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ABSTRACT

This report summarizes a hearing to examine the factors contributing to pressures on United States workers and to suggest government. industry, and labor policies. Section I is an introduction. Section II identifies the panelists: Director, Conservation of Human Resources, Columbia University; President, United Steel Workers of America; Senior Fellow in Economics, The Brookings Institution; Retired Vice President, Xerox Corporation; and Study Director, Panel on Technology and Employment, National Academy of Sciences. Section III is a summary of the panel's conclusions and recommendations. The following factors that contribute to employment trends are discussed: technological advances, the balance of trade, and trends in the service sector. Public policies for addressing worker and community dislocations are examined, including revitalizing specific industries, using declining tariffs to finance worker readjustment programs, expediting reemployment, financing training and education, insuring communities against severe economic losses, strengthening the Job Training Partnership Act, providing displaced workers the option of early retirement, requiring advance notification of plant shut-downs or large-scale layoffs, and providing second and third chance opportunities to gain basic skills competencies. Section IV expands upon the topics in Section III. (YLB)

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TECHNOLOGY POLICY TASK FORCE HEARING SUMMARY

THE EFFECTS OF TECHNOLOGICAL CHANGE ON THE LABOR FORCE

REPORT

PREPARED FOR THE

TECHNOLOGY POLICY TASK FORCE

TRANSMITTED TO THE

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY HOUSE OF REPRESENTATIVES

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***Elected March 30, 1987 (H. Res. 133).
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COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C.

TECHNOLOGY POLICY TASK FORCE

HEARING SUMMARY
ON
THE EFFECTS OF TECHNOLOGICAL CHANGE ON THE LABOR FORCE

July 1, 1987

Prepared by

Dr. Iris C. Rotberg
Principal Investigator, Technology Policy Task Force

October 1987

I. INTRODUCTION

The Technology Policy Task Force of the Committee on Science, Space, and Technology is conducting a study to identify basic problems and make recommendations on public policy for the development and application of technology. One important aspect of the study deals with issues related to technological change and industrial transition as they apply to the labor force.

On July 1, 1987, the Technology Policy Task Force held a hearing on the effects of technological change on the labor force. The purpose of the hearing was to examine the factors contributing to current pressures on American workers and to suggest government, industry and labor policies for dealing with the problems.

The hearing was prompted by the fact that many American workers are losing their jobs in traditional manufacturing industries. Some of these job losses have resulted from increased productivity in the manufacturing sector. But a number of other factors contribute:

- decreased market penetration (induced initially by the high value of the dollar which once lost is difficult to re-establish;
- the world debt crisis which has resulted in a loss of markets in debtor countries;
- increased competition from other countries;
- foreign government trade promotion policies including tax provisions favoring exports;

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(1)

- o oversupply of certain commodities;
- o substitution of products; and
- o shifting consumer preferences.

Under the circumstances, there clearly is a need for increased attention to technology applications, long-term market development, and product quality. A complication is that manufacturing "competitiveness" may not insure manufacturing employment in industrialized countries as the labor component becomes a decreasing proportion of total costs.

In some of these areas, the conditions may have been caused by factors which were out of U.S. control but to which the nation had to react. In other cases, internal policies may have created the problem. Regardless of the cause, these developments have done considerable damage to the labor force in traditional manufacturing fields. Many of the workers who lost their jobs have been absorbed in the job market, but at lower wages; others have remained unemployed.

This hearing considered public and private policies which can address some of these developments, adjust the focus of education, retrain displaced workers, or in some manner cope with the pressures on American workers, either by addressing industrial declines and shifts directly or by channeling workers' productive energies into areas where they can make a contribution.

The witnesses addressed the following issues:

Causes and Scope of the Problem

- What factors have contributed to the decline of certain industrial sectors? What is the relative contribution of such factors as the value of the dollar or trading practices in other countries, and to what extent is the decline a result of U.S. industrial practices with respect to technology applications, innovation, product quality, or marketing?

- Although many workers have been moved out of smokestack industries at great personal cost to them -- extended periods of unemployment or reemployment at reduced wages -- the United States has maintained a relatively low unemployment rate, while at the same time substantially increasing the labor force participation of women. What conditions have made this possible?

- As declining industries and increased automation reduce the number of blue-collar jobs, what type of employment opportunities will be available for these workers? Will there be enough desirable jobs to replace those changed or eliminated by automation? To what extent can "information-based" or service industries compensate for these losses? Are relative incomes likely to match those found today in traditional manufacturing jobs?

Public and Private Sector Policies

- What are the key government, industry, and labor policies -- or lack of them -- which have contributed to the current pressures on American workers? What specific government and private sector policies can assist workers or communities adversely affected by technological advances or industrial transition? How can government provide incentives for industry to take responsibility for adjustments necessitated by industrial change?

- What role can government, private industry, and labor play in the training and employment of youth and displaced workers? Under what conditions have current basic skills and retraining programs been effective in helping their participants find employment? Would employment programs be more effective if they were specifically associated with government policies and incentives affecting other aspects of industrial adjustment, for example, assistance for firms which are moving into more productive industries?

The hearing was designed to examine these issues from different perspectives rather than arriving at definitive "solutions". The summary below is taken from the written testimony and dialogue of five panelists who, for three hours in a frank and direct way, shared with the Committee their views about how to respond to problems of industrial change. The panelists represented different constituencies and different theoretical approaches. They sometimes disagreed about how to solve problems or, indeed, where they would focus attention. But their comments also reflected a shared understanding of America's changing role in the global economy and a strong commitment to developing public policies to alleviate adverse effects on workers and communities.

II. HEARING WITNESSES

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III. SUMMARY OF PANEL'S CONCLUSIONS AND RECOMMENDATIONS

A. Factors Contributing to Employment Trends

1. Technological Advances

The panel concluded that technological advances have a positive impact on employment and wages for the economy as a whole, although in the short-term these advances may be responsible for worker displacement in specific industries. The panel stressed the importance of developing public policies to address these dislocations.

Technological advances are expected to become increasingly important as the United States faces intense foreign competition in a number of industries. Moreover, as a world debtor nation, the United States must increase its exports in order to service its debt without major dislocation. As one panelist put it: "The issue is whether we are going to [export] at a reasonable level of [the] dollar or at a dollar that totally undermines our living standards.... And I think ultimately that does rest on technology".

Changes in technology development and transfer worldwide may require changes in our approach to technology development. The rate of exchange of scientific and technological knowledge has increased. Although the United States currently depends to a greater extent than other OECD nations on R&D-intensive exports, any advantage resulting from knowledge alone is likely to become more difficult to maintain. Our competitiveness will depend increasingly on our ability to apply that knowledge to the development

of new products and manufacturing techniques.

Moreover, as foreign countries overtake us in some fields of technology, our competitiveness also will depend on our ability to build on technological advances in other nations as well as our own. As one panel member put it, "I think there is an abysmal ignorance about the state of technology in the rest of the world... I think that exploiting this capacity to learn from others rather than to innovate and do it all alone is something that is going to be more open to us as indeed, we become closer to a situation of first among equals, rather than this dominant technological giant".

2. The Balance of Trade

The effects of technological change on employment are gradual in comparison with other economic factors, particularly the large trade and budget deficits. At least in the short run, these factors appear to be more significant determinants of total employment and the extent to which the U.S. economy can continue to support increases in the standard of living.

The U.S. trade deficit is closely linked to the budget deficit, with the high value of the dollar the primary mechanism initially inducing the trade deficit. Over the past two years, there has been a substantial decline in the value of the dollar and with time, this decline is expected to lead to an improvement in the trade balance.

But as one panelist noted: "...the dollar's fall is not a panacea. Its decline will reduce the purchasing power of American consumers. But the

day of reckoning from the excess consumption enjoyed thus far in the 1980s cannot be postponed forever.... Substantial reduction of the government deficit, and in particular, the federal budget deficit -- is by far the most feasible, if politically difficult. Although macroeconomists may disagree about the desirability of completely eliminating the federal deficit, there is a broad consensus that the deficit must eventually be brought down significantly from its current $150-200 billion range to something on the order of $50 billion. There also is consensus in the policymaking community that deficit reduction should take place gradually and, if the need arises, temporarily halted or even reversed if the economy slides into a recession".

Although panelists agreed about the key role of the budget deficit, there was some disagreement about the relative importance of other factors typically linked to the trade deficit -- low-wage imports, unfair trade practices, and failures in U.S. manufacturing capabilities. While one panelist found an "element of truth" in each of these explanations, he believes they should not be the driving force behind our trade policy because they do not account for overall trends in the balance of trade. Some other panelists felt these factors should be given considerably more weight.

To put the discussion in context, however, it is of interest to note that it reflects a shared understanding of the basic problem. As one panelist put it: "While America continues to have the world's largest GNP and to occupy a leading position in the global economy, in several respects the American economy is no longer preeminent.... "America's loss of global lead...[has] raised questions about the future ability of the economy to

sustain the rise in living standards recorded in the past".

But panelists proposed different explanations and different public policies to deal with the problem. In the view of one panel member, "efforts to recapture the past by retreating i) isolation", by erecting trade barriers, for example, cannot succeed. Another believes managing trade becomes even more important in a global economy where U.S. companies now have ready access to low-wage workers in foreign countries and where many foreign companies themselves are willing to export to the United States at a financial loss.

To some extent, panelists may have reached different conclusions because they focused on different questions. The conclusion one draws about our ability to compete with low-wage countries may be quite different for the economy as a whole than for specific industries. Some observers believe trade restrictions are counterproductive for the national economy -- and rarely solve the immediate problem. For others, they are essential to save specific industries which themselves are vital to the national interest.

Part of this discussion focused on concerns that the United States is losing its industrial base. The data show that individual U.S. industries have experienced major problems but, overall, manufacturing is approximately the same proportion of our gross national product as it was in 1950. Manufacturing production has increased by about 20 percent since 1980, approximately consistent with the rest of the economy.

However, the share of manufacturing in employment has declined from 30.8

percent of employment in 1960 to 19.9 percent in 1985 (although the size of the labor force in manufacturing industries has remained roughly constant at 20 million for the past 15 years). As one panelist put it, the decline in share of employment results not from "a loss of our ability to produce goods", but from "our enhanced ability to produce goods. More rapid productivity growth in the goods productive sector, has been the dominant reason for the share of manufacturing in our employment".

