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Economic and Policy Developments in the Apparel and Textiles Sector

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ABSTRACT

This report analyzes recent economic developments in the apparel and textiles industries and their future prospects as a large employer in the U.S. manufacturing sector. The impact on these industries of various trade and innovation policies are evaluated. This report will not be updated.

Economic and Policy Developments in the Apparel and Textiles Sector

Summary

The apparel and textiles industries together employed just under 1.4 million workers in 1998, accounting for almost 7% of all manufacturing employment in the United States. Over the past dozen years, however, there has been a marked downward trend in employment for these industries. This trend has accelerated in recent years, with over 275,000 jobs lost since 1993. This job loss is the most important issue facing these industries.

Much of this job loss has been linked to increasing domestic consumption of imports. Concerns about these industries have influenced recent trade negotiations involving the United States, most notably the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) and China's accession into GATT's successor, the World Trade Organization (WTO). The WTO, whose membership is made up of 132 nations, including the United States, is an organization committed to the dismantling of trade barriers between nations.

Related to the issue of import-induced job loss is the debate over renewal of programs aimed at helping workers displaced by trade find new jobs — the Trade Adjustment Assistance (TAA) program. Less crucial than these issues, but still relevant, is the effect on these industries of federally sponsored programs aimed at spurring innovation the manufacturing sector as a whole.

Probably the most important unresolved issue that will influence the ability of these industries to maintain employment in the coming decades will be the impact of China's prospective accession into the WTO. China is already the leading exporter of apparel into the United States, so the future growth of U.S./Chinese apparel trade will in large part determine employment numbers in the industry. Also important will be the continued efforts by the industries to remain internationally competitive through innovation. Here, federal policies like the Research and Experimentation (R&E) Tax Credit and cooperative government/industry collaborations will influence the degree of success the industries attain.

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The apparel and textile industries ("A&T sector" hereafter) constitute a significant part of the production chain responsible for providing consumers with clothing and other fabric-based products. Textile mills manufacture fabrics generally intended for use in apparel production, although other products are also made in textiles mills (rugs, carpets, and material for seatbelts and automobile seats are some examples). Apparel factories turn the textiles into clothing to be sold in the retail market.

The A&T sector, while experiencing declining employment over the past quarter of a century and frequently asserted by many observers to be in permanent decline, remains an important source of employment in the manufacturing sector of the United States. As of 1998, these industries employed just under 1.4 million workers, about 7% of all manufacturing employees, and more than either the aircraft or automobile industries, and almost as many as these two combined (1.37 million vs. 1.5 million). In recent years, however, this sector has experienced large-scale job losses — over 275,000 since 1993.[2] This significant job loss and the concomitant problem of re-employing former workers of this sector make up the most important issues facing these industries.

Much of this job loss is related to international competitiveness and recent import surges in the sector, making the status of ongoing international trade negotiations an important issue regarding the future prospects of the A&T sector. Concerns about this sector have influenced recent trade negotiations involving the United States, most notably the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) and China's possible accession into GATT's successor, the World Trade Organization (WTO). Related to this, the outcome of the debate over renewal of the Trade Adjustment Assistance (TAA) program is also important. Less crucial than these issues, but still relevant, is the status of several programs aimed at enhancing the international competitiveness of the manufacturing sector as a whole.

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[1]The author was an economic analyst in the Resources, Science, and Industry Division in the summer of 1999. Further questions on the apparel and textiles industries should be directed to Bernard Gelb (7-....).

[2]U.S. Department of Labor, Bureau of Labor Statistics. *Employment and Earnings*. March 1994 and March 1999.

The A&T Sector: Recent Performance

Employment, Productivity, and International Trade

It often is asserted that the A&T sector in the United States is a "sunset" industry — one that will perform poorly in the future in providing employment, trade shares, and productivity growth. A common view of the A&T sector is that it mass-produces a standardized output and seems to have poor prospects for technological progress, meaning that competition will fall predominantly along labor-cost lines. As the United States becomes economically integrated with countries whose average wage is a fraction of that for U.S. workers, some analysts believe it will be impossible for U.S.-made A&T to remain competitive in the world market.

