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THE CHAIRMAN

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STATEMENT BY MARTIN N. BAILY  
CHAIRMAN, COUNCIL OF ECONOMIC ADVISERS

Today, the Council of Economic Advisers released a report – *America's Interest in the World Trade Organization: An Economic Assessment*. The report looks at the increasing importance of international trade in the U.S. economy and the central role of the multilateral trading system in opening foreign markets, strengthening the rule of law, and promoting economic growth and development internationally.

The report concludes that the United States looks to the future from a position of economic strength, due in no small part to its openness and flexibility. U.S. tariffs are among the world's lowest, averaging only 2.8 percent on internationally comparable terms. The United States is also the world's leading trader in goods and services, accounting for about 14 percent of world exports and about 16 percent of imports. The report finds that Americans benefit directly from open markets, as both exporters and importers. For example, recent studies provide evidence of substantial wage advantages in jobs supported by goods exports – on the order of 15 percent. Americans also enjoy lower prices and more product variety.

For over 50 years the multilateral trading system, first consisting of the General Agreement on Tariffs and Trade, and more recently the World Trade Organization (WTO), has played a key part in meeting U.S. trade policy objectives. It has helped reduce foreign barriers to trade, strengthen the rule of law, and encourage economic growth and development. Through successive rounds of negotiations, tariffs on industrial products have fallen dramatically. At the end of WWII, the average tariff on industrial products in developed countries was about 40 percent. Today, the average is about 90 percent lower.

As a result of the Uruguay Round negotiations, the multilateral trading system now more fully covers agriculture, textiles and clothing, services, and intellectual property rights. There were also landmark decisions to create a WTO and institute a strengthened system for dispute resolution. This new dispute settlement mechanism, with its strengthened procedures, has proved extremely useful to the United States, which as a complaining party has so far prevailed in 22 out of 24 cases, having favorably settled 10 without litigation and having won 12 in litigation.

The success of the trading system and its value in reinforcing market-oriented development strategies has become increasingly appreciated over time. Originally dominated by the developed countries, participation in the trading system has grown as others have sought inclusion. Today, the WTO has 135 members and another 32 nations are seeking accession. Between 1989 and 1997, developing countries increased their share of world trade.

While its achievements have been considerable, the multilateral trading system remains a work in progress. A new round of negotiations offers opportunities to enhance market access, improve the functioning of the WTO, more effectively integrate labor and environmental considerations, and ensure that the benefits of trade are shared more widely.

**America's Interest in  
the World Trade Organization:  
An Economic Assessment**

**Executive Summary**

November 16, 1999

A Report by the Council of Economic Advisers

## Executive Summary

The U.S. economy looks to the future from a position of strength, due in no small part to its openness and flexibility. U.S. tariffs are among the world's lowest, averaging only 2.8 percent on internationally comparable terms. The United States is also the world's leading trader in goods and services, accounting for about 14 percent of world exports and about 16 percent of imports. Americans benefit directly from open markets. U.S. producers benefit from exports of high-tech manufactures, agriculture, and services, among other products. U.S. workers enjoy higher paying jobs and U.S. consumers enjoy lower prices and more product variety.

For over half a century the multilateral trading system, first consisting of the General Agreement on Tariffs and Trade (GATT) and more recently the World Trade Organization (WTO), has played a key part in meeting U.S. trade policy objectives. It has reduced barriers to trade, strengthened the rule of law, and encouraged economic development internationally. The post-WWII period has seen exceptional growth in much of the world as the global economy has become increasingly integrated.

While its achievements have been considerable, the trading system remains a work in progress. A new round offers opportunities to enhance market access, improve the functioning of the WTO, more effectively integrate labor and environmental considerations, and ensure that the benefits of trade are shared more widely.

### America Benefits from Market Liberalization

On the threshold of the 21<sup>st</sup> Century, two related features of the U.S. economy are particularly striking. First, it has never been more prosperous and, second, it has never been as integrated into the world economy. The U.S. economy provides its citizens with living standards that are higher than those in many other major industrial economies – measured in terms of purchasing power, per capita income in the United States is 27 percent higher than in Japan and 41 percent higher than in Germany. The U.S. economy is able to provide such high living standards, in part, because Americans engage extensively in international trade. As an indicator of its size and scope, U.S. trade's value relative to U.S. GNP has been almost 25 percent in recent years, the highest it has been at any point in the past hundred years.

- On average, Americans export about 11 percent of all the goods and services they produce and import about 13 percent of all they consume.
- Many high-tech U.S. manufacturing industries, such as computers and electronics, export 25 percent or more of their total shipments; U.S. wheat and rice growers export over 40 percent of their total production.
- The United States is the world's leading services exporter, accounting for over 18 percent of all commercial service exports.
- Recent studies provide evidence of substantial wage advantages in jobs supported by goods exports – on the order of 15 percent.

## **The WTO Promotes Market Opening**

America gains most when other nations lower their trade barriers as we reduce ours. Indeed, as one of the world's most open economies, we have a particular interest in promoting liberalization abroad. The system of binding commitments first established in the GATT and now advanced by the WTO has provided a framework for liberalization. Consistent with U.S. goals for an open multilateral trading system, the GATT was founded in 1948 on principles of reciprocity and non-discrimination. On this basis, it has been extremely successful in opening markets.

- At the end of WWII, the average tariff on industrial products in developed countries was about 40 percent. Today, the average is about 90 percent lower.

The Uruguay Round, concluded in 1994, reduced tariffs on industrial products and extended agreements to previously neglected sectors, such as agriculture, textiles and clothing, and services. Recent economic studies evaluate potential gains from the Uruguay Round, but capture only the effects of certain conceptually quantifiable features, namely reducing tariffs, reducing export subsidies, and eliminating quotas on some goods. They do not capture gains from provisions for services, dispute settlement, and intellectual property.

- Recent studies of some potential Uruguay Round benefits estimate that annual global income could rise \$171 billion to \$214 billion upon full implementation, in 1992 dollars; for the United States alone, the gains could amount to \$27 billion to \$37 billion each year.

Post-Uruguay Round negotiations yielded additional market access commitments in financial services, basic telecommunications services, and information technology, opening up new opportunities in some areas in which the United States is highly competitive. Growth in U.S. exports of private services point to potential gains from market opening.

- Since 1994, U.S. financial service exports have grown, on average, by 24 percent annually in nominal terms. U.S. insurance service exports have grown by 14 percent, and U.S. business, technical, and professional service exports have grown by 12 percent.

## **The WTO Promotes the Rule of Law**

To fully realize the benefits of trade, however, requires more than agreement to reduce barriers. Sustaining support for the trading system also requires rules that are credible and equitable. For firms to undertake the necessary investments to service foreign markets, they need to believe that new barriers will not be raised and that old ones will not reassert themselves. To rely on foreign suppliers, buyers need to believe likewise that market access will not be disrupted. Traders need assurance that commitments will be binding and that markets will remain open in the event of changed circumstances. Moreover, the rules should ensure that governments play fair – that they not seek advantage for favored interests by subsidizing their producers or passing regulations that unnecessarily distort international trade. Fairness also requires that the gains from trade are shared widely and do not come at the expense of core labor standards or the environment. In so doing, the WTO must strike an appropriate balance between the needs of the trading system and those of sovereign nations. The WTO Agreements do not and will not preclude the United States

from establishing and maintaining its own laws; impair the effective enforcement of U.S. laws; or limit the ability of the United States to set and achieve its environmental, labor, health, and safety standards at the levels it considers appropriate. Through consensus, the WTO has done much to achieve both credibility and fairness.

- WTO rules allow nations to take anti-dumping measures, countervailing-duty measures, and action against import surges, provided they follow certain procedures. The United States has used its own WTO-consistent trade laws to combat unfair foreign practices and to provide safeguards for domestic producers.
- The WTO provides an improved framework for resolving disputes. It has proved extremely useful to the United States, which as a complaining party has so far prevailed in 22 out of 24 cases, having favorably settled 10 without litigation and having won 12 in litigation.
- The WTO provides rules for protecting intellectual property rights. For the United States, one of the world's most innovative nations, such rights convey substantial value. In 1998, U.S. exports of royalties and license fees amounted to about \$37 billion.

By and large, WTO members have adhered to their commitments. The sustained trend towards market liberalization over the postwar period and the maintenance of commitments not to raise barriers even in the face of international financial crises, stand in sharp contrast to the trade policy experience during the inter-war period.

### **The WTO Extends the Benefits of Trade and Encourages Growth**

The United States has long advocated the use of the multilateral trading system to promote economic development internationally. The success of the trading system and its value in reinforcing market-oriented development strategies has become increasingly appreciated over time. Between 1989 and 1997, developing countries increased their share of world trade. Originally dominated by the developed countries, participation in the multilateral trading system has grown as others have sought inclusion. Today, the WTO has 135 members and another 32 nations are seeking accession. This allure of the trading system supports the view that international trade is not a zero-sum game. Both the United States and its trading partners reap the benefits. In fact, the shared aspect of the gains from trade, between trading partners, is a core principle of economics. However, not all WTO members are currently well positioned to use the system effectively. Some of its least developed members lack the necessary institutions and infrastructure to reap the full benefits of trade – in those cases, capacity building and technical assistance, coupled with market opening, could help spread the benefits.

### **The U.S. Agenda Meets the Challenges of the 21<sup>st</sup> Century**

The prospect of another round of multilateral trade negotiations provides new opportunities to advance U.S. interests in opening foreign markets, establishing an effective rule of law, and promoting economic development internationally. Barriers remain high in agriculture and services, sectors in which we are highly competitive. In agriculture, for example, bound tariff rates average about 50 percent around the world compared with less than 10 percent in the

United States. Average food and related prices in the EU and Japan are 34 and 134 percent higher, respectively, than in the United States. Moreover, the system of commitments and rules, though much improved, still requires further strengthening. And, much work remains to be done to ensure that developing countries – including the least developed – obtain the market access and technical assistance they need to realize the benefits that international trade can afford. The United States is also committed to putting a “human face” on the global economy.

For these reasons, the United States is proposing to launch a new round, lasting no more than three years, that focuses on market access in services, agriculture, and industrial products. It is also seeking immediate tariff cuts in eight key areas, agreement on transparency in government procurement, extension of the prohibition on e-commerce duties, and an agreement to make additional information-technology products tariff free. The United States also sees the need to strengthen the WTO's relationships with other international organizations and to make the WTO more open and accessible. The United States has sought to create a trading system that spreads the benefits of trade as widely as possible, both across and within countries, and is supportive of core labor standards and the environment. Thus, the United States is:

- Seeking to bring more nations into the trading system and ensure that developing countries fully benefit. The United States will work to give the least developed countries greater access to global markets. The United States is also proposing measures to provide technical assistance on implementing trade policy and strengthening institutions in developing countries responsible for trade, labor, environmental, and other policies that influence the gains to living standards from trade.
- Proposing to establish a WTO Working Group on Trade and Labor in Seattle and enhance the institutional links between the International Labor Organization (ILO) and the WTO, by granting the ILO observer status at the WTO.
- Pursuing opportunities that can both open markets and yield environmental benefits, such as eliminating fishery subsidies that contribute to over-fishing and eliminating tariffs on environmental goods; seeking to strengthen cooperation between the WTO and international organizations dealing with environmental matters like the UN Environmental Program.
- Committing to conduct a U.S. environmental review of the likely consequences of the Round and proposing that the WTO Trade and Environment Committee help identify environmental implications as the Round proceeds.

The WTO provides its members with some of the conditions that are necessary for successful economic performance, but the benefits it confers are not automatic. To fully realize the benefits of trade, it is necessary to adopt complementary domestic policies, such as those to help ensure that displaced resources are successfully re-employed. This requires effective mechanisms that help workers, farmers, and firms adjust to change when need arises – though economic studies typically find that trade is a small factor in overall job displacement. The Clinton Administration has made opening markets at home and abroad a major pillar of its economic strategy, but it has also adopted the complementary policies of investing in people and fiscal prudence.

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## **I. Overview**

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While its achievements have been considerable, the trading system remains a work in progress. A new round offers opportunities to enhance market access, improve the functioning of the WTO, more effectively integrate labor and environmental considerations, and ensure that the benefits of trade are shared more widely.

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United States. Average food and related prices in the EU and Japan are 34 and 134 percent higher, respectively, than in the United States. Moreover, the system of commitments and rules, though much improved, still requires further strengthening. And, much work remains to be done to ensure that developing countries – including the least developed – obtain the market access and technical assistance they need to realize the benefits that international trade can afford. The United States is also committed to putting a “human face” on the global economy.

For these reasons, the United States is proposing to launch a new round, lasting no more than three years, that focuses on market access in services, agriculture, and industrial products. It is also seeking immediate tariff cuts in eight key areas, agreement on transparency in government procurement, extension of the prohibition on e-commerce duties, and an agreement to make additional information-technology products tariff free. The United States also sees the need to strengthen the WTO’s relationships with other international organizations and to make the WTO more open and accessible. The United States has sought to create a trading system that spreads the benefits of trade as widely as possible, both across and within countries, and is supportive of core labor standards and the environment. Thus, the United States is:

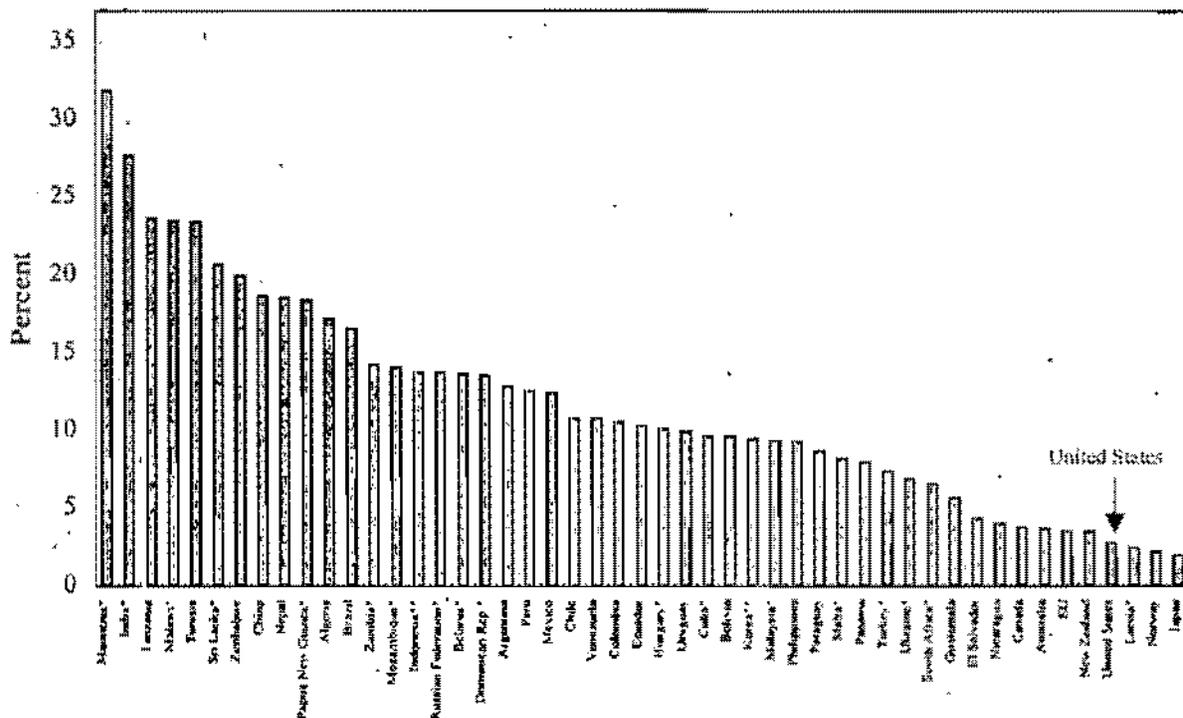
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The WTO provides its members with some of the conditions that are necessary for successful economic performance, but the benefits it confers are not automatic. To fully realize the benefits of trade, it is necessary to adopt complementary domestic policies, such as those to help ensure that displaced resources are successfully re-employed. This requires effective mechanisms that help workers, farmers, and firms adjust to change when need arises – though economic studies typically find that trade is a small factor in overall job displacement. The Clinton Administration has made opening markets at home and abroad a major pillar of its economic strategy, but it has also adopted the complementary policies of investing in people and fiscal prudence.

## II. America Benefits from Market Liberalization

The United States approaches market liberalization from a position of strength in the global economy, partly because of its openness and flexibility. U.S. tariffs on imports are among the lowest in the world, averaging about 2.8 percent on comparable terms (Figure 1).<sup>1</sup> And U.S. producers are among the most competitive in many sectors, including high-tech manufactures, agriculture, and services. Today, the United States is more integrated into the global economy than ever before – it is also the world's largest trader. The United States accounts for about 14 percent of the world's goods and services exports and about 16 percent of its imports.<sup>2</sup> Because the U.S. market is already so open, it stands to reason that Americans would have much to gain and relatively little to lose from additional multilateral liberalization. To date, the multilateral trading system has provided an effective forum for working toward open markets.

Figure 1: Mean Tariff Rates Weighted by World Imports 1998



Source: *World Development Indicators, 1999*, World Bank

Notes: \* indicates data from 1997; \*\* indicates data from 1996.

U.S. businesses, farmers, workers, and consumers already benefit from U.S. policies that enable the free flow of goods and services at the U.S. border and from international agreements that provide access to foreign markets. U.S. businesses benefit directly from export opportunities – some industries, such as electronics and computer equipment, sell at least a quarter of their

<sup>1</sup> In 1998, U.S. tariffs averaged about 2.8 percent, weighted by world imports; however, the share of total U.S. duties collected in total U.S. imports for consumption was only 2 percent. Figure 1 provides only a partial indication of countries' openness. A full international comparison would require an analysis of other measures, such as transparency and non-tariff barriers that are not reflected in Figure 1.

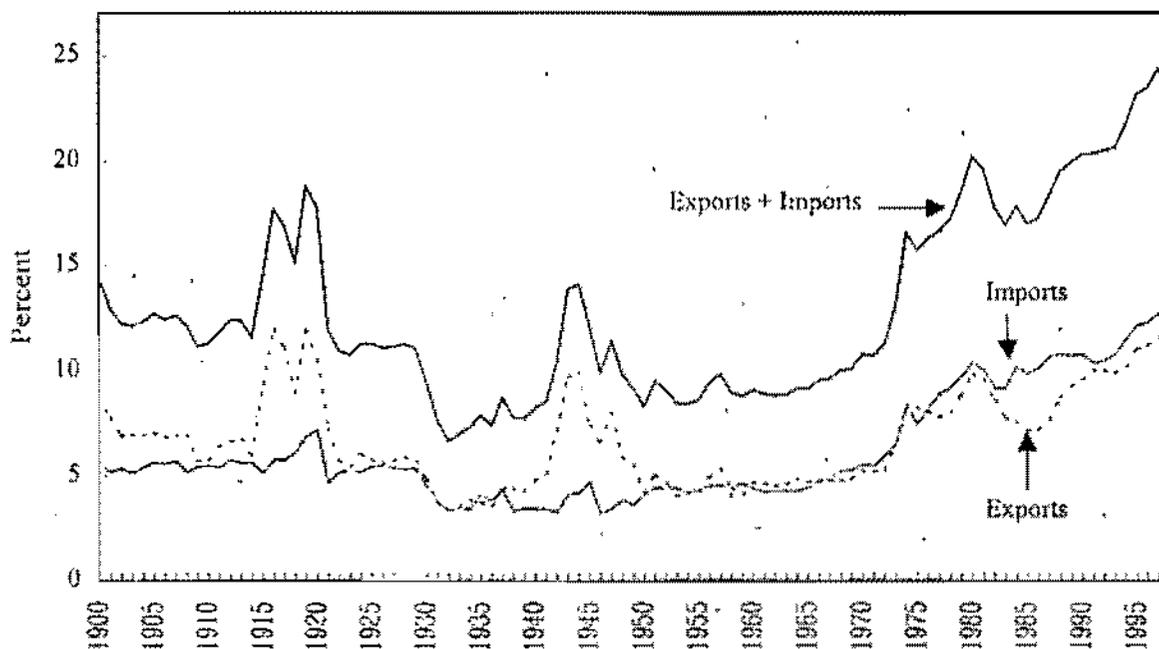
<sup>2</sup> Using data from the World Trade Organization, <http://www.wto.org/wto/stat/stat.htm> (downloaded November 11, 1999). The data are for world trade in goods and commercial services, including intra-EU trade.

merchandise overseas. They also enjoy access to low cost inputs, which makes them more competitive domestically and internationally. Many U.S. farmers also ship large shares of their production abroad. U.S. workers enjoy higher paying jobs and U.S. consumers enjoy lower prices and more product variety.

### America in the Global Economy

In recent years, trade's share in U.S. GNP has approached 25 percent, a record high for this century (Figure 2).<sup>3</sup> In 1998, U.S. goods and services exports and imports amounted to about \$966 billion and \$1,116 billion, respectively. On average, Americans exported 11 percent of the goods and services they produced and imported 13 percent of those they consumed. Capital goods accounted for the largest share of U.S. exports, about 31 percent, followed by services, then industrial supplies and materials (Figure 3a). Capital goods also accounted for the largest share of U.S. imports, about 24 percent, followed by consumer goods, then services (Figure 3b). The sectoral data suggest the importance of two-way trade within industries. The United States is competitive across a wide range of industries, in part, because U.S. firms have access to low-cost components, resulting in lower production costs.

Figure 2: U.S. Trade as a Percent of GNP 1900-1998



Source: The data for 1900-1970 are from the U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States, Part 2* (Washington, DC: 1975); the data for 1971-1998 are from the Bureau of Economic Analysis.

Notes: Export and import data from 1900-1918 do not include "Other Transactions"; import data from 1900-1919 do not include "Direct Military Expenditures."

<sup>3</sup> The share of trade in GNP provides a figurative benchmark. While exports come out of domestic production, imports supplement domestic consumption.

Figure 3a: U.S. Exports in 1998

Total = \$966 Billion

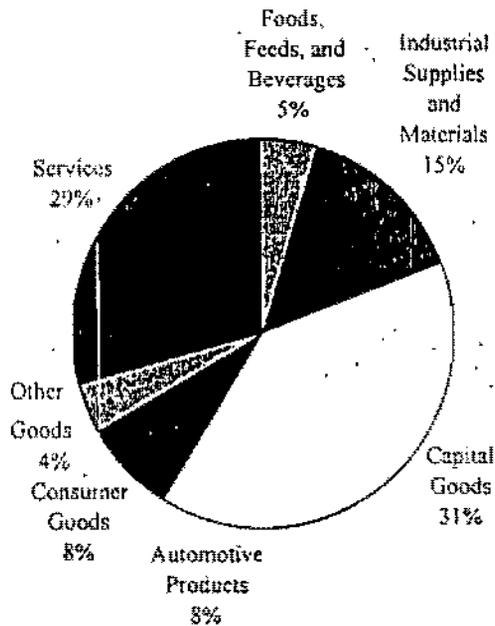
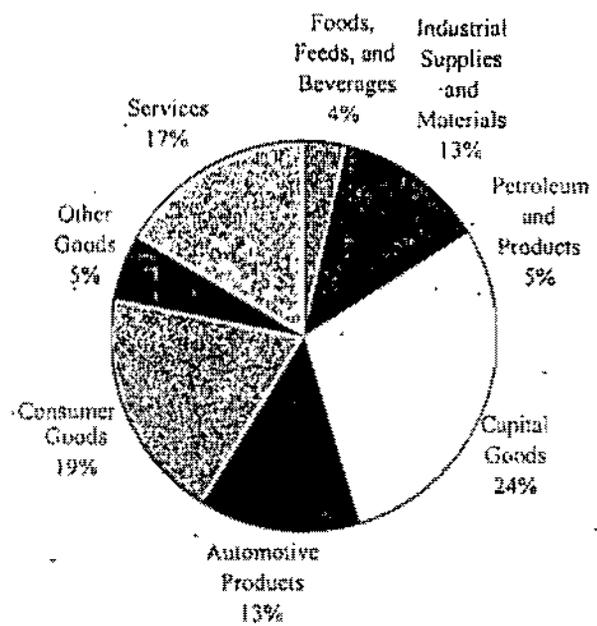


Figure 3b: U.S. Imports in 1998

Total = \$1,116 Billion



Source: U.S. Department of Commerce, Bureau of Economic Analysis

More detailed data on U.S. trade in manufacturing, agriculture and services provide even more compelling evidence of the extent of U.S. integration in the global economy and the value of open markets. For a variety of products – ranging from computers to wheat – access to global markets contributes substantially to U.S. production and consumption.