However, some panelists felt these statistics may overestimate the competitiveness of the commercial sector. Clearly there are differences among industries. And one panelist noted: If "you take the military piece out of it and leave the commercial piece...then you get a much clearer picture of how we are deindustrializing in terms of our ability to compete in this global economy and to really produce goods...." Another concluded: "From 1945 to 1965 we had no competition. And we thought we were good. In fact, we were lousy. That's a really very tough concept to get, and we're working ourselves out very slowly, very slowly".

3. Trends in the Service Sector

Most panelists concluded America's transition from a manufacturing to a service economy does not appear to be having significant effects on the nation's income distribution. Nor did they anticipate an overall decrease in the size of the middle class. But they did focus on two problems associated with the growing numbers of jobs in service and high technology industries. First, many displaced workers in traditional industries are not finding equivalent jobs in other parts of the economy. At least one panel-

ist felt this income loss was more than a temporary problem of industrial transition. As he put it, "...we are witnessing the downgrading of the standard of living not only of currently displaced blue-collar workers, but the freezing of future income opportunities for new workers."

Second, individuals who do not have minimum educational competencies are expected to have increasing difficulties finding jobs. One panelist noted, ..."basic skills of literacy, numerical reasoning, problem solving, written communication, are and...probably will become more important for labor force entrants to obtain quality jobs in the work place of the future". But there is little evidence that technical skill requirements will be significantly increased by technological change: "...technologies over the course of their development [tend]...to reduce their skill requirements for operation.... So we don't see a need for a radical upgrading, for example, in computer literacy of the U.S. population as a whole in order to obtain quality entry level jobs".

While manufacturing productivity has increased, productivity in the service sector -- which accounts for 60 percent of what we produce -- is down. This decrease is contrary to "conventional wisdom", which assumes greater productivity, and fewer jobs, with increasing computerization. Indeed, according to some panel members, just the opposite has occurred. Service industries have provided a growing number of jobs, in part because they are inefficient. Although computer technology has the potential for improving the productivity of service workers, as one panelist noted: "Computers will not make a badly managed business better. The expenses for computerization and the increased rigidity in computer-managed procedures are likely

to accelerate the decline of incompetent management.... One should automate successes, not failures".

The panelist also concluded that "we deploy a larger proportion of our national assets [than do other nations] on manipulating and shuffling information that doesn't produce anything." He feels we have been able to maintain an inefficient information sector because there is not yet a strong global market for information services: "If and when it comes, the present accumulation of unproductive practices in the U.S. will create a massive upheaval, exceeding in severity what we have so far experienced in the decline of industrial America".

The panelist recommended that: (1) Congress redirect some of its attention from the problems of manufacturing industries to problems of the service sector; and (2) the National Science Foundation sponsor studies of the factors affecting productivity gains and losses by the information workforce. In addition to considering the effects of technology on productivity, the studies would assess the impact of Congressional policies such as the Tax Reform Act of 1986.

Finally, one panelist expressed reservations about the possibility of conducting sound research in this area: "The argument that services are not productive is bad theory and worse statistics. We don't know how to measure productivity in services.... I [also] am very worried...about bureaucracy and the lack of effective management. But I wouldn't blame that on technology.... I think a very big technology like computerization takes a very long time to permeate.... So, I would argue that in thinking about

fundamental technologies -- and computerization is one -- you need a very long time perspective."

B. Public Policies for Addressing Worker and Community Dislocations

1. Revitalizing Specific Industries

Panel members held different views about the advisability of federal intervention to revitalize specific industries, although there was strong agreement that high priority should be given to developing public policies for addressing worker and community dislocations. One panelist concluded: "I do not think that the government should get involved in detailed programs of the nature of conditionality, fundamentally because I don't believe that the government knows what it takes to revitalize an industry. ...I say give the industry a breathing space. Give them a declining tariff, and let the chips fall where they may".

However, another argued "against transition scenarios which assume the sharp decline or demise of a particular industry", instead advocating "a transition to a more world-class format for the same industry". He also argued that Congress should not enact measures to facilitate capacity reduction by providing "economic and tax incentives or antitrust relaxations for closures".

2. Using Declining Tariffs to Finance Worker Readjustment Programs

One panel member recommended that revenues raised from tariffs and from

auctioning off the quotas we currently have should be earmarked for assisting workers adversely affected by imports, rather than used to provide long-term protection to declining industries. Under this proposal, tariff rates would be scheduled to decline over time. All existing quotas and other quantitative restrictions would be converted to their tariff equivalents by auctioning them off to the highest bidders.

In his view, the major advantage of earmarking funds is to provide a "safety valve" against protectionist pressures as well as to raise revenues for programs which have become increasingly ineffective because of inadequate funding.

However, some panelists described practical difficulties in attributing worker dislocations to specific causes, like imports, technology, or poor management: "...targeting workers according to the cause of their displacement would induce severe administrative problems and result in severe delays in the delivery of services, simply because its so difficult to determine the precise cause of displacement of an experienced worker".

3. Expediting Reemployment

The panel strongly advised that incentives to industry and workers should expedite the reemployment of displaced workers, noting that some programs have delayed adjustment by giving extended unemployment compensation payments without positively encouraging workers to find alternative employment. As one panelist put it, "...there is indeed something very traumatic and difficult for a worker who was earning a high wage to now have to ex-

perience a precipitous decline in his or her income. Indeed, there is an incentive to delay adjustment because of that erosion in the income that that worker would experience". He recommended a form of wage insurance for displaced workers which would compensate them for a proportion of the erosion in their wages for a specified time period.

4. Financing Training and Education

Panelists made several proposals for financing programs for those workers who chose education and retraining. All proposals circumvented traditional funding methods in an attempt to increase resources. One panelist suggested a federal loan program which would make it possible for anyone who wanted to undertake higher education or retraining in a recognized institution to receive full resources from the government and then be liable to pay it back through income taxes contingent on future income. A second proposal was for a program of federally-provided direct loans or loan guarantees, administered by state and local authorities to displaced workers who could use the loans to finance retraining or relocation or to establish new businesses. A third panelist proposed tax deductions for education and training expenses.

5. Insuring Communities against Severe Economic Losses

One panelist proposed a tax base insurance program for municipalities, counties, and states faced with severe economic losses. Communities could insure their tax base and then be reimbursed for some proportion of the erosion of that base (not due to a change in the tax rate) for some period

of time. Simulation studies suggest that the program could be operated on a self-financing basis by pooling the risk on the assumption that shortfalls are unlikely to hit all communities at the same time.

6. Strengthening Title III of the Federal Job Training Partnership Act (JTPA)

Panelists also recommended strengthening Title III of the Federal Job Training Partnership Act (JTPA) by: (1) increasing JTPA's coverage of displaced workers from the current level of 6-7 percent; (2) broadening the range both of employment and training services; (3) broadening income support for displaced workers engaged in training; and (4) revising state unemployment compensation laws to guarantee that displaced workers who are eligible for unemployment compensation can receive benefits during training.

As the proportion of existing labor force participants to new entrants increases over the next decade, policies to retrain existing workers will become increasingly important. But strong employment counseling and placement services remain the most practical alternative for many displaced workers. As one panelist put it: "It is desirable to have reasonable amounts of retraining money in the JTPA program available for workers who need and want and can profit from retraining. But the sad fact is that many workers with minimal educational competencies cannot be effectively retrained.... I have long favored a federally financed jobs program at minimum wages -- with remedial educational opportunities -- for those who need a job".

Evaluation of federal employment and training programs remains a problem. We do not yet have rigorous evaluation data to assess the effectiveness of these programs. Although there is some evidence -- in part anecdotal -- that the programs improve employment prospects, there is little knowledge to provide guidelines for program design.

7. Providing Displaced Workers the Option of Early Retirement

Some panel members stressed the importance of an early retirement option. They argued that most of our industrialized partners provide these options as a matter of social equity as well as to facilitate structural change. One panelist noted that it is common practice for European countries to offer early retirement at age 55 or 58: "It looks to me like a minimum kind of a thing that a civilized society might be willing to do." In the view of another: "...workers are unable to be sympathetic with the goals of industrial transition since there are little transitional programs assisting them."

8. Requiring Advance Notification of Plant Shut-downs or Large-scale Layoffs

Most panel members advocated mandatory advance notice. One recommendation was for at least two to three months notice of plant shut-downs or large-scale layoffs. Small firms or firms encountering unforeseen business circumstances would be exempted. An alternative was to reduce the tax burden on firms providing advance notice.

Voluntary advance notice appears to provide substantial notice to only a

small proportion of the work force. One panelist noted that "under the current voluntary system...the costs of plant closings in which advance notice is not provided are borne primarily by the taxpayers (including other employers) and the affected workers.... Requiring advance notice can redistribute the costs of layoffs and plant shut-downs". Another argued: "If you can have management have all kinds of these golden parachutes, the least you can do is if you've had a worker for 25 years on your payroll, to give him a couple of months notice". A third compared advance notice with a requirement that landlords give their tenants 30 days' notice: "...it just seems to me that dropping people, particularly when it's en masse, in an environment is just something which is basically inhuman.... I haven't seen the property market come grinding to a halt as a consequence of mandatory advance notification for property, and I would do the same thing for plant closing".

One panelist expressed his opposition to plant closing legislation because he felt it was impractical and would not achieve its purpose. He suggested instead a profit-sharing plan which he believes would be more effective in alleviating the basic problem: "...90 days is just not enough for someone to be able to reconfigure their life. ...those companies that are involved in gain-sharing ...these workers have a long-term understanding and information about the competitive viability of the firm...."

9. Providing Second and Third Chance Opportunities to Gain Basic Skills Competencies

The panel agreed that basic competencies in communication and problem-

solving skills would become increasingly important in the workplace of the future. One panel member put it this way:

"The Federal Government [should encourage] State and local governments and the private sector to provide second and third chance opportunities to young people who drop-out of high school lacking basic competencies -- arithmetic, reading, communication -- without which they can't get or hold a job in the service economy that currently provides 3 out of every 4 jobs".

"These basic skills programs would be more effective if they were linked to jobs since the young people who drop out of school have a negative image of the educational process..."

The major concern is that "many minority youth are coming into the labor force blocked from competing for mainline jobs" because of the very high drop-out rates in the inner city.... "We have a whole section of our population that is cut off from the new work force. That is the single most serious problem that I see in the American economy today. And that means that since I don't believe we can restructure the elementary and secondary schooling very quickly...we have to have second and third chance opportunities".

Overall, there is some cause for optimism about the ability of the economy to provide jobs for young people: "...the outstanding feeling that I have about the American economy is that in a continuing expanding labor market -- and we have had more and more jobs -- the young people can by and large

make it".