Much of this perception probably stems from rapid import penetration into the U.S. market over the last two decades, primarily from countries with substantially lower national wage rates than the United States. However, while the U.S. A&T market has seen a rising share of imports, the output of the domestic industry has increased modestly over the last dozen years. Combined, apparel and textiles account for 4% of all manufacturing output; their gross product roughly equals those of the instrument, paper, and primary metal manufacturing industries (individually).[3] Additionally, the *output multipliers* for the apparel and textiles industries are among the highest in manufacturing. Output multipliers measure the stimuli given to the aggregate economy by money spent in individual sectors. The average sectoral output multiplier for the overall economy is $1.89, meaning that $1 spent in the average sector will induce $1.89 in total economic activity.[4] An explanation of these multipliers is that if money is spent on the output of an industry, this money will go to wages of employees (who will be able to demand more goods of other sectors), to investment in plant, equipment, and inventory, or to profits, which may be re-invested in the firm, increasing demand for capital goods. For the A&T sector, $1 spent in the textile industry generates $2.77, and $1 spent in the apparel industry generates $2.51.[5]

While often lumped together as one sector, and sharing many commonalities, the textiles and apparel industries are distinct in some important respects. In 1998, total employment in the apparel industry averaged 771,000 while textile industry employment was 596,000. Employment in the apparel industry peaked at 1.3 million in 1973 and has generally declined since, falling especially fast during the recessions of 1981-82 and 1990-91 without gaining much ground after each. Between 1978 and 1998, apparel industry employment fell by 544,000 — 41%. Textile industry

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[3]The output measure used here is gross product originating in the industry -- the industry's contribution to (national) gross domestic product. For further explanation and data, see U.S. Department of Commerce, Bureau of Economic Analysis. *Survey of Current Business.* November 1997 and November 1998.

[4]These output multipliers are Department of Commerce estimates for 1987 based upon input-output tables for 1982. For discussion of and more information on output multipliers, see: CRS Report 93-370, *Manufacturing Industry: Its Impact on the U.S. Economy*, by David Cantor.

[5]Ibid.

employment peaked at 0.9 million in 1973 and also has steadily declined, but it has not fallen as fast as in the apparel industry, with 314,000 jobs lost in this period, or 35%. Both industries have suffered large losses since 1993 — with apparel losing 207,000 jobs and textiles losing 70,000.[6] These large employment decreases occurred during a time that production levels were essentially unchanged.

Rapid employment losses combined with stable output necessarily implies gains in *labor productivity*, defined as output produced per worker. Labor productivity growth in the economy as a whole determines how fast living standards can rise; thus industry labor productivity gains are very important. Economists generally attribute many of the increases in labor productivity to two separate phenomena: investment in labor-saving machinery that makes each worker more productive, called *capital deepening*; and technological advance. Both means of increasing labor productivity are extremely important, and many economists have posited that each is equally responsible for rising living standards.

Labor productivity growth in the textiles industry has actually outstripped that of the economy as a whole, increasing at 2.8% per year from 1970 to 1996, compared with 1.2% per year for the aggregate economy. Textiles productivity growth was fast even compared to the rest of the manufacturing sector (2.8% vs. 2.3%) and this higher rate of labor productivity growth has been maintained in the 1990's (4% vs. 3.5%).[7] Much of the increase in the textiles industry's productivity was due to capital deepening that occurred beginning in the 1970s. Over this decade, capital expenditures by textiles producers outstripped their profits, with about $3 billion annually invested in new plant and equipment.[8]

Labor productivity in the apparel industry grew more in line with the rest of the manufacturing sector, at just under 2.5% annually from 1970 to 1996. Capital deepening occurred, but was not nearly as dramatic as in the textiles industry. Even while investing more in the 1970's than in the previous two decades combined, the rate of capital formation was less than half that of the textiles industry. The main reasons for this investment disparity are probably: 1) that the flexibility needed for apparel production makes mass production less feasible; and 2) that apparel firms tend to be smaller, and hence less able to finance major capital improvements. Many observers of the sector believe that prospects for further productivity-enhancing capital improvements are dim. Many textiles factories have become almost completely machine-driven, leaving little room for further labor-saving, and the apparel industry seems ill-suited to such mechanization. However, increases in multifactor efficiency are much harder to predict, and information technology improvements that allow better communication between retailers and producers and "mass customization" of

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[6] *Employment and Earnings*. March 1974 and March 1999.