**Manufacturing industries are highly integrated.** A comparison of trade, production, and consumption data suggests substantial international integration in a number of industries, and an outward orientation in high-tech manufacturing. On average, exports accounted for about 15 percent of shipments in manufacturing and imports accounted for about 19 percent of consumption in 1996. Ranked on the basis of export shares, industrial and commercial machinery and computer equipment, electronic and other electrical equipment and components, and measuring, analyzing, and controlling instruments rated highest (Table 1). In each of these industries, exports accounted for roughly 25 percent or more of U.S. firms' total shipments. Ranked on the basis of import shares, leather products, apparel, and miscellaneous manufactures rated highest – imports accounted for at least 39 percent of domestic consumption in each industry. But, imports also accounted for a significant share of consumption in electronic and other electrical equipment and components and in industrial and commercial machinery and computer equipment – roughly 33 percent and 34 percent, respectively. As above, the data on industrial and commercial machinery and computer equipment suggest the importance of two-way trade. A closer look at more recent 1998 data on U.S. trade, production, and consumption in computer equipment provides further evidence:

**Table 1: U.S. Manufacturing Trade as a Percent of Total Shipments and Consumption 1996**

SIC Code	Product Description	Exports as a Percent of Shipments	Imports as a Percent of Consumption
20	Food and Kindred Products	6.82	6.14
21	Tobacco Products	17.09	0.96
22	Textile Mill Products	10.00	11.42
23	Apparel and Other Finished Products Made From Fabrics...	10.43	39.11
24	Lumber and Wood Products, Except Furniture	7.62	11.96
25	Furniture and Fixtures	5.63	15.05
26	Paper and Allied Products	9.02	9.37
27	Printing, Publishing, and Allied Industries	3.19	2.12
28	Chemicals and Allied Products	17.73	13.73
29	Petroleum Refining and Related Industries	3.98	9.80
30	Rubber and Miscellaneous Plastic Products	8.26	10.10
31	Leather and Leather Products	23.46	70.97
32	Stone, Clay, Glass, and Concrete Products	5.59	10.96
33	Primary Metal Industries	13.09	19.66
34	Fabricated Metal Products, Except Machinery and Transportation...	7.72	8.76
35	Industrial and Commercial Machinery and Computer Equipment	32.14	33.92
36	Electronic and Other Electrical Equipment and Components...	25.35	32.65
37	Transportation Equipment	21.45	27.30
38	Measuring, Analyzing, and Controlling Instruments...	24.72	22.08
39	Miscellaneous Manufacturing Industries	16.31	47.25
	<b>All Manufacturing</b>	<b>15.18</b>	<b>19.21</b>

Source: U.S. Department of Commerce, International Trade Administration

- In the computer industry, including computer hardware and peripherals, U.S. exports accounted for about 43 percent of domestic producers' total shipments and imports accounted for about 58 percent of final and intermediate domestic consumption.<sup>4</sup>
- According to a recent report, more than 60 percent of the hardware value of a typical U.S. personal computer system is made up of floppy and hard disc drives, video cards, multimedia

<sup>4</sup> The computer industry is defined here as SIC 3571, 3572, 3575, and 3577. The data are from a report prepared by the McGraw-Hill Companies and the U.S. Department of Commerce, International Trade Administration, *U.S. Industry and Trade Outlook '99 (1999)*, p. 27-5.

kits, monitors, mother boards, mouse devices, power supplies, and random access memory imported from Asia.<sup>5</sup>

**Farmers export large shares of production.** Here also, the data show that Americans benefit from opportunities to sell their products internationally. In 1998, U.S. agricultural exports totaled about \$34 billion, accounting for roughly a quarter of cash receipts.<sup>6</sup> However, for many bulk commodities, high-value products, and horticultural products, the share of production sold as exports was considerably higher. U.S. wheat and rice growers exported over 40 percent of their production, U.S. sunflower seed oil producers exported over 80 percent of their production, and U.S. almond growers exported over 70 percent.<sup>7</sup>

**Service exports have grown dramatically.** Though typically “small” relative to total industry production, U.S. exports of services have grown dramatically, providing further evidence of the increasing importance of global linkages. U.S. service exports have grown as a share of domestic production of services (Figure 4). They have also grown as a share of total exports.

- U.S. service providers have almost tripled their share of export-related production over the past five decades. In 1950, only 2.2 percent of U.S.-produced services were exported; in 1998, that share was about 6 percent.
- Over the same period, U.S. service exports have generally grown more rapidly than merchandise exports. As a result, their share of total U.S. exports has increased from about 17 percent in 1950 to about 29 percent in 1998.
- The United States is the world's leading services exporter, accounting for over 18 percent of all commercial service exports in 1998.<sup>8</sup> Among the leaders were travel services, transportation services, royalties and license fees, business, professional and technical services, and financial services, together accounting for about 78 percent of all U.S. private service exports.<sup>9</sup>

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<sup>5</sup> Ibid., p. 27-1.

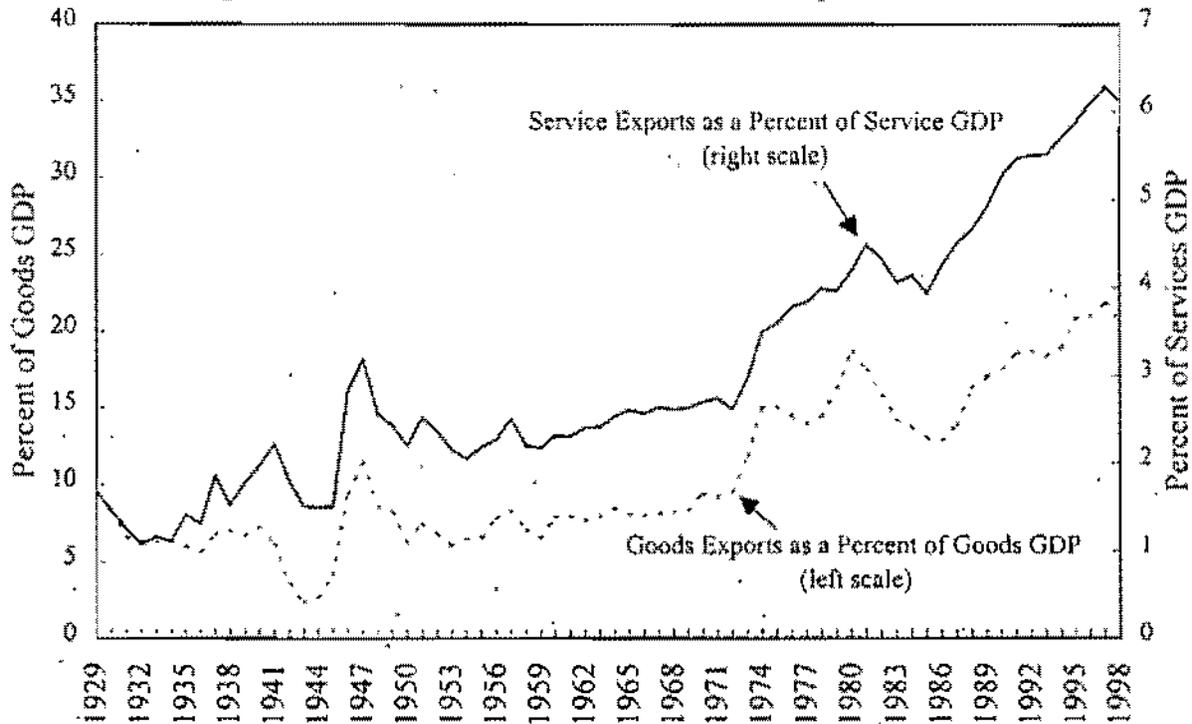
<sup>6</sup> Data are from the U.S. Department of Agriculture, Foreign Agricultural Service (July 1999); reporting exports as a share of cash receipts less government payments.

<sup>7</sup> Data are from the U.S. Department of Agriculture, Foreign Agricultural Service (July 1999); reporting exports as a share of domestic production, using 1996-98 average volume.

<sup>8</sup> See World Trade Organization, <http://www.wto.org/wto/statis/prerelease.htm> (downloaded October 21, 1999).

<sup>9</sup> Royalties and license fees includes some receipts, such as those from books, records and tapes and broadcasting and recording of live events, that could be apportioned to specific industries. Within the category of business, professional, and technical services, the leaders are construction, engineering, architectural, and mining services; installation, maintenance, and repair of equipment; legal services; operational leasing; and computer and data processing services – together accounting for almost 60 percent of all U.S. exports of business, professional, and technical services. See U.S. Department of Commerce, Economic Statistics Administration, Bureau of Economic Analysis, *Survey of Current Business* (July 1999), p. 102 and (October 1999), p. 64.

**Figure 4: Goods and Services Produced for Export 1929-1998**



Source: U.S. Department of Commerce, Bureau of Economic Analysis  
 Note: Data prior to 1959 are not subject to October 1999 data revision

America's trading partners are located around the world – in Europe, Asia, Latin America, and Africa – but they tend to be concentrated in developed and neighboring countries. Canada is America's top ranking partner, accounting for about 21 percent of merchandise trade (exports and imports combined). Measured on the same basis, the EU is a very close second, accounting for just over 20 percent of the total, followed by Japan, accounting for just over 11 percent, then Mexico, accounting for just under 11 percent. In aggregate, non-OECD countries account for about 31 percent of U.S. trade, though the least developed countries account for a small share – less than one percent of the total.

Although the U.S. economy is "open," in the sense that its average tariffs are among the world's lowest, the United States – by virtue of its size and its distance from many major markets – is not as dependent on trade as many other nations. Total trade's share in U.S. income is about 25 percent – well below total trade's share in world income, about 46 percent. As a result, one might argue that the United States benefits from trade relations with countries in Europe, Asia, Latin America, and Africa, while remaining relatively buffered from adverse global events by the strength of its domestic markets. We see evidence of our resilience in the recent financial crisis, wherein poor economic conditions in Asia and elsewhere led to a temporary reduction in demand for U.S. exports and contributed to a rise in our current account deficit. Although some sensitive sectors of the U.S. economy, including parts of manufacturing and agriculture, have been adversely affected by this international slowdown, our overall economy has been able to sustain robust growth and maintain full employment.

## Trade Raises Living Standards

We have seen that America has low trade barriers and is heavily involved in the global economy, but the question remains as to how we benefit. International trade raises U.S. living standards by improving the efficiency with which we allocate resources and enhancing our productivity.<sup>10</sup> Through exports, the expansion of internationally competitive sectors boosts incomes and large-scale production reduces costs. At the same time, the availability of imports increases buying power, improves consumer choice, and helps stave off inflation.

In his famous treatise, *The Wealth of Nations*, Adam Smith pointed out the economic benefits of specialization and the degree to which these benefits depend on a large market. The founding fathers of the United States revealed an innate appreciation of this insight when they enacted the Constitution. In particular, they explicitly prohibited states from restricting trade with other states. This prohibition is arguably the most effective free trade agreement in history. It established open trade among the states, creating a large internal market that has helped to make the United States one of the richest economies in the world. Because they can freely sell their products on this large market, Californians can produce more wine than if they could only to sell in their own state. Likewise, farmers in Kansas can grow more corn and factory workers in Michigan can build more automobiles. As a result of these activities, all Americans enjoy less expensive wines, corn, and automobiles.

Today, we take our open internal market for granted. Few would likely argue that the East or West of the United States would benefit if a barrier prevented trade between them. Yet the case for free international trade is fundamentally the same as the case for free domestic trade. Access to large, diverse markets permits specialization and specialization yields gains to producers and consumers. Open trade allows Americans to earn higher incomes than if they sold only at home. It also allows them to buy an array of products that is less expensive and more varied than if they could only purchase domestically. International competition also exposes U.S. industries to foreign technologies and stimulates them to become more inventive and productive.

However, it is important to remember that the internal market works, in part, because an effective rule of law governs domestic transactions. Each of the 50 states enjoys considerable latitude in setting its own local policies, but an overarching system of federal rules and guidelines assures openness across the country. Much in the same way, the multilateral trading system encourages transparent and predictable rules of conduct.

**Countries gain from specialization.** When a country produces and exports those goods and services that it can produce relatively inexpensively, and imports those that are relatively inexpensive to produce abroad, that trade can improve standards of living on both sides of the transaction.<sup>11</sup> For example, the United States, with an abundant supply of high-skilled labor and

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<sup>10</sup> The discussions of specialization, competition, and productivity that follow draw from the *Economic Report of the President* (Washington, DC: February 1998), pp. 236-238.

<sup>11</sup> A country's relative strengths, i.e., its comparative advantage, derives in part from its "natural" endowment of resources, such as capital, labor, and land. But other factors – including a country's domestic policies – are also important. They can affect both the quantity and quality of its resources. The U.S. economy, for example, benefits

capital, can produce financial services at lower cost, relative to other products, than can most developing countries. Costa Rica, with an abundant supply of low-skilled labor and appropriate growing conditions can produce coffee at lower cost, relative to other products, than can the United States. In this example, the United States would benefit from producing and exporting financial services and importing coffee; the reverse is true of Costa Rica. Through specialization, each country puts its resources to use where they can generate the most economic value. Thus, when countries open their borders to trade, or reduce existing barriers, they reallocate resources to the uses in which they will be most profitable.

**Competition enhances productivity.** Foreign competition gives domestic firms an incentive to raise their productivity. Unlike other one-time gains, these gains are recurring.<sup>12</sup> Once competition is introduced, it leads to a cycle of productivity improvements and quality enhancements that continue to benefit the economy indefinitely. Studies of the United States and Japan find a positive relationship between import growth and productivity growth.<sup>13</sup> Trade can also increase growth by improving the flow of knowledge and transfer of technology. With protection of intellectual property rights, foreign competition can promote research and development and lead to innovation – in both new products and new production processes.

**Exports provide clear benefits.** By selling overseas, firms can increase their sales and earnings. In response, production expands and more Americans are drawn into jobs in the most productive and internationally competitive sectors of our economy. In 1994, the total number of U.S. jobs supported directly and indirectly by manufacturing exports was one in five.<sup>14</sup> In agriculture the share was one in three. Since that time, U.S. goods exports as a share of U.S. goods production has risen. Access to larger markets can also reduce costs and increase innovation.

- **The expansion of internationally competitive sectors boosts incomes.** Recent studies provide evidence of substantial wage advantages in jobs supported by goods exports – roughly on the order of 15 percent. One such study indicates that wage premiums for exporting plants range from 12.5 to 18 percent on average for plants of all sizes, locations, and industries.<sup>15</sup> Another study finds that the wages of all production and related workers in jobs supported by goods exports were 13 percent higher than the national average, and the wages of workers in jobs supported directly by those exports were 20 percent higher.<sup>16</sup>

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from an abundant supply of high-skilled labor. However, such skills are not conferred by nature, rather they are conferred by education and training.

<sup>12</sup> Among the one-time gains, foreign competition can provide incentives for firms to reduce their prices in previously non-competitive markets. For example, foreign competition, including the threat of foreign competition, can help dilute domestic monopolies.

<sup>13</sup> See Robert Z. Lawrence, "Does a Kick in the Pants Get You Going or Does It Just Hurt? The Impact of International Competition on Technological Change in U.S. Manufacturing," unpublished draft (July 1999) and Robert Z. Lawrence and David E. Weinstein, "Trade and Growth: Import-Led or Export-Led? Evidence from Japan and Korea," NBER Working Paper No. W7264 (July 1999).

<sup>14</sup> See Lester A. Davis, "U.S. Jobs Supported by Goods and Services Exports, 1983-94" (U.S. Department of Commerce, Economics and Statistics Administration, Washington, DC: November 1996), p. 3.

<sup>15</sup> See J. David Richardson and Karin Rindal, "Why Exports Matter: More!" (The Institute for International Economics and The Manufacturing Institute, Washington, DC: February 1996), p. 9.

<sup>16</sup> See Lester A. Davis, pp. iii and 7-8.

- *Large-scale production reduces and spreads costs.* The economies of scale achieved by selling on world markets lower the costs of production and increase the returns to innovation. For some goods, such as automobiles, the average cost of production falls as more of the good is produced – hence, the larger the market, the lower the cost. As a result, U.S. producers become even more competitive and U.S. consumers enjoy lower prices. Moreover, the ability to spread the fixed costs of research and development across a larger sales volume allows globally competitive firms to be more innovative than those confined to selling in smaller domestic markets.

*Gains from trade also come from imports.* As a result of imports, consumers enjoy lower prices, higher effective wages, and greater product selection. Imports may also lead to increased competition and faster productivity growth. Recently, our ability to import has also provided an anti-inflationary safety valve – helping us to combine low inflation, steady growth, and high rates of employment.

- *Imports increase buying power.* The ability to buy less expensive foreign products is an important complement to faster productivity growth in raising living standards and boosting real wages. Today, a dollar buys 11 percent more imported goods and services than it did in 1995. And, over the same period, nominal average hourly earnings have risen from \$11.47 to \$13.31. Taken together, these two facts imply that by working an hour, the typical production worker can now buy 28 percent more imported goods and services than in 1995. Moreover, foreign competition creates incentives for U.S. businesses to price their products more competitively.
- *Imports improve consumer choice.* Imports increase the variety of products and allow consumers to buy products that are more precisely matched to their taste. Because markets are open, U.S. consumers can choose from seemingly countless models of 4-door sedans, 2-door hatchbacks, sport utility vehicles, and pick-up trucks; they can also purchase tropical fruit all year-round. Imports may also contribute to higher productivity by giving producers access to a wider array of inputs and equipment. The U.S. computer industry is among the world's most competitive, in part, because it can combine U.S. software and microprocessors with other components made in Asia and elsewhere.
- *Imports stave off inflation.* Recently, imports have provided an anti-inflationary safety-valve. Many economists ascribe some part of the recent quiescent performance of inflation to our ability to draw on global capacity. They believe that this allows the economy to achieve higher levels of employment without igniting inflation. This has allowed the Federal Reserve more leeway to keep interest rates low, which may, in turn, have contributed to the current low rate of unemployment.

*Specialization requires adjustments.* The gains from trade are not zero-sum, in that one country does not “win” at the expense of another. In fact, the shared aspect of the gains from trade across countries is a central tenet of economics. Nevertheless, by its very nature, specialization involves adjustments that may create winners and losers within countries. In the face of open markets and increased foreign competition, some industries within a country will expand and others may contract. Adjustments for businesses and workers in shrinking industries can be

costly and painful. Although economic studies typically find that trade is a small factor – roughly 10 percent or less – in overall job displacement, some workers may face short-term unemployment and others may even face permanent wage reductions if they are unable to find comparable jobs in expanding sectors.<sup>17</sup>

Trade, therefore, presents domestic challenges. But the fact that trade produces additional income means that, in principle, resources are available to help those who are hurt either to adapt, by becoming more productive and competitive in what they were already doing, or to switch to new activities. One way to help in the transition is to develop programs that directly address the problems of dislocation. Another way may be to encourage trade, while limiting the pace at which change occurs. Such gradualism may be desirable under certain circumstances, but attempting to prevent liberalization would be counterproductive. Permanent protection inevitably costs more, in foregone benefits, than it saves. The key lies in an economy that is sufficiently flexible and vibrant to meet the challenges of reaping those benefits.

- *Domestic programs help workers find jobs.* To address problems of worker dislocation – regardless of cause – the Clinton Administration has developed new programs to assist in job search and training. These programs add to the assistance that is already available to displaced workers through the Federal Trade Adjustment Assistance program. The Workforce Investment Act of 1998 retains a funding stream for dislocated workers and promotes customer access and choice through a one-stop service delivery system and Individual Training Accounts. The Administration has also ensured that lifelong learning tax credits and scholarships are available to assist workers in preparing for new jobs. Federal job and talent banks also provide new mechanisms for helping millions of U.S. workers. On a single day in October 1999, America's Job Bank posted over 1.3 million jobs; that same month, America's Talent Bank held over 400,000 resumes.
- *The WTO Agreements and U.S. trade laws provide cushions.* For example, key features of the Agreement on Agriculture and the Agreement on Textiles and Clothing phase-in gradually over periods of six to ten years. The WTO Agreements also allow countries to use certain forms of safeguards to protect temporarily against import surges that seriously injure or threaten to seriously injure a domestic industry. The United States has invoked its own safeguard provisions three times since the creation of the WTO, in cases involving corn brooms, wheat gluten, and lamb meat.

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<sup>17</sup> Data from the 1980s show that trade contributed at most 10 percent of the observed displacements from manufacturing in the worst year of that decade. See *Economic Report of the President* (1998), pp. 244-245. A 1994 study of potential Uruguay Round effects estimated that about 0.2 percent of U.S. work force could change jobs as a result of changes in patterns of trade. This compares with annual job changes for other reasons of 10 percent or more for the work force. See Susan M. Collins and Barry P. Bosworth, editors, *The New GATT, Implications for the United States* (The Brookings Institution, Washington, DC: 1994), p. 2. A Congressional Budget Office report on NAFTA concluded that the agreement would result in relatively little job displacement. The total number of jobs lost would probably be well under half a million, spread over at least a decade. By way of comparison, nearly 20 million workers were displaced during the 1980s. See U.S. Congressional Budget Office, *A Budgetary and Economic Analysis of the North American Free Trade Agreement* (July 1993), p. xv.

### III. The WTO Promotes Rules-Based Market Opening

A comparison of trade and protection patterns, pre- and post-GATT, illustrates the importance of the multilateral trading system in opening foreign markets, establishing an effective rule of law, and promoting economic growth internationally. Before the GATT, trade was highly susceptible to changes in economic and political circumstance. Barriers appeared during WWI and worsened during the inter-war period. Since the creation of the GATT in 1948, markets have become increasingly open and integrated. Through eight successive rounds of negotiations, major industrial nations' tariffs on manufactured goods have dropped by about 90 percent, some non-tariff barriers have been brought under GATT disciplines, more sectors have been covered more fully by trade rules, and participation has increased nearly six fold.

To what does the multilateral trading system owe its strength? Ultimately, it is to the belief of its members that their participation, including adherence to trading rules, is in their own self-interest. The WTO, which was established in 1995, reflects an agreement by each of the members to constrain its own behavior in return for other members constraining theirs. Nations have voluntarily agreed to such commitments because on balance they are beneficial. In making these commitments, nations are exercising, not giving up their sovereignty.

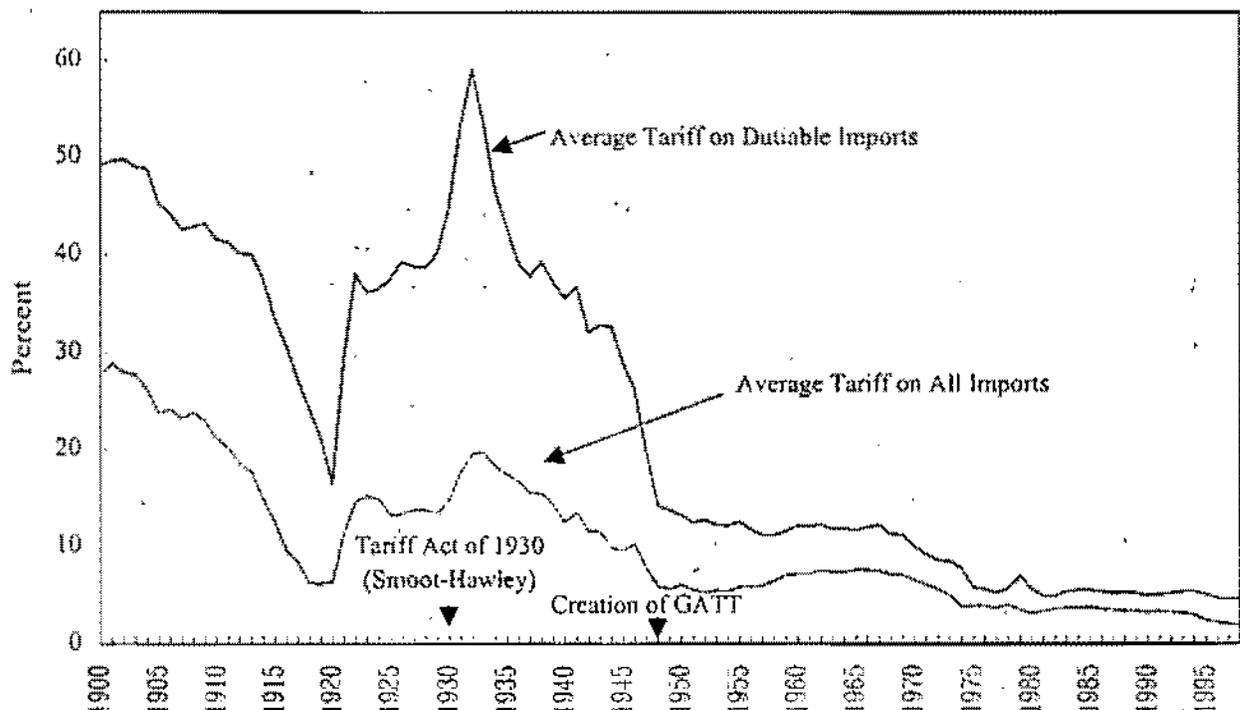
Moreover, the WTO has sought to strike an appropriate balance between the needs of the trading system and those of individual members. The rules, such as those for resolving disputes and setting standards, have become more transparent and predictable, but they are not wholly prescriptive. They leave considerable scope for national autonomy and diversity. The WTO Agreements do not and will not preclude the United States from establishing and maintaining its own laws; impair the effective enforcement of U.S. laws, including laws to combat unfair imports; or limit the ability of the United States to set and achieve its environmental, labor, health, and safety standards at the levels it considers appropriate. WTO panel reports have no direct effect on the U.S. legal system and do not change U.S. law.

For all of the reasons discussed, the United States, including its businesses, farmers, workers, and consumers, benefits substantially from trade liberalization. Though it can be difficult to separate the effects of liberalization from those of other economic and political events, economic models can be used to assess some of the effects of reducing tariffs, reducing export subsidies, and eliminating quotas on countries' trade, production, and income. Such models partially capture the effects of specialization and resource reallocation in goods trade, but are less adept at capturing the effects of changes in non-quantitative rules of conduct in goods and services trade, of improvements in product selection, and of some dynamic effects. On balance, they likely understate the long-term benefits of market liberalization. Moreover, as industrial tariffs in industrial countries have been so greatly reduced, trade negotiations have increasingly focused on services, non-tariff measures, and changes in rules whose benefits cannot be readily captured in formal economic models. The scope of coverage of economic effects captured in these models may in fact be decreasing due to the changing nature of trade agreements.