IV. MAJOR ISSUES ADDRESSED IN THE HEARING

A. Factors Contributing to Employment Trends

1. Technological Advances

The panel concluded that technological advances have a positive impact on employment and wages for the economy as a whole, although in the short-term these advances may be responsible for worker displacement in specific industries.

Dr. Mowery, representing the Panel on Technology and Employment of the National Academy of Sciences, put it this way:

> "...rather than being a central cause of the problems of unemployment and low earnings growth within this economy, technology is a key part of the solution to these problems. The U.S. economy faces increasingly intense foreign competition in a number of industries, and the maintenance of high levels of employment and earnings in the face of such competition requires productivity growth, which in turn depends on the rapid development and adoption of new technologies".

Dr. Lawrence described how technological advances might help to alleviate our budget and trade deficits:

"...the United States has become a world debtor nation. True, the world has been willing to lend to us while we have been engaged in the spending binge. But what we know about the future is at a minimum you have to service your debt. We see it with developing countries today. They have no choice but to learn to export. The same is true of the U.S. looking over the next decade. The issue is whether we are going to do it at a reasonable level of [the] dollar or at a dollar that totally undermines our living standards...."

"And that...hinges I think ultimately on our manufacturing sector because that's the dominant source of traded goods in the economy. We are going to have to learn to reverse ...our picture in trade. And I think ultimately that does rest on technology".

Dr. Ginzberg also stressed the importance of technological advances, particularly in civilian industries:

"There is no way for the U.S. to get itself repositioned in the new world economy without heavy reliance on new and better technology. ...Congress should keep its eye on strengthening our technological base, not restricting it. My own view is that we have a lopsided federal R&D with too much money going into defense".

Dr. Mowery noted that the United States depends to a greater extent than other OECD nations on R&D-intensive exports. But changes in technology development and transfer worldwide may necessitate changes in our approach to technology development.

He observed:

> "The rate at which new technologies and scientific knowledge flows across national boundaries appears to have increased, meaning that any knowledge-based competitive advantage held by U.S. firms may well be more fleeting in the future.... Therefore, the payoff increasingly comes from the embodiment in new products, the adoption in new process technologies, and there may be a role for exploring funding of some of these activities a little further downstream. It certainly has operated fairly effectively in agriculture...in aeronautics research...in areas of pharmaceuticals".

Panel members emphasized the importance of building on technological advances in other nations as well as our own.

As Dr. Lawrence put it:

> "I think there is an abysmal ignorance about the state of technology in the rest of the world, the degree to which in many areas foreigners have overtaken us. ...what [can we] do to give our workforce a global perspective and, indeed,

> our managers a global perspective? What do we do to encourage people to travel? What do we do to encourage people to obtain language skills?...we have now the advantage of being in a sense number two in certain areas. We don't have to innovate totally. We can copy. We have learned that in our auto industry as the Japanese have moved in bringing with them the superior management techniques. But I think that exploiting this capacity to learn from others rather than to innovate and do it all alone is something that is going to be more open to us as, indeed, we become closer to a situation of first among equals, if you will, rather than this dominant technological giant."

Although technological advances contribute to employment and wage growth for the economy as a whole, they cause hardships for individuals in specific industries.

Dr. Mowery stressed the importance of developing public policies to address these dislocations:

> "...technological change does, has had, and will continue to have severe consequences on the employment prospects for individuals in specific occupations and specific industries. But the impacts, by and large, are sectoral rather than aggregate. Therefore, the role, in the panel's view, of adjustment policies adopted by the public and private sectors, is to facilitate the movement of workers and resources from

declining to expanding sectors".

As Dr. Ginzberg put it:

> "...all you have to do is look at American agriculture and realize that technology in the larger sweep of things brought the labor force down from 90 percent of the total labor force in agriculture to three percent or below".

These transitions are likely to be gradual. Dr. Mowery noted:

> "The employment impacts of technological change typically occur gradually by comparison with other sources of economic change. Although scientific discovery may and often does occur rapidly or discontinuously, realization of the employment effects of technological change requires the widespread adoption of new technologies, which depends on the relatively gradual processes of investment in and 'debugging' of new technologies".

2. The Balance of Trade

Dr. Mowery stressed that "technological change is but one of a large number of forces affecting total employment and unemployment, and appears to be far from the most important factor". At least in the short run, other economic factors, particularly the large trade and budget deficits, appear to be more significant determinants of total employment and the extent to

which the U.S. economy can continue to support increases in the standard of living. A major part of the hearing focused on the U.S. trade deficit, its causes, and possible public policies to reduce it.

The panel concluded that there was a strong relationship between the trade and budget deficits. However, there was some disagreement about the relative importance of other factors typically linked to the trade deficit -- low-wage imports, unfair trade practices, and failures in U.S. manufacturing capabilities.

While Dr. Lawrence found an "element of truth" in each of these three explanations, he believes they should not be the driving force behind our trade policy because in his view they cannot account for the facts. Some other panelists felt these factors should be given considerably more weight.

To put the discussion which follows in context, however, it is of interest to note that it reflects a shared understanding of the basic problem. As Dr. Lawrence put it:

> "While America continues to have the world's largest GNP and to occupy a leading position in the global economy, in several respects the American economy is no longer clearly preeminent. ...America may provide its citizens with the world's highest living standard, but the lead is closer to ten rather than fifty percent".

"The channels linking the U.S. with the global economy have become deep and wide and they transmit shocks in both directions. This increased global integration of the economy has been associated with a period of much weaker domestic economic performance...."

"America's loss of global lead...[has] raised questions about the future ability of the economy to sustain the rise in living standards recorded in the past".

But panelists proposed different explanations and different public policies to deal with the problem. Dr. Lawrence argued that "efforts to recapture the past by retreating into isolation", by erecting trade barriers, for example, cannot succeed. Mr. Williams believes managing trade becomes even more important in a global economy where U.S. companies now have ready access to low-wage workers in foreign countries and where many foreign companies themselves are willing to export to the United States at a financial loss.

To some extent, panelists may have reached different conclusions because they focused on different questions. The conclusion one draws about our ability to compete with low-wage countries may be quite different for the economy as a whole than for specific industries. Dr. Lawrence believes trade restrictions are counterproductive for the national economy -- and rarely solve the immediate problem. For Mr. Williams, they are essential to save specific industries which themselves are vital to the national interest. But even panelists who differ about trade policy share many recom-

mendations in common, particularly a strong belief that both the public and private sectors have a responsibility to assist workers and communities hurt by industrial dislocation (see section B below).

The Budget Deficit. The panel concluded that the budget deficit is closely linked to the trade deficit.

Dr. Lawrence explained the link as follows:

> "When you spend more than you produce, you have to get foreign goods to make up the difference. Therefore, there is this direct link between our two deficits -- the federal budget deficit and the trade deficit".

> "...the U.S. has been in...a net spending situation since 1981. Between 1981 and 1986, total real U.S. spending on private consumption and investment and on government-provided services increased by 19.6 percent, or 6.4 percentage points faster than the increase in U.S. production over the same period".

> "...between 1981 and 1986 the government sector (federal, state, and local combined) increased its annual borrowing by about $100 billion. Annual borrowing by the Federal Government alone exploded at an even faster pace, increasing from $64 billion in 1981 to over $200 billion in 1986. The private sector failed to increase its saving to balance the gov-

ernment-sector spending splurge. In fact, net private investment ran ahead of net private saving in 1986, contributing to the excess level of national spending.

"In short, a fundamental imbalance between U.S. production and spending since 1981 has necessarily produced a mushrooming trade deficit. The rising dollar has been the primary mechanism inducing the trade balance shifts we have seen. Stimulated partly by high U.S. interest rates and by unsettled conditions abroad, international capital moved into the United States and caused the dollar to appreciate. This in turn priced U.S. products out of world markets.... How the U.S. chooses to close the gap between spending and production is perhaps the most important economic policy question facing our nation in the years ahead".

Over the past two years, there has been a substantial decline in the value of the U.S. dollar and with time, this decline is expected to lead to an improvement in the trade balance. But Dr. Lawrence continued:

"...the dollar's fall is not a panacea. Its decline will reduce the purchasing power of American consumers. But the day of reckoning from the excess consumption enjoyed thus far in the 1980s cannot be postponed forever".

Although the imbalance between national spending and production can be corrected in several ways, Dr. Lawrence suggests:

"Substantial reduction of the government deficit, and in particular, the federal budget deficit -- is by far the most feasible, if politically difficult. Although macroeconomists may disagree about the desirability of completely eliminating the federal deficit, there is a broad consensus that the deficit must eventually be brought down significantly from its current $150-200 billion range to something on the order of $50 billion. There is also consensus in the policymaking community that deficit reduction should take place gradually and, if the need arises, temporarily halted or even reversed if the economy slides into recession".

Dr. Ginzberg also pointed out the problems of "living beyond our means":

"...the U.S. economy is in big trouble...and I don't see any early escape. The tax reduction program in '81 was a disaster in my view and Congress needs to bring the federal budget into balance much more quickly".

"The middle-term outlook, 2-3 years, is in my opinion bleak because I don't see much, if any likelihood, that we can escape a recession which could lead to astronomical deficits".

"...we must get the federal budget back in balance so that the Federal Government can do some of the things that need doing such as more investment for R&D, for improving the hu-

man resources of the nation, helping the displaced workers, etc. We need to raise taxes, reduce many of our high subsidy programs, and slow down our defense outlays. On the basis of my long exposure to the Pentagon I'm sure that giving more money to the Armed Forces makes them, after a point, less not more effective".

Low-wage Imports. Dr. Lawrence concluded:

"Since wage levels tend to reflect productivity levels, high-wage countries such as the U.S. can compete with low-wage countries because their superior productivity compensates for high wage rates. If developing countries really had U.S. skills, technology and capital levels, their wages would no longer be low".

Dr. Lawrence presented the following arguments to support his view that low-wage imports do not prevent the United States from competing effectively in world markets:

- If low-wage imports were a major reason for the trade deficit, we would expect the deterioration in the merchandise trade balance between 1981 and 1986 to occur disproportionately across product categories. As shown in Table 1, the deficit occurred relatively uniformly across capital goods (down $43.2 billion), automotive products (down $45.8 billion), and consumer goods (down $44.0 billion).