[7] Productivity data produced by the U.S. Department of Labor, Bureau of Labor Statistics (BLS), Office of Productivity and Technology, and obtained from the BLS Internet web site (www.bls.gov).

[8] Mittelhauser, Mark. Employment Trends in Textiles and Apparel, 1973-2005. *Monthly Labor Review*. U.S. DOL. August 1997.

some clothing lines may have the potential to provide further productivity increases to both parts of the A&T sector.

While a considerable part of textiles employment losses can be explained by productivity increases, increased imports also played a small role; mostly through the indirect impacts of *apparel* imports. In the 1970's the U.S. textiles industry was the only one in a major industrialized country that kept its domestic market share stable, providing over 95% of domestic consumption. By 1992, the share of imports had increased to 11%.[9] While *direct* imports did not significantly affect the industry, it was affected greatly by increasing *apparel* imports. The largest market for domestically produced textiles is the domestic apparel industry. As apparel imports gained market share, fewer domestic textiles were demanded.

The U.S. textiles industry has made considerable efforts in trying to locate alternative markets besides the domestic apparel market. By 1991, 63% of textiles production was for the nonapparel market, up by 20% from 15 years earlier.[10] This ability to find and keep new markets will be crucial for the future success of domestic textiles manufacturers. Exports grew 12.1% in the textiles sector from 1989-1996, but have shrunk very slightly (1.2%) since 1997, due probably to lingering effects of foreign currency devaluations induced by the Asian crisis.

Apparel production did not experience the same rapid productivity gains as the textiles industry and, probably partly as a result, experienced higher levels of import penetration into the domestic market for apparel and a higher rate of employment loss. Imports grew from 5% to 26% of the apparel market from 1970 to 1988. Many of these imports came from developing countries — by 1995 China, Hong Kong, Taiwan and Mexico accounted for a fifth of all apparel sold in the United States, and imports as a whole accounted for over half.[11]

Many of the apparel imports entered the United States under a special provision in U.S. trade law (heading 9802 of the Harmonized Tariff Schedule (HTS), “HTS 9802" henceforth) that allows imports that have been assembled from U.S. materials to enter the United States and be assessed an import duty only on value-added generated abroad. The assembly and subsequent return export of foreign materials is generally called *production shared trade* (PST). The economic rationale for PST is to allow producers a greater opportunity to lower costs. These savings can be realized through: 1) enhanced access to lower-cost labor for certain aspects of production (often referred to as *slicing the value chain*),[12] or, 2) *economies of scale* that arise from greater specialization across plants. PST has been especially prevalent in the

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[9]Murray, Lauren A. Unraveling Employment Trends in Textiles and Apparel. *Monthly Labor Review.* August 1995.

[10]Department of Commerce International Trade Administration. Home furnishings, industrial uses, and automobile interiors are three examples of non-apparel markets for textiles.

[11]Ibid.

[12]It should be noted that this labor savings (lowering of unit labor costs) may not result solely from low wages *per se*, but rather depends on the relationship between wages and productivity.

apparel industry. PST imports as a percentage of total imports have risen 50% in the 1990's (from 14% to 21% of total imports). Almost all apparel (83%) entering the United States under HTS 9802 comes from the countries targeted by the Caribbean Basin Economic Recovery Act (CBERA).[13] Apparel is well-suited to PST with the CBERA nations because of easy access to low-cost apparel assembly workers there and generally high import duties on apparel entering the U.S. Following the passage of the North American Free Trade Agreement (NAFTA), much of this trade was diverted from CBERA countries to Mexico, as NAFTA eliminates *all* duties on Mexican imports, while CBERA imports still had to pay a duty on value-added generated offshore. In addition to the HTS 9802 program, apparel imports from CBERA countries that have been produced with U.S.-made textiles are counted at less than full value when figuring quotas for these countries.

