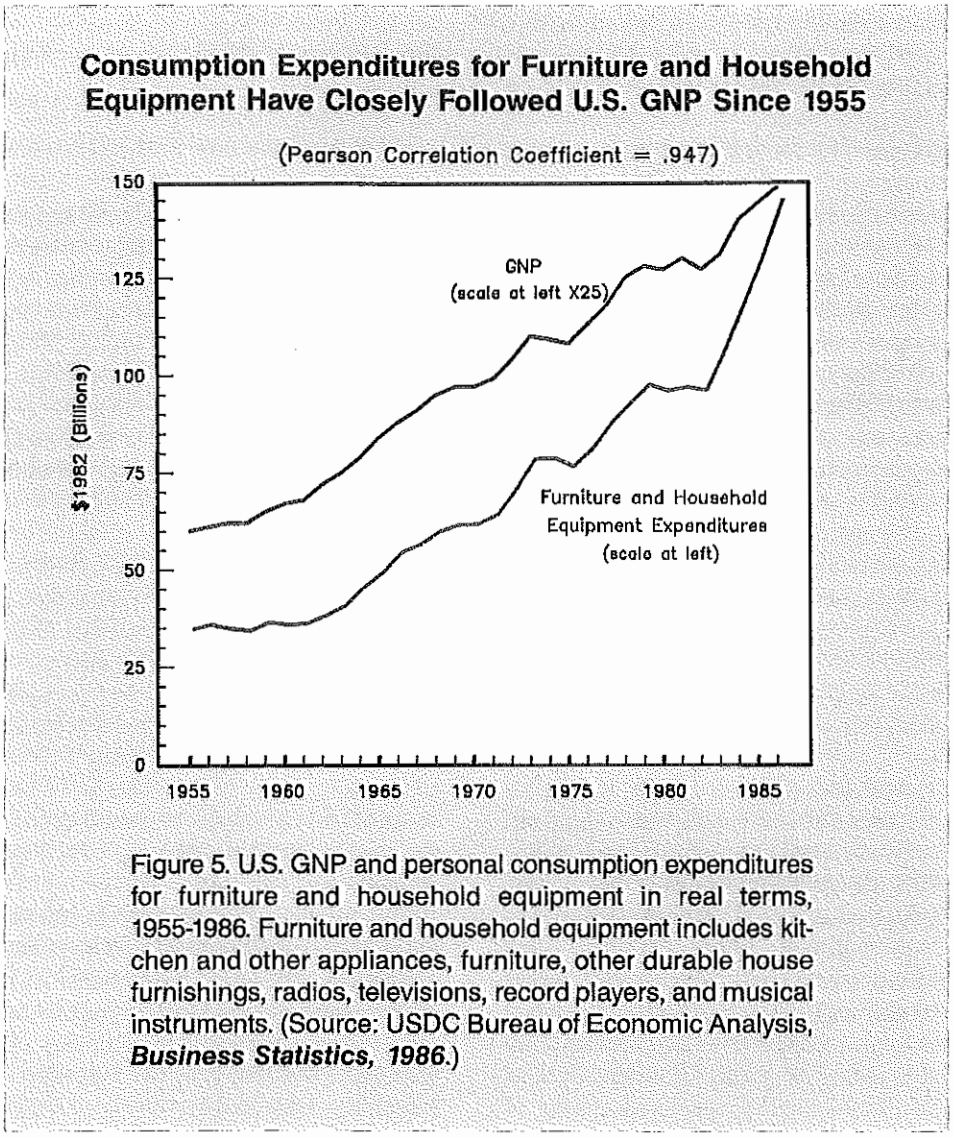


Figure 5. U.S. GNP and personal consumption expenditures for furniture and household equipment in real terms, 1955-1986. Furniture and household equipment includes kitchen and other appliances, furniture, other durable house furnishings, radios, televisions, record players, and musical instruments. (Source: USDC Bureau of Economic Analysis, ***Business Statistics, 1986.***)

highlights this trend in "non-store retailing" of furniture. The trend may be just beginning since, in general, the customers are relatively affluent and primarily between the ages of 25 and 44; the customers are primarily baby-boomers. While furniture sales through conventional retail channels increased by 4.5 percent in 1988, the increase for mail-order and other "alternative" channels was greater than 10 percent. Also, furniture stores devoted primarily to the products of a single manufacturer, and stores with specific areas devoted to single manufacturers are increasing in number and in their volume of sales.