- Similarly, we would expect the U.S. loss in trade position with each of its major trading partners to occur disproportionately across partners with low-wage countries accounting for a higher share of the increased deficit. However, as shown in Table 2, the share of U.S. manufactured imports from developing countries in 1986 (25.9 percent) was about the same as the share in 1981 (25.0 percent). And between 1960 and 1986, rather than increasing, the proportion of imports from low-wage countries decreased as wages in Europe and, more recently, Japan became more comparable to U.S. standards. In 1960, two-thirds of manufactured imports into the United States came from countries with less than half the U.S. income (and wage) levels; in 1986, the share from these countries was less than a third.

- Finally, Dr. Lawrence noted:

> "the progressive lowering of trade barriers between developed countries was not associated with a levelling down of U.S. wages to those of foreign developed countries, but rather with a period of rapid growth both here and abroad".

Mr. Williams was less sanguine about our ability to compete internationally:

> "It seems to me what Dr. Lawrence is saying -- It's wonderful to be assured that everything is okay and the world is moving forward as it should, despite all the evidence around us to the contrary, despite all these years of destruction and devastation..."

TABLE 1.—U.S. TRADE BY SELECTED END-USE CATEGORIES, 1981–86

[Percent of total unless otherwise specified]

Category	Exports		Imports		Change in trade balance [1] (billions of dollars)		
	1981	1986	1981	1986	Actual	Proportional [2]	Actual minus proportional
Capital goods	69.6	67.8	33.5	32.5	−43.2	−43.6	0.4
Automotive products	15.6	19.0	28.7	33.4	−45.8	−38.4	−7.4
Consumer goods	14.8	13.2	37.8	34.1	−44.0	−50.8	6.8

[1] Change in the manufactured trade balance between 1981 and 1986.
[2] The difference between what the trade balance would have been in each category if the 1981 proportions of total imports and exports had been maintained, and the actual trade balance in 1981.

Source: Data for 1981 are from U.S. Department of Commerce, International Trade Administration, United States Trade: Performance in 1985 and Outlook (Government Printing Office, 1986). Data for 1986 are provided by Lester Davis of the ITA. Figures are rounded.

TABLE 2.—U.S. MANUFACTURED TRADE, BY REGION, 1981–86

[Percent of total unless otherwise specified]

Region	Exports		Imports		Change in trade balance [1] (billions of dollars)		Actual minus proportional
	1981	1986	1981	1986	Actual	Proportional [2]	
Canada	20.2	24.0	20.2	17.2	−14.4	−30.3	15.9
Japan	6.1	10.0	25.3	27.4	−38.4	−38.4	0.0
Europe	23.2	24.0	22.4	22.4	−32.1	−33.5	1.4
Other developed countries	8.8	8.3	5.6	5.3	−8.3	−8.3	0.0
Less developed countries	40.5	31.6	25.0	25.9	−54.9	−36.9	−18.0
Asian newly industrialized countries	5.9	7.7	15.6	15.5	−23.3	−20.5	−2.8
Centrally planned economies	1.2	2.1	1.5	1.8	−1.5	−2.2	0.7
Total (billions of dollars)	166.8	169.8	156.4	308.9	−149.6	−149.6	0.0

[1] Change in the manufactured trade balance between 1981 and 1986
[2] The difference between what the trade balance would have been in each region if the 1981 proportions of total imports and exports had been maintained, and the actual trade balance in 1981.

Source: Same as table 1. Figures are rounded.

"The fact of the matter is that we live in a world where technology is totally mobile, where management skills are totally mobile, where capital moves around the world at a pace that we really can't keep track of any longer, where what isn't mobile is workers and communities and wage levels and so on...."

"I've had Chief Executives take me aside quietly in the back room and say Lynn, you must understand that we're living in this global economy, and if we cannot produce in America at rates and ways that are competitive with what we can do in other countries in the world, we will produce in other countries in the world".

"And the evidence is all around us that they do. And the evidence is all around us that they move to those other countries to seek advantage of the low wages in these other countries".

To support his contention that exports from newly industrialized countries are not necessarily originating from factors within their own economics, Mr. Williams quoted from the July 24, 1987 issue of The Journal of Commerce:

"For the past two decades, U.S. multinational corporations have been pouring money into manufacturing operations in Asia's 'four tigers'--Hong Kong, Singapore, South Korea and

Taiwan--along with less-developed but growing economies in the Philippines, Malaysia and Thailand".

"U.S. investments in countries such as Taiwan and South Korea have been aimed largely at producing for the U.S. market. Up to one-third of Taiwan's exports to the United States last year, for example, originated in U.S.-owned plants on the island, said an official at the American Institute in Taiwan, which functions as the unofficial U.S. embassy there".

"U.S. investments in these countries are shifting from low-end products such as textiles and footwear to high-value goods such as electronic components, computers and automobiles, largely for shipment back to the United States. Detailed figures are often hard to come by, but the scale is vast, judging by industry and other estimates given to The Journal of Commerce".

"In the case of Singapore, $2.2 billion -- about half its total 1986 exports to the United States -- came from U.S. companies there".

"The majority of the $670 million worth of manufactured goods exported from the Philippines to the United States last year was produced by subsidiaries of U.S. companies, especially in the semiconductor industry. Total Philippine exports to the United States in 1986 were valued at $759 million".

"The United States is Hong Kong's largest market and has some $6 billion invested there. But, given Hong Kong's open economy, there are no detailed records concerning the operations of U.S. companies there".

Dr. Ginzberg added the following examples of U.S. firms manufacturing goods in low-wage countries:

"A fair number of American computer companies are having their software written by Indians in India because it is much cheaper to get it written there than it is in this country. There is nothing to stop it. ...one of the very big computer companies...[has] a design unit in Jerusalem tied in with their Massachusetts affair. They 'get better people there for a lower cost' than they can in Massachusetts...."

He concluded:

"...Lawrence made a strong presentation but he promised too much. There is more going on in the international trade and financial markets than an overvalued dollar. I don't think we are anywhere near a new balance point".

Unfair Trade Practices. Dr. Lawrence presented evidence to support his conolusion that although virtually all countries, including the United States, maintain at least some restrictions on imports, unfair trade prac-

tices are not the main reason for the recent rise in the trade deficit:

- Trade restrictions did not prevent the United States from achieving an increasing surplus in manufactured goods trade between 1973 and 1981. Indeed, in 1981, the trade surplus in manufactured goods with non-OPEC developing countries was $11.6 billion.

- To account for the increasing trade deficit beginning around 1981, Dr. Lawrence argued:

  ..."unfair foreign practices would uniformly and suddenly have had to [have] changed...something close to a massive global conspiracy should have taken place. Yet we know that protection is not much greater in the rest of the world today than it was in 1981 -- the Europeans have cut back on their industrial subsidies while the Japanese market is somewhat more open today. ...In fact, the market in which protection has increased the most in recent times is probably the U.S.".

- As shown in Table 2, the Japanese share of the deficit growth is proportional to its 1981 trade shares. In 1981, Japan accounted for 25.3 percent of U.S. manufactured imports and 6.1 percent of manufactured exports, compared to 27.4 percent of imports and 10.0 percent of exports in 1986. Given the growth in total U.S. imports since 1981, the evidence suggests that Japan simply picked up its share of imports rather than "dramatically shifting its behavior". Although "Japan continues to be frequently singled out as having the most unfair trading practices

among U.S. trading partners...it is doubtful that such policies were a major factor in the dramatic increase in Japan's trade surplus with the U.S. since 1981".

In response, Mr. Williams commented on the willingness of many trading partners to export to the United States at a loss:

> "...for reasons of driving employment, for reasons of having some dollar income at whatever price -- there is all kinds of evidence out there that many trading partners are willing to export into this market, even at a loss, for other purposes.... Many of these people who are shipping materials -- steel and other items -- into the American market are not operating from market driven economies and have many other considerations".

Therefore, Mr. Williams is "concerned about whether the dollar alone will ever resolve the problem entirely".

Mr. Williams agreed that we have had more elements of protection in the United States in recent years but argued:

> "We've had to out of desperation. We've had interference in steel trade with the voluntary restraint agreements. ...if they weren't there, there would just be total devastation in the steel industry in the United States".

Finally, Mr. Williams commented on the connection between workers' rights, low wages, and unfair trade practices:

> "We are maintaining in both U.S. trade law and in current GATT negotiations that suppression of these rights constitutes an unfair trade practice. There is an unreasonable economic advantage being gained because the lack of international discipline allows and, indeed by default, encourages unfair wage competition. It is not enough for policymakers merely to affirm that such unfair competition can be offset by increased technology and productivity".

Failures in U.S. Manufacturing Capabilities. A popular explanation of our trade deficit is that Americans produce low-quality products which are not competitive in the marketplace. Dr. Ginzberg put it this way:

> "I said [to the head of GM in 1972], what the hell are you doing about small cars and imports? He said, we're doing nothing. Americans love big cars and we don't think this is anything, just some yuppies who are interested in it...."

> "If you don't know how to manage your resources -- steel is an outstanding example of what they didn't know what they were doing for 25 years".

> "Now, it's too simple to simply say that there's something going on over there. We got into very bad practices in this

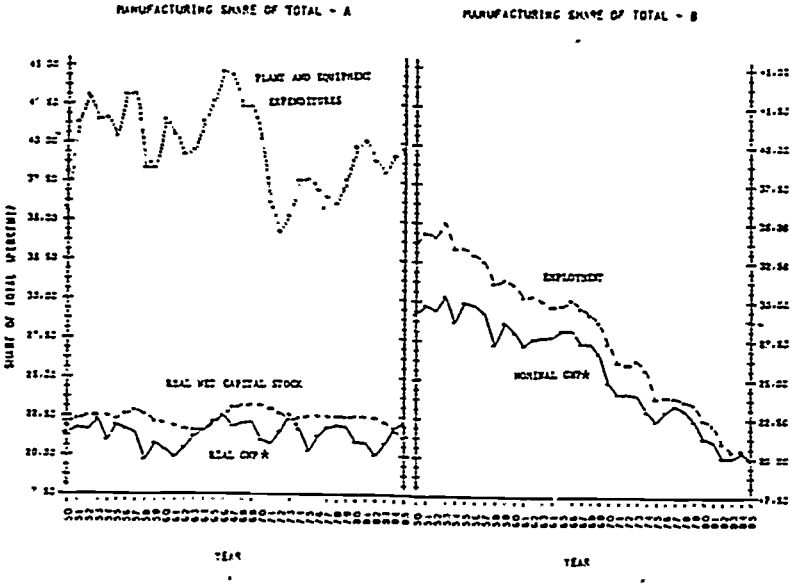
country. From 1945 to 1965 we had no competition. And we thought we were good. In fact, we were lousy. That's a really very tough concept to get, and we're working ourselves out very slowly, very slowly".