## The Trading System Provides a Framework for Liberalization

A comparison of trade and protection patterns, pre- and post-GATT, provides compelling evidence of the importance of the WTO in promoting market liberalization and an effective rule of law.<sup>18</sup> During the first half of the 20<sup>th</sup> Century, tariffs rose and sometimes fell, depending on a number of factors (Figure 5). In the years preceding the GATT, markets were susceptible to political pressures and protectionist interests. Since the 1950s, trade has become increasingly open and the world economy increasingly integrated. The growth of world trade has consistently outpaced the growth of world output (Figure 6).

Figure 5: Average U.S. Tariff Rates 1900-1998

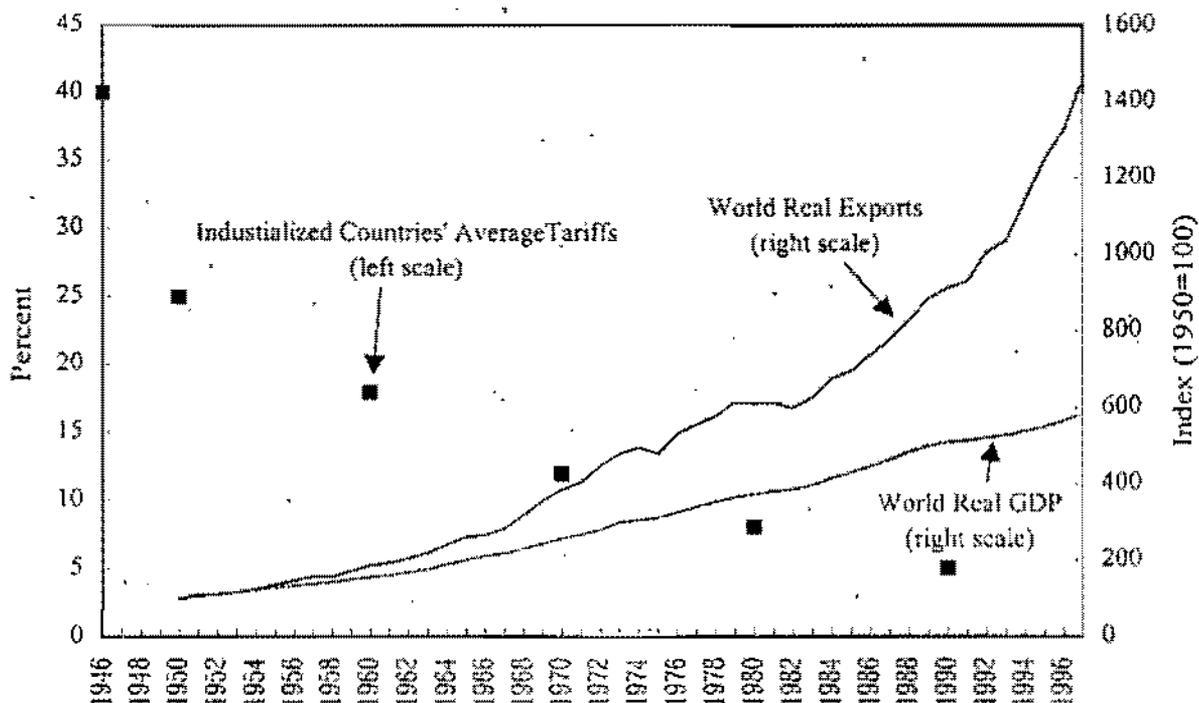


Source: U.S. International Trade Commission

Note: Average tariff rates are defined as the ratio of duties collected to import values.

<sup>18</sup> The discussion of the history of world trade in the first half of the 20<sup>th</sup> Century draws heavily from Douglas A. Irwin, "The GATT in Historical Perspective," *American Economic Review* (May 1995), pp. 323-328 and Douglas A. Irwin, "The Smoot-Hawley Tariff: A Quantitative Assessment," *The Review of Economics and Statistics* (1998), pp. 326-334. For more on the pre-WWI period, see Irwin (1995), pp. 323-324.

Figure 6: World Exports, GDP, and Tariff Estimates Post-WWII



Source: Export and GDP data are from Angus Maddison, *Monitoring the World Economy 1820-1992* (Development Centre of the OECD, 1995), pp. 227 and 239. Tariff estimates are based on Stoeckel et al, *Western Trading Blocs* (1990), pp. 7-8. Note: GDP and export data are extrapolated to 1997 using data from the World Trade Organization.

**Markets open at turn of century.** At the turn of the 20<sup>th</sup> Century, international trade was 'governed' by a loose network of bilateral treaties, subject to most-favored nation (MFN) clauses. Countries could alter their tariffs at will. For the most part, countries made use of tariffs, rather than other forms of market protection. For some countries, including the United States, tariffs were an important source of public revenue – roughly speaking, customs receipts accounted for about half of U.S. government revenue from 1870 through 1910. Absent international conflict, this trading 'arrangement' worked reasonably well. Data on trade and income for the same time period suggest that markets were relatively open – for a group of 11 major countries exports grew more rapidly than output.<sup>19</sup>

**Trade barriers rise with onset of WWI.** With the onset of WWI, some countries introduced higher tariffs, along with import quotas and other non-tariff trade impediments. The trend did not reverse itself after the war – countries' border measures grew more onerous, not less. Owing partly to the rise of protectionism, world trade collapsed. In June 1930, the U.S. Congress legislated the Smoot-Hawley tariff to protect U.S. agriculture and other sectors. Other countries followed. According to a recent study of the effects of the Smoot-Hawley tariff on U.S. imports and economic well being, the legislation led to an increase in import duties of about 20 percent on average, resulting in a 5 to 6 percent increase in the price of imports.<sup>20</sup> Though it is difficult to separate the effects of trade policy from those of the Great Depression, the relationship

<sup>19</sup> Irwin (1995), pp. 323-324. The 11 major countries are Australia, Belgium, Canada, France, Germany, Italy, Japan, Norway, Sweden, the United Kingdom, and the United States.

<sup>20</sup> Irwin (1998), p. 333.

between world trade and output is revealing. Of particular note was trade's failure to keep pace with real output during the early stages of economic recovery -- for the same group of 11 countries mentioned above, output was about 15 percent higher in 1938 than in 1929, but exports were about 15 percent lower.<sup>21</sup> The failure of international trade to join the recovery suggests the significance of the rise in trade barriers.

***Multilateral trading system emerges after WWII.*** At the end of WWII, faced with the legacy of protectionism, the need for reconstruction, and the specter of Communism, the United States led the call for an open trading system. The United States sought to secure the benefits of trade for itself and any other country willing to 'play by the rules,' to promote economic development in Europe and Asia, and to enlarge the scope of the market system to include as many countries as possible. In 1947, 23 countries gathered in Geneva to reduce trade barriers; the multilateral trading system eventually emerged from these deliberations, but other discussions of a more broadly based International Trade Organization did not move forward. For nearly 50 years, the GATT served as both an international agreement and an international organization. Through successive 'rounds' of negotiations, the GATT succeeded in three important regards: First, it established a rules-based trading system; second, it greatly reduced the tariff rates on industrial products; third, it drew in new participants (Table 2).

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<sup>21</sup> Irwin (1995), p. 324.

**Table 2: Eight Rounds of GATT Negotiations**

Years	Place (Name)	Subjects Covered	Countries
1947	Geneva	Tariffs	23
1949	Annecy	Tariffs	13
1951	Torquay	Tariffs	38
1956	Geneva	Tariffs	26
1960-61	Geneva (Dillon Round)	Tariffs	26
1964-67	Geneva (Kennedy Round)	Tariffs and anti-dumping measures	62
1973-79	Geneva (Tokyo Round)	Tariffs, non-tariff measures, and plurilateral "framework" agreements (also referred to as "codes")	102
1986-94	Geneva (Uruguay Round)	Tariffs, non-tariff measures, new rules for services, intellectual property rights, textiles and clothing, and agriculture; creation of the WTO and strengthening of the dispute settlement mechanism	123

Source: The World Trade Organization, "Roots: from Havana to Marrakesh,"  
<http://www.wto.org/about/facts4.htm> (downloaded September 19, 1999)

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- *Rules promote fair and open trade.* Consistent with U.S. goals for an open trading system, the GATT was founded on principles of consensus, reciprocity, and non-discrimination – all participants were granted MFN status and their products accorded national treatment. Any concession granted to one partner would be granted to all partners and, upon entry into a country, all products would be treated the same regardless of their origin. The same basic principles now apply generally to WTO members.
  - *Industrial tariffs decline dramatically.* At the end of WWII, the average tariff on industrial products in developed countries was about 40 percent. The Geneva negotiations of 1947 involved 23 countries and resulted in 45,000 tariff concessions, affecting about one-fifth of

the world's trade.<sup>22</sup> By the 1950s, industrial tariffs in developed countries averaged roughly 25 percent.<sup>23</sup> Later rounds in Annecy, Torquay, and Geneva led to further reductions. By the late 1960s, the average tariff on industrial products in developed countries fell to about 12 percent. By the end of the Uruguay Round phase in, the average will be 3.8 percent.

- *Participation increases nearly six-fold.* Over time, the multilateral trading system has become increasingly attractive to a widening range of participants. It has helped maintain stable trading relationships in the face of economic and political changes. The system has provided a forum to engage the EU and draw in developing, newly industrializing, and transition economies. In 1947 there were only 23 "contracting parties." By the mid-1960s, participation had risen to 62 countries. The Tokyo Round of the 1970s involved 102 participants and the Uruguay Round involved 123 participants; both of these rounds included many developing countries. More and more countries have been able to reap the benefits of open markets through outward-oriented development strategies. Today, the WTO claims 135 members and another 32 nations are seeking accession.<sup>24</sup>

### **Recent Negotiations Further U.S. Policy Objectives**

Through the 1960s, the GATT focused on reducing industrial tariffs. In this regard it was quite successful, but the 1970s gave way to new and additional protections, including quotas, voluntary export restraints, and other non-tariff measures. Moreover, some important sectors, such as services and agriculture, remained largely uncovered. Thus, the GATT began to turn its attention to non-tariff measures, sectoral expansion, and, to lesser extent, institutional reform. The Tokyo Round made less progress than some might have hoped, but laid the groundwork for more successful negotiations in the Uruguay Round. Although the Tokyo Round failed to bring agriculture into the GATT, it gave rise to plurilateral agreements or "codes" in some areas, including subsidies, standards, import licensing procedures, and government procurement. In many other regards, the GATT was also falling behind the times. Trade in services and the protection of intellectual property rights were becoming increasingly important in the global economy, but the GATT lacked adequate treatment of either issue. The Uruguay Round made significant gains in many of these areas, thus helping to usher in a new era in international trade.

*Uruguay Round opens markets and strengthens rules.* The Uruguay Round brought more sectors more fully into the multilateral trading system, strengthened the rules of international trade, and established the WTO in 1995 (Appendix). The Uruguay Round brought agriculture and textiles and clothing more fully into the GATT and took 'first steps' toward liberalizing trade in those sectors. The Uruguay Round also created the WTO, with its separate agreements on services and intellectual property, a more effective dispute settlement mechanism, and a 'built-in agenda' to promote liberalization between formal rounds.<sup>25</sup> Beginning in 1995, the

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<sup>22</sup> See the World Trade Organization, "Roots: from Havana to Marrakesh," <http://www.wto.org/about/facts4.htm> (downloaded September 19, 1999 and last updated January 14, 1998).

<sup>23</sup> Andrew Stoeckel, David Pearce, and Gary Banks, "Western Trade Blocks: Game, Set or Match for Asia-Pacific and the World Economy?" (Centre for International Economics, Australia: 1990), pp. 7-8.

<sup>24</sup> The 135 members include Estonia, which joined the WTO on November 13, 1999.

<sup>25</sup> Some of the Uruguay Round Agreements set timetables for future work, including new negotiations in some areas and assessments of the situation at specified times in others. See the World Trade Organization, "About the WTO, Beyond the Agreements," <http://www.wto.org/about/beyond2.htm> (downloaded September 19, 1999).

GATT no longer acts as an international organization – in this capacity it has been replaced by the WTO – though it still remains as an agreement on trade in goods. Under the auspices of the WTO, the GATT now stands next to the General Agreement on Trade in Services (GATS) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Under the Dispute Settlement Understanding (DSU), a single dispute settlement procedure covers disputes among all WTO members pertaining to the WTO's multilateral agreements.

Many key accomplishments of the Uruguay Round play directly to U.S. policy objectives and economic strengths. The United States has long recognized the importance of a credible rules-based system, both to open foreign markets and to spread the gains from trade as widely as possible. The Uruguay Round of negotiations moved much further toward creating such a system. The United States is also a leader in many areas, including high-tech manufacturing, agriculture, and services, which stand to benefit from the WTO Agreements and ongoing negotiations under the built-in agenda.

*Post-Uruguay Round negotiations continue process.* The built-in agenda called for further negotiations in agriculture and services and additional work in many areas. To date, post-Uruguay Round negotiations have yielded market access commitments in financial services, basic telecommunications services, and information technology, opening up new opportunities in areas in which the United States is highly competitive.<sup>26</sup>

- *Financial services.* On December 13, 1997, 70 WTO members concluded negotiations on financial services. They agreed to the broad liberalization of their banking, securities, insurance, and financial data services sectors. Based on recent estimates, the commitments apply to about \$18 trillion in global securities assets, \$38 trillion in global bank lending, and about \$2.2 trillion in worldwide insurance premiums. This brought to 102 the total number of WTO members with financial services commitments.
- *Basic telecommunications services.* On February 15, 1997, the United States and 69 other WTO members concluded negotiations on basic telecommunications services, such as telephone services. The agreement commits countries to provide market access and national treatment to service suppliers from other WTO members. Sixty-five countries also agreed to a set of specific pro-competitive regulatory principles. The agreement eliminates certain restrictive practices in countries that account for 95 percent of world telecommunications revenues, amounting to about \$600 billion in 1996.
- *Information technology.* On March 26, 1997, 40 countries agreed to eliminate import duties and other charges on information technology products, mostly by 2000. Since that time, the number of participants has grown. The agreement covers global information technology products such as semiconductors, telecommunications equipment, computers and computer equipment, and software. Participants account for over 90 percent of trade in this sector.

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<sup>26</sup> Summary of results from the *Economic Report of the President (1998)*, pp. 224-226, and from the World Trade Organization, <http://www.wto.org/about> (downloaded September 19, 1999). Discussions also continued on "the movement of natural persons," i.e., the entry and temporary stay of persons for the purpose of providing services, and on maritime transport services. The former discussions were completed in July 1995, achieving modest results, while the latter were suspended.

## Countries Gain from Lower Barriers

The Uruguay Round continued the focus of the GATT on tariff reductions, and extended agreements to previously neglected sectors, such as agriculture, textiles and clothing, and services. Substantial breakthroughs were achieved in new areas, such as trade-related aspects of intellectual property rights. Moreover, the creation of the WTO provides an improved institutional framework for resolving disputes and monitoring countries' performance in the trading system. While benefits are expected from each of these accomplishments, numerical assessments are limited to certain conceptually quantifiable features of the round, namely reducing tariffs, reducing export subsidies, and eliminating quotas on some industrial products, textiles and clothing, and agricultural products.<sup>27</sup> The assessments do not capture the gains from strengthened rules, such as those found in the dispute settlement procedure and the new agreements on services and trade-related aspects of intellectual property rights. Nor do they capture short-term adjustment costs.<sup>28</sup> Although restricted in scope, these assessments provide estimates of some of the potential benefits of the Uruguay Round.<sup>29</sup> They also provide insight as to the distribution of effects across countries and across industries within countries.

Recent studies evaluating a narrow range of the potential gains from the Uruguay Round, estimate that annual global income could rise by 0.7 to 0.9 percent or \$171 billion to \$214 billion upon full implementation, in 1992 dollars.<sup>30</sup> Most of these studies show gains accruing primarily to developed countries, perhaps not surprisingly, because many of their commitments are more directly quantifiable. For the United States, the annual gains could be about 0.4 to 0.6 percent of GDP, amounting to about \$27 billion to \$37 billion in 1992 dollars. These studies also show that some developing countries stand to gain significantly, especially relative to the size of their economies. Although the projected gains for many OECD countries, including the United States,

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<sup>27</sup> Even in this regard the assessments suffer considerable limitations. None fully depicts all sectors of the U.S. or global economies. In particular, they provide more stylized representations of some of the manufacturing sectors in which the United States is highly competitive. This kind of "aggregation bias" may significantly understate the benefits of the agreement to the United States. See Hugh M. Arce and Kenneth A. Reinert, "Aggregation and the Welfare Analysis of US Tariffs," in *Journal of Economic Studies*, Vol. 21, No. 6 (1994), pp. 26-30.

<sup>28</sup> As noted previously, a 1994 study estimated that about 0.2 percent of U.S. work force could change jobs as a result of changes in patterns of trade. See Susan M. Collins and Barry P. Bosworth, p. 2.

<sup>29</sup> The discussion below draws from the most recent revisions of four published models. These revisions, based on the actual commitments made by the countries in the negotiations, tend to project slightly lower gains than previously expected. See Ian Goldin and Dominique van der Mensbrugghe, "Assessing Agricultural Tariffication under the Uruguay Round," Thomas Hertel, Will Martin, Koji Yanagishima, and Betina Dimaranan, "Liberalizing Manufactures Trade in a Changing World Economy," Glenn W. Harrison, Thomas F. Rutherford, and David G. Tarr, "Quantifying the Uruguay Round," and Joseph F. Francois, Bradley McDonald, and Håkan Nordström, "The Uruguay Round: A Numerically Based Quantitative Assessment," in *The Uruguay Round and the Developing Countries*, Will Martin and L. Alan Winters, eds. (World Bank and Cambridge University Press, U.K.: 1996), pp. 156-291. The models differ in many respects, including the base periods chosen, parameter assumptions, and the agreements emphasized (for example, Goldin et al. focuses on agricultural liberalization, while Hertel et al. emphasizes textile and clothing liberalization). As a result, the estimates are not fully comparable.

<sup>30</sup> See Harrison et al., p. 238 and Francois et al., pp. 282-283. These estimates are from dynamic simulations, incorporating increasing returns to scale and imperfect competition in their representations of the U.S. and global economies and using 1992 as the benchmark for comparison. The dollar figures show gains relative to U.S. and global income in 1992 in 1992 dollars. With static specifications, the liberalization of trade in goods is estimated to induce an annual gain in the range 0.2 to 0.4 percent of global income, or \$40 billion to \$99 billion. While the dynamic simulations may be more realistic than their static counterparts, they include features that are also more difficult to characterize accurately.

amount to less than one percent of their respective national incomes, the gains for several smaller countries, such as Thailand, Malaysia, and Philippines, could be as much as ten percent or more of their respective national incomes.<sup>31</sup> Some least-developed countries could be affected adversely in the short run, but possible negative impacts could be offset partially if they were to further reduce their own trade barriers. Additional liberalization could also bring more rapid growth and enhance technology transfers. Sectoral estimates vary widely:

- The annual benefits of the Agreement on Agriculture could amount to \$5 billion to \$68 billion.<sup>32</sup> Most of the studies show benefits accruing to OECD countries, including the United States, and to some upper-income developing countries. Though a significant 'first-step,' the major achievement in the Agreement on Agriculture is more in bringing the sector into the GATT framework than in actual liberalization.
- The annual benefits of the Agreement on Textiles and Clothing (ATC), obtained through abolishing the multi-fiber arrangement (MFA), could amount to \$20 billion to \$118 billion.<sup>33</sup> The United States and EU would derive substantial gains from eliminating the MFA quota restrictions, mainly because their consumers and firms using imported products as inputs see significantly lower prices. The effects on other countries are mixed.
- The annual benefits of Uruguay Round liberalization of industrial products, excluding textiles and clothing, could amount to \$59 billion to \$87 billion.<sup>34</sup> The benefits of liberalization in this sector are more evenly distributed among developed and developing countries than in the cases of the Agreement on Agriculture or the ATC.

Taking a slightly different approach, estimates of the benefits of trade liberalization can also be derived from analyses of the costs of protection. For example, a study of the costs of protection in the United States finds that tariffs and quantitative import restrictions in place in 1990 cost American consumers about \$70 billion, over 1 percent of GDP.<sup>35</sup> The net welfare loss, after deducting tariff revenues and transfers to domestic producers was \$11 billion.

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<sup>31</sup> See Hertel et al., p. 203 and Harrison et al., p. 237.

<sup>32</sup> See Goldin et al., p. 170, Harrison et al. p. 238, and Francois et al., pp. 282-283.

<sup>33</sup> See Harrison et al., p. 238 and Francois et al., pp. 282-283.

<sup>34</sup> Ibid.

<sup>35</sup> See Gary Clyde Hufbauer and Kimberly Ann Elliot, *Measuring the Costs of Protection in the United States* (Institute for International Economics, Washington, DC: 1994). Returning to the earlier discussion of the Smoot-Hawley tariff, quantitative assessments suggest that the tariff accounted for about 7 percent of the 40 percent decline in imports in the two years after the legislation took effect. However, less is known about the associated loss of economic welfare. Estimates of the effects of the Smoot-Hawley tariff on U.S. income range from less than \$5 million in a partial equilibrium economic model to \$60 billion to \$460 million in general equilibrium models, all measured in terms of 1929 dollars and amounting to less than 1 percent of GNP. See Irwin (1998), pp. 331-333. These figures do not, however, account for the added effects of the similar actions taken by other trading nations.

## New Rules Convey Additional Benefits

Among its most significant accomplishments, the Uruguay Round greatly strengthened the rules of international trade. Good governance, i.e., an effective rule of law, is essential. The promise of market liberalization for U.S. businesses, farmers, workers, and consumers, hinges crucially on transparency and predictability. For example, if U.S. businesses lack certainty that their products will be treated fairly in foreign markets, they may weigh the risks and opt against them, choosing to forgo opportunities for expansion. If intellectual property rights are ambiguous, U.S. businesses may hesitate to trade in products that are "knowledge-based." In effect, they may not choose to specialize in the things they do best. Or, they may limit their sales to domestic markets and affiliates. As a result, the U.S. economy may not reap the full benefits of trade. In these ways, the multilateral trading system is more than "just" a trading system – it is a system of rules that positively impacts business decisions and standards of living.

More specifically, the Uruguay Round introduced new rules for agriculture, textiles and clothing, services, intellectual property, and dispute settlement, and other areas. Some of the rules were quantitative, such as those requiring reductions in tariffs on certain agricultural products. They were discussed previously. Others were not, such those pertaining to national treatment for services and protection for intellectual property rights. As noted above, economic models often have difficulty capturing the direct economic benefits of non-quantitative changes, but careful observation provides evidence of their importance. The discussion below highlights three such areas, dispute settlement, and services, and intellectual property.

*Dispute settlement process improves.* The DSU improves on GATT dispute settlement proceedings by expediting decision making and instituting an appeals process.<sup>36</sup> It also establishes procedures to ensure consequences for failure to implement panel rulings. One is the acceptance of cross-sector suspension of concessions for countries that choose not to abide by the ruling. Note here, that the procedure presents each member with a choice. A WTO dispute settlement panel cannot force the United States, or any other member, to change its laws. Only the United States determines exactly how it will respond to the recommendations of a WTO panel, if at all. If a U.S. measure is found to be in violation of a WTO provision, the United States may decide on its own to change the law; compensate a foreign country by lowering trade barriers of equivalent amount in the same or another sector; or do nothing and possibly face retaliation by the affected country in the form of increased barriers to U.S. exports. The United States retains full sovereignty in its decisions as do all other WTO members.

At times, however, the results may be disappointing, as in the recent case of the EU banana import regime. The WTO panel found favorably for the United States, concluding that the EU import regime was not WTO-consistent, but the recommendation did not bring about a satisfactory change in EU policy. In this instance, the WTO arbitrators found that the United States was being harmed in the amount of \$191.4 million annually and accordingly could suspend trade concessions equivalent to that amount. The United States did so by imposing 100 percent ad valorem duties on a range of products, including bath preparations, handbags, and bed

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<sup>36</sup> Portions of this discussion are drawn from the *Economic Report of the President* (1998), pp. 223-224. They have been modified to include new data from the Office of the U.S. Trade Representative.

linens. Nevertheless, in the nearly five years since its institution, many countries, including the United States, have made efficient use of the new mechanism, largely to their satisfaction.

The introduction of a strengthened multilateral dispute settlement system in the WTO, together with the Agreement on Agriculture, the GATS, and the TRIPS Agreement, has broadened the scope of enforcement tools available to the United States. In the 1980s, the United States had no effective dispute settlement mechanism available to address problems in the areas of intellectual property, services, and agriculture, which the GATT covered barely or not at all. Beginning in 1995, however, the DSU and the new WTO rules have permitted the United States to use multilateral dispute settlement procedures to address the majority of issues that face U.S. exporters. For example, trade in agriculture and intellectual property has featured prominently on the U.S. roster under the DSU.

The results of 49 complaints filed by the United States suggest that the dispute settlement process has proved effective. The United States has prevailed in 22 out of 24 cases so far, having favorably settled in 10 cases without litigation and having won in 12 cases in litigation.<sup>37</sup> Only two of the 12 cases, those relating to the EU banana and beef import regimes, resulted in retaliatory measures. Six cases are still pending before dispute settlement panels and 17 are still in the consultative phase or otherwise inactive.<sup>38</sup> The United States has used the dispute settlement process to address conflicts with a variety of countries, the majority of which are major trading partners. Of the 49 complaints filed by the United States, 20 involved the EU and affiliates, 5 involved Japan, 5 involved Korea, 3 involved Canada, 3 involved India, 2 involved Australia, and the remainder involved others.