- **Demand for "upscale" furniture is increasing.** The increasing affluence of older baby-boomers is creating strong demand for higher-priced household furniture. The trend was recognized in the *1989 U.S. Industrial Outlook*; furniture spending by persons over 35 years old is projected to increase at about 2.5 percent per year, while spending for adults younger than 35 remains level. "The older baby-boomers are much more likely to desire higher quality furniture, since home decoration, along with entertaining at home, has high priority with this group" (USDC International Trade Administration, 1989). This particular trend is also expected to contribute to manufacturing consolidation in the industry, as some companies consolidate to acquire upscale product lines that are expected to increase in popularity (Standard & Poors, 1988).

- **Ready-to-assemble furniture demands are increasing.** Ready-to-assemble furniture sales are increasing each year; the sub-industry grew 20-25 percent in 1986, for example, to represent 10 percent of all U.S. household furniture shipments (Stureson and Sinclair, 1988). According to the *1989 U.S. Industrial Outlook* (USDC International Trade Administration, 1989), most baby-boomers "are not interested in waiting very long for furniture delivery. That is one reason ready-to-assemble furniture has done well in recent years."

- **Consumers are generally better informed.** Older baby-boomers, those born between 1946 and 1954, have been

called "the best-educated consumers in U.S. history;" they tend to "know what they want and refuse to settle for less" (Stern, 1987). Retail strategies that emphasize furniture "sales" and price mark-downs are currently being challenged by "everyday low pricing" strategies (see Cutler, 1989). A recent indication of better informed consumers and new attitudes of U.S. consumers is also provided by the incidence of furniture retailers being formally charged with deceptive advertising—a violation of state consumer protection laws where "sale" items actually weren't on sale (Thomas, 1989). The trend toward better informed consumers is also indicated by the January 1989 *Consumer Reports* article "How to Buy Upholstered Furniture" (Anonymous, 1989).

- **Consumers have higher expectations of retailers and manufacturers.** Product safety is an increasingly important topic in consumer markets for household furniture. Flammability standards for upholstered furniture used in public areas of hotels, motels, and nursing homes, for example, are currently being negotiated between manufacturers and firefighters associations, and a voluntary industry association, the Upholstered Furniture Action Council, has been organized to conduct research into more "cigarette-resistant" upholstered furniture. Both efforts reflect the increasing responsibilities of manufacturers and retailers to a better informed, more demanding consuming public in the U.S. Another indication is provided by the use of retail "hangtags" on upholstered furniture products whose foam has been produced without the use of environmentally damaging chlorofluorocarbons (Evans, 1989).

Another reflection of transition in furniture markets and marketing that relates to basic consumer attitudes is the trend toward increased financing of consumer purchases and the related increase in the importance of interest rates. Consumer installment debt as a percent of personal income has become an extremely important near-term indicator of the potential of U.S. consumers to buy furniture. Consumer installment debt was nearly 16 percent of personal income in the U.S. in mid-1988, for example, up from less than 12 percent after the 1982 economic recession. Recent high levels of consumer debt are seen as a negative factor in short-term furniture markets in the U.S. (USDC International Trade Administration, 1989). Also, recent percentages may actually underestimate the true level of U.S. consumer debt. The loss of consumer interest deductions for income tax purposes has recently shifted some consumer debt to home equity loans. The important issue is that U.S. consumer spending increasingly involves financing, and potential furniture markets are increasingly related to levels of consumer debt and prevailing interest rates.

Interest rates affect the costs of manufacturing furniture, but high rates also have several negative, increasingly important impacts on furniture markets. As rates rise, housing construction and resales are affected, but payments on existing car loans and adjustable rate mortgages also increase, leaving less discretionary income for furniture and other durable goods whose purchase can be postponed. Higher interest rates also mean consumers are confronted with higher direct costs for furniture and other goods that are financed. Major economic issues such as the federal budget deficit and its impact on interest rates and foreign trade have become, and will remain, crucial issues in the prosperity of various U.S. industries and sub-industries during the next 20 years. In furniture and other durable goods industries, their importance has been magnified by basic changes in consumer attitudes and the trend toward increased financing of consumer purchases.