There was no disagreement among panel members that these failures had occurred in some industries. However, Dr. Lawrence felt they have been given too much weight in discussions of the trade deficit because "such quality failures are unlikely to have become pervasive simultaneously across the wide range of goods in which the U.S. trade deficit has emerged".

Dr. Lawrence presented the following evidence to support his view that failures in U.S. manufacturing capabilities are not the major explanation of the trade deficit:

- As shown in Panel A of Chart 1, manufacturing is approximately the same proportion of our gross national product as it was in 1950. "Individual U.S. industries have indeed experienced tremendous difficulties. But in the aggregate, if you look at measures of our industrial base, our capacity to produce in manufacturing, you find that that has increased by about 20 percent since 1980, roughly in line with the rest of our economy".

CHART 1



* Real GNP is expressed in dollars adjusted for inflation and nominal GNP, in current dollars.

- However, if the share of manufacturing in employment in our economy is considered, there is a significant decline as shown in Panel B. Manufacturing accounted for 30.8 percent of employment in 1960, 22.4 percent in 1980 and 19.9 percent in 1985 (although the absolute number of Americans working in manufacturing industries has remained roughly constant at 20 million for the past 15 years). The decline in share of employment results not from "a loss of our ability to produce goods", but from "our enhanced ability to produce goods. More rapid productivity growth in the goods productive sector has been the dominant reason for the share of manufacturing in our employment".

- Indeed, Dr. Lawrence noted that "last year, unit labor costs in the United States -- partly as a result of the dollar, partly because of the fact that our manufacturing productivity growth was faster than any other major industrial economy -- improved by 22 percent compared with that of our major competitors. If you look at what happened to the price of our exports compared to our competitiors, you discover that with respect to Japan, we are now more competitive than we were in 1980. We are not quite back to the level of the Germans, but there has been a marked improvement in the fundamentals".

- The strong manufacturing production growth can be accounted for by "the abnormally strong rise in total U.S. spending relative to GNP in this recovery and in the unusually strong rise, within total spending, in spending on goods.... Spending on goods...increased by a massive 23.6 percent. In response, U.S. producers lost significant shares of the do-

mestic market to foreigners and yet were still able to expand production volumes faster than overall GNP. What explains the dramatic rise of U.S. spending on goods in the recent expansion? First, goods have become relatively cheap.... In addition, U.S. spending shifted rapidly towards purchases of automobiles...defense equipment, and office equipment (particularly computers). While aggregate spending on goods has been strong, it has been highly concentrated in these three categories".

- In short, "America has not deindustrialized, nor will it. But the nature of U.S. industry is changing. The expanding sectors reflect an age of information and technology-based growth. Among the contracting sectors in serious trouble are several major heavy industries".

Mr. Williams was less optimistic about the general vitality of the manufacturing sector:

> "If you take out of what we're manufacturing, if you take the military piece out of it, that's what worries a great many of us so much. You take the military piece out of it and leave the commercial piece, and then you get a much clearer picture of how we are deindustrializing in terms of our ability to compete in this global economy and to really produce goods and have them out there in this global economy. This situation is much grimmer and much more difficult".

3. Trends in the Service Sector

The panel considered employment patterns in service industries. Two issues were discussed: (1) the implications for employment of the transition from a manufacturing to a service economy; and (2) the effects of automation in service industries on employment and productivity.

Transition from a Manufacturing to a Service Economy. Since the early 1950s, the proportion of U.S. employment in services has increased steadily. There was no disagreement among the panelists that the decreasing share of employment in manufacturing has produced worker and community dislocations which require government attention. Nor did panelists differ about the increasing importance of basic skills competencies for labor force participation. However, there were different views about the extent to which the economy as a whole would continue to support jobs with incomes comparable to those lost in declining industries.

Mr. Williams expressed the following concern:

> "...the loss of these basic industries jobs is not being replaced by comparable income level jobs in the service sectors. It would be misleading to assume that since the unemployment rate is relatively low, according to your staff notice, that the process of readjustment is being successful. Actually, we are witnessing the downgrading of the standard of living not only of currently displaced blue-collar workers, but the freezing of future income opportunities for new workers".

Dr. Ginzberg reached similar conclusions:

"Those in high wage industries with good union contracts will have great difficulty in finding equivalent jobs in an increasing white collar economy.... However, there are many good middle level technician jobs in the service sector".

Dr. Ginzberg also spoke of negative consequences for individuals with low educational levels:

"I believe that the shift to the service economy, which is continuing to accelerate, where we now have three out of every four jobs in services, means that if one does not have minimum qualifying educational competencies, one is going to be out of that labor market".

"I begin to see in New York, Chicago, L.A. and many other places a serious danger to the stability of the society -- not to the individuals of the society -- of having youngsters coming of working age who lack the minimum qualifications to get employed in the new service economy".

"We have all kinds of jobs in New York. We've had 400,000 jobs since our low point in 1977. But we have to import most of those people from other parts of the United States and from abroad. That is a very serious matter".

Although Dr. Howery found little evidence to suggest that technical skill requirements would be significantly increased by technological change, he

did project increased basic skill requirements. Technical skill requirements are not expected to increase because:

> "...technologies over the course of their development [tend] ...to reduce their skill requirements for operation. If you compare mainframe computers of the early 1950's with the desk-top personal computers of the mid-1980's, I think you'll find that the skill requirements for operation have declined rather dramatically".

> "So we don't see a need for a radical upgrading, for example, in computer literacy of the U.S. population as a whole in order to obtain quality entry level jobs. What the panel does find is that basic skills of literacy, numerical reasoning, problem solving, written communication, are and...probably will become more important for labor force entrants to obtain quality jobs in the work place of the future. And the lack of basic skills within a significant portion of the experienced displaced worker population constitutes a serious problem for adjustment policy".... Estimates range as high as 20 to 30 percent of experienced displaced workers have serious deficiencies in basic skills".

However, Dr. Mowery did not "find compelling evidence to suggest that the recent technological change has had any relationship to changes in the household income distribution within this economy" or on "polarizing the structure of the

workforce: that is to say, creating a two-tiered workforce".

Nor did he anticipate negative consequences of technological change for women and minority workers:

> "...any projected adverse consequences of such change are very small, and are dwarfed by projections of overall growth in employment opportunities. Nonetheless, affirmative action and other policies to combat racial and sexual discrimination in the workplace are among the most effective to reduce any disproportionate adjustment burden borne by these groups...In addition, policies to strengthen the quality of basic skills preparation for labor force entrants from minority groups are important in improving the ability of these individuals to obtain good jobs in the future workplace".
>
> In general, the projected deceleration of labor force growth between 1984 and 1995 "should improve the employment prospects for labor force entrants".

Dr. Lawrence's testimony supported this positive outlook and tried to put the transition from manufacturing to services into historical perspective:

> "The process of economic development is often referred to as industrialization, but judged by employment patterns it could be more accurately described as a transition to services. Even during the early period of U.S. industrialization, for

example, employment in services increased as rapidly as employment in goods-producing industries".

"This shift will continue in the next decade. According to U.S. Department of Labor projections in 1995, 74.4 percent of the American labor force will produce services (compared with 72.3 percent in 1984) while only 17.2 percent will be employed in manufacturing...."

"a concern exists that the reduced role for manufacturing in the economy will threaten national well-being... Manufacturing, some argue, is a vital source of productivity growth of middle-class incomes and the demand for capital goods".

"The U.S. experience indicates that these arguments seriously misinterpret the evidence. First, increases in services production have not come at the expense of goods production... Second, the declining employment share of goods production primarily results from the relatively faster increases in output per worker in goods industries. Just as rising farm productivity increased food production while freeing farm labor for employment in factories, so relatively rapid growth in manufacturing productivity is increasing goods production while making a larger share of the labor force available for employment in services..."

"Third, the stylized image of structural change in the United

States is represented by the displaced steel or automobile worker forced to take a menial job in fast foods or electronic assembly... Even sophisticated analysts believe that, as the economy shifts away from basic manufacturing and toward high-technology and service industries, the number of mid-level jobs will decline... But...these presumptions...are [not] correct. One cannot get an accurate picture of structural change by looking at just a few sectors or relying on anecodotal evidence. The auto and steel industries have received a lot of attention, but even at their 1979 peaks, they accounted for only 1.1 percent of total employment".

As shown in Table 3, "the proportion of full-time workers with middle-class earnings in the production of goods is exactly the same as the proportion of workers with middle-class earnings in the rest of the economy -- 46 percent. Durable-goods manufacturing does rank second among all sectors in the proportion of its workers receiving middle-class earnings (50 percent). However, the public sector has the most intensively middle-class work force (55 percent), and in third place is the services sector: transportation, communications and public utilities (49 percent). There is virtually no difference between the proportions of middle-class earnings in nondurable manufacturing (44 percent), finance (43 percent), and miscellaneous services (43 percent)".

TABLE 3.—EARNINGS DISTRIBUTION ACROSS SECTORS, CATEGORIZED BY HIGH, MIDDLE AND LOW EARNINGS, 1969, 1983 [1]

[In percent]

Sector	Distribution in 1969								
	Total			Males			Females		
	High	Mid	Low	High	Mid	Low	High	Mid	Low
Total	20	50	30	28	56	16	5	39	56
Goods producing	21	53	26	26	58	16	2	38	60
Agriculture	5	25	70	6	26	68	0	16	84
Mining	32	52	15	35	52	13	1	56	44
Construction	32	50	18	33	49	17	5	57	38
Manufacturing	20	55	25	26	62	13	2	38	60
Durables	22	60	18	27	62	11	3	49	48
Nondurables	15	49	36	23	60	17	2	28	71
Services	17	45	38	27	54	19	3	33	64
Transportation, communication, and public utilities	23	61	16	28	62	10	4	55	41
Trade	15	43	41	23	54	23	2	25	74
Finance, insurance, and real estate	22	45	33	40	48	12	4	42	54
Private households	2	9	89	5	26	70	2	7	92
Miscellaneous services	15	42	43	28	49	23	4	37	59
Public sector	24	56	20	34	56	10	12	56	32

Sector	Distribution in 1983								
	Total			Males			Females		
	High	Mid	Low	High	Mid	Low	High	Mid	Low
Total	21	46	33	30	47	23	7	44	49
Goods producing	24	46	30	30	48	22	6	42	52
Agriculture	3	27	69	4	28	68	1	21	78
Mining	48	42	9	53	40	8	28	55	16
Construction	28	45	27	30	45	25	6	51	42
Manufacturing	23	48	29	31	51	18	6	41	53
Durables	26	50	24	32	51	17	7	49	44
Nondurables	19	44	37	28	51	21	5	34	61
Services	19	42	40	30	43	27	6	40	54
Transportation, communication, and public utilities	36	49	15	43	45	12	14	56	27
Trade	14	38	48	21	44	35	3	28	69
Finance, insurance, and real estate	22	43	35	44	39	18	7	46	46
Private households	2	8	90	2	18	80	1	7	92
Miscellaneous services	16	43	41	28	41	31	7	44	49
Public sector	23	55	23	32	53	15	12	56	32

[1] Income categories established using median male weekly earnings of $142 in 1969 and $379 in 1983 as a middle benchmark. The categories are defined as follows: High (1983) = $500; mid (1983) = $250–499, low (1983) = $0–249, high (1969) = $187, mid (1949) = $9–187, low (1969) = $0–93.