*Services agreements provide first steps toward potential gains.* The U.S. services sector has grown substantially, in terms of both U.S. income and exports. Private and public services, including travel, transportation, retailing, advertising, insurance, accounting, engineering, and education, accounted for 53 percent of U.S. GDP in 1998, compared with 32 percent in 1950 (Figure 7). Over time, the share of services in total U.S. exports has also increased. Private and public services accounted for about 29 percent of U.S. exports in 1998, compared with about 17 percent in 1950. (During the same period, however, the share of services in U.S. imports was mostly declining or flat.) In 1998, the United States accounted for 18 percent of all commercial service exports, ranking first in the world.<sup>39</sup> Roughly speaking, the data are consistent with the view that the service sector is one in which the United States enjoys a comparative advantage.<sup>40</sup> Taken together, the data suggest U.S. services exporters, and possibly some importers, stand to benefit from continued market liberalization.

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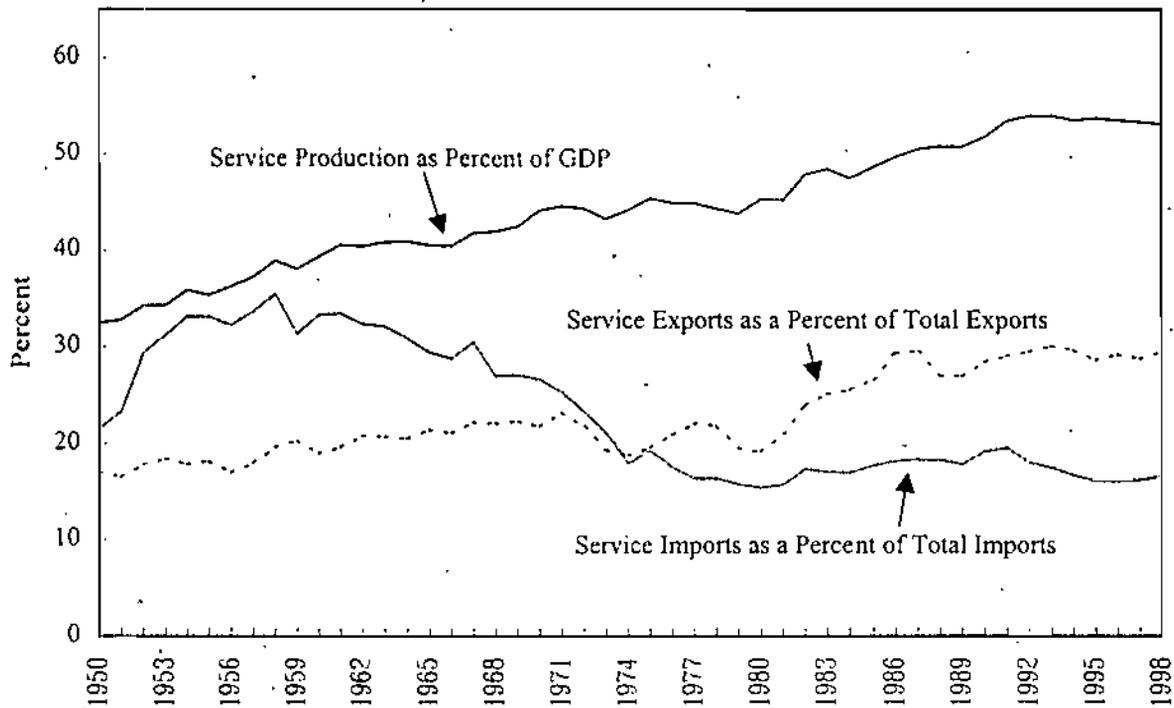
<sup>37</sup> The United States did not prevail in two matters, one of which involved three separate complaints.

<sup>38</sup> Of the 33 complaint brought against the United States, 10 were settled "out of court," 5 were lost in litigation, 7 are in panel or appellate phase, and 11 are still in consultations or otherwise inactive.

<sup>39</sup> World Trade Organization, <http://www.wto.org/wto/statis/prerelease.htm> (downloaded November 11, 1999).

<sup>40</sup> See Catherine L. Mann, *Is the U.S. Trade Deficit Sustainable?* (Institute for International Economics, Washington, DC: September 1999).

**Figure 7: Services as a Percent of U.S. Trade and Production 1950-1998**



Source: U.S. Department of Commerce, Bureau of Economic Analysis  
 Note: Data prior to 1959 are not subject to October 1999 data revision.

Recent data on trade in private services alone point to potential areas of gain from GATS and further negotiations. Between 1994 and 1998, total U.S. exports of private services rose from about \$186 billion to about \$246 billion, growing on average by about 7 percent annually.<sup>41</sup> Within this category of trade, U.S. financial service exports increased by about 24 percent annually, U.S. insurance service exports increased by about 14 percent annually, and U.S. business, professional, and technical service exports increased by about 12 percent annually. U.S. exports of royalties and license fees grew by about 8 percent annually, just ahead of the sectoral average. U.S. exports of financial services and insurance grew much more rapidly between 1994 and 1998 than between 1986 and 1994, the period in which the Uruguay Round was negotiated. By contrast, U.S. exports of business, professional, and technical services and royalties and license fees slowed somewhat in the later period.<sup>42</sup>

U.S. private service imports increased more rapidly in the later period than did U.S. private service exports, but from a smaller base – they grew from about \$119 billion in 1994 to about \$165 billion in 1998, at an average annual rate of almost 9 percent. Here, the top gainers were financial services which increased by about 23 percent annually, business, professional, and

<sup>41</sup> All cited growth rates are derived from nominal trade figures.

<sup>42</sup> The annual growth rate in U.S. exports of all private services was somewhat lower in the post-Uruguay Round period, 7 percent between 1994 and 1998, than in the pre-Uruguay Round period, 12 percent between 1986 and 1994. The growth in U.S. exports of goods also slowed in the later period, increasing by 8 percent annually between 1994 and 1998, compared with 11 percent annually between 1986 and 1994.

technical services, which increased by about 19 percent annually, and royalties and license fees, which increased by about 18 percent annually.<sup>43</sup>

***Intellectual property rights convey substantial value.*** The WTO describes intellectual property rights as “the rights given to persons over the creations of their minds.” Such creations have helped contribute to the success of the U.S. economy. A recent study conducted by the OECD reports that knowledge-based industries and services (including community, social, and personal services; finance, insurance, and other business services; communications services; high-technology manufactures; and medium-high-technology manufactures) accounted for over 50 percent of the value added in the U.S. business sector in 1996.<sup>44</sup> The United States ranked second only to Germany in this regard. Another recent study finds that corporate patent activity in 1995 reflected U.S. technological strengths in developing new medical and surgical devices, electronics, telecommunications, advanced materials, and biotechnology.<sup>45</sup> Strong intellectual property protection – and enforcement – helps spur innovation, by providing assurances that U.S. businesses and inventors will reap the benefits of their research and development.

Though only one indicator among many, data on U.S. trade in royalties and license fees help illustrate the importance to U.S. businesses of protecting intellectual property rights.<sup>46</sup> In 1998, U.S. exports of royalties and license fees, deriving from industrial processes, books, records, tapes, broadcasting and recording of live events, franchise fees, trademarks, and other sources, amounted to about \$36.8 billion, accounting for about 15 percent of all U.S. private service exports (Figure 8). This share has increased over the past decade – U.S. exports of royalties and license fees have more than tripled in nominal terms, thus outpacing the growth in U.S. private service exports overall. However, as noted above, the growth in U.S. exports of royalties and license fees has slowed somewhat in recent years. The growth in U.S. imports of royalties and license fees has also outpaced the growth in U.S. private service imports overall – but in this case, still accounting for a relatively small share of the total. In 1988, U.S. imports of royalties and license fees totaled about \$2.6 billion and accounted for about 3 percent of all U.S. private service imports; in 1998, they totaled about \$11.3 billion and accounted for almost 7 percent of all U.S. private service imports.

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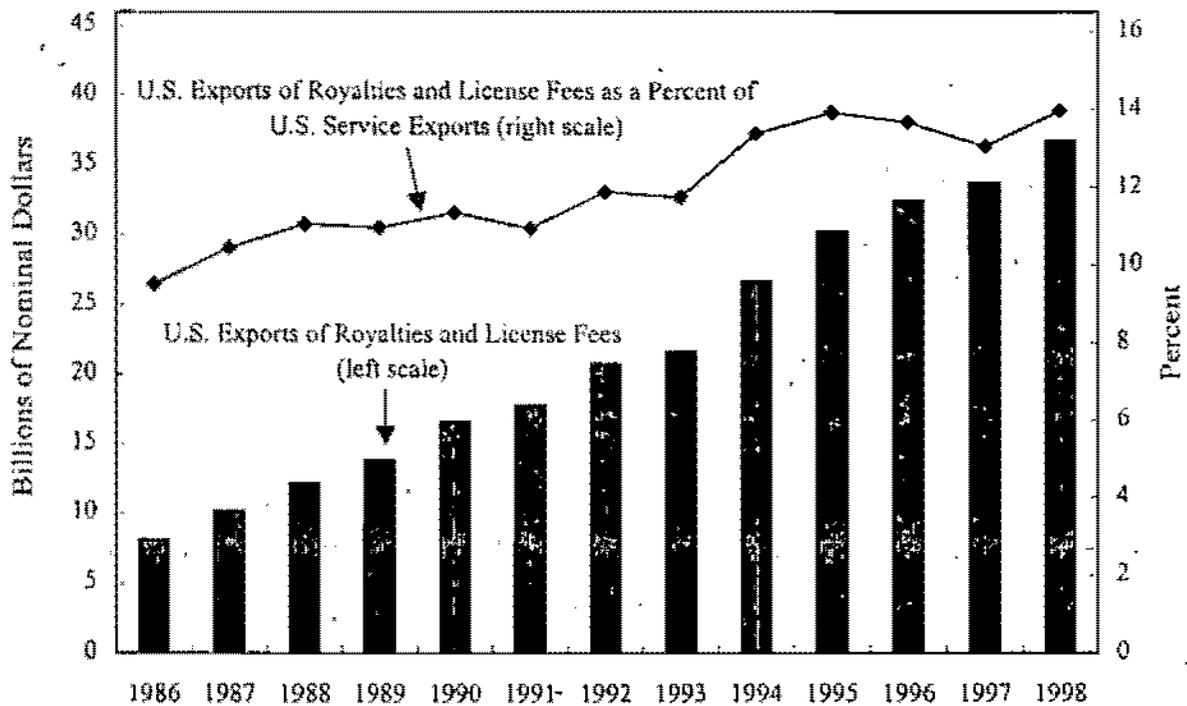
<sup>43</sup> For the most part, the annual growth rates between 1994 and 1998 exceeded those between 1986 and 1994. The annual growth rate in U.S. imports of all private services was also higher in the post-Uruguay Round period, almost 9 percent between 1994 and 1998, compared with about 8 percent between 1986 and 1994.

<sup>44</sup> See Organization for Economic Cooperation and Development, *OECD Science, Technology and Industry Scoreboard 1999, Benchmarking Knowledge-Based Economies (1999)*, p. 19.

<sup>45</sup> See the National Science Board, *Science and Engineering Indicators-1998*, Arlington, VA, National Science Foundation, 1998 (NSB 98-1), pp. 6-21 and 6-22.

<sup>46</sup> For more on U.S. trade in royalties and license fees, see the National Science Board, pp. 6-14 to 6-16.

Figure 8: U.S. Exports of Royalties and License Fees 1986-1998



Source: *Survey of Current Business*, July 1999, U.S. Department of Commerce, Bureau of Economic Analysis, p. 85

Patent data, which provide a rough indicator of national 'inventiveness,' also help illustrate the importance of intellectual property rights protections. Not surprisingly, the number of patents awarded annually to U.S. firms and individuals is also increasing. Over a 13-year period, from 1982 to 1995, the number of patents issued annually by the U.S. Patent and Trademark Office grew from under 60,000 to over 100,000, with more than half of the patents granted in each year going to U.S. inventors.<sup>47</sup> Moreover, U.S. inventors have also been active in neighboring and some faraway markets. U.S. inventors received more patents in Mexico than did other non-Mexican inventors and they received more patents in Canada than did other non-Canadian inventors. They also out-paced other foreign inventors in some more distant markets, such as Japan, Brazil, Hong Kong, India, Malaysia, and Thailand.<sup>48</sup>

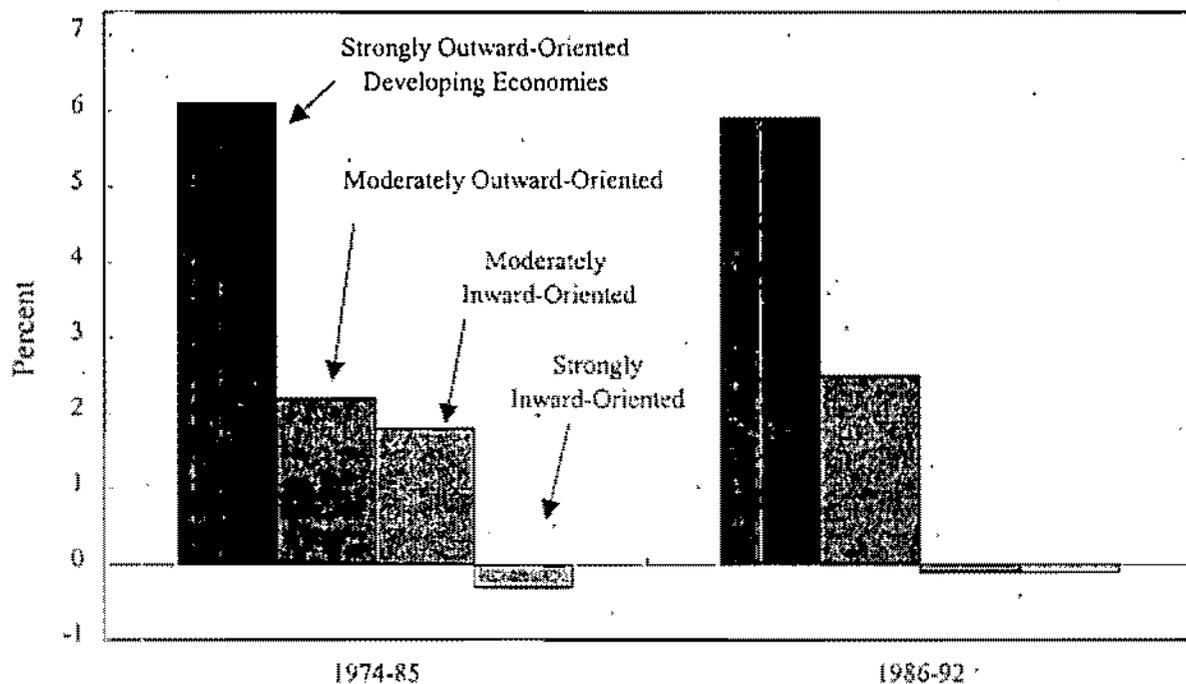
<sup>47</sup> *Ibid.*, pp. 6-19.

<sup>48</sup> *Ibid.*, pp. 6-22 and 6-23.

#### IV. The WTO Extends the Benefits of Trade and Encourages Growth

U.S. trade policy has long sought to use the trading system to help promote economic development. Trade is often described as an 'engine of growth.' The weight of the evidence, including both historical insight and statistical indicators, supports this view. For example, the correlation between outward orientation and growth suggest a mutually supportive relationship (Figure 9). Data from 1974-1985 and 1986-1992 show developing countries with inward-oriented economic policies experiencing less annual growth of GDP per capita than those with outward-oriented economic policies. In the later period, the differences in growth patterns are even more apparent. Moreover, a rules-based system that creates incentives for countries to adopt transparent policies and procedures can also help further the development process.

**Figure 9: Annual Growth of Real GDP Per Capita in Selected Developing Economies**



Source: *World Economic Outlook*, May 1993, International Monetary Fund, p. 76

As evidence of its appeal, the multilateral trading system has grown substantially since its founding. Today, the WTO claims 135 members, including over 100 developing countries, compared with only 23 contracting parties in 1948. Since 1995, seven new members have joined the WTO – Bulgaria, Ecuador, Estonia, Kyrgyzstan, Latvia, Mongolia, and Panama – and another 32 nations are seeking accession. However, not all WTO members are well positioned to make use of these opportunities. Some, especially the least developed among them, lack the necessary institutions and infrastructure to reap the full benefits of the multilateral system.

The United States has a strong interest in promoting economic development internationally for a combination of humanitarian, political, and economic reasons. Among these reasons is our own

self-interest. Growth abroad creates demand for our exports and yields new sources of inputs for U.S. manufactures. In doing so, it promotes growth in the United States. Thus, we have a direct interest in seeing our trading partners prosper. This means that a multilateral system that promotes trade is beneficial, not only because it enhances economic development abroad, as history seems to suggest, but also because it is good for us. Consistent with this view, the United States has long sought to extend the benefits of trade as widely as possible.

### **The Multilateral Trading System Provides Opportunities for Growth**

Historical insight supports the view that the multilateral trading system facilitates trade, thereby providing an engine of economic growth. The experience of the United States, parts of Europe, and Japan after WWII, as well as the emergence of the Asian Newly Industrializing Economies (NIEs) in the 1970s, provide evidence. The multilateral trading system can also help advance the economic development process by creating incentives for members to adopt more transparent policies and procedures.

*Trade fuels post-WWII reconstruction and growth.* The period following WWII was an extremely prosperous period for much of the world, including the United States, Japan, and parts of Europe. It was a period in which Japan and the developed countries of Europe were able to approach America's rising productivity levels. There are many possible reasons for this prosperity, but commonly cited among them is the creation of a more open trading system. This trading system allowed outward-oriented Japan and parts of Europe to enjoy the kind of scale economies that previously only the United States could enjoy, with the strength of its domestic market. But their development did not come at the expense of the United States. The post-WWII era was also a period of rapid growth for the U.S. economy.

*Trade also contributes to economic development.* In the early 1970s, growth slowed substantially in the United States and much of the world. However, growth remained strong in the Asian NIEs and other outward-oriented Asian economies. Although there is some debate as to the source of their growth, many have argued that their outward orientation played a major role. Now, some of these economies are among our major trading partners. In 1998, Korea, Singapore, Hong Kong, and Taiwan accounted for a combined total of about 9 percent of U.S. merchandise exports and imports. Moreover, economic evidence suggests that as these economies grew, their workers generally shared in the gains.<sup>49</sup>

*The multilateral trading system promotes good governance.* As the history of the GATT demonstrates, the United States has long advocated the use of the multilateral trading system to promote economic development internationally. It has also sought to establish strong democratic institutions and to spread the 'rule of law,' not just in the trading system *per se* but, more generally, throughout the world. The new dispute settlement system has advanced the rule of law, by allowing the WTO to enforce trading rules more effectively. But other aspects of the WTO can help further this objective. By requiring transparency in its procedures and establishing new rules for transparency in government procurement, the WTO can help promote good governance worldwide. For these reasons, the United States has aspired to extend the

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<sup>49</sup> See U.S. Congressional Budget Office, "Promoting Worker Rights in Developing Countries: U.S. Policies and Their Rationale" (April 1997), p. 16.

benefits of trade as widely as possible, both across and within countries, by opening WTO membership to any country willing to 'play by the rules.'

### **The Full Realization of Benefits Requires Further Integration**

Today, developing countries account for over three-quarters of the WTO's membership. Their role in the trading system changed significantly in the Uruguay Round. Many were active in negotiations, helping to bring agriculture more fully into the GATT and to reach agreement on phasing out the MFA. As discussed previously, trade can enhance countries' growth prospects, as evidenced by Japan and parts of Europe in the post-WWII period and, more recently, the Asian NIEs. Currently, the developing countries stand to gain from further liberalization of trade in agriculture, services, and industrial products. Trade in high-tech manufactures and services, along with associated knowledge transfers, offers potential for developing countries, including the least developed, to enter the global economy more rapidly and effectively. The developing countries would gain not only from more trade with industrialized countries, but also from increased trade among themselves. An important next step in the next round should be to ensure that more members of the global community are able to benefit more fully from participation in the multilateral trading system and from adoption of outward-oriented trade regimes.

*Active participants move ahead.* By and large, developing countries have come to account for an increasingly large share of world trade, but some have moved ahead faster than others. Overall, exports plus imports of developing countries rose at an annual rate of 9.9 percent between 1989 and 1997, exceeding the 7.6 percent growth rate of world trade.<sup>50</sup> Of the developing country total, the trade of WTO members grew slightly faster, at an annual rate of 10.5 percent. However, the 48 least developed countries have to some extent been left behind. For these countries, trade grew at an annual rate of 6.1 percent (through 1996). Some of these countries have difficulty participating fully in the world trading system even if they are WTO members – often because of lack of adequate domestic institutions and infrastructure.

*Capacity building, technical assistance, and liberalization could help spread benefits.* The international community, including all WTO members, can do more to help spread the benefits of participation in the global economy. Efforts should address the specific needs of developing countries, especially the least developed, but there are overall principles that can offer substantial assistance to most. First, many of the poorest countries lack capacity to implement effectively their WTO obligations in a number of areas. Through the WTO, the international community can focus on offering capacity building and technical assistance to those countries, as well as on making more progress in further liberalization in priority areas, such as agriculture and services. In addition, the developing countries can take their own actions. They would benefit from continued unilateral and bilateral liberalization, as significant gains can be derived from increased South-South trade in addition to North-South trade.

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<sup>50</sup> Numbers cited here are derived from Constantine Michalopoulos, "Trade Policy and Market Access Issues for Developing Countries," unpublished draft (September 1999), pp. 4-5 and exclude intra-EU trade. The developing country category is based on the WTO statistical classification with South Africa included and Israel excluded.

## V. The U.S. Agenda Meets the Challenges of the 21<sup>st</sup> Century

The United States is able to look to the future – and a new round of multilateral trade negotiations – from a position of economic strength. The U.S. economy is enjoying an unprecedented period of expansion and performance. It is experiencing revolutions in information technology and biotechnology. It is highly competitive over a wide range of activities in agriculture, services, and industry. U.S. farmers have long been among the world's most productive. U.S. manufacturers have restored much of the competitiveness that had, in some cases, eroded in the 1980s in both basic and high-tech industries. U.S. firms continue to lead in business, financial, and other private services. To reach its fullest potential, however, the United States continues to have an interest in improving its access to foreign markets, strengthening the operation of the WTO system of rules, and promoting the growth and development of foreign economies.

### **Much Remains to Be Done**

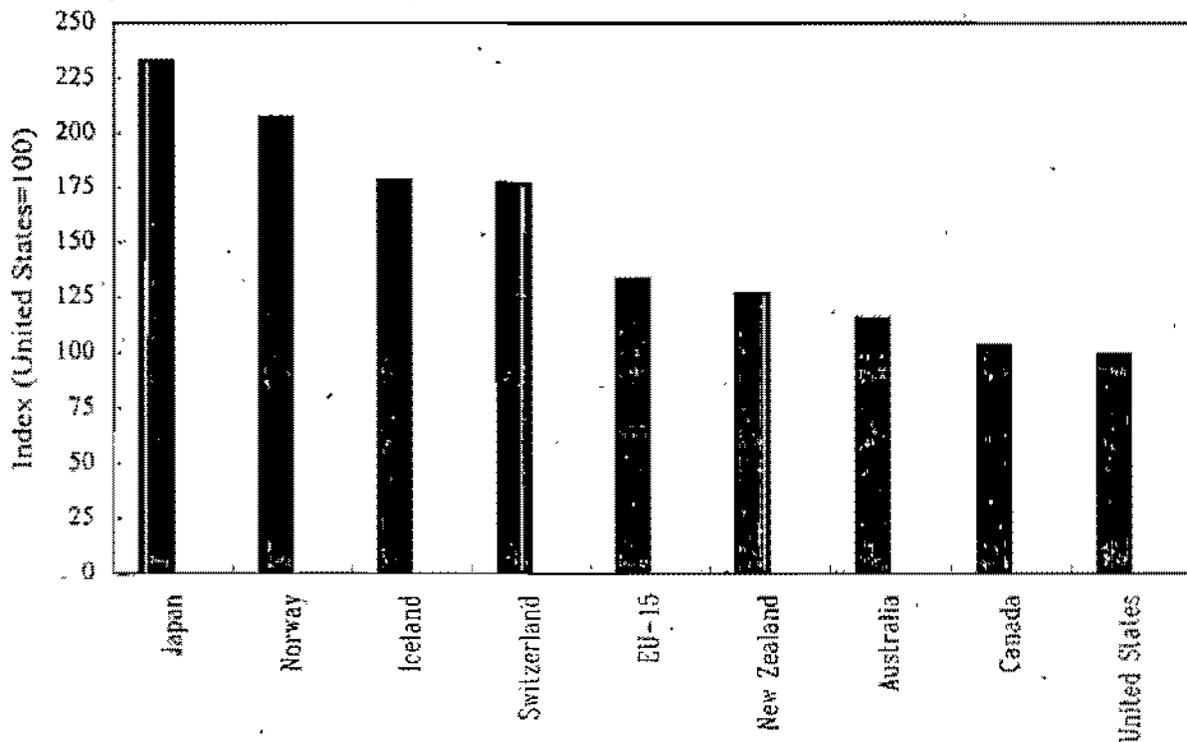
Many foreign governments continue to allow or impose high tariffs and burdensome rules on imports; many also maintain trade-distorting domestic subsidies. Agriculture provides a stark example. Bound tariff rates on agricultural products average about 50 percent around the world compared with less than 10 percent in the United States.<sup>51</sup> Moreover, even after the Uruguay Round commitments are implemented fully, the EU and Japan will be able to provide as much as \$78 billion and \$35 billion, respectively, of trade-distorting domestic support to their farmers each year.<sup>52</sup> By comparison, the United States will be limited to about \$19 billion. Partly because of these policies, average food and related prices are 34 percent higher in the EU and 134 percent higher in Japan than they are in the United States (Figure 10). Many foreign barriers to trade also remain in the services sector.