Finally, major changes are occurring and will continue to occur in U.S. furniture markets due to technology. As stated in the OTA report with respect to technology and consumer markets in general: "Technology can create: new products and services, radical declines in the prices of existing products, an increased ability to tailor products to individual needs, new sources of information about products, new retailing methods, changes in time available for making purchases, changed tastes, and new government regulations affecting both price and quality. There is no obvious way to estimate consumer response."

Technology is affecting U.S. consumer markets for furniture, yet the difficulty of estimating "consumer response" during the next 20 years is readily illustrated by recent markets for furniture complements to new consumer electronics products. Sales of furniture complements, from microwave oven carts to computer tables and home entertainment fixtures, could not have been anticipated 20 years ago—their demand was created and their markets have expanded as new electronic products have been developed and marketed. New products, including video cassette recorders, microwave ovens, computers, and stereos, were cited as the principal reason for purchasing ready-to-assemble furniture by approximately 30 percent of U.S. consumers whose most recent furniture purchase was a ready-to-assemble product (Stureson and Sinclair, 1988). New consumer products for the home have negative impacts on non-complementary furniture products, however. Their purchase is discretionary and they compete with furniture and other products for the limited discretionary income of U.S. cousumers.

Information technologies, meanwhile, may have longer-term, less obvious impacts on global furniture markets. Modern communications technologies have significant potential to induce shared consumer demands for furniture, clothes, and other products. In the past, consumer tastes and preferences for furniture and style-related products have been more geographically distinct—preferred styles have been more closely related within countries and between neighboring countries and geographic areas.

Choices for the Future

The U.S. furniture industry is one part of a complex, evolving society—a society that has experienced many changes in recent decades. The extent of recent economic and social change is illustrated by statements in the OTA report that once described expectations about the American economy:

"It may once have been reasonable to expect that:

- "the American economy could be managed without continuous concern for foreign economies,
- "most significant technical innovations would be developed and used first by Americans,
- "hands-on production jobs would dominate attractive employment opportunities,
- "large 'economy of scale' production facilities capable of driving down the price of mass-produced commodities would dominate production, and
- "a person with a conventional high school education could earn an income adequate to support a middle-class family."

These statements no longer describe American expectations. However, they highlight the extent of recent change and the extent to which "major forces" will result in further economic and social change during the next 20 years. As technology impacts production and consumption, as trade becomes globalized, as new resource constraints and environmental concerns arise, and as major changes occur in values and tastes, some U.S. industries and companies will prosper while others will decline.

This section describes Education, Government Regulation, and Taxation, and Research, Innovation, and Competitiveness as areas where "strategic choices" are extremely important.[7] The central theme of this section is that new approaches are necessary if U. S. producers and cousumers are to prosper in coming years. Specifically, the new approaches focus on current public and private underinvestment in education, training, and research and innovation. Also, new approaches are needed to preserve the health and safety of individuals aud the quality of the environment—approaches that can accomplish such goals without overly restrictive requirements and bureaucracy that severely diminish the productivity and competitiveness of U.S. firms and industries.

Education, Government Regulation, and Taxation

Education. Educational quality has long been a public policy goal in the U.S. Improved education is often stressed as essential to long-term economic and social progress and prosperity. Improved education and training may never have been more critical than at present, however, as technology and other major forces creating economic transformation magnify their importance.

Earlier economic transformations in the U.S. were associated with public and private investments in **physical** infrastructure. Early 19th-century developments in technology led to investments in canals and railroads, for example, and early 20th-century developments resulted in major construction of highways and electric power systems. In the "emerging economy" of today, however, "an educated population is the most critical infrastructure." The "emerging economy" places new demands on the "intellectual skills and knowledge of American workers. Old standards of competence are no longer adequate." Also, although educational needs, work skills, and "standards of competence" are changing quickly, methods for addressing new education and training challenges are also advancing rapidly. OTA concluded that "technology is making it possible to look for significant changes in the productivity and quality of teaching and learning for the first time. A system allowing any person, anywhere, with any background, and any assortment of gaps in education, access to training on any subject is within the state-of-the-art of existing technology."

State and local policy leaders should also consider recent evidence on educational programs and industry locations in setting priorities for *Choices for the Future*. While state and local tax and regulatory incentives may be important in attracting jobs aud income, educational systems and programs are extremely important in technology-based, high value-added iudustries. New emphasis on education now means that an area, state, or region "capable of providing well-educated people has an advantage that is difficult to overcome through other incentives."