Source: Bureau of Labor Statistics: unpublished data, Usual Weekly Earnings of Employed Full-Time Wage and Salary Workers, 1969–1983.

"Manufacturing may provide a larger share of middle-class jobs than the rest of the economy. But it scarcely represents the backbone of the middle-class. If all manufacturing workers were to be reemployed with earnings patterns typical of the rest of the economy, the aggregate distribution of earnings would change very little. The number of workers receiving upper-class and middle-class earnings would decline by only 3 percent and 1.7 percent, respectively".

"A similar analysis with a slightly different data base... [shows that] the proportion of middle- and upper-class jobs for both males and females is higher in high-tech than in the rest of manufacturing. All of the major high technology industries (chemicals, electrical and nonelectrical machinery, aircraft and instruments) have smaller shares of lower-class jobs than the rest of manufacturing and almost all of them have larger shares of upper-class jobs".

"The United States is already a services economy. Only 25 percent of the workforce today produce goods. This shift has progressed so far that to understand the implications we have only to look around us. The advent of this expansion reflects advances in technology and productivity that enable us to meet the demand patterns of a high-income population. Public policy should not try to hinder this transition, but it may try to aid those displaced".

The Effects of Automation in Service Industries on Employment and Productivity. Mr. Strassmann noted in his testimony that while manufacturing productivity has increased, productivity in the service sector has decreased. This decrease is contrary to "common wisdom", which assumes greater productivity, and fewer jobs, with increasing computerization. Indeed, Mr. Strassmann makes a case that just the opposite has occurred. Service industries have provided a growing number of jobs, in part because they are inefficient.

Mr. Strassmann's testimony deals with "information workers," a category which includes personnel in government, banking, insurance, professional services, health industries, as well as personnel in manufacturing, transportation and trade organizations who are concerned with the generation and processing of information. Mr. Strassmann estimated that this personnel accounts for 56% of the workforce and 67% of all labor costs.

Mr. Strassmann noted:

> "...the undoubted economic gains from computerization may not stand up to examination. ...Computers, Office Equipment and Communications Equipment accounted for 32.5% of all business capital expenditures in 1986, an amount "not approximated in any other country".

Yet he finds that information worker productivity in both the information and goods sectors has declined significantly since 1974, a period in which

production worker productivity has increased in both sectors. The higher proportion of information workers accounts for the overall decline in national productivity.

Mr. Strassmann stressed the importance of increasing the productivity of information workers to realize further gains in per capita income. In his view:

> "Computer technology is the most plausible major capital investment that still has the potential for improving the productivity of information workers. Therefore, we need answers why computerization has hitherto not delivered favorable productivity results".

Mr. Strassmann's analysis of the evidence suggests:

> "Computers will not make a badly managed business better. The expenses for computerization and the increased rigidity in computer-managed procedures are likely to accelerate the decline of incompetent management..."

> "...we have created a breeding, a work breeding paperwork and information breeding machinery in the United States which is unequal anywhere in the world by any ratio that you can look at. We deploy a larger proportion of our national assets on manipulating and shuffling information that doesn't produce anything".

"Companies most likely to benefit from computer investments are those that have simplified their management, focussed on improved quality, reduced their assets and introduced innovative ways of delivering value-added to customers. Such companies seem to derive great additional benefits from computers' contribution to reduced administrative expense".

"The implications of these findings are clear. One should automate successes, not failures".

Mr. Strassmann believes that we have been able to maintain an inefficient information sector because there is not yet a strong global market for information services:

"If and when it comes, the present accumulation of unproductive practices in the U.S. will create a massive upheaval, exceeding in severity what we have so far experienced in the decline of industrial America".

"The existing practices and policies of the U.S. government contribute to the lack of productivity in the information sector. The government continues to impose an increasingly costly burden on the information sector, through bureaucratization of its management practices.... Therefore I recommend that Congress re-directs some of its attention from a preoccupation with the problems of the production sector to the

emerging problems of the new information-based economy".

Mr. Strassmann also recommended that the National Science Foundation sponsor studies of the factors affecting productivity gains and losses by the information workforce. In addition to considering the effects of technology on productivity, the studies would assess the impact of Congressional policies such as the Tax Reform Act of 1986.

Dr. Lawrence added the following observations about the need to increase productivity in the service sector:

"...if you look since 1973, what is st king is that productivity growth in goods areas has not done all that badly. In fact, it now looks in the last few years that we have returned more or less to the historic rate of improvement in manufacturing that we had before 1973. But if we look in the services area, we find there has been literally zero productivity growth over the period".

"And that ironically, rather than our international competitivenss, is the biggest drain on our living standards today. Unless we can find a way to improve our services productivity, 60 percent of what we are producing, that is going to be the dominant source of our living standard improvements".

"So, I do applaud the quite novel notion that we should not simply be looking at the goods areas. And indeed, what is

striking is how little R&D expenditures takes place in services production. Almost all our R&D is taking place in manufacturing. Why aren't we spending on R&D and services? We know abysmally little about the slowdown in services productivity".

"And again I applaud the notion that the National Science Foundation ought to be appointing a commission to investigate and to mobilize the kind of knowledge that we may well put in the battle against cancer. It is just as important if you will, from the standpoint of our future that we learn what works and what doesn't in this huge proportion of our economy where our productivity growth has been so poor".

Dr. Ginzberg was more skeptical about the possibility of sound research conclusions in this area:

"The argument that services are not productive is bad theory and worse statistics. We don't know how to measure productivity in services...."

"I am very worried as Strassmann was about bureaucracy and the lack of effective management. But I wouldn't blame that on technology. ...I think a very big technology like computerization takes a very long time to permeate. The automobile is 102 years old, and it took us not one generation, but two generations to get people to learn how to drive easily

and to get the right products and to get it all worked out. And it took a half a century to get the trucks to compete with the railroads, et cetera. So, I would argue that in thinking about fundamental technologies--and computerization is one--you need a very long time perspective".

B. Public Policies for Addressing Worker and Community Dislocations

Panel members strongly agreed that high priority should be given to developing public policies for addressing worker and community dislocations. There also was agreement about a number of specific policies, including an emphasis on basic skills programs and on providing incentives to industry and workers that would expedite the reemployment of displaced workers.

Indeed, differences which did occur often reflected a difference in emphasis rather than basic policy. But panelists held different views about some key points -- for example, the advisability of federal intervention to revitalize specific industries and the feasibility of earmarking worker adjustment funds for specific categories of workers. The discussion below summarizes the panelists' main points.

1. Revitalizing Specific Industries

Dr. Lawrence argued that federal policies should focus on easing transitions for workers and communities rather than attempting to restore specific industries:

"I personally am very skeptical of coordinated orchestrated programs in order to deal with decline in a specific industry. I believe if an industry is being injured as a result of imports, it should come to the International Trade Commission (ITC), it should prove that it is being injured, a declining tariff should be provided in the form of protecting that sector".

"I do not think that the government should get involved in detailed programs of the nature of conditionality, where protection is provided on a quid pro quo basis, fundamentally because I don't believe that the government knows what it takes to revitalize an industry. I don't think we know how to restore the competitiveness of any individual industry. I don't think that is the job of the government".

"In fact, it is very striking that if you actually look at the steel industry where we had, in 1984, mandated investment in that industry, we find that firms which have been investing the heaviest over the last decade are those closest to bankruptcy today. It has not been a profitable endeavor to invest in the steel industry. Yet the Congress in 1984 mandated that such investment should take place".

"So I am skeptical that we really know what it takes. I also don't see why we should mandate every firm to invest. It is almost bound to be sure that some of them have to be shaken

out. I say give the industry a breathing space. Give them a declining tariff, and let the chips fall where they may. It was mocked when it was implemented, but in fact that was exactly our policy with Harley Davidson in the auto cycle industry".

"We gave them a tariff, we set it to decline, they knew it was temporary, and they restored their competitiveness. The market isn't perfect; it does make some errors. We can slow adjustment down. But I don't think we should do it in a detailed or interventionist way".[1]

However, Mr. Williams argued "against transition scenarios which assume the sharp decline or demise of a particular industry":

"Indeed, we would advocate that there be a transition to a more world-class format for the same industry.... We have reduced...employment enormously in agriculture, but we didn't wipe out agriculture. Agriculture exists as a vital part of the American economy and provides an enormous number of service jobs servicing that agricultural industry.... We are going to have a smaller work force manufacturing things, but it is vitally important that we continue to have a manufacturing capability because that is what sustains the service industry to look after it".

"My main emphasis is upon the need for a forum in which we

can coordinate various government policies regarding industrial transition. Congress might, without such industrial coordination, enact measures -- based upon the assumption of capacity reduction -- to facilitate such reductions by providing economic and tax incentives or antitrust relaxations for closures. An uncoordinated ad hoc approach of this type would be a mistake".

However, Mr. Williams emphasized:

"We do...recognize that profound structural changes are occurring and will continue. In 1977, there was approximately 160 million tons of steelmaking capacity employing over 425,000 workers. Today, the capacity is near 112 million tons and only 180,000 steelworkers are employed. Adjustment is taking place, but for workers it is traumatic. Emphasis upon new technology is warranted. But there must be a social commitment to workers. So far, we have not been able to develop a forum for the implementation of a social contract. It is that aspect of adjustment or transition to which I urge this Committee's attention".