Apparel production has long been one of the first industries that developing countries establish, as it requires far less initial capital investment than many other manufacturing industries. Critics of the HTS 9802 program contend that it provides incentive for U.S. employers to move production off-shore to low-wage countries, thus adversely impacting the wage and employment prospects of U.S. workers, especially the unskilled. These criticisms, however, point out another difficulty in forecasting the future prospects of the domestic A&T sector. Imports of apparel can adversely effect the domestic textiles industry by decreasing demand for its output; however, not only the *level*, but the *origin* of these apparel imports are important. The cost of transporting textiles long distances, combined with the existence of competitive textiles factories in East Asia, may mean that apparel imported from these areas could be wholly made with foreign textiles products. However, the close proximity of the CBERA nations and Mexico, combined with these regions' relative dearth of competitive textiles plants, means that apparel imports from these nations may well *add* to the demand for the U.S. textiles industry's output. In fact, apparel imports from CBERA nations and NAFTA grew during the same period that textile exports grew. Efforts to expand NAFTA and create a larger regional trading bloc may then, perhaps unexpectedly, be helpful to the textiles sector if much apparel trade is diverted from Asia to countries in the Western Hemisphere. The apparel sector, however, seems quite vulnerable to low-wage competition whatever the origin.

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[13]Statistics on PST from: United States International Trade Commission Report, *Production Sharing: Use of U.S. Components and Materials in Foreign Assembly Operations,* Publication Number 3146, November 1998.

Issues in the 106th Congress

International Trade and Adjustment

Phaseout of Quotas. Fears of employment loss brought on by import penetration originally led to the adoption in 1974 of the Multi-Fiber Arrangement (MFA), a series of bilateral quota restrictions on apparel and textiles imports into industrialized economies, and has slowed full liberalization of the A&T sector even today. The Uruguay Round of 1995 produced a treaty calling for the gradual phasing out of quota restrictions on apparel and textiles imports into developed countries, the Agreement on Textiles and Clothing (ATC). The ATC mandates that signatories' quotas be progressively eliminated by product line over a 10-year period, when, in 2005, all quota restrictions will lapse. As it is up to the importing countries to decide in what order to eliminate product line quotas, it may well be the case that the full economic effect of the ATC will not be felt until late in the agreement.

Proponents of managed trade arrangements like the MFA and more gradual quota reduction agreements like the ATC argue that these agreements reduce substantial labor adjustment costs that would be incurred if the industry was abruptly opened to foreign competition. It has been posited that workers laid off due to pressure from foreign trade have longer layoffs and lose more income than those laid off for other reasons.[14] Much of this difficulty in re-employment stems from the generally poor skills profile of the labor force in many import-sensitive industries, and the fact that, unlike jobs displaced because of cyclical fluctuations or the closing of an individual plant within an industry, international trade represents a structural shift in an economy, meaning that these jobs (and the opportunities for workers to exploit job-specific skills) will likely be permanently lost.

Further, proponents of managed trade and more gradual liberalization point to evidence showing that adjustment costs caused by layoffs in the A&T sector are substantially higher than those in many other sectors, as A&T workers generally are not college educated, have developed skills that are specific only to the A&T sector, and are disproportionately female and/or minorities. Textile workers also tend to be clustered geographically in areas where there are fewer alternative job opportunities — generally in isolated communities in the South — meaning that community disruption is another factor related to trade-induced job displacement. Proponents of a more rapid move towards liberalization in the sector claim that these adjustment costs will have to be incurred eventually, and that such measures are inefficient tools for saving jobs. For example, estimates of the cost to American consumers for each textile industry job saved ranged as high as $52,200 per year, and $46,000 per year for each apparel industry job saved.[15]

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[14]For a more complete discussion, see: Kletzer, Lori, Trade and Job Displacement in U.S. Manufacturing, 1979-1991. *Imports, Export and the American Worker*, Collins (ed.). Brookings Institution Press. 1997.