Government Regulation. Government rules and regulations have profound impacts ou the efficiency and competitiveness of U.S. industries. In a chapter titled 'The Miasma of Regulation,' Reich (1987) clearly presents the general problem of "thickening" rules and regulations. According to

[7] *These headings include specific topics from the OTA report, but they are not all inclusive. Materials have been included from other sources, however, particularly from* ***The High-Flex Society: Shaping America's Economic Future*** *by Choate and Linger (1988), and* ***Tales of A New America*** *by Reich (1987). Although most of the issues discussed are broad, several topics under Research, Innovation, and Competitiveness relate specifically to the U.S. household furniture industry. Their discussion would be incomplete, however, without the broader context of other "strategic" issues in education, government regulation, and taxation.*

Reich, although most U.S. business executives agree that the public "deserves protection from toxic wastes, nuclear accidents, air and water pollutants, unsafe products, fraudulent claims, and monopoly," problems arise with how regulations are designed and implemented; statutes are "overly complicated," and the "rules devised to fulfill them are excrutiatingly detailed." Also, compared to other advanced industrial nations, U.S. regulations are "uniquely picayune." While other nations have similar regulations on health, safety, and the environment, they are far less detailed. Reich concludes that the "miasma of regulation" has occurred in the U.S. because most U.S. business executives and lawyers, as well as government regulatory officials, "act on the expectation that American business will try to outmaneuver government." Although a fundamental "change in attitude will be difficult to achieve," Reich suggests that the most basic need is for a "broader definition of responsibility by which business would not simply yield to the letter of the law but endorse its spirit, or else openly challenge the goals underlying the laws." Although policies were not mentioned that relate specifically to furniture manufacturing, Choate and Longer (1988) outlined several industry-specific "micro-policies" to address the general problem of limiting bureaucratic regulations (and antitrust actions) harmful to American competitiveness.

OTA states that many of the reasons previously given for government regulations—to ensure effective competition, for example—have been "undermined" by recent technologies, foreign competition, and other "changes now transforming the economy."[8] OTA also concludes, however, that the changes have increased the need "to provide consumers with information, protect consumer safety, and ensure environmental quality." A trend important to U.S. furniture manufacturers and other producers of consumer products is thus repeated. While the "miasma" of goverument rules and regulations in some areas may decrease if effective, well-directed policy choices are made, consumer and environmental concerns will continue to increase in importance. Furniture manufacturers may expect greater government involvement in such issues as wood dust and finishing during the next 20 years, as well as in such product safety issues as the flammability of upholstered fabrics and finished products.

Taxation. Perhaps the best example of a specific *Choice for the Future* currently being considered in taxation comes from the area of income taxation. Serious, plausible reasons have been presented by OTA and others to severely modify or entirely eliminate corporate income taxes. According to OTA, the corporate income tax has "many liabilities," but only three "principal virtues" (Figure 6). Recent proposals before Congress have included elimination of corporate income taxes as part of widely-based tax reform measures. Such reforms may have little chance of immediate passage, but serious consideration of evidence against corporate income taxes seems inevitable as the evidence is growing, and is coming from diverse public and private individuals, groups , and agencies.

Other tax-related proposals have also been advanced recently. OTA did not attempt a systematic review of tax alternatives and their implications, but used example options to "illustrate the power the tax code has in influencing the structure of the American economy." In addition to proposals to reform or abolish U.S. corporate income taxes, specific examples included capital gains provisions and proposals to limit interest deductions for housing. In general, OTA's current proposals or "illustrative options" for tax reform have the common purpose of encouraging "patient capital" or longer-term investments, and discouraging short-term, speculative investments.