Finally, Dr. Ginzberg commented on the efficacy of past attempts to restore specific industries:

"I am sympathetic to many of Mr. Williams' comments about the devastation that has occurred in many steel communities and

to many steelworkers and their families. But I think that a hard look at government interventions in steel will show that it has been costly and of not much help to anybody. My preference is to help the workers, not the firms. After all, we live in a capitalistic world and that means that the consequences of poor management are losses and bankruptcies".

2. Using Declining Tariffs to Finance Worker Readjustment Programs

Rather than using tariffs to provide long-term protection to declining industries, Dr. Lawrence suggested instead that revenues raised from declining tariffs and from auctioning off the quotas we currently have should be earmarked for assisting workers adversely affected by imports:

> "Even under highly conservative assumptions our proposed program...could be readily financed for at least a decade by converting existing quotas into declining tariffs. ...trade adjustment assistance (TAA) for firms, workers, and communities has been rendered increasingly ineffective because its funding has been severely cut back over the past five years".

There was some disagreement about the advisability of targeting worker readjustment programs on specific categories of workers -- for example, those displaced by trade imbalances or by technological change. For Dr. Lawrence, the major advantage of earmarking funds is to provide a "safety valve" against protectionist pressures as well as to raise revenues for programs which have become increasingly ineffective because of inade-

quate funding.

Some panelists noted practical difficulties in attributing worker dislocations to specific causes, like imports, technology, or poor management.

In Dr. Ginzberg's view:

> "...the Federal Government should move with considerable caution to introduce specially targeted programs to ease the problems of dislocated workers. The reason for this recommended caution is that it is often hard or impossible to determine whether plant shut-downs and ensuing unemployment reflect trade imbalances and other causes (poor management) or some combination of both. Further, I believe that our efforts to date with special adjustments such as TAA were not satisfactory and were costly".

Dr. Mowery reached the same conclusion:

> "The panel felt that targeting workers according to the cause of their displacement would induce severe administrative problems and result in severe delays in the delivery of services, simply because it's so difficult to determine the precise cause of displacement of an experienced worker. Consider the relative roles of technological change in the U.S. economy and technological change in foreign economies in displacing workers in trade-impacted industries, for example.

Should technological change in Japan be counted as a source of displacement for workers in the U.S. auto industry who are displaced by imports? Is it imports or is it technological change? Should we spend 14 months trying to decide which of these it is? If we do, the panel felt, we'll end up not getting the services to the workers when they need it.

3. Expediting Reemployment

Programs for displaced workers should be designed to expedite reemployment. Dr. Lawrence noted:

"...even in its heyday, TAA delayed adjustment, particularly by displaced workers who were merely given extended unemployment compensation payments without being positively encouraged to find alternative employment".

"...there is indeed something very traumatic and difficult for a worker who was earning a high wage to now have to experience a precipitous decline in his or her income. Indeed, there is an incentive to delay adjustment because of that erosion in the income that that worker would experience".

"My suggestion is a form of...wage insurance for workers from such displaced and dislocated industries. If a worker were earning say $25,000 or $30,000 a year and they found a new job paying $10,000, I would suggest that they would be com-

pensated say for half of the erosion in their wages for some period of time. That proportion could be adjusted according to their age [and seniority] with older workers getting more".

Workers residing in regions where the unemployment rate was significantly higher than the national average would be eligible for extended unemployment compensation; workers who wished to find employment in other areas would receive relocation allowances.

4. Financing Training and Education

For those workers who chose retraining, Dr. Lawrence proposed assistance in the form of federal loans which would carry repayment obligations tied to future earnings and collected automatically through the income tax system:

"...my own view is that imperfection in the market for training really is an area where the government has a role to play. ...whereas a bank can't obtain your future earnings, the government can because everybody files tax returns.... So, my proposal is...a contingent repayment plan where anyone who wants to undertake training in a recognized institution, be it for higher education, be it for later training, would obtain the money from the government and would then be liable for paying it back through their tax returns contingent on their future income".

"And I'm not talking about only giving them partial resources.... After all, if training is going to add to their incomes, and the government can take a share of that, I think you should be able to operate this and not necessarily with large amounts of concessional financing".

Two additional proposals for education and training loans were cited at the hearing:

- Dr. Mowery noted the recommendation of the Panel on Technology and Employment to institute a program of federally-provided direct loans or loan guarantees, administered by state or local authorities to displaced workers who could use the loans to finance retraining or relocation or to establish new businesses.

- Mr. Strassmann proposed tax deductions for education and training expenses:

"If an employee's knowledge is his capital, and the basis for a major share of his earnings, then all education and training should be given the same preferential treatment as we have given traditionally to capital. In the industrial age societal productivity was largely determined by the easy availability of capital. The encouragement and protection of capital formation, whether in the form of assets or technology, has always been one of the prime objective of government policies".

"In the information age, the knowledge capacity of the workforce is the basis of societal productivity gains. Capital is plentiful and becomes an easily available commodity, on a global scale. Hence, legislative policy should shift from concerns about capital to preferential treatment of every conceivable means for enhancing the knowledge capacity of the U.S. workforce".

"Specifically, Congress should adopt the policy that all educational and training expenses should become fully tax-deductible and, in special cases, eligible for a depletion allowance. This shift should be financed by a gradual removal of the preferential tax treatment given to the role of physical assets. In this regard, the recent elimination of the investment tax credit was a move in the right direction. However, the gains in tax revenues should have been reinvested into the creation of new knowledge capital".

5. Insuring Communities against Severe Economic Losses

Dr. Lawrence proposed assistance for municipalities, counties, and states faced with severe economic losses:

"We believe that just as we have unemployment insurance for workers, we ought to have a tax base insurance program for communities. They could insure their tax base and then, in the event of a precipitous shortfall not due to the change in

the tax rate, but due if you will to a plant closure or a crop failure or a fall in the price of oil--It's a program that has wide regional applicability, not just due to trade, but due to other forms of structural shocks that hit communities".

"They would then in turn be reimbursed for some proportion of the erosion of that tax base for some period of time. You could either do it on a voluntary basis, or you could make it mandatory. When you do it on a voluntary basis you have a problem, as in all insurance programs, of some kind of adverse selection, that only those who are susceptible to these disturbances would sign up. On the other hand, when we did our study we were struck by how pervasive the shortfalls have been for communities".

Dr. Lawrence described simulation studies which suggested that the program could be operated on a self-financing basis by pooling the risk on the assumption that shortfalls are unlikely to hit all communities at the same time.

6. Strengthening Title III of the Federal Job Training Partnership Act (JTPA)
Dr. Howery recommended improvements in service for displaced workers by: (1) increasing JTPA's coverage of displaced workers from the current level of 6-7 percent; (2) broadening the range both of employment and training services; (3) broadening income support for displaced workers engaged in training; and (4) revising state unemployment compensation laws to guaran-

ter .hat displaced workers who are eligible for unemployment compensation can receive benefits during training.

The panel es.imated costs of these proposals based on U.S. Bureau of Labor Statistics on the annual flow of displaced workers from 1979 to 1983. If displaced workers are defined as workers with at least three years experience in the job from which they were laid off, the annual flow was approximately 1 million persons; the estimated annual cost is $785 million to cover 30 percent of the workers -- a participation rate considerably higher than in any program to date. If workers in shorter term jobs are included, the estimate increases to 2.3 million persons, with an annual cost of approximately $1.8 billion to serve 30 percent of the displaced workers.

Dr. Lawrence noted that the proportion of existing labor force participants to new entrants will increase over the next decade both as a result of the baby bust generation and the fact that the proportion of women entering the labor force is likely to level out:

> "...what we know about our society is that increasingly it is going to be the existing workers who have to be retrained.... Our policies have to change as a result of that".

Dr. Ginzberg stressed the importance of strong employment counseling an' placement services for displaced workers:

> "it is desirable to have reasonable amounts of retraining money in the JTPA program available for workers who need and

want and can profit from retraining. But the sad fact is that many workers with minimal educational competencies cannot be effectively retrained. They can best profit from a stronger federal-state employment system with improved counseling and placement assistance. I have long favored a federally financed jobs program at minimum wages -- with remedial educational opportunities -- for those who need a job. Admittedly the latter would require new funding and I see no alternative but to raise taxes to cover the cost".

Evaluation of federal employment and training programs remains a problem. Dr. Mowery noted that we do not yet have rigorous evaluation data to assess the effectiveness of these programs. Although there is some evidence -- in part anecdotal -- that the programs improve employment prospects, there is little knowledge to provide guidelines for program design.

Clearly there are many individual success stories. As Mr. Williams noted:

"There are a great many examples of successful training efforts. There are a great many examples in terms of various industries. There are some unions that have been much involved in training. There are some projects in terms of retraining like those in the automobile industry that have been negotiated with the UAW and Ford...and General Motors".

"There are many success stories in the JTPA in terms of individuals. We have tried deliberately in the steelworkers be-

cause we have been negotiating with essentially companies that haven't got any money to spend really, and they're in great, difficult circumstances. So, we made a deliberate effort to try to make as much use of government finance out there as we could.... The whole problem has been that the resources available for this have been so limited in relation to the need.... Certainly I think one of the reasons that our modest efforts have been successful is that the union, the workers, and the company and the JTPA effort -- there has been joint involvement in doing these things".

7. Providing Displaced Workers the Option of Early Retirement

Dr. Ginzberg suggested an amendment to Social Security allowing workers who are unemployed due to plant shut-downs, to receive reduced benefits if they are between 58 and 62 and have 20 or more years employment. He argued that using the Social Security system would "avoid putting the costs of large underfunded pension plans on the federal system or the U.S. Treasury."

Dr. Ginzberg noted that it is common practice for European countries to offer early retirement at age 55 or 58: "It looks to me like a minimum kind of a thing that a civilized society might to be willing to do."

Mr. Williams also stressed the importance of an early retirement option:

"Of particular concern to potentially displaced workers in restructuring industries is the availability of early pen-

sions due to plant shut-downs. Almost all of our industrialized partners provide these older - worker compensation measures not only to facilitate structural changes. There is also a question of social equity. Yet, we are faced with an anomaly. Steel firms have declared themselves hampered by these 'exit costs' and have been engaging in Chapter II bankruptcies in order to avoid these obligations. Furthermore, even when pension plans have been terminated and the PBGC assumes responsibility for guaranteeing the basic benefits, this agency insists upon intervening in collective bargaining agreements if the unions attempt to recover for the structurally displaced workers those shut-down benefits not guaranteed by the PBGC. My point, Mr. Chairman, is that workers are unable to be sympathetic with the goals of industrial transition since there are little transitional programs assisting them".