[15]Grennes, Thomas. The Multifiber Arrangement and the Management of International Textile Trade, *Cato Journal*, Vol. 9, No. 1. These estimates are based on how much more consumers have to pay for textiles and apparel due to tariffs levied on imports, or due to

By 2005 the ATC will expire, and apparel and textiles will be subject to the rules and regulations of WTO, which forbid the use of quotas. Estimates of the impact of this on the U.S. A&T sector vary widely, but most studies project employment losses from 200,000 to 650,000.[16] The apparel industry is projected to bear most of these losses, while the textiles industry will suffer mainly from the indirect effects of a smaller domestic apparel industry[17].

China and the WTO. The biggest unresolved issue regarding the A&T industry and the WTO concerns China's possible accession and how fast quotas on Chinese apparel and textiles may be expanded or eliminated.[18] While the ATC is set to expire in 2005, 10 years after it was first implemented, some advocates for the A&T sector assert that the 10-year phaseout of quotas on Chinese apparel imports should not begin until the date of Chinese accession to the WTO. Chinese apparel (including Hong Kong) already makes up 15% of the U.S. market. With expanding quotas, this could grow very rapidly in the future, perhaps inducing large employment shifts in the United States.

Presently, U.S.-China trade relations are governed by Title VI of the Trade Act of 1974. The Jackson-Vanik Amendment to this Act mandates that the status of U.S. trade relations with China be reviewed annually by the Administration. If China is accepted as a member of the WTO, this review would be contrary to existing WTO obligations, as acceptance into the WTO requires the granting of *unconditional* most-favored-nation (MFN) status to the products of all WTO members. H.R. 557, introduced in the 106th Congress, aims to rectify this conflict by exempting China from the Jackson-Vanik review in the event of that country's accession into the WTO. There is no legislative requirement presently for the President to obtain statutory authorization to approve the inclusion of China into the WTO. Three bills pending in the 106th Congress (H.R. 884, S. 742, S. 743) would require the President to obtain congressional approval before the United States could support China's WTO accession.[19] Two of these three bills (H.R. 884, S. 743) require that the United States withdraw from the WTO if China becomes a member without U.S. support.

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higher prices caused by supply shortages resulting from quotas imposed on foreign goods.

[16]The range of estimates is wide due to uncertainty regarding future U.S.-China trade relations, and the effect of trade liberalization on foreign demand for U.S. apparel and textiles. For more on this, see: Murray, Lauren A. Unraveling Employment Tends in Textiles and Apparel, *Monthly Labor Review*. U.S. Department of Labor. August 1995. The specific low and high estimates cited are from the U.S. Congressional Budget Office and the American Textile Manufacturers Institute, respectively.

[17]Again, it is hard to predict what effect the phaseout of the ATC will have on the demand for U.S. textiles from foreign producers, once tariffs on U.S. goods are lifted.

[18]For more information see: U.S. Library of Congress, Congressional Research Service, *China-U.S. Textiles Trade: Growth and Confrontation*, by Edward Rappaport, CRS Report 97-371.

[19]H.R. 884 was introduced March 1, 1999 by Representative Gephardt. S. 742 was introduced on March 25, 1999 by Senator Grassley. S. 743 was introduced on March 25, 1999 by Senator Hollings.

Adjustment Programs. The TAA and NAFTA-Transitional Adjustment Assistance Program (TAAP) initiatives were developed to meet the challenge of structural adjustment to the pressures of international competition. Both programs are generally two-pronged: they provide technical assistance to firms to help them reorganize and become more competitive, and they provide extended benefits to workers who have been displaced by imports.

The technical assistance provided to *firms* is coordinated through the Economic Development Assistance (EDA) Program of the Commerce Department. Firms that believe that they have been adversely affected by imports petition to the EDA for certification of eligibility for assistance. If this eligibility is granted, then the firm may receive assistance in drafting an adjustment proposal — a plan for how the firm can remain competitive within the industry. If this proposal is accepted, the firm may then apply for TAA grants that assist the firm in enacting the measures enumerated in the proposal. To receive the award, the firm's plan must demonstrate a viable adjustment program, provide proof that its economic resources are devoted to adjustment, and give consideration to the employees of the firm.