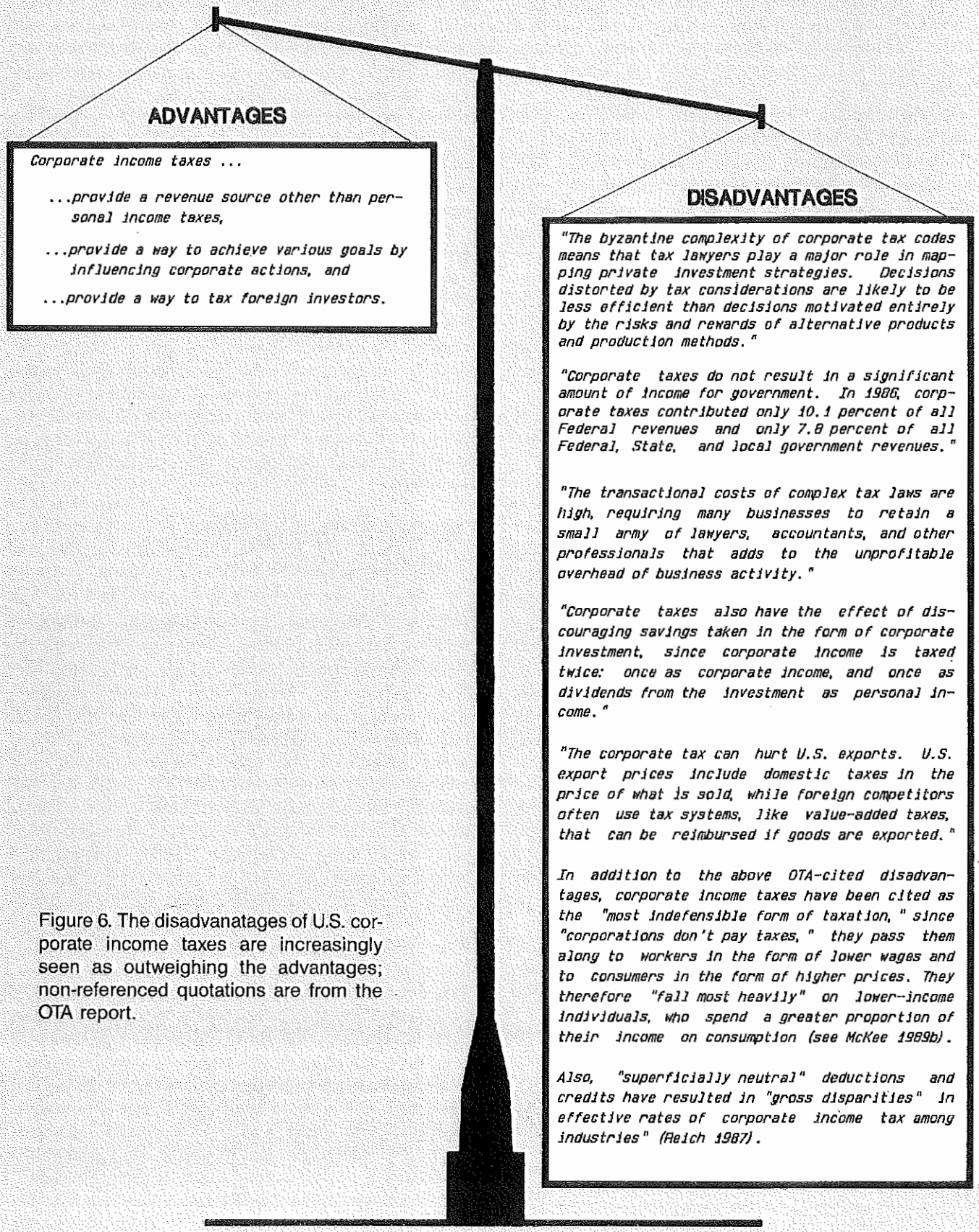
Research, Innovation, and Competitiveness

U.S. economic policies and practices largely evolved during times when the Nation's production and consumption was considered autonomous. Policies and practices have therefore been poorly designed to cope with the foreign competition which most products have faced during the 1980's. The transformation from relatively insulated domestic markets to strong competition from abroad has occurred for many reasons, as previously discussed, and U.S. companies have reacted to the competition in several ways. Some companies have moved their low-skilled operations to low-wage countries, while relying on Japanese products for their high technology needs; others have resorted to creative accounting to "dress up" their balance sheets and to "cosmetic" mergers and acquisitions. Other U.S. companies have joined with workers in demanding government protection from foreign competition. Finally, some major U.S. companies have relied on the refuge of defense contracting (Reich, 1987). According to Reich, there has been a "pervasive mismatch between what many Americans can do and what they need to do to be part of the newly competitive world economy." Corporate reactions to foreign competition, and the fact that 7 percent is now accepted as a "normal" rate of unemployment in the U.S., signal "a failure of adaptation," an important concept also emphasized by Choate and Linger (1988) ". . . societies decline as they lose their ability to adapt."