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<sup>51</sup> Data from the U.S. Department of Agriculture, Foreign Agricultural Service (July 1999).

<sup>52</sup> Data from the U.S. Department of Agriculture, Foreign Agricultural Service (November 1999).

Figure 10: Food, Beverage, and Tobacco Prices in Selected OECD Economies 1996



Source: PPPs 1996 Results, OECD 1998 (unpublished)

In addition, the rules of the WTO and the manner in which they are enforced have room for improvement. Many commitments negotiated in the Uruguay Round have yet to be implemented, in part because some members lack the technical capacity to do so. In some instances, the system's operation remains hidden from public scrutiny to a degree which impedes public confidence and support. The dispute settlement process, in particular, while much improved in the Uruguay Round, remains opaque and sometimes slow to deliver effective resolution. For a credible system it is not sufficient for justice to be done, it must also be seen to be done. The system should also be seen to enhance the benefits it brings by supporting core labor standards and environmental objectives; in doing so, it would broaden support among some who remain skeptical about open trade.

The Uruguay Round negotiations were protracted – lasting from 1986 to 1994 – and even after their conclusion, much of the agenda was not completed. The next round should be designed to produce results much faster, both to provide new and additional benefits sooner and to keep pace with change. For this reason, the United States has proposed a three-year deadline for completing the next round.

Probably the greatest challenge is to ensure that the least developed economies emerge and that the emerging economies are integrated into a global system that promotes economic growth. Although the United States still tends to trade most often with other developed or neighboring economies, its trade with developing countries is already important and holds great promise for the future – non-OECD countries account for about 33 percent of U.S. imports and about 29

percent of U.S. exports. This U.S. interest in sustained economic development abroad has been underscored by the financial crises that have affected many developing countries over the past two years. The slump in growth associated with the crisis has constrained U.S. exports and caused considerable disruption in imports. While the source of these problems has been macroeconomic and financial, the resolution has included trade. In addition, the need for trading rules has been underscored by the problems engendered by insufficient transparency.

### **U.S. Objectives for Seattle and Beyond**

The United States is committed to expanding the circle of nations that benefit from trade and putting a "human face" on the global economy. As such, U.S. proposals reflect key interests in opening foreign markets, strengthening the rule of law, and promoting economic development. The United States is proposing to launch a new round that includes a broad-based market access agenda, focusing on services, agriculture, and industrial tariffs, and lasting no more than three years. The WTO's built-in agenda calls for further negotiations on agriculture and services, beginning no later than December 31, 1999 and January 1, 2000, respectively. In agriculture, for example, the United States is seeking to eliminate export subsidies, reduce tariffs and trade-distorting domestic supports, and ensure that trade in agricultural biotechnology products is based on transparent, predictable, and timely processes.

The United States is also seeking immediate tariff cuts in eight key areas; agreement on transparency in government procurement, extension of the prohibition on e-commerce duties, and an agreement to make additional information technology products tariff free. The United States sees a need to strengthen the WTO's relationships with other international organizations and for reforms to make the WTO itself more open and accessible.

- The United States is seeking accelerated tariff liberalization in eight key areas – chemicals, energy products, environmental products, fish, forest products, jewelry, medical and scientific equipment, and toys. These areas account for \$198 billion of U.S. exports.
- The United States, together with South Korea and Hungary, has proposed a worldwide agreement on transparency in government procurement to promote good government practices. Such practices reduce the potential for bribery, corruption, and other insider deals. Adoption of this proposal would provide all nations with more opportunity to sell their goods and services in the \$3.1 trillion government procurement market.
- In 1998, WTO Ministers agreed to a temporary prohibition on duties on electronic commerce. The United States is seeking an extension of the prohibition to ensure the continued growth of the high-technology sector, to ensure that no WTO members take actions to inhibit the growth of e-commerce, and ensure that developing countries benefit from the expansion of e-commerce.
- The United States has highlighted the need to make the WTO more open and more accessible. To achieve this goal, the United States has proposed opening the dispute settlement procedures to the public, allowing non-governmental organizations (NGOs) to file amicus curiae briefs in cases involving the environment, and creating institutional structures

to increase consultations with NGOs. The United States also sees the need to strengthen the WTO's institutional relationships with other international organizations, beyond the Bretton Woods institutions, to include the International Labor Organization and UN Environmental Program (UNEP) for example.

The United States has sought to create a trading system that spreads the benefits of trade as widely as possible, both across and within countries, and is supportive of core labor standards and the environment. To that end, the United States is:

- Seeking to bring more nations into the open trading system and ensure that developing countries fully benefit from the system. The United States will work to give the least developed countries greater access to global markets. The United States is also proposing measures to provide technical assistance on implementing trade policy and strengthening institutions in developing countries responsible for trade, labor, environmental, and other policies that influence the gains to living standards from trade.
- Proposing to establish a WTO Working Group on Trade and Labor in Seattle, strengthen the ILO, and enhance the institutional links between the ILO and the WTO, by granting the ILO observer status at the WTO, similar to that enjoyed by the World Bank and others.
- Pursuing opportunities that can open markets and yield environmental benefits, such as eliminating fishery subsidies that contribute to over-fishing and eliminating tariffs on environmental goods; and seeking to strengthen cooperation between the WTO and international organizations dealing with environmental issues like UNEP.
- Committing to conduct a U.S. environmental review of the likely consequences of the Round and proposing that the WTO Trade and Environment Committee help identify environmental implications as the Round proceeds.

Much of the recent debate about trade has been carried out in extreme and sterile terms. Trade liberalization is sometimes promoted by those who see no costs and opposed by those who see no benefits. The truth is that trade can provide benefits, on balance, but it can – like any other source of growth – also impose costs. A key challenge for policy is to implement the complementary policies that help compensate and aid those who are hurt. Likewise, membership in the WTO is sometimes advocated as if it imposes no constraints and it is sometimes challenged as an unwarranted invasion of our sovereignty. The truth is, however, that we do agree to constrain our behavior by agreeing to adhere to the rules of the trading system. Our membership in the WTO is advantageous not because it entails no obligations, but because on balance they are beneficial. Finally, there are some who believe that trade agreements should only deal with trade barriers, while there are others who would have them almost mimic a global government. The truth is that for trade to be free it must command popular support, and to do so it must be perceived as fair. This requires rules that do more than simply reduce barriers; it also requires rules that leave considerable scope for national autonomy and diversity.

Some suggest that while the GATT helped advance U.S. geopolitical interests during the Cold War, the United States no longer needs the organization now that the Cold War is over.

However, the U.S. economy is more open now than ever before and international trade is vital to U.S. economic interests. Our participation in the WTO is the centerpiece of our trade policy. But, while freer trade brings benefits it is important to recognize it is not a panacea. It is crucial to ensure that the benefits of trade are shared widely and that the rule of law governing it be fair. Trade policy also needs to part of broader economic strategy and it needs to be supplemented by policies that facilitate change and promote equity. The Clinton Administration has made opening markets at home and abroad one of the pillars of its economic policies, but it has also recognized the importance of macroeconomic policies to achieve fiscal discipline and microeconomic policies to invest in people and technology.

## Appendix: Key Achievements of the Uruguay Round Negotiations<sup>53</sup>

For nearly 50 years, the General Agreement on Tariffs and Trade (GATT) served as both an international agreement and international organization. It dealt with international trade in goods and did not cover trade in services, such as transportation, tourism, insurance, and telecommunications, or trade-related aspects of intellectual property rights. The Uruguay Round further reduced tariffs on industrial products, brought more sectors more fully into the multilateral fold, strengthened the rules of conduct for international trade, and created a new institution – the World Trade Organization. As a result, the multilateral trading system now more fully covers agriculture, textiles and clothing, services, and intellectual property rights.

As a result of the Uruguay Round, the negotiating governments greatly increased the proportion of their trade that is “bound” by tariff concessions (legal commitments limiting maximum tariff rates). They also reduced tariff rates. Some developing countries made and bargained for tariff concessions for the first time. Moreover, as a result of the Agreement on Agriculture, all agricultural products of all WTO Members are now bound by tariff concessions. Even if a concession simply fixed in place a tariff rate that was already being applied on a de facto basis, the tariff concession provides legal certainty, which is definitely positive even if its value may be difficult to quantify.

Most importantly, the Uruguay Round created the World Trade Organization (WTO), and its more effective dispute settlement mechanism. The GATT still has its place at the center of the WTO system, but it is now administered by the WTO, and is tied to other agreements on trade in goods, as well as the General Agreement on Trade in Services (GATS) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Disputes concerning any of these multilateral agreements are subject to one set of dispute settlement procedures, the Understanding on Rules and Procedures Governing the Settlement of Disputes or “Dispute Settlement Understanding” (DSU).

**Industrial Products.** In most cases, the Uruguay Round cuts in developed countries’ tariffs on imports of industrial products, excluding textiles and clothing, are being phased in over 5 years, beginning January 1, 1995. By the end of the phase in, these tariffs will be cut by about 40 percent, from an average of 6.3 percent to an average of 3.8 percent. The proportion of imports of industrial products that receives duty-free treatment in developed countries will increase from 20 percent by value to 44 percent. Before the Uruguay Round, 78 percent of developed countries’ tariff lines were bound; after the Uruguay Round, 99 percent will be bound. In developing countries, the percentage of bound tariff lines went from 21 percent to 73 percent. Economies in transition agreed to increase their bindings from 73 percent to 98 percent.

**Agricultural Products.** The Uruguay Round succeeded in bringing agriculture more fully into the multilateral trading system. Through the negotiation of the Agreement on Agriculture, all tariffs on agricultural products are bound, and non-tariff barriers were converted to tariffs by “tariffication.” Industrial countries agreed to cut tariffs on agricultural products by 36 percent on

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<sup>53</sup> This appendix draws from the World Trade Organization, <http://www.wto.org/about> (downloaded September 19, 1999) and the GATT Secretariat, “The Results of the Uruguay Round of Multilateral Trade Negotiations, Market Access for Goods and Services: Overview of the Results” (November 1994).

average over six years; developing countries agreed to cut their tariffs by 24 percent on average over ten years. For products subject to tariffication, the Agreement permits special safeguards to protect against import surges. The Agreement also limits and reduces countries' use of export subsidies and trade-distorting domestic supports. Agriculture is part of the WTO's built-in agenda, with talks scheduled to begin by December 31, 1999.

*Textiles and Clothing.* From 1974 until the end of the Uruguay Round, trade was governed by the Multi-Fiber Arrangement (MFA). The MFA was a framework for bilateral agreements and unilateral actions, based on quantitative restrictions on imports. In 1995, the WTO's Agreement on Textiles and Clothing (ATC) replaced the MFA. The ATC will integrate the textile and apparel sector into the GATT rules, by eliminating quota restrictions gradually over a ten-year period. Like the Agreement on Agriculture, the ATC also allows special safeguards to protect against import surges. By 2005, all import quotas and discrimination will end and the ATC will terminate. The Uruguay Round also established a Textiles Monitoring Body to supervise the ATC's implementation.

*Services.* The GATS provides multilaterally agreed and legally enforceable rules, covering all internationally traded services (except most air transport services). It extends MFN treatment to all WTO members, with limited exceptions, and extends national treatment and market access obligations in areas where a country has made a specific commitment. The GATS provides rules for regulatory transparency, other aspects of regulation, recognition of other countries' qualifications, and international payments and transfers. As a result of bilateral negotiations, individual countries made legally binding commitments to open markets and/or provide nondiscriminatory treatment in specific service sectors. A set of "schedules" lists the sectors being opened, the extent of market access being given in those sectors, and any limitations on national treatment. Although some commitments did not go beyond the market access offered at the time they were made, they still prevent governments from backtracking on access; the GATS met the objectives of bringing services into the multilateral trading system and providing the certainty needed for business decisions. As in the case of agriculture, the service sector is included in the WTO's built-in agenda, with a full new round of negotiations scheduled to begin no later than January 1, 2000.

A series of annexes to the GATS addresses particular concerns of different industries, including the movement of natural persons; financial services, telecommunications, and some air-transport services. Negotiations on specific commitments in financial services and telecommunications continued after the Uruguay Round, as part of the built-in agenda, and resulted in new liberalization packages. Talks on the movement of natural persons also continued and achieved modest results. Further talks on maritime services were scheduled, but suspended.

*Intellectual Property.* The TRIPS Agreement requires a minimum standard of intellectual property rights protection and enforcement of intellectual property rights. It also provides for basic rights to non-discriminatory treatment. The Agreement deals with copyright and related rights, including for computer programs, data bases, sound recordings and films; trademarks and service marks; geographical indications, including appellations of origin; patents, including the protection of new varieties of plants; industrial designs; layout designs of integrated circuits; protection of undisclosed information, including trade secrets and test data. Substantive

provisions of the main international agreements of the World Intellectual Property Organization provide the basis for protection, with additions and modifications. For example, under TRIPS the Berne Convention for the Protection of Literary and Artistic Works now applies to computer programs. Moreover, the TRIPS Agreement also addresses patents by requiring that patent protection be available for a 20-year minimum for all inventions, whether products or processes, in almost all technology fields.

The TRIPS Agreement also requires WTO members to provide procedures and remedies under their domestic law to ensure that foreign right holders can effectively enforce intellectual property rights. Under some circumstances, member countries may adopt measures to prevent or control practices in the licensing of intellectual property rights that are abusive or anti-competitive. When the WTO Agreements took effect on January 1, 1995, developed countries were given one year to bring their laws and practices into conformance with the TRIPS Agreement. Developing countries and some economies in-transition were given longer transition periods. The TRIPS Agreement, like the GATS and the agreements on trade in goods, can be enforced through the WTO's dispute settlement procedures.

**Other WTO Agreements.** The Round also brought agreements relating to trade in goods, to governing anti-dumping measures, subsidies and countervailing duties, safeguards, and to technical barriers.

- *Anti-Dumping Measures.* The Anti-Dumping Agreement, more formally the Agreement on the Implementation of Article VI of the GATT 1994, permits WTO members to assess antidumping duties on imports of a product if it is dumped (as defined by the agreement) and if the dumped imports have been found to cause or threaten material injury to the domestic industry producing the product. The Agreement also provides for due process and transparency in anti-dumping investigations.
- *Subsidies and Countervailing Measures.* The Agreement on Subsidies and Countervailing Measures provides rules for the use of domestic subsidies and countervailing duties offsetting those subsidies. Under the Agreement, a country may seek the withdrawal of a subsidy or removal of its adverse effects, by bringing a WTO dispute. A country may also assess countervailing duties on imports of a subsidized product, offsetting the value of the subsidy, if the subsidized imports have been found to cause or threaten material injury to the domestic industry producing a like product. The Agreement applies to both industrial products and agriculture, although its application to agriculture has been modified by the operation of a temporary "peace clause" in the Agreement on Agriculture. Some exceptions apply to subsidies of developing countries.
- *Emergency Protection from Imports.* The Agreement on Safeguards allows countries to temporarily restrict imports of a product if an absolute or relative import surge is causing or threatening to cause serious injury to the domestic industry producing a like or directly competitive product, and if the importing country has conducted an investigation that transparently and objectively examines certain factors bearing on serious injury. (The Agreement prohibits the use of "gray area" measures, including voluntary export restraints and orderly marketing arrangements.) When the serious injury has been caused by an

absolute import surge, and the importing country conducts a transparent and objective investigation consistent with the Safeguards Agreement, its trading partners cannot take a compensatory suspension of concessions against it for the first three years that such a "safeguard" measure is in place. Special rules apply for safeguard measures affecting developing country products.

- *Technical Barriers to Trade.* The Agreement on Technical Barriers to Trade (TBT) tries to ensure that regulations, standards, testing and certification procedures do not create unnecessary obstacles to trade. The Agreement on TBT does not prohibit countries from adopting standards, or require that standards be harmonized internationally. Rather, it sets out a 'code of good practice' for the preparation, adoption, and application of standards by central government bodies and others.
- *Health Regulations for Farm Products.* Complementary to the Agreement on TBT and the Agreement on Agriculture, the Agreement on Sanitary and Phytosanitary Measures establishes rules for standards to protect human, animal, and plant health. The Agreement urges countries to adopt internationally agreed standards to the extent possible, but it does not prohibit countries from setting their own, possibly higher, standards. However, it does require that all standards be based on science and non-discriminatory.
- *Miscellaneous.* The Uruguay Round agreements also include the Agreement on Import Licensing Procedures; the Agreement on Implementation of Article VII of the GATT 1994 and related ministerial decisions on customs valuation; the Agreement on Preshipment Inspection; the Agreement on Rules of Origin; and the Agreement on Trade-Related Investment Measures.

*Plurilateral Agreements.* The WTO Agreement also provides the framework for two agreements which only some, not all, of the WTO Members have accepted. These are the Agreements on Trade in Civil Aircraft and on Government Procurement, which were originally negotiated during the Tokyo Round. During the Uruguay Round, the Agreement on Government Procurement was renegotiated and replaced with a new agreement that now applies to more entities and to services. The procurement agreement applies only to agencies listed by each of the governments that is party to the agreement. These agencies' procurement is then subject to rules that guarantee fair and non-discriminatory conditions of international competition.

*Dispute Settlement.* The Dispute Settlement Understanding improves upon previous rules and procedures. It creates a single system for addressing disputes under each of the WTO's multilateral agreements and the Agreement on Government Procurement; provides an expedited process with clearly defined stages; prevents individual countries from blocking the adoption of rulings; and authorizes countermeasures if an adopted ruling is not implemented. Ordinarily, a case should not take more than a year – or 15 months if it is appealed. (If either side requests, members of an Appellate Body hear appeals of panel rulings.) Moreover, in a reversal of the GATT procedure, all dispute settlement rulings – including those of the Appellate Body – are adopted automatically, unless there is consensus to reject a ruling.

After a ruling is adopted, a country faces three possible outcomes: it can adhere to the recommendations of the panel; it can compensate the claimant; or the claimant can suspend previously granted concessions of like amount. The general principle is that the suspension should occur in the same sector of trade (for example, a violation in the goods sector should be met with suspended concessions in the goods sector). If this is not practicable or effective, the suspension can occur in other sectors, and so the dispute settlement system helps integrate the obligations of the entire WTO system.

*Trade Policy Review Mechanism.* The TPRM provides a regular forum for monitoring each country's performance in the WTO system, through reports by countries and the WTO Secretariat and discussions between WTO member governments. The review is not legally binding. Its objectives are to increase the transparency and understanding of countries' trade policies and practices through regular monitoring; improve the quality of public and intergovernmental debate on the issues; and enable a multilateral assessment of the effects of policies on the world trading system.

## List of Frequently Used Acronyms

APEC	Asia-Pacific Economic Cooperation
ATC	Agreement on Textiles and Clothing
DSU	Dispute Settlement Understanding
EU	European Union
ILO	International Labor Organization
GATT	General Agreement on Tariffs and Trade
GATS	General Agreement on Trade in Services
GDP	Gross Domestic Product
GNP	Gross National Product
MFA	Multi-Fiber Arrangement
MFN	Most-Favored Nation
NAFTA	North American Free Trade Agreement
NGO	Non-Governmental Organization
NIE	Newly Industrializing Economy
OECD	Organization for Economic Cooperation and Development
TBT	Technical Barriers to Trade
TPRM	Trade Policy Review Mechanism
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TRIMS	Trade-Related Investment Measures
UNEP	United Nations Environmental Program
WTO	World Trade Organization

**20 Million Jobs:  
January 1993 – November 1999**

**A Report by the  
Council of Economic Advisers  
and the  
Office of the Chief Economist,  
U.S. Department of Labor**

**December 3, 1999**

## EXECUTIVE SUMMARY

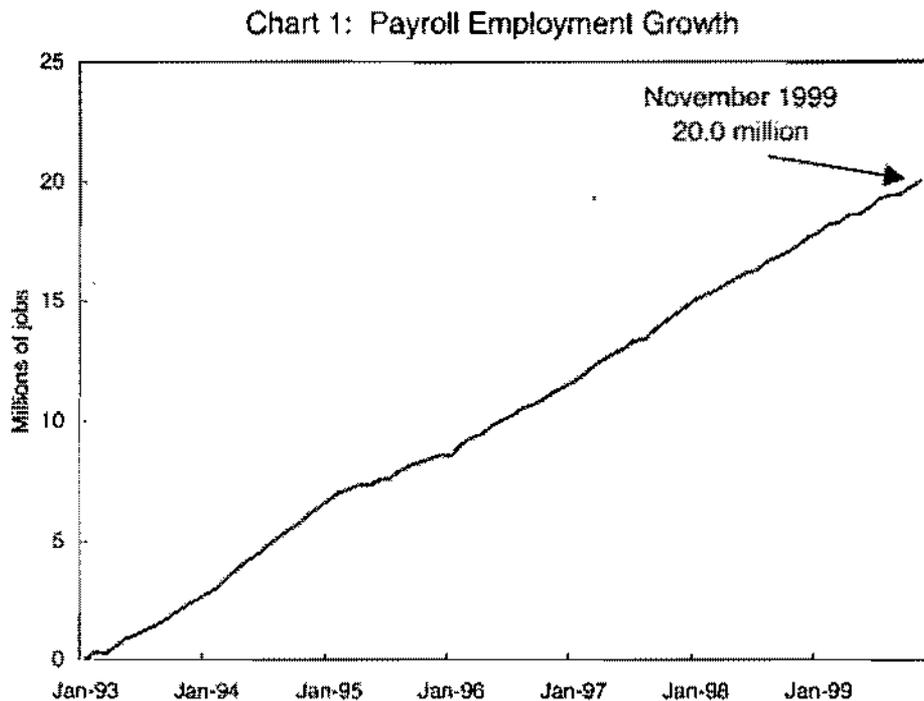
- **Robust Job Growth.** Since January 1993, employment has grown rapidly and 20 million net new jobs have been created. Employment is at an all-time high—a larger percent of the population is employed now than at any previous time. The unemployment rate, at 4.1 percent, is the lowest it has been in 29 years.
- **Broad Employment Gains.** Employment gains have been strong for all major subgroups of the population. For African Americans and Hispanics, the proportions of the population with jobs rose to record highs and the unemployment rates fell to record lows. The unemployment rate for women is now lower than at any time since 1953.
- **More High-Quality Jobs.** The 20 million jobs created since January 1993 have overwhelmingly been good jobs. Eighty-one percent of the job growth was in industry/occupation categories paying above-median wages. Sixty-five percent was in the highest-paying third of industry/occupation categories.
- **Real Wage Growth for All.** Increases in real (inflation-adjusted) earnings were widely shared in the late 1990s. This is in sharp contrast to the 1980s, when growth in real earnings was concentrated among high-wage workers and real earnings fell for those at the lower end of the wage distribution. Strong earnings growth in the past few years produced gains in household income, and the poverty rate has fallen to its lowest level since 1979.
- **Sectoral Differences.** Services accounted for a substantial share of job growth since January 1993, but construction, transportation, and public utilities also accounted for significant portions. Employment was growing in manufacturing until the Asian financial crisis, but it started declining in the second quarter of 1998, reducing net job creation in that sector.
- **Most Jobs Remain Full-Time.** The majority of all jobs are full-time jobs—there has been no increase in the proportion of jobs that are part-time or in the proportion of workers holding multiple jobs.
- **Declining Worker Displacement.** In a dynamic economy with rapid job growth, many more jobs are being created than are being lost. And while some workers have been displaced from their jobs, job displacement rates have been on the decline and workers' reported fear of job loss is abating.

## INTRODUCTION

Since January 1993, the economy has generated 20 million new jobs. A higher proportion of the population aged 16 and over is employed now than ever before, and at 4.1 percent the unemployment rate is lower than it has been since 1970.<sup>1</sup> Moreover, as the evidence in this paper shows, a very high proportion of the new jobs that people are taking are good jobs in industry/occupation categories that pay above-median wages. Real wages are growing again. And the benefits of a strong labor market are being shared widely among U.S. workers—including groups that saw little if any progress over the 1973-93 period.

## 20 MILLION JOBS

Between January 1993 and November 1999, employers added 20 million people to their payrolls<sup>2</sup> (Chart 1).