8. Requiring Advance Notification of Plant Shut-downs or Large-scale Layoffs

Most panel members advocated mandatory advance notice. Dr. Mowery recommended federal legislation requiring that as many workers as possible receive at least two to three months advance notice of plant shut-downs or large-scale layoffs. The recommendation is based on the following rationale:

"Worker adjustment assistance programs are more effective when services are provided to workers prior to their displacement. Such pre-layoff assistance generally is feasible

only in the context of advance notice. In addition to improving the effectiveness of public investments in worker adjustment assistance programs, advance notice reduces the duration of unemployment following layoff, thus reducing public expenditures on unemployment compensation. A number of groups, including the National Association of Manufacturers, the Business Roundtable, the Secretary of Labor's Task Force on Economic Adjustment and Worker Dislocation, and the President's Commission on Industrial Competitiveness, have endorsed voluntary advance notice".

"Although there is disagreement over the mechanisms that will provide the broadest possible coverage of the U.S. work force, voluntary advance notice does not appear to provide substantial advance to more than a small share of the work force. According to the U.S. General Accounting Office, nearly 30% of the workers surveyed received no advance notice of layoffs or plant shut-downs, while blue-collar workers in non-union establishments received an average of only two days' notification".

"Under the current voluntary system of advance notice, the costs of plant closings in which advance notice is not provided are borne primarily by the taxpayers (including other employers) and the affected workers--employers choosing to close without advance notice create an exernality, reflecting the fact that the costs of such actions are not fully taken

into account by employers. Requiring advance notice can redistribute the costs of layoffs and plant shut-downs. Federal action to broaden the coverage of workers by advance notice also follows in an established tradition of actions to improve the functioning of market mechanisms (e.g., securities market regulation, consumer protection statutes and regulations) by ensuring that information available to one party to a transaction is not employed strategically or otherwise manipulated (as in the case of 'insider trading' on Wall Street)".

"Reflecting these considerations, the Panel recommended that federal action be taken to broaden the coverage of the U.S. work force by advance notice, with appropriate provisions to exempt small firms and those firms encountering unforeseen business circumstances. The Panel recommended either a federal requirement for advance notice or a tax-based incentive plan, which would combine tax credits on the corporate income tax with surcharges on federal unemployment insurance taxes to reduce the tax burden on firms providing advance notice".[2]

Dr. Mowery also noted that the issue of added costs to firms resulting from advance notice was discussed by the management representatives on the panel, most of whom were experienced in providing notice. None of these representatives felt advance notice made a significant contribution to the costs of doing business.

Nor, according to Mr. Williams, is there evidence that people stop working when they are notified of plant shut-downs:

> "The truth of the matter is that people work harder...usually in some desperate attempt to try to have their employer understand that they ought to continue the operation...."

Mr. Ginzberg recommended 90 day notice for plant shut-downs for all units of 100 or more employees:

> "If you can have management have all kinds of these golden parachutes, the least you can do is if you've had a worker for 25 years on your payroll, to give him a couple of months notice".

> "I think from my studies back in South Wales in the coal mining areas in 1939...one of the most important things is to communicate as early as possible to workers as much reality of the changes that are going to face them as possible, because they will then begin to do something about it".

Dr. Lawrence put it this way:

> "Let me just say my view is that closing, of course, isn't panacea. But I am struck that none of us find it very peculiar that in the property market a landlord is required to give the tenant 30 days' notice. We sort of take that as al-

most a norm. And I believe that the same kind of norm of just basic human decency--the fact is that a job is more important to people than where they dwell probably. And it just seems to me that dropping people, particularly when it's en masse, in an environment is just something which is basically inhuman. And so, I think it has an efficiency cost".

"But I also believe that there are times--as I say, I haven't seen the property market come grinding to a halt as a consequence of mandatory advance notification for property, and I would do the same for plant closing".

Mr. Strassmann expressed his opposition to plant closing legislation because he felt it was impractical and would not achieve its purpose. He suggested instead a profit-sharing plan which he believes would be more effective in alleviating the basic problem:

"First, 90 days is just not enought for somebody to be able to reconfigure their life. So, I think it is falling far short of really being a helpful solution to a much deeper endemic kind of a problem. If you are a chemical worker or a steelworker, 90 days just won't do much for you".

"My feeling, based on study, is that those companies that are involved in gain sharing where, in fact, the workers have much greater understanding and information about the profitability of the company--and we have a number of very success-

ful examples of that--those workers have a long-term understanding and information about the competitive viability of the firm, and they are able on a long-term basis to make judgments which are necessary to adjust their whole style of living and their direction and exercise individualized choices".

In addition to giving workers information about the profitability of their firm, Mr. Strassmann believes that profit-sharing has a number of other advantages:

"The Japanese as well as a small, but significant, number of U.S. companies practice some form of gain-sharing. This is an approach which allows for only a portion of income to come from wages. A large fraction, sometimes exceeding 50 to 100% of base pay, is earned on the basis of the overall performance of the enterprise and on an individual's contribution to its success".

"The theoretical meaning of any gain-sharing is far-reaching. It implies a departure from the traditional theory of wages and how wages are set. As an active participant in the success or failure of a business the employee cannot be seen any more as someone who just rents his time at a contract wage rate. The employee becomes partially an owner because he contributes not only labor but also capital in the form of his knowledge and personal involvement. Thus, as any in-

vestor, he shares not only in risks but also in the gains".

"The policy consequences of a widespread adoption of gain-sharing are far-reaching. For instance, it would suggest that all gain-sharing should be treated as capital gains and not as income. This would change tax laws. It would also alter the way how individuals perceive their ability to influence the workplace and working conditions".

"Firms that use some sort of gain-sharing show better productivity, enhanced job-information, improved industrial relations, greater competitiveness and superior social concerns, thus relieving much of the persistent pressure for ever increasing amounts of legislative and regulatory actions".

"The lessons to be learned from businesses that treat their employees as part-owners should influence Congress to adopt a national policy supporting gain-sharing".

9. Providing Second and Third Chance Opportunities to Gain Basic Skills Competencies

The panel agreed that basic competencies in communication and problem-solving skills would become increasingly important in the workplace of the future.

Dr. Ginzberg put it this way:

"The Federal Government [should encourage] state and local governments and the private sector to provide second and third chance opportunities to young people who drop out of high school lacking basic competencies--arithmetic, reading, communication--without which they can't get or hold a job in the service economy that currently provides 3 out of every 4 jobs. Good technology without a competent labor force is not the answer to our economic future".

These basic skills programs would be more effective if they were linked to jobs. Dr. Ginzberg recommended a federally funded jobs program with a basic competencies component:

"Since the young people who drop out of school have a negative image of the educational process, it is important to try to reduce the drop-out rate by offering them part-time jobs in which they may be interested. Similarly, after they drop out, one cannot get them back into school simply for remedial work. Such an effort must be linked to jobs and training".

Indeed, these programs may help prevent some of the costly worker readjustments necessitated by industrial transition:

"...retraining is important for people who have the competencies to be retrained.... but if you don't have the basic educational competencies, you can't be retrained. A lot of the

automobile workers' experiences in retraining, especially in the Los Angeles area, from automobiles to computers, did not work".

Mr. Williams reached similar conclusions:

"We need to try to focus in terms of results, try to relate training to job prospects that might be available...but on a parallel track...we should be working at the basic skills...at language, education, and at computer literacy".

But Mr. Williams feels we do not do a very good job of educating our entire population:

"...the top half of the work force in America, we do a great job. Our universities are world class, and in all of these we're competitive. From the middle down we do a very poor job. And we do that poor job in a variety of places. We don't do it too well in our school system.... On the industry side of it, we don't do in-house training nearly as well".

Dr. Ginzberg's major concern is that "many minority youth are coming into the labor force blocked from competing for mainline jobs" because of high drop-out rates in the inner city. In his view:

"...American society is at risk if a significant minority of all our citizens cannot become self-supporting".

"We have a whole section of our population that is cut off from the new work force. That is the single most serious problem that I see in the American economy today".

"And that means that since I don't believe we can restructure the elementary and secondary schooling very quickly--my colleague used to say it took 40 years to get an innovation into the educational system--we have to have second and third chance opportunities. In World War II I was in charge of a considerable part of the teaching of illiterates. They weren't total illiterates. We took them in the Army--300,000 of them. And we brought them up to snuff pretty quickly. That was one of my Eisenhower studies called 'The Uneducated'".

Overall, Dr. Ginzberg remains optimistic about the ability of the economy to provide jobs for young people".

"...I think when you're dealing with younger people, the important thing to do is to have hopefully the economy buoyant enough that with some kinds of money for counseling and job search and so on, you can move people around".

"We saw that a large number of workers out of Detroit went to

Houston. Then Houston fell on its face, so they had to go back to Detroit. But by and large, if you're in the younger age groups, I think the outstanding feeling that I have about the American economy is that in a continuing expanding labor market--and we have had more and more jobs--the younger people can by and large make it".

FOOTNOTES

[1] Dr. Lawrence did suggest that an affirmative injury finding by the ITC should trigger liberalized standards for assessing mergers of firms not protected by quotas.

> "If an industry is judged by the ITC to be seriously damaged by imports then there is little worry that mergers will lead to imperfect competition".

[2] Anne O. Kruger, a member of the National Academy of Sciences panel represented by Dr. Mowery, opposed mandatory advance notice:

> "Advance notification of layoffs is undoubtedly beneficial to those workers who will lose their jobs. If there were no negative side effects associated with advance notification, it would clearly be beneficial to all".

> "There will be several side effects, however, if notification is mandatory. First, the necessary enforcement apparatus would increase the cost of doing business. Second, for all firms, but especially for risky ones, knowledge that layoffs could not be made on short notice would increase incentives to use capital and hire fewer workers. To the extent that fewer jobs would be created, the proposed requirement would hurt the employment prospects of those the proposal is designed to assist. That mandatory periods prior to layoffs

can result in smaller levels of employment has been well documented in a number of developing countries. Third, requirements of advance notification reduce the flexibility of firms already in difficulty. The requirement is, in effect, the same as a tax for these firms".

"I conclude that advance notification is desirable, and efforts to educated employers of its value to employees should be encouraged. With respect to mandatory notification, however, I believe that the evidence is far from sufficient to warrant such a step".