The TAA program is unusual compared to other government programs in that it allows grant money to be spent on private sector consultants. Many proponents of the TAA program for firms point to this as a strength, arguing that private sector consultants allow a greater range of advice and flexibility than do strictly governmental assistance programs. A comprehensive review of the program has found that firms that receive TAA funding generally perform better in terms of sales and employment than similar firms who do not.[20] This same report asserts that the apparel industry has been a prime beneficiary of this program, although industry-specific breakdowns of employment and/or earnings performance are not given. The TAA program officially expired June 30, 1999. Two bills in the 106th Congress (H.R. 1491 and S. 220) reauthorize the TAA program for firms. While a relatively small program, TAA has been controversial since its inception in 1962. Many critics claim that there is no economic difference between trade competition and domestic competition; consequently, offering assistance to firms impacted by trade pressures is tantamount to preferential treatment. Others believe that TAA only serves to distort the normal market adjustment processes, impeding the benefits gained from trade liberalization. Proponents of the program argue that it is an essential complement to trade liberalization, allowing the adjustment process to proceed less painfully and giving firms a fair chance to adopt to a changed business environment.

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[20] *Effective Aid to Trade-Impacted Manufacturers: An Evaluation of the Trade Adjustment Assistance Program* , a report to the Economic Development Administration by the Urban Institute, November 1998.

The TAA and NAFTA-TAAP programs for *workers* are coordinated by the Department of Labor. These provide extensions of unemployment insurance to workers who have been displaced by direct imports and who have enrolled in certified training programs[21]. The present TAA programs for workers were part of the 1974 Trade Act, and were widely seen as having been developed in exchange for organized labor's support for, or at least acquiescence to, further trade liberalization. Funding for the TAA program for workers also lapsed as of June 30, 1999. The merging of TAA programs with other programs aimed at worker retraining and displacement has been proposed repeatedly, but has never been enacted. Several bills now pending would continue funding this part of the program for the next three to four years (H.R. 1491, H.R. 1728 and S. 220).[22]

Caribbean Trade. The CBERA was originally passed in 1984 in an effort to promote economic development for the targeted countries. A&T products were largely excluded form the Act's trade liberalization, but the 106th Congress is considering two proposals to enhance trade benefits to CBERA countries, both in the context of larger bills aimed at providing economic aid in response to the damage inflicted by Hurricane Mitch and Georges. Both S. 371 and H.R. 984 would broaden the provisions of HTS 9802 to something closer to the access of Mexico under NAFTA, even allowing duty-free and quota-free importation of apparel not made of material formed and cut in the United States.[23] The House bill provides a larger range of preferentially treated product lines. An expected Administration proposal that has not yet been introduced as legislation, but is purportedly closer to the Senate bill, provides for more stringent labor and environmental protections, and would allow tariff benefits for a shorter period of time than either congressional initiative (2 years instead of 5).[24]

African Trade. Legislation introduced in the 106th Congress (H.R. 434/S. 666 and H.R. 772) would increase duty-free benefits for products from Sub-Saharan Africa and eliminate U.S. quotas for textiles and apparel from these countries.[25] In the short run, such measures would be likely to have a small effect on the industries, mostly because such trade presently is so small in volume — less than 1% of U.S. apparel and textile originate in these countries. If, however, this legislation spurs

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[21]*Direct* imports means imports of goods directly in competition with the output of the industry in which the worker was employed. Critics have pointed out that many jobs may be at risk less directly from imports — service industries that *support* manufacturing industries that are directly affected by imports, for example.

[22]H.R. 1491 was introduced April 20, 1999 by Representative Matsui. H.R. 1728 was introduced May 6, 1999 by Representative English. S. 220 was introduced January 19, 1999 by Senator Moynihan.

[23]H.R. 984 was introduced March 4, 1999 by Representative Crane. S. 371 was introduced on February 2, 1999 by Senator Graham.

[24]For more information on this, see: U.S. Library of Congress, Congressional Research Service, *Trade and the Americas*, by Raymond Ahearn, CRS Issue Brief, 95017.