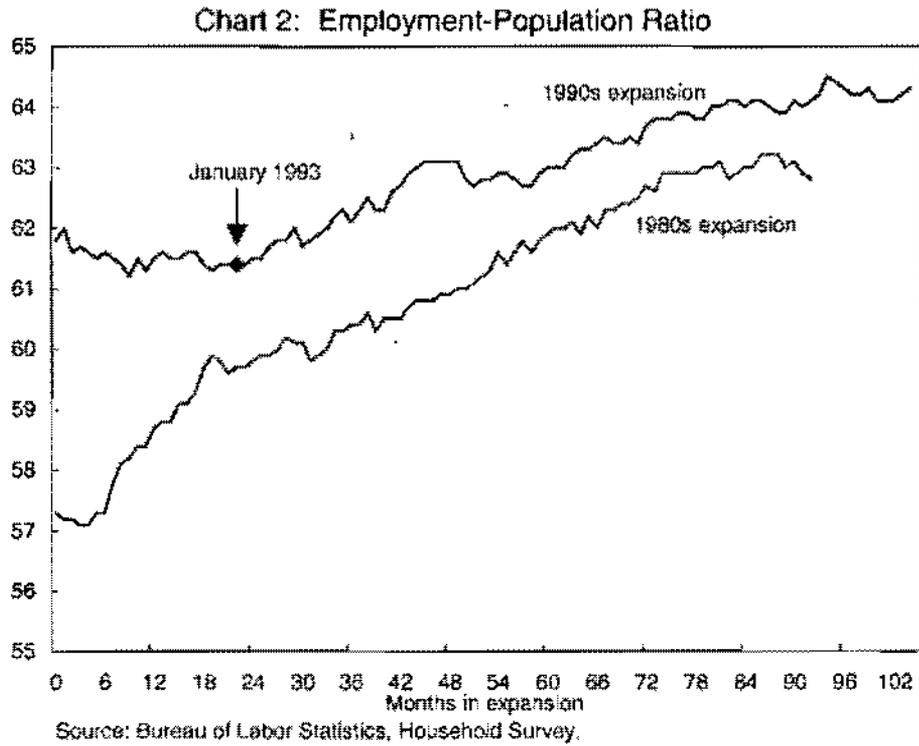
Source: Bureau of Labor Statistics, Establishment Survey.

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<sup>1</sup> Employment and jobs data come from two sources. The establishment survey asks employers how many people they have on their payrolls; the household survey asks people whether they have a job or are looking for a job. References to "jobs" in this paper generally refer to the establishment survey, while references to "employment" generally refer to the household survey.

<sup>2</sup> Although the current expansion technically began following the business cycle trough in March 1991, job growth was very sluggish for more than a year and payroll employment had grown by only 1.2 million by January 1993.

More people are working now than ever before. The proportion of the population aged 16 and over that is employed reached an all-time high this year and has been higher during this expansion than it was at comparable points during the 1980s expansion (Chart 2). This high



employment-population ratio reflects longer term trends, but the very strong labor market and policies designed to increase the rewards to work surely have contributed as well by attracting new workers into the labor market. At the same time, the unemployment rate has been below 5 percent for 29 consecutive months and is lower than it has been in 29 years. While the unemployment rate in January 1993 was about the same as it was at a comparable point in the 1980s expansion, it has subsequently declined faster and further than it did in that expansion (Chart 3).

## EMPLOYMENT GAINS ARE WIDESPREAD

Labor market gains since January 1993 have been impressive across demographic groups (Table 1). African Americans and Hispanics, for example, experienced their lowest unemployment rates on record during the past year (Chart 4).<sup>3</sup> Employment-population ratios have reached record highs not only for all persons aged 16 and over but also for particular subgroups such as women, African Americans and Hispanics.<sup>4</sup> The increased labor force activity of women, in particular, reflects a combination of forces, such as welfare reform and the Earned Income Tax Credit (EITC), that improve the incentives to work among those with low earnings. The unemployment rate for women is the lowest it has been since 1953.

Table 1  
Indicators of Labor Market Activity for Selected Demographic Groups  
1992 to November 1999  
(percent, civilian workers, seasonally adjusted)

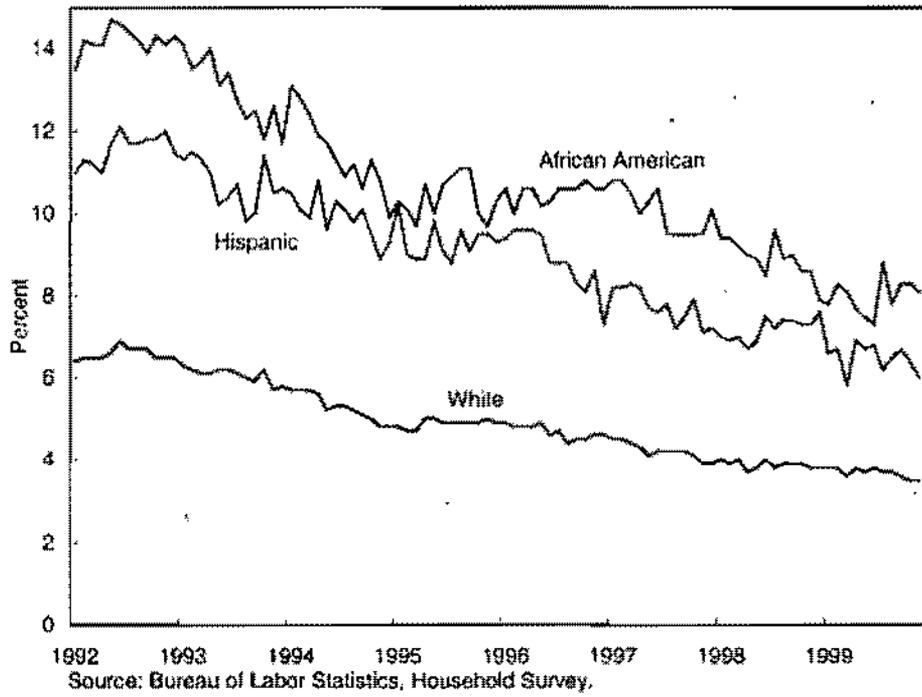
Demographic group	Unemployment rate			Employment-population ratio		
	Annual 1992	Nov. 1999	Change	Annual 1992	Nov. 1999	Change
Total	7.5	4.1	-3.4	61.5	64.3	2.8
White	6.6	3.5	-3.1	62.4	64.8	2.4
African American	14.2	8.1	-6.1	54.9	60.8	6.0
Hispanic	11.6	6.0	-5.6	59.1	63.7	4.6
Men, 16 years and over	7.9	4.0	-3.9	69.8	71.6	1.8
Women, 16 years and over	7.0	4.2	-2.8	53.8	57.5	3.8
Teenagers	20.1	14.1	-6.0	40.9	44.8	3.9

Source: Bureau of Labor Statistics, Household Survey.

<sup>3</sup>Separate unemployment rates have been recorded since 1972 for African Americans and 1973 for Hispanics. The record lows for these groups were 7.3 percent for African Americans (June 1999) and 5.8 percent for Hispanics (March 1999). Monthly rates for these groups have a tendency to fluctuate somewhat, due to their small sizes in the monthly surveys of households.

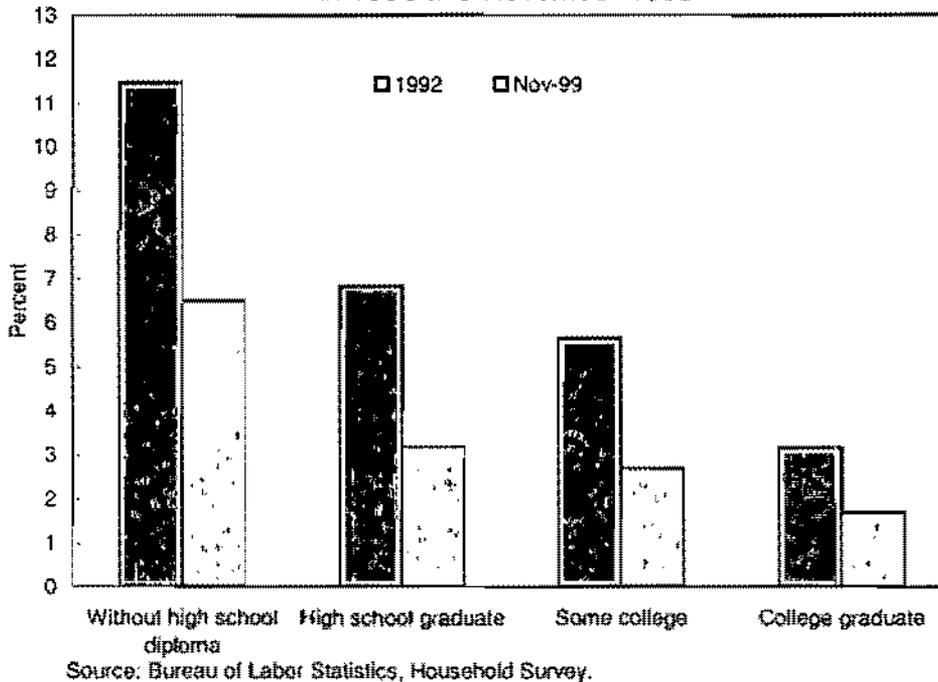
<sup>4</sup>Record highs for these groups include an employment-population ratio of 57.6 percent for women (January 1999), 61.2 percent for African Americans (January 1999) and 64.1 percent for Hispanics (March 1999).

Chart 4: Unemployment Rates by Race and Ethnicity



Unemployment rates have declined for all educational groups since 1992, with the largest percentage point declines in the groups with the fewest years of schooling completed (Chart 5).

Chart 5: Unemployment Rates by Educational Attainment in 1992 and November 1999



## THE QUALITY OF JOBS

The 20 million jobs created since January 1993 have overwhelmingly been good jobs. This conclusion is based on an analysis of employment growth in which total household employment is divided into 90 industry/occupation categories, ranked by median earnings, in order to assess where the new employment growth occurred.<sup>5</sup> This analysis indicates that

- 81 percent of the new jobs created from 1993 to the present<sup>6</sup> were in categories paying above-median wages;<sup>7</sup> and
- 65 percent of the new jobs created were in job categories with wages in the highest-paying third of industry/occupation categories.

Many of the good new jobs are in professional and managerial occupations, and these two categories account for almost 70 percent of college graduates in the workforce. But growth in good jobs was not confined to college graduates.

First, while roughly 77 percent of employees in professional jobs in 1998 had at least a bachelors degree, 51 percent of managers did not.

Second, the overwhelming majority of new jobs in industry/occupation categories more likely to be filled by non-college graduates are also good jobs. When professional occupations are excluded from the analysis, 71 percent of the remaining employment growth was in categories that paid above-median wages (for the categories that remained). Sixty percent was in the highest-paying third of industry/occupation categories.

Finally, the overwhelming majority of employment growth among those with a high school diploma (but no college) were good jobs. A preliminary analysis confined to this group found that virtually all of the net growth in employment was in the highest-paying third of industry/occupation categories for such workers. (Gains for the bottom third were largely offset by losses in the middle third.)

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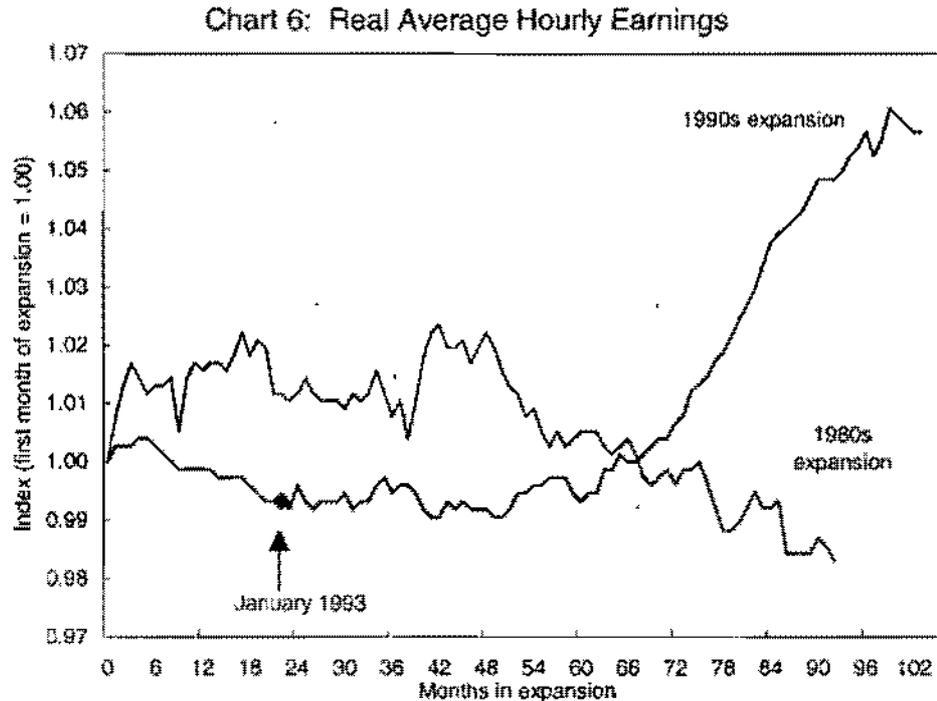
<sup>5</sup> The household survey is used because the establishment survey does not contain information about occupations that would allow this kind of breakdown. The results from the household survey are used to infer where the job growth occurred. The Council of Economic Advisers and the Department of Labor earlier conducted a similar analysis of job growth between February 1994 and February 1996 based on a finer industry/occupation breakdown (see *Job Creation and Employment Opportunities: the United States Labor Market, 1993-1996*, A Report by the Council of Economic Advisers with the U.S. Department of Labor, Office of the Chief Economist, April 23, 1996). That report found that 68 percent of the net growth in full-time employment occurred in industry/occupation groups paying above-median wages.

<sup>6</sup> Because the household data are not seasonally adjusted, a comparison of October 1999 employment levels with January 1993 employment levels might be contaminated by seasonal factors. To minimize seasonal effects and to capture jobs created in 1993-99, the analysis compares average employment in January through October 1999 with average employment in 1992.

<sup>7</sup> Industry/occupation groups were ranked by median earnings in the base year and separated into two groups, each containing half of total employment. Eighty-one percent of the employment growth was in the higher paying half.

## WAGE GAINS ACROSS-THE-BOARD

This expansion's strong labor market has created a large number of good new jobs and it has generated rising real (inflation-adjusted) wages for most workers. Although it took some time for growth in real average hourly earnings to gain momentum in this expansion, the past 4 years have witnessed solid gains (Chart 6). By contrast, real wages declined at the end of the 1980s expansion and continued to decline in the 1990-91 recession.

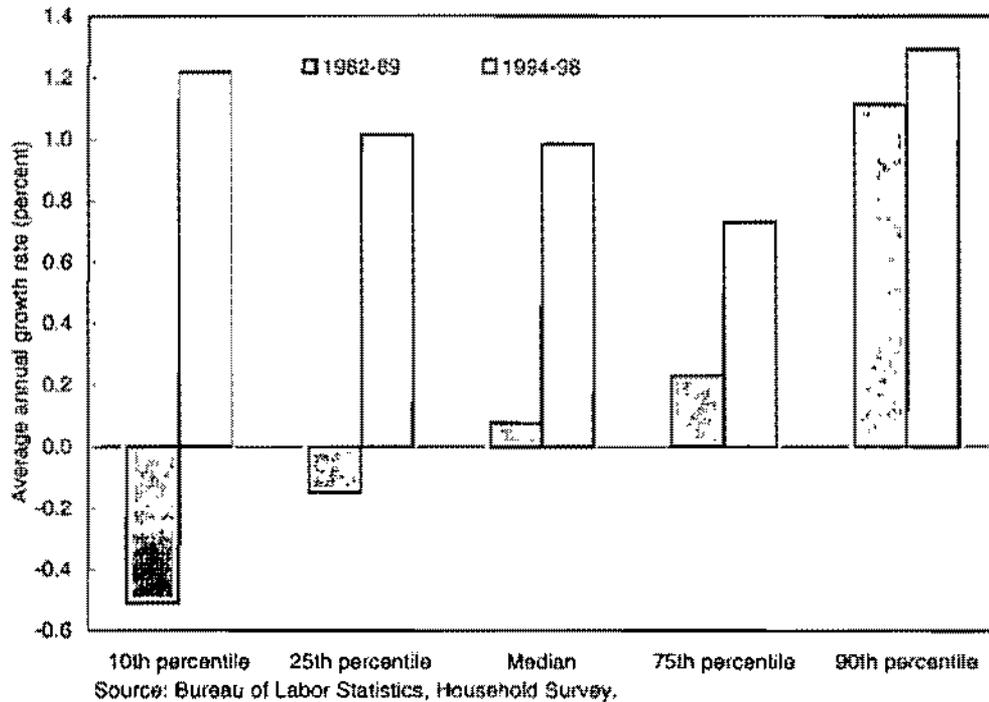


Source: Bureau of Labor Statistics, Establishment Survey.

Average real earnings in the United States were relatively stagnant or falling from 1979 through the mid-1990s, with low-wage earners experiencing the greatest losses of earnings and overall earnings inequality rising significantly.<sup>8</sup> However, the resumption in real earnings growth since 1996 has been especially evident among low-wage workers. Since the second quarter of 1996, median usual weekly earnings of full-time workers have grown by 5.3 percent. Growth was 7.0 percent at the 25th percentile of earnings, and 8.5 percent at the 10th percentile. Compared with the 1980s expansion, the growth in these earnings has been much more evenly distributed since 1994 (Chart 7).

<sup>8</sup>Real wage data in this report are based on the official consumer price indexes (CPI) computed by the Bureau of Labor Statistics (BLS). However, methodological improvements made by the BLS would have reduced measured inflation between 1979 and 1995 by almost a half percentage point per year, on average, if they had been introduced earlier. Use of an experimental index that incorporates these changes in earlier years would raise real wage growth slightly, but not change the basic conclusions of this report.

Chart 7: Growth in Median Usual Weekly Earnings



The resumption of significant real wage growth primarily reflects the return of high productivity growth, which has averaged over 2 percent per year for each of the past 3 years. Furthermore, the higher real wage growth at the bottom of the wage scale reflects other policy developments, such as the increases in the Federal minimum wage that were implemented during October 1996 and September 1997.

Finally, the increases in employment and earnings experienced by workers have resulted in rising real incomes and declining poverty rates for American families. Real median household income reached an all-time high of \$38,885 in 1998. The poverty rate fell to 12.7 percent, the lowest it has been since 1979. The effects of the EITC, which are not reflected in the official money income and poverty measures, lifted an additional 4.3 million people out of poverty in both 1997 and 1998. African Americans experienced a large 15.1 percent increase in real median household income between 1993 and 1998 and the poverty rate for African Americans of 26.1 percent is the lowest ever recorded. Real median income of Hispanic households grew by 4.8 percent in 1998, and the poverty rate dropped to the lowest it has been since 1979.

## SECTORAL DIFFERENCES

An industry breakdown of the 20 million new payroll jobs that have been created since January 1993 shows that services accounted for about 50 percent of all new jobs created, and retail trade accounted for another 17 percent (Chart 8). Although jobs in the services industry are commonly thought of as low-wage, the industry is in fact quite heterogeneous, with

predominantly high paying jobs. Of all jobs created in the services industry, nearly three-quarters have been in the professional and managerial occupations that pay above-median wages.

Across all industries, employment in the professional and managerial job categories is growing the most rapidly, and these two categories together account for over 60 percent of all net new job creation (Chart 9). They also account for almost 70 percent of all college graduates in the workforce, so rising employment in these occupations reflects the premium that our economy now places on the acquisition of skills.

While professionals and managers experienced the highest employment growth rates, the robust growth of the economy also produced strong growth rates in high-wage jobs for those without college degrees. For example, there was significant employment growth in the sales, crafts, and operative/laborer occupational categories. This included significant growth in blue-collar jobs, reflecting the relative strength of the construction, transportation/communication, and wholesale trade sectors. Since January 1993, 1.8 million new construction jobs have been added. The annual rate of job creation in construction over this period was substantially faster than it was during the expansion of the 1980s.

Chart 8: Shares of Employment Growth by Industry, Jan. 1993 - Nov. 1999

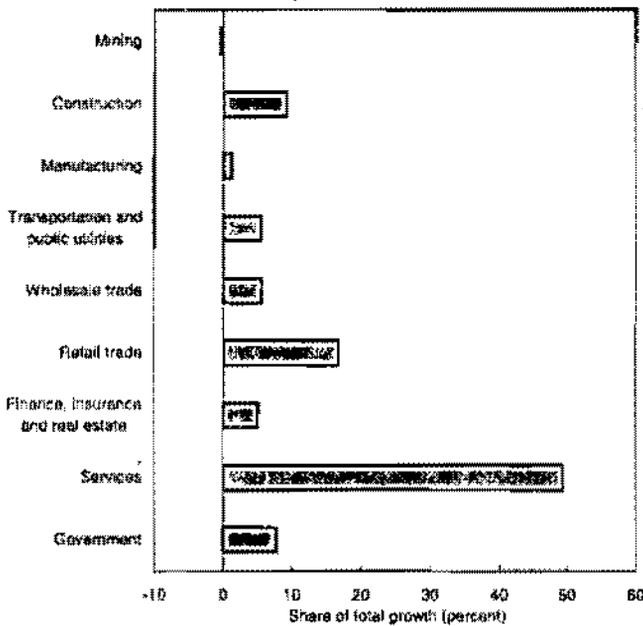
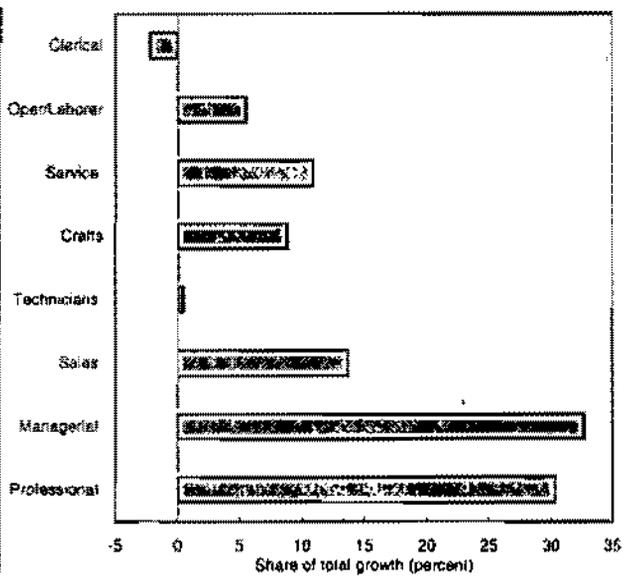


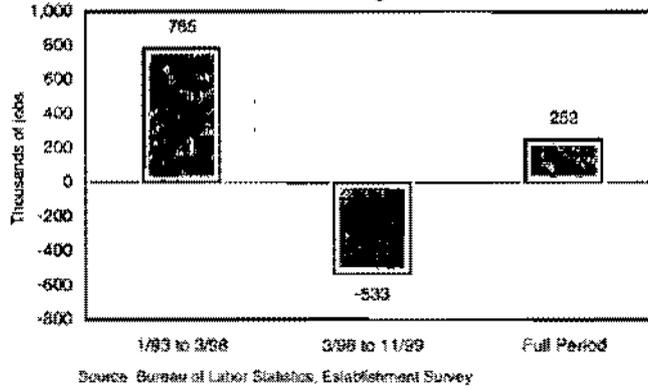
Chart 9: Shares of Employment Growth by Major Occupation, 1992-1999



After declining by 3 million jobs from an all-time peak in 1979, manufacturing jobs rose by 252,000 after January 1993. However, the pattern of job growth in this sector has been uneven since then. Almost 800,000 new jobs were added between January 1993 and February 1998, but since that time roughly two-thirds of that number have been lost. This decline reflects the loss of exports to Asia since the financial crisis there, as well as stagnant exports and rising imports more broadly that reflect the strength of the U.S. economy relative to those of our

trading partners. It is anticipated, however, that some of the lost jobs will return when foreign markets regain strength.

Chart 10: Change in the Number of Manufacturing Jobs

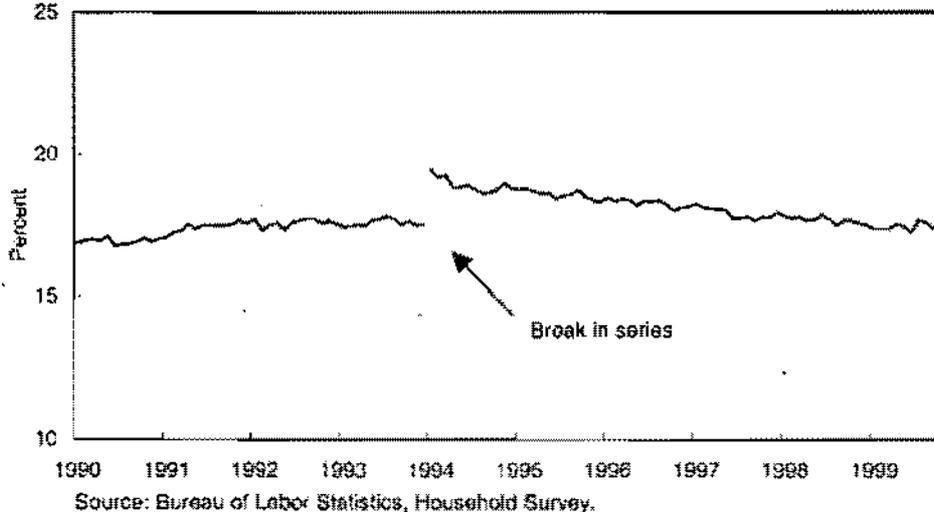


**MOST JOBS REMAIN FULL-TIME**

The majority of all jobs continue to be full-time jobs. There has been no increase in the proportion of jobs that are part-time or that are secondary jobs for workers.

The proportion of employed persons reporting part-time employment has declined slightly in recent years, falling 2 percentage points since 1994 (Chart 11). Most of the decrease in part-time employment has occurred because of a decrease in those taking part-time jobs for “non-economic” reasons, such as illness or child-care responsibilities. If the new jobs were disproportionately part-time, average hours worked per job might be expected to fall. But employer data show that average hours worked for all jobs (including the new jobs) remained roughly constant: the number of nonfarm jobs and the total number of hours worked both grew

Chart 11: Fraction of Workers with Part-Time Jobs



at about the same rate since January 1993. Thus, this evidence also suggests that most of the new jobs are full-time.