Accelerating change and declining flexibility have had "far-reaching implications" in the U.S.; Choate and Linger describe the "most visible" as "lost U.S. economic leader-

[8] *An excellent review of current trends in government regulation, both social and economic, is presented in the 1989* ***Economic Report of the President.*** *Chapter 5, titled "Rethinking Regulation," reviews regulations and their justification, yet concludes by recognizing that "The United States now competes in a global marketplace. In order to continue to compete successfully, the Nation must develop approaches to regulation that promote technological innovation."*

ADVANTAGES AND DISADVANTAGES OF U.S. CORPORATE INCOME TAXES



ADVANTAGES

Corporate income taxes ...

...provide a revenue source other than personal income taxes,

...provide a way to achieve various goals by influencing corporate actions, and

...provide a way to tax foreign investors.

DISADVANTAGES

"The byzantine complexity of corporate tax codes means that tax lawyers play a major role in mapping private investment strategies. Decisions distorted by tax considerations are likely to be less efficient than decisions motivated entirely by the risks and rewards of alternative products and production methods."

"Corporate taxes do not result in a significant amount of income for government. In 1986, corporate taxes contributed only 10.1 percent of all Federal revenues and only 7.8 percent of all Federal, State, and local government revenues."

"The transactional costs of complex tax laws are high, requiring many businesses to retain a small army of lawyers, accountants, and other professionals that adds to the unprofitable overhead of business activity."

"Corporate taxes also have the effect of discouraging savings taken in the form of corporate investment, since corporate income is taxed twice: once as corporate income, and once as dividends from the investment as personal income."

"The corporate tax can hurt U.S. exports. U.S. export prices include domestic taxes in the price of what is sold, while foreign competitors often use tax systems, like value-added taxes, that can be reimbursed if goods are exported."

In addition to the above OTA-cited disadvantages, corporate income taxes have been cited as the "most indefensible form of taxation," since "corporations don't pay taxes," they pass them along to workers in the form of lower wages and to consumers in the form of higher prices. They therefore "fall most heavily" on lower-income individuals, who spend a greater proportion of their income on consumption (see McKee 1989b).

Also, "superficially neutral" deductions and credits have resulted in "gross disparities" in effective rates of corporate income tax among industries" (Reich 1987).

Figure 6. The disadvanatages of U.S. corporate income taxes are increasingly seen as outweighing the advantages; non-referenced quotations are from the OTA report.

ship in one key industry after another, the mounting trade deficit, the extraordinary rise in the federal debt, and the decade-long decline of real wages and income." Figure 7 summarizes important issues that have been proposed for government, business, and labor. The issues are designed to result in adaptability—flexibility in production and marketing brought about by new government, business, and labor policies and attitudes. Research and innovation in the workplace are critical issues in U.S. competitiveness, and are perhaps the most important issue for furniture manufacturing and marketing.

What has been done to increase labor productivity and flexibility in U.S. furniture manufacturing? Past improvements in wood processing and finishing have included multiple cutting heads on wood carving machines, abrasive planing for direct dimensioning at sanding machines, new designs and uses for hand-held power fastening tools, and labor-saving wood surfacing and finishing techniques (Henneberger, 1978). More recent improvements have resulted from robotics and other automation techniques in both fabric and wood operations (see Huffman and Heidman, 1988). "Flexible automation" is a goal of current research in U.S. furniture manufacturing—automation will only succeed in furniture manufacturing if flexibility is maintained to meet the production demands of new styles and designs. Automated manufacturers are not only better able to compete with furniture producers abroad, they are also better able to withstand economic recession. Such producers are able to operate profitably at less than full capacity.

Who is responsible for the research and innovation necessary for U.S. furniture producers to compete effectively in domestic and foreign markets? The answer, of course, is that both public and private efforts are necessary. The public role is vital in two broad ways—through policies designed to encourage the formation and efficient use of capital and human resources, and through direct funding of research designed for automation and efficiency in the industry. *Choices for the Future* that encourage the mix of "patient" capital, are examples of public policies needed to encourage longer-term research, development, and implementation of

PROPOSALS TO ADDRESS 'DECLINING FLEXIBILITY'

"...America's future need not be bleak. The nation faces the challenges of inexorable change with, by any measure, substantial assets: Its political system is sound. It has an enormous stock of capital, a treasure-house of technology, tens of millions of skilled workers, and a spirit of initiative, entrepreneurship, and competitiveness."