[25]H.R. 434 was introduced on February 2, 1999 by Representative Crane. H.R. 772 was introduced February 23, 1999 by Representative Jackson. S. 666 was introduced on March 18, 1999 by Senator Lugar.

investment in these countries, the longer term impact of such trade on the A&T sector could be substantial. This impact may be blunted, however, if goods produced in Africa merely displace exports from other sources, notably East Asia.[26]

Innovation Policies

The A&T sector benefits from several broad programs aimed at enhancing the pace of innovation in the U.S. manufacturing sector. This support takes many forms: tax credits, technology transfer programs, and training credits. Some of the issues coming before the 106th Congress are: the status of the research and experimentation (R&E) tax credit, the funding of Manufacturing Extension Partnership Program (MEP), and regulations affecting Cooperative Research and Development Agreements (CRADA) between the industry and the federal government.

R&E Tax Credit. The R&E tax credit allows firms, across industries, to claim a credit against their federal income tax liability for qualified spending on research and experimentation. Private sector research and development (R&D) is vital to aggregate economic growth, yet individual firms may be reluctant to fund high levels of R&D because of uncertainty about the private returns to such spending. The R&E tax credit is aimed at spurring higher levels of private R&D. Perhaps surprisingly, a comprehensive study of the manufacturing sector found that: "the own-price elasticity of company-financed R&D does not vary much from industry to industry....",[27] meaning that efforts to make research and development cheaper (the purpose of the R&E tax credit) spur almost the same amount of additional R&D activity in every industry, including the apparel and textile industries. In fact, the measured elasticities in the study for the A&T sector were higher than elasticities in those industries considered more technology-intensive, such as scientific instruments.

This implies that, for the purposes of inducing R&D efforts, the R&E tax credit may be more important for the A&T sector.[28] This probably is because more technology-intensive industries consider R&D spending a *fixed cost* of their sector — activity that must be undertaken to remain competitive, regardless of public policy; while for the A&T sector, the amount of R&D engaged in is variable, depending on the expense. Recent technological advances in the A&T sector range from computer-aided design (CAD) in the pre-production phase, to chemical advances in dyes and coloring, to communication efficiencies linking retailers and factories. The future of the R&E tax credit may determine to a large degree the rate of continued technical progress in the A&T sector.

While it has always been a temporary provision of the Internal Revenue Code, the R&E tax credit has generally enjoyed wide congressional support. Much of this support stems from its status as an *indirect* mechanism for encouraging research and

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[26]For more information on this, see CRS Issue Brief, 98015, *African Trade and Investment: Proposals in the 106th Congress*, by Dagne, Theodros S. and Sek, Lenore.

[27]Mamuneas, Theofanis and M. Ishaq Nadiri. Public Research and Development Policies and Cost Behavior of U.S. Manufacturing Industries. NBER Working Paper No. 5059. June 1997.

[28]However, the differences in elasticities are very small.

development in the private sector, in that it is not targeted at any specific industry. A number of bills making the R&E tax credit permanent were introduced in the 106th Congress.[29] H.R. 2488, passed by both the House and the Senate with slight variations, has been reported out of a conference committee. It would extend the credit to 2004.[30]

MEP and CRADAs. The MEP and CRADAs represent federal efforts to promote private sector R&D by reducing the risks and costs associated with it, and by giving small and medium-sized firms access to expertise and research that would be out of their reach without government assistance. These programs aim to foster cooperative efforts between government, industry, and academia, but do not provide any direct financial assistance (subsidies, for example) to firms participating in them.

The Manufacturing Extension Partnership Program (MEP) is a network of regional centers set up to assist small and medium-sized companies in adopting new technologies and manufacturing techniques derived from R&D performed in federal laboratories. Administered by the Department of Commerce's National Institute of Standards and Technology (NIST), this is a cooperative effort between the federal government, state and local governments, universities, and/or the private sector. While funding has generally been sufficient to meet federal obligations, questions still remain whether or not the centers will become self-sufficient, a stated goal of the program.[31]