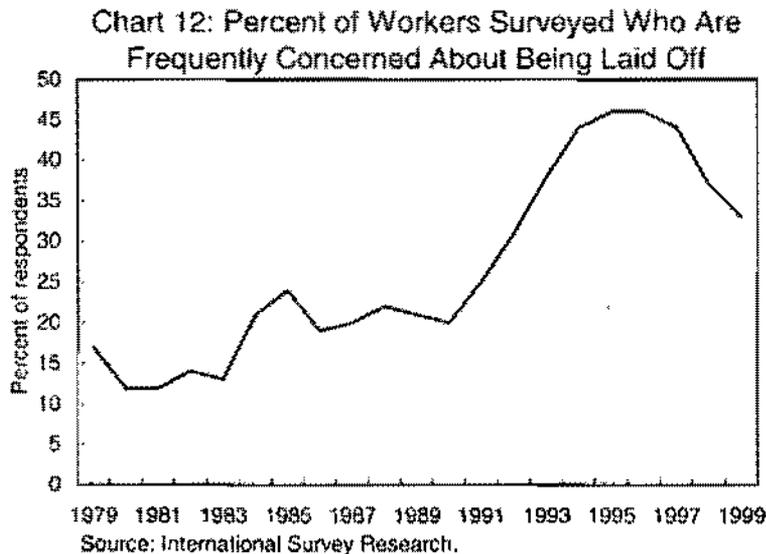
Multiple job holding might raise concerns about the quality of jobs created if Americans have to work two or more jobs to make ends meet. The data, however, do not indicate any significant change in multiple job holding. The percentage of employed persons working multiple jobs has remained about 6 percent since the late 1980s.

## DECLINING WORKER DISPLACEMENT

In an economy characterized by rapid net job growth, the volume of new jobs vastly outnumbers the volume of job losses. But in any growing economy, particular jobs will be lost as declining firms are replaced by new, growing firms or as firms reorganize to remain competitive. Unfortunately, these kinds of job losses often generate employment and earnings losses, particularly among more experienced workers, who must then bear the costs of adjusting to new jobs. An important question is, has the rapid growth of jobs in the 1990s also been accompanied by a growth in the percent of workers who have been displaced from their jobs?

The data show an increase in the probability of displacement in the late 1980s and early 1990s, and a drop thereafter. The percent of all workers with 3 or more years of tenure who became displaced from their job was 3.9 percent in the 1991-92 period, but then fell to 2.9 percent in the 1995-96 period. Because the labor market has been so robust in the 1990s, both the rate of re-employment following displacement and earnings after re-employment have been higher in this decade than at comparable points in the 1980s.

Workers' fears of job loss have also declined in recent years. Survey results show that the percent of workers who believe job loss is likely in the next year has declined since the mid-1990s, from 12 percent in 1993 to 8 percent in 1998. A different survey, of workers employed by large firms, finds that the percent of workers who are frequently concerned about being laid off rose until 1996 and declined thereafter from 46 percent to 33 percent in 1999 (Chart 12).



## VI. CONCLUSION

The labor market in the United States has performed extremely well over the past several years. Unemployment rates are as low as they have been in 29 years, and many demographic groups are experiencing their lowest unemployment (or highest employment) ever recorded. Welfare caseloads too are their lowest level in over 30 years as record numbers of people are moving from welfare to work. Real wages, which had been stagnant or declining for almost two decades, are now rising again, particularly among the lowest-wage workers. Real household income has reached a record high while poverty rates are declining. While the increased earnings inequality in the 1980s and early 1990s has not been reversed, the gains from economic growth are now being shared more widely.

Employment is growing in high-wage job categories. Indeed, over 80 percent of the 20 million jobs created since January 1993 are in categories that pay wages above the median, and 65 percent are in the top third of job categories ranked by median earnings.

Other evidence too suggests that the United States is creating a large number of high-quality jobs. The data show that there has been no increase in the share of employees who are working part-time jobs or the fraction of the workforce holding multiple jobs. Recent research has also indicated that job displacement rates and workers' perceptions of the likelihood of job loss have decreased in recent years.

Overall, the U.S. labor market is performing exceptionally well, but some sources of concern remain. Although manufacturing jobs are up since January 1993, in the wake of the Asian financial crisis more than half a million jobs have been lost since March 1998. However, strong domestic consumer demand, along with some stabilization in the economies of our trading partners, have led to faster growth of output in manufacturing in 1999. If output gains continue at their current pace, employment gains should follow.

While the declines in unemployment rates for disadvantaged groups are encouraging, the rates themselves remain too high. Recognizing that continued investments in education and training for these groups are essential to improve their labor market performance, the Clinton/Gore Administration has implemented initiatives such as the Youth Opportunity Movement, America's Job Network, and the President's GEAR UP initiative. The President's New Markets Initiative, which encourages businesses to tap consumer markets and labor pools in underserved local areas, also should contribute to continued improvements in employment rates for all of these groups. The Administration also believes that those who suffer displacement through no fault of their own should be guaranteed access to the kinds of reemployment services that will help them regain employment with minimal loss of earnings.

Finally, the Administration continues to pursue policies that reduce inequality and "make work pay" for all American workers, especially the least-educated. Minimum wage increases implemented in 1996 and 1997 have been one factor that has contributed to earnings growth for those with the lowest wages, and the President has proposed an additional \$1.00 increase in the minimum wage over a two-year period to contribute further to strong wage growth among those

who suffered the greatest deterioration in wages during the 1970s and 1980s.

The creation of 20 million jobs since January 1993 is a significant achievement. Even more encouraging is the fact that the overwhelming majority of these jobs have been good jobs. This accomplishment highlights the importance of sound policies to keep the economy strong and to invest in people.



EXECUTIVE OFFICE OF THE PRESIDENT  
COUNCIL OF ECONOMIC ADVISERS  
WASHINGTON, D.C. 20502

THE CHAIRMAN

SATURDAY, APRIL 1, 2000

CONTACT: AUDREY CHOI  
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STATEMENT BY MARTIN N. BAILY  
CHAIRMAN, COUNCIL OF ECONOMIC ADVISERS

Today, the Council of Economic Advisers released a brief report—*The Uses of Census Data: An Analytical Review*. This document provides an overview of the myriad uses of census data by many different sectors of society. The constitutionally designated purpose of the decennial census is to ensure an accurate apportionment of seats in the House of Representatives based on state populations. However, since the early 1800s policy makers have recognized that an accurate census can provide other valuable information to improve the policy process. Currently, policy makers at all levels of government, as well as private businesses, households, researchers, and nonprofit organizations, rely on an accurate census in many ways that range far beyond the single fact of how many people live in each state.

The review notes that the Federal Government uses census data in a variety of extraordinarily important ways. For example, census data provide information necessary for monitoring compliance with the Voting Rights Act, the Civil Rights Act, and other anti-discrimination and affirmative action plan requirements. Accurate census data are similarly essential for programs that identify areas eligible for housing assistance and rehabilitation loans; housing subsidies, job training and employment services; energy cost assistance; and community economic development. Accurate census data are critical to allocating funds for supplemental food programs and other social services for women and children. The accuracy of census data affects the allocation of funding for numerous Federal education programs such as vocational and adult education.

State and local governments also use census data in important ways. These include decisions on redistricting and the determination of state and local voting district boundaries; use by local government agencies trying to determine the need for new schools; and program planning for infrastructure, public health and environmental protection.

The business community relies on accurate census data for product development, marketing, and location decisions. In many cases, private social service agencies and community groups depend on census data for the delivery of health, social, and educational services. Accurate census data are vital to researchers in a wide variety of endeavors. Finally, data from the decennial Census form a crucial input into the sample designs of other national surveys that are used in calculating unemployment and inflation statistics, as well as a wide range of other statistics used in evaluating and formulating national policy.

**THE USES OF CENSUS DATA:  
AN ANALYTICAL REVIEW**

**BY**

**THE COUNCIL OF ECONOMIC ADVISERS**

**APRIL 1, 2000**

## OVERVIEW:

Constitutionally, the purpose of the decennial census is to ensure an accurate apportionment of seats in the House of Representatives based on state populations. Since the early 1800s, however, policy makers have recognized that an accurate census can provide other valuable information to improve the policy process. Today, policy makers at all levels of government, as well as private businesses, households, researchers, and nonprofit organizations, rely on an accurate census in myriad ways that range far beyond the single fact of how many people live in each state. This report provides a brief overview of these uses.

### I. FEDERAL GOVERNMENT USES

Monitoring compliance with Federal law. Questions on ancestry, gender, race, Hispanic origin, language spoken at home, place of birth, citizenship and year of entry provide critical information for monitoring compliance with the Voting Rights Act, the Civil Rights Act, and other anti-discrimination and affirmative action plan requirements.

Assessing economic well being. Accurate census data are critical for developing accurate assessments of economic well-being for the Nation as a whole as well as for different racial, ethnic, and regional populations.

Assisting families and low-income populations. Accurate census data are critical for programs that aim to identify areas eligible for housing assistance and rehabilitation loans; housing subsidies; job training and employment services; energy cost assistance; and community economic development. Accurate census data also are critical to allocating funds for supplemental food programs and other social services for women and children.

Assisting the elderly, the disabled, and veterans. Accurate census data are required to determine and forecast the number of persons eligible for benefits based on age, such as Social Security and Medicare and to forecast the number of persons eligible for Social Security disability benefits. They are necessary to develop baselines for reducing employment barriers faced by persons with disabilities and to allocate funds for vocational education and rehabilitation programs for disabled workers. Accurate census data are required to determine where to build veterans hospitals, to establish baselines for veteran population projections, and to report to Congress on the needs of selected groups of veterans, such as Vietnam-era and female veterans.

Education. The accuracy of census data affects the allocation of funding for numerous Federal education programs such as vocational and adult education.

Other. Census data on farm residence help USDA assess housing conditions and needs on farms. Information on place of work and journey to work helps the Federal government formulate national transportation and energy-use policies.

## II. STATE AND LOCAL GOVERNMENT USES

Drawing legislative boundaries. Decisions on redistricting and the determination of state and local voting district boundaries require accurate census data.

Education. Accurate census data are critical to local government agencies and school boards trying to determine the need for new schools, including what type (elementary, middle, or high school).

Infrastructure, public health and environmental protection, and program planning. Numerous state and local government planning responsibilities depend on accurate census data, including determining the need for schools, highways, public transportation, hospitals, libraries, and police and fire protection. Water and sewage disposal information helps identify needs for water purification, treatment, or sewage facilities. Farm data are used to allocate funds to land grant colleges, for cooperative extension activities, and for grants to agricultural experiment stations. Accurate census data make for better planning and implementation of a variety of programs, including education and training, health, education, and social services. Accurate census data help public health officials perform tasks such as locating areas in danger of ground water contamination and waterborne diseases. They help environmental agencies analyze energy consumption, identify conservation opportunities, and forecast energy needs.

Disaster relief. Accurate census information helps local governments predict transportation needs in disaster recovery and contingency planning initiatives. The data help governments and relief agencies in assessing the amount of displacement and the shelter and recovery needs of populations affected by natural disasters such as floods, hurricanes, tornadoes, and earthquakes.

Assisting families, low-income populations, the elderly, the disabled, and veterans. Accurate census data are necessary for appropriate state implementation of Federal programs for these groups in areas such as housing assistance, energy cost assistance, community development, and employment and social services. Accurate census data also help city and community officials pinpoint areas that need special programs such as meals-on-wheels and social service agencies identify special needs such as telephone access in case of medical emergency.

### III. BUSINESS USES

Product development and marketing. Accurate census data on where people of different ages live helps businesses of all kinds to develop and market their products. For example:

Manufacturers of baby products such as baby food, clothes, diapers, and toys, and manufacturers of maternity clothes and greeting cards need accurate information on children as they develop and market their product lines, as do television producers of children's programs and planners of large family amusement parks.

Architects, contractors, and real estate firms need accurate information on the size and composition of households and their housing as they design, build, and sell houses and apartments.

Producers of consumer durables such as television sets, washing machines, and home furnishings benefit from accurate information on households and their characteristics.

Accurate census information on language spoken at home helps television and radio stations define foreign language service areas and marketing companies develop products and services tailored to those who speak languages other than English.

Forecasting demand. Businesses forecasting demand for their products require accurate census data to develop these forecasts. Utilities depend on accurate census data to develop long-range plans for new facilities and networks.

Location decisions. A variety of business location decisions are improved by accurate census data. Examples include: businesses seeking to pinpoint areas to gauge potential markets for locating new stores, plants, or warehouses; businesses interested in finding sites having a labor force with certain education characteristics; building developers and contractors selecting sites for new housing developments; and businesses seeking to pinpoint areas of a city for locating new restaurants specializing in particular types of ethnic food.

Providing equal opportunities and achieving compliance with Federal law. Accurate census data help businesses set up and monitor affirmative action and anti-discrimination plans. And they help companies to comply with anti-discrimination legislation such as the Equal Employment Opportunities Act.

**Examples of Business Use of Census Data.** Newspaper accounts and census questionnaires provide examples of businesses that use census data.

Numerous small businesses responded to a request for examples of business uses of census data, but so too did some large companies. For example, McDonald's reported that for the past 20 years they had relied on decennial censuses to perform market analysis and determine site locations for new restaurants. The company also has used the Census Bureau's TIGER Line files (a digital map database) to merge their own proprietary information with the detailed social and economic data from the decennial census for small geographic areas for use in its corporate planning.

Around the time of the last census, the *Washington Post* ran a lead article in its Business section entitled, "For Business, Census is a Marketing Data Motherlode." The article noted how retailers such as K mart use the census to fine-tune neighborhood promotions; how Safeway used it to study potential sites for new stores; and how Proctor & Gamble used it to estimate sales of Pampers a decade out. The article also described how banks use census data to provide a basic demographic sketch of the neighborhoods around each of their branches.

Examples of uses of census data culled from a sample of monthly activity reports from the Census Bureau's Regional Office Information Services Program include the following:

- An independent television station in Philadelphia that is using ZIP code level data for a viewer profile to design program and advertising strategies.
- A foreign language newspaper distributor seeking increased circulation in New York, New Jersey, and Connecticut used census data to list languages spoken at home in each county of the three states.
- A major advertising firm used census data on languages spoken at home in the Chicago area to develop a new advertising campaign for a client.
- A district sales office for an automobile manufacturer is using ZIP Code and city profiles for a market analysis that will be used to help local dealerships develop sales campaigns.
- A real estate company in Colorado is using census data to determine which languages to use on a series of instructional tapes on buying and selling real estate.

#### IV. COMMUNITY GROUP USES

Delivering health, social, and educational services. In many cases, private social service agencies and community groups have the same needs for accurate census data as state and local government agencies that provide social services. Private groups benefit from accurate census data to set up and administer assistance programs for children, teens, and older persons; to provide services that reflect

cultural differences; to teach English, and conduct voter registration drives; to provide housing and job training for displaced homemakers; to provide veteran support services and promote the need for veteran services and facilities.

Disaster relief. As with social services, non-governmental organizations benefit from accurate census information in much the same way as governments when planning for and responding to disasters like hurricanes, tornadoes, floods, and earthquakes.

## V. INDIVIDUAL USES

Location decisions. Individuals can make better choices about home-buying, job relocation, or starting a small business if they can take advantage of accurate census information.

## VI. ACADEMIC RESEARCH USES

Accurate census data are vital to researchers in a wide variety of endeavors. Some of the most important needs include the following:

Any research requiring comprehensive information at the neighborhood level must rely on the census, with its tract level information.

Research on ethnicity or other research requiring reasonable numbers of observations of relatively small population groups must rely on the census.

The decennial census is the only consistent source of data for researchers examining trends over periods of decades.

The census is the best source of information for research on immigration and mobility.

## VII. USES BY OTHER SURVEYS AND DATA COLLECTION

Serving as an important base for other surveys. Data from the decennial Census form a crucial input into the sample designs of other national surveys such as the Current Population Survey (the source of the nation's unemployment statistics), the Survey of Income and Program Participation, the National Crime Victimization Survey, the Survey of Recent College Graduates, the Consumer Expenditure Survey (the source for expenditure weights used in calculating the Consumer Price Index), and statistics compiled by the National Center for Educational Statistics (NCES) and the National Center for Health Statistics (NCHS).

Calculating rates. Data from other sources are combined with data from the Census to compute rates of various indicators. For example, NCHS uses its own survey data combined with Census data to calculate numerous vital statistics and rates for health service utilization. Similarly, the Bureau of Justice Statistics uses Census data to calculate imprisonment and victimization rates, and the Federal Bureau of Investigation uses Census data to calculate crime rates.

Creating national estimates. Census data are used to adjust surveys to be nationally representative. For example, the NCES uses Census data to make its survey results on education indicators reflect the total United States population.

**Case Study: The Current Population Survey.** Information on the labor force, employment, and unemployment is derived from the monthly Current Population Survey (CPS). The March supplement to the CPS provides information for calculating the poverty rate and measures of household and family income. The accuracy of the CPS depends critically on the accuracy of census information, because all of the population "controls" for a decade are derived from the previous decennial census. These population controls are then updated monthly using estimates of births, deaths, and migration. The BLS has incorporated information about the undercount in the 1990 census into the CPS.

BLS Commissioner Abraham has advised Census Director Prewitt that if the BLS had not incorporated the undercount, and, instead, used the official 1990 census population estimates used for apportionment, its estimate of the working age population would have been too low by 2.1 million. Labor force information for persons of Hispanic origin and blacks would have been affected disproportionately because these groups make up three-fourths of persons not counted in the official statistics. Without information on the undercount, BLS says its estimates of the overall level of employment and unemployment would have been too low, and the geographic and demographic distribution of unemployment (and other measures) shown in their data would have been inaccurate. Moreover these errors would have persisted for (at least) the next 10 years.

Unemployment statistics from the CPS are included in the allocation formulas used to distribute funds in many Federal programs. Use of inaccurate population estimates could cause a shift of several percent in a state's allocation. Many Federal programs are tied to the poverty rate, which could also be affected by inaccurate population counts. This and other information derived from the CPS affects evaluations of such initiatives as welfare reform, health insurance legislation, and minimum wage legislation.

EXECUTIVE OFFICE OF THE PRESIDENT  
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WASHINGTON, D.C. 20502

FOR IMMEDIATE RELEASE  
Thursday, May 11, 2000

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OPPORTUNITIES AND GENDER PAY EQUITY  
IN NEW ECONOMY OCCUPATIONS

A Report by the Council of Economic Advisers

The President today announced a new Council of Economic Advisers report on women's progress in the new economy, focusing on information technology (IT) fields. This report notes that IT is a highly paid, dynamic, and rapidly growing sector of the labor market, with job growth that is far faster than the economy at large. However, challenges remain to enable women to share fully in the benefits of IT jobs. Currently, women are significantly underrepresented in IT, especially in the higher-paid occupations and much like in the economy at large, a gender earnings gap exists within IT jobs. The pay gap for women narrows dramatically as women obtain more education. Policies that encourage greater numbers of college-educated women to choose IT-related fields of study, and firm practices that encourage these women to remain in IT occupations, can be expected to help reduce the gender pay gap in IT.

Among the key findings of the report are:

- The field of Information Technology (IT) has provided extraordinary job growth in the United States. Since 1983, employment in five core IT-related occupations has grown by 81 percent—an increase that greatly exceeded the 32 percent employment growth for the general economy.
- Employment in the five IT-related occupations provides excellent pay for both men and women. For example, the median annual earnings of women employed full-time in IT is over \$38,000—about 60 percent higher than the \$23,900 earned by women working outside of IT.
- However, an important gender employment gap exists in these IT occupations. Women are currently underrepresented, making up only 29 percent of these occupations, compared with 47 percent of the workforce in the general economy.
- Furthermore, women are most underrepresented in the IT occupations where pay is the highest—for example, in electrical engineering, which is just 10 percent female. This occupational disparity contributes to a lack of women in the highest paid jobs. While 18 percent of men employed in IT earn \$70,000 or more, only 8 percent of women earn this much.

- There is also a gender pay gap within IT occupations. A woman with median earnings in IT earns about 22 percent less than a man with median earnings. Part of this gap stems from differences in age, education, race, and occupational composition. Taking these factors into account lowers the gap to 12 percent—a gap similar to that estimated for the labor market more generally.
- The gender pay gap narrows sharply for women in IT who have higher levels of education. Women who do not have bachelor's degrees face a pay gap of 15 to 21 percent, after adjusting for demographics and occupation. By contrast, women with a bachelor's degree or more face a 9 to 11 percent gap. In IT jobs, education plays an even more important role in narrowing the pay gap than in the economy at large.
- Reducing the pay gap in IT will require a relative increase in the proportion of young women who choose educational programs that prepare them for the higher-paying occupations in IT. Policies that assist women in their career development, such as on-the-job training and mentoring, can also enhance women's investment in these occupational skills and their retention rates, and can thus be expected to help close the gender wage gap.

**OPPORTUNITIES AND GENDER PAY EQUITY  
IN NEW ECONOMY OCCUPATIONS**

**May 11, 2000**

**A Report by  
The Council of Economic Advisers**

## OPPORTUNITIES AND GENDER PAY EQUITY IN NEW ECONOMY OCCUPATIONS

### EXECUTIVE SUMMARY

- The field of Information Technology (IT) has provided extraordinary job growth in the United States. Since 1983, employment in five core IT-related occupations has grown by 81 percent—an increase that greatly exceeded the 32 percent employment growth for the general economy.
- Employment in the five IT-related occupations provides excellent pay for both men and women. For example, the median annual earnings of women employed full-time in IT is over \$38,000—about 60 percent higher than the \$23,900 earned by women working outside of IT.
- However, an important gender employment gap exists in these IT occupations. Women are currently underrepresented, making up only 29 percent of these occupations, compared with 47 percent of the workforce in the general economy.
- Furthermore, women are most underrepresented in the IT occupations where pay is the highest—for example, in electrical engineering, which is just 10 percent female. This occupational disparity contributes to a lack of women in the highest paid jobs. While 18 percent of men employed in IT earn \$70,000 or more, only 8 percent of women earn this much.
- There is also a gender pay gap within IT occupations. A woman with median earnings in IT earns about 22 percent less than a man with median earnings. Part of this gap stems from differences in age, education, race, and occupational composition. Taking these factors into account lowers the gap to 12 percent—a gap similar to that estimated for the labor market more generally.
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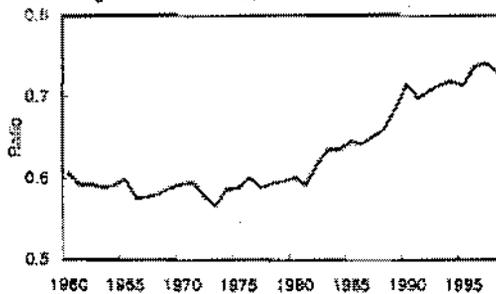
# OPPORTUNITIES AND GENDER PAY EQUITY IN NEW ECONOMY OCCUPATIONS

## 1. INTRODUCTION

The progress made by women in the paid labor market has been one of the most important economic changes of the 20th century. The past century has seen an enormous increase in the proportion of women who work for pay. In 1999 about three-fifths of the adult female population were in the labor force (either employed or looking for work), a rate three times as high as the rate in 1900. And far more women today enter previously male-dominated professions.

The opening of opportunities in the labor market for women has gone hand in hand with improvements in their labor market outcomes. One way of assessing this progress is in the earnings of women relative to men (see Chart 1). In 1960 a woman with median earnings was paid about 40 percent less than a man with median earnings (based on annual earnings of full-time, full-year workers). This pay gap, which resulted in an earnings ratio of about 0.60, remained little changed

Chart 1. Ratio of Female to Male Median Annual Earnings for Full-Time, Year-Round Workers



Source: Department of Commerce (Bureau of the Census).

over the 1960s and 1970s, but subsequently narrowed, so that the earnings ratio was 0.73 for 1998 (the last year for which data on full-year workers is available). In 1999 a slightly different measure of pay equity—the median weekly earnings—indicated that the median full-time female worker earned about 77 percent of a man's earnings.

This report provides evidence about the source of this pay gap by focusing on a narrow, but increasingly important, subset of occupations in the labor market—occupations related to Information Technology (IT). The report's focus on IT stems

from the particularly visible role IT has played in the new economy. IT is a highly paid, dynamic, and rapidly growing sector of the labor market. In fact, employment in the five core IT occupations grew 81 percent since 1983, dwarfing the 32 percent growth in the economy at large. Women in this sector have earnings that considerably exceed those outside IT. For example, a typical woman working full-time in the IT occupations we study earns \$38,000 annually, compared to \$23,900 in other occupations.<sup>1</sup>

However, challenges still remain to enable women to share fully in the benefits of IT jobs. Currently, women are significantly underrepresented in IT, especially in the higher-paid occupations. In addition, much like in the economy at large, a gender earnings gap exists within IT jobs; weekly pay in the IT occupations is 23 percent less for women than for men—about the same as in the rest of the labor market. The pay gap for women with college education is significantly smaller than for women with less education. A distinctive feature of the IT sector is that education plays an even more important role in narrowing the pay gap than in the economy at large. Policies that encourage greater numbers of college-educated women to choose IT-related fields of study, and firm practices that encourage these women to remain in IT occupations, can be expected to help reduce the gender pay gap in IT.

<sup>1</sup> All annual earnings figures in this report are based on hourly earnings calculated from the CPS (described later in the text) translated into yearly earnings for a full-year worker employed 40 hours per week.

Studying the sources of this pay gap in IT is useful as a means of understanding the pay structure in this rapidly growing sector, and is instructive for illuminating gender differences in pay in the labor market more generally. Section 2 provides a brief background on the IT sector, and Section 3 reports a statistical analysis of the gender wage gap in IT. Section 4 provides a discussion placing results in a broader context. Section 5 concludes.