"But these assets are strengths only if they can be deployed with speed, agility, and competence. Indeed, adaptability is the unrecognized, unaddressed, intangible key to renewed American productivity and competitiveness."

"...the decline of American flexibility is the product of numerous obstacles to change found throughout society." To recapture America's capacity to adapt, the many "barriers and obstacles" must be identified and eliminated, "one by one." Proposals for government, business, and labor include:

- motivating workers by giving them a more participatory role in management decisions and by tying their incomes to company profits,
- limiting bureaucratic regulation and antitrust actions where these hurt American competitiveness abroad,
- establishing the post of National Competitiveness Advisor... modeled after the National Security Advisor... a "neutral broker" who would focus on diverse concerns that affect the U.S. "industrial position,"
- structuring taxes and financial institutions to encourage business strategy and planning,
- a "GI—Bill—type program" to finance the retraining of dislocated workers, and to help secure capital for small businesses.

Figure 7. Comments on addressing the negative impacts of accelerating change and declining flexibility in the United States. Quotations and proposals are from ***The High-Flex Society: Shaping America's Economic Future***, by Pat Choate and J. K. Linger (1988).

new products and methods. Direct funding of research in furniture manufacturing is also necessary, however.

OTA concluded that areas of production such as home construction and apparel, areas similar to furniture in that "research has not traditionally played a major role," will find their productivity and competitive positions strongly influenced by their ability to conduct and absorb the products of research. "It is essential that the United States improve on the way it combines corporate and public resources in the pursuit of innovation. Like education, this is an area where government expenditure should be considered as investment and not consumption." Public and private research investments relating to furniture are currently underway on a major scale by the USDA Forest Service at Princeton, West Virginia, and at State Universities in North Carolina and Mississippi—two of the Nation's leading furniture-producing states.

The furniture industry is no different from many U.S. industries in that marketing developments and new technologies in manufacturing, transportation, and communication are resulting in new challenges and opportunities. *Choices for the Future* in education, government regulation, taxation, as well as in research and innovation, are critical to prosperity in the emerging global economic environment. With respect to U.S. competitiveness, Reich (1987) states: "To the extent that there is a problem, then, it exists at home. If foreigners can do something better or more cheaply, then we had best learn to do it as well, or learn to do something else that they cannot so easily rival. If they are willing to sacrifice profits now for the sake of larger profits in the future, then we had better make similar sacrifices if we hope to stay in the game. It is as simple, and as difficult, as that."

The U.S. furniture industry has adapted to foreign competition in several of the ways previously listed—mergers and acquisitions, and moving production facilities abroad, for example. The longer-term health of the industry, however, can only be ensured by public and private policies and actions to enhance productivity and adaptability in manufacturing, transportation, and marketing. In furniture production, as in other mannfacturing industries, it must increasingly be realized that comparative advantage in production is becoming less and less a function of a region, state, or country's raw materials and labor costs. In many respects, comparative advantage during the next 20 years will become, as stated by Choate and Linger (1988), "a function of the quality of technology, management, and worker know-how, and government policies that affect the price of capital, set the terms of trade, and shape the economic environment."

Literature Cited

Anonymous. 1989. How to buy upholstered furniture. Consumer Reports 54(1):33-38.

Behm, D. 1989. Facing environmental regulations. Manufacturing Today 6(2):18.

Blumenthal, W. M. 1988. The world economy and technological change. Foreign Affairs 66(3):529-550.

Carlino, G. A. 1989. What can output measures tell us about deindustrialization in the Nation and its regions. Bus. Rev., Fed. Res. Bank of Philadelphia, Jan.-Feb., p. 15-27.

Choate, P., and J. K. Linger. 1988. The High-Flex Society: Shaping America's Economic Future. A. A. Knopf, New York, 301 p.

Cohen, S. S., and J. Zysman. 1987. The myth of a post-industrial economy. Technology Rev., Feb.-March, p. 55-61.

Cutler, I.S. 1989. Retailers rethink pricing, but not abandoning sales. Furn. Today 13(29):8, 9.

Doherty, B. A., and S. H. Bullard. 1989. The U.S. wood household furniture industry: Adapting to changing times. *In* Proc. South. Forest Economics Workshop, March 1-3, 1989, San Antonio, TX (in press).