The MEP provides no direct financial assistance to firms; rather it makes available a wide range of consulting functions in areas such as: business strategy, worker retraining, marketing, and equipment upgrading. The centers are selected in an open competition, and presently must provide 50% of their funding from non-federal sources. A comprehensive review of the MEP has been issued by the General Accounting Office (GAO), in a report titled *Manufacturing Extension Programs, Manufacturers' Views About Delivery and Impact of Services*. Of the firms surveyed, 73% reported that their relationship with an MEP center had a positive effect on their business performance. This same report tallied the delivery of MEP services by industry. Firms in the A&T sector constituted 3% of the total firms serviced. The NIST has reported that since its inception in 1988, the MEP has assisted over 62,000 companies. Appropriations legislation H.R. 2670, for the Commerce Department includes $99.8 million for the MEP, while its Senate counterpart, S. 1217, provides $109.8 million. Recent decreases in funding mostly reflect statutory requirements that centers provide two-thirds of their own funding after 6 years.[32]

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[29]For more information see: CRS Issue Brief, IB92039, *The Research and Experimentation Tax Credit*, updated periodically, by (name redacted),.

[30]H.R. 2488 was introduced July 13, 1999 by Representative Archer.

[31]For more information see: Congressional Research Service, *Manufacturing Extension Program: An Overview*, by Wendy Schacht, CRS Report 97-104.

[32]H.R. 2670 was introduced August 2, 1999 by Representative Rogers. S. 1217 was introduced June 1, 1999 by Senator Gregg.

CRADAs are mechanisms established by the Federal Technology Transfer Act that allow the transfer of technology from government laboratories to the private sector for commercialization. The government may provide financial support in the way of overhead for research and development performed and necessary in its own laboratories, but is prohibited from providing direct funding to its CRADA partner. This requirement that the industry partner invest its own time and money in the R&D process is meant to insure that the R&D performed is relevant to industry needs.[33] Preference is given to small and medium-sized manufacturers.

The American Textiles (AMTEX) Partnership, a collaboration between the textiles industry and the Department of Energy (DOE), began in 1993. The AMTEX partnership has resulted in several potential productivity-enhancing innovations for the industry. The most important in terms of its immediate impact is the "Demand Activated Manufacturing Architecture", a secure, Internet-based information system that links sectors in the A&T production and distribution chain. The aim of the system is to reduce supply shortages and redundant inventory, two pressing problems of the sector. "Computer-Aided Fabric Evaluation" allows image-processing computer technology to scan large swaths of textiles fabric for flaws before these cause improper cutting or printing. Such innovations, while holding promise for improving the international competitiveness of American-made textiles, may be of limited use in addressing the problem of future employment prospects for many of the industry's present employees. Like many productivity enhancing developments, these may necessitate changes in the composition of the workforce of the textiles industry, increasing demand within the industry for higher-skilled workers while displacing what were traditionally less-skilled positions.

H.R. 209 of the 106th Congress was passed by the House on May 11, 1999. It would revise requirements affecting industry licensing of innovations achieved by a federal laboratory through a CRADA. Among other requirements, the license applicant must commit to achieving practical, commercial utilization of the innovation within a reasonable time, and prohibits a government agency from providing an exclusive or partially exclusive license on a federally owned invention without providing 15 days public notice and considering comments upon the license application and receiving a development plan from the license applicant.[34]

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[33]For more information see: CRS Report 95-150. *Cooperative Research and Development Agreements (CRADAs)*, by Wendy Schacht,

[34]H.R. 209 was introduced January 6, 1999 by Representative Morella.

Summary

Despite the effects of labor-displacing productivity growth and foreign competition, the A&T sector will continue to be an important source of manufacturing employment — the Bureau of Labor Statistics projects that in 2005 the sector will employ 1.3 million workers. While the apparel industry seems to exhibit a consistent downward trend in employment, the textiles industry may well have stable employment for the foreseeable future.

The A&T sector, already running a substantial trade deficit, will almost surely see its international position worsen in coming years, especially if China joins the WTO and CBERA/NAFTA parity proposals are enacted — making these issues probably the most important the industry will face in the 106th Congress. The extent of this erosion of the industries' international performance will depend in large part on the success of the textiles industry in finding export markets to compensate for the declining demand from domestic apparel producers.

The size and labor force profile of the A&T sector implies that the adjustment costs incurred by a relatively sudden job loss would be substantial. Both the TAA programs and the general competitiveness policies assisting manufacturing enterprises could reduce these costs. The 106th Congress has shown little interest in substantially changing the character of these programs, but it seems safe to say that the historical controversy over their precise configurations will continue.