## 2. THE IT WORKFORCE

By most accounts the U.S. economy is experiencing a technological transformation that has changed the nature of work and placed a premium on a new set of skills. While this transformation has affected many jobs in the economy, there is a core set of occupations at the forefront of the revolution—occupations in information technology. Although there is no exact definition of an IT worker, there are a number of occupations that quite clearly fall into the general domain of IT.<sup>2</sup> The analysis in this report considers a number of core IT occupations for which data are available from the Current Population Survey (CPS), a large nationally representative sample with information on workers' weekly earnings, demographic characteristics, and occupation. These core IT occupations are:

- electrical and electronic engineers;
- computer systems analysts and scientists;
- operations and systems researchers and analysts;
- computer programmers; and
- computer operators.

Definitions of these occupations are provided in Box 1.

### Box 1. Descriptions of IT Occupations

*Electrical and Electronic Engineers* design, develop, test, and supervise the manufacturing of electrical and electronic equipment. These engineers specialize in different areas such as power generation, transmission, and distribution; communications; computer electronics; and electrical equipment manufacturing—or a subdivision of these areas. They design new products, write performance requirements, and develop maintenance schedules. They also test equipment, solve operating problems, and estimate the time and cost of engineering projects.

*Computer Systems Analysts, Engineers, and Scientists* is a category which includes a wide range of computer-related occupations. Systems analysts solve computer problems and enable computer technology to meet the individual needs of an organization. Computer engineers work with hardware and software aspects of systems design and development. Computer scientists include a wide range of computer professionals who design computers and the software that runs them, develop information technologies, and develop and adapt principles for applying computers to new uses.

*Operations Researchers and Analysts* conduct research and perform analyses to support management in increasing the performance of an organization. Managers begin the process by presenting the symptoms of an operations-related problem to the analyst, who then formally defines the problem

<sup>2</sup> For a further discussion of these and related issues see Carol Ann Meares et al., "The Digital Workforce: Building Infotech Skills at the Speed of Innovation," U.S. Department of Commerce, Office of Technology Policy, June 1999.

and selects the most appropriate analytical technique to examine it. Upon completion of the analysis, the analyst presents management with recommendations based on the results of the analysis.

**Computer Programmers** write, test, and maintain the detailed instructions, called programs, or software, that computers must follow to perform their functions. In many larger organizations, programmers follow descriptions that have been prepared by software engineers or systems analysts. The transition from mainframe to personal computers has blurred the once rigid distinction between the programmer and the user. Increasingly, adept users are taking over many of the tasks previously performed by programmers, such as writing simple programs to assess data or perform calculations.

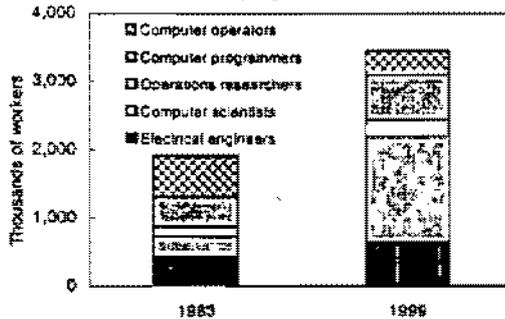
**Computer Operators** oversee the operation of computer hardware systems to ensure that they are being used most efficiently. These systems include mainframes, minicomputers, or networks of personal computers. Computer operators must anticipate problems and take preventative action, as well as solve problems that occur during operations. Increased automation and other technological advances are shifting the responsibilities of many computer operators to areas such as network operations, user support, and database maintenance.

Source: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2000-01 Edition*, 2000.

### IT Occupations: High Wages and Rapid Growth

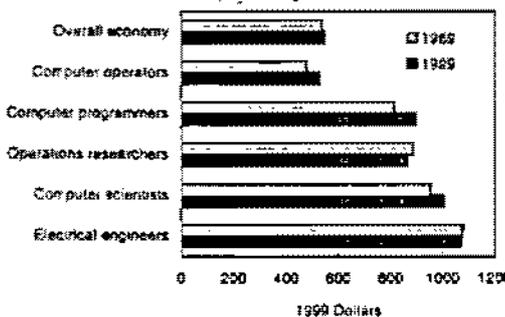
The combined employment level in these five occupations has grown by almost 81 percent since 1983 (Chart 2), with particularly strong growth in the last five years. In contrast, total employment in the overall economy grew by just 32 percent since 1983. Today these five IT occupations comprise approximately 3.4 million workers (about 2.6 percent of all employed workers). Employment projections by the Bureau of Labor Statistics suggest that rapid growth for computer-related occupations is expected to continue well into the 21<sup>st</sup> century.

Chart 2. Workers Employed in IT Occupations



Source: Department of Labor (Bureau of Labor Statistics).

Chart 3. Median Weekly Earnings of Full-Time Workers



Source: Department of Labor (Bureau of Labor Statistics).

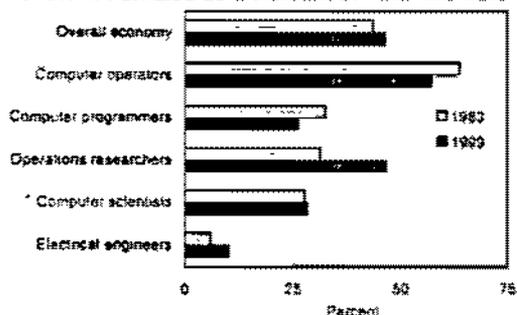
Looking at specific occupations, the most notable feature is the strong and steady growth of computer systems analysts and scientists. In 1983, this occupation had just over a quarter of a million workers, or 14 percent of the total IT workforce. By 1999, there were 1.5 million workers in this occupation, or 45 percent of the total. Also notable is the decline in the number of computer operators, perhaps stemming from changes in computing technology.

In addition to experiencing high employment growth, these occupations are also characterized by high wages. Median weekly earnings for four of the five IT occupations—all but computer operators—easily exceeded median weekly earnings for all workers in 1999 as well as in 1989 (Chart 3). The median earnings for the highest-paid IT occupation—electrical and electronic engineers—were almost twice that of all workers (\$1,073 vs. \$549 in 1999).

## Female Representation in IT

As in many other highly technical occupations, women are underrepresented in IT. In 1999, women represented 46.5 percent of all employed workers, but only 28.9 percent of the IT workforce (Chart 4). The percentage of women in these occupations has actually been declining since 1986, when it was 40.2 percent. These aggregate percentages, moreover, mask considerable variation across the five IT occupations. In 1999, women were particularly underrepresented in the higher-

Chart 4. Females as a Percent of Total Workers



Source: Department of Labor (Bureau of Labor Statistics).

paying IT occupations. For example, in electrical and electronic engineering—the highest-paid of these IT occupations—women made up just 10.1 percent. In comparison, women made up 57.3 percent of computer operators—the lowest paid IT occupation. Part of the overall downward trend in female representation in IT can be accounted for by the general shift in employment away from computer operators towards occupations in which women are less well represented. Programs geared towards increasing the role of women in technical fields are discussed below.

### 3. AN ANALYSIS OF THE GENDER WAGE GAP IN IT

Although women in IT earn far more than women in other sectors, the median weekly earnings of women who work full time in IT is about 23 percent less than men's—about the same pay gap as is experienced in the labor market generally. A small part of this difference is plausibly due to women in the sample working fewer hours than men, but use of a measure of earnings per hour changes the gender pay gap only modestly—to about 22 percent.

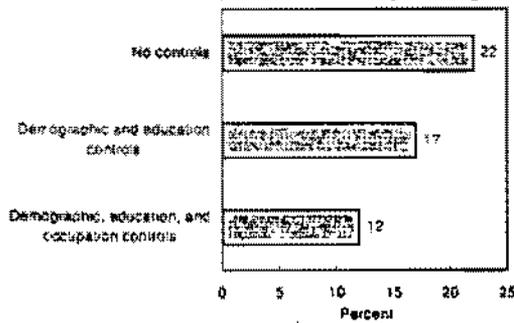
The objective of this analysis is to explore the factors that underlie this hourly pay gap. A portion of the gap is due to differences in the characteristics of men and women, such as education and age. Regression analysis can control for these differences, and thus compare the wages of similar men and women—of those with comparable education and age.<sup>3</sup>

The basic pay difference between women and men—the 22 percent pay gap—diminishes to 17 percent after controlling for educational attainment, age, and race (see Chart 5 and the Appendix Table).<sup>4</sup> Women tend to be less well educated and slightly younger than men in IT, thus controlling for these differences narrows the gap slightly. This gap might also narrow further if data were available on women's labor force experience (rather than age), since lower levels of experience at each age level could limit women's pay growth relative to men's.

<sup>3</sup> In particular, a series of earnings regression models are estimated using a pooled sample of the 1997, 1998, and 1999 monthly CPS data (with respondents in 1997 and 1998 included only in their last survey months). The dependent variable is the log of individuals' per hour earnings, and explanatory variables control for individual characteristics. The analysis focuses on full-time workers aged 20 or older who are not self-employed. Earnings are converted to December 1999 dollars using the monthly CPI-U. The sample size is 6,650. All coefficients have been standardized so that they can be interpreted as the *percent difference in earnings* associated with the explanatory variable. (That is,  $e^b - 1$  is reported, where  $b$  is the estimated coefficient from the regressions.)

<sup>4</sup> The results reported in the Appendix Table were estimated using median regression, rather than ordinary least squares (OLS). One advantage of median regression is that it allows one to safely ignore earnings top-coding of the CPS data (about 1.7 percent of the sample are top-coded). A second advantage is that this allows easy comparison to the other quantile regressions discussed below. Differences in "average" or "typical" individuals, described in the text, always refer to differences in the median. The same regressions were estimated using OLS, leading to similar inferences.

Chart 5. Gender Gap in Median Hourly Earnings



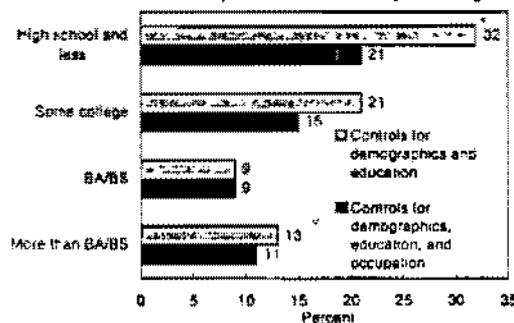
Source: CEA tabulation of monthly CPS data.

therefore a rough measure of the extent of gender discrimination in the IT labor market. However, this measure may underestimate the true extent of pay discrimination. If capable women are promoted into higher-paying computer-related occupations at lower rates than men, then looking at the pay differentials between men and women within each occupation doesn't reveal the extent of pay discrimination—the glass ceiling limits women's promotions and thus elevates the pay disparity between women and men overall.<sup>6</sup>

### Differences in the Pay Gap Across Educational Levels

The average gender pay gap at the median—22 percent—masks striking differences in the gap between men and women at varying levels of education. Among women and men who have a high school degree or less, the pay gap is 21 percent even after accounting for differences in demographics and occupation. The comparable gap for workers with some college education is 15

Chart 6. Gender Gap in Median Hourly Earnings



Source: CEA tabulation of monthly CPS data.

Another factor affecting the differential pay of men and women in IT is that women tend to be employed in IT occupations that are lower paying. For example, women are more likely to be computer operators than men are, and women are less likely to be electrical and electronic engineers. Controlling for these occupational differences within the IT sector explains a significant portion of the pay gap—the gap falls to 12 percent after adding controls for occupational composition.<sup>5</sup> It may be tempting to conclude that this estimated 12 percent pay gap is

percent. Since 16 percent of all women in IT have a high-school degree or less, and an additional 30 percent have some college (but no bachelor's degree), the persistently large pay gap between these women and men is certainly noteworthy. For women with higher levels of education, in contrast, the gender pay gap is lower—about 9 to 11 percent (Chart 6). This demonstrates the potential for education to promote greater pay equity for women. In this regard, education is particularly important in IT occupations. Our analysis suggests that education plays a more important role in narrowing the pay gap in IT jobs than in the economy at large.

<sup>5</sup> This 12 percent "unexplained" pay gap is the same as one study featured in the Council of Economic Advisers report, "Explaining Trends in the Gender Wage Gap," 1998.

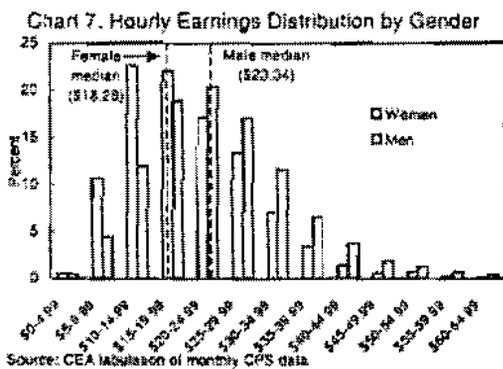
<sup>6</sup> To illustrate this point, consider a hypothetical example. Suppose that a firm pays all of its programmers—men and women alike—the same wage. This firm also pays all systems analysts—again, men and women alike—a higher wage. Suppose further that this firm discriminates against women in promotion, so that a higher fraction of men than women are promoted from the programming positions into the higher-paying systems analyst positions. Using a regression approach that looks at pay only within occupations (as we did to calculate the 12 percent reported above), there would be no evidence of pay discrimination within occupations in this hypothetical firm, even though in fact pay discrimination exists—operating through lower promotion rates for women.

## The Pay Gap Across the Pay Distribution

The IT sector is well known for its high average pay rates, but also for paying exceptionally high wages to a substantial number of people, such as people in jobs with successful start-up companies. In fact, in the IT occupations evaluated here, 18 percent of men and 8 percent of women have earnings that translate to more than \$70,000 annually. Outside the IT sector far fewer people earn these high income levels—only 7 percent of men and 2½ percent of women. Similarly, 10 percent of men and 4 percent of women in IT earn more than \$80,000, compared with 4 percent of men and 1½ percent of women working outside the IT sector.

However, these same numbers indicate that in IT, as in the rest of the labor market, women do not fully share in high-earnings jobs. Women, in fact, are concentrated at the other end of the distribution; 20 percent of all women in IT have earnings that translate to \$24,900 or less per year,

but only 9 percent of men fall in this earnings category. (Chart 7 shows the earnings distributions for men and women.)



*Sources of Pay Disparity at the Low and High Earnings Levels.* At every point of the earnings distribution, women earn less than men. Among low-earning workers there is a large gap of 24 percent, while among high-earning workers the gap is a somewhat smaller 17 percent. Intriguingly, however, once demographics, education, and occupation are taken into account, there is a persistent “unexplained” 12 to 13 percent gender pay

gap at the low end of the earnings distribution, as well as at the median, and high end. The fact that the same gap persists at the upper end of the earnings distribution indicates that occupational choice can only partially explain why even highly-compensated women earn less than men.<sup>7</sup>

## Summary of Statistical Results

Analysis indicates that at the median, the gender pay gap in IT of 22 percent narrows to 17 percent among individuals with similar age, race, and education, and to 12 percent when also accounting for gender differences in occupation. Other notable findings that emerge from the statistical analysis are:

- While women in IT generally earn considerably less than men, this gap is much smaller for women who are college educated. Among IT workers with no college education, women earn about 21 percent less than men with similar demographics and occupations. In contrast, the gap for those with a bachelor’s degree or graduate degree is 9 to 11 percent.
- Much of the wage gap in IT is the consequence of differences in occupational composition by gender. Accounting for occupation differences (along with demographics and education) the wage gap closes to 12-13 percent for workers receiving low earnings, median earnings, and high earnings.

<sup>7</sup> These results are based on quantile regression results that compare women at the 80<sup>th</sup> percentile of their distribution to men at the 80<sup>th</sup> percentile of their earnings distribution, introducing controls for age, education, race, and occupation, and on a similar quantile regression at the 20<sup>th</sup> percentile. See the Appendix table.

#### 4. LOWER REPRESENTATION OF WOMEN IN TECHNICAL FIELDS

The results above indicate that women are paid less than men in IT occupations, even after accounting for observed factors that influence pay. As noted, this gap is not by any means unique to the IT sector. It largely mirrors what happens in the economy at large and is similar to trends in the broad fields of science and engineering, where women are also greatly underrepresented, particularly in the highest paying jobs. A portion of the difference in pay in technical fields is a consequence of this underrepresentation, so it is important to understand why this disparity occurs.

Some of the gender differences in representation in scientific or IT occupations are due to the differences in the proportion of men and women who prepare for technically-oriented careers. While the evidence suggests that men and women are receiving the same level of science and math preparation in high school, among those earning bachelor's degrees women were much less likely than men to earn a degree in science and engineering. In 1996, 41 percent of men and 29 percent of women selected degrees in this area. The percentage differences are even larger when focussing specifically on engineering (9.4 percent versus 1.7 percent). A recent study by the Department of Commerce concluded that "increasing women's participation in the education pipeline that leads to many IT jobs may require efforts to get more college-bound women to choose science and engineering as a field of study, especially computer science and engineering disciplines."<sup>8</sup> A number of federal programs are now in place to facilitate the entry of women into these fields (see Box 2).

##### **Box 2. Federal Programs to Increase Participation by Women in Science, Technology, and Engineering**

The federal government has developed a range of programs aimed at promoting increased participation of women in science, technology and engineering. Some of these programs are national in scope, while others encourage greater participation by women within specific agencies. Examples include:

**National Aeronautical and Space Administration WISE program.** The WISE (Women in Science and Engineering) program at NASA is an undergraduate academic and research program whose goal is increasing the number of highly qualified minority and disadvantaged women in scientific and technical careers. Its strong mentoring and research components are designed to encourage students to pursue graduate studies and/or advanced degrees. Participants are provided opportunities for research experiences at all NASA Centers, the Jet Propulsion Laboratory, universities, and other federal laboratories.

**Environmental Protection Agency WISE council.** The goals of the WISE council are to increase the number of female scientists and engineers at EPA through recruitment and community outreach, to update and expand their skills, to enhance their careers and work environment, and identify barriers to professional advancement and take action to correct inequities that may exist. The council represents the concerns of all of EPA's women scientists and engineers.

**National Science Foundation Program for Gender Equity in Science, Mathematics, Engineering and Technology.** This program funds education research in factors that encourage or discourage young women's interest, knowledge, and involvement in science and technology, from kindergarten through college. At the undergraduate level, for example, research may look at strategies for recruitment and retention of young women in engineering and computer science. Research grants

<sup>8</sup> Carol Ann Meares et al., "The Digital Workforce: Building Infotech skills at the Speed of Innovation," U.S. Department of Commerce, Technology Administration, Office of Technology Policy, June 1999. See p. 95.

are awarded through a national competition, with most grantees being educational institutions and non-profit research organizations.

**National Science Foundation POWRE program.** The Professional Opportunities for Women in Research and Education (POWRE) program helps women who want to re-enter science careers improve their academic standing or advance to tenure track positions. The program supports more than 200 women in science and engineering by providing funding for visiting researchers, research and educational enhancement. It also supplements existing NSF-funded activities that promote academic career advancement of women in science, technology and engineering.

**National Institutes of Health Re-entry program.** The Re-entry program focuses on workers who had to withdraw from their careers because of family responsibilities such as caring for children or an ill family member. Supplements to existing research grants provide salary support and some research costs to assist the re-entering scientist in the transition back to the laboratory, under the sponsorship of a mentor. For more senior re-entering scientists, the mentored Research Scientist Development Award allows scientists to apply for support for a period of supervised training to update their skills and knowledge.

Sources: National Science and Technology Council, "Ensuring a Strong U.S. Scientific, Technical, and Engineering Workforce in the 21<sup>st</sup> Century," April 2000. National Science Foundation, "Program for Gender Equity in Science, Mathematics, Engineering, and Technology," October 1998.

Among those women who do prepare for and enter technically-oriented occupations, exit rates are often high, further reducing the overall representation of women working in these occupations. In general both male and female exit rates from the science and engineering occupations are higher than for other similar professional occupations (such as law and health professions), but women exit from science and engineering at twice the rate of men. One reason that is cited by women for their higher exit rate is the greater responsibilities of women for family care. Women were also roughly twice as likely as men to have made location decisions and sacrificed career opportunities to satisfy a spouse's career. Thus, some women make the choice to compromise their careers by choosing occupations that are more family-friendly.<sup>9</sup> The results in this report—that pay disparity persists broadly across occupations, educational attainment and pay levels—suggests that there are many factors aside from personal choices that contribute to pay inequity. Nonetheless, policies that address these family needs are likely to raise retention rates, thereby improving career prospects for women.

Women also cite differential treatment as a primary reason for their higher exit rates relative to men. Of college-educated women who leave science, 19 percent state that they left in part because "science and engineering are unfriendly to women." To explore this general response more fully, 52 women in science and engineering were interviewed at length.<sup>10</sup> Based on these interviews, the study concludes that successful women who remain in science and engineering almost always have important mentors supporting them, whereas those lacking mentors are more likely to exit the field. More than half of women in the study also said they perceived that the performance standards were more stringent for women than for men. These perceptions, whether accurate or not, influence their desire to stay and to invest in the ongoing development that is necessary in science-related fields.<sup>11</sup>

<sup>9</sup> Anne Preston, "Sex, Kids, and Commitment to the Workplace: Employers, Employees and the Mommy Track," working paper, 1999.

<sup>10</sup> Anne Preston, "Occupational Exit of Men and Women from Science and Engineering Jobs: A Comprehensive Study," working paper, 1997. Evidence is from a sample of college-educated men and women who graduated from a large state college from 1960-1991.

<sup>11</sup> Although direct evidence of discrimination in hiring and promotion is generally hard to come by, such evidence does exist for some skilled occupations. In auditions for symphony orchestras, females' chances of

If women have been passed over for promotion or perceive that their future professional opportunities are poorer than those of men, they may rationally choose to focus more on their family responsibilities. As a result, they may be further underrepresented in the higher paying occupations.

In general, reduction of the pay gap in IT will require a relative increase in the proportion of young women who choose educational programs that prepare them for the higher-paying occupations in IT. Because the gender pay gap tends to be lower for individuals with higher levels of education, an increase in the education of women entering IT might prove an especially effective means of narrowing the pay gap. In addition, policies that open greater possibilities for promotion and that assist women in their career development, such as on-the-job training and mentoring, can also enhance women's investment in these occupational skills and their retention rates. This in turn could contribute to a further reduction in the gender pay gap in IT.

## 5. CONCLUSION

Women in IT occupations earn more than those women who hold other types of jobs: the median earnings of women in IT is \$38,000 compared to \$23,900 for women in other occupations. However, the median pay for women within IT is considerably less than that of men within IT; women earn 22 percent less than men. Part of this pay differential is associated with lower education for women, so that after controlling for this factor, along with demographics, women earn 17 percent less than men. An additional part of the gap occurs because women are underrepresented in the highest-paid IT occupations. When controls for occupational differences are introduced, women earn 12 percent less than men. This 12 percent may underestimate the true earnings gap if there is, for example, a "glass ceiling" that limits women's access to the higher paying occupations.

Women's underrepresentation in IT occupations remains pronounced, particularly in the higher paying occupations such as computer systems analysts and electrical and electronic engineers. Part of this differential is associated with less preparation among women for technical fields. But if the evidence from scientific fields as a whole is representative of IT conditions for women, women also have higher exit rates for IT jobs than do men. Employers can address this gap in exit rates with improved mentoring and training for women. The data show that more highly educated women earn wages that are more comparable to men's, so the hiring and retention of these well-educated women is a potential key for reducing the pay gap between men and women in IT.

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successful entry are considerably higher when the jury listening to the audition cannot see the gender of the applicants (Claudia Goldin and Cecilia Rouse, "Orchestrating Impartiality: The Impact of 'Blind' Auditions on Female Musicians," National Bureau of Economic Research Working Paper, 1997). Similarly, in high-paying restaurants, where the wait staff tend to contain more men, when a man and woman submit identical resumes, the man is more likely to be hired (David Neumark, Roy Blank and Kyie An Nort, "Sex Discrimination in Restaurant Hiring: An Audit Study," *Quarterly Journal of Economics*, August 1996).

Appendix Table  
Estimated Percentage Wage Gap in Hourly Earnings

	Median						20 <sup>th</sup> Percentile			80 <sup>th</sup> Percentile		
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(1)	(2)	(3)
<i>Overall Pay Gap</i>	-0.22	-0.17	-0.12				-0.24	-0.20	-0.13	-0.17	-0.13	-0.12
<i>Pay Gap by Education</i>												
High School and Less				-0.31	-0.32	-0.21						
Some College				-0.20	-0.21	-0.15						
College (BA, BS)				-0.13	-0.09	-0.09						
More than BA, BS				-0.14	-0.13	-0.11						
<i>Controls for education, race/ethnicity and age</i>	No	Yes	Yes	No <sup>a</sup>	Yes	Yes	No	Yes	Yes	No	Yes	Yes
<i>Controls for education, race/ethnicity, age and occupation</i>	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Note: Each model is based on a quantile regression at either the 20<sup>th</sup>, 50<sup>th</sup>, or 80<sup>th</sup> percentile. The dependent variable is the log of hourly earnings. All coefficients presented are statistically significant at the 1 percent level.

<sup>a</sup> Controls for education only.

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**TEENS AND THEIR PARENTS IN THE 21<sup>ST</sup> CENTURY:  
AN EXAMINATION OF TRENDS IN TEEN BEHAVIOR  
AND THE ROLE OF PARENTAL INVOLVEMENT**

**May 2000**

**A Report by  
The Council of Economic Advisers**