Drucker, P. F. 1986. The changed world economy. Foreign Affairs 64(4):768-791.

Epperson, W. W. 1986. Furniture industry trends and outlook effects on the hardwood lumber industry. *In* Proc. 14th Annual Hardwood Symp., Hardwood Research Council, May 18-21, 1986, Cashiers, NC, p. 9-19.

Evans, G. 1989. CFCs may affect upholstered furniture industry. Manufacturing Today 13(31):4, 20.

Gnuschke, J. 1989. The 1989 national outlook. Business Perspectives 2(2):1-3.

Henneberger, E. J. 1978. Productivity growth below average in the household furniture industry. Monthly Lab. Rev. Nov.:23-29.

Herrin, J. 1989. L.A. wood producers plan to move plants, broaden offerings. Furn. Today 13(20):6, 64.

Hoerr, J. 1987. Getting man and machine to live happily ever after. Bus. Week. No. 2995, April 20, 1987, p. 61-62.

Huffman, G. D., and C. H. Heiden. 1988. Technology Assessment of the Mississippi Furniture Manufacturing Industry. Automation and Robotics Applic. Center, Univ. of South. Mississippi, Hattiesburg, Dec. 15 Draft, 97 p.

James, G. E. 1989. Pact redefines cross-border trade. Furn. Today 13(27):1, 22-23.

McKee, C. J. L. 1989a. New wood dust standard may carry $200 million tab. Furn. Today 13(19):1, 27.

McKee, C. J. L. 1989b. A simplified tax system? Dream on! Furn. Today 13(9):50.

Nolley, J. W. 1988. Bulletin of hardwood market statistics: Fall 1988. USDA For. Serv., Northeast. For. Exp. Stn., Gen. Tech. Rep. NE-122, 29 p.

Office of Technology Assessment. 1988. The American Economic Transition: Choices for the Future. U.S. Gov. Printing Office, Washington, DC, 501 p.

Quinn, J. B., and C. E. Gagnon. Will services follow manufacturing into decline? Harvard Bus. Rev. 64:95-103.

Reich, R. B. 1987. Tales of a New America. Vintage Books, New York, 290 p.

Shaver, K. 1989. Alternative distribution channels. Furn. Today 13(27):8-14.

Standard & Poor's Corporation. 1986. Textiles, apparel & home furnishings current analysis. Standard & Poor's Industry Surveys, Standard & Poor's Corporation, New York, p. T61-T67.

Standard & Poor's Corporation. 1988. Textiles, apparel & home furnishings basic analysis. Standard & Poor's Industry Surveys, Standard & Poor's Corporation, New York, p. T75-T96.

Starr, E. 1988. The growth of small manufacturers:1976-1984. Bus. Ec. 23(2):41-45.

Stern, A. L. 1987. The baby boomers are richer and older. Bus. Month 130(4):24, 26, 28.

Stureson, F. N., and S. A. Sinclair. 1988. A consumer view of ready-to-assemble furniture. Dept. of Wood Sci. & For. Products, Thomas M. Brooks For. Products Center, VPI & SU, Blacksburg, VA, 106 p.

Thomas, L. 1989. Mattress Discounters agree to deceptive ad charges. Furn. Today 13(24):2, 35.

Thompson, R. 1988. Baby boom's mid-life crisis. Editorial Res. Rep., Congressional Quarterly, Inc., Washington, DC. 1(1):1-11.

USDC Bureau of Economic Analysis. 1987. Business Statistics 1986. U.S. Govt. Printing Office, Washington, DC, 262 p.

USDC Bureau of the Census. 1985. Census of Manufactures, 1982. U.S. Govt. Printing Office, Washington, DC.

USDC International Trade Administration. 1985. A competitive assessment of the U.S. wood and upholstered furniture industry. U.S. Govt. Printing Office, Washington, DC, 50 p.

USDC International Trade Administration. 1988. 1988 U.S. Industrial Outlook. U.S. Govt. Printing Office, Washington, DC, p. 47-1 to 47-5.

USDC International Trade Administrtion. 1989. 1989 U.S. Industrial Outlook. U.S. Govt. Printing Office, Washington, DC, p. 42-1 to 42-4.

Wallis, A. 1988. The United States in the world economy. Current Policy No. 1076, U.S. Dept. of State, Bur. of Pub. Affairs, Washington, DC, 5 p.

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